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**STORMWATER MANAGEMENT REPORT
ADDENDUM
FOR THE
K. HOVNANIAN AT MARLBORO PLACE
AMENDED PRELIMINARY AND FINAL
MAJOR SUBDIVISION
BLOCK 355, LOTS 6, 7, 8 & 11
TOWNSHIP OF MARLBORO
MONMOUTH COUNTY, NEW JERSEY
OCTOBER 20, 2020**

PREPARED BY:
DW SMITH ASSOCIATES, LLC

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DWSA Reference No. 20-314

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STORMWATER MANAGEMENT REPORT
K. HOVNIANIAN AT MARLBORO PLACE AMENDED PRELIMINARY AND FINAL MAJOR SUBDIVISION
BLOCK 355, LOTS 6, 7, 8 & 11
TOWNSHIP OF MARLBORO, MONMOUTH COUNTY, NJ
OCTOBER 20, 2020

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I. PROJECT SUMMARY

This Stormwater Management Report Addendum shall be used in conjunction with the Stormwater Management Report, prepared by DW Smith Associates, last revised February 3, 2020. This Addendum has been provided to address the changes in the proposed drainage areas due to grading revisions throughout the site. Specifically, the below drainage areas have been modified. Please find a summary of each below:

- DA-2: This undetained area has been regraded to eliminate the retaining wall along the southerly portion of the property and has been increased by 0.169 acres.
- DA-4: This area has been regraded to have an additional 0.071 acres run undetained to the north of the site.
- DA-7: This undetained area has been regraded to eliminate the retaining wall along the northerly portion of the property and has been reduced by 0.240 acres.
- DA-A9: This area tributary to Inlet A-9 and the basin has been increased by 0.240 acres.
- DA-A8, A-10, A-11, A-12 & A-13: These areas tributary to the basin have been reduced by a total of 0.240 acres.

The numbers above indicate that the overall amount of undetained area and area tributary to the basin will remain balanced and unchanged. The below pre versus post charts of peak rate of runoff show that flow is reduced to each individual subcatchment in the post-development condition. Also, the overall post-development flows are 50%, 75% and 80% of the 2, 10 and 100-year storm events, respectively, as compared to pre-development flows.

PRE-DEVELOPMENT RUNOFF SUMMARY								
STORM EVENT	DRAINAGE AREAS							COMBINED TOTAL SITE (cfs)
	DA #1 (cfs)	DA #2 (cfs)	DA #3 (cfs)	DA #4 (cfs)	DA #5 (cfs)	DA #6 (cfs)	DA OFFSITE (cfs)	
2 year	0.53	0.07	0.53	0.15	0.00	0.26	2.54	3.83
10 year	1.82	0.12	0.83	0.25	0.02	0.40	4.92	7.86
25 year	3.25	0.45	1.04	0.53	0.09	0.54	6.85	11.69
100 year	7.26	1.73	1.49	1.58	0.46	1.23	11.23	23.08

RUNOFF REDUCTION REQUIREMENTS					
STORM EVENT	TOTAL ON-SITE RUNOFF REQUIRING REDUCTION (cfs)	REQUIRED REDUCTION (%)	ALLOWABLE POST-DEVELOPMENT RUNOFF FOR ON-SITE RUNOFF (cfs)	OFFSITE RUNOFF (NO REDUCTION REQUIRED) (cfs)	TOTAL ALLOWABLE POST-DEVELOPMENT RUNOFF (cfs)
2 year	1.28	50	0.64	2.54	3.18
10 year	2.94	75	2.21	4.92	7.13
25 year	4.97	N/A (use 75%)	3.73 (using 75%)	6.85	10.58
100 year	12.43	80	9.94	11.23	21.17

POST-DEVELOPMENT RUNOFF SUMMARY (MODIFIED UNDETAINED AREAS)						
STORM EVENT	DA #2 (cfs)		DA #4 (cfs)		DA #7 (cfs)	
	ALLOWABLE	PROPOSED	ALLOWABLE	PROPOSED	ALLOWABLE (DA-5 IN PRE)	PROPOSED
2 Year	0.07	0.00	0.15	0.00	0.00	0.00
10 Year	0.12	0.02	0.25	0.02	0.02	0.01
25 Year	0.45	0.11	0.53	0.13	0.09	0.04
100 Year	1.73	0.57	1.58	0.66	0.46	0.19

POST-DEVELOPMENT SUMMARY				
STORM EVENT	OUTFLOW RECHARGE BASIN TO INFILTRATION BASIN (cfs)	OUTFLOW FROM BASIN TO OFFSITE (cfs)	OFFSITE (NON-CAPTURED) (cfs)	TOTAL POST-DEVELOPMENT RUNOFF (cfs)
2 year	0.00	0.73	0.39	0.75
10 year	0.04	2.65	0.60	2.79
25 year	0.25	6.82	1.12	7.27
100 year	2.17	18.97	3.21	20.49

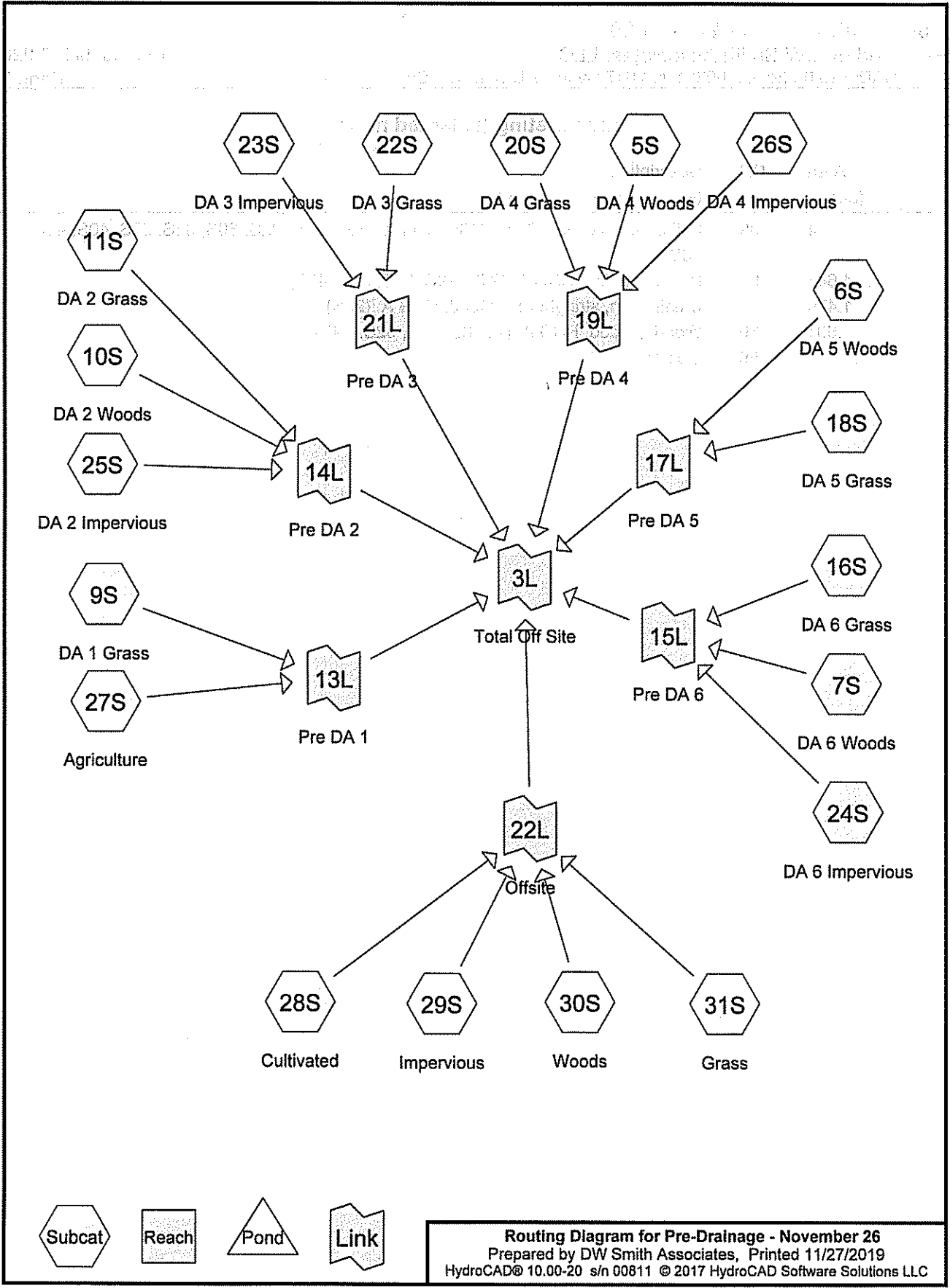
RUNOFF REDUCTION COMPARISON SUMMARY			
STORM EVENT	ALLOWABLE POST-DEVELOPMENT FLOW (cfs)	ACTUAL POST-DEVELOPMENT FLOW (cfs)	RUNOFF REDUCTION REQUIREMENT MET?
2 year	3.18	0.75	Yes
10 year	7.13	2.79	Yes
25 year	10.58	7.27	Yes (no reduction requirement)
100 year	21.17	20.49	Yes

The pre- and post-development hydrographs can be found within Appendix A and B, respectively.

Also, the pipe calculations have been revised to show that the proposed pipe network has capacity to handle the increased flow to Inlet A-9. These calculations can be found in Appendix C of this report.

Overall, the inflow and outflow to and from the proposed basin remained unchanged from what was previously approved and all applicable stormwater regulations are still met. It can be concluded that the modified drainage areas will not negatively impact the proposed development or adjacent properties.

APPENDIX A
PRE-DEVELOPMENT RUNOFF CALCULATIONS



Routing Diagram for Pre-Drainage - November 26
 Prepared by DW Smith Associates, Printed 11/27/2019
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Post 2, 10, 25 & 100 Yr 9-10-20

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.624	39	>75% Grass cover, Good, HSG A (11S, 16S, 20S, 22S, 30S, 34S, 35S, 40S, 42S, 46S)
4.648	98	Paved parking, HSG A (24S, 29S, 31S, 33S, 45S)
1.470	63	Small grain, straight row, Good, HSG A (28S)
0.601	30	Woods, Good, HSG A (7S, 8S, 10S, 32S, 39S)
15.343	59	TOTAL AREA

**PRE-DEVELOPMENT RUNOFF CALCULATIONS
(2 YEAR STORM)**

Pre-Drainage - November 26

NOAA 24-hr D 2-Year Rainfall=3.38"

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment5S: DA 4 Woods	Runoff Area=0.237 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=370' Tc=36.2 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment6S: DA 5 Woods	Runoff Area=0.601 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=150' Tc=23.3 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment7S: DA 6 Woods	Runoff Area=0.201 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=113' Tc=22.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment9S: DA 1 Grass	Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=780' Tc=20.5 min CN=39 Runoff=0.00 cfs 0.001 af
Subcatchment10S: DA 2 Woods	Runoff Area=0.755 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=343' Tc=34.4 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment11S: DA 2 Grass	Runoff Area=2.086 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=460' Tc=31.6 min CN=39 Runoff=0.00 cfs 0.001 af
Subcatchment16S: DA 6 Grass	Runoff Area=0.825 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=145' Tc=18.5 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment18S: DA 5 Grass	Runoff Area=0.462 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=268' Tc=22.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment20S: DA 4 Grass	Runoff Area=1.402 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=388' Tc=23.9 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment22S: DA 3 Grass	Runoff Area=0.567 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=457' Tc=33.2 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment23S: DA 3 Impervious	Runoff Area=0.194 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=0.53 cfs 0.051 af
Subcatchment24S: DA 6 Impervious	Runoff Area=0.094 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=0.26 cfs 0.025 af
Subcatchment25S: DA 2 Impervious	Runoff Area=0.039 ac 100.00% Impervious Runoff Depth=3.15" Flow Length=460' Tc=31.6 min CN=98 Runoff=0.07 cfs 0.010 af
Subcatchment26S: DA 4 Impervious	Runoff Area=0.083 ac 100.00% Impervious Runoff Depth=3.15" Flow Length=293' Tc=26.5 min CN=98 Runoff=0.15 cfs 0.022 af
Subcatchment27S: Agriculture	Runoff Area=1.510 ac 0.00% Impervious Runoff Depth=0.60" Flow Length=272' Tc=19.4 min CN=63 Runoff=0.53 cfs 0.076 af
Subcatchment28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=0.60" Flow Length=650' Tc=19.1 min CN=63 Runoff=0.52 cfs 0.074 af

Pre-Drainage - November 26

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NOAA 24-hr D 2-Year Rainfall=3.38"

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Subcatchment29S: Impervious Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=3.15"
Flow Length=750' Tc=13.8 min CN=98 Runoff=2.15 cfs 0.229 af

Subcatchment30S: Woods Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=580' Tc=28.3 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment31S: Grass Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=820' Tc=22.1 min CN=39 Runoff=0.00 cfs 0.000 af

Link 3L: Total Off Site Inflow=3.83 cfs 0.489 af
Primary=3.83 cfs 0.489 af

Link 13L: Pre DA 1 Inflow=0.53 cfs 0.077 af
Primary=0.53 cfs 0.077 af

Link 14L: Pre DA 2 Inflow=0.07 cfs 0.011 af
Primary=0.07 cfs 0.011 af

Link 15L: Pre DA 6 Inflow=0.26 cfs 0.025 af
Primary=0.26 cfs 0.025 af

Link 17L: Pre DA 5 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 19L: Pre DA 4 Inflow=0.15 cfs 0.022 af
Primary=0.15 cfs 0.022 af

Link 21L: Pre DA 3 Inflow=0.53 cfs 0.051 af
Primary=0.53 cfs 0.051 af

Link 22L: Offsite Inflow=2.54 cfs 0.303 af
Primary=2.54 cfs 0.303 af

Total Runoff Area = 15.343 ac Runoff Volume = 0.489 af Average Runoff Depth = 0.38"
91.63% Pervious = 14.059 ac 8.37% Impervious = 1.284 ac

PRE-DEVELOPMENT RUNOFF CALCULATIONS
(10 YEAR STORM)

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment5S: DA 4 Woods	Runoff Area=0.237 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=370' Tc=36.2 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment6S: DA 5 Woods	Runoff Area=0.601 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=150' Tc=23.3 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment7S: DA 6 Woods	Runoff Area=0.201 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=113' Tc=22.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment9S: DA 1 Grass	Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=780' Tc=20.5 min CN=39 Runoff=0.11 cfs 0.052 af
Subcatchment10S: DA 2 Woods	Runoff Area=0.755 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=343' Tc=34.4 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment11S: DA 2 Grass	Runoff Area=2.086 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=460' Tc=31.6 min CN=39 Runoff=0.09 cfs 0.043 af
Subcatchment16S: DA 6 Grass	Runoff Area=0.825 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=145' Tc=18.5 min CN=39 Runoff=0.04 cfs 0.017 af
Subcatchment18S: DA 5 Grass	Runoff Area=0.462 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=268' Tc=22.0 min CN=39 Runoff=0.02 cfs 0.010 af
Subcatchment20S: DA 4 Grass	Runoff Area=1.402 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=388' Tc=23.9 min CN=39 Runoff=0.06 cfs 0.029 af
Subcatchment22S: DA 3 Grass	Runoff Area=0.567 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=457' Tc=33.2 min CN=39 Runoff=0.02 cfs 0.012 af
Subcatchment23S: DA 3 Impervious	Runoff Area=0.194 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=0.83 cfs 0.081 af
Subcatchment24S: DA 6 Impervious	Runoff Area=0.094 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=0.40 cfs 0.039 af
Subcatchment25S: DA 2 Impervious	Runoff Area=0.039 ac 100.00% Impervious Runoff Depth=4.99" Flow Length=460' Tc=31.6 min CN=98 Runoff=0.10 cfs 0.016 af
Subcatchment26S: DA 4 Impervious	Runoff Area=0.083 ac 100.00% Impervious Runoff Depth=4.99" Flow Length=293' Tc=26.5 min CN=98 Runoff=0.24 cfs 0.035 af
Subcatchment27S: Agriculture	Runoff Area=1.510 ac 0.00% Impervious Runoff Depth=1.66" Flow Length=272' Tc=19.4 min CN=63 Runoff=1.81 cfs 0.208 af
Subcatchment28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=1.66" Flow Length=650' Tc=19.1 min CN=63 Runoff=1.77 cfs 0.203 af

Pre-Drainage - November 26

NOAA 24-hr D 10-Year Rainfall=5.23"

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Subcatchment29S: Impervious Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=4.99"
Flow Length=750' Tc=13.8 min CN=98 Runoff=3.35 cfs 0.364 af

Subcatchment30S: Woods Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.01"
Flow Length=580' Tc=28.3 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment31S: Grass Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.25"
Flow Length=820' Tc=22.1 min CN=39 Runoff=0.06 cfs 0.027 af

Link 3L: Total Off Site Inflow=7.86 cfs 1.138 af
Primary=7.86 cfs 1.138 af

Link 13L: Pre DA 1 Inflow=1.82 cfs 0.261 af
Primary=1.82 cfs 0.261 af

Link 14L: Pre DA 2 Inflow=0.12 cfs 0.060 af
Primary=0.12 cfs 0.060 af

Link 15L: Pre DA 6 Inflow=0.40 cfs 0.056 af
Primary=0.40 cfs 0.056 af

Link 17L: Pre DA 5 Inflow=0.02 cfs 0.010 af
Primary=0.02 cfs 0.010 af

Link 19L: Pre DA 4 Inflow=0.25 cfs 0.064 af
Primary=0.25 cfs 0.064 af

Link 21L: Pre DA 3 Inflow=0.83 cfs 0.092 af
Primary=0.83 cfs 0.092 af

Link 22L: Offsite Inflow=4.92 cfs 0.594 af
Primary=4.92 cfs 0.594 af

Total Runoff Area = 15.343 ac Runoff Volume = 1.138 af Average Runoff Depth = 0.89"
91.63% Pervious = 14.059 ac 8.37% Impervious = 1.284 ac

PRE-DEVELOPMENT RUNOFF CALCULATIONS
(25 YEAR STORM)

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 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 5S: DA 4 Woods	Runoff Area=0.237 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=370' Tc=36.2 min CN=30 Runoff=0.00 cfs 0.003 af
Subcatchment 6S: DA 5 Woods	Runoff Area=0.601 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=150' Tc=23.3 min CN=30 Runoff=0.01 cfs 0.007 af
Subcatchment 7S: DA 6 Woods	Runoff Area=0.201 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=113' Tc=22.1 min CN=30 Runoff=0.00 cfs 0.002 af
Subcatchment 9S: DA 1 Grass	Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=780' Tc=20.5 min CN=39 Runoff=0.49 cfs 0.128 af
Subcatchment 10S: DA 2 Woods	Runoff Area=0.755 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=343' Tc=34.4 min CN=30 Runoff=0.01 cfs 0.009 af
Subcatchment 11S: DA 2 Grass	Runoff Area=2.086 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=460' Tc=31.6 min CN=39 Runoff=0.35 cfs 0.106 af
Subcatchment 16S: DA 6 Grass	Runoff Area=0.825 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=145' Tc=18.5 min CN=39 Runoff=0.17 cfs 0.042 af
Subcatchment 18S: DA 5 Grass	Runoff Area=0.462 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=268' Tc=22.0 min CN=39 Runoff=0.09 cfs 0.023 af
Subcatchment 20S: DA 4 Grass	Runoff Area=1.402 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=388' Tc=23.9 min CN=39 Runoff=0.26 cfs 0.071 af
Subcatchment 22S: DA 3 Grass	Runoff Area=0.567 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=457' Tc=33.2 min CN=39 Runoff=0.09 cfs 0.029 af
Subcatchment 23S: DA 3 Impervious	Runoff Area=0.194 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=1.03 cfs 0.102 af
Subcatchment 24S: DA 6 Impervious	Runoff Area=0.094 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=0.50 cfs 0.049 af
Subcatchment 25S: DA 2 Impervious	Runoff Area=0.039 ac 100.00% Impervious Runoff Depth=6.29" Flow Length=460' Tc=31.6 min CN=98 Runoff=0.13 cfs 0.020 af
Subcatchment 26S: DA 4 Impervious	Runoff Area=0.083 ac 100.00% Impervious Runoff Depth=6.29" Flow Length=293' Tc=26.5 min CN=98 Runoff=0.30 cfs 0.044 af
Subcatchment 27S: Agriculture	Runoff Area=1.510 ac 0.00% Impervious Runoff Depth=2.55" Flow Length=272' Tc=19.4 min CN=63 Runoff=2.89 cfs 0.321 af
Subcatchment 28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=2.55" Flow Length=650' Tc=19.1 min CN=63 Runoff=2.83 cfs 0.313 af

Subcatchment29S: Impervious Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=6.29"
Flow Length=750' Tc=13.8 min CN=98 Runoff=4.19 cfs 0.458 af

Subcatchment30S: Woods Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.14"
Flow Length=580' Tc=28.3 min CN=30 Runoff=0.00 cfs 0.001 af

Subcatchment31S: Grass Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.61"
Flow Length=820' Tc=22.1 min CN=39 Runoff=0.25 cfs 0.066 af

Link 3L: Total Off Site Inflow=11.69 cfs 1.794 af
Primary=11.69 cfs 1.794 af

Link 13L: Pre DA 1 Inflow=3.25 cfs 0.449 af
Primary=3.25 cfs 0.449 af

Link 14L: Pre DA 2 Inflow=0.45 cfs 0.135 af
Primary=0.45 cfs 0.135 af

Link 15L: Pre DA 6 Inflow=0.54 cfs 0.093 af
Primary=0.54 cfs 0.093 af

Link 17L: Pre DA 5 Inflow=0.09 cfs 0.030 af
Primary=0.09 cfs 0.030 af

Link 19L: Pre DA 4 Inflow=0.53 cfs 0.117 af
Primary=0.53 cfs 0.117 af

Link 21L: Pre DA 3 Inflow=1.04 cfs 0.130 af
Primary=1.04 cfs 0.130 af

Link 22L: Offsite Inflow=6.85 cfs 0.839 af
Primary=6.85 cfs 0.839 af

Total Runoff Area = 15.343 ac Runoff Volume = 1.794 af Average Runoff Depth = 1.40"
91.63% Pervious = 14.059 ac 8.37% Impervious = 1.284 ac

PRE-DEVELOPMENT RUNOFF CALCULATIONS
(100 YEAR STORM)

