

Stormwater Management Report


330-336 Lawrence Station Road

Block 42.01, Lots 13.01 & 15

Lawrence Township

Mercer County, New Jersey

Prepared by



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Job #19-107
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I. SUMMARY

SITE DESCRIPTION

The subject parcel is a ±9.71 acre site located on Lawrence Station Road in the Township of Lawrenceville known as Block 4201, Lots 13.01 & 15. Both lots are partially wooded and significantly encumbered with wetlands. Lot 13.01 contains the existing Islamic Circle of Mercer County (ICMC) and associated parking and other improvements. Lot 15 contains an existing abandoned building (recently demolished) and areas of asphalt and broken asphalt parking as well as a bare earth area previously used for parking. The site contains soils predominantly from the hydrological group "C".

The stormwater analysis focuses on Lot 15 as the proposed location of an additional parking lot to serve the ICMC. Minor changes to the parking within Lot 13.01 result in no net change in impervious cover.

Lot 15 generally drains from south to north to wetlands areas located at the rear of the property. A small area at south side of the site drains towards Lawrence Station Road in the existing conditions. The pre-development areas to the point of analysis contains ± 2.734 acres total. The remainder of the site is undeveloped area and is not included in the calculations.

Pre- and post-development peak discharges at the point of interest and pre- and post-development curve numbers were calculated using the methodology in the U.S.D.A. Natural Resource Conservation Service (NRCS) Technical Release No. 55 (TR-55). Existing and proposed hydrographs were calculated using the Delmarva Unit Hydrograph method as included in the *HydroCAD (version 10.00-25)* computer software. Because the drainage sheds are relatively small and mostly impervious, pre- and post-development times of concentration to basin are assumed to be 10 minutes.

Stormwater storage volumes within the stormwater facilities were calculated using storage calculations within in the *HydroCAD* computer software.

The proposed improvements result in a net increase in impervious cover of approximately 0.20 acres. The tables below summarizes the pre- and post-developed peak discharges and stormwater runoff volumes for the 2-, 10-, and 100-year storm events.

The increase results in a total increase in volume from the site of approximate 0.025 acre-feet for the 100-year storm. Therefore in order to retain the pre-developed runoff characteristics and to provide some additional water quality treatment, three (3) rain garden areas are proposed with a total volume 0.033 ac-ft of storage.

DESIGN DATA

The 2-, 10-, and 100-year pre- and post-developed hydrographs were generated using the following data:

Pre-Development Conditions

Impervious Area A
D.A.: 1.010 acres
CN: 98
t_c: 10 min.

Impervious Area B
D.A.: 0.074 acres
CN: 98
t_c: 10 min.

Pervious Area A
D.A.: 1.120 acres
CN: 75
t_c: 10 min.

Pervious Area B
D.A.: 0.530 acres
CN: 73
t_c: 10 min.

Post-Development Conditions

Impervious Area A
D.A.: 1.010 acres
CN: 98
t_c: 10 min.

Impervious Area B
D.A.: 0.260 acres
CN: 98
t_c: 10 min.

Pervious Area A
D.A.: 1.175 acres
CN: 74
t_c: 10 min.

Pervious Area B
D.A.: 0.289 acres
CN: 74
t_c: 10 min.

Drainage Area A

| Storm Event (yr) | Pre-Developed Peak Discharge (cfs) | Post-Developed Peak Discharge (cfs) | Pre-Developed Runoff Volume (ac-ft) | Post-Developed Runoff Volume (ac-ft) |
|------------------|------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| 2 | 3.35 | 3.33 | 0.368 | 0.368 |
| 10 | 5.80 | 5.82 | 0.631 | 0.634 |
| 100 | 10.83 | 10.96 | 1.179 | 1.192 |

Drainage Area B

| Storm Event (yr) | Pre-Developed Peak Discharge (cfs) | Post-Developed Peak Discharge (cfs) | Pre-Developed Runoff Volume (ac-ft) | Post-Developed Runoff Volume (ac-ft) |
|-------------------------|---|--|--|---|
| 2 | 0.63 | 0.85 | 0.068 | 0.093 |
| 10 | 1.29 | 1.47 | 0.134 | 0.161 |
| 100 | 2.72 | 2.76 | 0.281 | 0.301 |

NJDEP STORMWATER MANAGEMENT REQUIREMENTS

Stormwater Runoff Quality

In accordance with N.J.A.C. 7:8-5.5, stormwater management measures shall only be required for water quality control if an additional one-quarter acre of impervious surface is being proposed on a development site. The project proposes approximately 0.2-acres of new impervious and thus water quality control is not required.

Although not required by Rule, the proposed rain gardens will retain and infiltrate an equivalent runoff of the NJDEP Water Quality storm event from the proposed increase in impervious area. The Water Quality storm generates approximately 0.017 ac-ft of runoff where the garden areas are proposed with a total volume 0.033 ac-ft of storage. Rain gardens (or "bio-retention systems") are approved to provide a 90% TSS-removal rate which exceeds the 80% rate required.

Stormwater Runoff Quantity

In accordance with N.J.A.C. 7:8-5.4, stormwater management measures shall be included to control the stormwater runoff quantity impacts. Compliance with this requirement can be demonstrated by matching pre-construction conditions and ensuring that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site.

The increase in the peak runoff rates of the 100-year storm are negligible (0.13 and 0.04 cfs for the two drainage areas) and are easily attenuated within the substantial wooded wetlands areas which will be retained on the site. Additionally, as noted above, the entire increase in the 100-year runoff volume is retained on-site. Therefore this requirement is met.

Groundwater Recharge

The Rules also require that the project include stormwater management measures which prevent the loss of groundwater recharge. Compliance with this requirement can be demonstrated by infiltrating 100% of the *difference* between the site's pre- and post-developed 2-year runoff volumes.

Pre-Developed 2-Year Runoff Volume = 0.436 ac-ft

Total Post-Developed 2-Year Runoff Volumes = 0.461 ac-ft

An equivalent volume of runoff for the increase in the 2-year storm volume is retained and infiltrated in the garden gardens (0.025 ac-ft required vs. 0.033 ac-ft provided) therefore this requirement is met.

Green Infrastructure

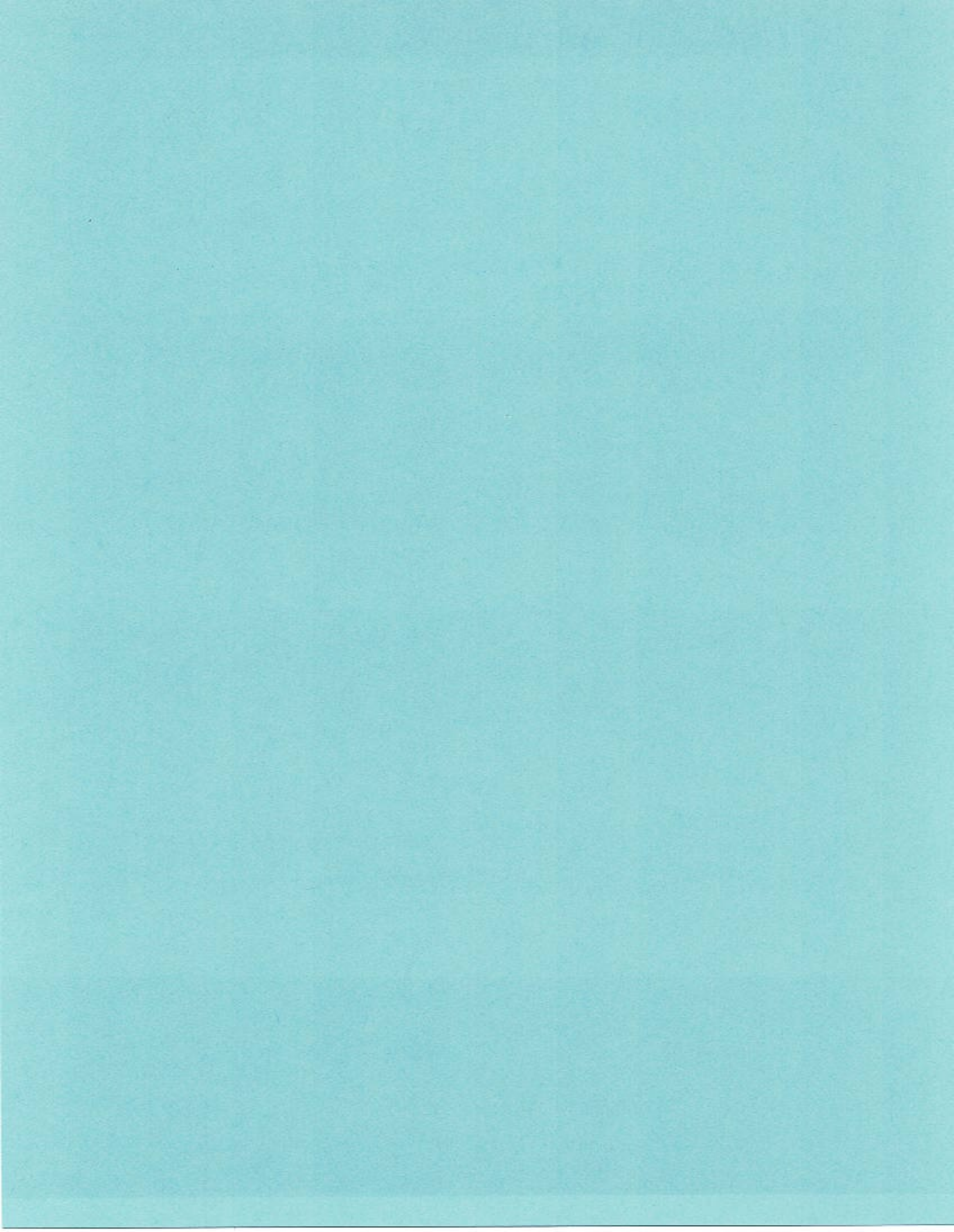
On December 3, 2018, NJDEP proposed modifications to New Jersey's Stormwater Management Rules (NJAC 7:8). The Rules include requirements for "green infrastructure" best management practices (BMPs) including measures intended to manage stormwater runoff close to the source of discharge.

As of the date of this report, the new Rules including the green infrastructure BMPs have not yet been adopted. However the site design was reviewed to determine where such measures have already been included or where others could be incorporated.

The site proposes three Rain Garden areas which will collect and treat runoff particularly for smaller storm events.

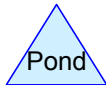
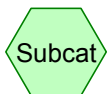
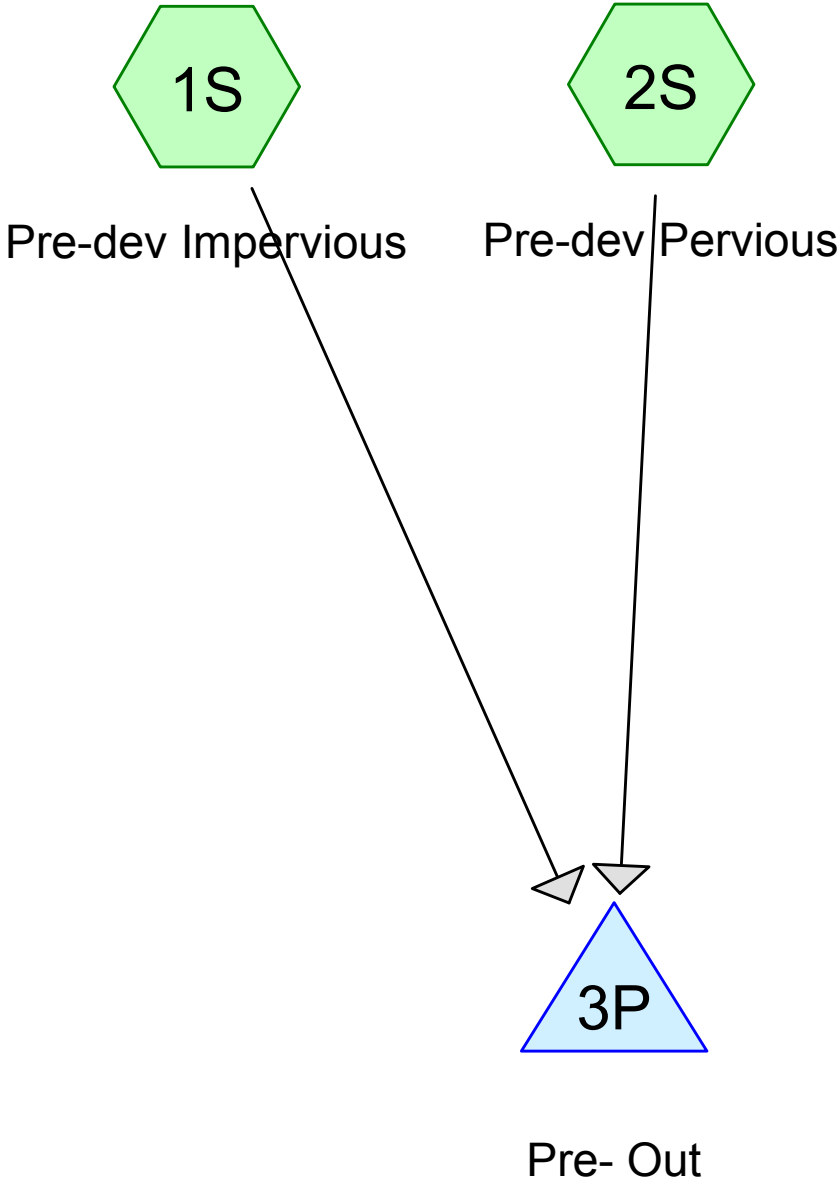
The project incorporates a design which maintains ALL of the wooded and wetlands areas on the site. The project will allow previously disturbed areas within the wetlands to revegetate and concentrates the development in the uplands portion of the site. Therefore the site as designed does help advance the goals of green infrastructure by reducing runoff and providing areas for increased opportunity of recharge and evapotranspiration.

The project as proposed addresses the goals of the new Rules by maintaining and restoring as closely as possible the natural hydrologic cycle through reduced peak runoff, volume, and pollutant loading of small storm events, reduction in the stream baseflow, and increasing the opportunity to infiltrate and evapotranspire stormwater.



II. PRE-DEVELOPED CONDITIONS

Pre-Developed Drainage Area "A"



Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|----|---------------------------------------|
| 0.320 | 79 | 50-75% Grass cover, Fair, HSG C (2S) |
| 0.800 | 74 | >75% Grass cover, Good, HSG C (2S) |
| 1.010 | 98 | Unconnected roofs, HSG C (1S) |

Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 2.130 | HSG C | 1S, 2S |
| 0.000 | HSG D | |
| 0.000 | Other | |

19-107 Pre-dev

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Page 4

Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------|-------------------------|
| 0.000 | 0.000 | 0.320 | 0.000 | 0.000 | 0.320 | 50-75% Grass cover, Fair | 2S |
| 0.000 | 0.000 | 0.800 | 0.000 | 0.000 | 0.800 | >75% Grass cover, Good | 2S |
| 0.000 | 0.000 | 1.010 | 0.000 | 0.000 | 1.010 | Unconnected roofs | 1S |

Summary for Subcatchment 1S: Pre-dev Impervious

Runoff = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af, Depth= 3.08"

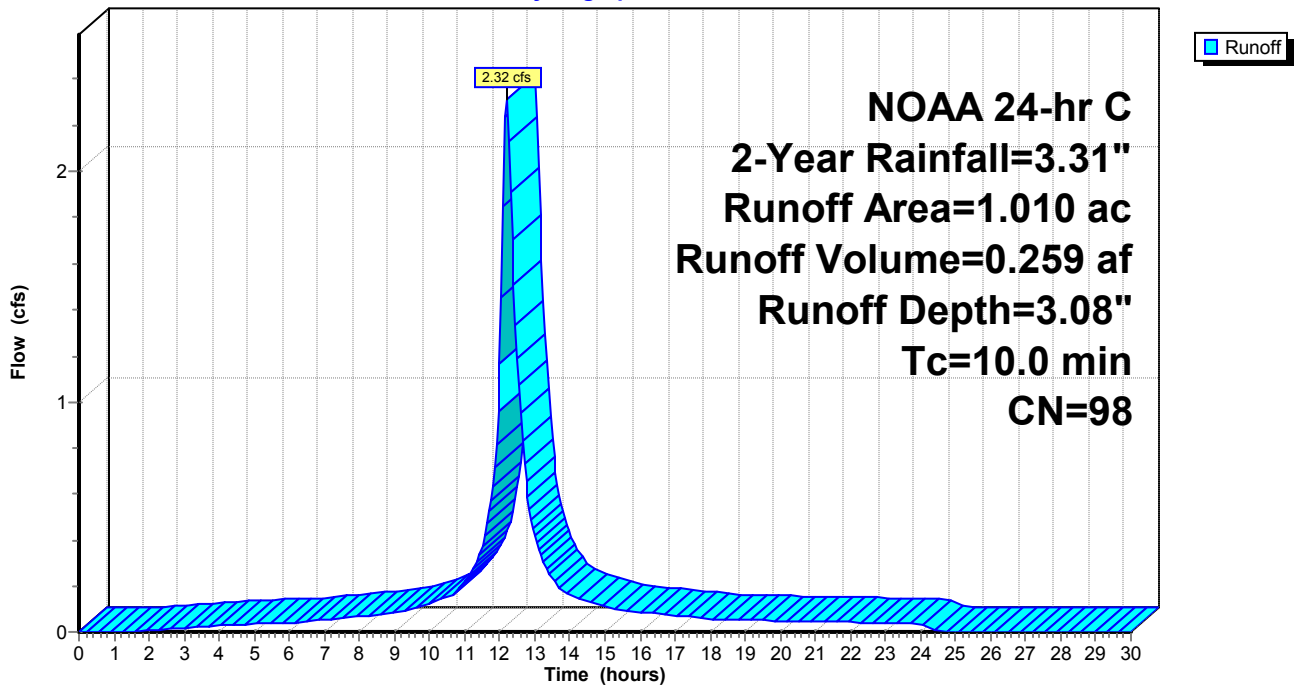
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 1.010 | 98 | Unconnected roofs, HSG C |
| 1.010 | | 100.00% Impervious Area |
| 1.010 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious

Runoff = 1.04 cfs @ 12.21 hrs, Volume= 0.109 af, Depth= 1.17"

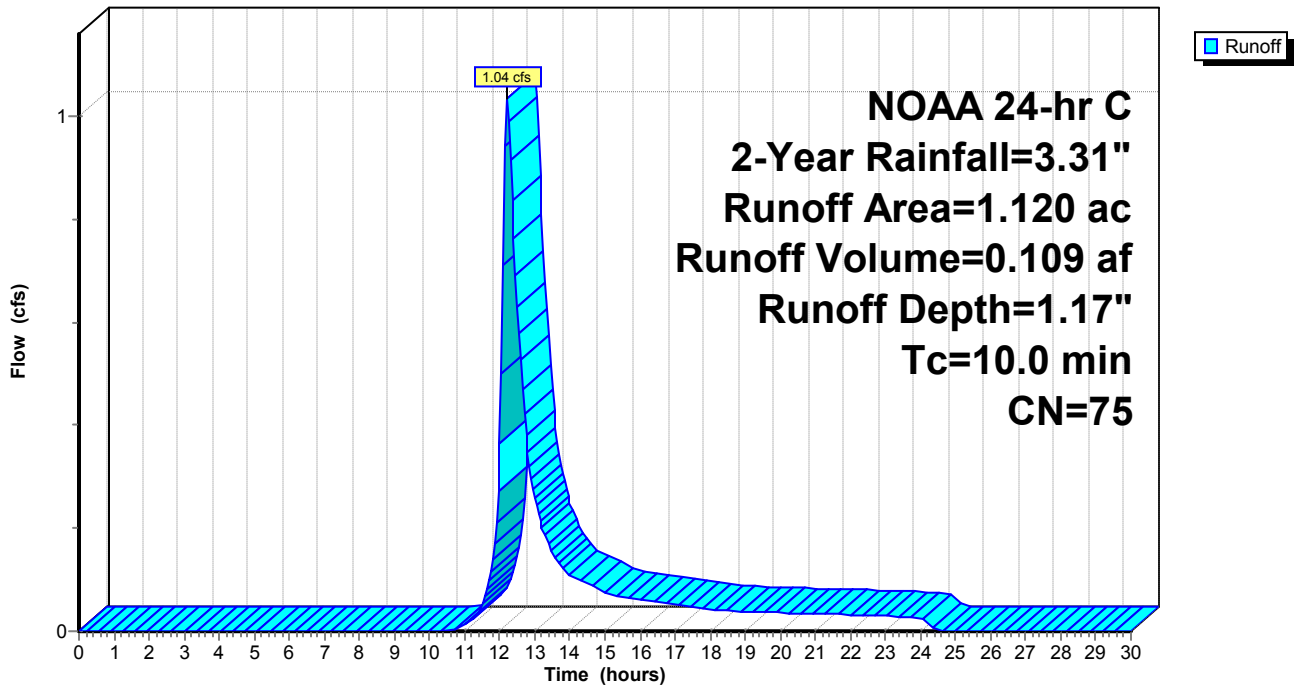
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|---------------------------------|
| 0.320 | 79 | 50-75% Grass cover, Fair, HSG C |
| 0.800 | 74 | >75% Grass cover, Good, HSG C |
| 1.120 | 75 | Weighted Average |
| 1.120 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious

Hydrograph



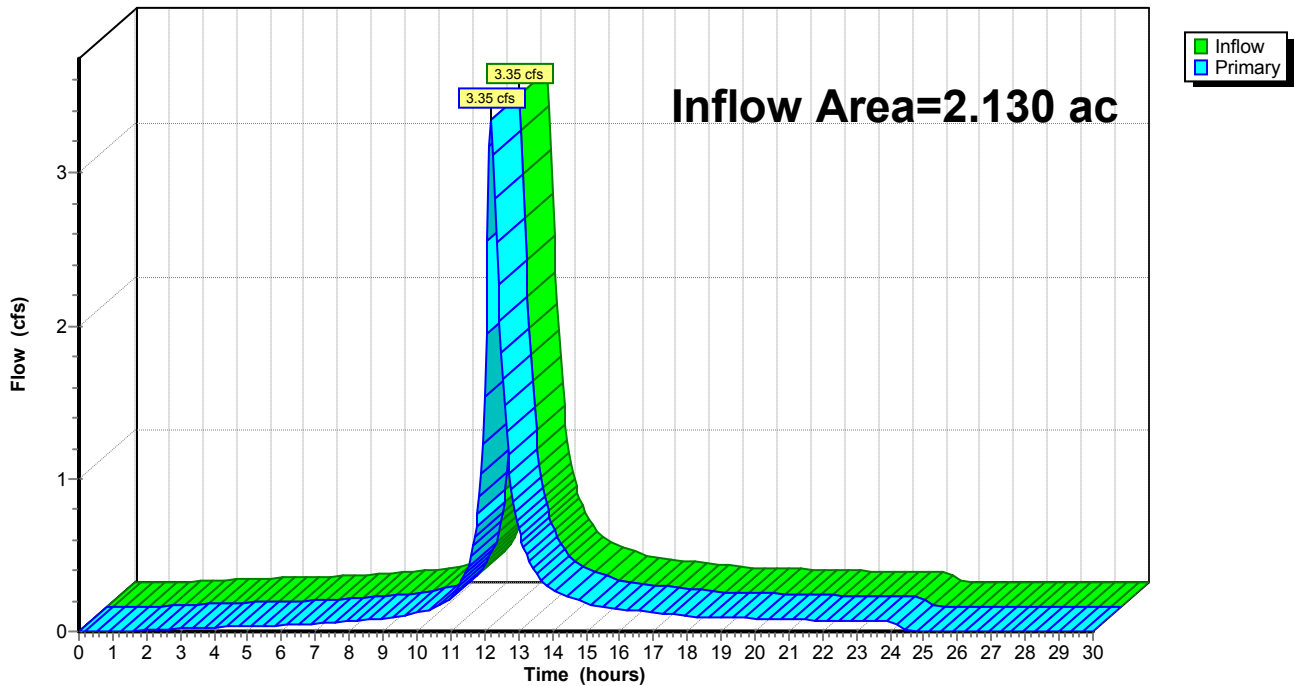
Summary for Pond 3P: Pre- Out

Inflow Area = 2.130 ac, 47.42% Impervious, Inflow Depth = 2.07" for 2-Year event
Inflow = 3.35 cfs @ 12.20 hrs, Volume= 0.368 af
Primary = 3.35 cfs @ 12.20 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out

