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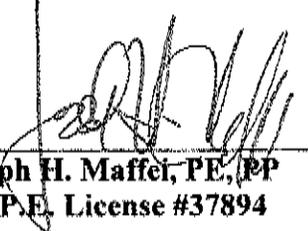
ENGINEERS

ENVIRONMENTAL PLANNERS

LANDSCAPE ARCHITECTS

**STORMWATER MANAGEMENT  
CALCULATIONS  
FOR  
BLOCK 236, LOTS 6.18 & 6.19  
DENNIS TOWNSHIP  
CAPE MAY COUNTY, NJ**

**EDA #10793**

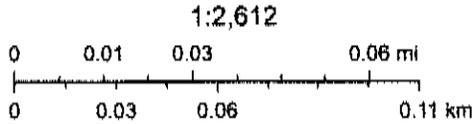
  
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11/2/26  
Date

# Aerial Map



12/4/2025, 12:15:23 PM



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



# **Soils Map**

Soil Map---Cape May County, New Jersey



Web Soil Survey map file located at <https://websoilsurvey.sc.egov.usda.gov>

Map Scale: 1:1,420 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 18N WGS84



Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

## MAP LEGEND

- Area of Interest (AOI)
- Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points
- Special Point Features**
  - Blowout
  - Borrow Pit
  - Clay Spot
  - Closed Depression
  - Gravel Pit
  - Gravelly Spot
  - Landfill
  - Lava Flow
  - Marsh or swamp
  - Mine or Quarry
  - Miscellaneous Water
  - Perennial Water
  - Rock Outcrop
  - Saline Spot
  - Sandy Spot
  - Severely Eroded Spot
  - Sinkhole
  - Slide or Slip
  - Sodic Spot

- Soil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features**
  - Water Features
  - Streams and Canals
- Transportation**
  - Rails
  - Interstate Highways
  - US Routes
  - Major Roads
  - Local Roads
- Background**
  - Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cape May County, New Jersey  
 Survey Area Data: Version 21, Aug 28, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DoeAO	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	4.0	44.4%
EveB	Evesboro sand, 0 to 5 percent slopes	4.5	49.6%
FobB	Fort Mott sand, 0 to 5 percent slopes	0.5	6.0%
<b>Totals for Area of Interest</b>		<b>9.1</b>	<b>100.0%</b>

## Cape May County, New Jersey

### EveB—Evesboro sand, 0 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* t0tf

*Elevation:* 0 to 150 feet

*Mean annual precipitation:* 28 to 59 inches

*Mean annual air temperature:* 46 to 79 degrees F

*Frost-free period:* 161 to 231 days

*Farmland classification:* Farmland of local importance

#### Map Unit Composition

*Evesboro and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Evesboro

##### Setting

*Landform:* Low hills

*Landform position (three-dimensional):* Interfluvial, side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Sandy eolian deposits and/or sandy fluvio-marine deposits

##### Typical profile

*A - 0 to 4 inches:* sand

*AB - 4 to 17 inches:* sand

*Bw - 17 to 31 inches:* sand

*C - 31 to 80 inches:* stratified loamy sand to sand

##### Properties and qualities

*Slope:* 0 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Excessively drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 4.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* A

*Ecological site:* F153DY170NJ - Sandy, Excessively Drained Upland

*Hydric soil rating:* No

#### **Minor Components**

##### **Mullica, rarely flooded**

*Percent of map unit:* 5 percent

*Landform:* Flood plains, depressions, drainageways

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear, concave

*Ecological site:* F149AY090NJ - Coastal Plain Hardwood Swamp

*Hydric soil rating:* Yes

##### **Atsion**

*Percent of map unit:* 5 percent

*Landform:* Flats

*Landform position (two-dimensional):* Foothills

*Landform position (three-dimensional):* Dip, tall

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* F153DY120NJ - Sandy, Spodic Coastal Plain  
Swamp

*Hydric soil rating:* Yes

##### **Downer**

*Percent of map unit:* 5 percent

*Landform:* Knolls, low hills

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Ecological site:* F153DY160NJ - Well Drained Coarse-Loamy  
Upland

*Hydric soil rating:* No

##### **Lakehurst**

*Percent of map unit:* 5 percent

*Landform:* Flats, depressions

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear, concave

*Ecological site:* F153DY140NJ - Sandy, Spodic Pine Barrens  
Upland

*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Cape May County, New Jersey

Survey Area Data: Version 21, Aug 28, 2025

## Cape May County, New Jersey

### DoeAO—Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area

#### Map Unit Setting

*National map unit symbol:* 2thwd  
*Elevation:* 0 to 190 feet  
*Mean annual precipitation:* 41 to 50 inches  
*Mean annual air temperature:* 46 to 64 degrees F  
*Frost-free period:* 190 to 250 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Downer and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Downer

##### Setting

*Landform:* Flats, knolls, low hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve, rise  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear  
*Parent material:* Loamy fluviomarine deposits

##### Typical profile

*Ap - 0 to 10 inches:* sandy loam  
*BE - 10 to 16 inches:* loamy sand  
*Bt - 16 to 28 inches:* sandy loam  
*C1 - 28 to 48 inches:* loamy sand  
*C2 - 48 to 80 inches:* sand

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 1  
*Hydrologic Soil Group:* A  
*Ecological site:* F153DY160NJ - Well Drained Coarse-Loamy Upland  
*Hydric soil rating:* No

#### **Minor Components**

##### **Galestown**

*Percent of map unit:* 10 percent  
*Landform:* Flats  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* F153DY170NJ - Sandy, Excessively Drained Upland  
*Hydric soil rating:* No

##### **Ingleside**

*Percent of map unit:* 5 percent  
*Landform:* Flats  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* F153DY160NJ - Well Drained Coarse-Loamy Upland  
*Hydric soil rating:* No

##### **Hammonton**

*Percent of map unit:* 5 percent  
*Landform:* Flats, broad interstream divides  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear  
*Ecological site:* F149AY130NJ - Moist Loamy Upland  
*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Cape May County, New Jersey  
Survey Area Data: Version 21, Aug 28, 2025

**TEST PIT #1**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 5"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
5"- 24"	10YR 5/4 Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
24"-39"	10YR 5/4 Yellowish Brown, Sandy Loam, Subangular Blocky, Friable w/30% Coarse Fragments
39"-51"	10YR 6/6 Brownish Yellow, Sand, Single Grain, Loose
51"-114"	10YR 7/6 Yellow, Sand, Single Grain, Loose
114"-135"	10YR 7/2 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 8/1 White, Common, Medium, Distinct

Depth of Seasonal High Water: 114"  
Depth of Groundwater: >135"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

**TEST PIT #2**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 3"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
3"- 35"	10YR 5/6 Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
35"-55"	10YR 6/6 Brownish Yellow, Sand, Single Grain, Loose w/40% Coarse Fragments
55"-94"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
94"-133"	10YR 7/2 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 8/1 White, Few, Fine & Faint

Depth of Seasonal High Water: 111"  
Depth of Groundwater: >133"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

PTJ/jf

**TEST PIT #3**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0" - 4"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
4" - 29"	10YR 6/4 Light Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
29" - 53"	10YR 5/6 Yellowish Brown, Sand, Single Grain, Loose w/30% Coarse Fragments
53" - 96"	10YR 6/3 Pale Brown, Sand, Single Grain, Loose
96" - 125"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose w/mottles of 10YR 8/1 White, Few, Fine & Faint
125" - 136"	10YR 7/1 Light Gray, Sand, Single Grain, Loose w/ mottles of 10YR 6/6 Brownish Yellow, Common, Medium, Distinct

Depth of Seasonal High Water: 110"  
Depth of Groundwater: >136"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

**TEST PIT #4**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0" - 3"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
3" - 57"	10YR 5/4 Yellowish Brown, Loamy Sand, Subangular Blocky, Friable
57" - 97"	10YR 6/6 Brownish Yellow, Sand, Single Grain, Loose w/40% Coarse Fragments
97" - 132"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
132" - 142"	10YR 7/1 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 7/6 Yellow, Fine, Few & Faint

Depth of Seasonal High Water: 132"  
Depth of Groundwater: >145"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

PTJ/jf

**TEST PIT #5**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 4"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
4"- 35"	10YR 6/4 Light Yellowish Brown, Loamy Sand, Subangular Blocky, Friable
35"-49"	10YR 5/6 Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
49"-78"	10YR 6/8 Brownish Yellow, Brown, Sand, Single Grain, Loose
78"- 126"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
126"- 136"	10YR 7/1 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 7/3 Very Pale Brown, Fine, Few & Faint

Depth of Seasonal High Water: 126"  
Depth of Groundwater: >136"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

**TEST PIT #6**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 3"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
3"- 17"	10YR 5/2 Grayish Brown, Sandy Loam, Subangular Blocky, Friable
17"-50"	10YR 6/4 Light Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
50"-100"	10YR 7/4 Very Pale Brown, Sand, Single Grain, Loose
100"- 120"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
120"- 140"	10YR 7/1 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 6/6 Brownish Yellow, Few, Fine & Faint

Depth of Seasonal High Water: 120"  
Depth of Groundwater: >140"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

PTJ/jf

### **TEST PIT #7**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 11"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
11"- 34"	10YR 5/6 Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
34"-64"	10YR 6/8 Brownish Yellow, Brown, Sand, Cemented
64"- 81"	10YR 7/4 Very Pale Brown, Sand, Single Grain, Loose
81"- 108"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
108"-134"	10YR 7/2 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 8/1 White, Few, Fine & Faint

Depth of Seasonal High Water: 118"  
Depth of Groundwater: >134"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

### **TEST PIT #8**

<b><u>DEPTH</u></b>	<b><u>DESCRIPTION</u></b>
0"- 10"	10YR 5/1 Gray, Sandy Loam, Subangular Blocky, Friable
10"- 23"	10YR 6/4 Light Yellowish Brown, Sandy Loam, Subangular Blocky, Friable
23"-41"	10YR 6/8 Brownish Yellow, Sandy Loam, Subangular Blocky, Friable
41"- 76"	10YR 7/4 Very Pale Brown, Sand, Single Grain, Loose
76"- 108"	10YR 7/3 Very Pale Brown, Sand, Single Grain, Loose
108"- 128"	10YR 7/1 Light Gray, Sand, Single Grain, Loose w/mottles of 10YR 6/6 Brownish Yellow, Few, Fine & Faint

Depth of Seasonal High Water: 108"  
Depth of Groundwater: >128"  
Date Performed: 1/9/2026  
Performed By: Piotr Jaros

PTJ/jf

# **Stormwater Narrative**

## STORMWATER MANAGEMENT CALCULATIONS

### Existing Conditions

The project site consists of an area of 3.21 Acres. The parcel consists of woodland, grassland and woodland/brush conditions. The soil types for this project site are (DoeAO) Downer Sandy Loam 0 to 2% slopes and (EveB) Evesboro Sand 0 to 5% slopes.