Pre-Drainage - November 26

NOAA 24-hr D 100-Year Rainfall=8.94"

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment5S: DA 4 Woods	Runoff Area=0.237 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=370' Tc=36.2 min CN=30 Runoff=0.03 cfs 0.013 af
Subcatchment6S: DA 5 Woods	Runoff Area=0.601 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=150' Tc=23.3 min CN=30 Runoff=0.10 cfs 0.033 af
Subcatchment7S: DA 6 Woods	Runoff Area=0.201 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=113' Tc=22.1 min CN=30 Runoff=0.03 cfs 0.011 af
Subcatchment9S: DA 1 Grass	Runoff Area=2.520 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=780' Tc=20.5 min CN=39 Runoff=2.25 cfs 0.331 af
Subcatchment10S: DA 2 Woods	Runoff Area=0.755 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=343' Tc=34.4 min CN=30 Runoff=0.11 cfs 0.042 af
Subcatchment11S: DA 2 Grass	Runoff Area=2.086 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=460' Tc=31.6 min CN=39 Runoff=1.50 cfs 0.274 af
Subcatchment16S: DA 6 Grass	Runoff Area=0.825 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=145' Tc=18.5 min CN=39 Runoff=0.77 cfs 0.108 af
Subcatchment18S: DA 5 Grass	Runoff Area=0.462 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=268' Tc=22.0 min CN=39 Runoff=0.40 cfs 0.061 af
Subcatchment20S: DA 4 Grass	Runoff Area=1.402 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=388' Tc=23.9 min CN=39 Runoff=1.16 cfs 0.184 af
Subcatchment22S: DA 3 Grass	Runoff Area=0.567 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=457' Tc=33.2 min CN=39 Runoff=0.39 cfs 0.074 af
Subcatchment23S: DA 3 Impervious	Runoff Area=0.194 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=1.42 cfs 0.141 af
Subcatchment24S: DA 6 Impervious	Runoff Area=0.094 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=0.69 cfs 0.068 af
Subcatchment25S: DA 2 Impervious	Runoff Area=0.039 ac 100.00% Impervious Runoff Depth=8.70" Flow Length=460' Tc=31.6 min CN=98 Runoff=0.18 cfs 0.028 af
Subcatchment26S: DA 4 Impervious	Runoff Area=0.083 ac 100.00% Impervious Runoff Depth=8.70" Flow Length=293' Tc=26.5 min CN=98 Runoff=0.41 cfs 0.060 af
Subcatchment27S: Agriculture	Runoff Area=1.510 ac 0.00% Impervious Runoff Depth=4.42" Flow Length=272' Tc=19.4 min CN=63 Runoff=5.10 cfs 0.556 af
Subcatchment28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=4.42" Flow Length=650' Tc=19.1 min CN=63 Runoff=5.00 cfs 0.542 af

Pre-Drainage - November 26

NOAA 24-hr D 100-Year Rainfall=8.94"

Prepared by DW Smith Associates

Printed 11/27/2019

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Subcatchment29S: Impervious

Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=8.70"
Flow Length=750' Tc=13.8 min CN=98 Runoff=5.75 cfs 0.634 af

Subcatchment30S: Woods

Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.66"
Flow Length=580' Tc=28.3 min CN=30 Runoff=0.02 cfs 0.006 af

Subcatchment31S: Grass

Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=1.57"
Flow Length=820' Tc=22.1 min CN=39 Runoff=1.12 cfs 0.172 af

Link 3L: Total Off Site

Inflow=23.08 cfs 3.337 af
Primary=23.08 cfs 3.337 af

Link 13L: Pre DA 1

Inflow=7.26 cfs 0.887 af
Primary=7.26 cfs 0.887 af

Link 14L: Pre DA 2

Inflow=1.73 cfs 0.344 af
Primary=1.73 cfs 0.344 af

Link 15L: Pre DA 6

Inflow=1.23 cfs 0.187 af
Primary=1.23 cfs 0.187 af

Link 17L: Pre DA 5

Inflow=0.46 cfs 0.094 af
Primary=0.46 cfs 0.094 af

Link 19L: Pre DA 4

Inflow=1.58 cfs 0.257 af
Primary=1.58 cfs 0.257 af

Link 21L: Pre DA 3

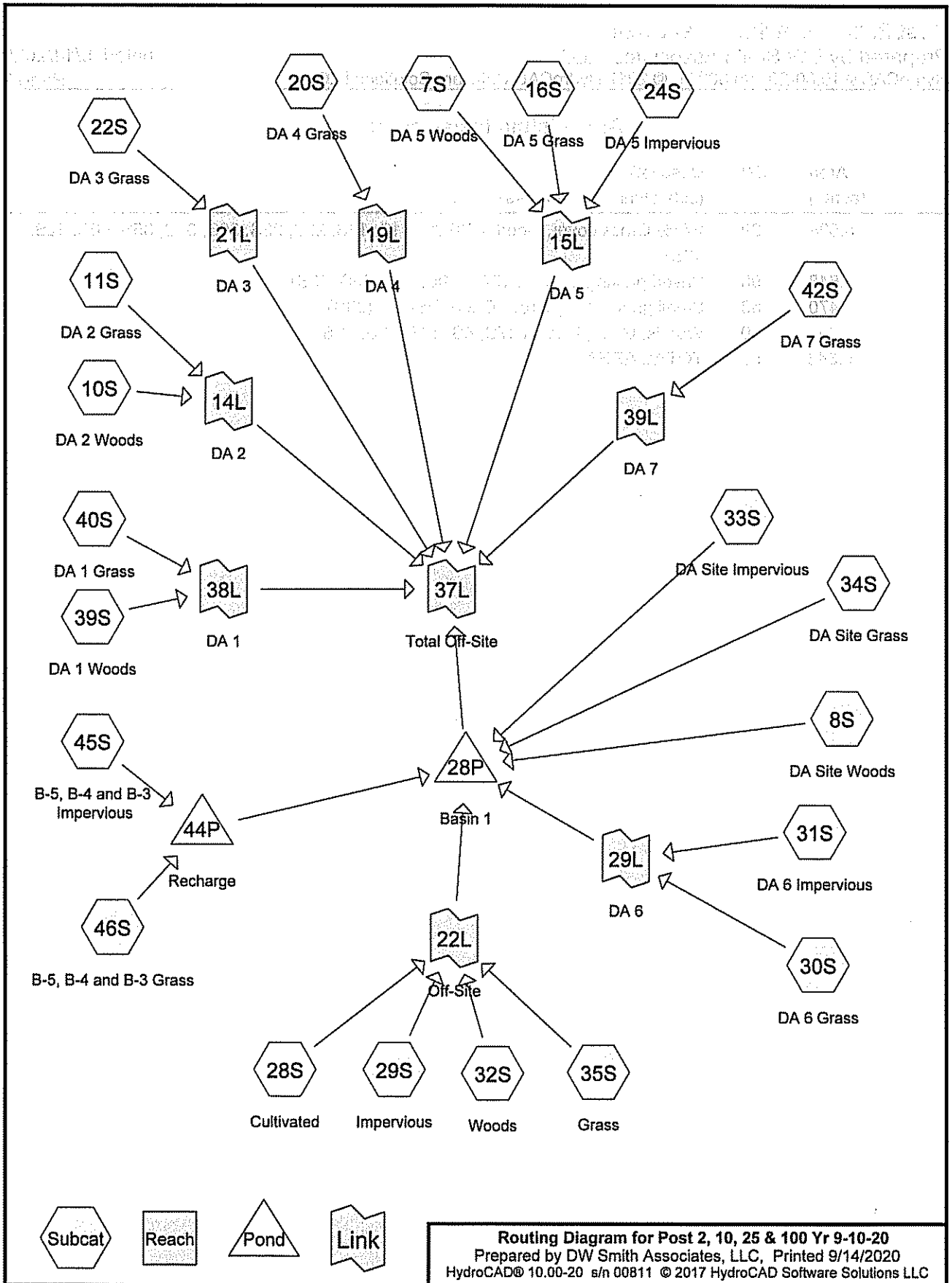
Inflow=1.49 cfs 0.215 af
Primary=1.49 cfs 0.215 af

Link 22L: Offsite

Inflow=11.23 cfs 1.353 af
Primary=11.23 cfs 1.353 af

Total Runoff Area = 15.343 ac Runoff Volume = 3.337 af Average Runoff Depth = 2.61"
91.63% Pervious = 14.059 ac 8.37% Impervious = 1.284 ac

APPENDIX B
POST-DEVELOPMENT RUNOFF CALCULATIONS



Post 2, 10, 25 & 100 Yr 9-10-20

Prepared by DW Smith Associates, LLC

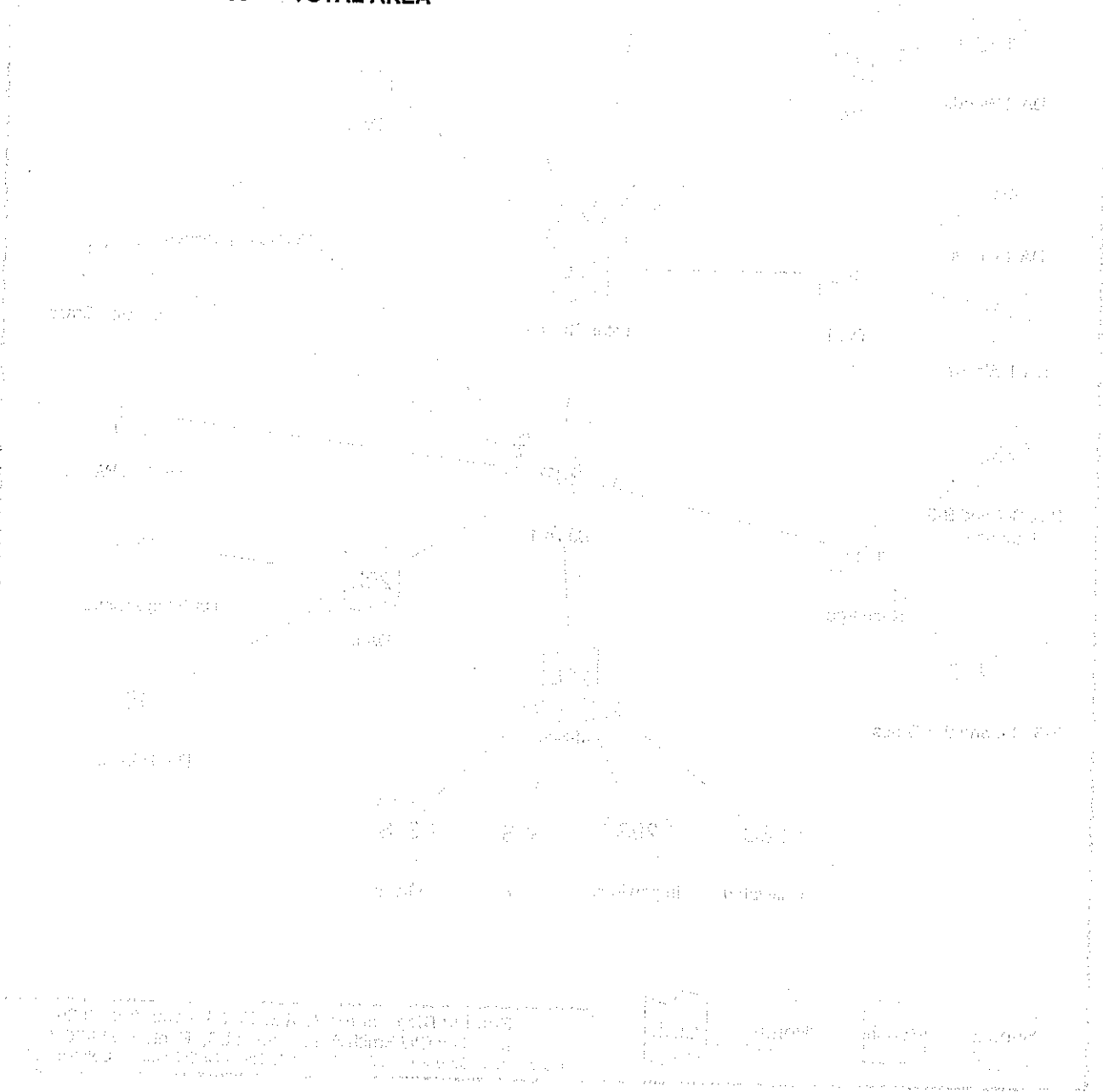
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.624	39	>75% Grass cover, Good, HSG A (11S, 16S, 20S, 22S, 30S, 34S, 35S, 40S, 42S, 46S)
4.648	98	Paved parking, HSG A (24S, 29S, 31S, 33S, 45S)
1.470	63	Small grain, straight row, Good, HSG A (28S)
0.601	30	Woods, Good, HSG A (7S, 8S, 10S, 32S, 39S)
15.343	59	TOTAL AREA



POST-DEVELOPMENT RUNOFF CALCULATIONS
(2 YEAR STORM)

Time span=0.00-50.00 hrs, dt=0.05 hrs, 1001 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 7S: DA 5 Woods	Runoff Area=0.014 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 8S: DA Site Woods	Runoff Area=0.116 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=110' Tc=25.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 10S: DA 2 Woods	Runoff Area=0.338 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=120' Slope=0.0147 '/' Tc=27.3 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 11S: DA 2 Grass	Runoff Area=0.461 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 16S: DA 5 Grass	Runoff Area=0.363 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 20S: DA 4 Grass	Runoff Area=0.538 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 22S: DA 3 Grass	Runoff Area=0.078 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 24S: DA 5 Impervious	Runoff Area=0.141 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=0.39 cfs 0.037 af
Subcatchment 28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=0.60" Flow Length=415' Tc=14.9 min CN=63 Runoff=0.59 cfs 0.074 af
Subcatchment 29S: Impervious	Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=2.39 cfs 0.229 af
Subcatchment 30S: DA 6 Grass	Runoff Area=0.013 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 31S: DA 6 Impervious	Runoff Area=0.027 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=0.07 cfs 0.007 af
Subcatchment 32S: Woods	Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=345' Tc=24.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 33S: DA Site Impervious	Runoff Area=3.441 ac 100.00% Impervious Runoff Depth=3.15" Tc=10.0 min CN=98 Runoff=9.41 cfs 0.902 af
Subcatchment 34S: DA Site Grass	Runoff Area=4.629 ac 0.00% Impervious Runoff Depth=0.00" Tc=10.0 min CN=39 Runoff=0.01 cfs 0.002 af
Subcatchment 35S: Grass	Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.00" Flow Length=585' Tc=17.9 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment39S: DA 1 Woods	Runoff Area=0.018 ac 0.00% Impervious	Runoff Depth=0.00"
	Tc=10.0 min CN=30	Runoff=0.00 cfs 0.000 af
Subcatchment40S: DA 1 Grass	Runoff Area=0.202 ac 0.00% Impervious	Runoff Depth=0.00"
	Tc=10.0 min CN=39	Runoff=0.00 cfs 0.000 af
Subcatchment42S: DA 7 Grass	Runoff Area=0.151 ac 0.00% Impervious	Runoff Depth=0.00"
	Tc=10.0 min CN=39	Runoff=0.00 cfs 0.000 af
Subcatchment45S: B-5, B-4 and B-3	Runoff Area=0.165 ac 100.00% Impervious	Runoff Depth=3.15"
	Tc=10.0 min CN=98	Runoff=0.45 cfs 0.043 af
Subcatchment46S: B-5, B-4 and B-3 Grass	Runoff Area=0.881 ac 0.00% Impervious	Runoff Depth=0.00"
	Tc=10.0 min CN=39	Runoff=0.00 cfs 0.000 af
Pond 28P: Basin 1	Peak Elev=168.46' Storage=37,995 cf	Inflow=12.31 cfs 1.214 af
		Outflow=0.73 cfs 0.467 af
Pond 44P: Recharge	Peak Elev=170.18' Storage=1,898 cf	Inflow=0.45 cfs 0.044 af
		Outflow=0.00 cfs 0.000 af
Link 14L: DA 2		Inflow=0.00 cfs 0.000 af
		Primary=0.00 cfs 0.000 af
Link 15L: DA 5		Inflow=0.39 cfs 0.037 af
		Primary=0.39 cfs 0.037 af
Link 19L: DA 4		Inflow=0.00 cfs 0.000 af
		Primary=0.00 cfs 0.000 af
Link 21L: DA 3		Inflow=0.00 cfs 0.000 af
		Primary=0.00 cfs 0.000 af
Link 22L: Off-Site		Inflow=2.83 cfs 0.303 af
		Primary=2.83 cfs 0.303 af
Link 29L: DA 6		Inflow=0.07 cfs 0.007 af
		Primary=0.07 cfs 0.007 af
Link 37L: Total Off-Site		Inflow=0.75 cfs 0.505 af
		Primary=0.75 cfs 0.505 af
Link 38L: DA 1		Inflow=0.00 cfs 0.000 af
		Primary=0.00 cfs 0.000 af
Link 39L: DA 7		Inflow=0.00 cfs 0.000 af
		Primary=0.00 cfs 0.000 af

Total Runoff Area = 15.343 ac Runoff Volume = 1.296 af Average Runoff Depth = 1.01"
69.71% Pervious = 10.695 ac 30.29% Impervious = 4.648 ac

Summary for Subcatchment 10S: DA 2 Woods

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

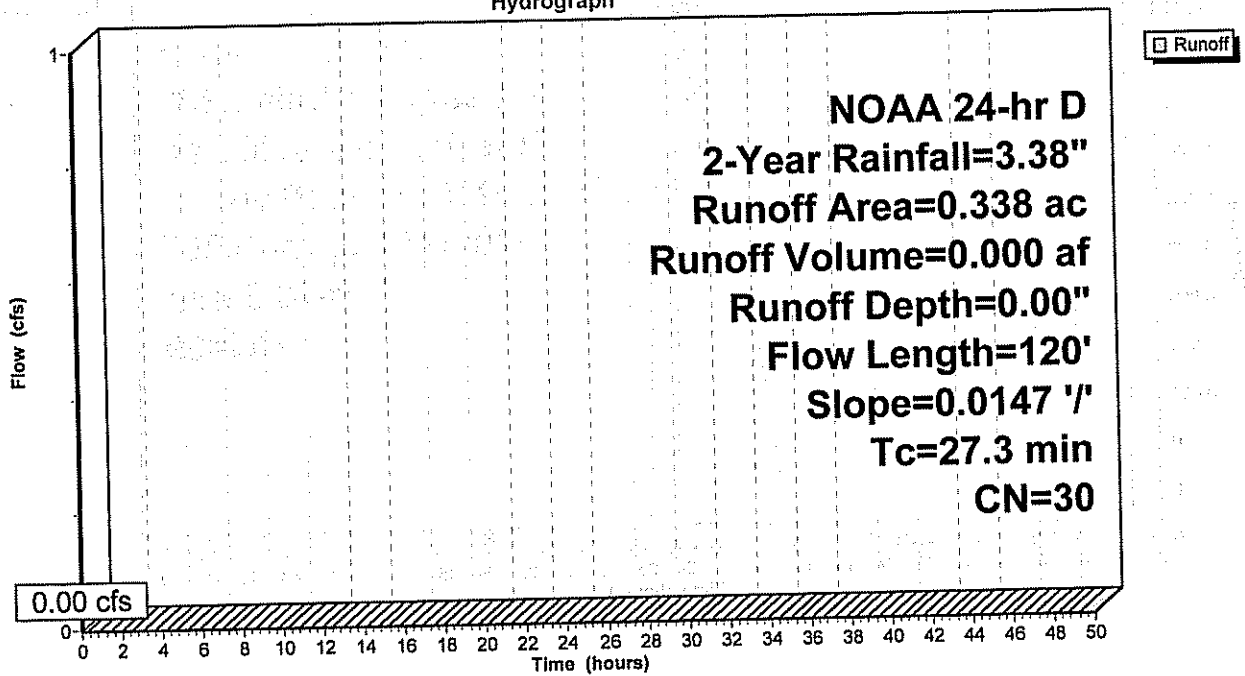
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 2-Year Rainfall=3.38"

Area (ac)	CN	Description
0.338	30	Woods, Good, HSG A
0.338		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.3	120	0.0147	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.38"

Subcatchment 10S: DA 2 Woods

Hydrograph



Summary for Subcatchment 10S: DA 2 Woods

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

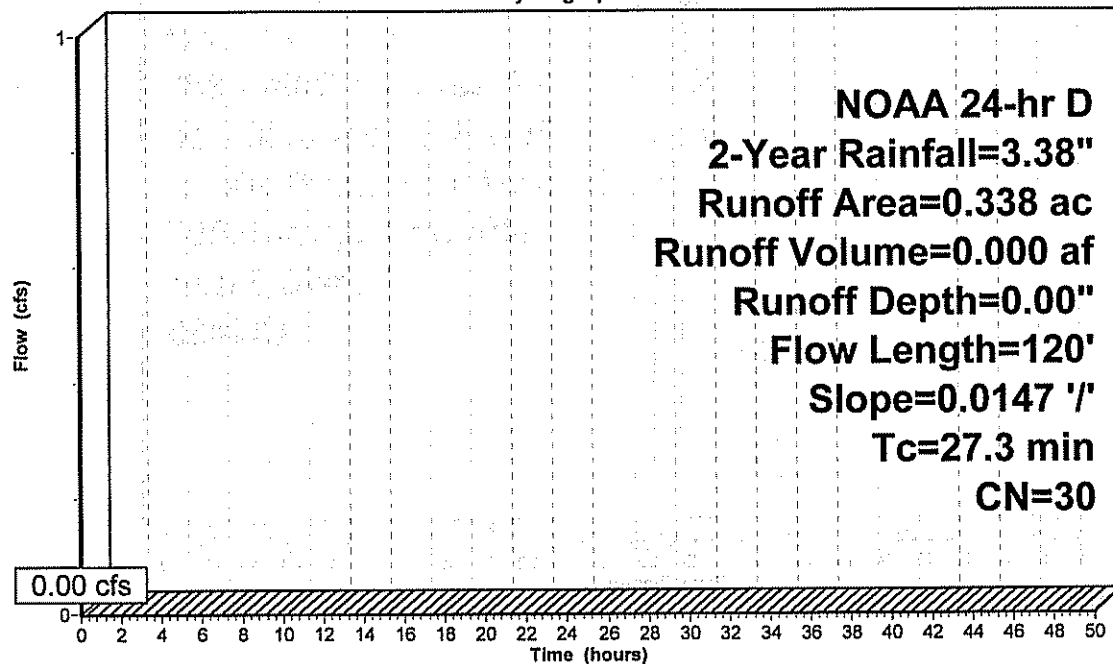
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 2-Year Rainfall=3.38"