Hydrograph



Summary for Subcatchment 1S: Pre-dev Impervious

Runoff = 3.53 cfs @ 12.19 hrs, Volume= 0.402 af, Depth= 4.77"

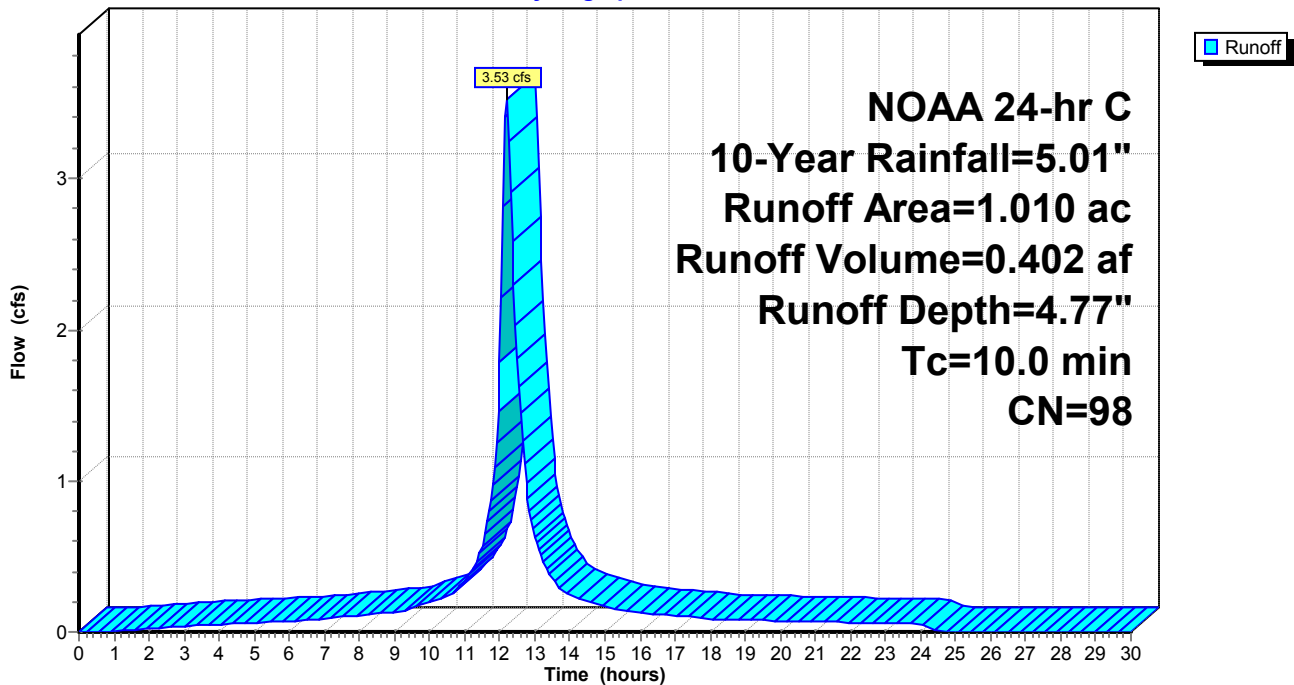
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 1.010 | 98 | Unconnected roofs, HSG C |
| 1.010 | | 100.00% Impervious Area |
| 1.010 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious

Runoff = 2.27 cfs @ 12.20 hrs, Volume= 0.229 af, Depth= 2.46"

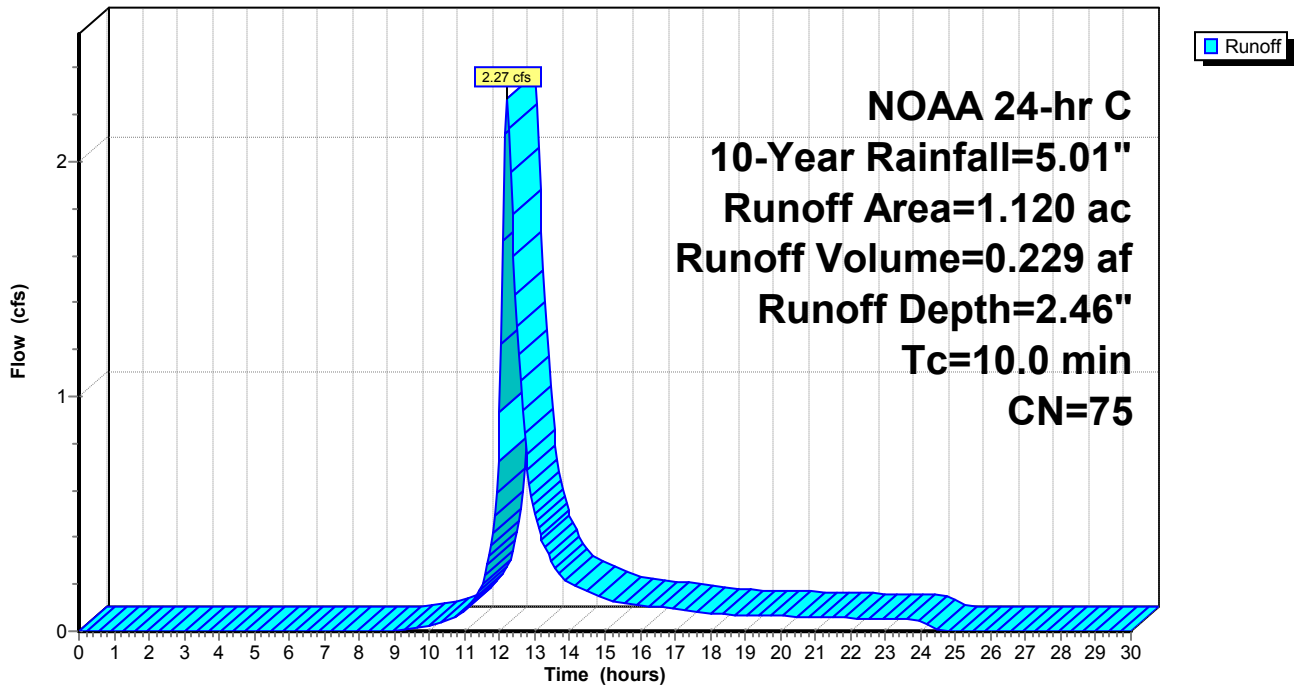
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|---------------------------------|
| 0.320 | 79 | 50-75% Grass cover, Fair, HSG C |
| 0.800 | 74 | >75% Grass cover, Good, HSG C |
| 1.120 | 75 | Weighted Average |
| 1.120 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious

Hydrograph



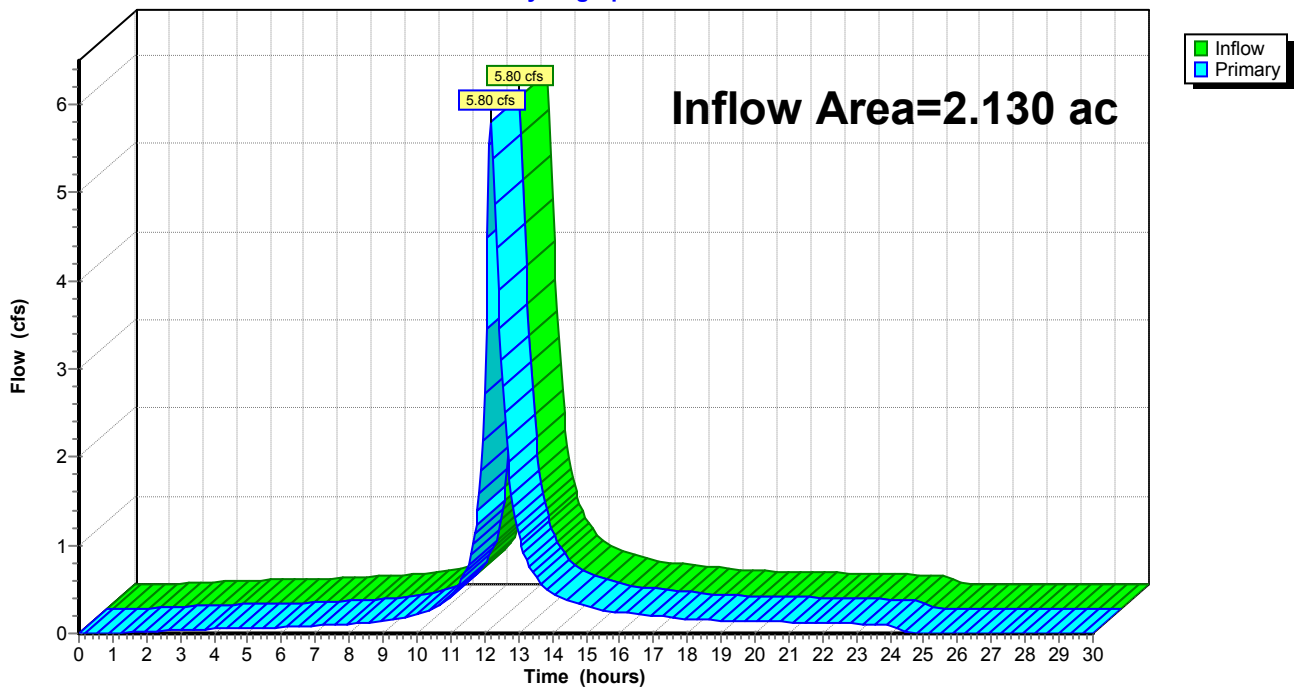
Summary for Pond 3P: Pre- Out

Inflow Area = 2.130 ac, 47.42% Impervious, Inflow Depth = 3.56" for 10-Year event
Inflow = 5.80 cfs @ 12.19 hrs, Volume= 0.631 af
Primary = 5.80 cfs @ 12.19 hrs, Volume= 0.631 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out

Hydrograph



Summary for Subcatchment 1S: Pre-dev Impervious

Runoff = 5.90 cfs @ 12.19 hrs, Volume= 0.681 af, Depth= 8.09"

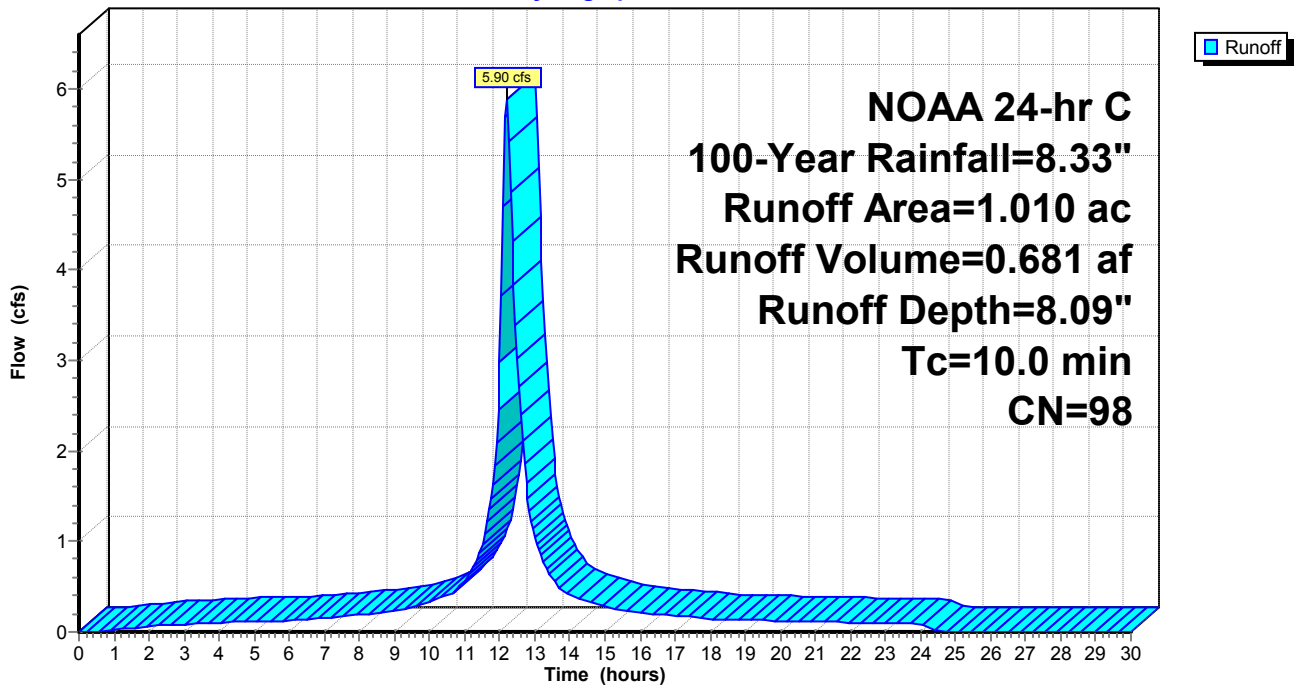
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 1.010 | 98 | Unconnected roofs, HSG C |
| 1.010 | | 100.00% Impervious Area |
| 1.010 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious

Runoff = 4.94 cfs @ 12.20 hrs, Volume= 0.498 af, Depth= 5.34"

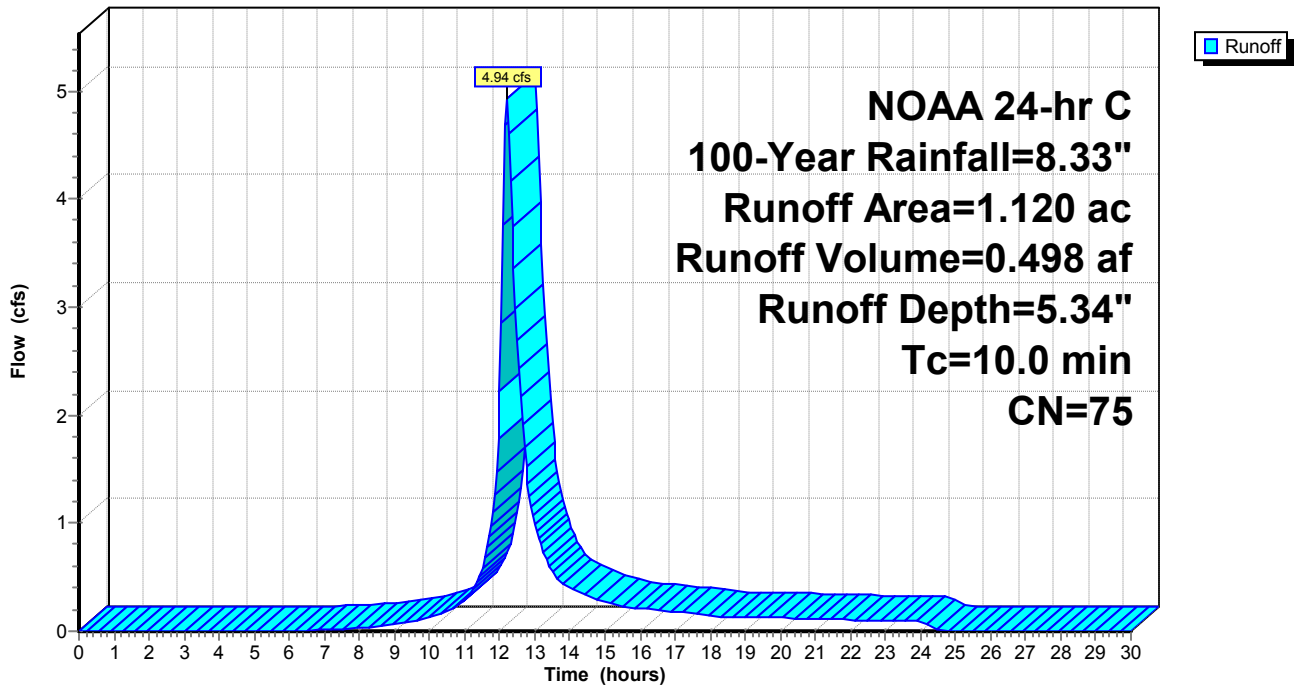
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|---------------------------------|
| 0.320 | 79 | 50-75% Grass cover, Fair, HSG C |
| 0.800 | 74 | >75% Grass cover, Good, HSG C |
| 1.120 | 75 | Weighted Average |
| 1.120 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious

Hydrograph



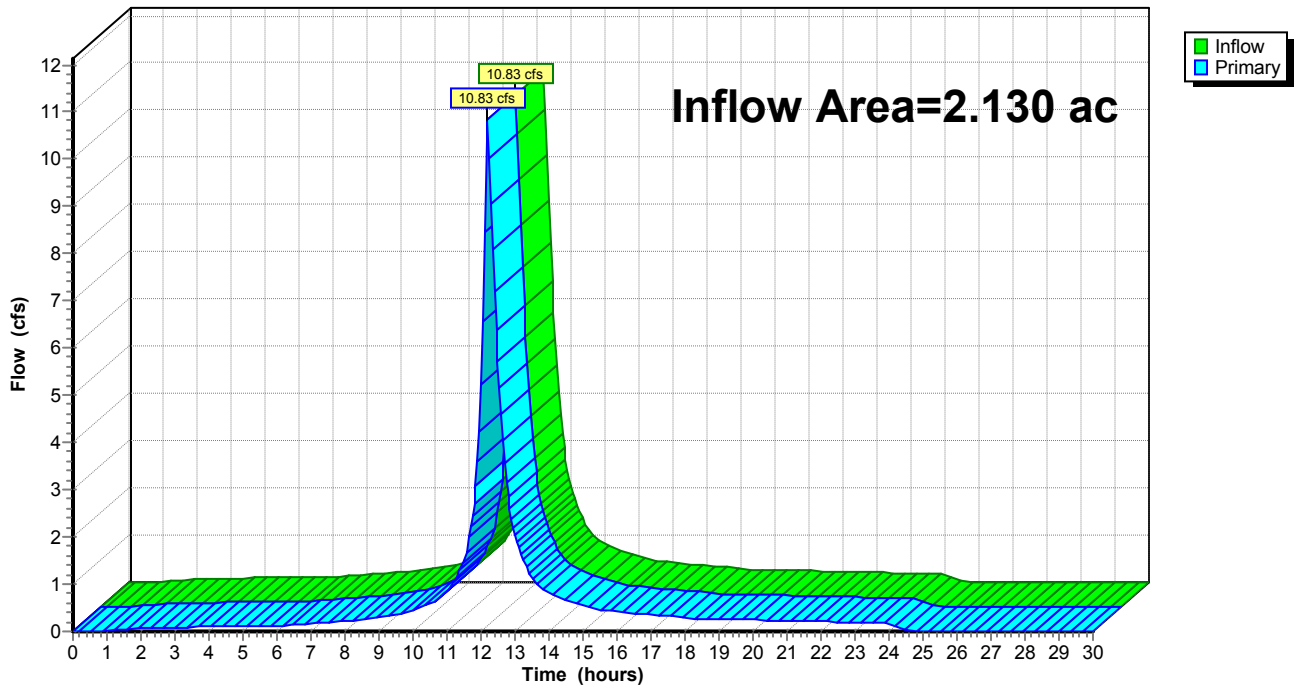
Summary for Pond 3P: Pre- Out

Inflow Area = 2.130 ac, 47.42% Impervious, Inflow Depth = 6.64" for 100-Year event
Inflow = 10.83 cfs @ 12.19 hrs, Volume= 1.179 af
Primary = 10.83 cfs @ 12.19 hrs, Volume= 1.179 af, Atten= 0%, Lag= 0.0 min

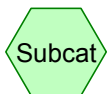
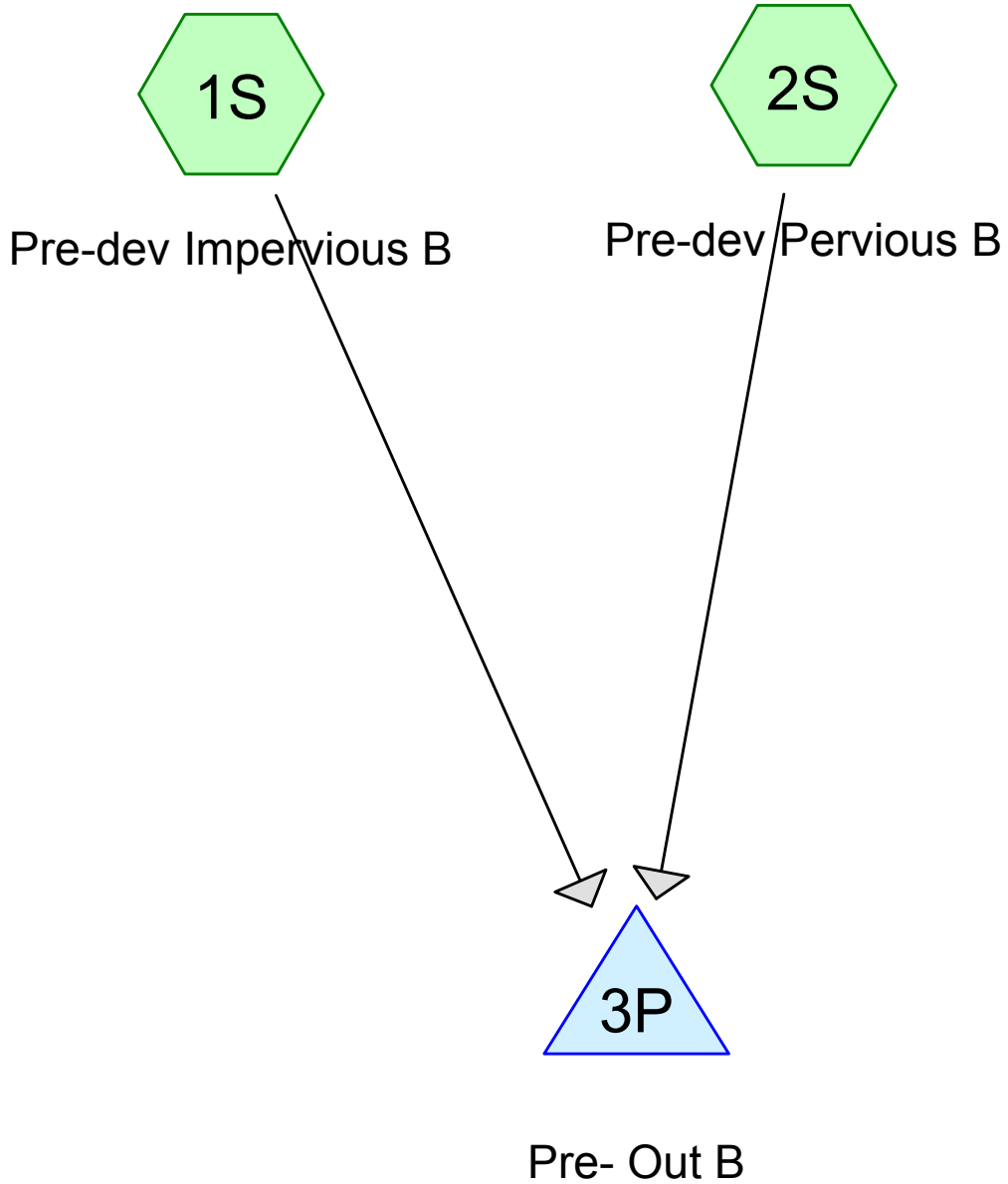
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out