### Drainage Design

The project site consists of six (6) watershed areas:

Watershed #1 consists of woodland conditions. The watershed is located within the rear portion of the property. This watershed drains in a southerly direction to a point located off site.

Watershed #2 consists of both woodland and woodland/brush conditions. The watershed is located within the central portion of the property. This watershed drains in a northwesterly direction to an existing low point.

Watershed #3 consists of woodland and grassland conditions. The watershed is located within the northern portion of the property adjacent to Woodbine-Ocean View Road. This watershed drains in a northerly direction to a point located off site.

Watershed #4 consists of woodland and woodland/brush conditions. The watershed is located within the rear portion of the property adjacent to the southerly property line. This watershed drains in a westerly direction to a point located off site.

Watershed #5 consists of woodland and woodland/brush conditions. The watershed is located within the central portion of the property adjacent to Woodbine-Ocean View Road. This watershed drains in a northeasterly direction to an existing low point.

Watershed #6 consists of woodland/brush conditions. The watershed is located along the easterly property line. This watershed drains in a northeasterly direction to a point located off site.

The drainage calculations for the project site were derived using the TR-55 Method of Hydrology Rainfall Type NOAA C Delmarva Unit Hydrograph.

The proposed stormwater storage facilities have been designed in accordance with the NJDEP Stormwater Regulations adopted on July 17, 2023. The proposed stormwater facilities have been designed utilizing both the adjusted current rainfall totals and the projected rainfall totals for the 2-Year, 10-Year and 100-Year Design Storms. The following rainfall data was utilized in the stormwater calculations:

### Current Storm Events

2-Year	3.34 Inches
10-Year	5.22 Inches
100-Year	9.07 Inches

**Projected Storm Events**

2-Year	3.93 Inches
10-Year	6.28 Inches
100-Year	11.52 Inches

**2-Year Post Development Design Storm  
Groundwater Recharge**

• Pre-Development Storage:	1,481 CF
• Post-Development Storage:	20,647 CF
• Total Storage Required:	19,166 CF
• Total Storage Available	58,499 CF
• Infiltration Basin #2A (Elev. 23.85)	49,353 CF
• Infiltration Basin #5 (Elev. 24.55)	4,573 CF
• Infiltration Basin #5A (Elev. 24.55)	4,573 CF

**Meteorological Data – Current Storm Event**

(New Jersey 24 Hour Rainfall Frequency Data – Cape May County)

2-Year	3.34 Inches
10-Year	5.22 Inches
100- Year	9.07 Inches

**Pre-Development Conditions – Watershed #1 – 0.14 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.14 Acres

TC = 17.60 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.03 CFS	0.03 CFS

**Pre-Development Conditions – Watershed #2 – 1.40 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	1.20 Acres
Woodland/Brush	32	0.20 Acres

TC = 21.30 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow-Existing Low Point</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.25 CFS	0.14 CFS

**Pre-Development Conditions – Watershed #3 – 0.21 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.20 Acres
Grass	39	0.01 Acres

TC = 40.20 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.08 CFS	0.08 CFS
10-YR	0.12 CFS	0.12 CFS
100-YR	0.21 CFS	0.21 CFS

**Pre-Development Runoff – Watershed #4 – 0.33 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.20 Acres
Woodland/Brush	32	0.13 Acres

TC = 22.60 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.07 CFS	0.07 CFS

**Pre-Development Runoff – Watershed #5 – 0.82 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.40 Acres
Woodland/Brush	32	0.42 Acres

TC = 30.30 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow-Existing Low Point</u>
2-YR	0.29 CFS	0.00 CFS
10-YR	0.45 CFS	0.07 CFS
100-YR	0.79 CFS	0.52 CFS

**Pre-Development Runoff – Watershed #6 – 0.43 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland/Brush	32	0.43 Acres

TC = 27.80 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.04 CFS	0.04 CFS
10-YR	0.07 CFS	0.07 CFS
100-YR	0.56 CFS	0.56 CFS

**Post-Development Runoff – Watershed #1 – 0.03 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.03 Acres

TC = 15.50 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.02 CFS	0.02 CFS

**Post-Development Runoff – Watershed #2 – 0.07 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.03 Acres
Grass/Landscaping	39	0.04 Acres

TC = 1.30 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.10 CFS	0.10 CFS

**Post-Development Runoff – Watershed #2A – 2.44 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	1.05 Acres
Woodland	30	0.04 Acres
Impervious	98	1.35 Acres

TC = 16.80 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow Basin #2A</u>
2-YR	4.75 CFS	0.00 CFS
10-YR	7.46 CFS	0.00 CFS
100-YR	13.38 CFS	0.00 CFS

**Post-Development Runoff – Watershed #3 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 1.00 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.09 CFS	0.09 CFS

**Post-Development Runoff – Watershed #4 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 7.30 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.05 CFS	0.05 CFS

**Post-Development Runoff – Watershed #5 – 0.40 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.30 Acres
Impervious	98	0.10 Acres

TC = 7.30 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow Basin #5</u>
2-YR	0.37 CFS	0.00 CFS
10-YR	0.58 CFS	0.00 CFS
100-YR	1.39 CFS	0.02 CFS

**Post-Development Runoff – Watershed #5A – 0.39 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.30 Acres
Impervious	98	0.09 Acres

TC = 7.60 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow Basin #5A</u>
2-YR	0.32 CFS	0.00 CFS
10-YR	0.51 CFS	0.00 CFS
100-YR	1.28 CFS	0.00 CFS

**Post-Development Runoff – Watershed #6 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 1.50 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.09 CFS	0.09 CFS

**Post-Development Flows at Discharge Point #1**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #1</u>	<u>Post-Development Peak Flows DC Point #1</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.03 CFS	0.02 CFS	66.67%

**Post-Development Flows at Discharge Point #2**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #2</u>	<u>Post-Development Peak Flows DC Point #2</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.14 CFS	0.10 CFS	71.42%

**Post-Development Flows at Discharge Point #2A**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #4</u>	<u>Post-Development Peak Flows DC Point #2A</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.07 CFS	0.00 CFS	0.00%

The proposed stormwater storage facility has been designed to incorporate green infrastructure measures by capturing, filtering and infiltrating stormwater to help restore the natural water cycle. Specifically, the stormwater system incorporates grassland to provide a simple disconnection of flows and to infiltrate clean runoff close to the initial source.

All of the proposed watershed areas have been created to be less than the 2.50 acre maximum required for small scale structures.

The proposed stormwater system has been designed to meet the NJDEP Stormwater Management Rules. The Stormwater Management System has been designed to reduce the post-construction load of Total Suspended Solids (TSS) in stormwater runoff generated from the water quality design storm by 80% by utilizing an infiltration basin. The system meets

the 80% TSS removal required by the NJDEP Stormwater Management Rules.

**Infiltration Basin**

**80% Removal**

**Infiltration Basin #2A Storage Volumes**

<u>Elevation</u>	<u>Storage Volume</u>
21.85	0 CF
22.00	3,310 CF
23.00	27,007 CF
24.00	53,491 CF
25.00	82,981 CF
25.50	98,881 CF

	<u>Elevation</u>
Water Quality Design Storm.....	22.08
2-Year Design Storm .....	22.52
10-Year Design Storm .....	22.93
100-Year Design Storm .....	23.87

**Post-Development Flows at Discharge Point #3**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #3</u>	<u>Post-Development Peak Flows DC Point #3</u>	
2-YR	0.08 CFS	0.00 CFS	0.00%
10-YR	0.12 CFS	0.00 CFS	0.00%
100-YR	0.21 CFS	0.09 CFS	42.85%

**Post-Development Flows at Discharge Point #4**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #4</u>	<u>Post-Development Peak Flows DC Point #4</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.07 CFS	0.03 CFS	42.85%

**Post-Development Flows at Discharge Point #5**

<u>Design Storm</u>	<u>Post-Development Peak Flows To Basin #2A</u>
2-YR	0.00 CFS
10-YR	0.00 CFS
100-YR	0.02 CFS



All of the proposed watershed areas have been created to be less than the 2.50 acre maximum required for small scale structures.

The proposed stormwater system has been designed to meet the NJDEP Stormwater Management Rules. The Stormwater Management System has been designed to reduce the post-construction load of Total Suspended Solids (TSS) in stormwater runoff generated from the water quality design storm by 80% by utilizing an infiltration basin. The system meets the 80% TSS removal required by the NJDEP Stormwater Management Rules.