Area (ac)	CN	Description
0.338	30	Woods, Good, HSG A
0.338		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.3	120	0.0147	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.38"

Subcatchment 10S: DA 2 Woods

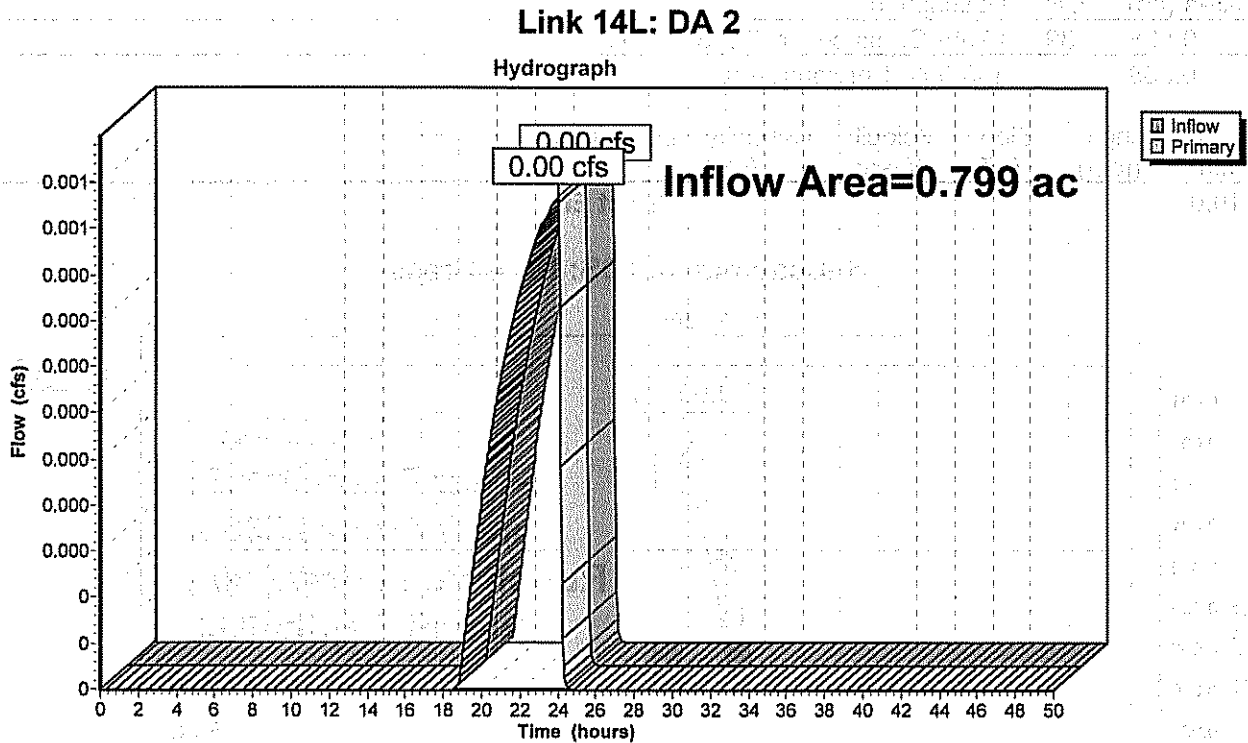
Hydrograph



Summary for Link 14L: DA 2

Inflow Area = 0.799 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs



Summary for Subcatchment 20S: DA 4 Grass

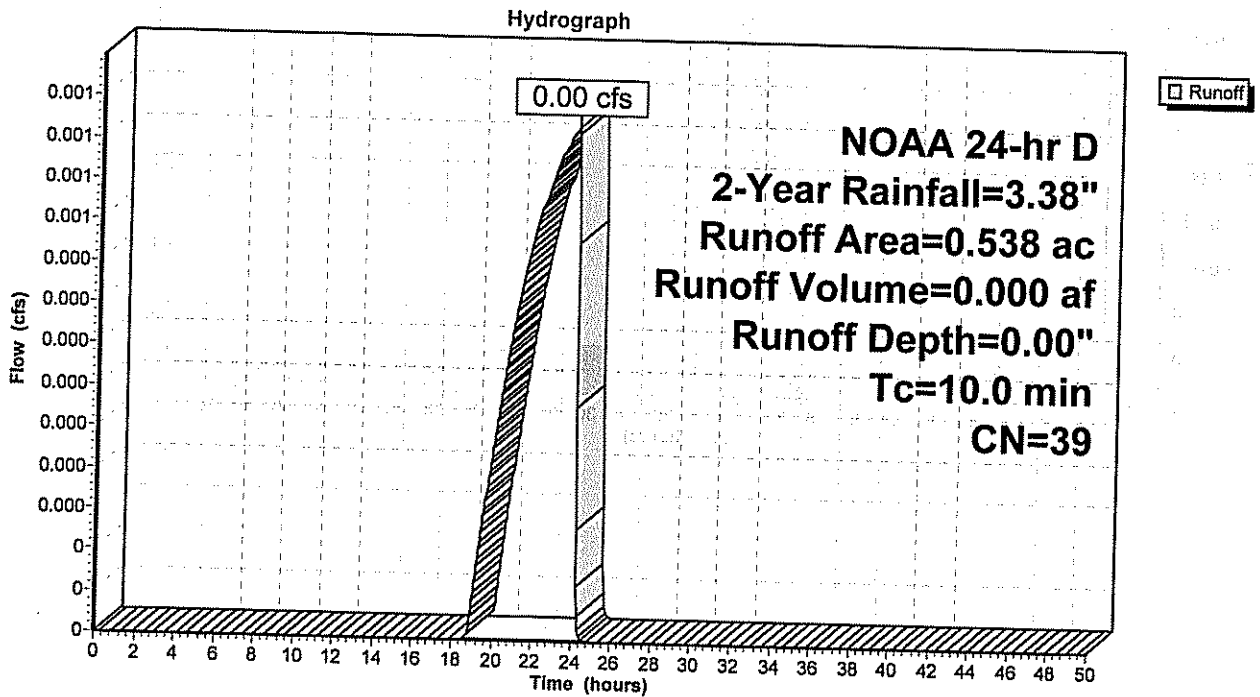
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 2-Year Rainfall=3.38"

Area (ac)	CN	Description
0.538	39	>75% Grass cover, Good, HSG A
0.538		100.00% Pervious Area

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

Subcatchment 20S: DA 4 Grass



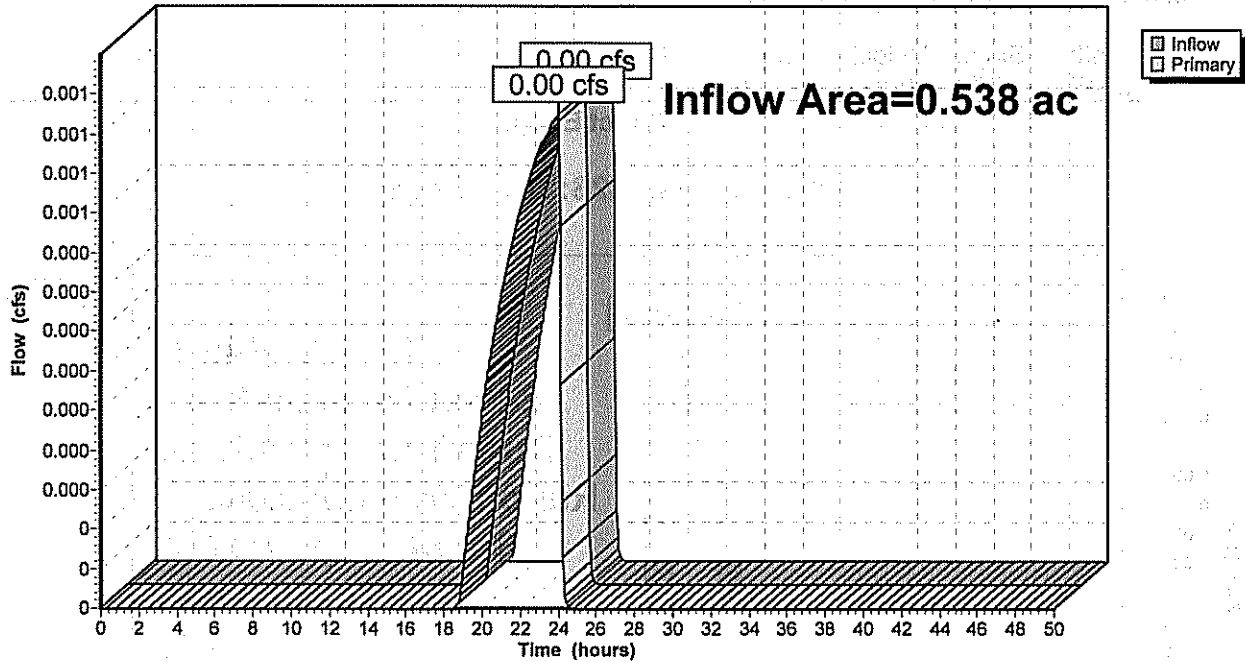
Summary for Link 19L: DA 4

Inflow Area = 0.538 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 19L: DA 4

Hydrograph



Summary for Subcatchment 42S: DA 7 Grass

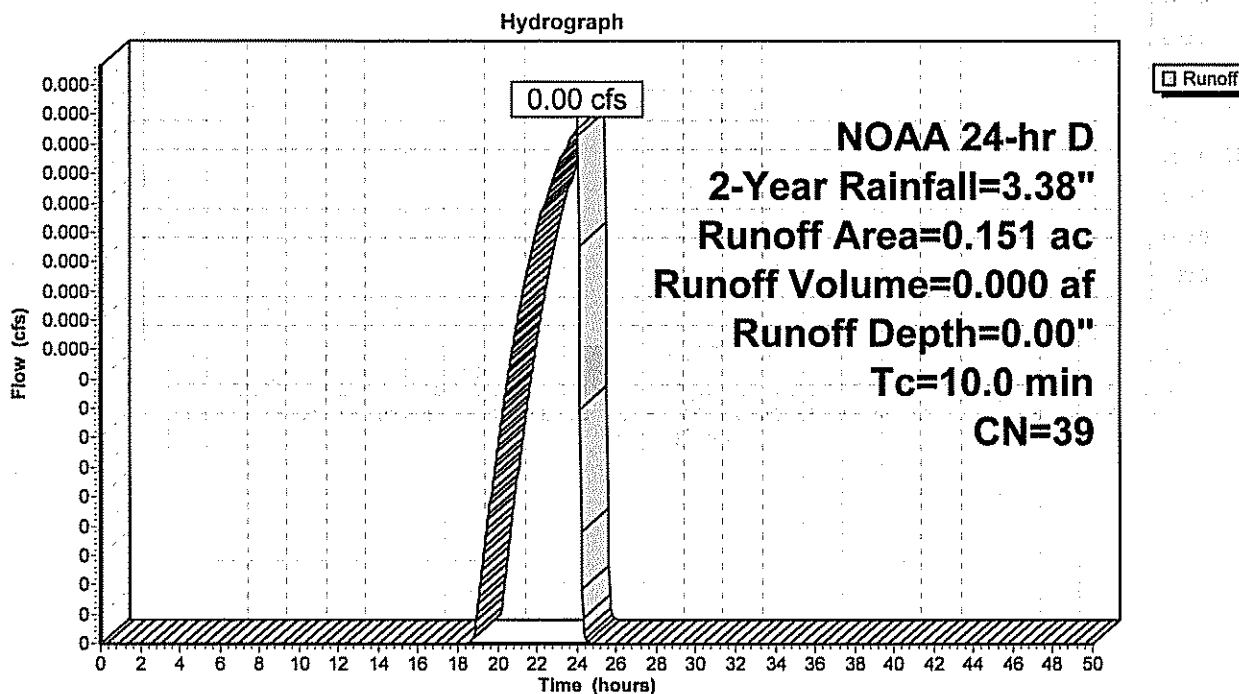
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 2-Year Rainfall=3.38"

Area (ac)	CN	Description
0.151	39	>75% Grass cover, Good, HSG A
0.151		100.00% Pervious Area

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

Subcatchment 42S: DA 7 Grass



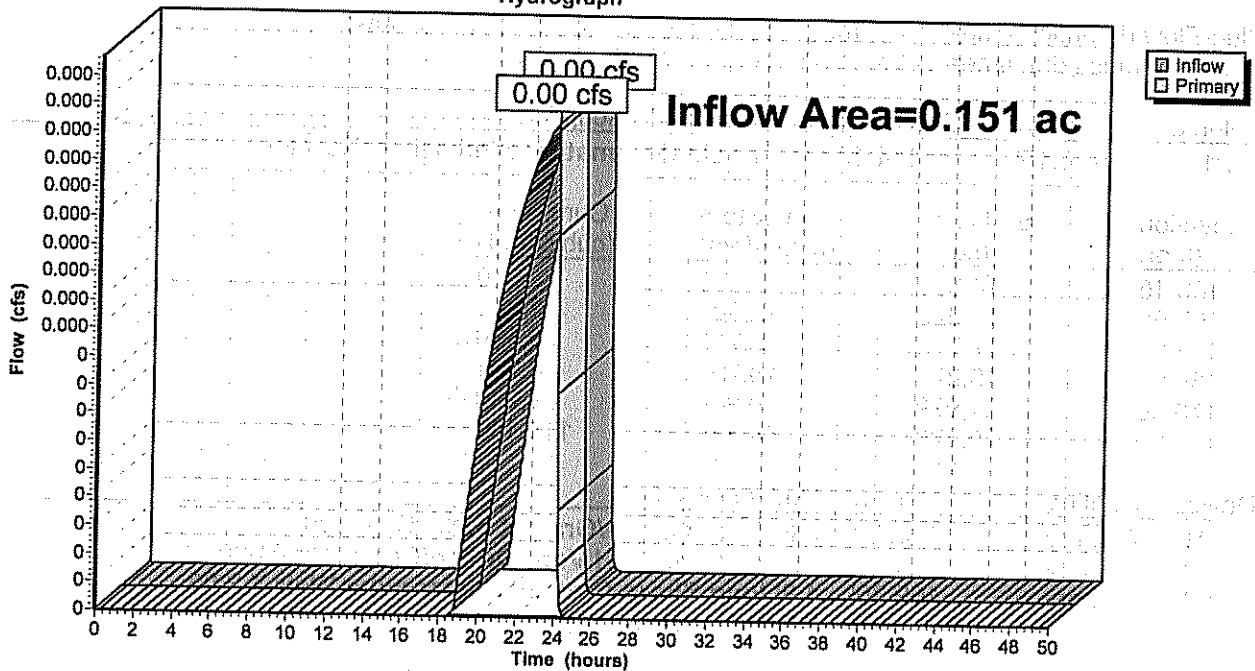
Summary for Link 39L: DA 7

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 39L: DA 7

Hydrograph



Summary for Pond 28P: Basin 1

Inflow Area = 13.039 ac, 34.57% Impervious, Inflow Depth = 1.12" for 2-Year event
 Inflow = 12.31 cfs @ 12.17 hrs, Volume= 1.214 af
 Outflow = 0.73 cfs @ 14.38 hrs, Volume= 0.467 af, Atten= 94%, Lag= 132.6 min
 Primary = 0.73 cfs @ 14.38 hrs, Volume= 0.467 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 168.46' @ 14.38 hrs Surf.Area= 18,714 sf Storage= 37,995 cf

Plug-Flow detention time= 533.4 min calculated for 0.467 af (38% of inflow)
 Center-of-Mass det. time= 362.0 min (1,133.7 - 771.6)

Volume	Invert	Avail.Storage	Storage Description
#1	166.15'	114,130 cf	Basin (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.15	14,300	0	0
167.00	15,820	12,801	12,801
168.00	17,770	16,795	29,596
169.00	19,820	18,795	48,391
170.00	21,979	20,900	69,290
171.90	25,220	44,839	114,130

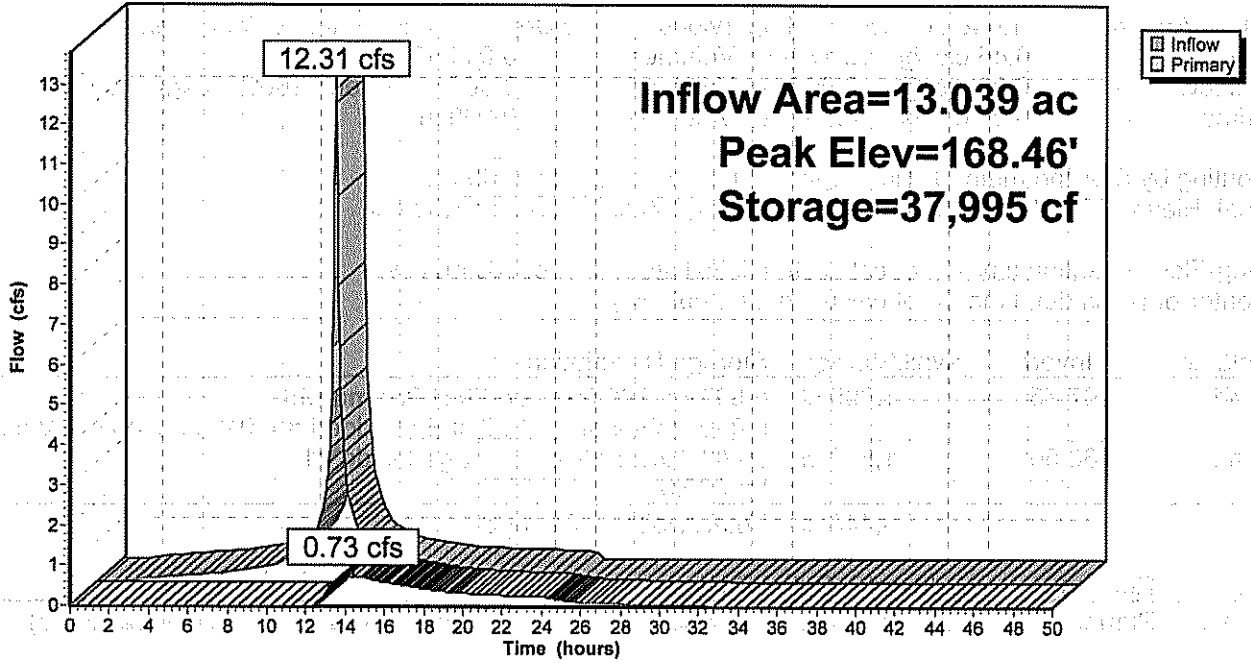
Device	Routing	Invert	Outlet Devices
#1	Primary	168.15'	6.0" Vert. Orifice/Grate X 3.00 C= 0.600
#2	Primary	170.60'	48.0" W x 48.0" H Vert. Orifice/Grate C= 0.600
#3	Primary	169.30'	1.8' long Sharp-Crested Rectangular Weir X 2.00 2 End Contraction(s)

Primary OutFlow Max=0.73 cfs @ 14.38 hrs HW=168.46' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.73 cfs @ 1.90 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 28P: Basin 1

Hydrograph



Time (hours)	Inflow (cfs)	Primary (cfs)
0	0.73	0.73
2	0.73	0.73
4	0.73	0.73
6	0.73	0.73
8	0.73	0.73
10	0.73	0.73
12	0.73	0.73
14	12.31	0.73
16	2.0	0.73
18	1.0	0.73
20	1.0	0.73
22	0.73	0.73
24	0.73	0.73
26	0.73	0.73
28	0.73	0.73
30	0.73	0.73
32	0.73	0.73
34	0.73	0.73
36	0.73	0.73
38	0.73	0.73
40	0.73	0.73
42	0.73	0.73
44	0.73	0.73
46	0.73	0.73
48	0.73	0.73
50	0.73	0.73

Summary for Pond 44P: Recharge

Inflow Area = 1.046 ac, 15.77% Impervious, Inflow Depth = 0.50" for 2-Year event
 Inflow = 0.45 cfs @ 12.17 hrs, Volume= 0.044 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.18' @ 24.60 hrs Surf.Area= 1,300 sf Storage= 1,898 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

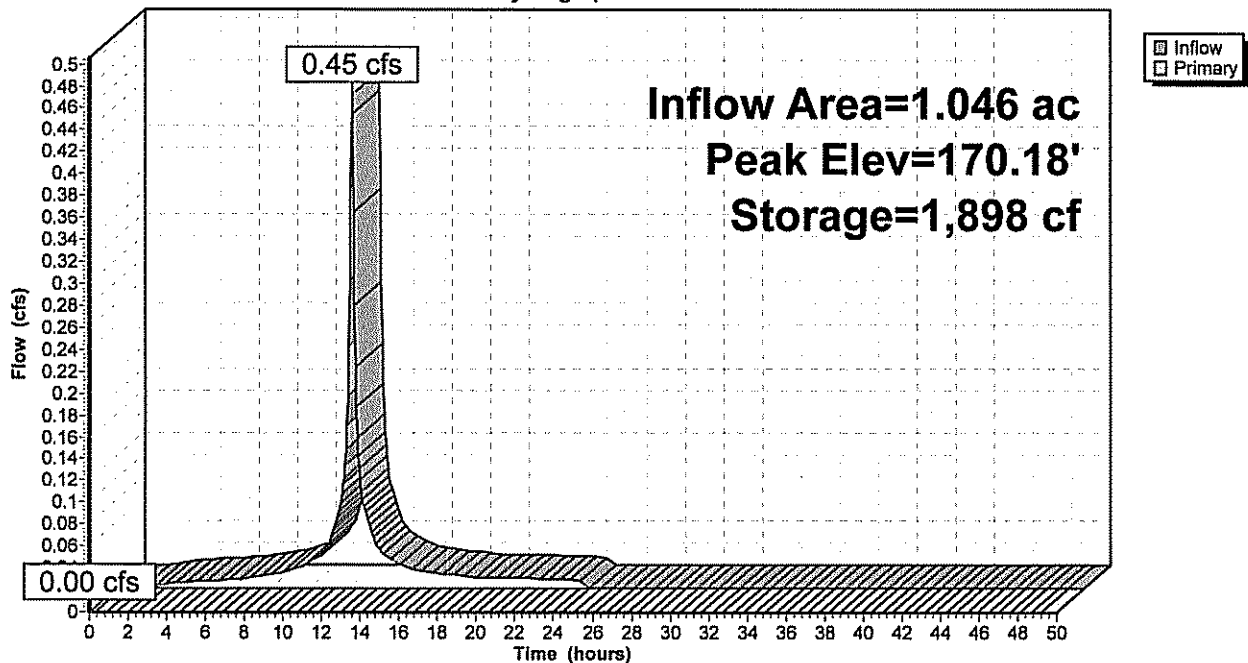
Volume	Invert	Avail.Storage	Storage Description
#1	167.75'	1,605 cf	5.00'W x 260.00'L x 4.50'H Prismatic 5,850 cf Overall - 1,838 cf Embedded = 4,012 cf x 40.0% Voids
#2	168.50'	1,838 cf	36.0" Round Pipe Storage Inside #1 L= 260.0'
		3,443 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	171.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.75' (Free Discharge)
 1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 44P: Recharge