Hydrograph



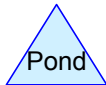
Pre-Developed Drainage Area "B"



Subcat



Reach



Pond



Link

Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|----|---------------------------------------|
| 0.530 | 74 | >75% Grass cover, Good, HSG C (2S) |
| 0.074 | 98 | Unconnected roofs, HSG C (1S) |

19-107 Pre-dev B

Prepared by TSE

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Page 3

Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.604 | HSG C | 1S, 2S |
| 0.000 | HSG D | |
| 0.000 | Other | |

Summary for Subcatchment 1S: Pre-dev Impervious B

Runoff = 0.17 cfs @ 12.19 hrs, Volume= 0.019 af, Depth= 3.08"

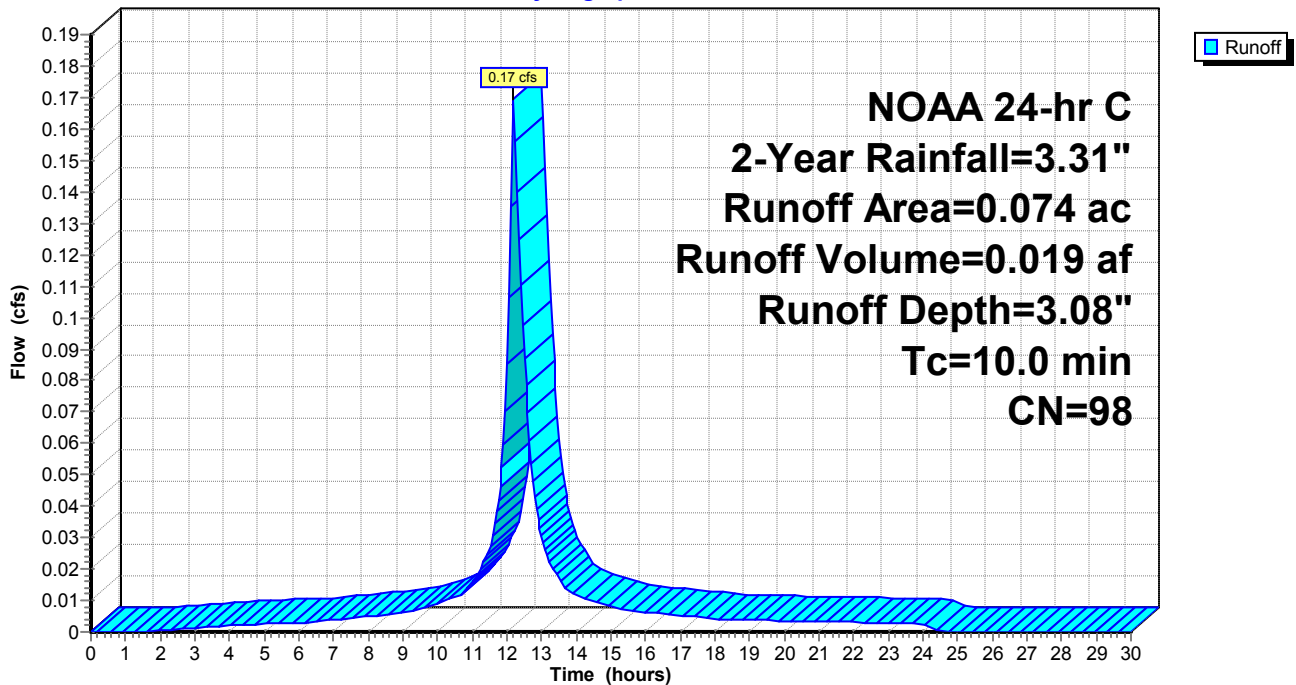
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.074 | 98 | Unconnected roofs, HSG C |
| 0.074 | | 100.00% Impervious Area |
| 0.074 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious B

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious B

Runoff = 0.46 cfs @ 12.21 hrs, Volume= 0.049 af, Depth= 1.11"

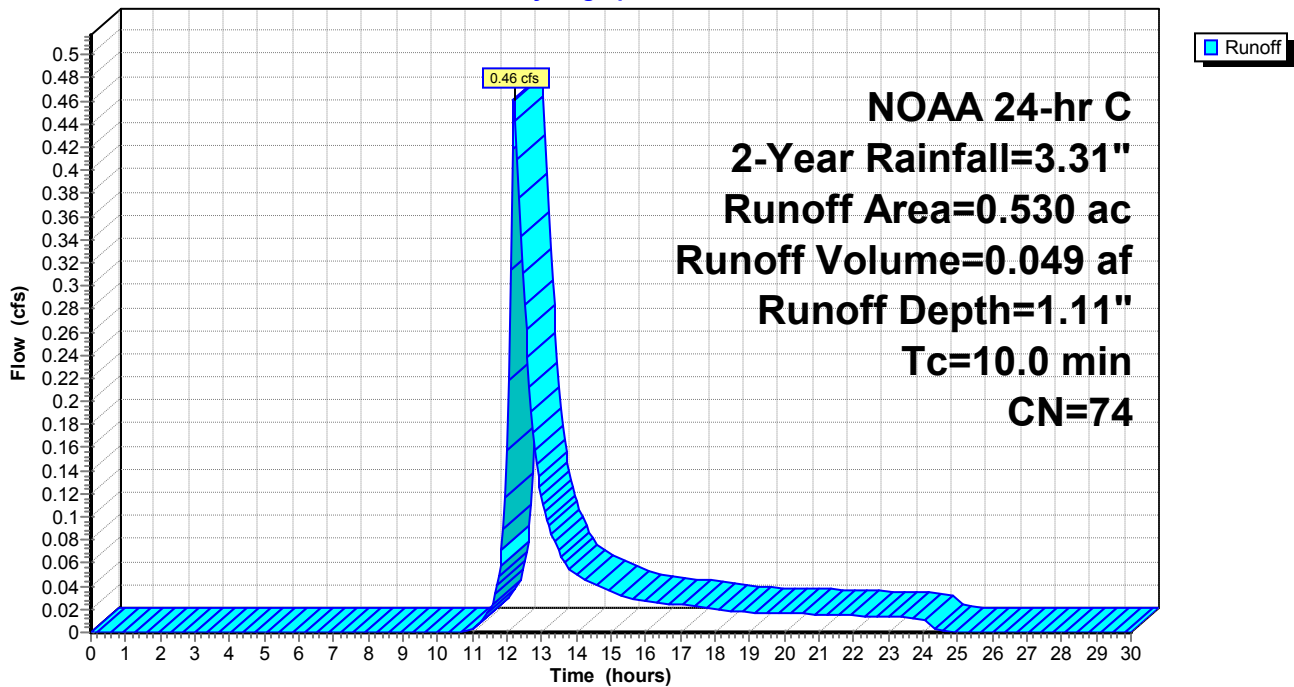
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.530 | 74 | >75% Grass cover, Good, HSG C |
| 0.530 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious B

Hydrograph



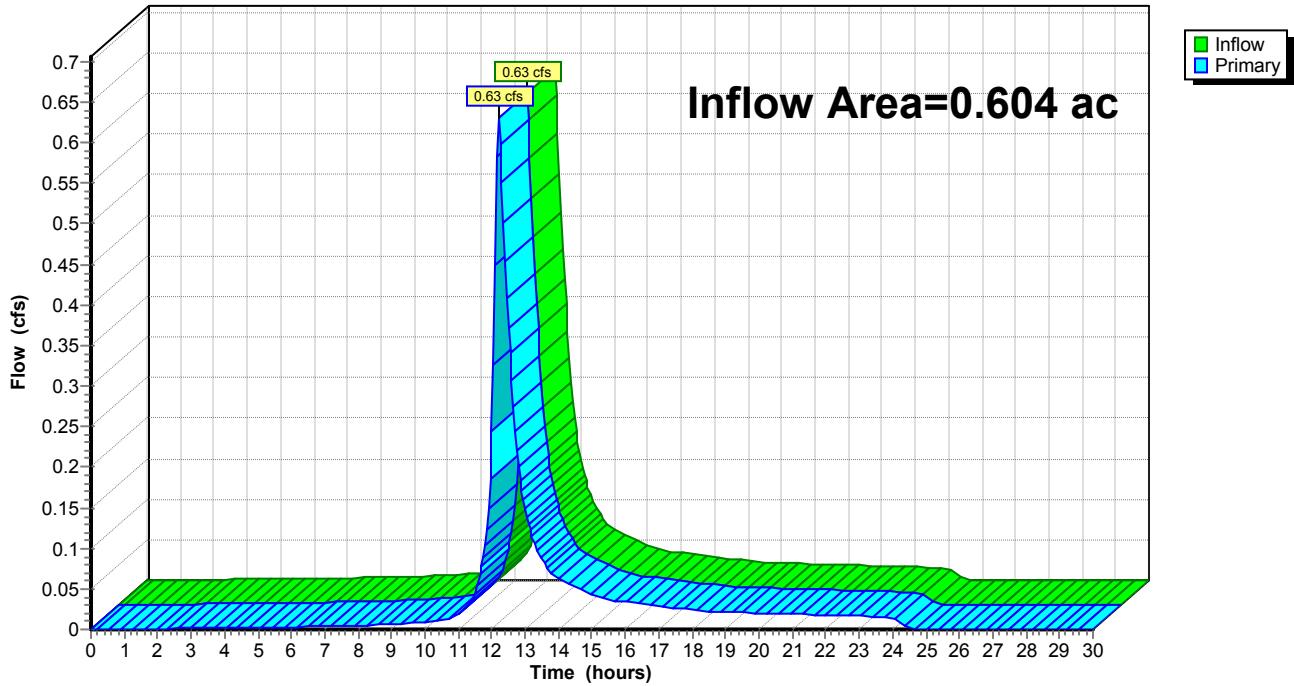
Summary for Pond 3P: Pre- Out B

Inflow Area = 0.604 ac, 12.25% Impervious, Inflow Depth = 1.35" for 2-Year event
Inflow = 0.63 cfs @ 12.21 hrs, Volume= 0.068 af
Primary = 0.63 cfs @ 12.21 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out B

Hydrograph



Summary for Subcatchment 1S: Pre-dev Impervious B

Runoff = 0.26 cfs @ 12.19 hrs, Volume= 0.029 af, Depth= 4.77"

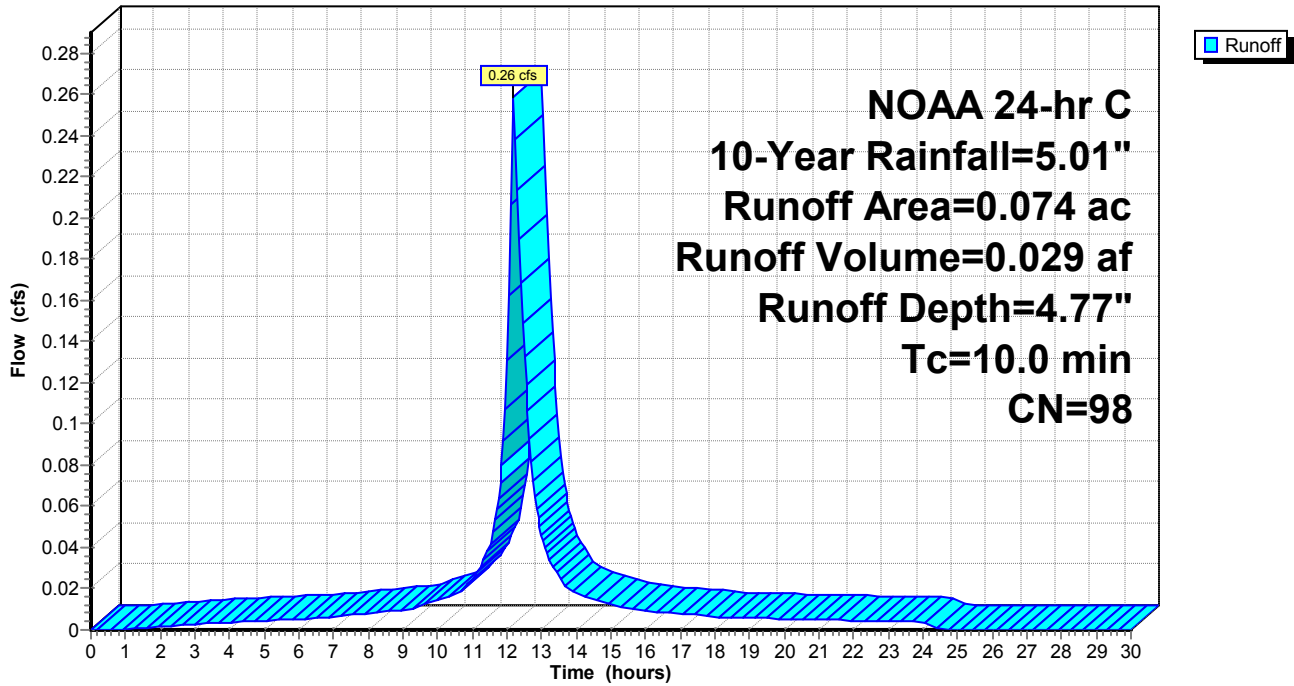
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.074 | 98 | Unconnected roofs, HSG C |
| 0.074 | | 100.00% Impervious Area |
| 0.074 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious B

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious B

Runoff = 1.03 cfs @ 12.20 hrs, Volume= 0.105 af, Depth= 2.37"

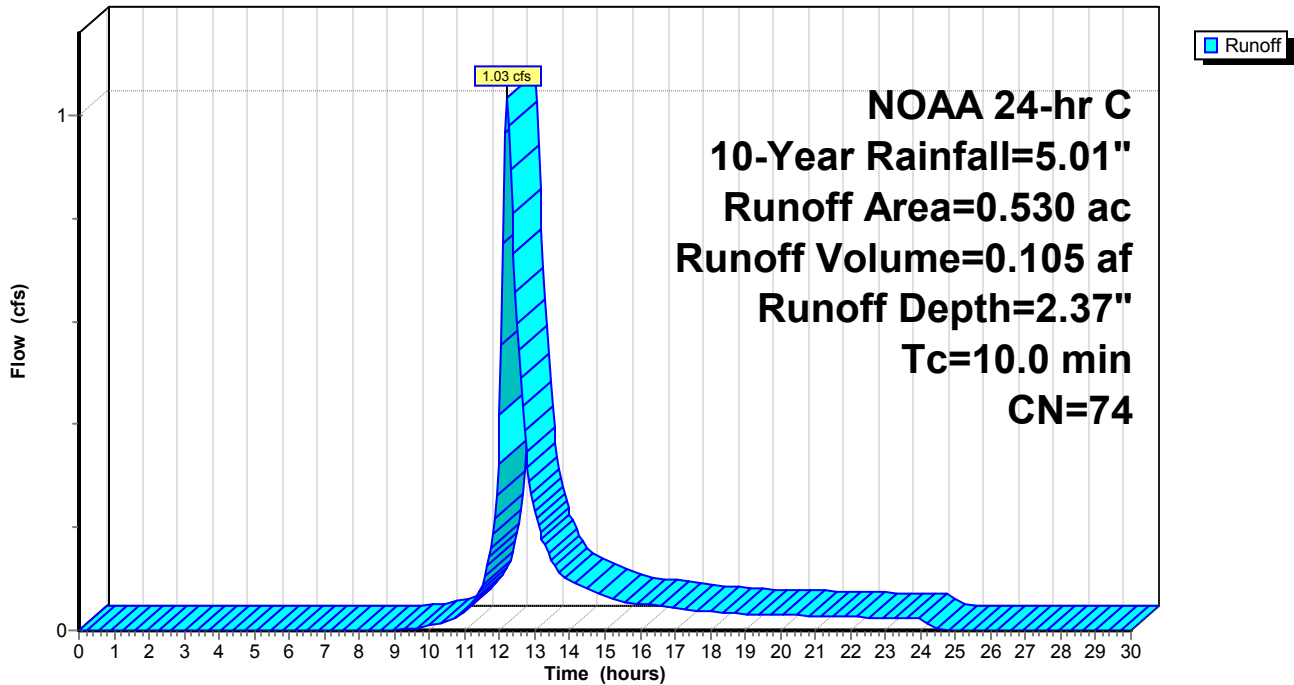
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.530 | 74 | >75% Grass cover, Good, HSG C |
| 0.530 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious B

Hydrograph



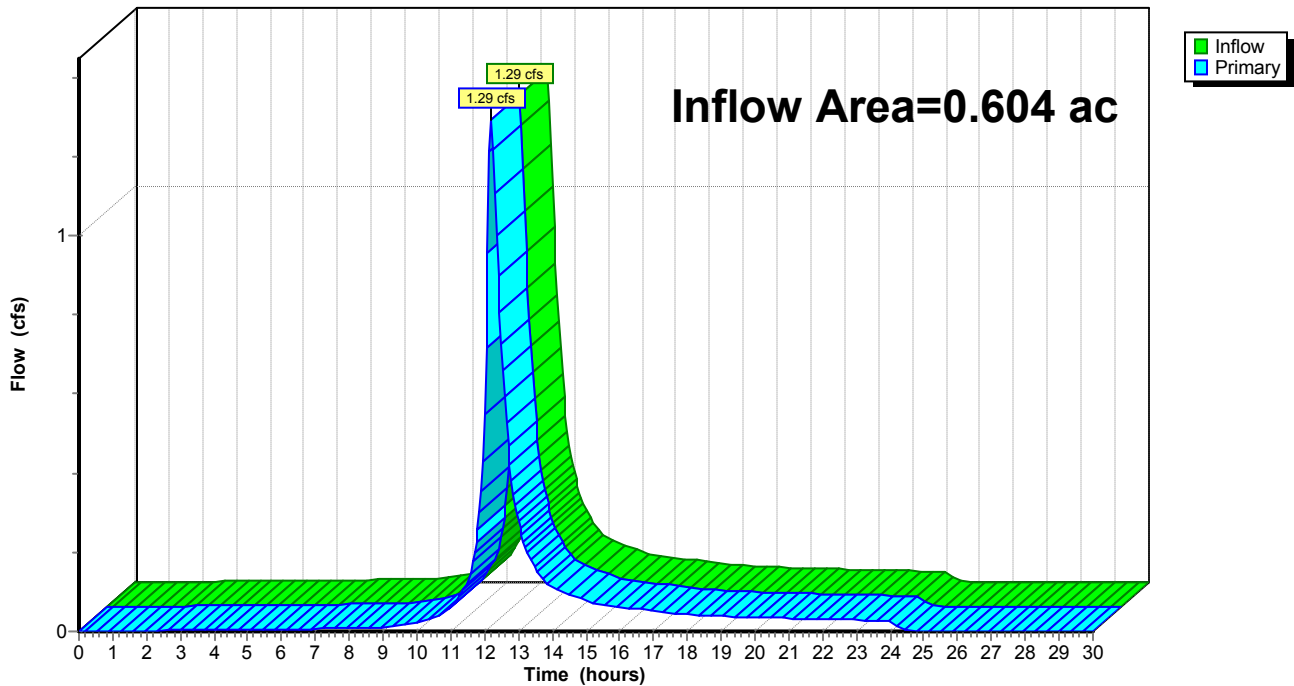
Summary for Pond 3P: Pre- Out B

Inflow Area = 0.604 ac, 12.25% Impervious, Inflow Depth = 2.67" for 10-Year event
Inflow = 1.29 cfs @ 12.20 hrs, Volume= 0.134 af
Primary = 1.29 cfs @ 12.20 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out B

Hydrograph



Summary for Subcatchment 1S: Pre-dev Impervious B

Runoff = 0.43 cfs @ 12.19 hrs, Volume= 0.050 af, Depth= 8.09"

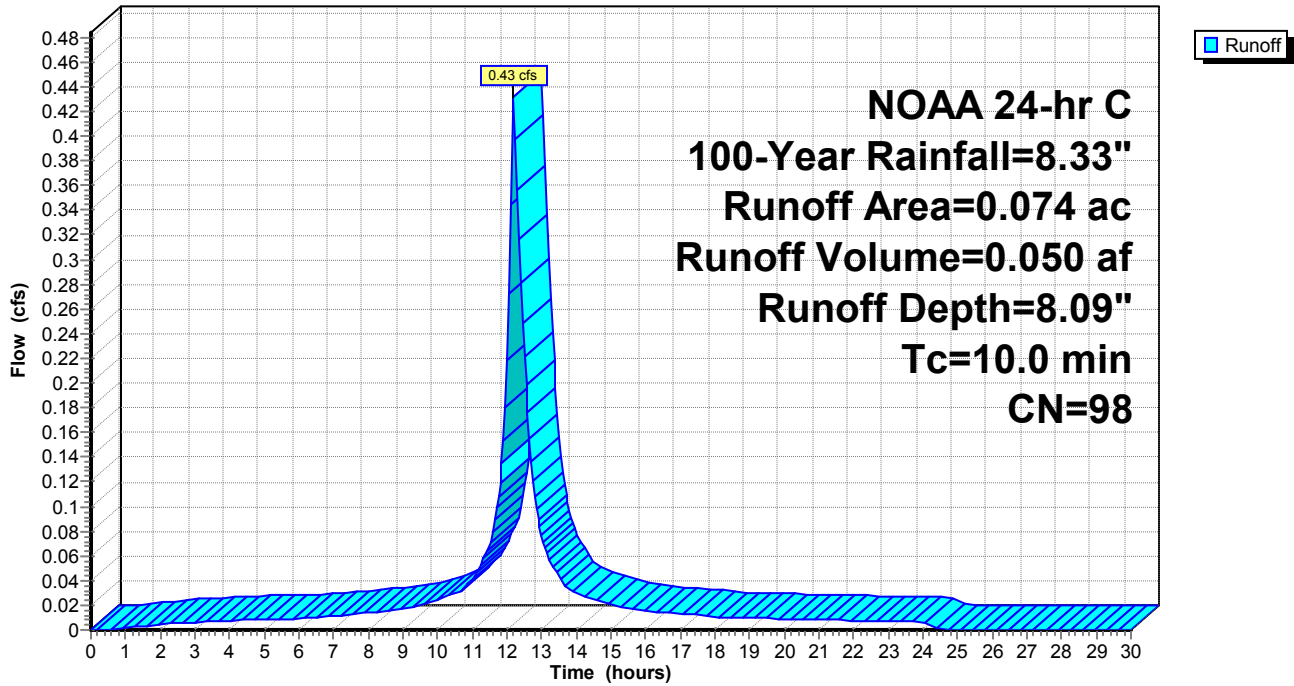
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.074 | 98 | Unconnected roofs, HSG C |
| 0.074 | | 100.00% Impervious Area |
| 0.074 | | 100.00% Unconnected |

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

Subcatchment 1S: Pre-dev Impervious B

Hydrograph



Summary for Subcatchment 2S: Pre-dev Pervious B

Runoff = 2.29 cfs @ 12.20 hrs, Volume= 0.231 af, Depth= 5.22"