**Infiltration Basin**

**80% Removal**

**Infiltration Basin #5A Storage Volumes**

<u>Elevation</u>	<u>Storage Volume</u>
22.50	0 CF
23.00	653 CF
24.00	2,918 CF
25.00	6,534 CF
25.60	8,842 CF
	<u>Elevation</u>
Water Quality Design Storm.....	22.79
2-Year Design Storm .....	23.21
10-Year Design Storm .....	23.62
100-Year Design Storm .....	24.53

**Post-Development Flows at Discharge Point #6**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #6</u>	<u>Post-Development Peak Flows DC Point #6</u>	
2-YR	0.04 CFS	0.00 CFS	0.00%
10-YR	0.07 CFS	0.00 CFS	0.00%
100-YR	0.56 CFS	0.09 CFS	16.07%

**Meteorological Data – Future Storm Event**

(New Jersey 24 Hour Rainfall Frequency Data – Cape May County)

2-Year	3.93 Inches
10-Year	6.28 Inches
100- Year	11.52 Inches

**Pre-Development Conditions – Watershed #1 – 0.14 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.14 Acres

TC = 16.20 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.09 CFS	0.09 CFS

**Pre-Development Conditions – Watershed #2 – 1.40 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	1.20 Acres
Woodland/Brush	32	0.20 Acres

TC = 20.00 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow-Existing Low Point</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.02 CFS	0.00 CFS
100-YR	0.81 CFS	0.74 CFS

**Pre-Development Conditions – Watershed #3 – 0.21 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.20 Acres
Grass	39	0.01 Acres

TC = 37.10 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.15 CFS	0.15 CFS
100-YR	0.27 CFS	0.27 CFS

**Pre-Development Runoff – Watershed #4 – 0.33 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.20 Acres
Woodland/Brush	32	0.13 Acres

TC = 21.00 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.20 CFS	0.20 CFS

**Pre-Development Runoff – Watershed #5 – 0.82 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.40 Acres
Woodland/Brush	32	0.42 Acres

TC = 29.10 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow Existing Low Point</u>
2-YR	0.34 CFS	0.01 CFS
10-YR	0.55 CFS	0.17 CFS
100-YR	1.04 CFS	0.74 CFS

**Pre-Development Runoff – Watershed #6 – 0.43 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland/Brush	32	0.43 Acres

TC = 26.40 Minutes

<u>Design Storm</u>	<u>Pre-Development Peak Inflow</u>	<u>Pre-Development Peak Outflow</u>
2-YR	0.05 CFS	0.05 CFS
10-YR	0.18 CFS	0.18 CFS
100-YR	0.87 CFS	0.87 CFS

**Post-Development Runoff – Watershed #1 – 0.03 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.03 Acres

TC = 14.30 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.00 CFS	0.00 CFS
100-YR	0.05 CFS	0.05 CFS

**Post-Development Runoff – Watershed #2 – 0.07 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Woodland	30	0.03 Acres
Grass/Landscaping	39	0.04 Acres

TC = 1.20 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.01 CFS	0.01 CFS
100-YR	0.23 CFS	0.23 CFS

**Post-Development Runoff – Watershed #2A – 2.44 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	1.05 Acres
Woodland	30	0.04 Acres
Impervious	98	1.35 Acres

TC = 15.60 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow-Basin #2A</u>
2-YR	5.67 CFS	0.00 CFS
10-YR	9.11 CFS	0.00 CFS
100-YR	17.85 CFS	0.16 CFS

**Post-Development Runoff – Watershed #3 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 1.00 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.02 CFS	0.02 CFS
100-YR	0.17 CFS	0.17 CFS

**Post-Development Runoff – Watershed #4 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 6.70 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.01 CFS	0.01 CFS
100-YR	0.10 CFS	0.10 CFS

**Post-Development Runoff – Watershed #5 – 0.40 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.30 Acres
Impervious	98	0.10 Acres

TC = 6.80 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow-Basin #5</u>
2-YR	0.43 CFS	0.00 CFS
10-YR	0.73 CFS	0.00 CFS
100-YR	2.16 CFS	0.14 CFS

**Post-Development Runoff – Watershed #5A – 0.39 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.30 Acres
Impervious	98	0.09 Acres

TC = 7.10 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Routed Peak Outflow-Basin #5A</u>
2-YR	0.38 CFS	0.00 CFS
10-YR	0.65 CFS	0.00 CFS
100-YR	2.02 CFS	0.11 CFS

**Post-Development Runoff – Watershed #6 – 0.04 Acres**

<u>Cover Type</u>	<u>CN Value</u>	<u>Area</u>
Grass/Landscaping	39	0.04 Acres

TC = 1.40 Minutes

<u>Design Storm</u>	<u>Post-Development Peak Inflow</u>	<u>Post-Development Peak Outflow</u>
2-YR	0.00 CFS	0.00 CFS
10-YR	0.01 CFS	0.01 CFS
100-YR	0.17 CFS	0.17 CFS

**Post-Development Flows at Discharge Point #1**

<u>Design Storm</u>	<u>Pre-Development Peak Flows-Watershed #1</u>	<u>Post-Development Peak Flows DC Point #1</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.09 CFS	0.05 CFS	55.55%

**Post-Development Flows at Discharge Point #2**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #2</u>	<u>Post-Development Peak Flows DC Point #2</u>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.74 CFS	0.08 CFS	10.81%

**Post-Development Flows at Discharge Point #2A**

<b><u>Design Storm</u></b>	<b><u>Pre-Development Peak Flows Watershed #4</u></b>	<b><u>Post-Development Peak Flows DC Point #2A</u></b>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.20 CFS	0.12 CFS	60.00%

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**Infiltration Basin**

**80% Removal**

**Infiltration Basin #2A Storage Volumes**

<b><u>Elevation</u></b>	<b><u>Storage Volume</u></b>
21.85	0 CF
22.00	3,310 CF
23.00	27,007 CF
24.00	53,491 CF
25.00	82,981 CF
25.50	98,881 CF

	<b><u>Elevation</u></b>
Water Quality Design Storm.....	22.08
2-Year Design Storm .....	22.64
10-Year Design Storm .....	23.18
100-Year Design Storm .....	24.50

**Post-Development Flows at Discharge Point #3**

<b><u>Design Storm</u></b>	<b><u>Pre-Development Peak Flows-Watershed #3</u></b>	<b><u>Post-Development Peak Flows DC Point #3</u></b>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.15 CFS	0.02 CFS	13.33%
100-YR	0.27 CFS	0.17 CFS	62.96%

**Post-Development Flows at Discharge Point #4**

<b><u>Design Storm</u></b>	<b><u>Pre-Development Peak Flows Watershed #4</u></b>	<b><u>Post-Development Peak Flows DC Point #4</u></b>	
2-YR	0.00 CFS	0.00 CFS	0.00%
10-YR	0.00 CFS	0.00 CFS	0.00%
100-YR	0.20 CFS	0.12 CFS	60.00%

**Post-Development Flows at Discharge Point #5**

<b><u>Design Storm</u></b>	<b><u>Post-Development Peak Flows To Basin #2A</u></b>
2-YR	0.00 CFS
10-YR	0.00 CFS
100-YR	0.14 CFS

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**Infiltration Basin**

**80% Removal**

**Infiltration Basin #5 Storage Volumes**

<u>Elevation</u>	<u>Storage Volume</u>
25.50	0 CF
23.00	653 CF
24.00	2,918 CF
25.00	6,534 CF
25.60	8,842 CF

	<u>Elevation</u>
Water Quality Design Storm.....	22.81
2-Year Design Storm .....	23.39
10-Year Design Storm .....	23.95
100-Year Design Storm .....	24.60

**Post-Development Flows at Discharge Point #5A**

<u>Design Storm</u>	<u>Post-Development Peak Flows to Basin #2A</u>
2-YR	0.00 CFS
10-YR	0.00 CFS
100-YR	0.11 CFS

The proposed stormwater storage facility has been designed to incorporate green infrastructure measures by capturing, filtering and infiltrating stormwater to help restore the natural water cycle. Specifically, the stormwater system incorporates grassland to provide a simple disconnection of flows and to infiltrate clean runoff close to the initial source.

All of the proposed watershed areas have been created to be less than the 2.50 acre maximum required for small scale structures.

The proposed stormwater system has been designed to meet the NJDEP Stormwater Management Rules. The Stormwater Management System has been designed to reduce the post-construction load of Total Suspended Solids (TSS) in stormwater runoff generated from the water quality design storm by 80% by utilizing an infiltration basin. The system meets the 80% TSS removal required by the NJDEP Stormwater Management Rules.

**Infiltration Basin**

**80% Removal**

**Infiltration Basin #5A Storage Volumes**

<u>Elevation</u>	<u>Storage Volume</u>
22.50	0 CF
23.00	653 CF
24.00	2,918 CF
25.00	6,534 CF
25.60	8,842 CF

	<u>Elevation</u>
Water Quality Design Storm.....	22.79
2-Year Design Storm .....	23.32
10-Year Design Storm .....	23.87
100-Year Design Storm .....	24.59

**Post-Development Flows at Discharge Point #6**

<u>Design Storm</u>	<u>Pre-Development Peak Flows Watershed #6</u>	<u>Post-Development Peak Flows DC Point #6</u>	
2-YR	0.05 CFS	0.00 CFS	0.00%
10-YR	0.18 CFS	0.01 CFS	5.55%
100-YR	0.87 CFS	0.17 CFS	19.54%

## **NINE (9) NONSTRUCTURAL NJDEP BEST MANAGEMENT PRACTICES**

1. Project areas that provide water quality benefits or areas particularly susceptible erosion and sediment loss.

**The project has been designed to incorporate an infiltration basin to provide water quality benefits.**

2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.