Hydrograph



**POST-DEVELOPMENT RUNOFF CALCULATIONS
(10 YEAR STORM)**

Time span=0.00-50.00 hrs, dt=0.05 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment7S: DA 5 Woods	Runoff Area=0.014 ac 0.00% Impervious Runoff Depth=0.01" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment8S: DA Site Woods	Runoff Area=0.116 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=110' Tc=25.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment10S: DA 2 Woods	Runoff Area=0.338 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=120' Slope=0.0147 '/' Tc=27.3 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment11S: DA 2 Grass	Runoff Area=0.461 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.02 cfs 0.010 af
Subcatchment16S: DA 5 Grass	Runoff Area=0.363 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.02 cfs 0.008 af
Subcatchment20S: DA 4 Grass	Runoff Area=0.538 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.02 cfs 0.011 af
Subcatchment22S: DA 3 Grass	Runoff Area=0.078 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.002 af
Subcatchment24S: DA 5 Impervious	Runoff Area=0.141 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=0.60 cfs 0.059 af
Subcatchment28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=1.66" Flow Length=415' Tc=14.9 min CN=63 Runoff=1.98 cfs 0.203 af
Subcatchment29S: Impervious	Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=3.72 cfs 0.364 af
Subcatchment30S: DA 6 Grass	Runoff Area=0.013 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment31S: DA 6 Impervious	Runoff Area=0.027 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=0.12 cfs 0.011 af
Subcatchment32S: Woods	Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.01" Flow Length=345' Tc=24.1 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment33S: DA Site Impervious	Runoff Area=3.441 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=14.66 cfs 1.432 af
Subcatchment34S: DA Site Grass	Runoff Area=4.629 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.20 cfs 0.096 af
Subcatchment35S: Grass	Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=585' Tc=17.9 min CN=39 Runoff=0.06 cfs 0.027 af

Subcatchment39S: DA 1 Woods	Runoff Area=0.018 ac 0.00% Impervious Runoff Depth=0.01" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment40S: DA 1 Grass	Runoff Area=0.202 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.01 cfs 0.004 af
Subcatchment42S: DA 7 Grass	Runoff Area=0.151 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.01 cfs 0.003 af
Subcatchment45S: B-5, B-4 and B-3	Runoff Area=0.165 ac 100.00% Impervious Runoff Depth=4.99" Tc=10.0 min CN=98 Runoff=0.70 cfs 0.069 af
Subcatchment46S: B-5, B-4 and B-3 Grass	Runoff Area=0.881 ac 0.00% Impervious Runoff Depth=0.25" Tc=10.0 min CN=39 Runoff=0.04 cfs 0.018 af
Pond 28P: Basin 1	Peak Elev=169.27' Storage=53,830 cf Inflow=20.17 cfs 2.154 af Outflow=2.65 cfs 1.407 af
Pond 44P: Recharge	Peak Elev=171.27' Storage=2,893 cf Inflow=0.70 cfs 0.087 af Outflow=0.04 cfs 0.021 af
Link 14L: DA 2	Inflow=0.02 cfs 0.010 af Primary=0.02 cfs 0.010 af
Link 15L: DA 5	Inflow=0.60 cfs 0.066 af Primary=0.60 cfs 0.066 af
Link 19L: DA 4	Inflow=0.02 cfs 0.011 af Primary=0.02 cfs 0.011 af
Link 21L: DA 3	Inflow=0.00 cfs 0.002 af Primary=0.00 cfs 0.002 af
Link 22L: Off-Site	Inflow=5.46 cfs 0.594 af Primary=5.46 cfs 0.594 af
Link 29L: DA 6	Inflow=0.12 cfs 0.012 af Primary=0.12 cfs 0.012 af
Link 37L: Total Off-Site	Inflow=2.79 cfs 1.503 af Primary=2.79 cfs 1.503 af
Link 38L: DA 1	Inflow=0.01 cfs 0.004 af Primary=0.01 cfs 0.004 af
Link 39L: DA 7	Inflow=0.01 cfs 0.003 af Primary=0.01 cfs 0.003 af

Total Runoff Area = 15.343 ac Runoff Volume = 2.316 af Average Runoff Depth = 1.81"
69.71% Pervious = 10.695 ac 30.29% Impervious = 4.648 ac

Summary for Subcatchment 10S: DA 2 Woods

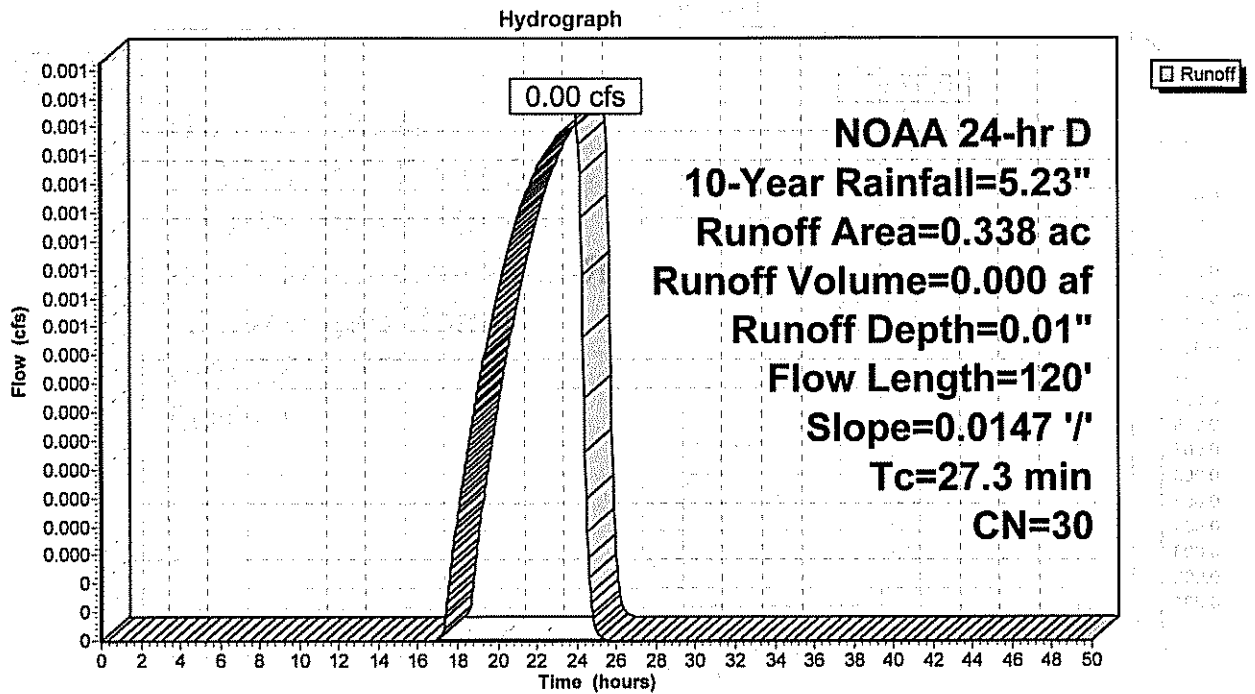
Runoff = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 10-Year Rainfall=5.23"

Area (ac)	CN	Description
0.338	30	Woods, Good, HSG A
0.338		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.3	120	0.0147	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.38"

Subcatchment 10S: DA 2 Woods



Summary for Subcatchment 11S: DA 2 Grass

Runoff = 0.02 cfs @ 12.91 hrs, Volume= 0.010 af, Depth= 0.25"

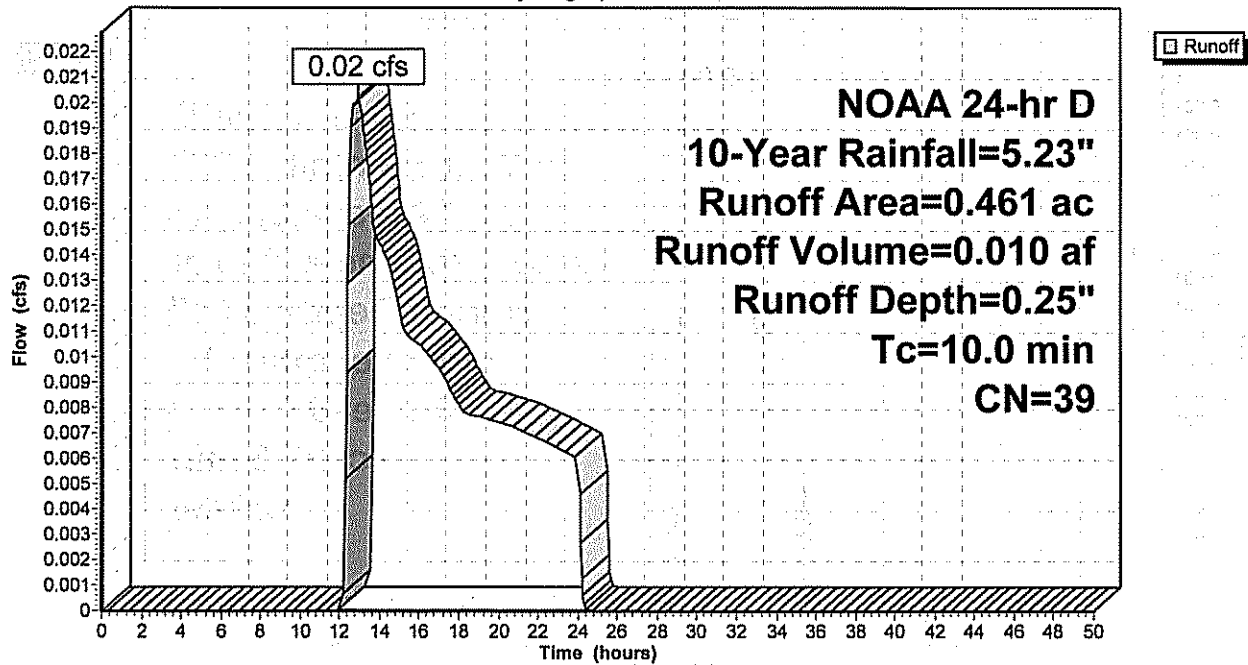
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 10-Year Rainfall=5.23"

Area (ac)	CN	Description
0.461	39	>75% Grass cover, Good, HSG A
0.461		100.00% Pervious Area

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

Subcatchment 11S: DA 2 Grass

Hydrograph



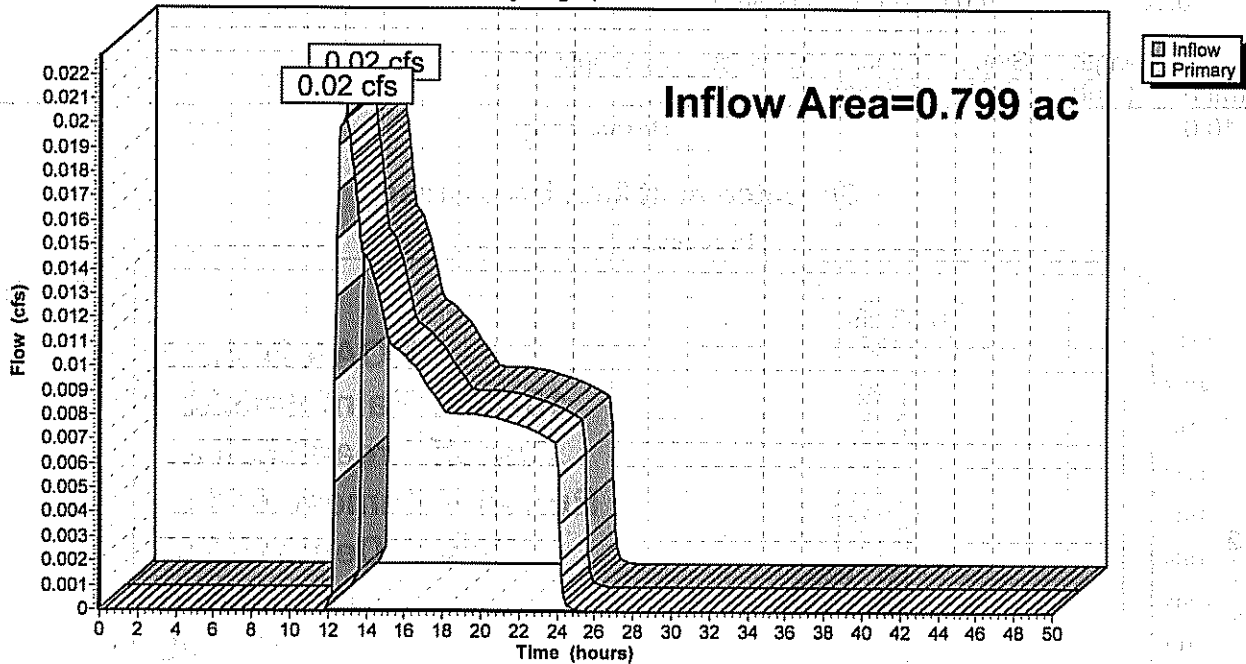
Summary for Link 14L: DA 2

Inflow Area = 0.799 ac, 0.00% Impervious, Inflow Depth = 0.15" for 10-Year event
Inflow = 0.02 cfs @ 12.91 hrs, Volume= 0.010 af
Primary = 0.02 cfs @ 12.91 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 14L: DA 2

Hydrograph



Summary for Subcatchment 20S: DA 4 Grass

Runoff = 0.02 cfs @ 12.91 hrs, Volume= 0.011 af, Depth= 0.25"

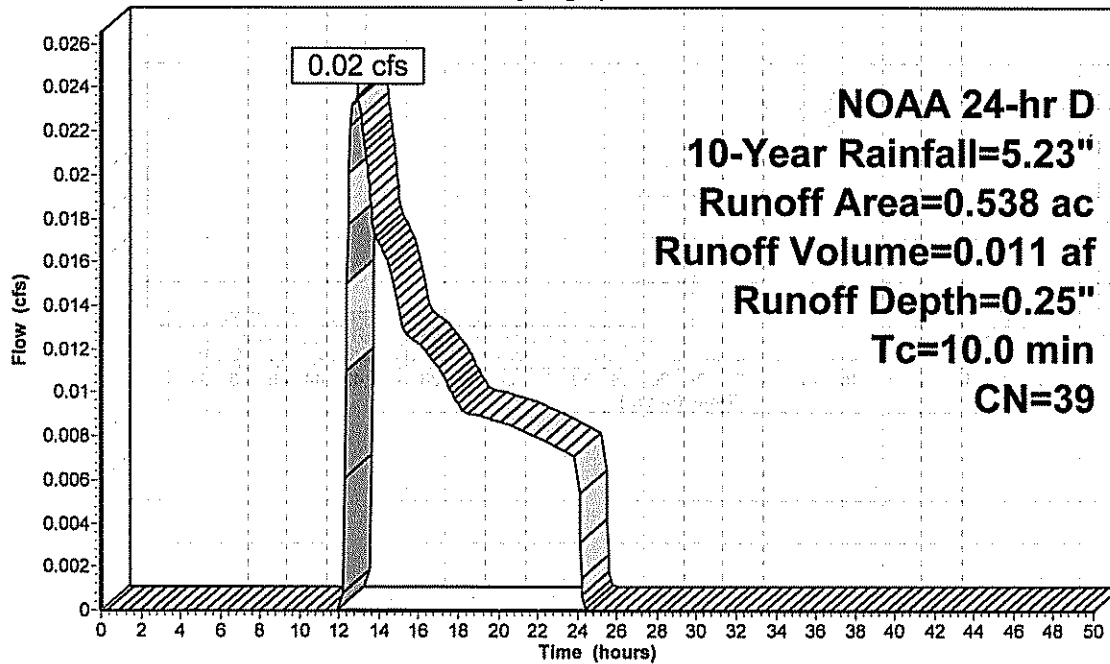
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 10-Year Rainfall=5.23"

Area (ac)	CN	Description
0.538	39	>75% Grass cover, Good, HSG A
0.538		100.00% Pervious Area

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

Subcatchment 20S: DA 4 Grass

Hydrograph



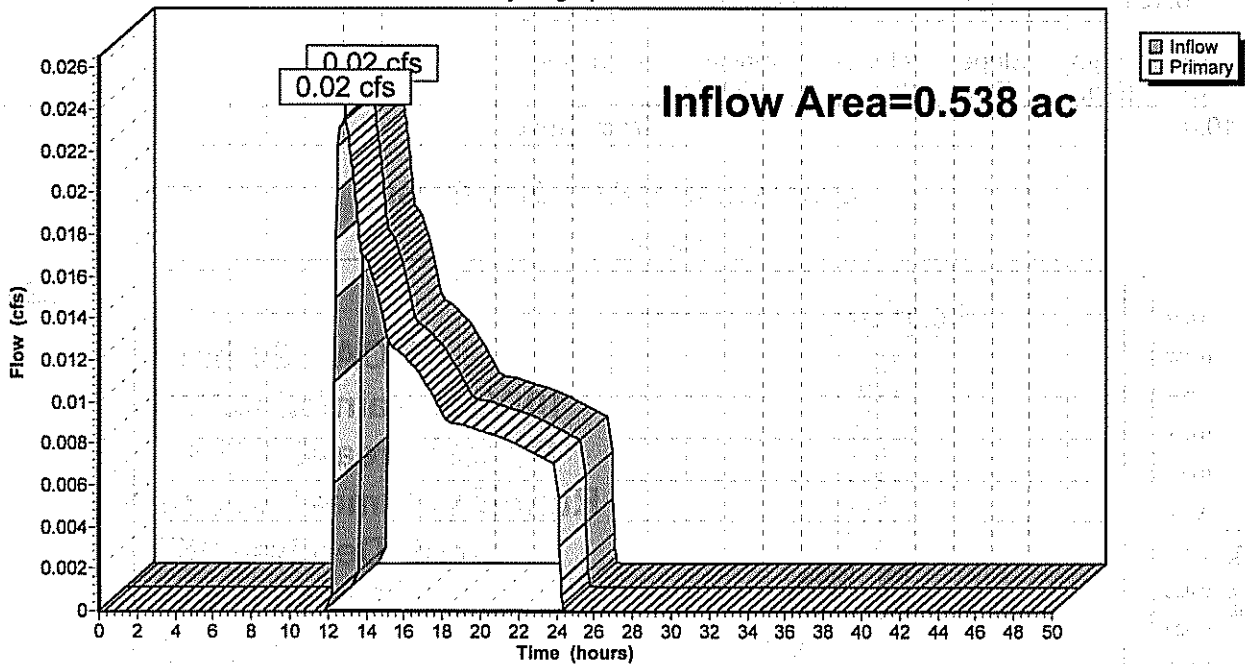
Summary for Link 19L: DA 4

Inflow Area = 0.538 ac, 0.00% Impervious, Inflow Depth = 0.25" for 10-Year event
Inflow = 0.02 cfs @ 12.91 hrs, Volume= 0.011 af
Primary = 0.02 cfs @ 12.91 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 19L: DA 4

Hydrograph



Summary for Subcatchment 42S: DA 7 Grass

Runoff = 0.01 cfs @ 12.91 hrs, Volume= 0.003 af, Depth= 0.25"

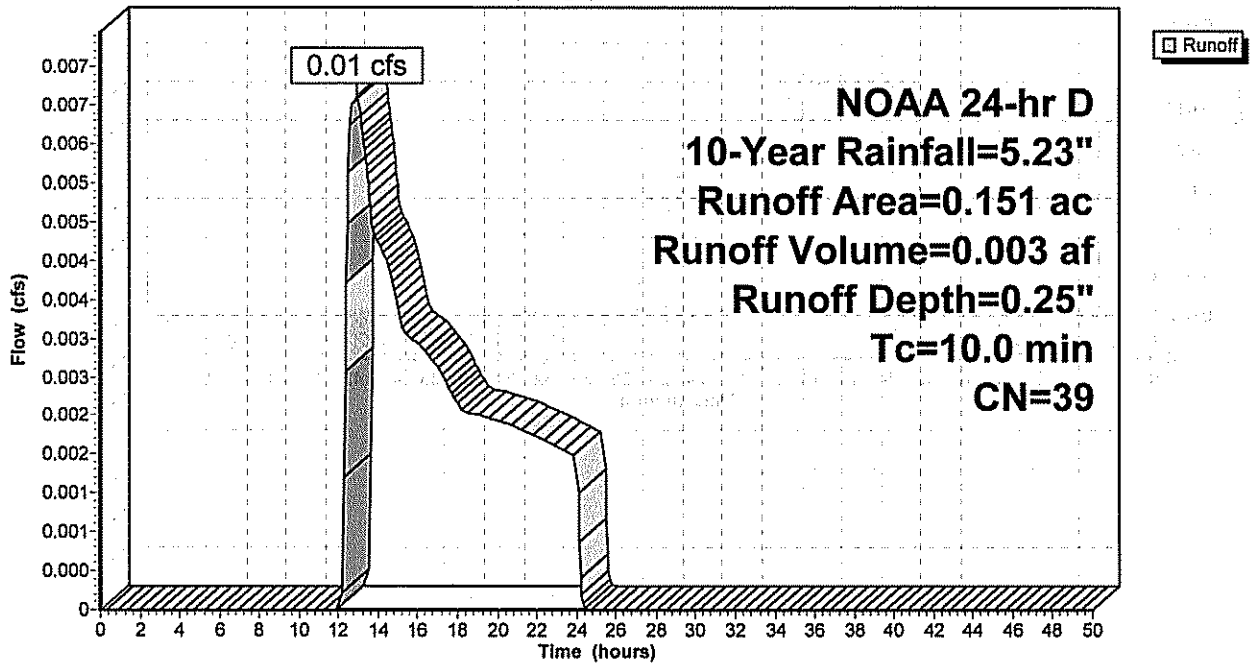
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 10-Year Rainfall=5.23"