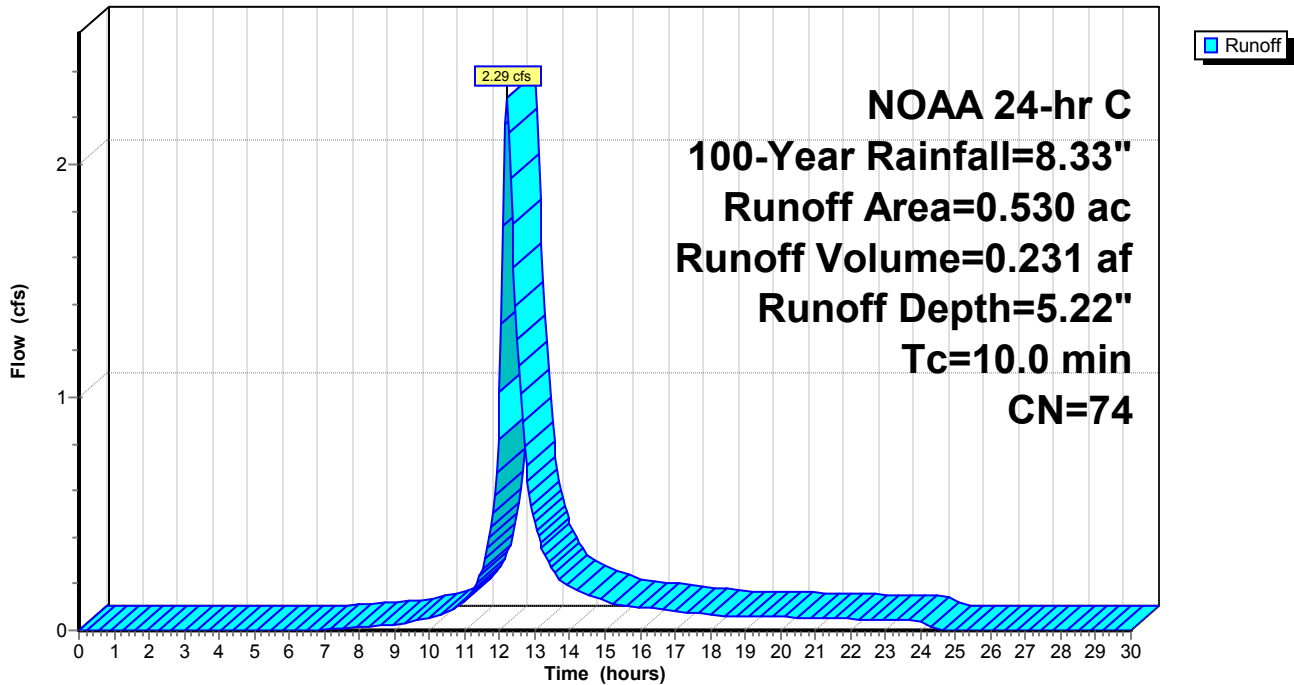
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.530 | 74 | >75% Grass cover, Good, HSG C |
| 0.530 | | 100.00% Pervious Area |

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

Subcatchment 2S: Pre-dev Pervious B

Hydrograph



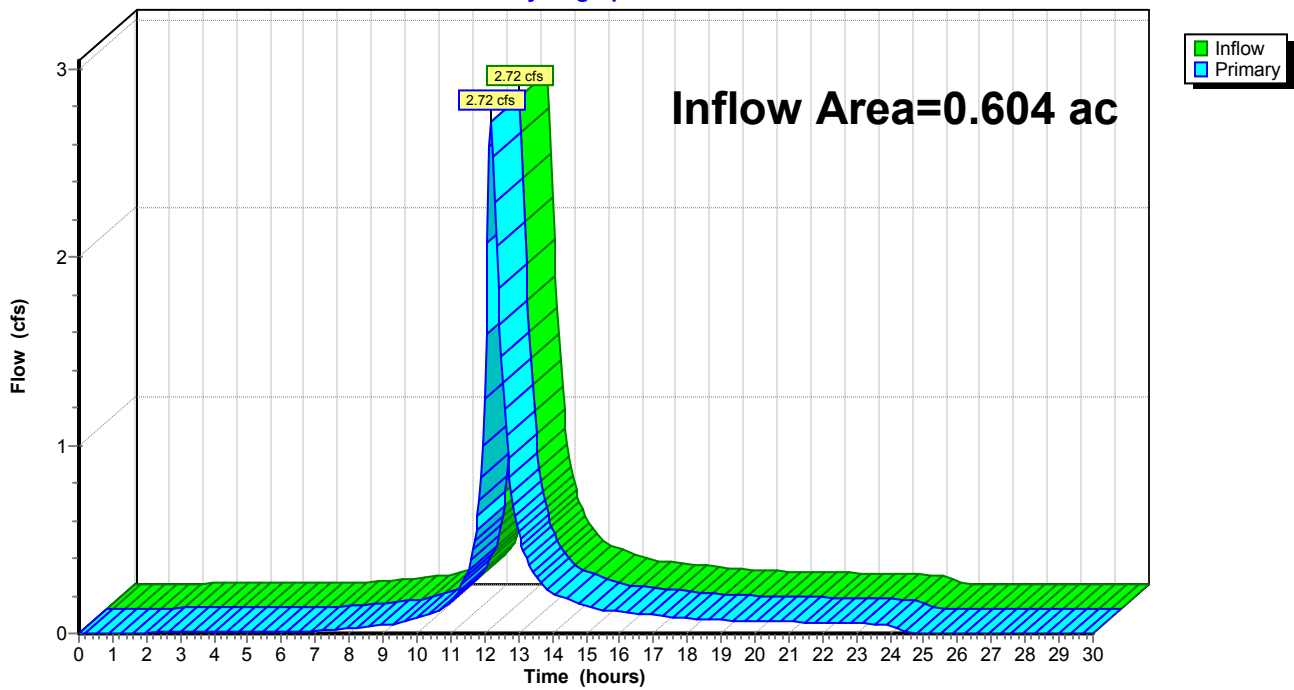
Summary for Pond 3P: Pre- Out B

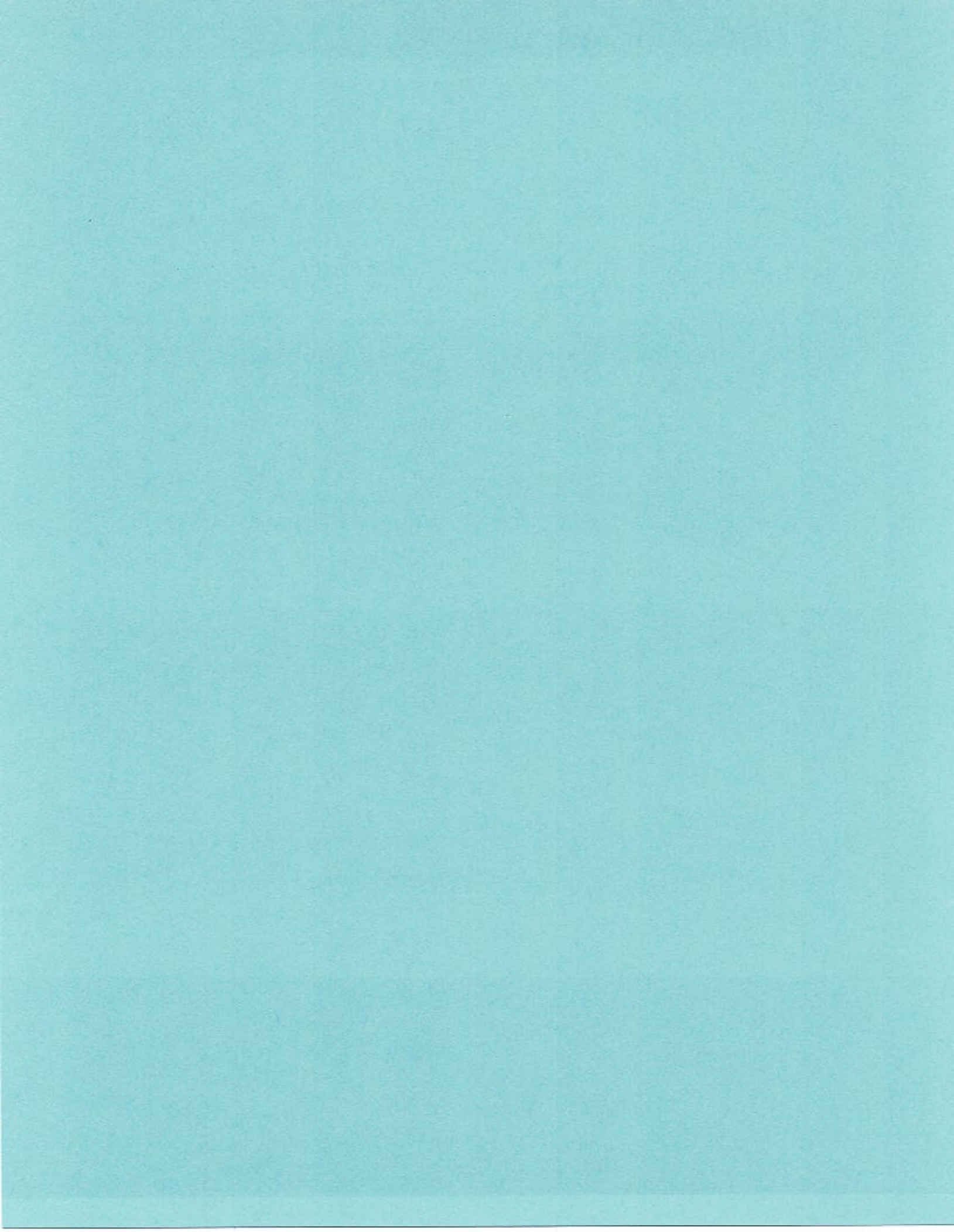
Inflow Area = 0.604 ac, 12.25% Impervious, Inflow Depth = 5.57" for 100-Year event
Inflow = 2.72 cfs @ 12.20 hrs, Volume= 0.281 af
Primary = 2.72 cfs @ 12.20 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Pre- Out B

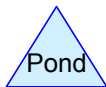
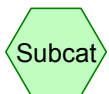
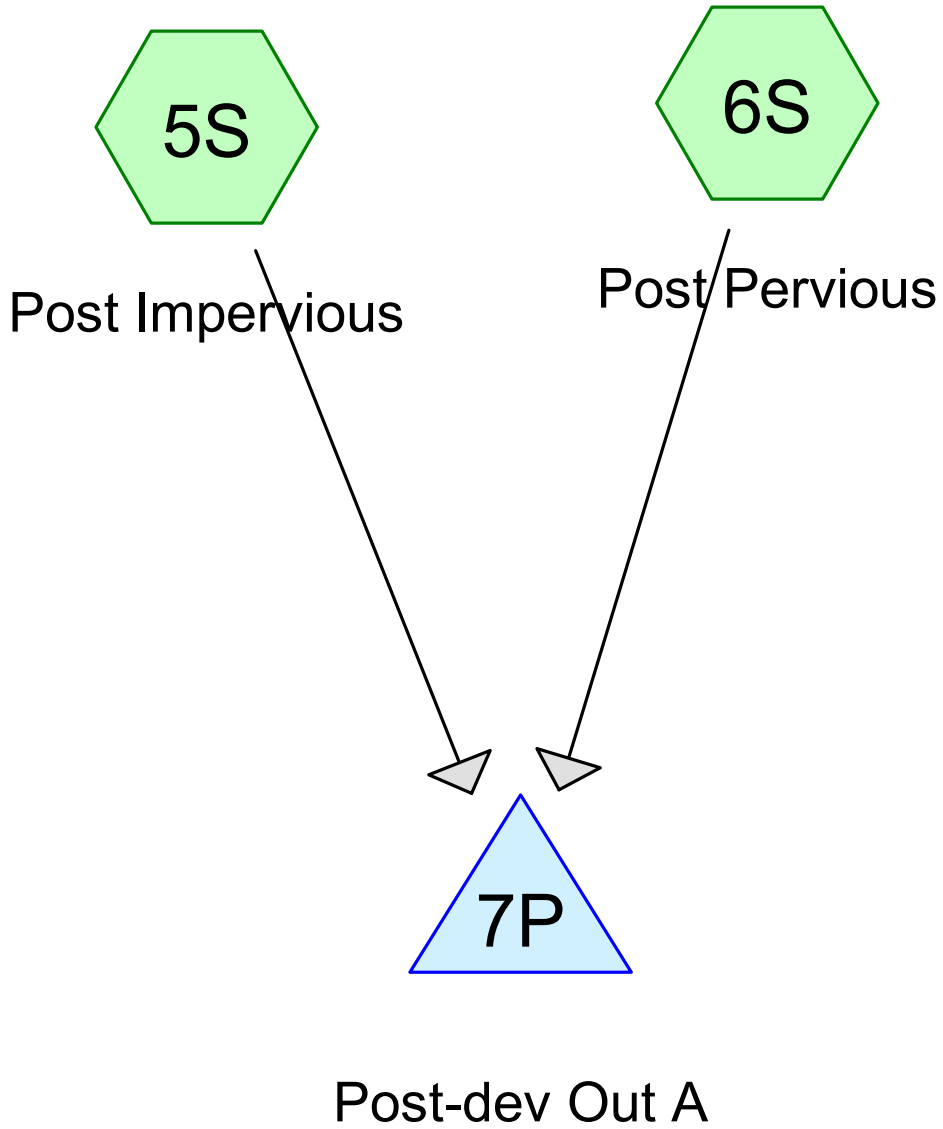
Hydrograph





III. POST-DEVELOPED CONDITIONS

Post-Developed Drainage Area "A"



19-107 Post-dev

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Page 2

Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|----|---------------------------------------|
| 1.175 | 74 | >75% Grass cover, Good, HSG C (6S) |
| 1.010 | 98 | Paved parking, HSG C (5S) |

19-107 Post-dev

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Page 3

Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 2.185 | HSG C | 5S, 6S |
| 0.000 | HSG D | |
| 0.000 | Other | |

19-107 Post-dev

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Page 4

Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-------------------------|
| 0.000 | 0.000 | 1.175 | 0.000 | 0.000 | 1.175 | >75% Grass cover, Good | 6S |
| 0.000 | 0.000 | 1.010 | 0.000 | 0.000 | 1.010 | Paved parking | 5S |

Summary for Subcatchment 5S: Post Impervious

Runoff = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af, Depth= 3.08"

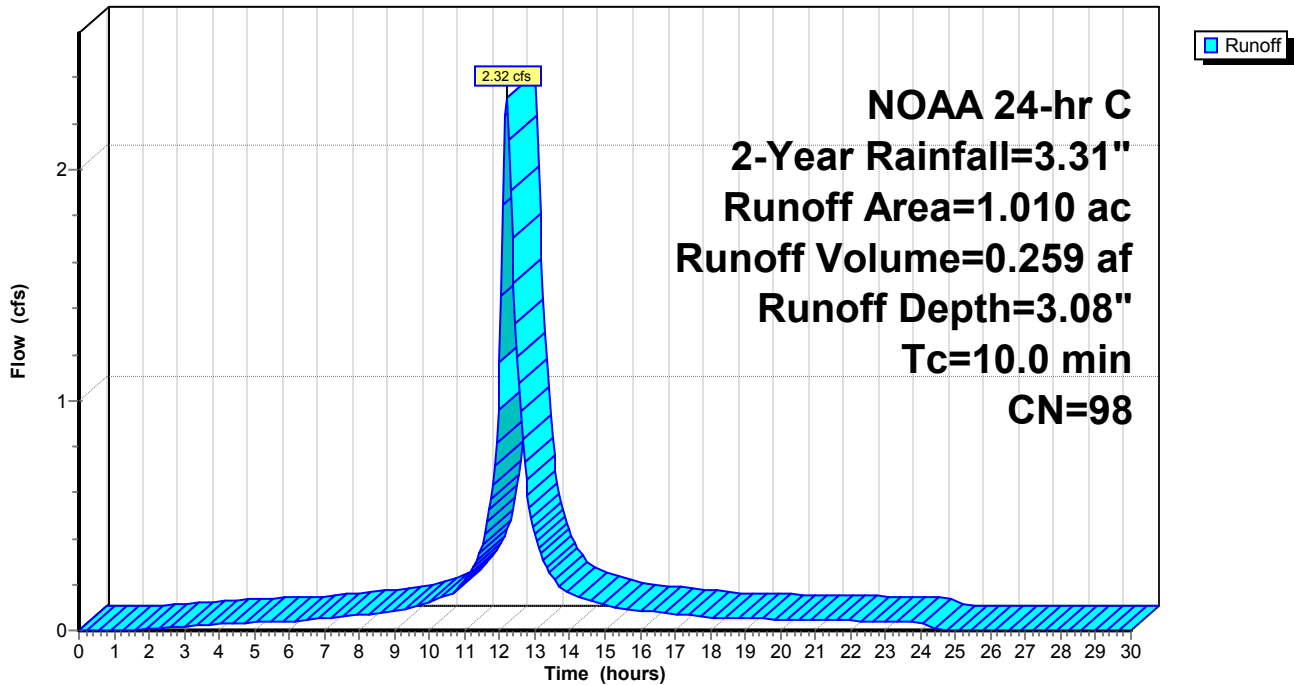
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|-------------------------|
| 1.010 | 98 | Paved parking, HSG C |
| 1.010 | | 100.00% Impervious Area |

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

Subcatchment 5S: Post Impervious

Hydrograph



Summary for Subcatchment 6S: Post Pervious

Runoff = 1.02 cfs @ 12.21 hrs, Volume= 0.109 af, Depth= 1.11"

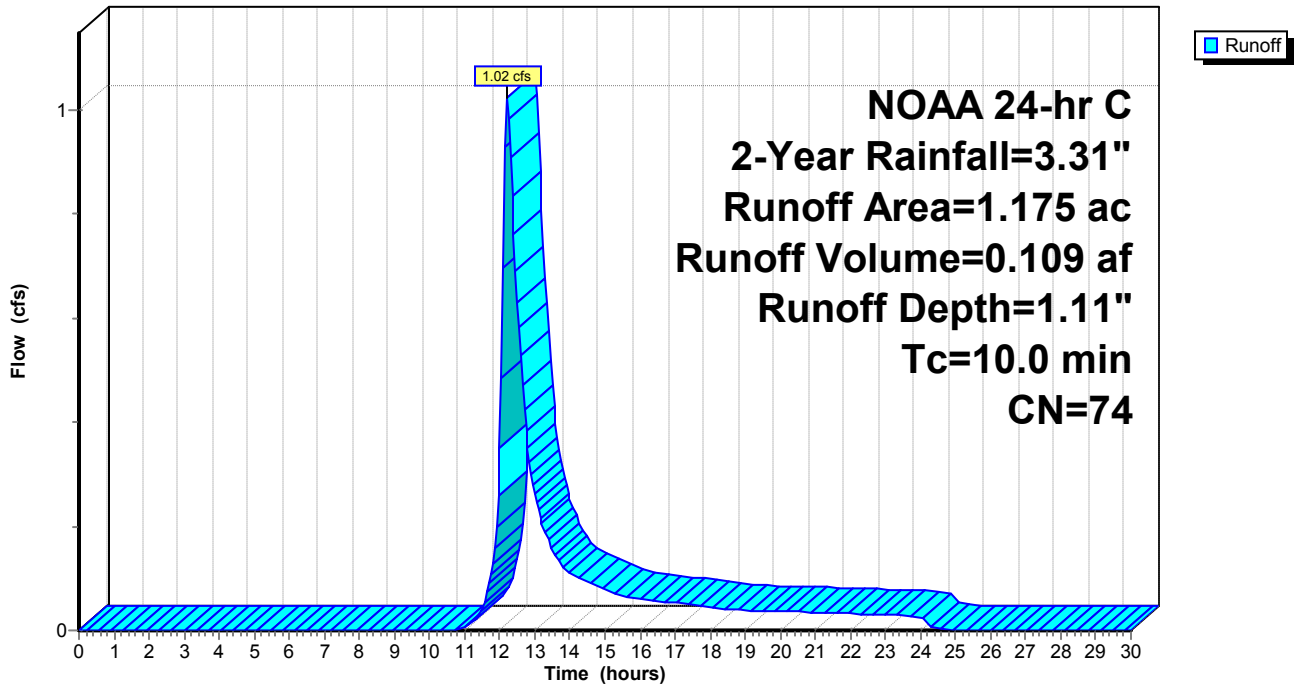
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 1.175 | 74 | >75% Grass cover, Good, HSG C |
| 1.175 | | 100.00% Pervious Area |

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

Subcatchment 6S: Post Pervious

Hydrograph



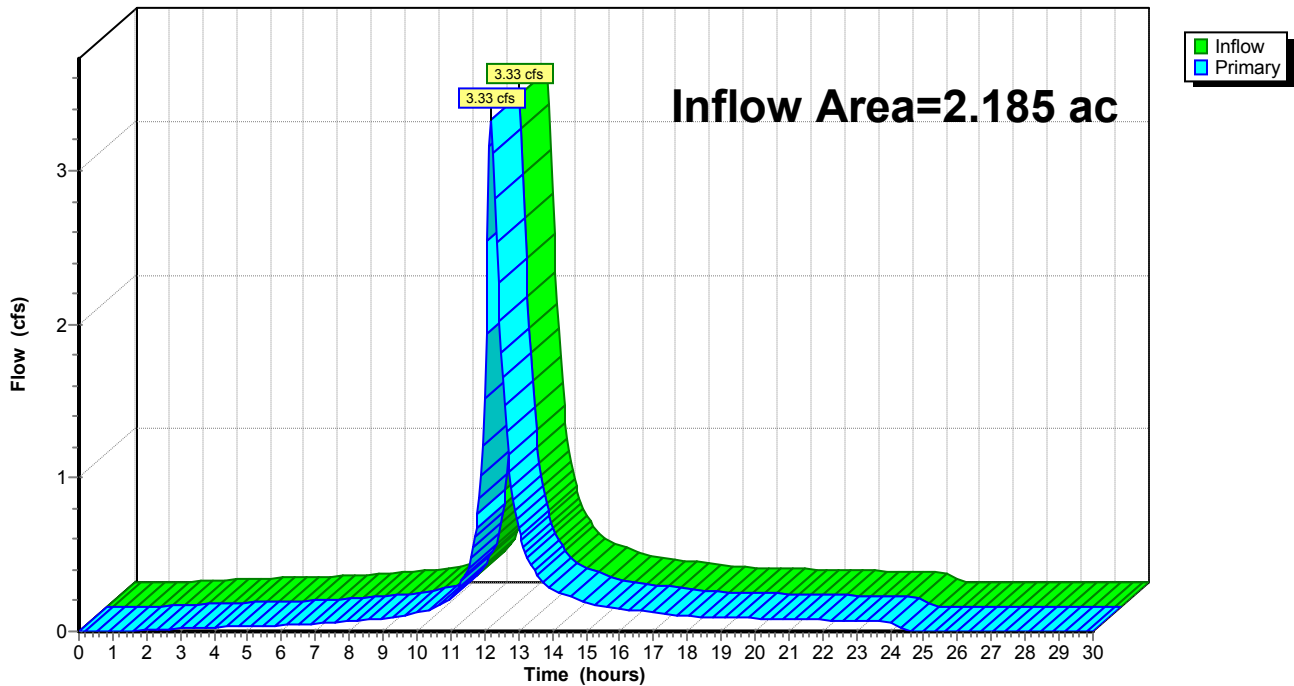
Summary for Pond 7P: Post-dev Out A

Inflow Area = 2.185 ac, 46.22% Impervious, Inflow Depth = 2.02" for 2-Year event
Inflow = 3.33 cfs @ 12.20 hrs, Volume= 0.368 af
Primary = 3.33 cfs @ 12.20 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 7P: Post-dev Out A

Hydrograph



Summary for Subcatchment 5S: Post Impervious

Runoff = 3.53 cfs @ 12.19 hrs, Volume= 0.402 af, Depth= 4.77"