**The proposed stormwater storage facility has been designed to incorporate Green Infrastructure measures by capturing, filtering and infiltrating stormwater to help restore the natural water cycle. Specifically, the stormwater system incorporates an infiltration basin to provide a simple disconnection of flows and to provide infiltration of clean runoff close to the initial source.**

3. Maximize the protection of natural drainage features and vegetation.

**The preservation of the existing wooded areas has been incorporated to the greatest extent possible.**

4. Minimize the decrease in pre-development time of concentration.

**The project site has been designed to minimize the decrease in the pre-development time of concentration by preserving the existing natural areas.**

5. Minimize land disturbance including clearing and grading.

**The project has been designed to minimize land disturbance including clearing and grading.**

6. Minimize soil compaction and all other soil disturbance.

**The project site has been designed to minimize soil compaction and all other soil disturbance by preserving the existing area of woodlands to the greatest extent possible and by preserving existing natural areas.**

7. Provide low-maintenance landscaping that provides for the retention and planting of native plants and minimizes the use of lawns, fertilizers and pesticides, in accordance with NJAC 7:50-6.24.

**The project site has been designed with low maintenance native plant material.**

8. Provided vegetated open channel conveyance systems discharging into and through stable vegetated areas.

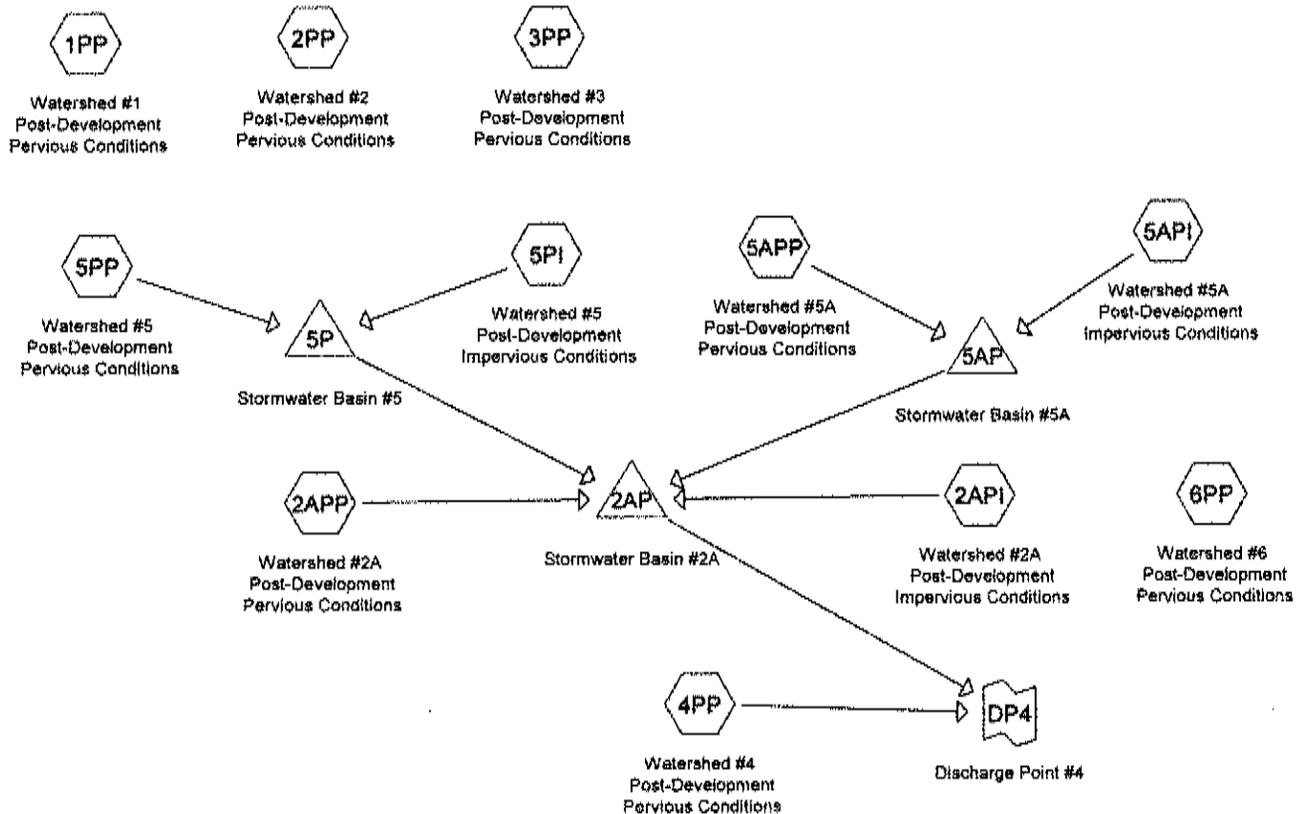
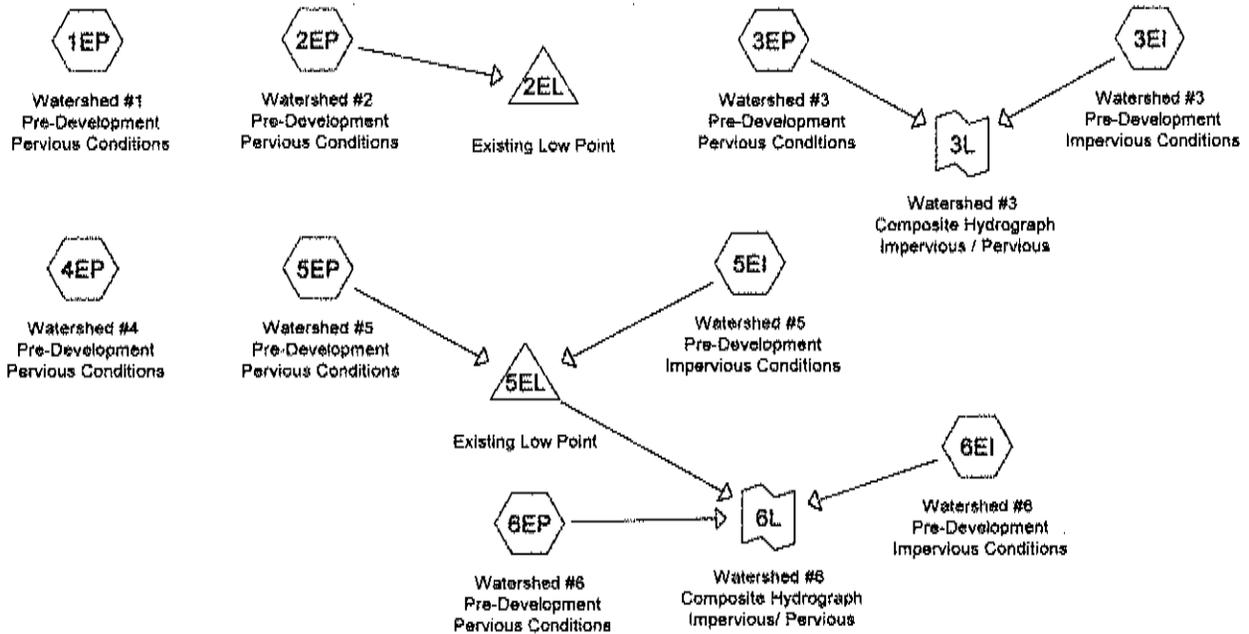
**The site has been designed to convey stormwater flows by way of vegetated overland flow to the greatest extent possible.**

9. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site to prevent or minimize the use or exposure of pollutants at the site to prevent or minimize the release of those pollutants into stormwater runoff. These source controls shall include, but are not limited to:

- a) Site design features that help to prevent accumulation of trash and debris in drainage systems.
- b) Site design features that help to prevent discharge of trash and debris from drainage systems
- c) Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments.
- d) Applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act NJSA 4:24-39 et seq and implementing rules when establishing vegetation after land disturbance.

**The project site will be seeded and fertilized in accordance with the Soil Erosion and Sediment Control Act NJSA 4:25-39 et seq and implementing rules.**