Area (ac)	CN	Description
0.151	39	>75% Grass cover, Good, HSG A
0.151		100.00% Pervious Area

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

Subcatchment 42S: DA 7 Grass

Hydrograph



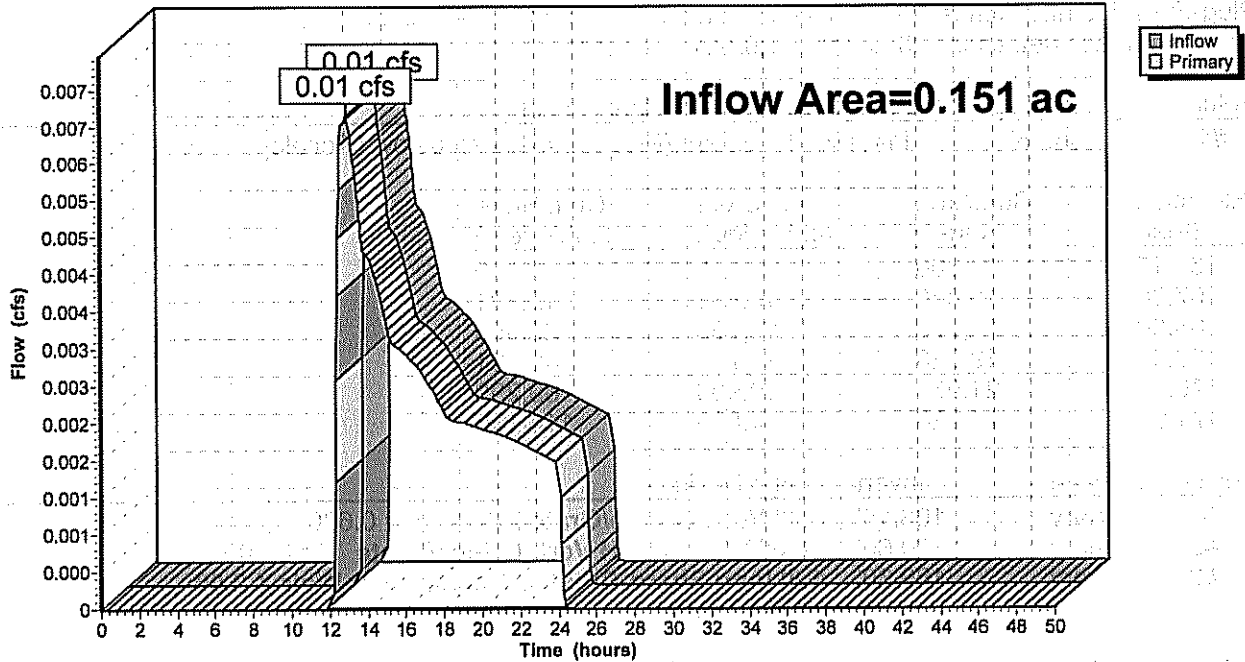
Summary for Link 39L: DA 7

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth = 0.25" for 10-Year event
Inflow = 0.01 cfs @ 12.91 hrs, Volume= 0.003 af
Primary = 0.01 cfs @ 12.91 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 39L: DA 7

Hydrograph



Summary for Pond 28P: Basin 1

Inflow Area = 13.039 ac, 34.57% Impervious, Inflow Depth = 1.98" for 10-Year event
 Inflow = 20.17 cfs @ 12.17 hrs, Volume= 2.154 af
 Outflow = 2.65 cfs @ 13.17 hrs, Volume= 1.407 af, Atten= 87%, Lag= 59.5 min
 Primary = 2.65 cfs @ 13.17 hrs, Volume= 1.407 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 169.27' @ 13.17 hrs Surf.Area= 20,404 sf Storage= 53,830 cf

Plug-Flow detention time= 362.2 min calculated for 1.405 af (65% of inflow)
 Center-of-Mass det. time= 237.6 min (1,022.1 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1	166.15'	114,130 cf	Basin (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.15	14,300	0	0
167.00	15,820	12,801	12,801
168.00	17,770	16,795	29,596
169.00	19,820	18,795	48,391
170.00	21,979	20,900	69,290
171.90	25,220	44,839	114,130

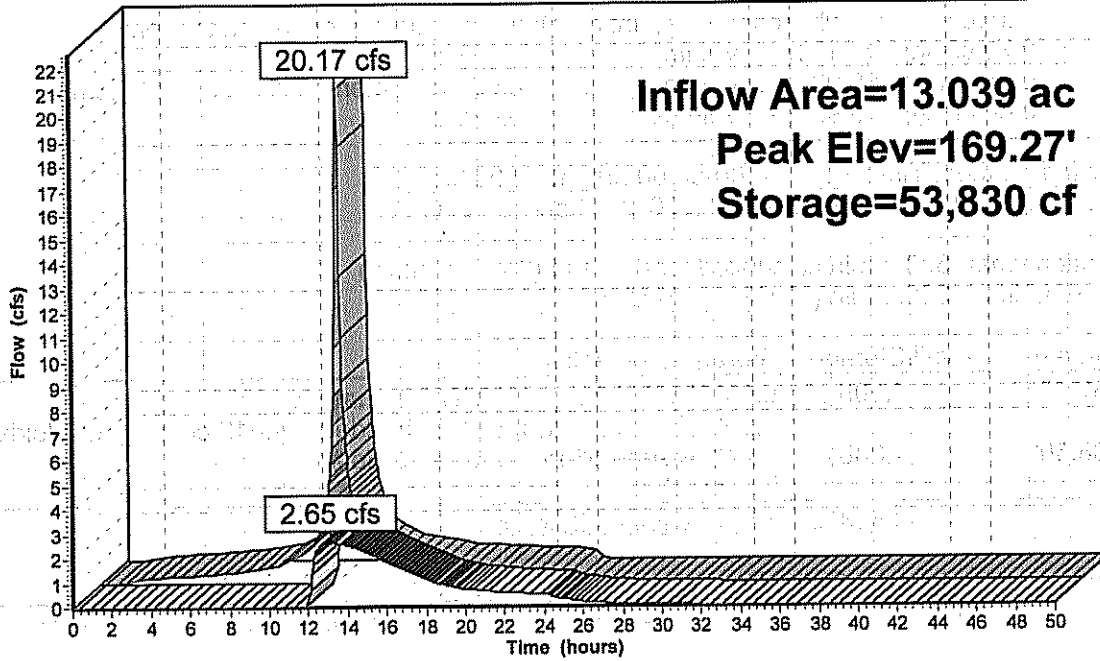
Device	Routing	Invert	Outlet Devices
#1	Primary	168.15'	6.0" Vert. Orifice/Grate X 3.00 C= 0.600
#2	Primary	170.60'	48.0" W x 48.0" H Vert. Orifice/Grate C= 0.600
#3	Primary	169.30'	1.8' long Sharp-Crested Rectangular Weir X 2.00 2 End Contraction(s)

Primary OutFlow Max=2.65 cfs @ 13.17 hrs HW=169.27' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 2.65 cfs @ 4.49 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 28P: Basin 1

Hydrograph



Summary for Pond 44P: Recharge

Inflow Area = 1.046 ac, 15.77% Impervious, Inflow Depth = 1.00" for 10-Year event
 Inflow = 0.70 cfs @ 12.17 hrs, Volume= 0.087 af
 Outflow = 0.04 cfs @ 15.96 hrs, Volume= 0.021 af, Atten= 94%, Lag= 227.3 min
 Primary = 0.04 cfs @ 15.96 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 171.27' @ 15.96 hrs Surf.Area= 1,300 sf Storage= 2,893 cf

Plug-Flow detention time= 633.4 min calculated for 0.021 af (24% of inflow)
 Center-of-Mass det. time= 358.9 min (1,168.1 - 809.2)

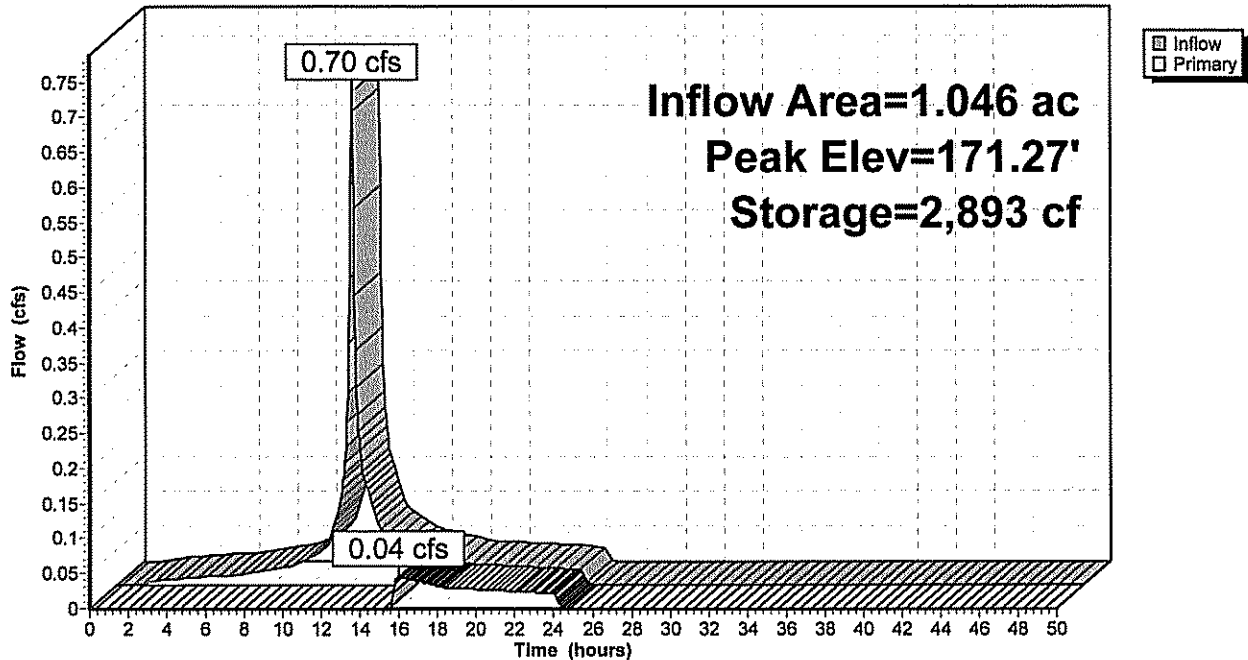
Volume	Invert	Avail.Storage	Storage Description
#1	167.75'	1,605 cf	5.00'W x 260.00'L x 4.50'H Prismatic 5,850 cf Overall - 1,838 cf Embedded = 4,012 cf x 40.0% Voids
#2	168.50'	1,838 cf	36.0" Round Pipe Storage Inside #1 L= 260.0'
		3,443 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	171.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.03 cfs @ 15.96 hrs HW=171.27' (Free Discharge)
 ↳ Sharp-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.45 fps)

Pond 44P: Recharge

Hydrograph



POST-DEVELOPMENT RUNOFF CALCULATIONS

(25 YEAR STORM)

Time span=0.00-50.00 hrs, dt=0.05 hrs, 1001 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 7S: DA 5 Woods	Runoff Area=0.014 ac 0.00% Impervious Runoff Depth=0.14" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 8S: DA Site Woods	Runoff Area=0.116 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=110' Tc=25.8 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment 10S: DA 2 Woods	Runoff Area=0.338 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=120' Slope=0.0147 '/' Tc=27.3 min CN=30 Runoff=0.01 cfs 0.004 af
Subcatchment 11S: DA 2 Grass	Runoff Area=0.461 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=0.11 cfs 0.023 af
Subcatchment 16S: DA 5 Grass	Runoff Area=0.363 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=0.09 cfs 0.018 af
Subcatchment 20S: DA 4 Grass	Runoff Area=0.538 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=0.13 cfs 0.027 af
Subcatchment 22S: DA 3 Grass	Runoff Area=0.078 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=0.02 cfs 0.004 af
Subcatchment 24S: DA 5 Impervious	Runoff Area=0.141 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=0.75 cfs 0.074 af
Subcatchment 28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=2.55" Flow Length=415' Tc=14.9 min CN=63 Runoff=3.15 cfs 0.313 af
Subcatchment 29S: Impervious	Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=4.66 cfs 0.458 af
Subcatchment 30S: DA 6 Grass	Runoff Area=0.013 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=0.00 cfs 0.001 af
Subcatchment 31S: DA 6 Impervious	Runoff Area=0.027 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=0.14 cfs 0.014 af
Subcatchment 32S: Woods	Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.14" Flow Length=345' Tc=24.1 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment 33S: DA Site Impervious	Runoff Area=3.441 ac 100.00% Impervious Runoff Depth=6.29" Tc=10.0 min CN=98 Runoff=18.34 cfs 1.804 af
Subcatchment 34S: DA Site Grass	Runoff Area=4.629 ac 0.00% Impervious Runoff Depth=0.61" Tc=10.0 min CN=39 Runoff=1.13 cfs 0.234 af
Subcatchment 35S: Grass	Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=0.61" Flow Length=585' Tc=17.9 min CN=39 Runoff=0.27 cfs 0.066 af

Subcatchment39S: DA 1 Woods	Runoff Area=0.018 ac 0.00% Impervious Runoff Depth=0.14"
	Tc=10.0 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment40S: DA 1 Grass	Runoff Area=0.202 ac 0.00% Impervious Runoff Depth=0.61"
	Tc=10.0 min CN=39 Runoff=0.05 cfs 0.010 af
Subcatchment42S: DA 7 Grass	Runoff Area=0.151 ac 0.00% Impervious Runoff Depth=0.61"
	Tc=10.0 min CN=39 Runoff=0.04 cfs 0.008 af
Subcatchment45S: B-5, B-4 and B-3	Runoff Area=0.165 ac 100.00% Impervious Runoff Depth=6.29"
	Tc=10.0 min CN=98 Runoff=0.88 cfs 0.087 af
Subcatchment46S: B-5, B-4 and B-3 Grass	Runoff Area=0.881 ac 0.00% Impervious Runoff Depth=0.61"
	Tc=10.0 min CN=39 Runoff=0.21 cfs 0.045 af
Pond 28P: Basin 1	Peak Elev=169.76' Storage=64,110 cf Inflow=26.75 cfs 2.958 af
	Outflow=6.82 cfs 2.211 af
Pond 44P: Recharge	Peak Elev=171.32' Storage=2,932 cf Inflow=1.05 cfs 0.131 af
	Outflow=0.25 cfs 0.065 af
Link 14L: DA 2	Inflow=0.11 cfs 0.027 af
	Primary=0.11 cfs 0.027 af
Link 15L: DA 5	Inflow=0.82 cfs 0.092 af
	Primary=0.82 cfs 0.092 af
Link 19L: DA 4	Inflow=0.13 cfs 0.027 af
	Primary=0.13 cfs 0.027 af
Link 21L: DA 3	Inflow=0.02 cfs 0.004 af
	Primary=0.02 cfs 0.004 af
Link 22L: Off-Site	Inflow=7.59 cfs 0.839 af
	Primary=7.59 cfs 0.839 af
Link 29L: DA 6	Inflow=0.15 cfs 0.015 af
	Primary=0.15 cfs 0.015 af
Link 37L: Total Off-Site	Inflow=7.27 cfs 2.380 af
	Primary=7.27 cfs 2.380 af
Link 38L: DA 1	Inflow=0.05 cfs 0.010 af
	Primary=0.05 cfs 0.010 af
Link 39L: DA 7	Inflow=0.04 cfs 0.008 af
	Primary=0.04 cfs 0.008 af

Total Runoff Area = 15.343 ac Runoff Volume = 3.193 af Average Runoff Depth = 2.50"
69.71% Pervious = 10.695 ac 30.29% Impervious = 4.648 ac

Summary for Subcatchment 10S: DA 2 Woods

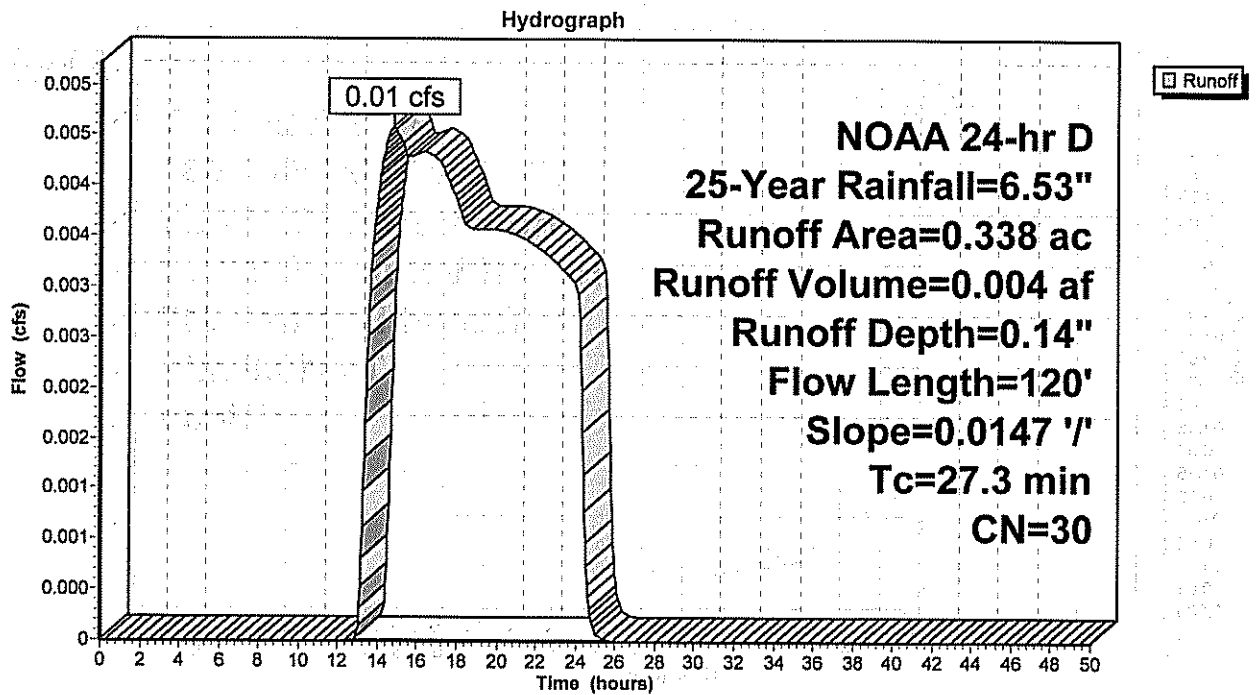
Runoff = 0.01 cfs @ 14.81 hrs, Volume= 0.004 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 25-Year Rainfall=6.53"

Area (ac)	CN	Description
0.338	30	Woods, Good, HSG A
0.338		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.3	120	0.0147	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.38"

Subcatchment 10S: DA 2 Woods



Summary for Subcatchment 11S: DA 2 Grass

Runoff = 0.11 cfs @ 12.26 hrs, Volume= 0.023 af, Depth= 0.61"

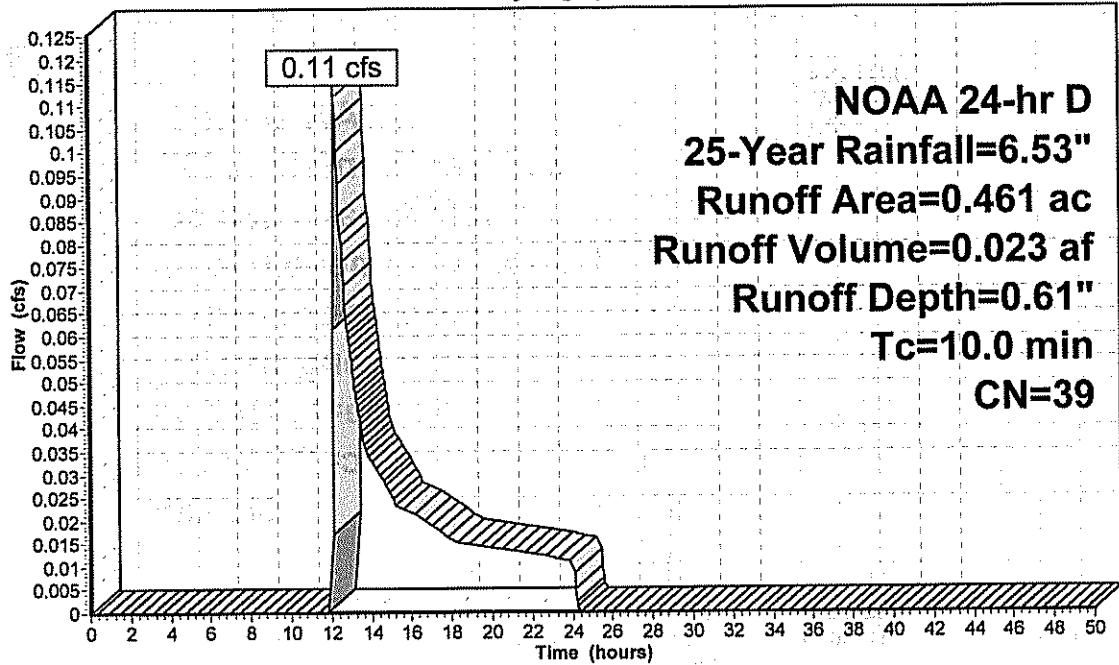
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 25-Year Rainfall=6.53"

Area (ac)	CN	Description
0.461	39	>75% Grass cover, Good, HSG A
0.461		100.00% Pervious Area

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

Subcatchment 11S: DA 2 Grass

Hydrograph



Runoff

NOAA 24-hr D
 25-Year Rainfall=6.53"
 Runoff Area=0.461 ac
 Runoff Volume=0.023 af
 Runoff Depth=0.61"
 Tc=10.0 min
 CN=39