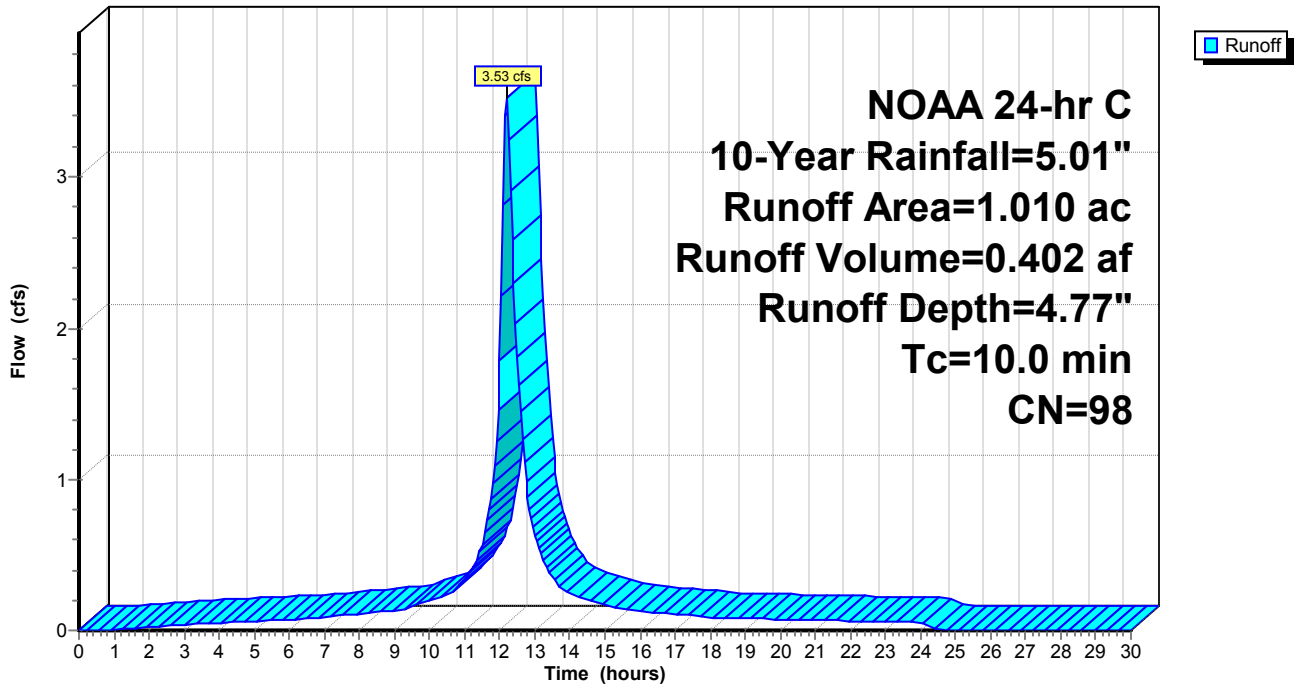
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|-------------------------|
| 1.010 | 98 | Paved parking, HSG C |
| 1.010 | | 100.00% Impervious Area |

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

Subcatchment 5S: Post Impervious

Hydrograph



Summary for Subcatchment 6S: Post Pervious

Runoff = 2.29 cfs @ 12.20 hrs, Volume= 0.232 af, Depth= 2.37"

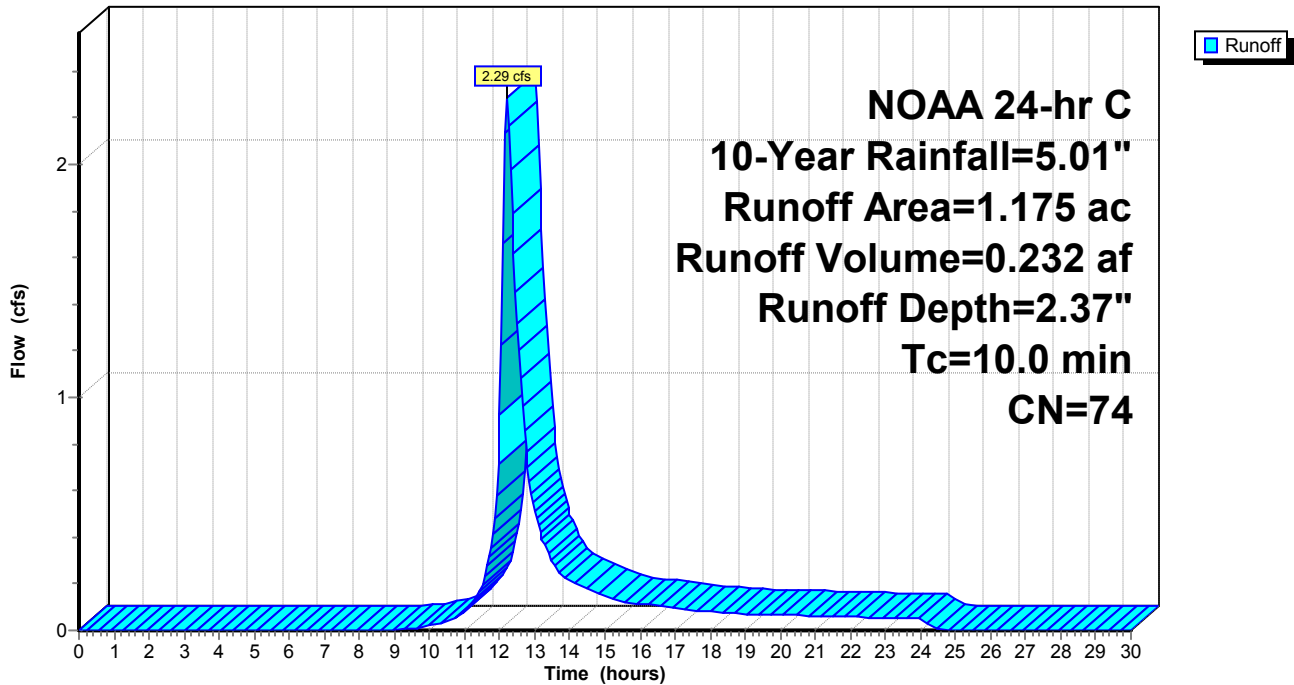
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 1.175 | 74 | >75% Grass cover, Good, HSG C |
| 1.175 | | 100.00% Pervious Area |

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

Subcatchment 6S: Post Pervious

Hydrograph



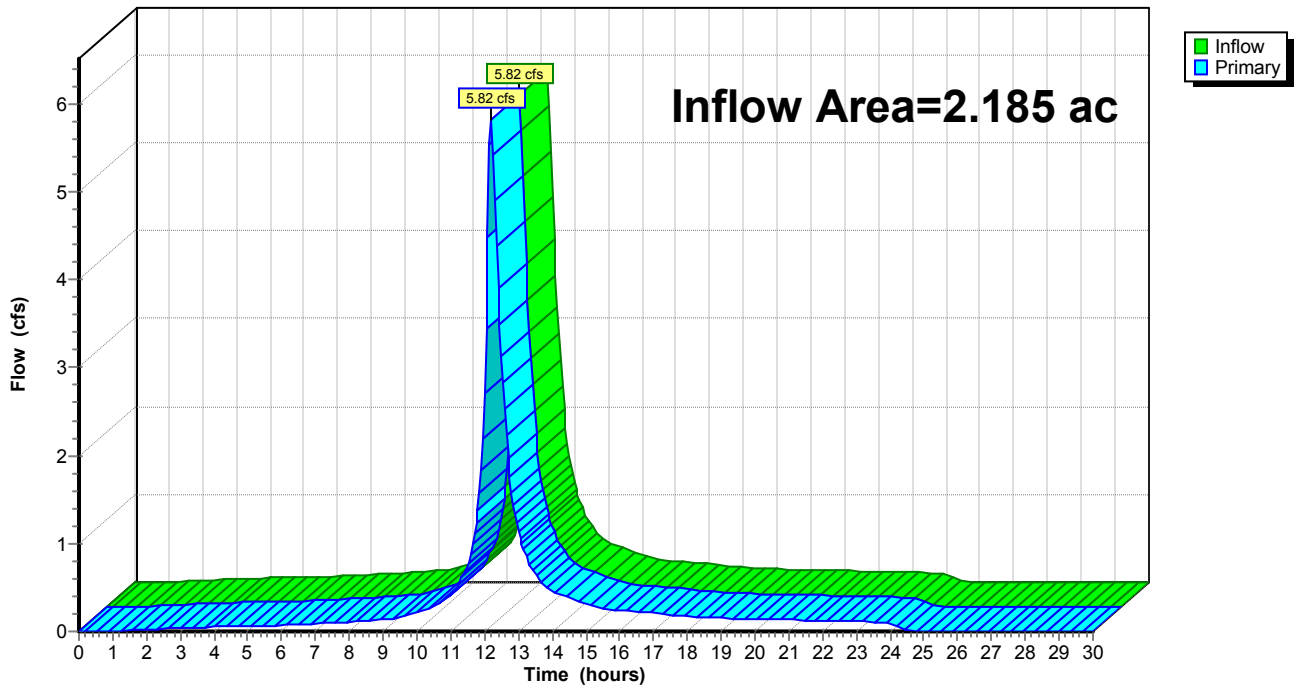
Summary for Pond 7P: Post-dev Out A

Inflow Area = 2.185 ac, 46.22% Impervious, Inflow Depth = 3.48" for 10-Year event
Inflow = 5.82 cfs @ 12.20 hrs, Volume= 0.634 af
Primary = 5.82 cfs @ 12.20 hrs, Volume= 0.634 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 7P: Post-dev Out A

Hydrograph



Summary for Subcatchment 5S: Post Impervious

Runoff = 5.90 cfs @ 12.19 hrs, Volume= 0.681 af, Depth= 8.09"

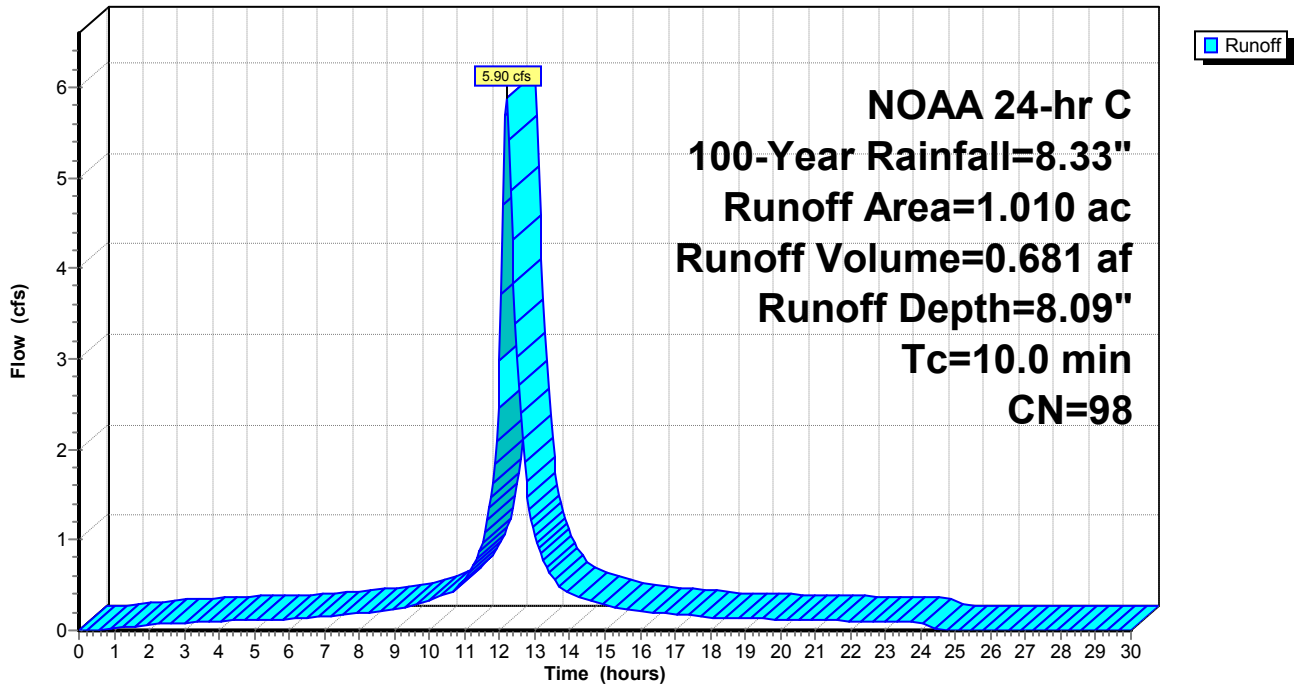
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|-------------------------|
| 1.010 | 98 | Paved parking, HSG C |
| 1.010 | | 100.00% Impervious Area |

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

Subcatchment 5S: Post Impervious

Hydrograph



Summary for Subcatchment 6S: Post Pervious

Runoff = 5.07 cfs @ 12.20 hrs, Volume= 0.511 af, Depth= 5.22"

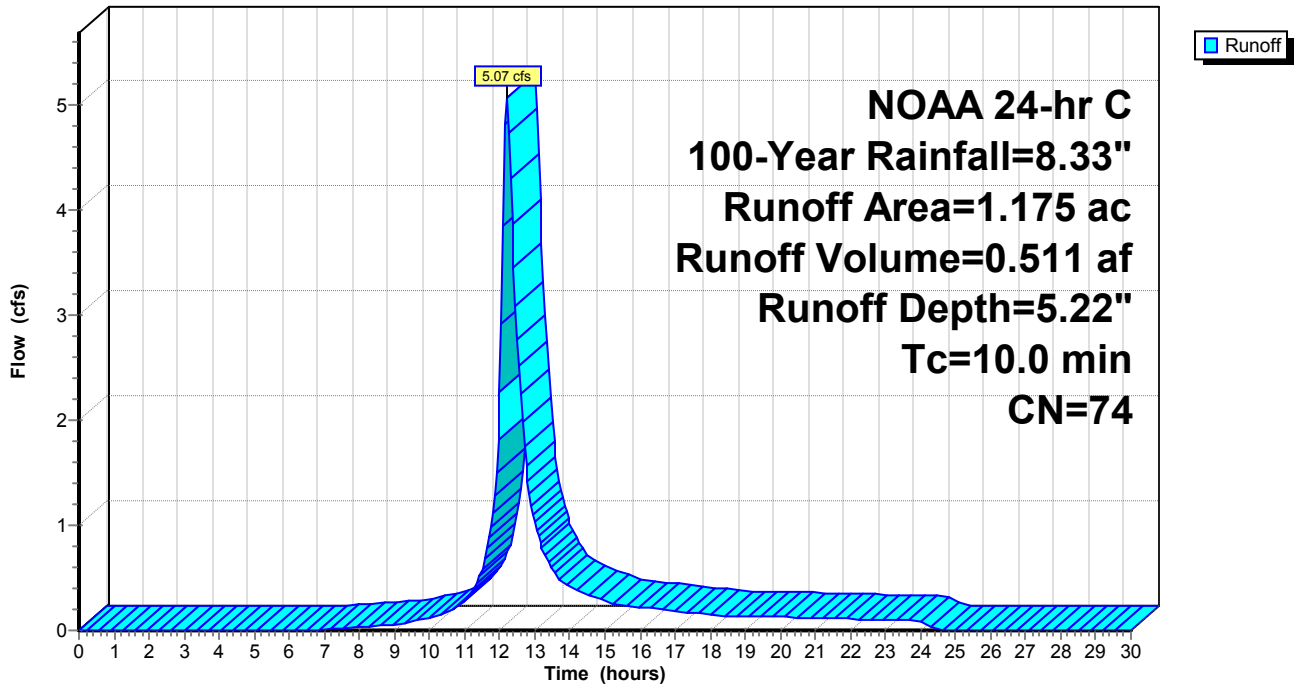
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 1.175 | 74 | >75% Grass cover, Good, HSG C |
| 1.175 | | 100.00% Pervious Area |

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

Subcatchment 6S: Post Pervious

Hydrograph



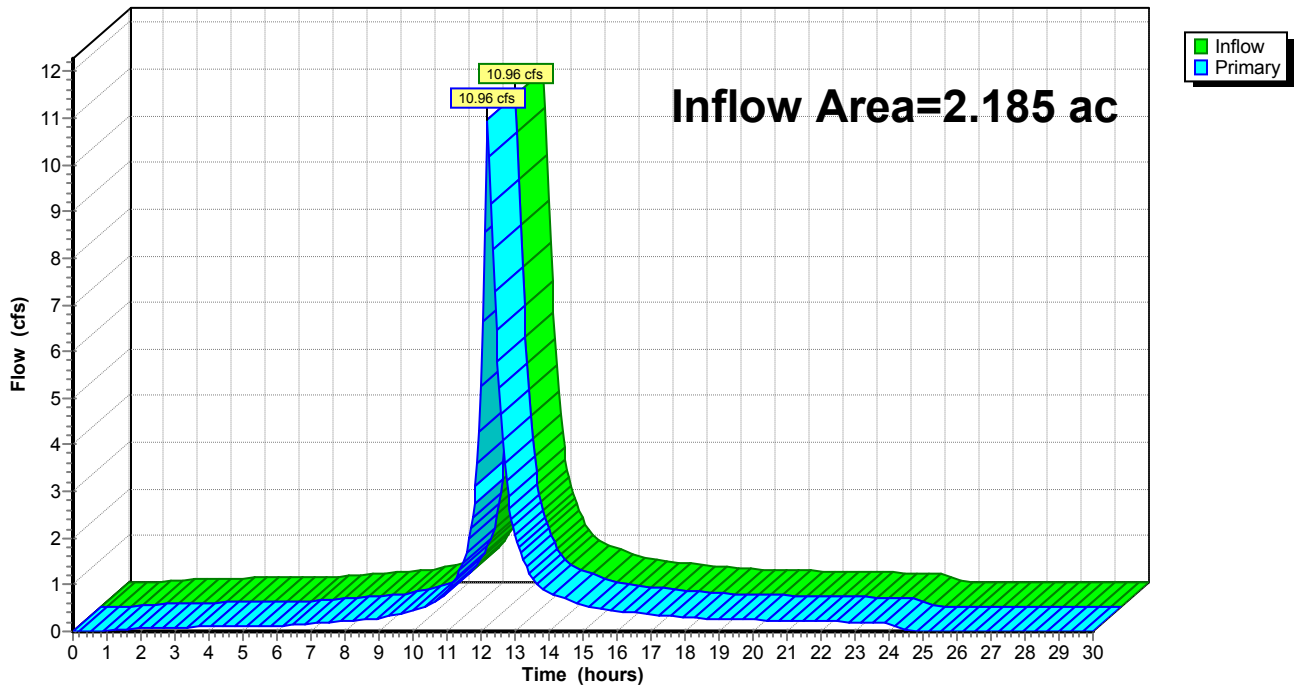
Summary for Pond 7P: Post-dev Out A

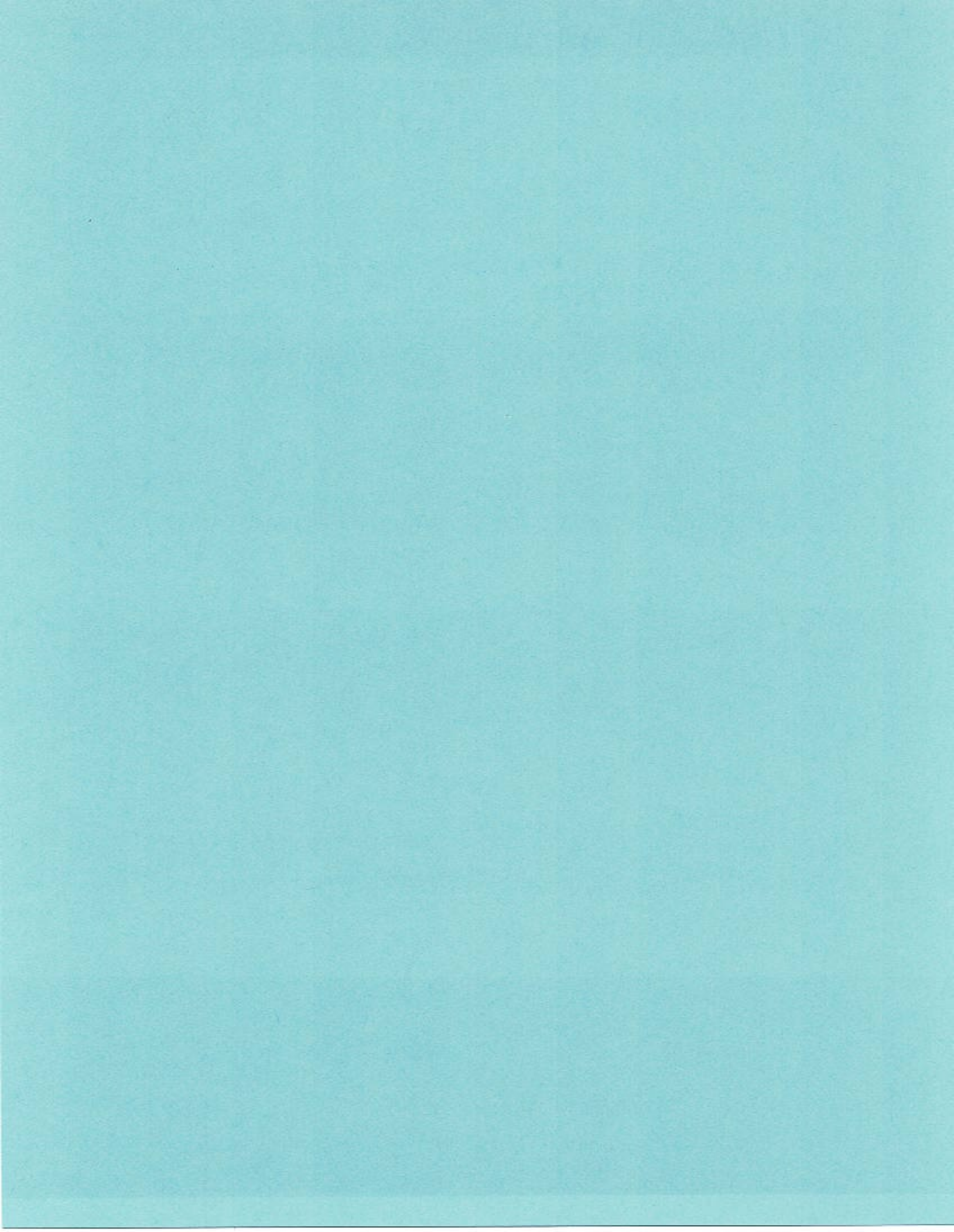
Inflow Area = 2.185 ac, 46.22% Impervious, Inflow Depth = 6.55" for 100-Year event
Inflow = 10.96 cfs @ 12.19 hrs, Volume= 1.192 af
Primary = 10.96 cfs @ 12.19 hrs, Volume= 1.192 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