# **Stormwater Routing Diagram**



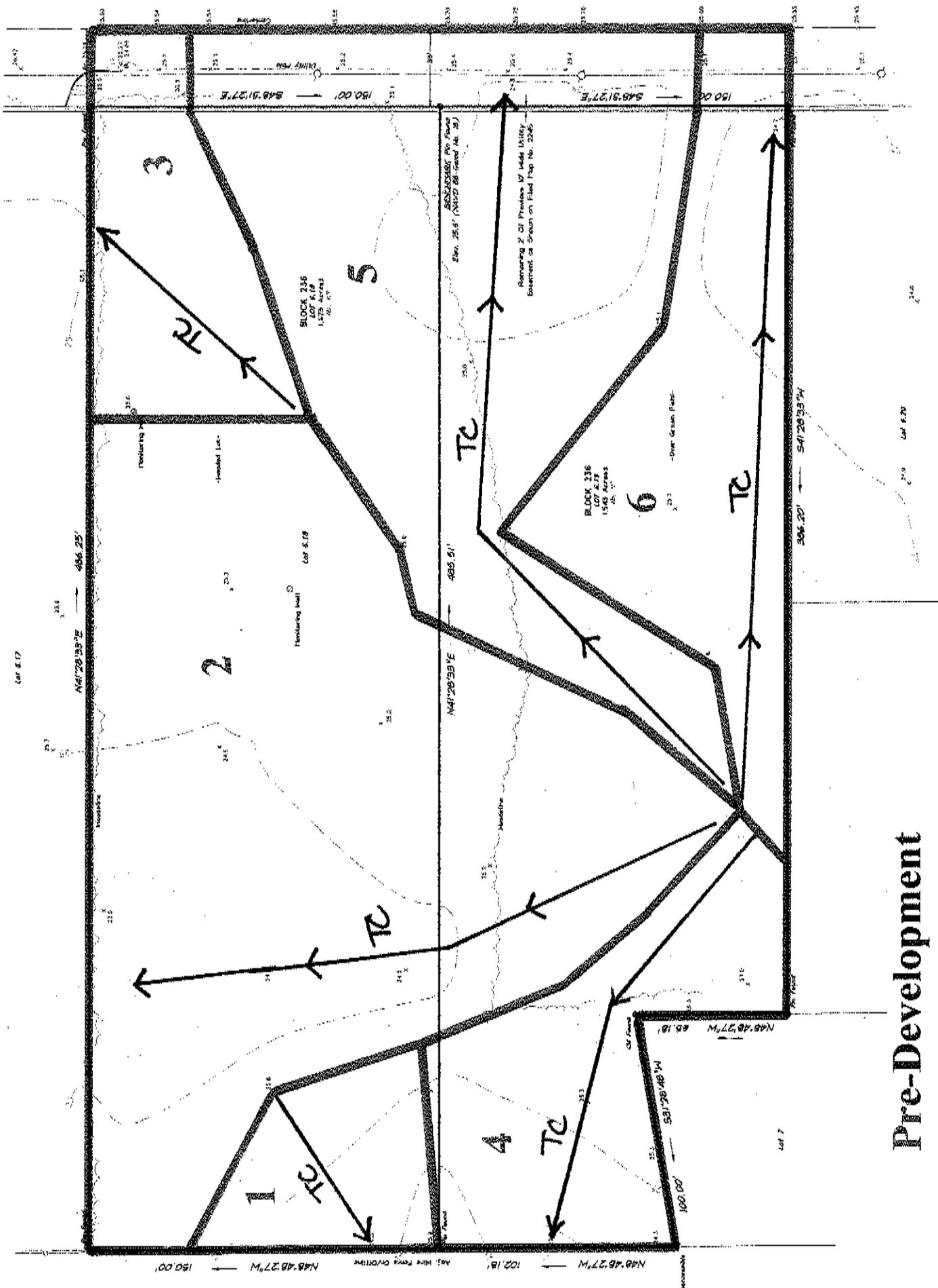
**Routing Diagram for Clark Edward, LLC**  
 Prepared by Engineering Design Associates, Printed 1/8/2026  
 HydroCAD® 10.20-8a s/n 01171 © 2025 HydroCAD Software Solutions LLC

**Pre-Development  
Watershed Delineation Plan**

WOODBINE - OCEAN VIEW ROAD

(SHEET 146)

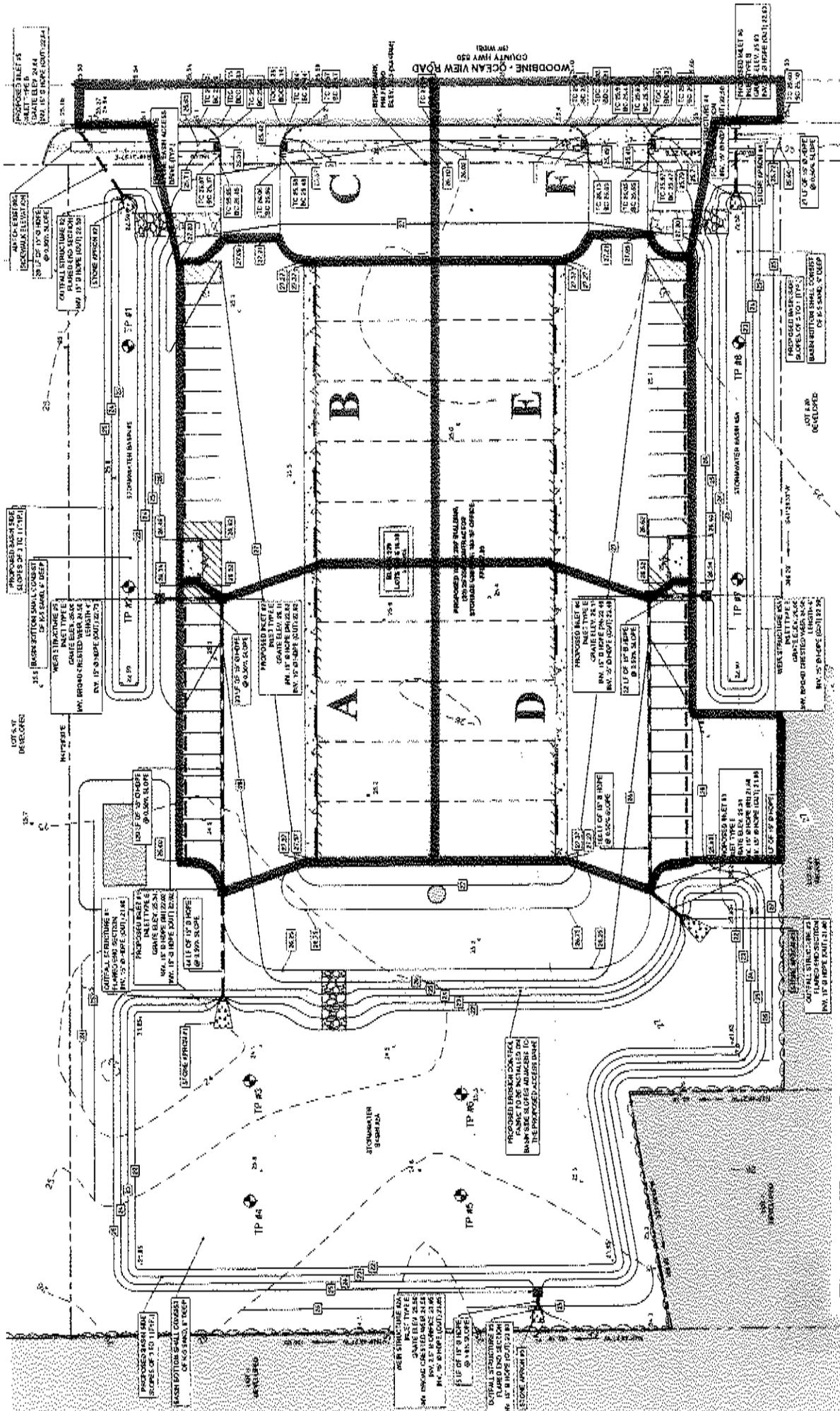
THE GRADUAL OF THIS ROAD



Pre-Development  
Watershed Delineation Plan

**Post-Development  
Watershed Delineation Plan**





# Post-Development Sub-Watershed Delineation Plan

**Pre-Development Runoff**

**Current Rainfall Rates**

**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

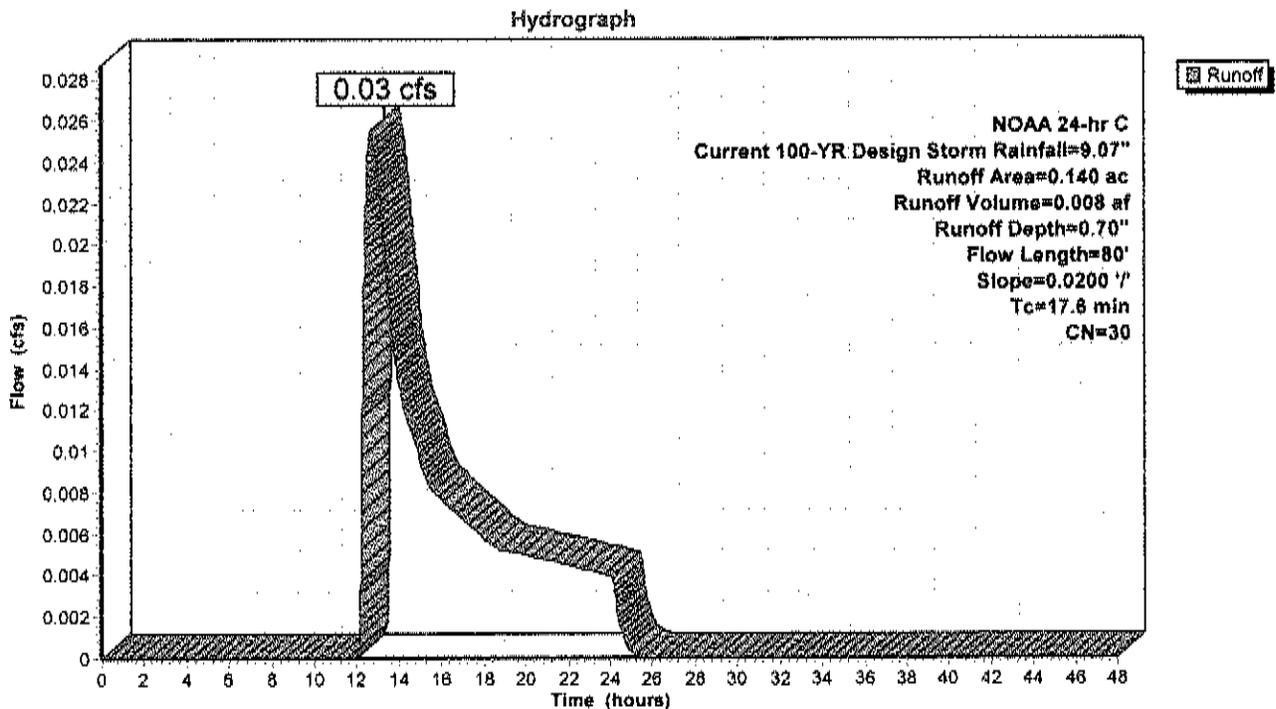
Runoff = 0.03 cfs @ 12.67 hrs, Volume= 0.008 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.34"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