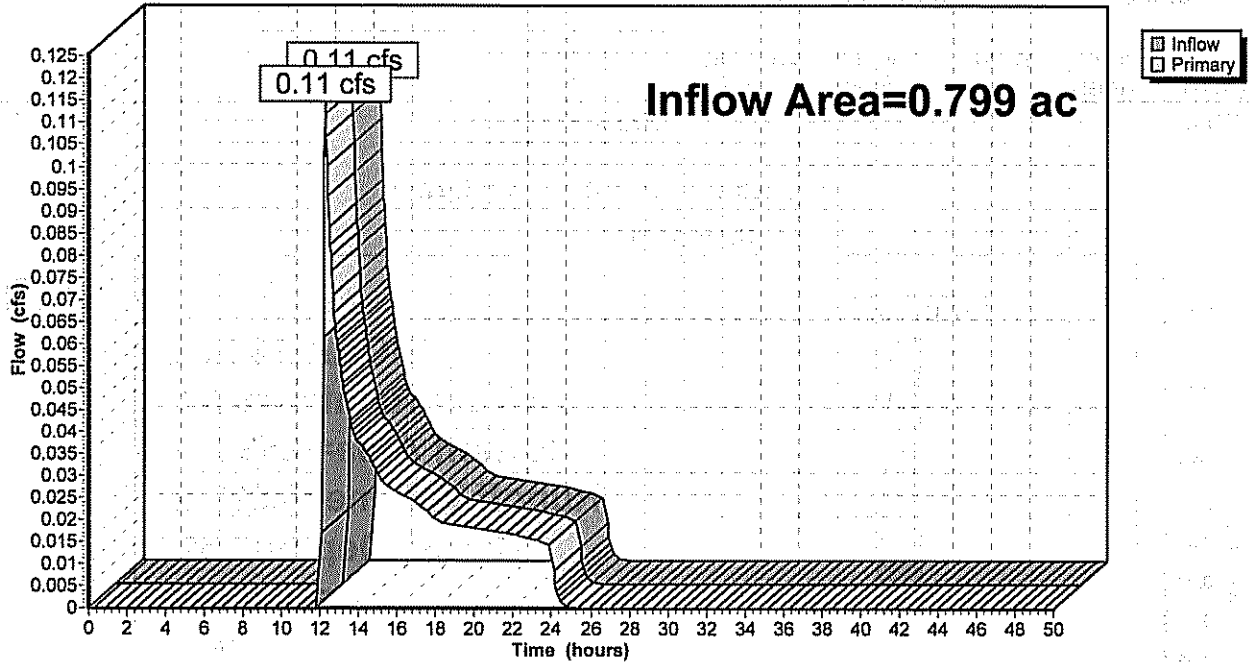
Summary for Link 14L: DA 2

Inflow Area = 0.799 ac, 0.00% Impervious, Inflow Depth = 0.41" for 25-Year event
Inflow = 0.11 cfs @ 12.26 hrs, Volume= 0.027 af
Primary = 0.11 cfs @ 12.26 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 14L: DA 2

Hydrograph



Summary for Subcatchment 20S: DA 4 Grass

Runoff = 0.13 cfs @ 12.26 hrs, Volume= 0.027 af, Depth= 0.61"

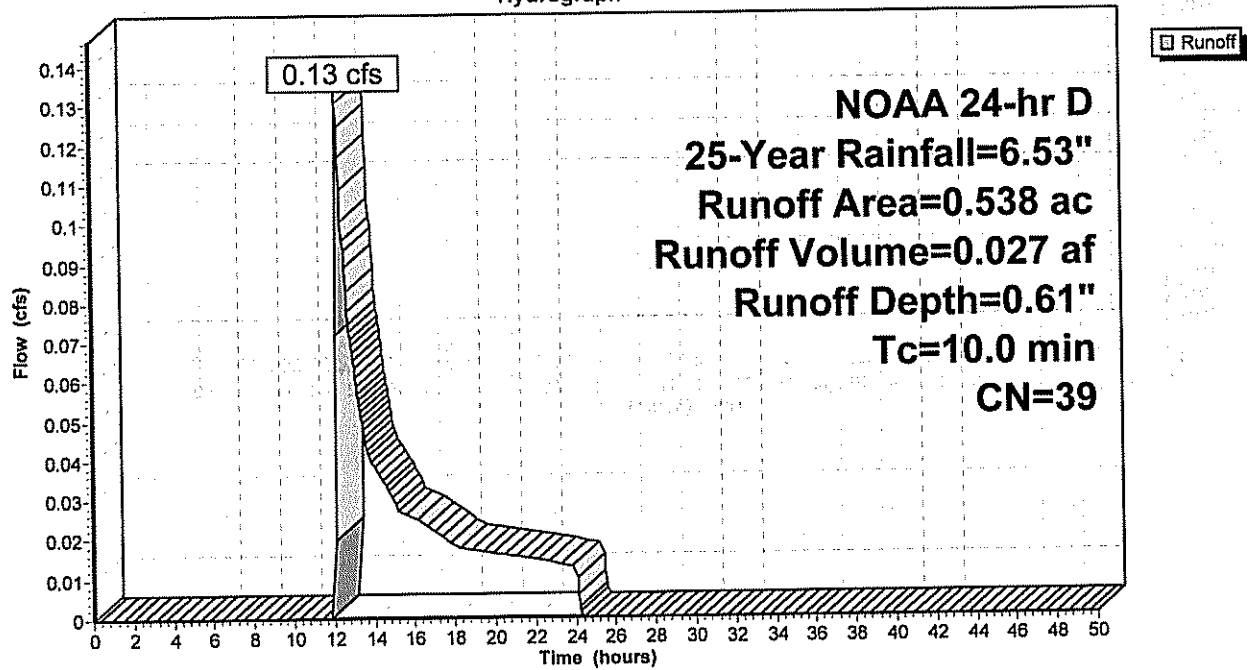
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 25-Year Rainfall=6.53"

Area (ac)	CN	Description
0.538	39	>75% Grass cover, Good, HSG A
0.538		100.00% Pervious Area

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

Subcatchment 20S: DA 4 Grass

Hydrograph



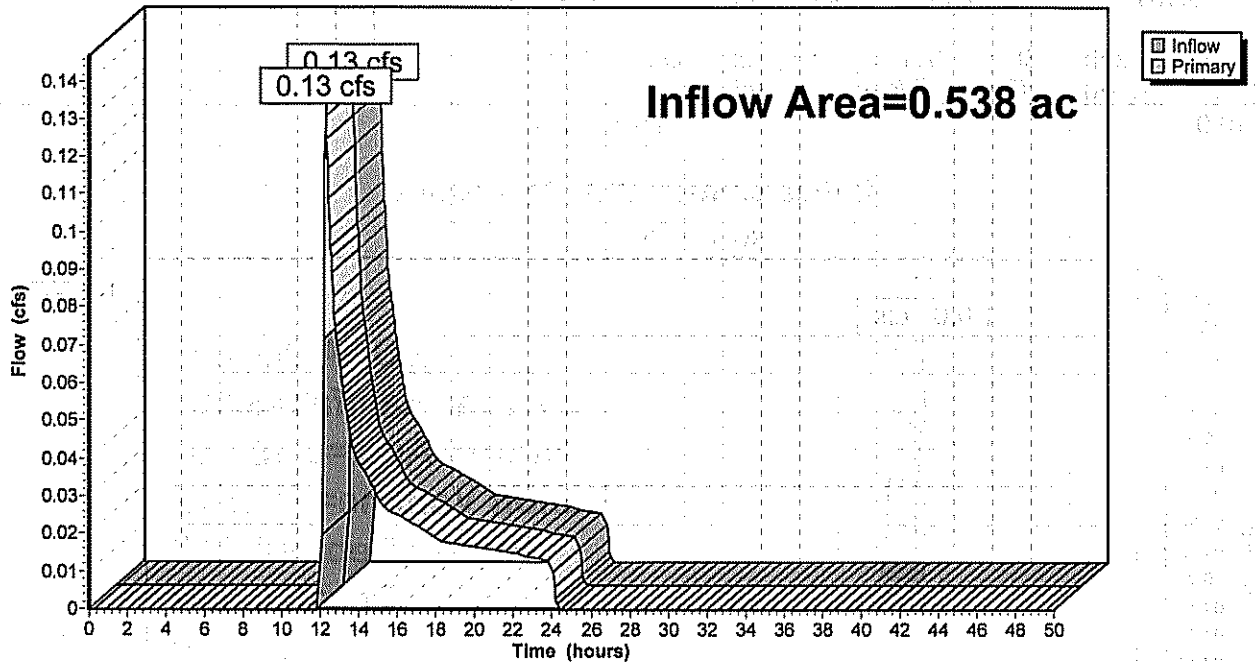
Summary for Link 19L: DA 4

Inflow Area = 0.538 ac, 0.00% Impervious, Inflow Depth = 0.61" for 25-Year event
Inflow = 0.13 cfs @ 12.26 hrs, Volume= 0.027 af
Primary = 0.13 cfs @ 12.26 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 19L: DA 4

Hydrograph



Summary for Subcatchment 42S: DA 7 Grass

Runoff = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Depth= 0.61"

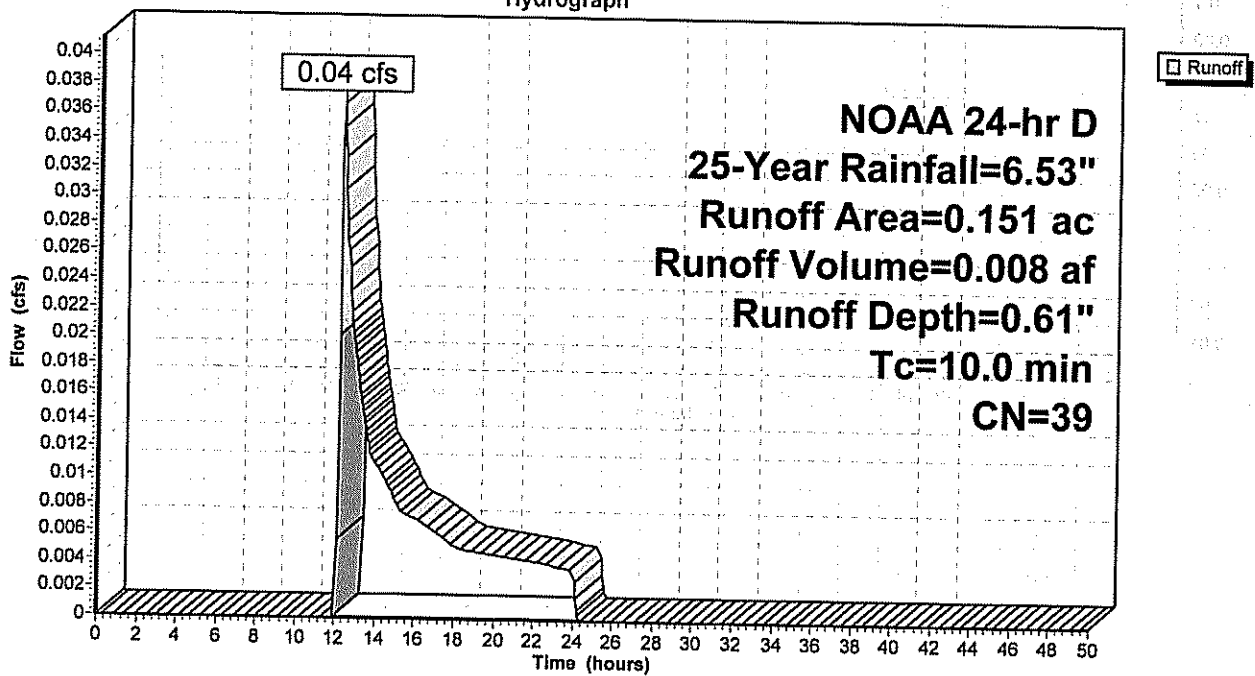
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 25-Year Rainfall=6.53"

Area (ac)	CN	Description
0.151	39	>75% Grass cover, Good, HSG A
0.151		100.00% Pervious Area

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

Subcatchment 42S: DA 7 Grass

Hydrograph



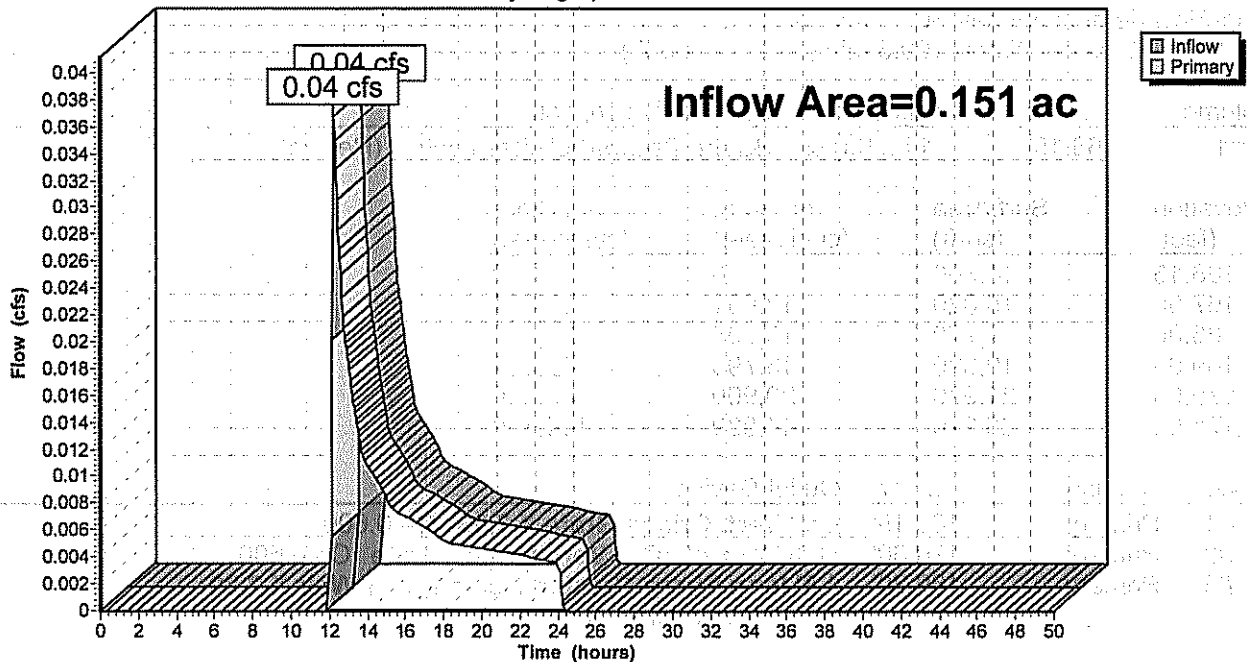
Summary for Link 39L: DA 7

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth = 0.61" for 25-Year event
Inflow = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af
Primary = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 39L: DA 7

Hydrograph



Summary for Pond 28P: Basin 1

Inflow Area = 13.039 ac, 34.57% Impervious, Inflow Depth = 2.72" for 25-Year event
 Inflow = 26.75 cfs @ 12.18 hrs, Volume= 2.958 af
 Outflow = 6.82 cfs @ 12.63 hrs, Volume= 2.211 af, Atten= 75%, Lag= 27.2 min
 Primary = 6.82 cfs @ 12.63 hrs, Volume= 2.211 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 169.76' @ 12.63 hrs Surf.Area= 21,464 sf Storage= 64,110 cf

Plug-Flow detention time= 304.3 min calculated for 2.209 af (75% of inflow)
 Center-of-Mass det. time= 199.5 min (989.3 - 789.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.15'	114,130 cf	Basin (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.15	14,300	0	0
167.00	15,820	12,801	12,801
168.00	17,770	16,795	29,596
169.00	19,820	18,795	48,391
170.00	21,979	20,900	69,290
171.90	25,220	44,839	114,130

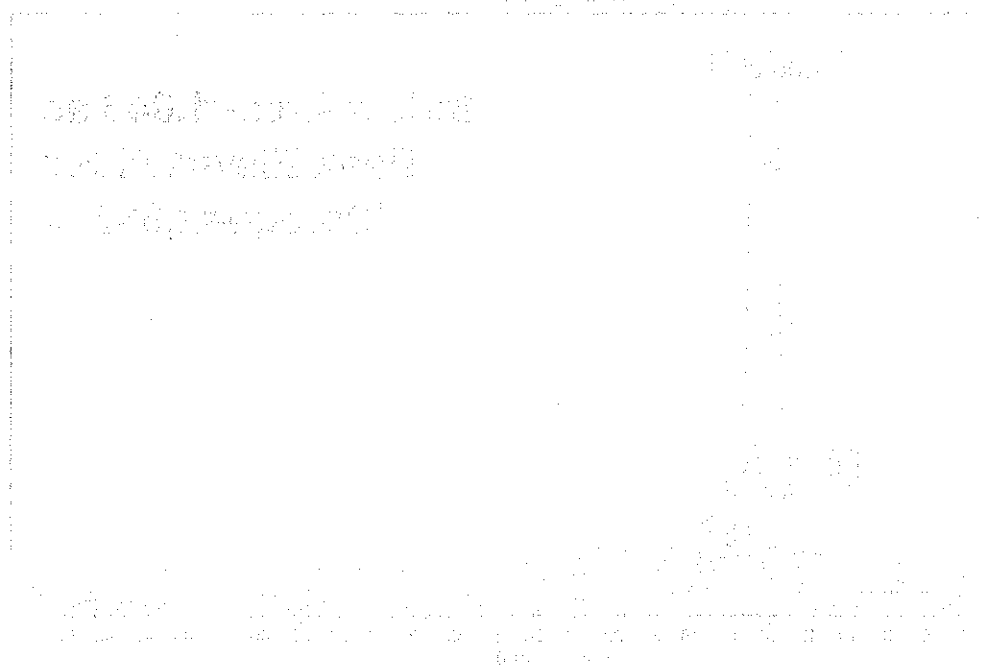
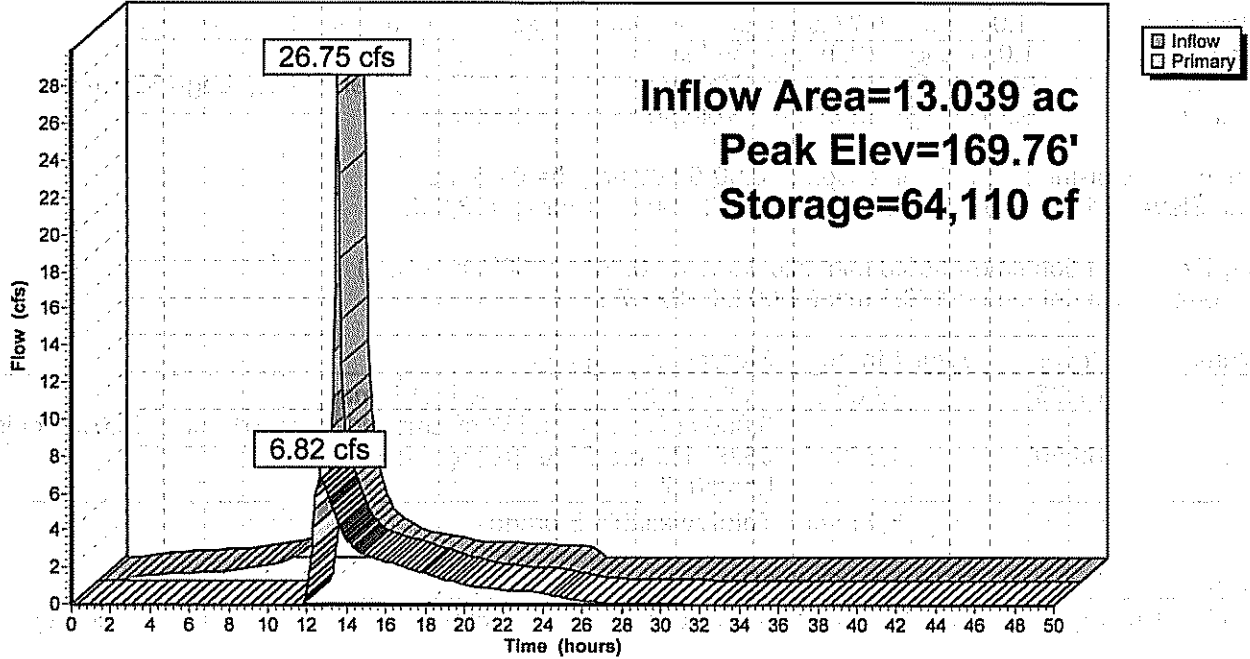
Device	Routing	Invert	Outlet Devices
#1	Primary	168.15'	6.0" Vert. Orifice/Grate X 3.00 C= 0.600
#2	Primary	170.60'	48.0" W x 48.0" H Vert. Orifice/Grate C= 0.600
#3	Primary	169.30'	1.8' long Sharp-Crested Rectangular Weir X 2.00 2 End Contraction(s)

Primary OutFlow Max=6.80 cfs @ 12.63 hrs HW=169.76' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 3.31 cfs @ 5.62 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 3.50 cfs @ 2.22 fps)

Pond 28P: Basin 1

Hydrograph



Summary for Pond 44P: Recharge

Inflow Area = 1.046 ac, 15.77% Impervious, Inflow Depth = 1.50" for 25-Year event
 Inflow = 1.05 cfs @ 12.19 hrs, Volume= 0.131 af
 Outflow = 0.25 cfs @ 12.84 hrs, Volume= 0.065 af, Atten= 76%, Lag= 39.3 min
 Primary = 0.25 cfs @ 12.84 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 171.32' @ 12.84 hrs Surf.Area= 1,300 sf Storage= 2,932 cf