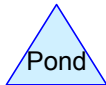
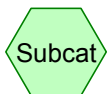
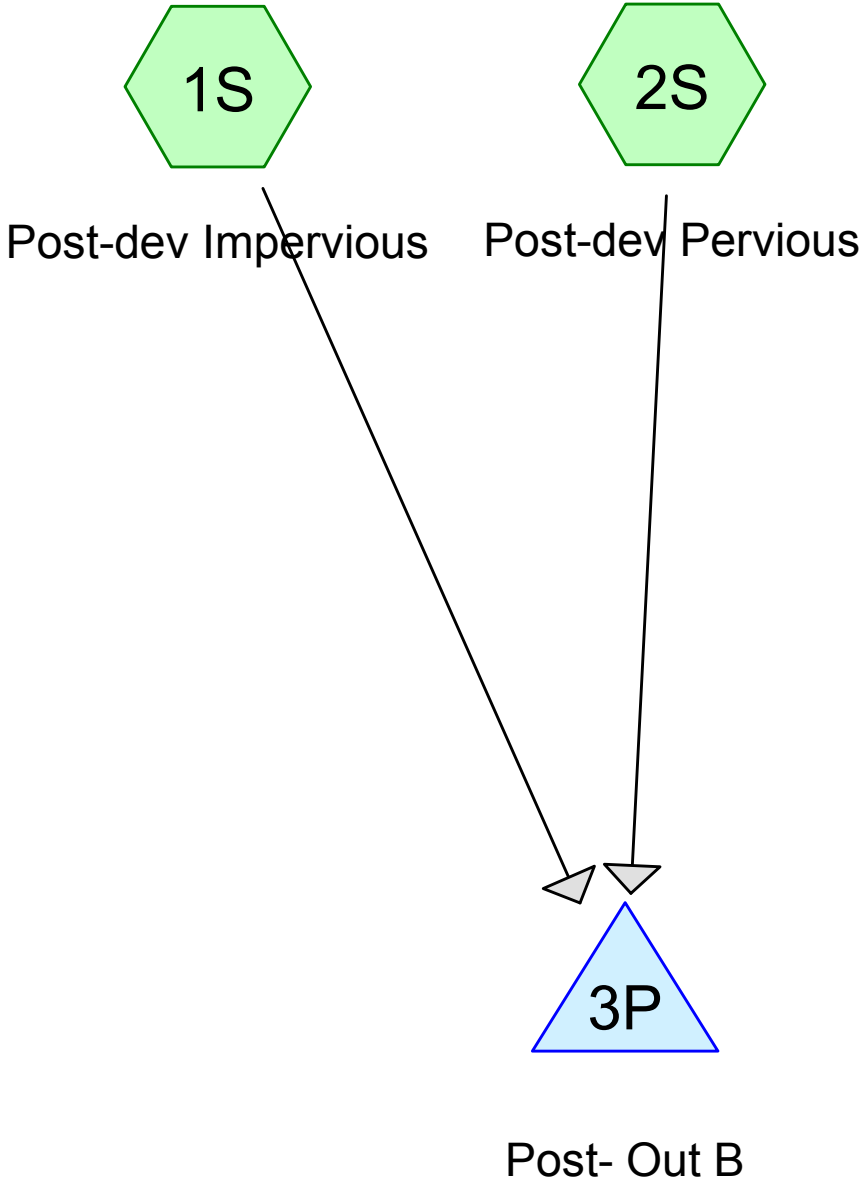
Pond 7P: Post-dev Out A

Hydrograph





Post-Developed
Drainage Area "B"



19-107 Post-dev B

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Page 2

Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|----|---------------------------------------|
| 0.289 | 74 | >75% Grass cover, Good, HSG C (2S) |
| 0.260 | 98 | Unconnected roofs, HSG C (1S) |

19-107 Post-dev B

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Page 3

Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.549 | HSG C | 1S, 2S |
| 0.000 | HSG D | |
| 0.000 | Other | |

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Page 4

Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-------------------------|
| 0.000 | 0.000 | 0.289 | 0.000 | 0.000 | 0.289 | >75% Grass cover, Good | 2S |
| 0.000 | 0.000 | 0.260 | 0.000 | 0.000 | 0.260 | Unconnected roofs | 1S |

Summary for Subcatchment 1S: Post-dev Impervious

Runoff = 0.60 cfs @ 12.19 hrs, Volume= 0.067 af, Depth= 3.08"

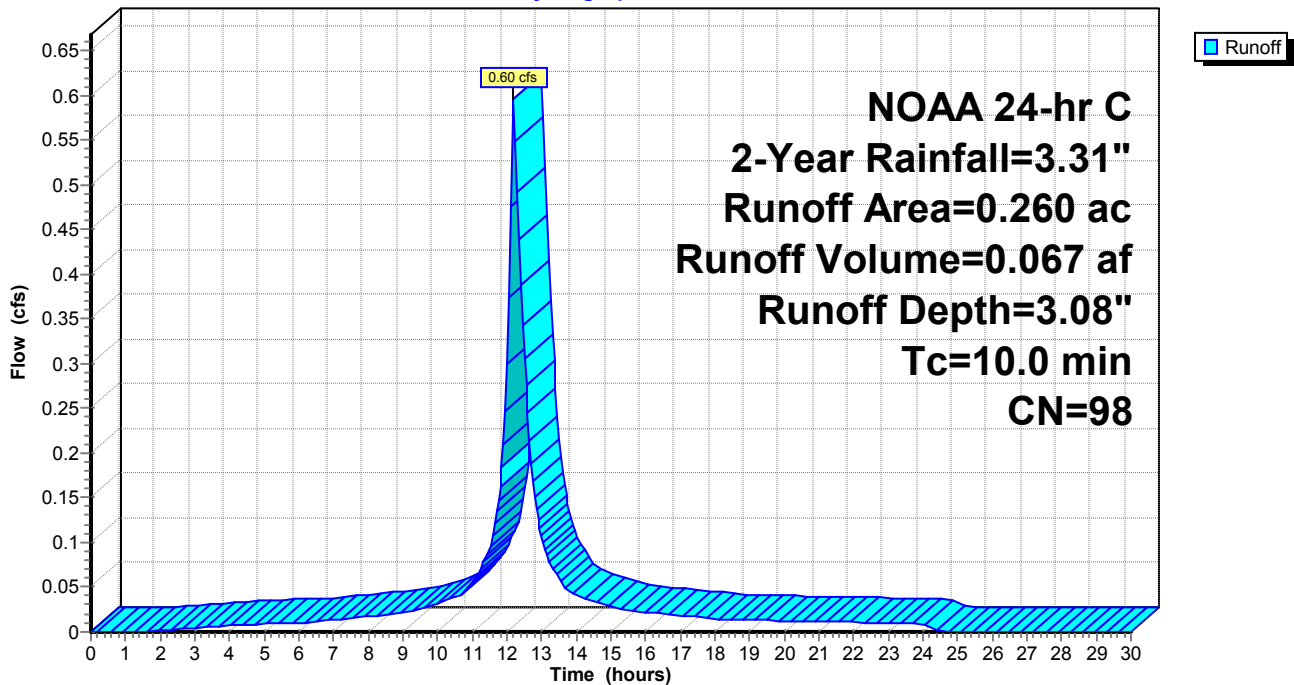
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.260 | 98 | Unconnected roofs, HSG C |
| 0.260 | | 100.00% Impervious Area |
| 0.260 | | 100.00% Unconnected |

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

Subcatchment 1S: Post-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Post-dev Pervious

Runoff = 0.25 cfs @ 12.21 hrs, Volume= 0.027 af, Depth= 1.11"

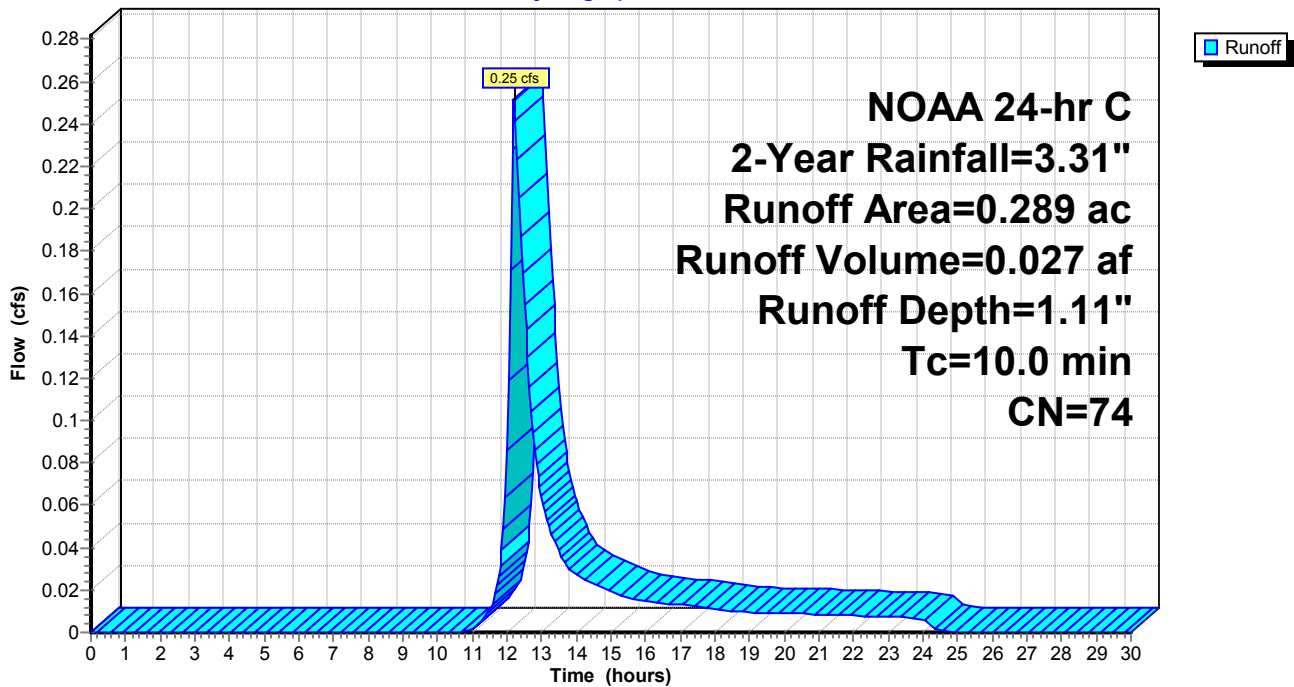
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.289 | 74 | >75% Grass cover, Good, HSG C |
| 0.289 | | 100.00% Pervious Area |

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

Subcatchment 2S: Post-dev Pervious

Hydrograph



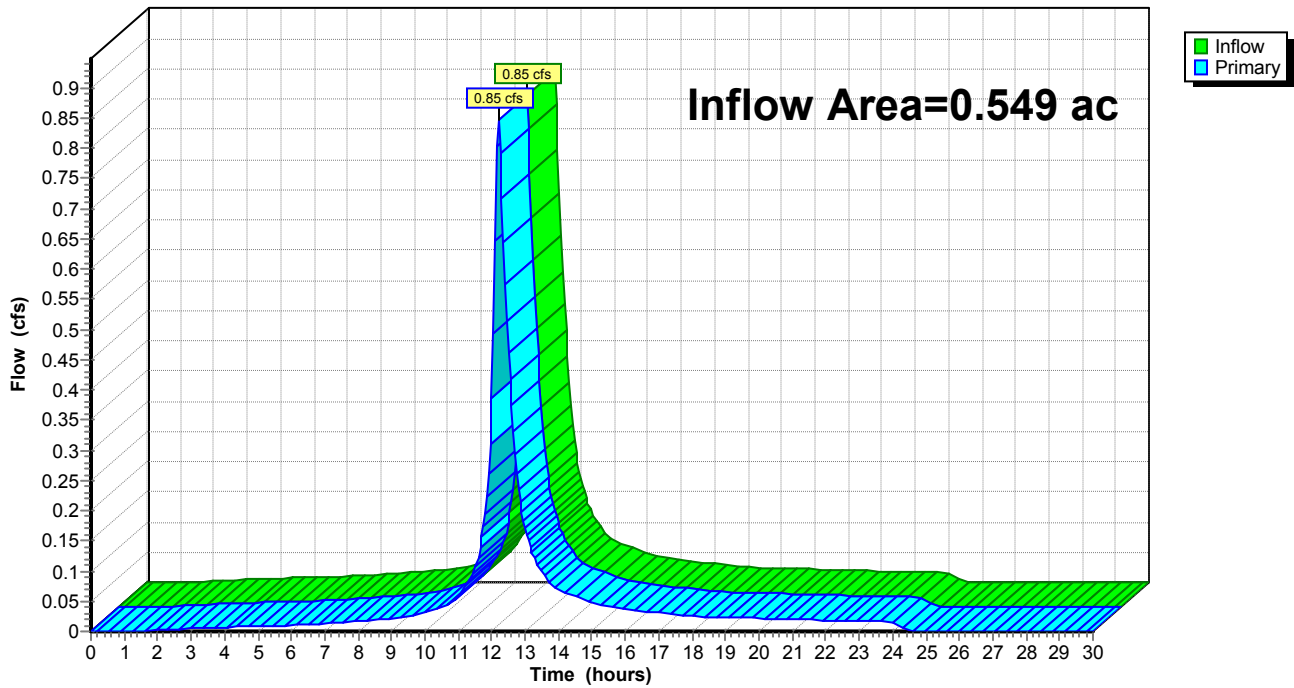
Summary for Pond 3P: Post- Out B

Inflow Area = 0.549 ac, 47.36% Impervious, Inflow Depth = 2.04" for 2-Year event
Inflow = 0.85 cfs @ 12.20 hrs, Volume= 0.093 af
Primary = 0.85 cfs @ 12.20 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Post- Out B

Hydrograph



Summary for Subcatchment 1S: Post-dev Impervious

Runoff = 0.91 cfs @ 12.19 hrs, Volume= 0.103 af, Depth= 4.77"

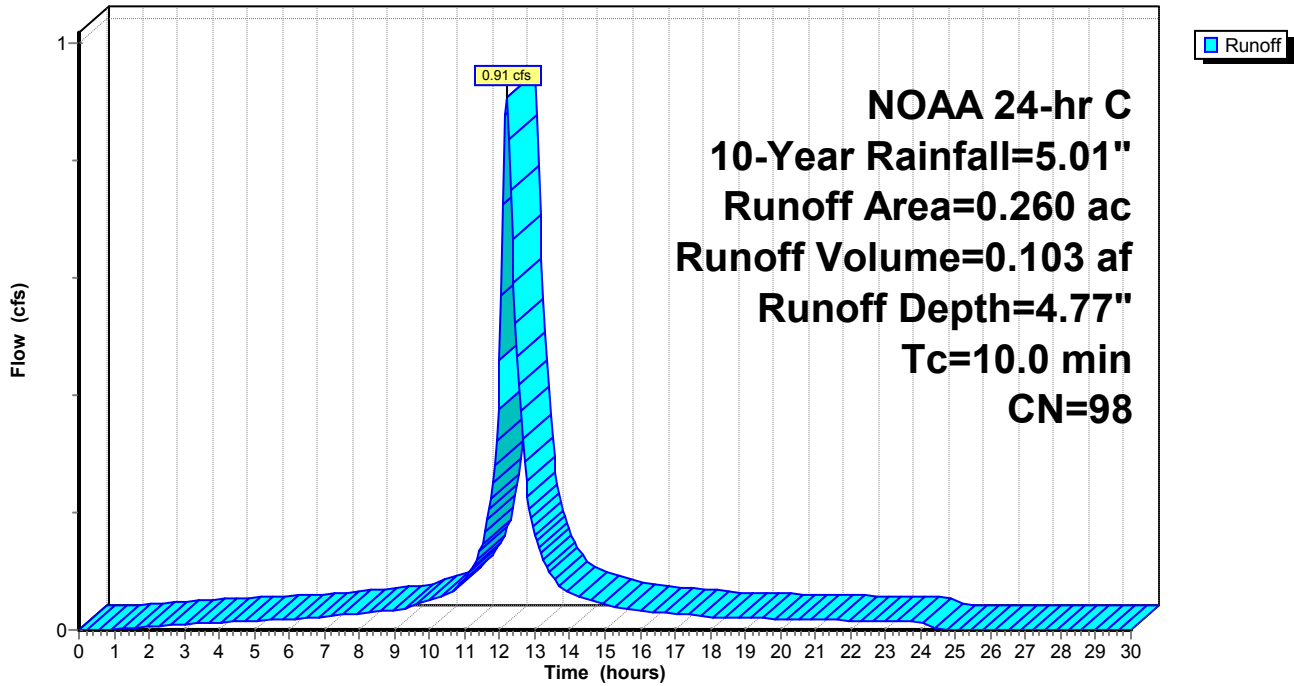
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.260 | 98 | Unconnected roofs, HSG C |
| 0.260 | | 100.00% Impervious Area |
| 0.260 | | 100.00% Unconnected |

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

Subcatchment 1S: Post-dev Impervious

Hydrograph



19-107 Post-dev B

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NOAA 24-hr C 10-Year Rainfall=5.01"

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Page 9

Summary for Subcatchment 2S: Post-dev Pervious

Runoff = 0.56 cfs @ 12.20 hrs, Volume= 0.057 af, Depth= 2.37"

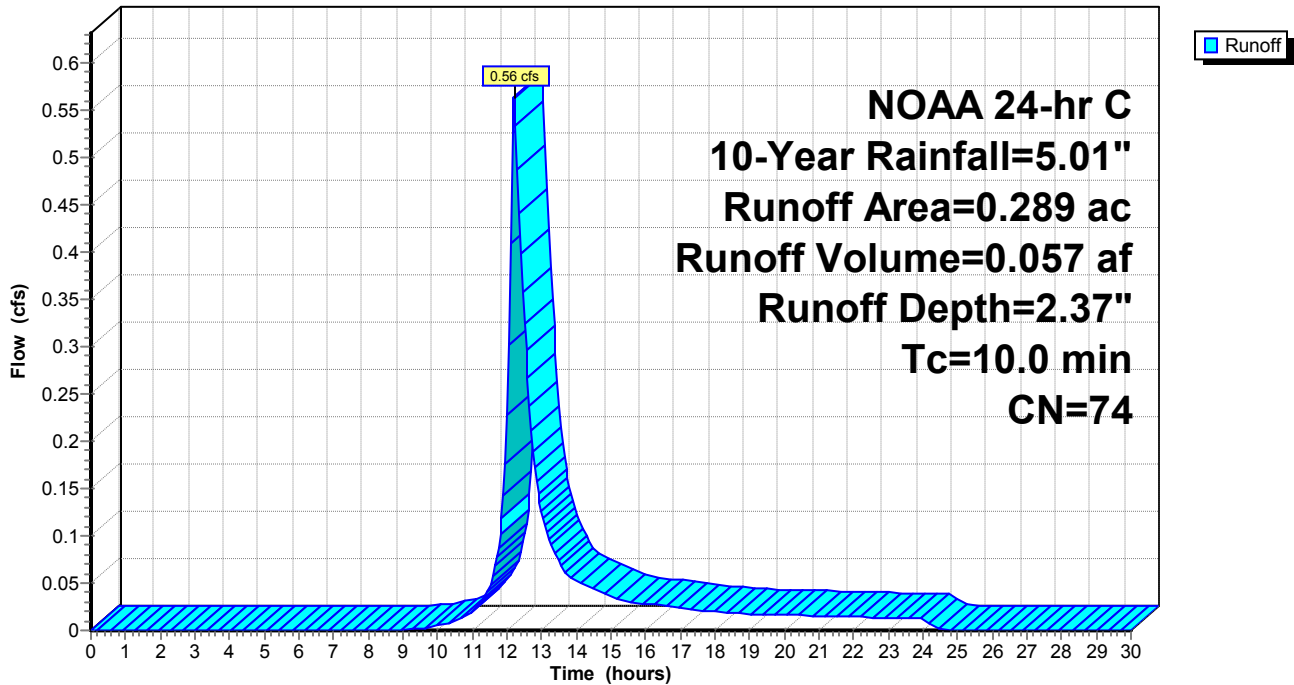
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.289 | 74 | >75% Grass cover, Good, HSG C |
| 0.289 | | 100.00% Pervious Area |

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

Subcatchment 2S: Post-dev Pervious

Hydrograph



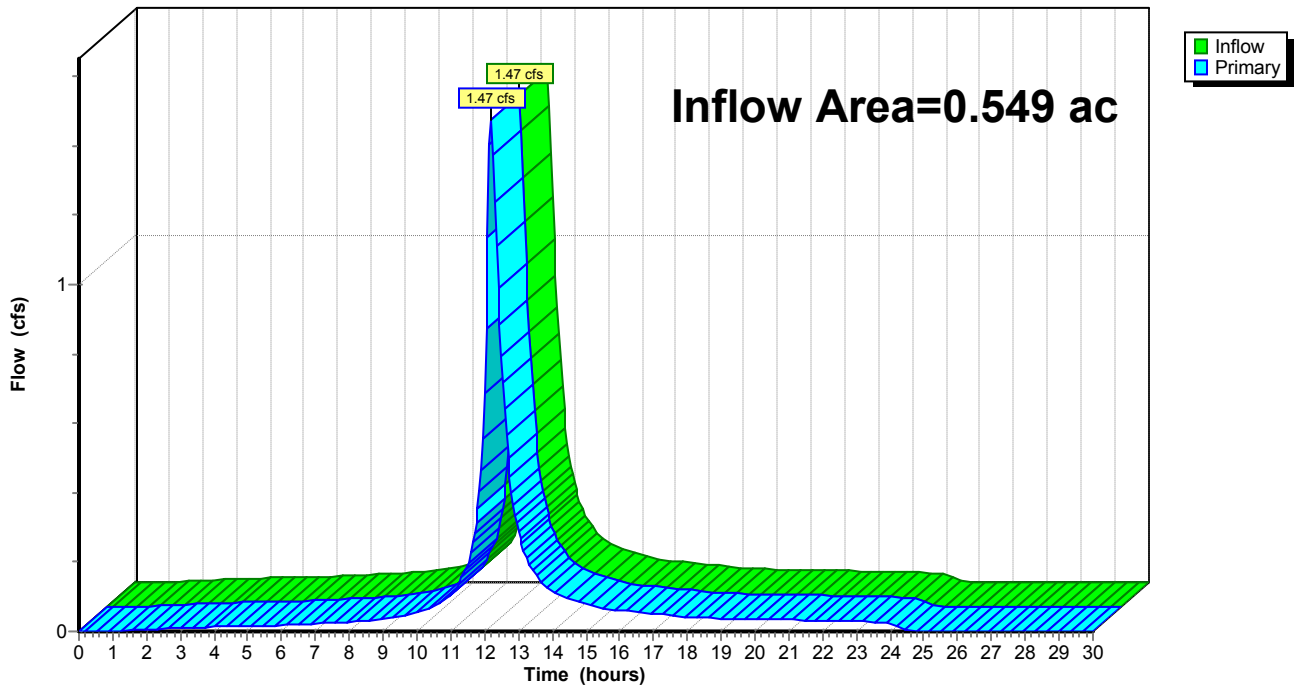
Summary for Pond 3P: Post- Out B

Inflow Area = 0.549 ac, 47.36% Impervious, Inflow Depth = 3.51" for 10-Year event
Inflow = 1.47 cfs @ 12.19 hrs, Volume= 0.161 af
Primary = 1.47 cfs @ 12.19 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Post- Out B

Hydrograph



Summary for Subcatchment 1S: Post-dev Impervious

Runoff = 1.52 cfs @ 12.19 hrs, Volume= 0.175 af, Depth= 8.09"