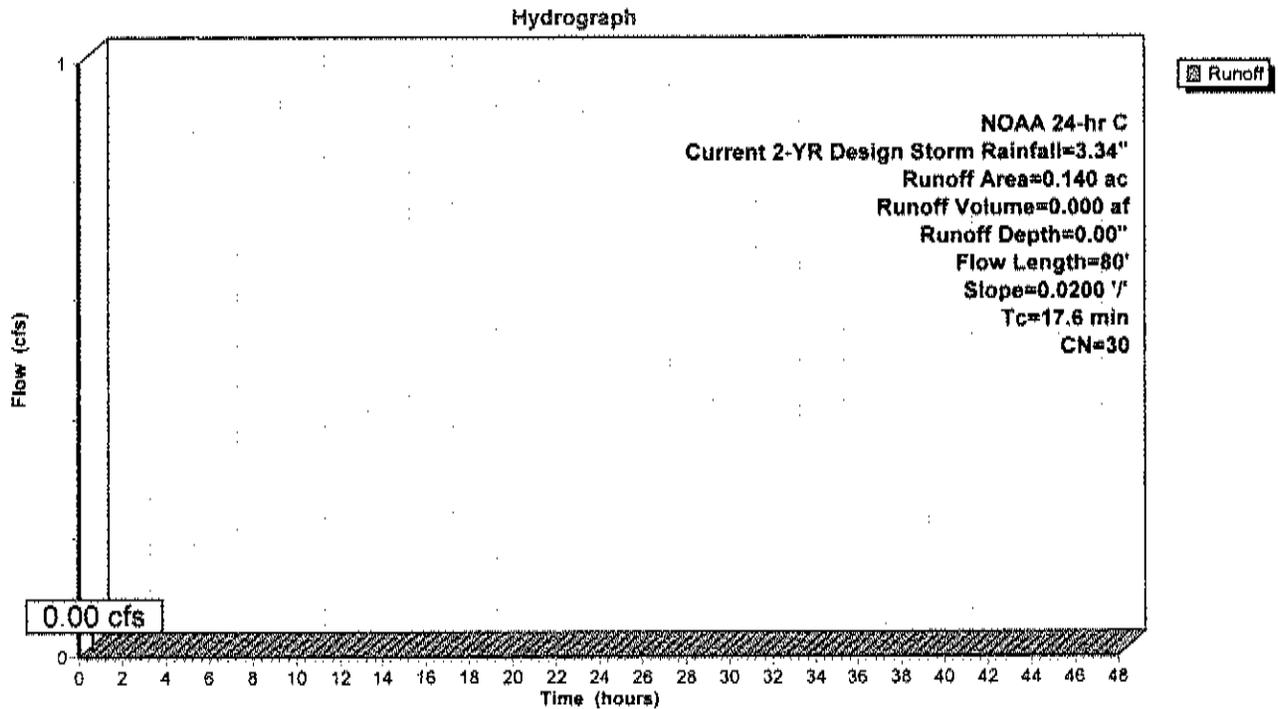
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.34"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

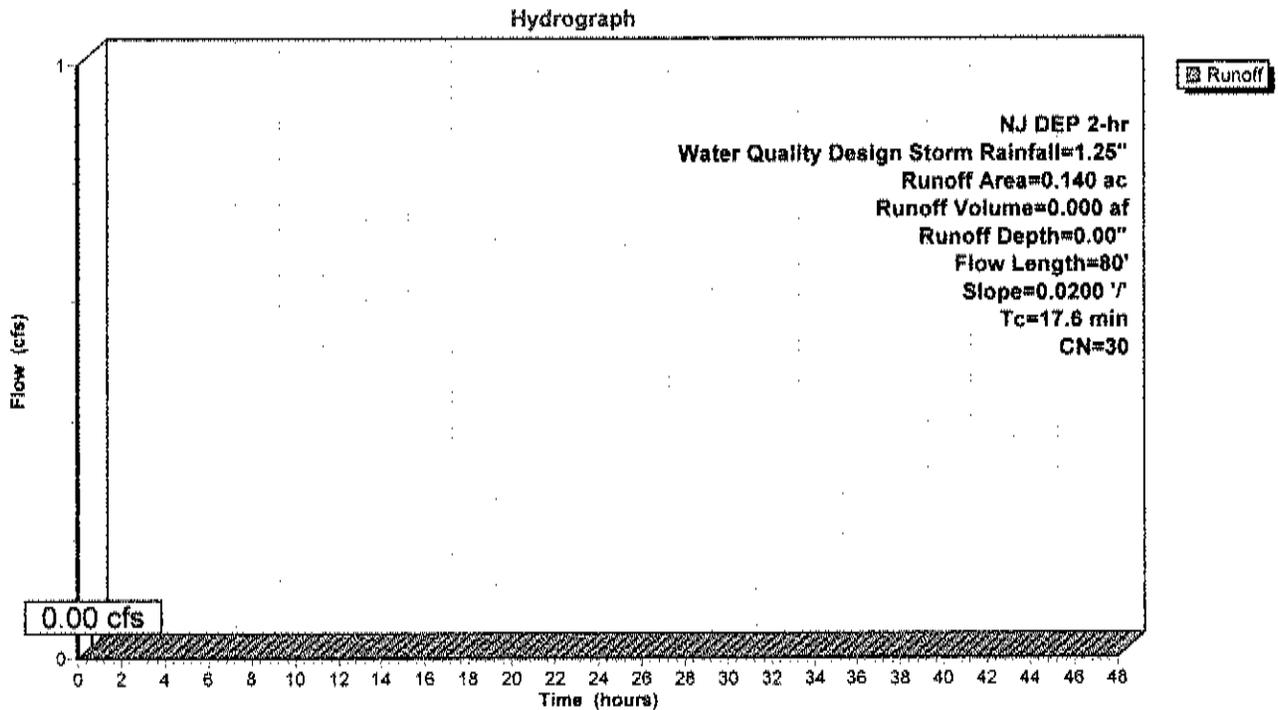
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.34"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

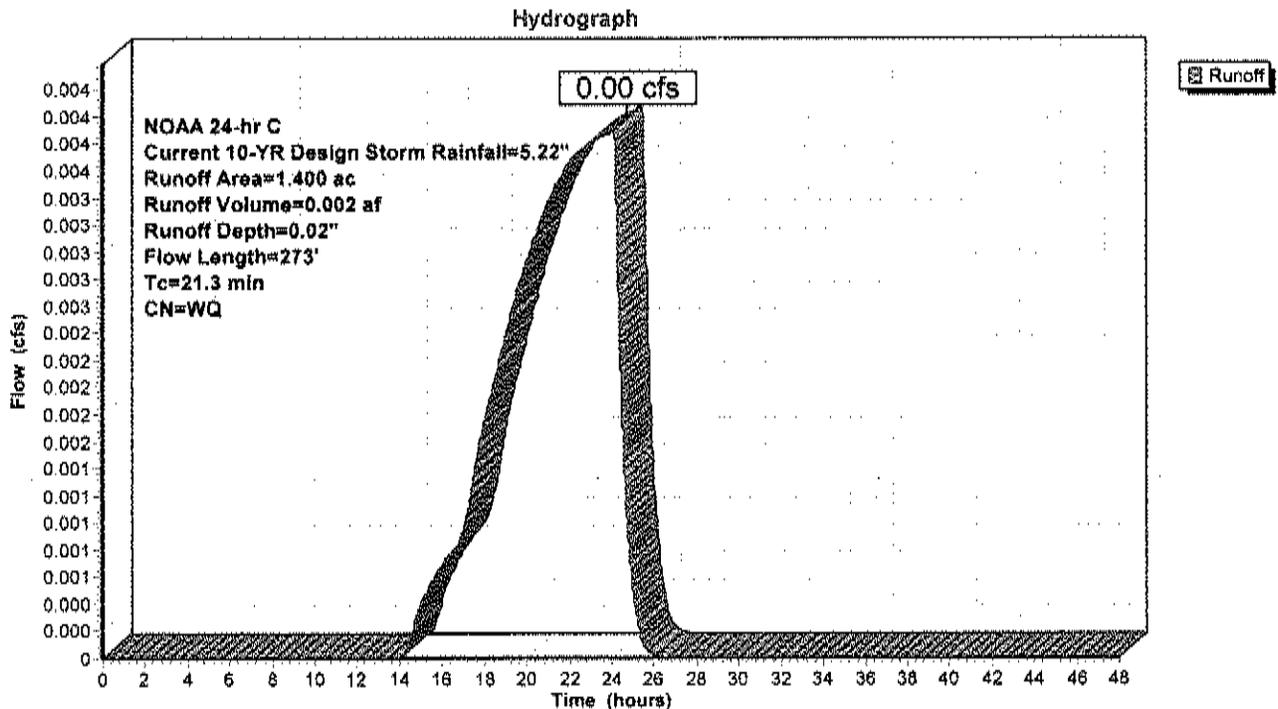
Runoff = 0.00 cfs @ 24.09 hrs, Volume= 0.002 af, Depth= 0.02"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	85	0.0256	0.08		<b>Sheet Flow, Woods/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	28	0.0285	0.84		<b>Shallow Concentrated Flow, Woods/Brush</b> Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
21.3	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