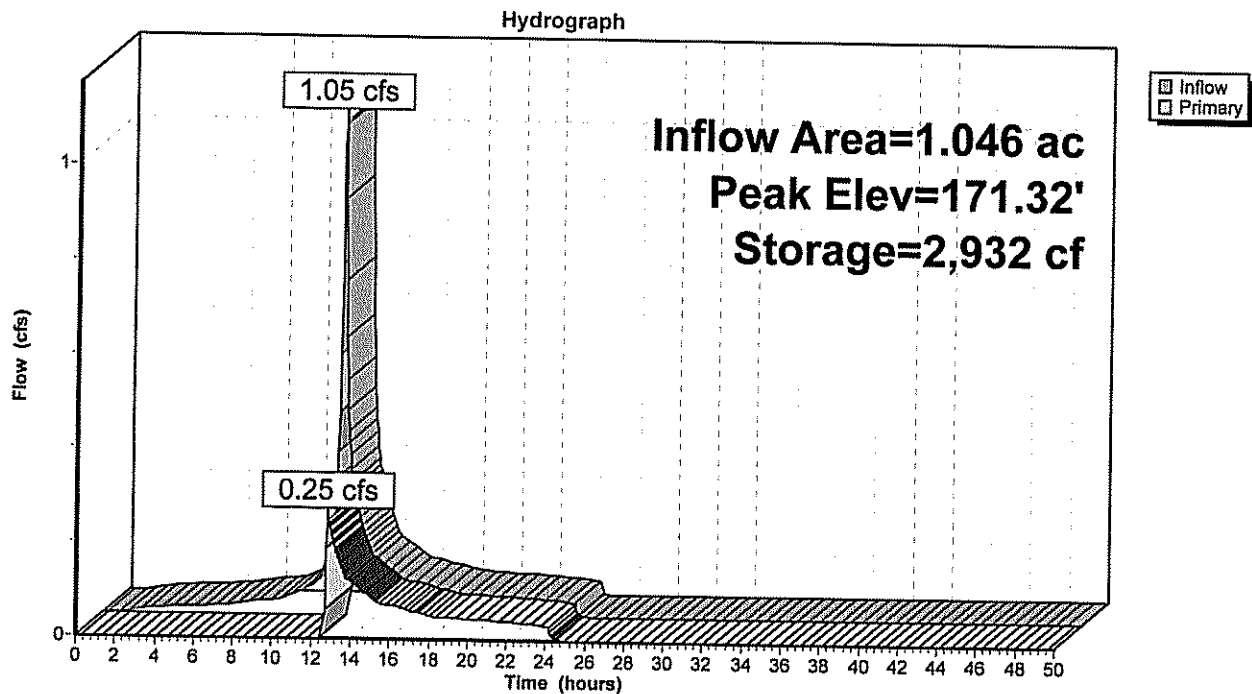
Plug-Flow detention time= 353.6 min calculated for 0.065 af (50% of inflow)
 Center-of-Mass det. time= 179.7 min (1,002.4 - 822.7)

Volume	Invert	Avail.Storage	Storage Description
#1	167.75'	1,605 cf	5.00'W x 260.00'L x 4.50'H Prismaoid 5,850 cf Overall - 1,838 cf Embedded = 4,012 cf x 40.0% Voids
#2	168.50'	1,838 cf	36.0" Round Pipe Storage Inside #1 L= 260.0'
		3,443 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	171.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.24 cfs @ 12.84 hrs HW=171.32' (Free Discharge)
 ↑=Sharp-Crested Rectangular Weir (Weir Controls 0.24 cfs @ 0.87 fps)

Pond 44P: Recharge



POST-DEVELOPMENT RUNOFF CALCULATIONS
(100 YEAR STORM)

Time span=0.00-50.00 hrs, dt=0.05 hrs, 1001 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment7S: DA 5 Woods	Runoff Area=0.014 ac 0.00% Impervious Runoff Depth=0.66" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment8S: DA Site Woods	Runoff Area=0.116 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=110' Tc=25.8 min CN=30 Runoff=0.02 cfs 0.006 af
Subcatchment10S: DA 2 Woods	Runoff Area=0.338 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=120' Slope=0.0147 '/' Tc=27.3 min CN=30 Runoff=0.05 cfs 0.019 af
Subcatchment11S: DA 2 Grass	Runoff Area=0.461 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.57 cfs 0.060 af
Subcatchment16S: DA 5 Grass	Runoff Area=0.363 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.45 cfs 0.048 af
Subcatchment20S: DA 4 Grass	Runoff Area=0.538 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.66 cfs 0.071 af
Subcatchment22S: DA 3 Grass	Runoff Area=0.078 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.10 cfs 0.010 af
Subcatchment24S: DA 5 Impervious	Runoff Area=0.141 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=1.03 cfs 0.102 af
Subcatchment28S: Cultivated	Runoff Area=1.470 ac 0.00% Impervious Runoff Depth=4.42" Flow Length=415' Tc=14.9 min CN=63 Runoff=5.54 cfs 0.542 af
Subcatchment29S: Impervious	Runoff Area=0.874 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=6.39 cfs 0.634 af
Subcatchment30S: DA 6 Grass	Runoff Area=0.013 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.02 cfs 0.002 af
Subcatchment31S: DA 6 Impervious	Runoff Area=0.027 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=0.20 cfs 0.020 af
Subcatchment32S: Woods	Runoff Area=0.115 ac 0.00% Impervious Runoff Depth=0.66" Flow Length=345' Tc=24.1 min CN=30 Runoff=0.02 cfs 0.006 af
Subcatchment33S: DA Site Impervious	Runoff Area=3.441 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=25.15 cfs 2.495 af
Subcatchment34S: DA Site Grass	Runoff Area=4.629 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=5.69 cfs 0.607 af
Subcatchment35S: Grass	Runoff Area=1.308 ac 0.00% Impervious Runoff Depth=1.57" Flow Length=585' Tc=17.9 min CN=39 Runoff=1.24 cfs 0.172 af

Subcatchment39S: DA 1 Woods	Runoff Area=0.018 ac 0.00% Impervious Runoff Depth=0.66" Tc=10.0 min CN=30 Runoff=0.00 cfs 0.001 af
Subcatchment40S: DA 1 Grass	Runoff Area=0.202 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.25 cfs 0.027 af
Subcatchment42S: DA 7 Grass	Runoff Area=0.151 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=0.19 cfs 0.020 af
Subcatchment45S: B-5, B-4 and B-3	Runoff Area=0.165 ac 100.00% Impervious Runoff Depth=8.70" Tc=10.0 min CN=98 Runoff=1.21 cfs 0.120 af
Subcatchment46S: B-5, B-4 and B-3 Grass	Runoff Area=0.881 ac 0.00% Impervious Runoff Depth=1.57" Tc=10.0 min CN=39 Runoff=1.08 cfs 0.116 af
Pond 28P: Basin 1	Peak Elev=170.59' Storage=82,545 cf Inflow=44.26 cfs 4.652 af Outflow=18.97 cfs 3.904 af
Pond 44P: Recharge	Peak Elev=171.55' Storage=3,081 cf Inflow=2.26 cfs 0.235 af Outflow=2.17 cfs 0.169 af
Link 14L: DA 2	Inflow=0.57 cfs 0.079 af Primary=0.57 cfs 0.079 af
Link 15L: DA 5	Inflow=1.46 cfs 0.151 af Primary=1.46 cfs 0.151 af
Link 19L: DA 4	Inflow=0.66 cfs 0.071 af Primary=0.66 cfs 0.071 af
Link 21L: DA 3	Inflow=0.10 cfs 0.010 af Primary=0.10 cfs 0.010 af
Link 22L: Off-Site	Inflow=12.41 cfs 1.353 af Primary=12.41 cfs 1.353 af
Link 29L: DA 6	Inflow=0.21 cfs 0.021 af Primary=0.21 cfs 0.021 af
Link 37L: Total Off-Site	Inflow=20.49 cfs 4.262 af Primary=20.49 cfs 4.262 af
Link 38L: DA 1	Inflow=0.25 cfs 0.027 af Primary=0.25 cfs 0.027 af
Link 39L: DA 7	Inflow=0.19 cfs 0.020 af Primary=0.19 cfs 0.020 af

Total Runoff Area = 15.343 ac Runoff Volume = 5.076 af Average Runoff Depth = 3.97"
69.71% Pervious = 10.695 ac 30.29% Impervious = 4.648 ac

Summary for Subcatchment 10S: DA 2 Woods

Runoff = 0.05 cfs @ 12.74 hrs, Volume= 0.019 af, Depth= 0.66"

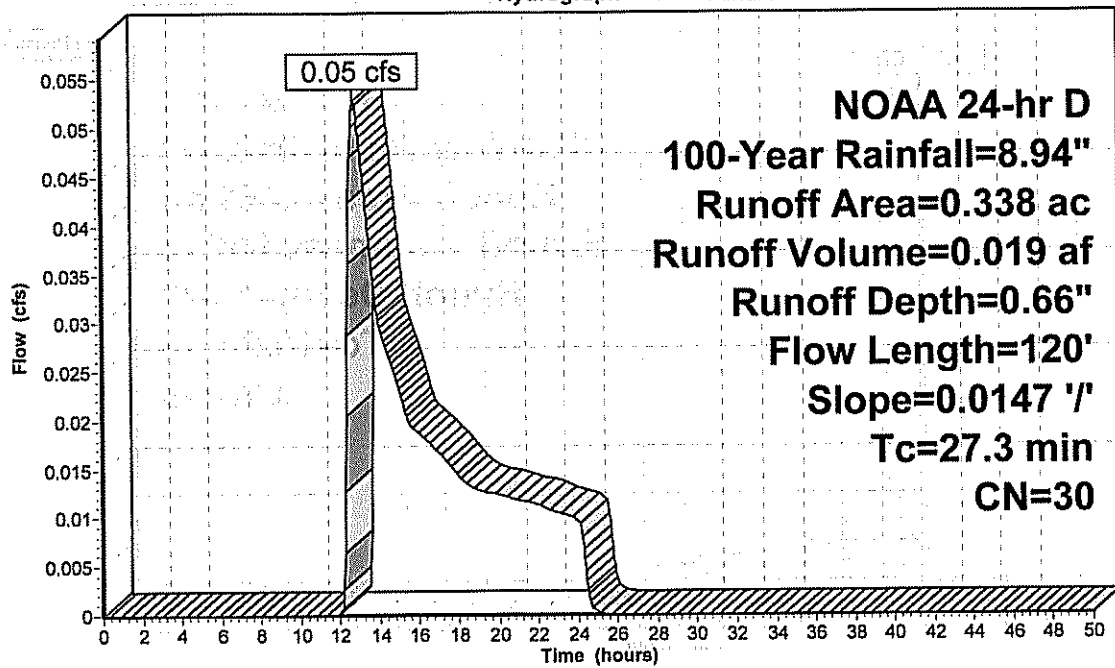
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 100-Year Rainfall=8.94"

Area (ac)	CN	Description
0.338	30	Woods, Good, HSG A
0.338		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.3	120	0.0147	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.38"

Subcatchment 10S: DA 2 Woods

Hydrograph



Summary for Subcatchment 11S: DA 2 Grass

Runoff = 0.57 cfs @ 12.20 hrs, Volume= 0.060 af, Depth= 1.57"

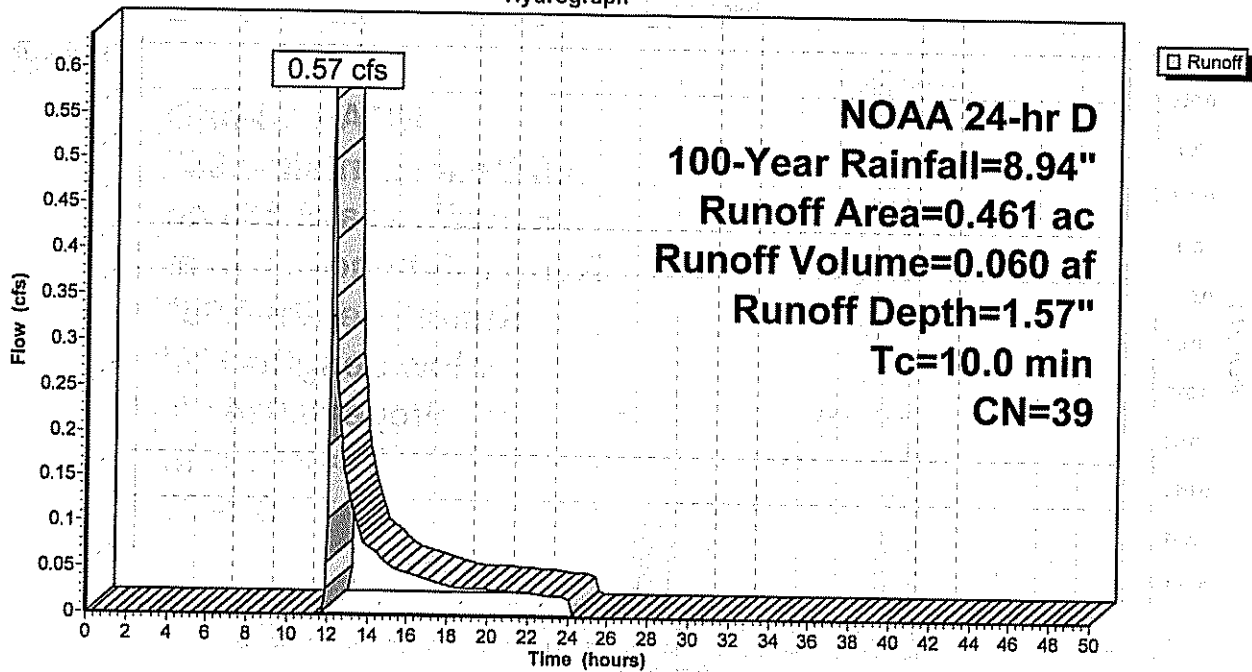
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 100-Year Rainfall=8.94"

Area (ac)	CN	Description
0.461	39	>75% Grass cover, Good, HSG A
0.461		100.00% Pervious Area

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

Subcatchment 11S: DA 2 Grass

Hydrograph



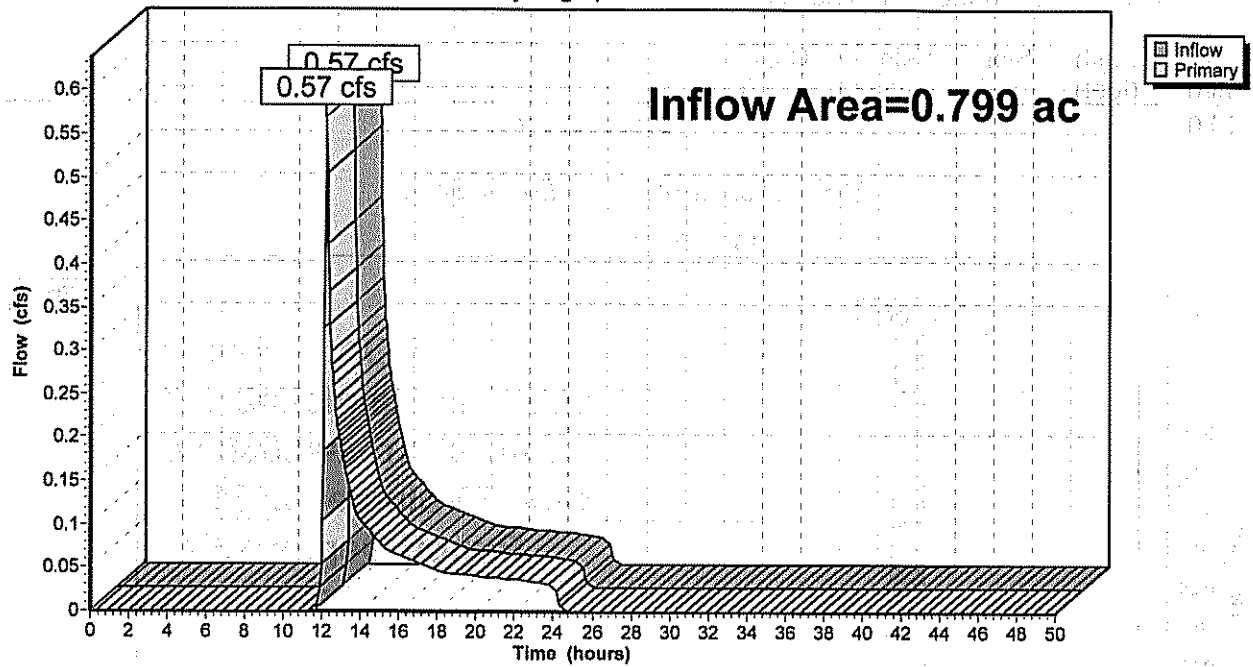
Summary for Link 14L: DA 2

Inflow Area = 0.799 ac, 0.00% Impervious, Inflow Depth = 1.19" for 100-Year event
Inflow = 0.57 cfs @ 12.20 hrs, Volume= 0.079 af
Primary = 0.57 cfs @ 12.20 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 14L: DA 2

Hydrograph



Summary for Subcatchment 20S: DA 4 Grass

Runoff = 0.66 cfs @ 12.20 hrs, Volume= 0.071 af, Depth= 1.57"

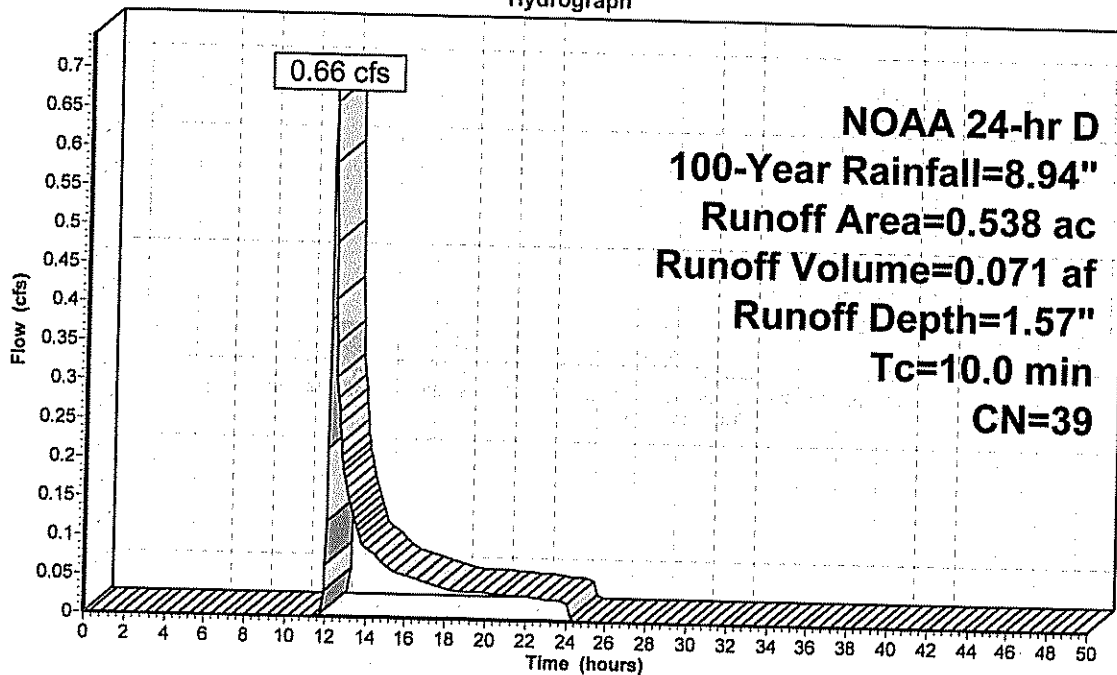
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 100-Year Rainfall=8.94"

Area (ac)	CN	Description
0.538	39	>75% Grass cover, Good, HSG A
0.538		100.00% Pervious Area

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

Subcatchment 20S: DA 4 Grass

Hydrograph



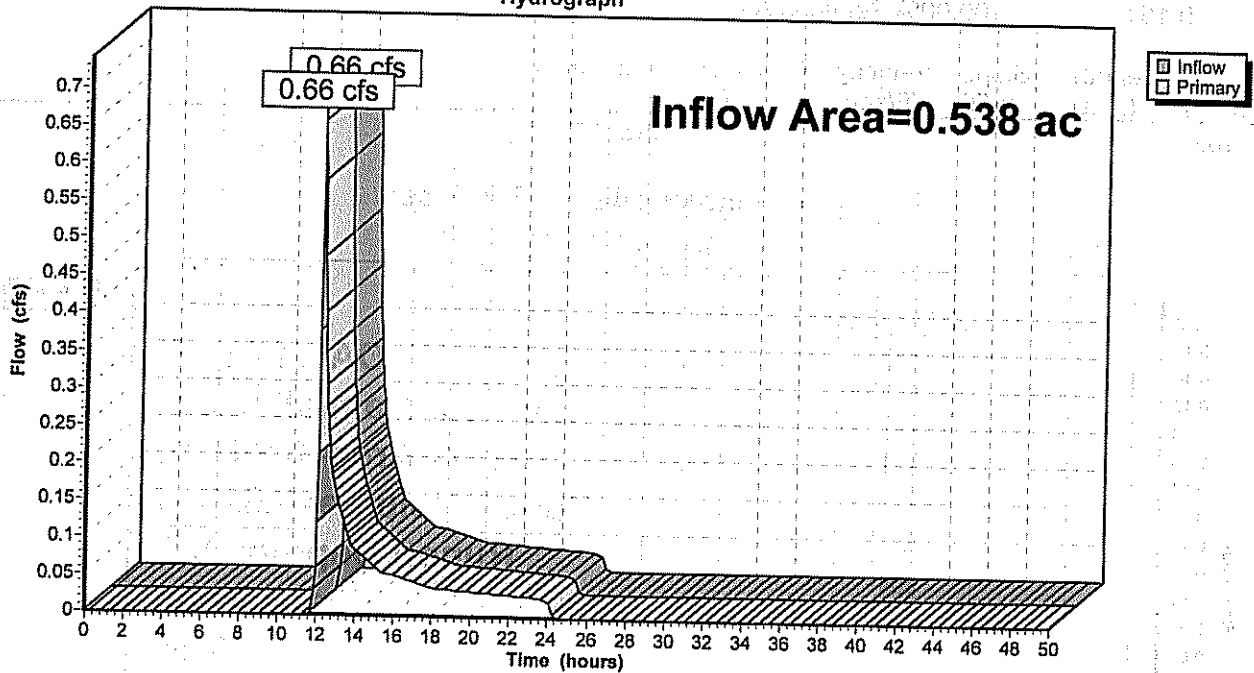
Summary for Link 19L: DA 4

Inflow Area = 0.538 ac, 0.00% Impervious, Inflow Depth = 1.57" for 100-Year event
Inflow = 0.66 cfs @ 12.20 hrs, Volume= 0.071 af
Primary = 0.66 cfs @ 12.20 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 19L: DA 4

Hydrograph



Summary for Subcatchment 42S: DA 7 Grass

Runoff = 0.19 cfs @ 12.20 hrs, Volume= 0.020 af, Depth= 1.57"