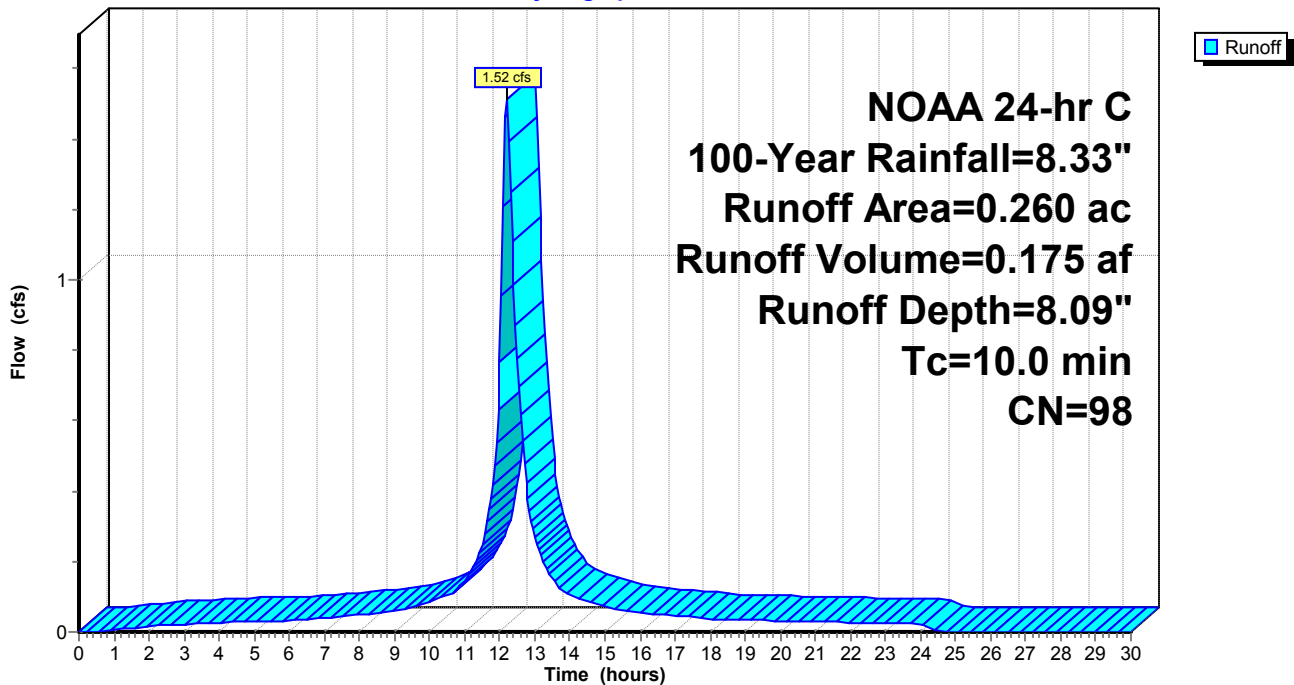
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.260 | 98 | Unconnected roofs, HSG C |
| 0.260 | | 100.00% Impervious Area |
| 0.260 | | 100.00% Unconnected |

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

Subcatchment 1S: Post-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Post-dev Pervious

Runoff = 1.25 cfs @ 12.20 hrs, Volume= 0.126 af, Depth= 5.22"

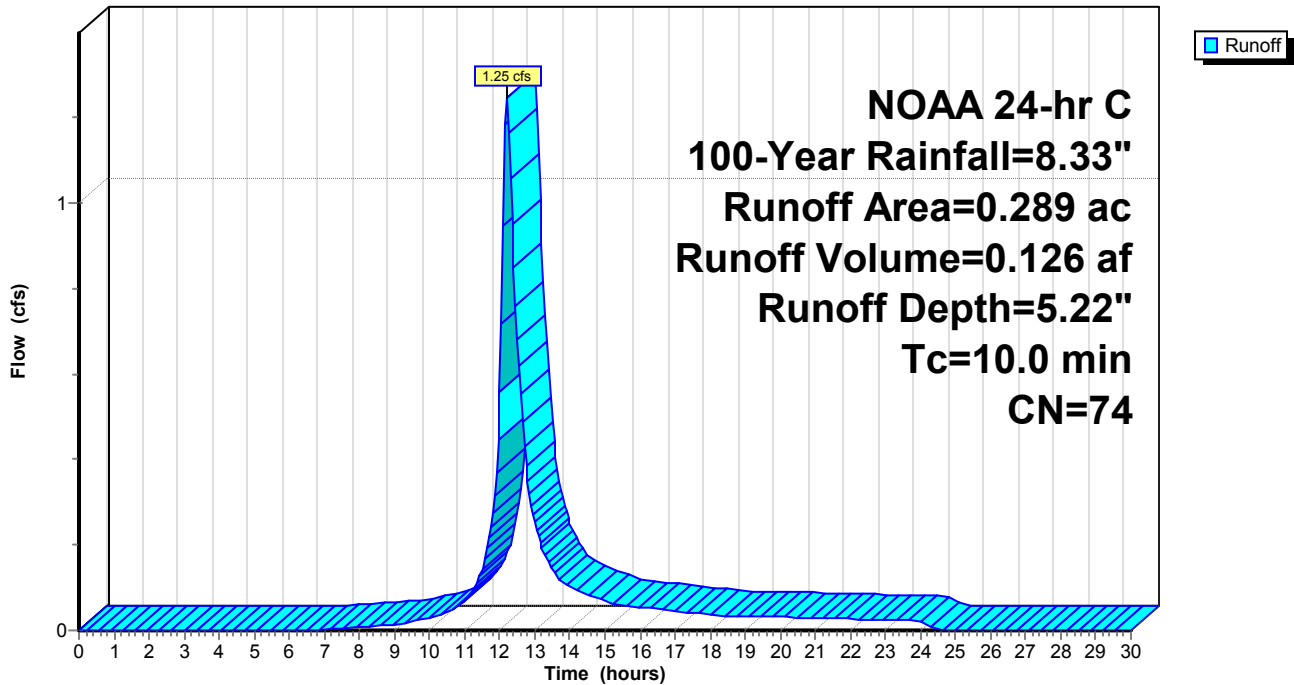
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.289 | 74 | >75% Grass cover, Good, HSG C |
| 0.289 | | 100.00% Pervious Area |

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

Subcatchment 2S: Post-dev Pervious

Hydrograph



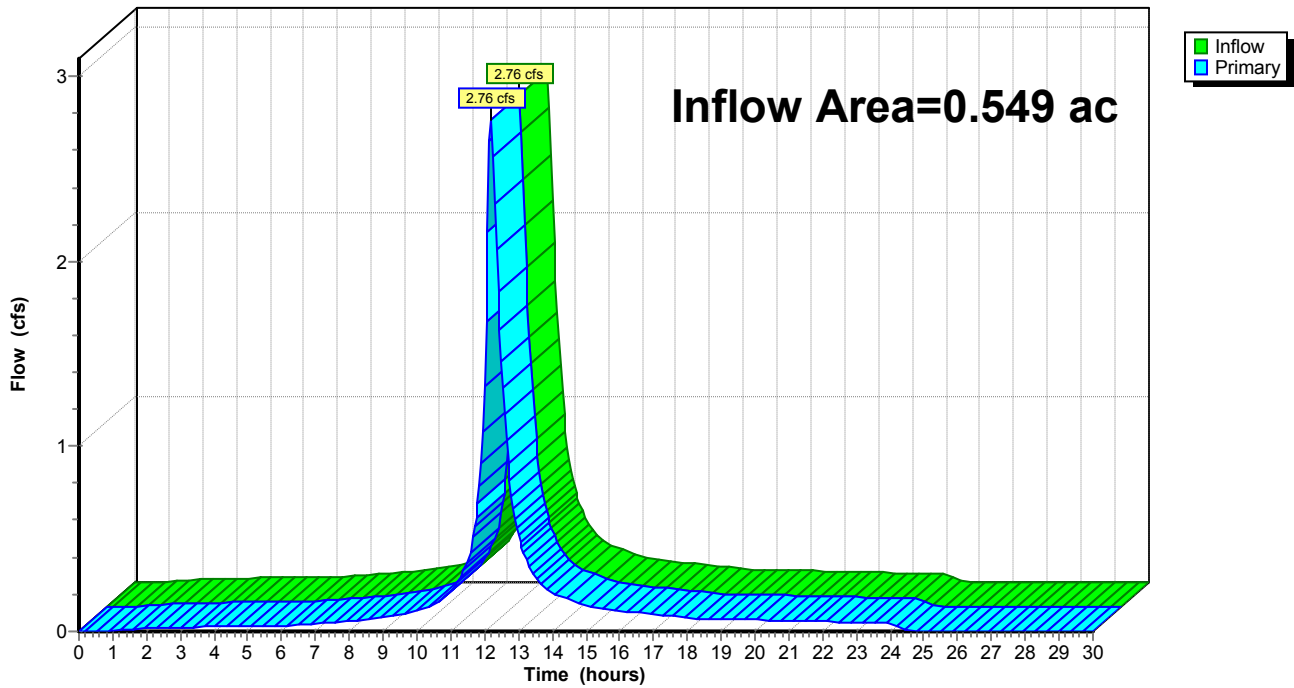
Summary for Pond 3P: Post- Out B

Inflow Area = 0.549 ac, 47.36% Impervious, Inflow Depth = 6.58" for 100-Year event
Inflow = 2.76 cfs @ 12.19 hrs, Volume= 0.301 af
Primary = 2.76 cfs @ 12.19 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Pond 3P: Post- Out B

Hydrograph



Summary for Subcatchment 1S: Post-dev Impervious

Runoff = 0.48 cfs @ 1.17 hrs, Volume= 0.022 af, Depth= 1.03"

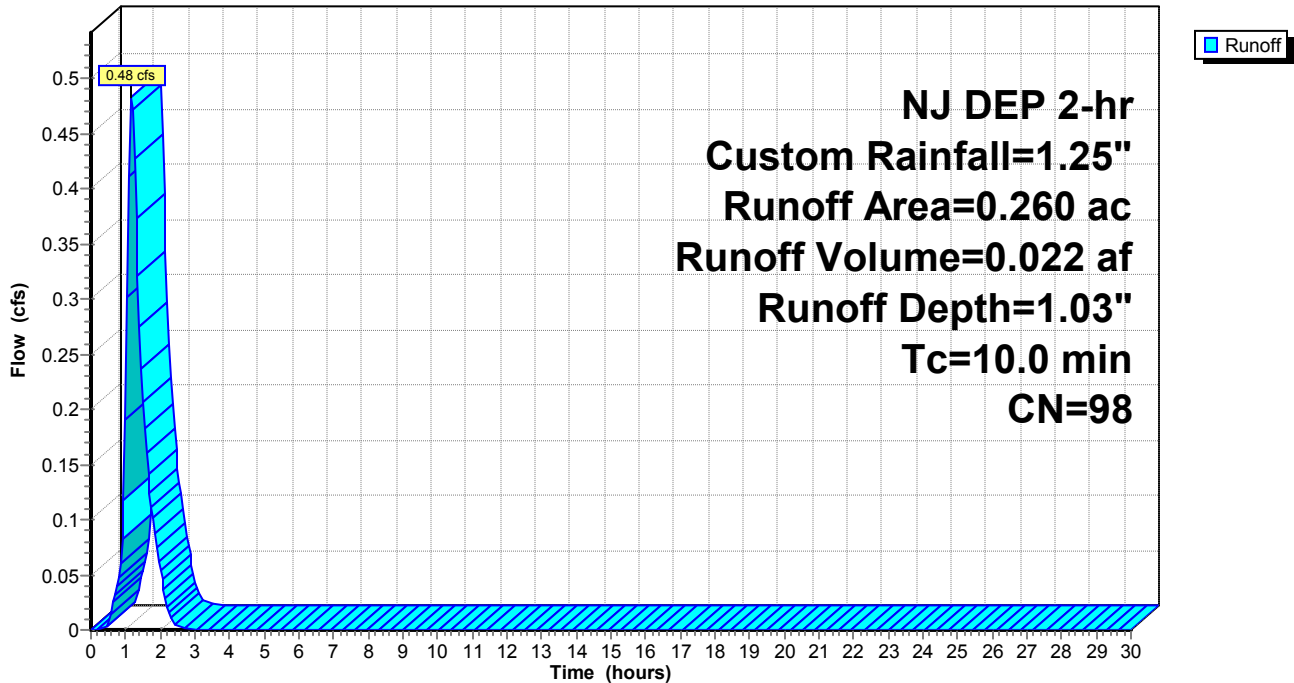
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NJ DEP 2-hr Custom Rainfall=1.25"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.260 | 98 | Unconnected roofs, HSG C |
| 0.260 | | 100.00% Impervious Area |
| 0.260 | | 100.00% Unconnected |

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

Subcatchment 1S: Post-dev Impervious

Hydrograph



Summary for Subcatchment 2S: Post-dev Pervious

Runoff = 0.03 cfs @ 1.34 hrs, Volume= 0.002 af, Depth= 0.07"

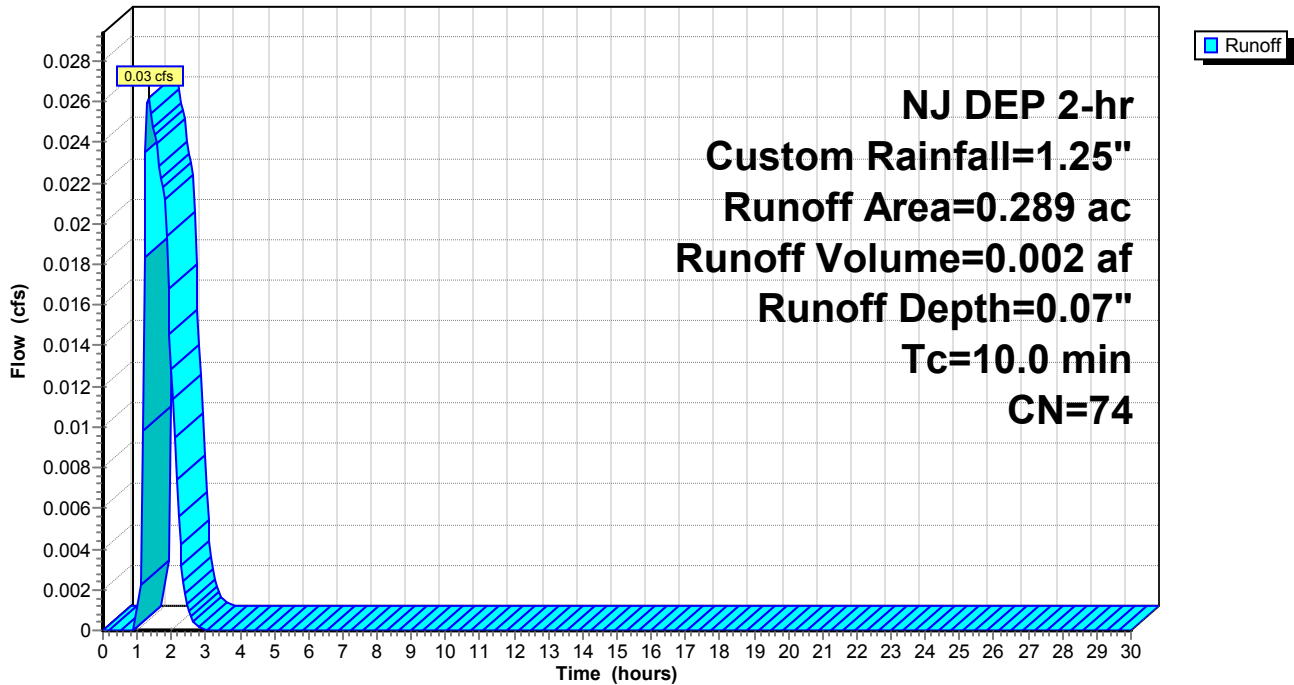
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 NJ DEP 2-hr Custom Rainfall=1.25"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.289 | 74 | >75% Grass cover, Good, HSG C |
| 0.289 | | 100.00% Pervious Area |

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

Subcatchment 2S: Post-dev Pervious

Hydrograph



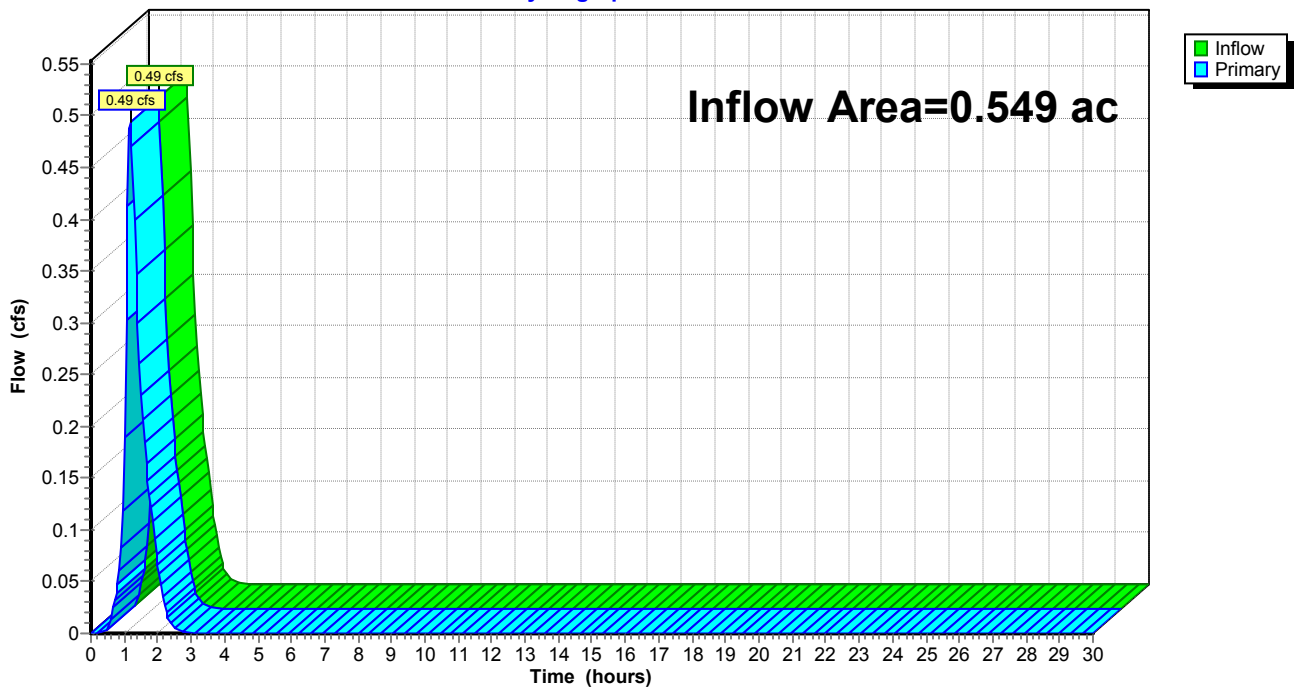
Summary for Pond 3P: Post- Out B

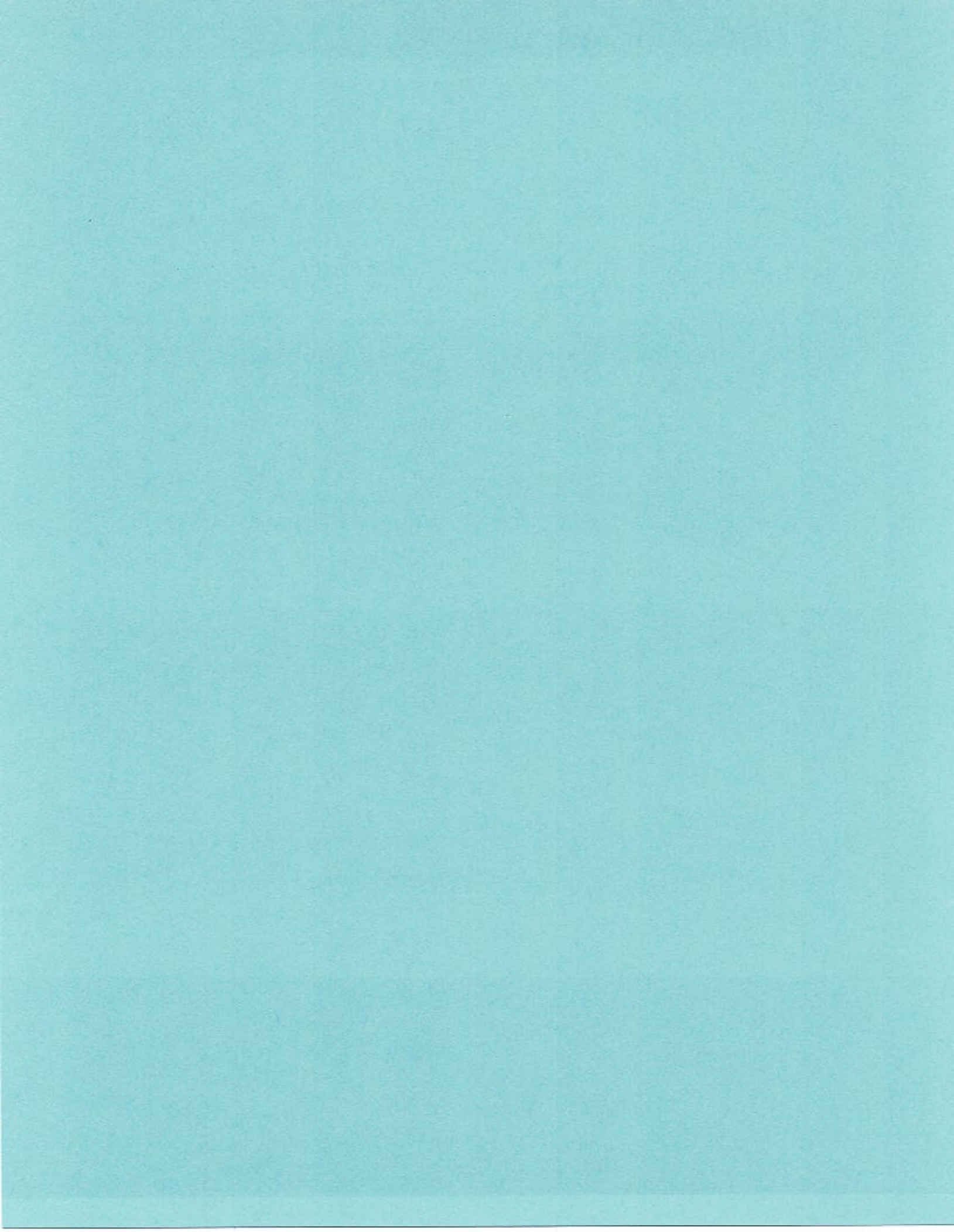
Inflow Area = 0.549 ac, 47.36% Impervious, Inflow Depth = 0.53" for Custom event
Inflow = 0.49 cfs @ 1.18 hrs, Volume= 0.024 af
Primary = 0.49 cfs @ 1.18 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

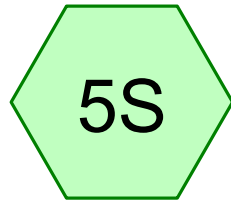
Pond 3P: Post- Out B

Hydrograph

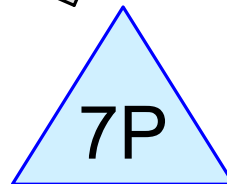
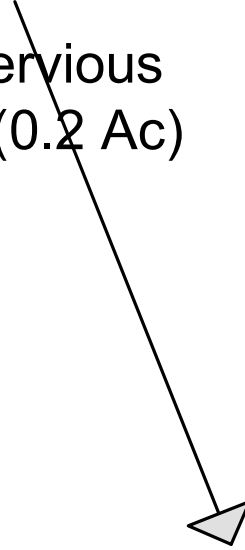




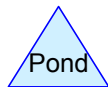
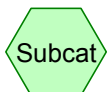
Post-Developed Water Quality



Post Impervious Increase (0.2 Ac)



Post-dev Out A



19-107 Post-dev WQ only

Prepared by TSE

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Page 2

Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|----|---------------------------------------|
| 0.200 | 98 | Paved parking, HSG C (5S) |

Summary for Subcatchment 5S: Post Impervious Increase (0.2 Ac)

Runoff = 0.37 cfs @ 1.17 hrs, Volume= 0.017 af, Depth= 1.03"