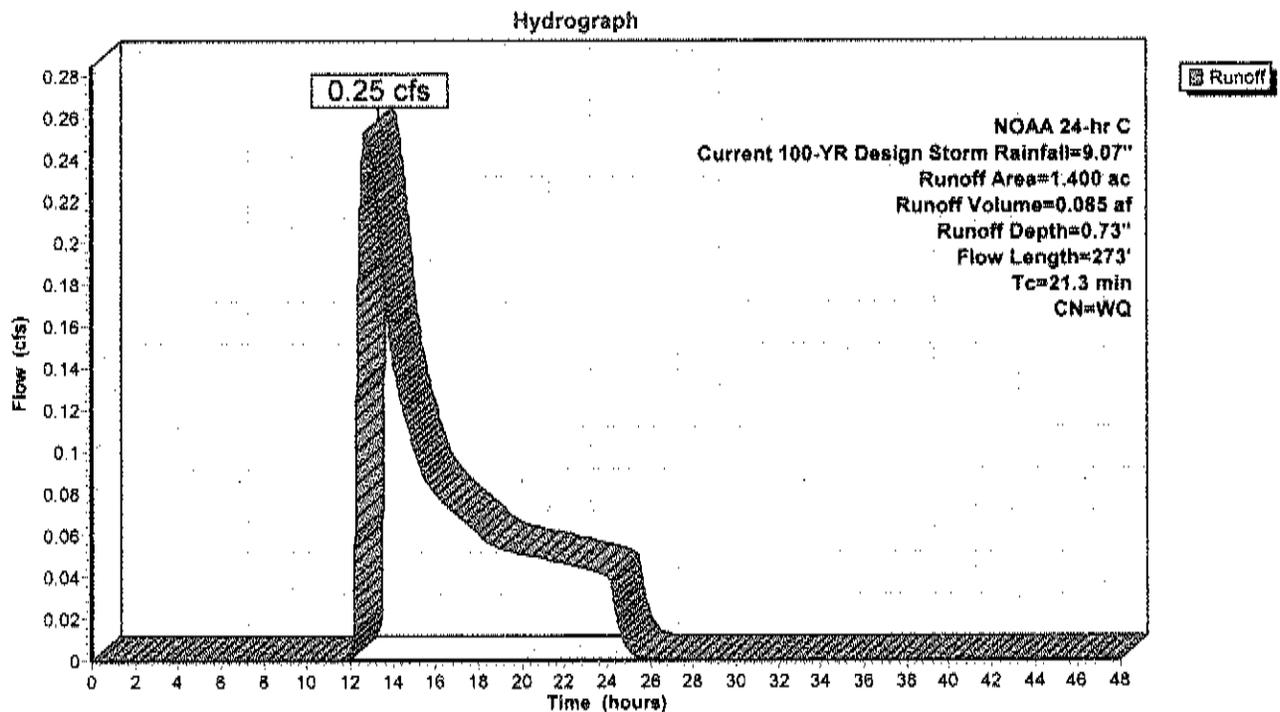
Runoff = 0.25 cfs @ 12.73 hrs, Volume= 0.085 af, Depth= 0.73"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	85	0.0256	0.08		<b>Sheet Flow, Woods/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	28	0.0285	0.84		<b>Shallow Concentrated Flow, Woods/Brush</b> Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
21.3	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

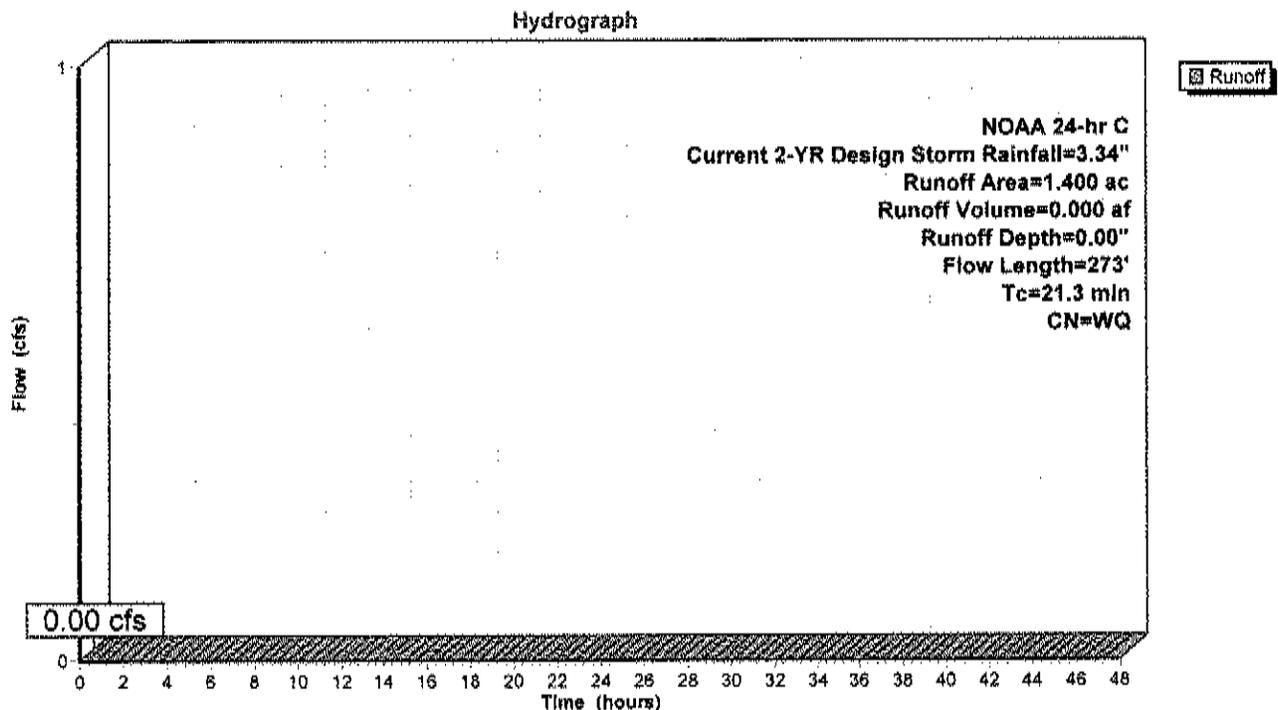
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	85	0.0256	0.08		Sheet Flow, Woods/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	28	0.0285	0.84		Shallow Concentrated Flow, Woods/Brush Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
21.3	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

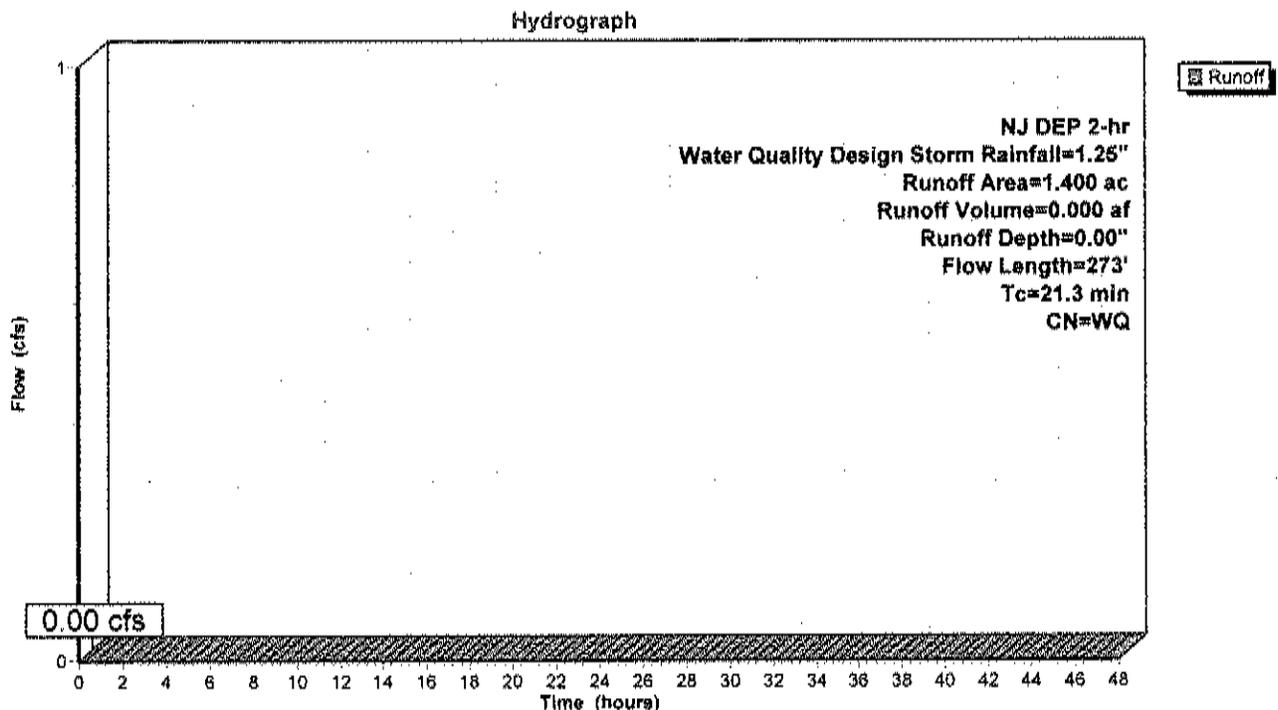
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	85	0.0256	0.08		<b>Sheet Flow, Woods/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	28	0.0285	0.84		<b>Shallow Concentrated Flow, Woods/Brush</b> Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
21.3	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.02" for Current 10-YR Design Storm event  
 Inflow = 0.00 cfs @ 24.09 hrs, Volume= 0.002 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= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.28' @ 26.37 hrs Surf.Area= 0.013 ac Storage= 0.002 af

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

Volume #1	Invert	Avail.Storage	Storage Description
	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device #1	Routing Primary	Invert 24.10'	Outlet Devices
<b>50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir</b>			
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			
Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64			