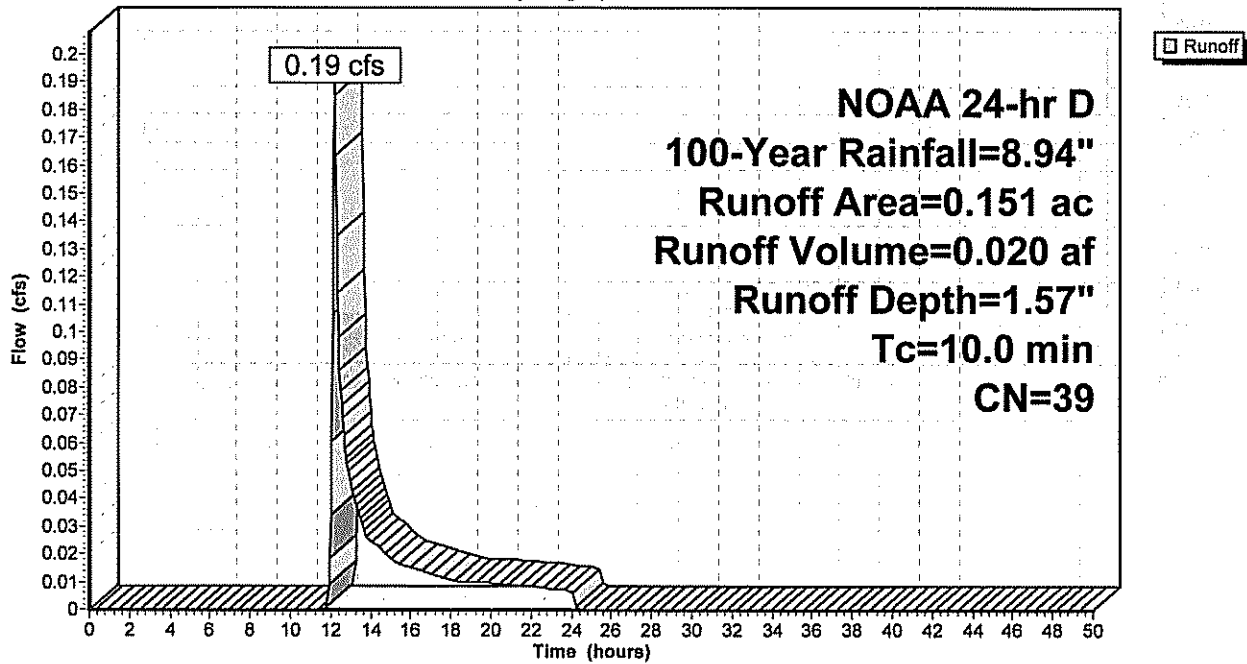
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 NOAA 24-hr D 100-Year Rainfall=8.94"

Area (ac)	CN	Description
0.151	39	>75% Grass cover, Good, HSG A
0.151		100.00% Pervious Area

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

Subcatchment 42S: DA 7 Grass

Hydrograph



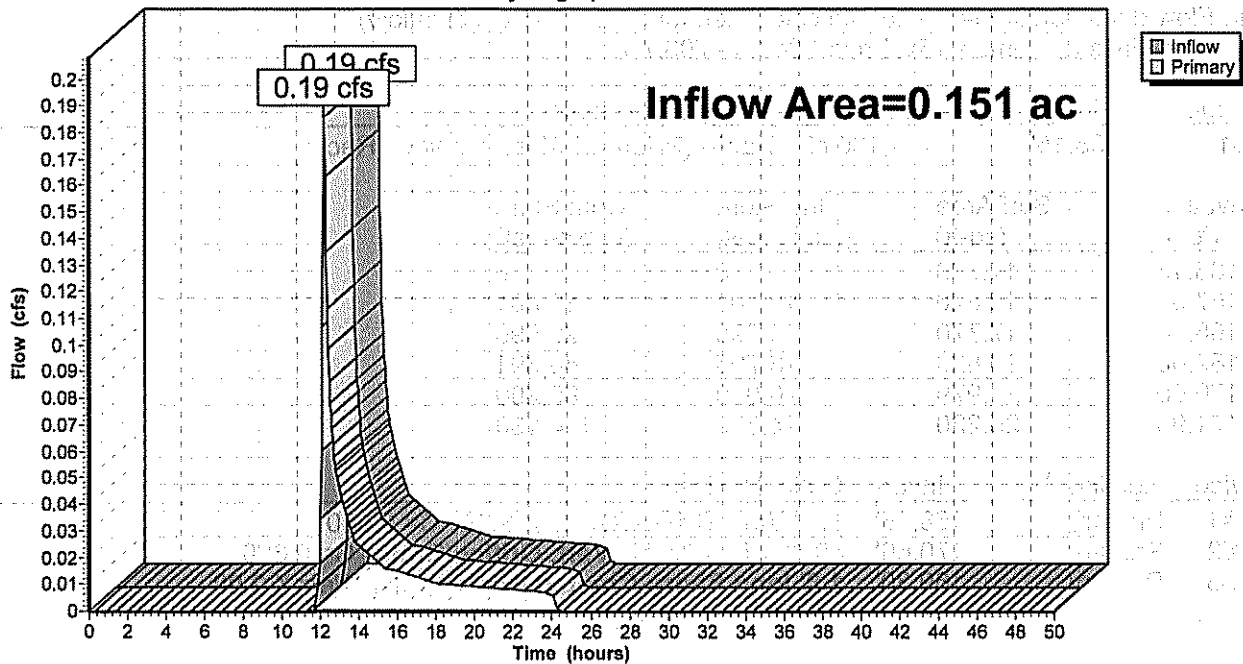
Summary for Link 39L: DA 7

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth = 1.57" for 100-Year event
Inflow = 0.19 cfs @ 12.20 hrs, Volume= 0.020 af
Primary = 0.19 cfs @ 12.20 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs

Link 39L: DA 7

Hydrograph



Summary for Pond 28P: Basin 1

Inflow Area = 13.039 ac, 34.57% Impervious, Inflow Depth = 4.28" for 100-Year event
 Inflow = 44.26 cfs @ 12.19 hrs, Volume= 4.652 af
 Outflow = 18.97 cfs @ 12.42 hrs, Volume= 3.904 af, Atten= 57%, Lag= 14.0 min
 Primary = 18.97 cfs @ 12.42 hrs, Volume= 3.904 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 170.59' @ 12.42 hrs Surf.Area= 22,985 sf Storage= 82,545 cf

Plug-Flow detention time= 232.6 min calculated for 3.904 af (84% of inflow)
 Center-of-Mass det. time= 154.1 min (947.8 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.15'	114,130 cf	Basin (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.15	14,300	0	0
167.00	15,820	12,801	12,801
168.00	17,770	16,795	29,596
169.00	19,820	18,795	48,391
170.00	21,979	20,900	69,290
171.90	25,220	44,839	114,130

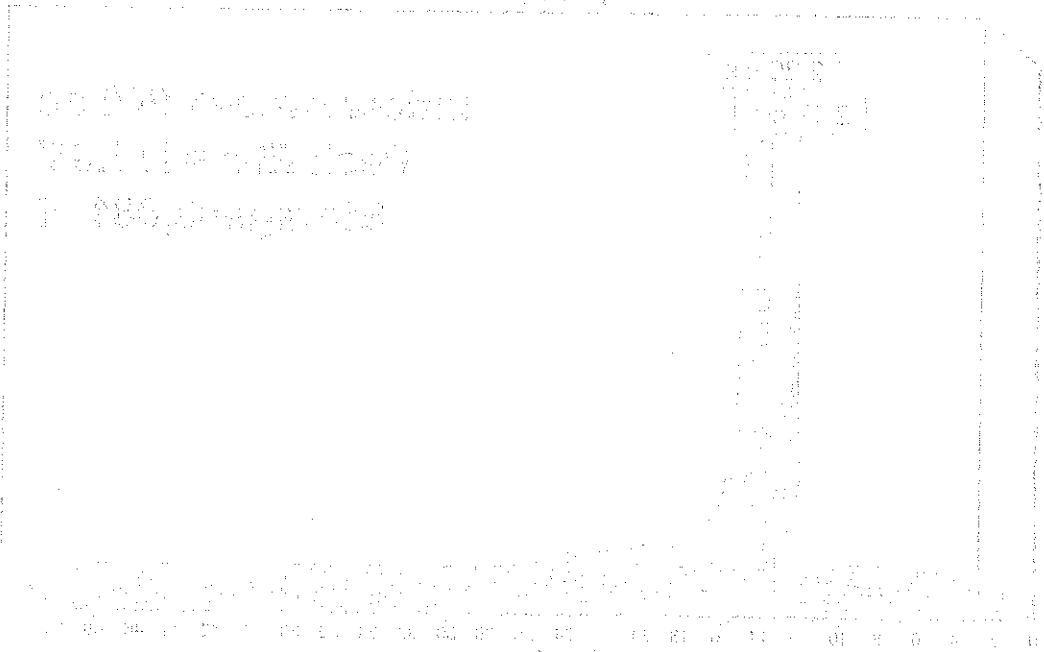
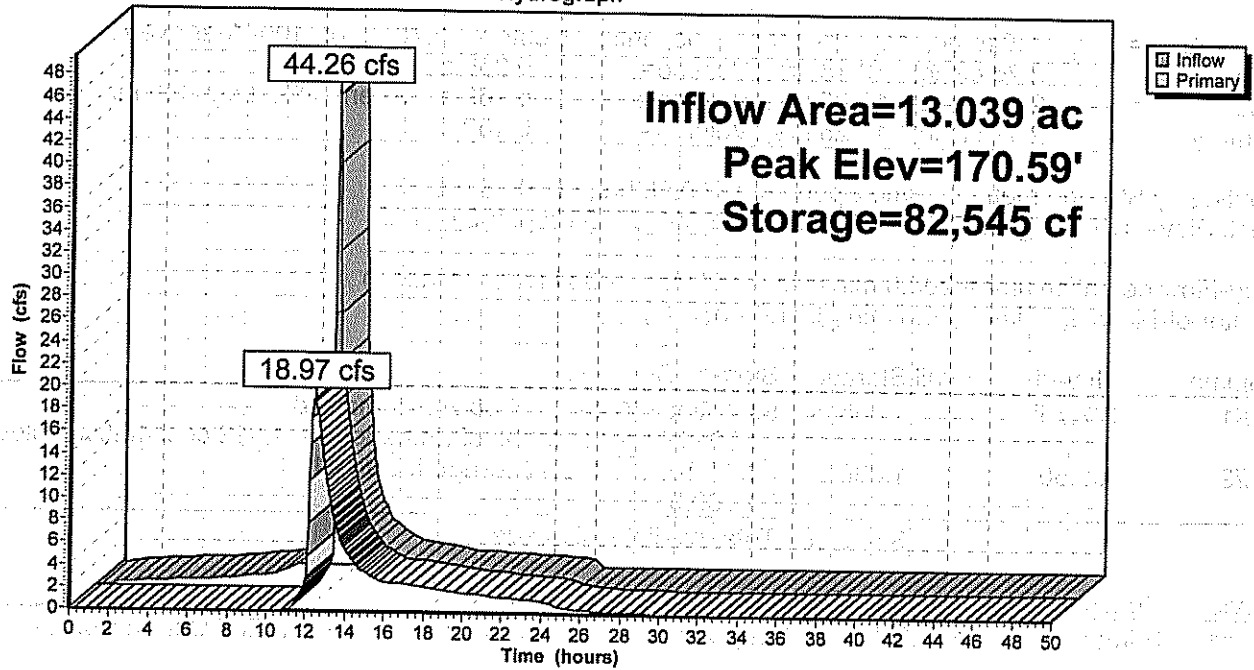
Device	Routing	Invert	Outlet Devices
#1	Primary	168.15'	6.0" Vert. Orifice/Grate X 3.00 C= 0.600
#2	Primary	170.60'	48.0" W x 48.0" H Vert. Orifice/Grate C= 0.600
#3	Primary	169.30'	1.8' long Sharp-Crested Rectangular Weir X 2.00 2 End Contraction(s)

Primary OutFlow Max=18.90 cfs @ 12.42 hrs HW=170.59' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 4.19 cfs @ 7.12 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 14.71 cfs @ 3.71 fps)

Pond 28P: Basin 1

Hydrograph



Summary for Pond 44P: Recharge

Inflow Area = 1.046 ac, 15.77% Impervious, Inflow Depth = 2.70" for 100-Year event
 Inflow = 2.26 cfs @ 12.18 hrs, Volume= 0.235 af
 Outflow = 2.17 cfs @ 12.25 hrs, Volume= 0.169 af, Atten= 4%, Lag= 3.8 min
 Primary = 2.17 cfs @ 12.25 hrs, Volume= 0.169 af

Routing by Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 171.55' @ 12.25 hrs Surf.Area= 1,300 sf Storage= 3,081 cf

Plug-Flow detention time= 208.0 min calculated for 0.169 af (72% of inflow)
 Center-of-Mass det. time= 90.6 min (921.0 - 830.4)

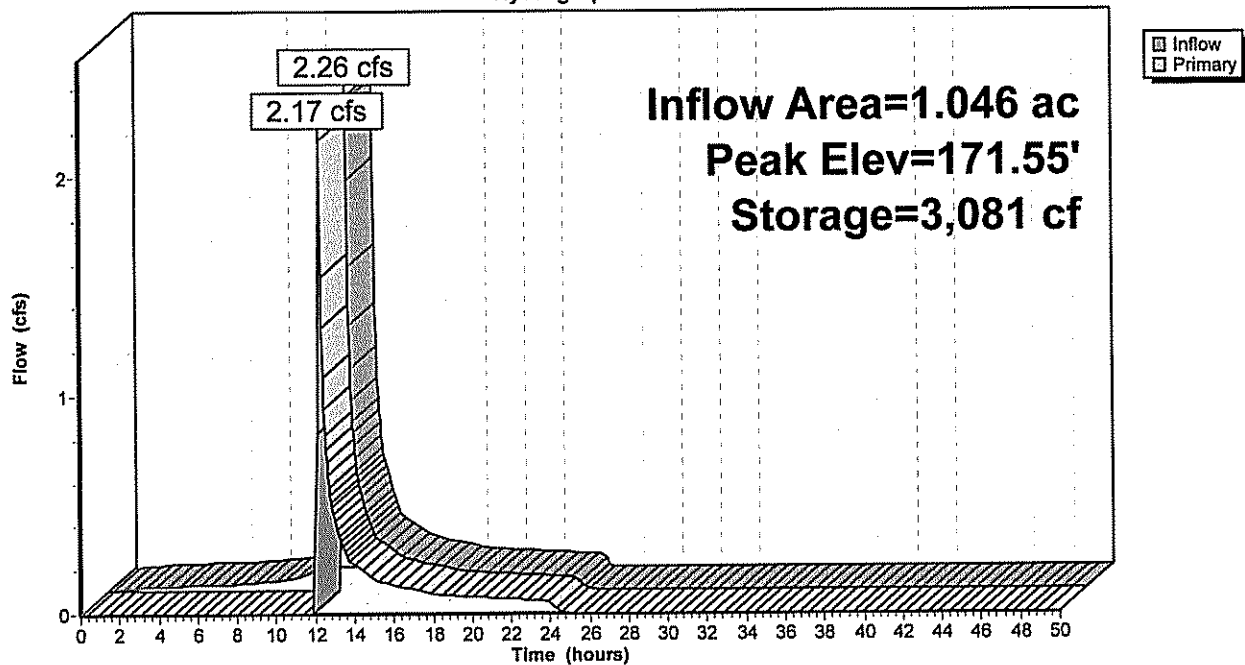
Volume	Invert	Avail.Storage	Storage Description
#1	167.75'	1,605 cf	5.00'W x 260.00'L x 4.50'H Prismaoid 5,850 cf Overall - 1,838 cf Embedded = 4,012 cf x 40.0% Voids
#2	168.50'	1,838 cf	36.0" Round Pipe Storage Inside #1 L= 260.0'
		3,443 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	171.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=2.14 cfs @ 12.25 hrs HW=171.55' (Free Discharge)
 ←1=Sharp-Crested Rectangular Weir (Weir Controls 2.14 cfs @ 1.80 fps)

Pond 44P: Recharge

Hydrograph



APPENDIX C PIPE SIZING CALCULATIONS

BY: CM

BUCKDALE SUBDIVISION
MARLBORO TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

JOB NO. 20-314
DATE: 11/26/2019
REV: 9/14/2020

RATIONAL "c" COMPUTATIONS

AREA	WOODS								CULTIVATED				GRASS								IMPERVIOUS		AREA	WIEGHTED
	HSG A		HSG B		HSG C		HSG D		HSG A		HSG A		HSG B		HSG C		HSG D		Area	Weighted (c=0.98)				
	Area	Weighted (c=0.11)	Area	Weighted (c=0.14)	Area	Weighted (c=0.16)	Area	Weighted (c=0.20)	Area	Weighted (c=0.49)	Area	Weighted (c=0.26)	Area	Weighted (c=0.32)	Area	Weighted (c=0.35)	Area	Weighted (c=0.38)						
Inlet A 13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.453	0.131	0.000	0.000	0.000	0.000	0.000	0.000	0.674	0.663	1.03	0.68	
Inlet A 12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.845	0.245	0.000	0.000	0.000	0.000	0.000	0.000	0.468	0.459	1.31	0.64	
Inlet A 11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.13	0.77	
Inlet A 10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.233	0.228	0.33	0.78	
Inlet A 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.099	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.757	0.742	1.86	0.67	
Inlet A 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.164	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.126	0.123	0.29	0.59	
Manhole A 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	
Inlet A 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.347	0.101	0.000	0.000	0.000	0.000	0.000	0.000	0.335	0.328	0.68	0.63	
Inlet A 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.124	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.094	0.092	0.22	0.69	
Inlet A 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.206	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.348	0.66	0.73	
Manhole A 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	
Manhole A 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	
Manhole A 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00	
Inlet B 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.640	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.165	0.162	0.81	0.43	
Inlet B 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.094	0.092	0.13	0.29	
Inlet B 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.116	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.090	0.12	0.29	
Inlet B 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.088	0.088	0.09	0.98	
Inlet B 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.102	0.100	0.18	0.67	
Off-Site	0.115	0.013	0.000	0.000	0.000	0.000	0.000	0.000	1.470	0.720	1.308	0.378	0.000	0.000	0.000	0.000	0.000	0.000	0.074	0.657	3.77	0.52		

BY: CM

**BUCKDALE SUBDIVISION
MARLBORO TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY**

JOB NO. 20-314
DATE: 3/13/2019
REV: 9/15/2020

STORM SEWER COMPUTATIONS - RATIONAL METHOD (Q=CIA)

Inflow Point #	Inflow (Ac.)		"C"	"C" Avg.	Tc Minutes			"I"	RCP HDPE "Q" cfs	n = 0.013 n = 0.010 Pipe Size	Slope	Qf	Vf	Vact	L
	Sub-Total	Total			To Inlet	In Pipe	Total								
Inlet B 5	0.81	0.81	0.43	0.43	10.0	0.5	10.5	6.60	2.3	24 Dia. HDPE	0.13%	10.6	3.4	2.4	100
Inlet B 4	0.13	0.93	0.29	0.41	10.5	0.3	10.8	6.57	2.5	24 Dia. HDPE	0.13%	10.6	3.4	2.4	63
Inlet B 3	0.12	1.05	0.29	0.40	10.8	0.4	11.2	6.54	2.7	24 Dia. HDPE	0.13%	10.6	3.4	2.5	81
Inlet B 2	0.09	1.13	0.98	0.44	11.2	0.1	11.3	6.50	3.3	15 Dia. HDPE	0.30%	4.6	3.7	3.6	24
TO MANHOLE A 1															
Inlet B 1	0.18	0.18	0.67	0.67	10.0	0.1	10.1	6.60	0.8	15 Dia. HDPE	0.30%	4.6	3.7	2.6	23
TO MANHOLE A 1															
Inlet A 13	1.03	1.03	0.68	0.68	10.0	1.3	11.3	6.60	4.6	15 Dia. HDPE	0.35%	5.0	4.0	4.3	304
TO INLET 11															
Inlet A 12	1.31	1.31	0.54	0.54	10.0	0.9	10.9	6.60	4.6	15 Dia. HDPE	0.35%	5.0	4.0	4.3	222
Inlet A 11	0.13	2.47	0.77	0.61	11.3	0.5	11.7	6.50	9.7	24 Dia. HDPE	0.30%	16.1	5.1	4.6	152
Inlet A 10	0.33	2.80	0.78	0.63	11.7	0.2	11.9	6.46	11.3	24 Dia. HDPE	0.30%	16.1	5.1	4.9	52
TO INLET 8															
Inlet A 9	1.86	1.86	0.57	0.57	10.0	0.1	10.1	6.60	7.0	18 Dia. HDPE	0.30%	7.5	4.2	4.5	24
Inlet A 8	0.29	4.95	0.59	0.60	11.9	0.2	12.1	6.45	19.3	30 Dia. HDPE	0.30%	29.2	5.9	5.5	57
Manhole A 7	0.00	4.95	0.00	0.60	12.1	0.2	12.2	6.44	19.2	30 Dia. HDPE	0.30%	29.2	5.9	5.5	57
TO INLET 5															
Inlet A 6	0.68	0.68	0.63	0.63	10.0	0.1	10.1	6.60	2.8	15 Dia. HDPE	0.30%	4.6	3.7	3.4	24
Inlet A 5	0.22	5.85	0.59	0.61	12.2	0.2	12.4	6.42	22.8	30 Dia. HDPE	0.30%	29.2	5.9	5.9	73
Inlet A 4	0.56	6.41	0.73	0.62	12.4	0.6	13.0	6.41	25.3	30 Dia. HDPE	0.30%	29.2	5.9	6.2	213
Manhole A 3	0.00	6.41	0.62	0.62	13.0	0.5	13.6	6.36	25.1	30 Dia. HDPE	0.30%	29.2	5.9	6.1	191
Manhole A 2	0.00	6.41	0.62	0.62	13.6	0.1	13.7	6.32	25.0	30 Dia. HDPE	0.30%	29.2	5.9	6.1	31
Manhole A 1	0.00	7.73	0.62	0.59	13.7	0.1	13.8	6.31	28.9	30 Dia. HDPE	0.35%	31.5	6.4	6.8	54
TO F.E.S. A-16 DISCHARGING INTO STORMWATER MANAGEMENT BASIN 1															
Off-Site	3.77	3.77	0.52	0.52	17.9	0.0	17.9	5.33	10.5	12 Dia. HDPE	11.00%	15.4	19.6	18.4	42
TO F.E.S. O-1 DISCHARGING INTO STORMWATER MANAGEMENT BASIN 1															

**APPENDIX D
DRAINAGE AREA MAPS**