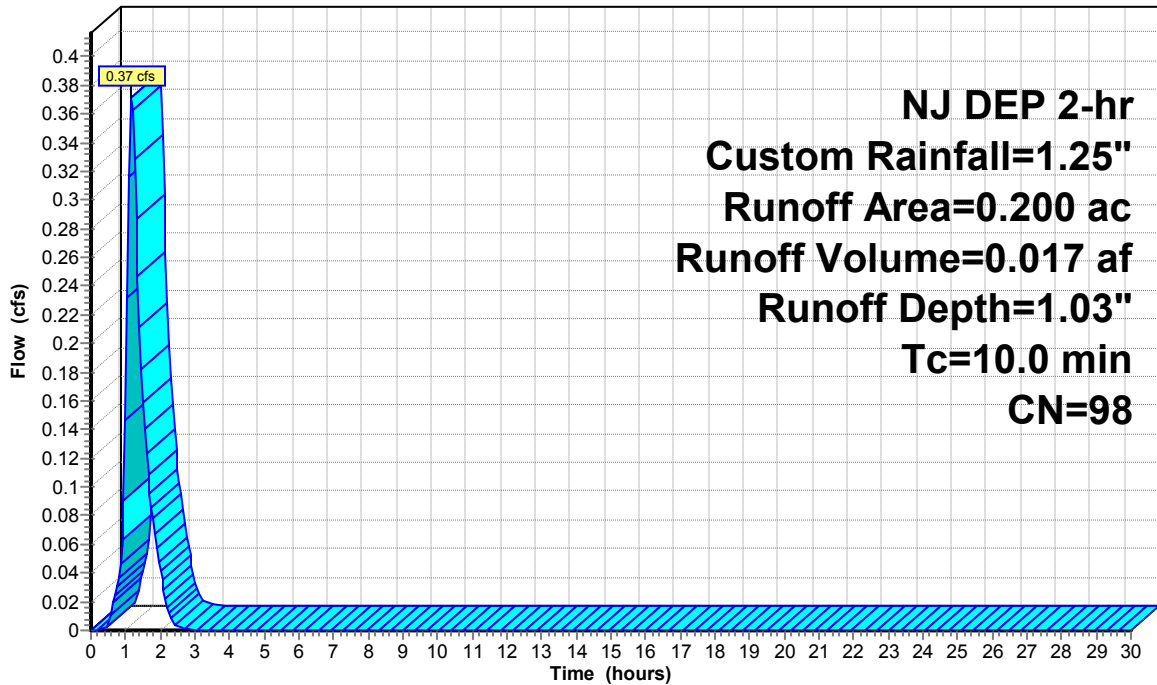
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr Custom Rainfall=1.25"

| Area (ac) | CN | Description |
|-----------|----|-------------------------|
| 0.200 | 98 | Paved parking, HSG C |
| 0.200 | | 100.00% Impervious Area |

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

Subcatchment 5S: Post Impervious Increase (0.2 Ac)

Hydrograph



**NJ DEP 2-hr
Custom Rainfall=1.25"
Runoff Area=0.200 ac
Runoff Volume=0.017 af
Runoff Depth=1.03"
Tc=10.0 min
CN=98**

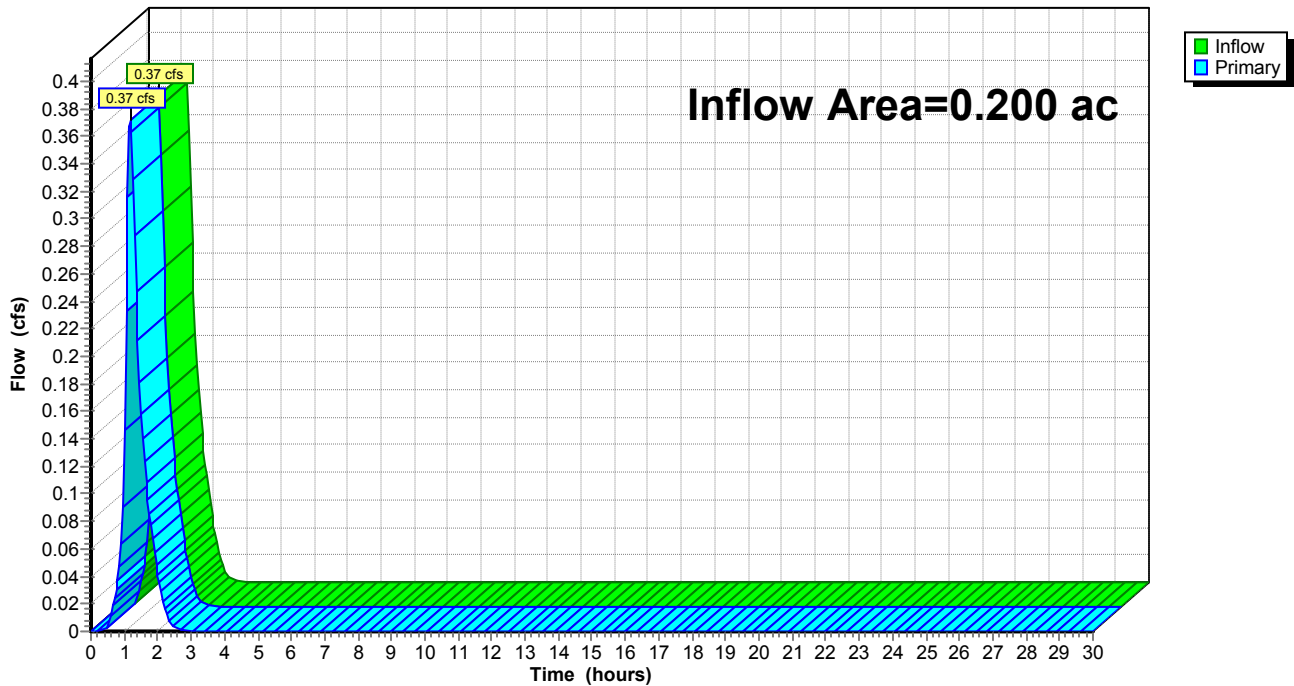
Summary for Pond 7P: Post-dev Out A

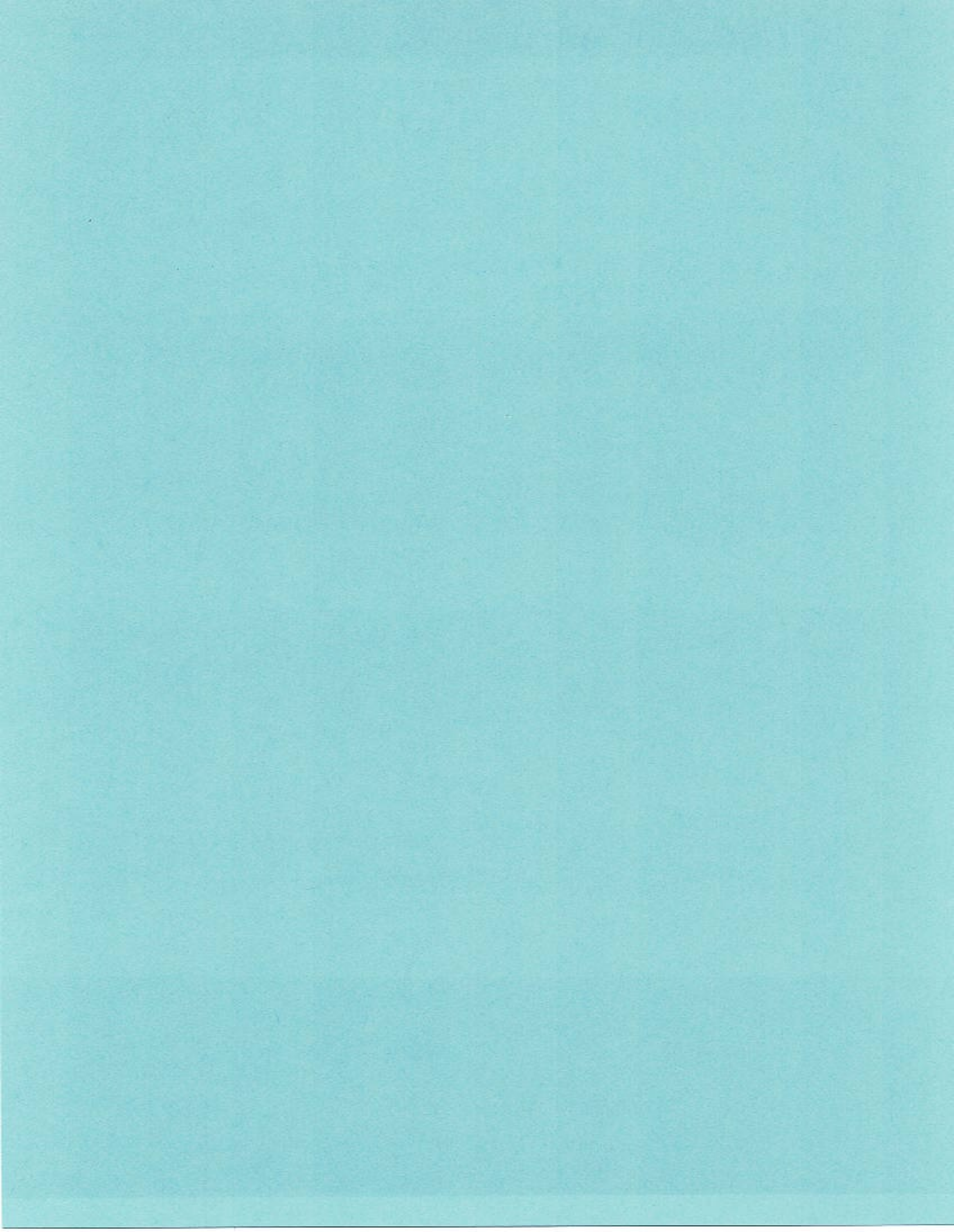
Inflow Area = 0.200 ac, 100.00% Impervious, Inflow Depth = 1.03" for Custom event
Inflow = 0.37 cfs @ 1.17 hrs, Volume= 0.017 af
Primary = 0.37 cfs @ 1.17 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

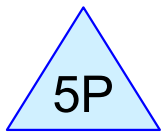
Pond 7P: Post-dev Out A

Hydrograph

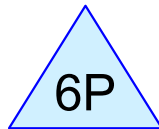




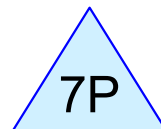
Rain Garden Volumes



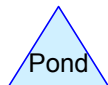
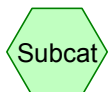
Rain Garden A-1



Rain Garden A-2



Rain Garden B-1



19-107 Rain Garden sizing

NOAA 24-hr C 100-Year Rainfall=8.33"

Prepared by TSE

Printed 8/13/2020

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Page 2

Summary for Pond 5P: Rain Garden A-1

| Volume | Invert | Avail.Storage | Storage Description |
|---------------------|----------------------|---------------------------|--|
| #1 | 52.00' | 264 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 52.00 | 31 | 0 | 0 |
| 53.00 | 497 | 264 | 264 |

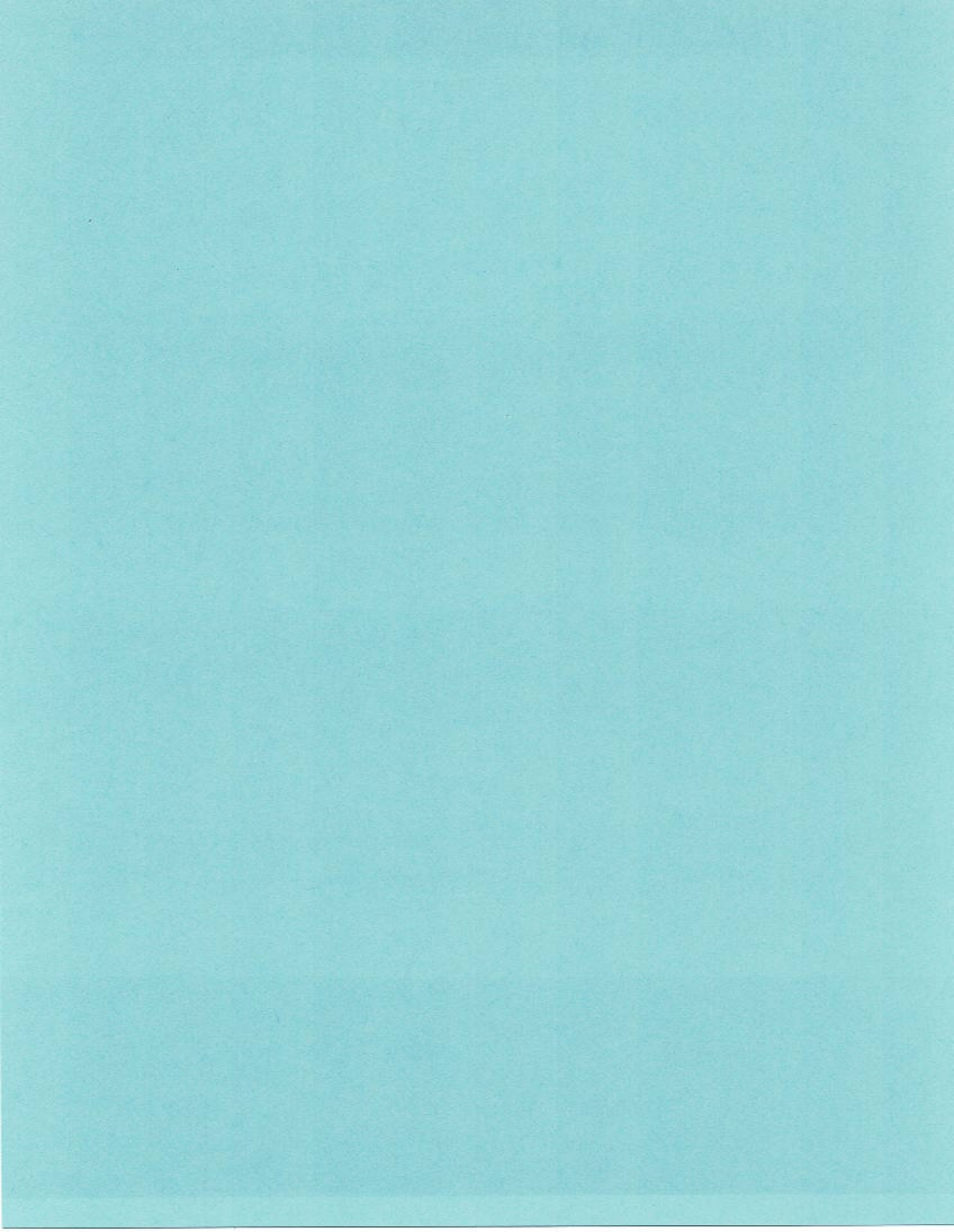
Summary for Pond 6P: Rain Garden A-2

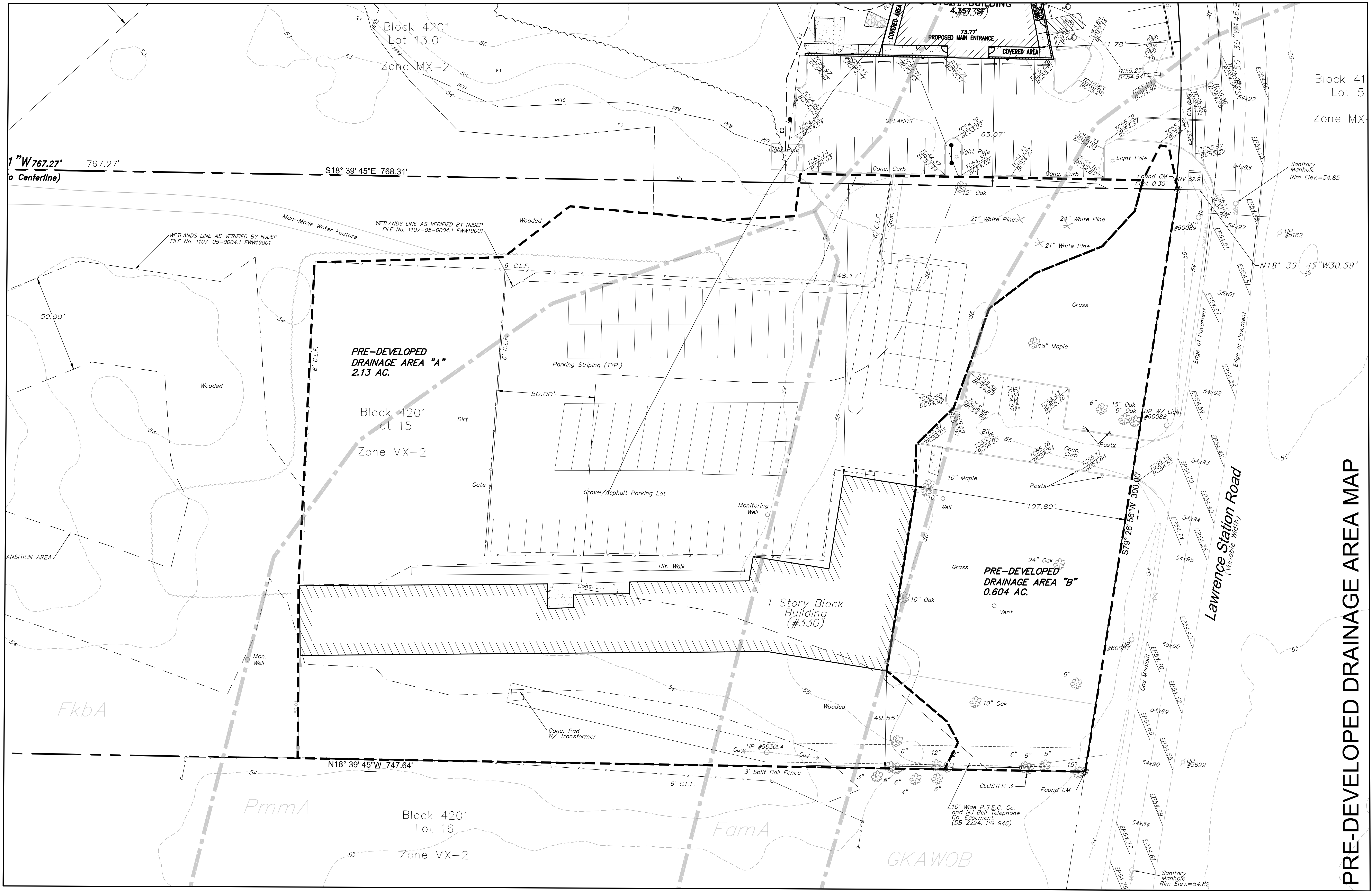
| Volume | Invert | Avail.Storage | Storage Description |
|---------------------|----------------------|---------------------------|--|
| #1 | 54.00' | 611 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 54.00 | 409 | 0 | 0 |
| 55.00 | 812 | 611 | 611 |

Summary for Pond 7P: Rain Garden B-1

| Volume | Invert | Avail.Storage | Storage Description |
|---------------------|----------------------|---------------------------|--|
| #1 | 54.00' | 563 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 54.00 | 289 | 0 | 0 |
| 55.00 | 837 | 563 | 563 |

IV. PRE- AND POST-DEVELOPED DRAINAGE AREA MAPS





Block 41
Lot 5
Zone MX-

PRE-DEVELOPED DRAINAGE AREA MAP

1" W 767.27' 767.27'
to Centerline) S18° 39' 45" E 768.31'

**PRE-DEVELOPED
DRAINAGE AREA "A"
2.13 AC.**

Block 4201
Lot 15
Zone MX-2

**PRE-DEVELOPED
DRAINAGE AREA "B"
0.604 AC.**

Block 4201
Lot 16
Zone MX-2

Lawrence Station Road
(Variable Width)

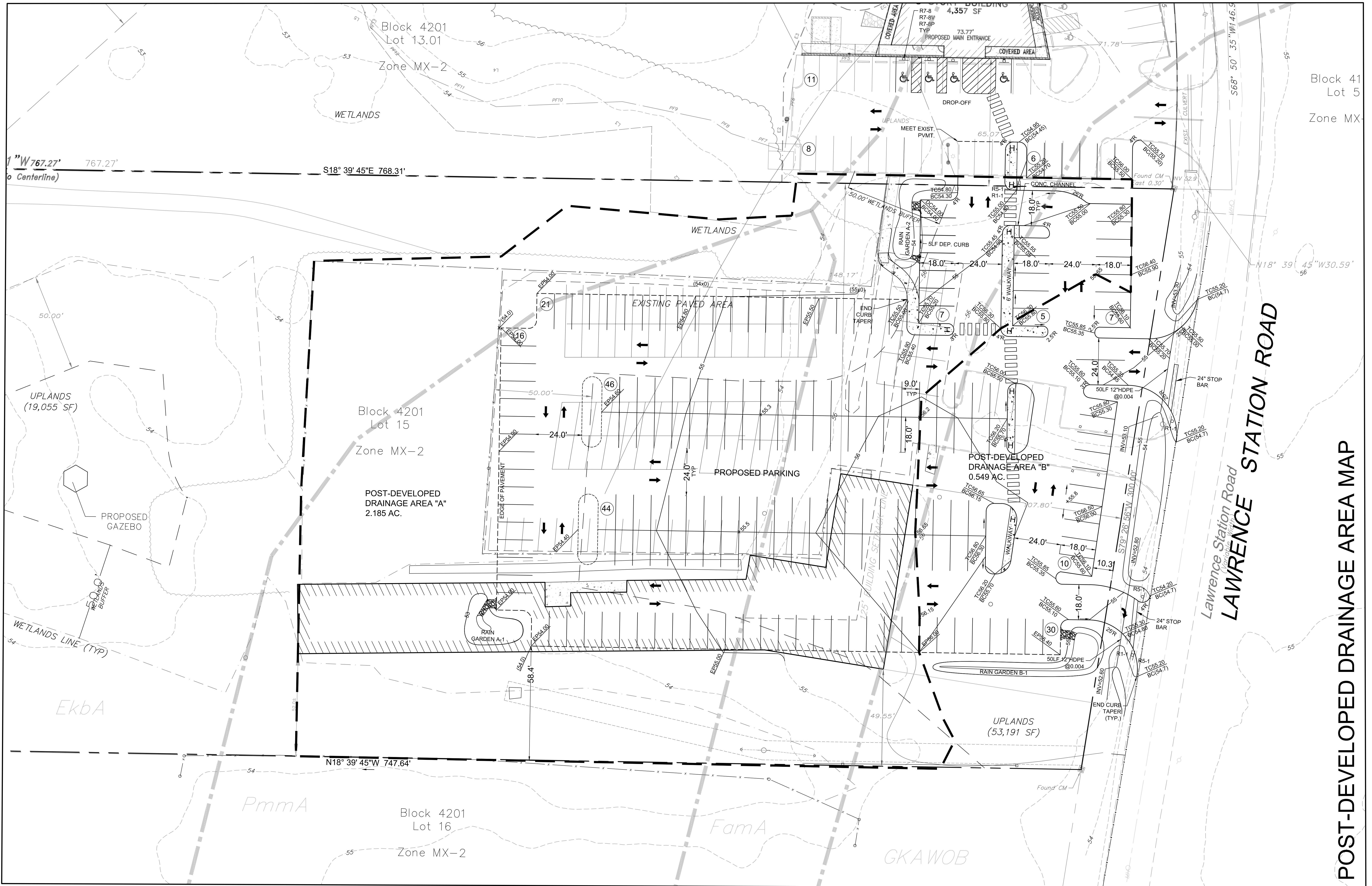
10' Wide P.S.E.G. Co.
and NJ Bell Telephone
Co. Easement.
(DB 2224, PG 946)

Ekba

Pmma

Fama

GKAWOB



1" W 767.27' (to Centerline)

S18° 39' 45" E 768.31'

N18° 39' 45" W 747.64'

Block 41
Lot 5
Zone MX-

Block 4201
Lot 13.01
Zone MX-2

Block 4201
Lot 15
Zone MX-2
POST-DEVELOPED
DRAINAGE AREA "A"
2.185 AC.

Block 4201
Lot 16
Zone MX-2

Lawrence Station Road
LAWRENCE STATION ROAD

POST-DEVELOPED DRAINAGE AREA MAP

WETLANDS
UPLANDS (19,055 SF)
PROPOSED GAZEBO
WETLANDS LINE (TYP)
EkbA
Pmma
FamA
GKAWOB

N18° 39' 45" W 30.59'

S68° 50' 35" W 146.9'

4,357 SF
R7-8
R7-8V
R7-8P
TYP
PROPOSED MAIN ENTRANCE

POST-DEVELOPED
DRAINAGE AREA "B"
0.549 AC.

UPLANDS
(53,191 SF)