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)

↑=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.73" for Current 100-YR Design Storm even  
 Inflow = 0.25 cfs @ 12.73 hrs, Volume= 0.085 af  
 Outflow = 0.14 cfs @ 14.11 hrs, Volume= 0.056 af, Atten= 45%, Lag= 82.4 min  
 Primary = 0.14 cfs @ 14.11 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.11' @ 14.11 hrs Surf.Area= 0.063 ac Storage= 0.029 af

Plug-Flow detention time= 241.5 min calculated for 0.056 af (66% of inflow)  
 Center-of-Mass det. time= 107.6 min ( 1,094.8 - 987.1 )

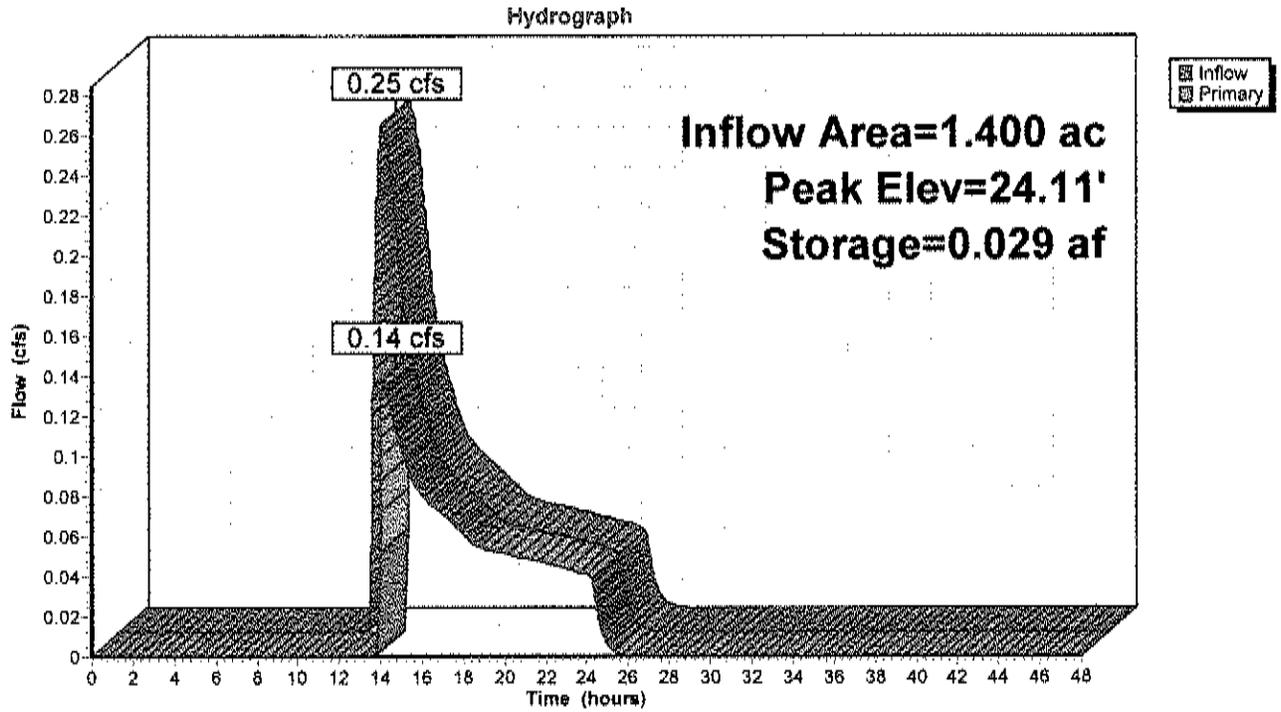
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.09 cfs @ 14.11 hrs HW=24.11' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 0.09 cfs @ 0.22 fps)

### Pond 2EL: Existing Low Point



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for Current 2-YR Design Storm event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.00' @ 0.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

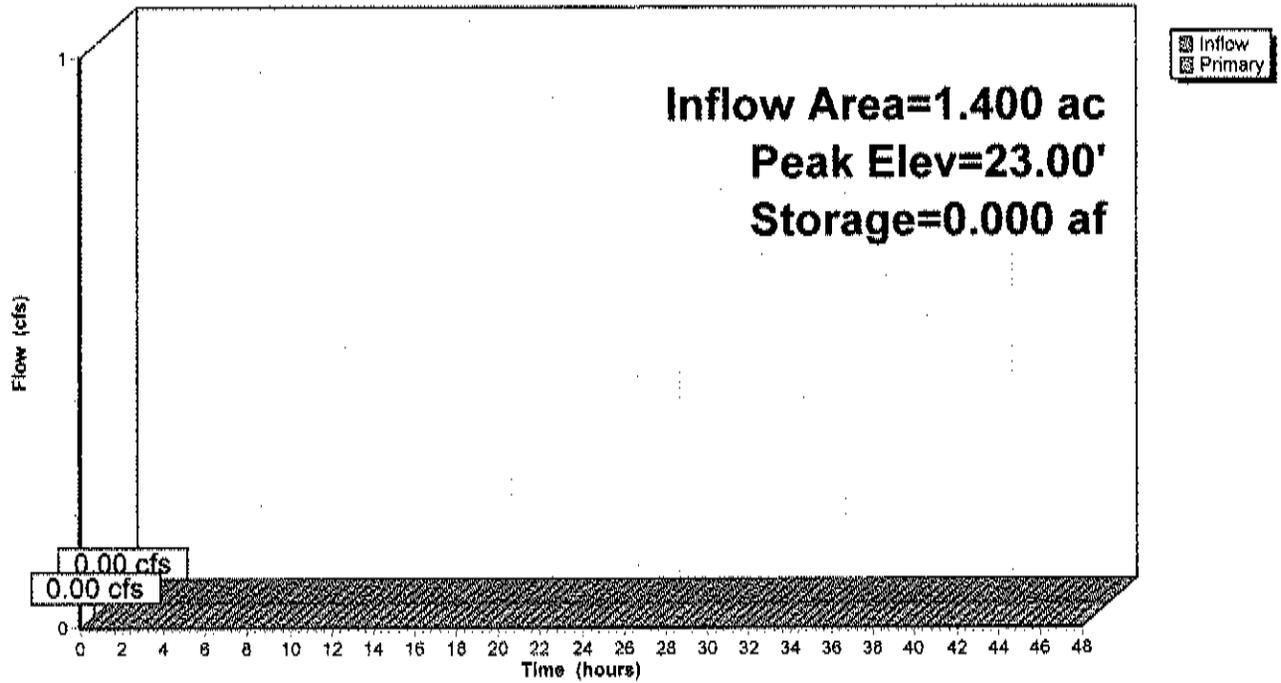
Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 2EL: Existing Low Point

Hydrograph



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for Water Quality Design Storm event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.00' @ 0.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

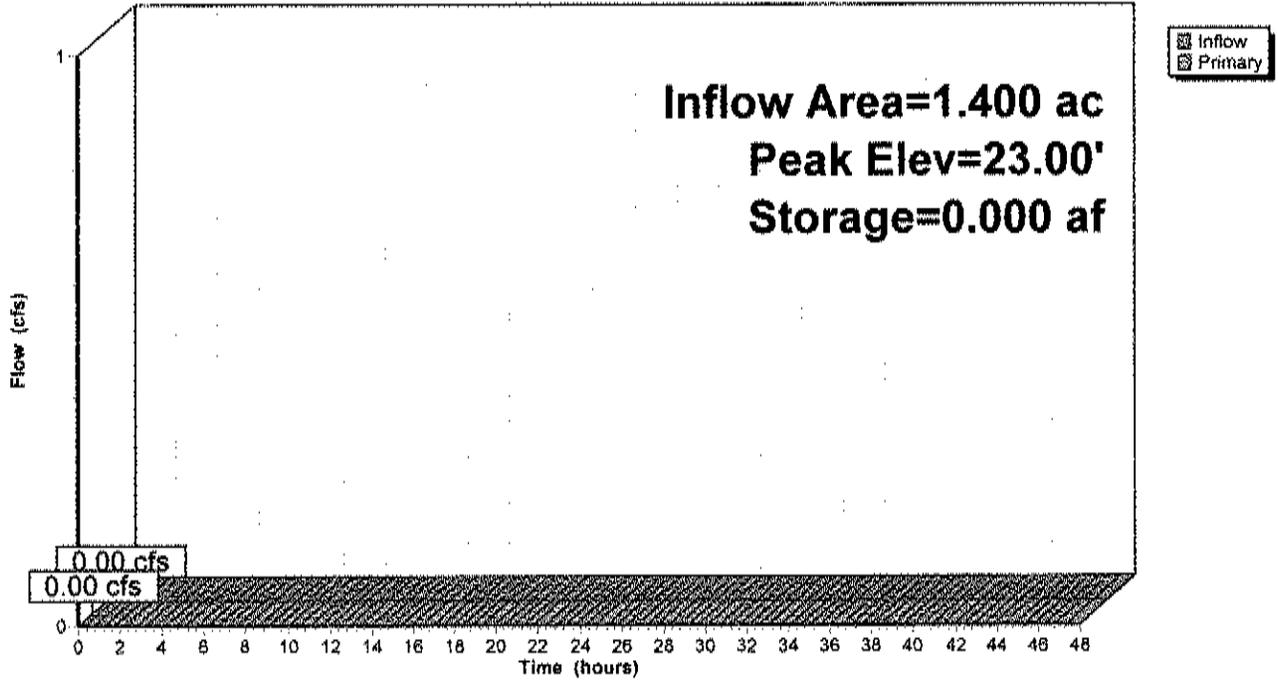
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 2EL: Existing Low Point

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

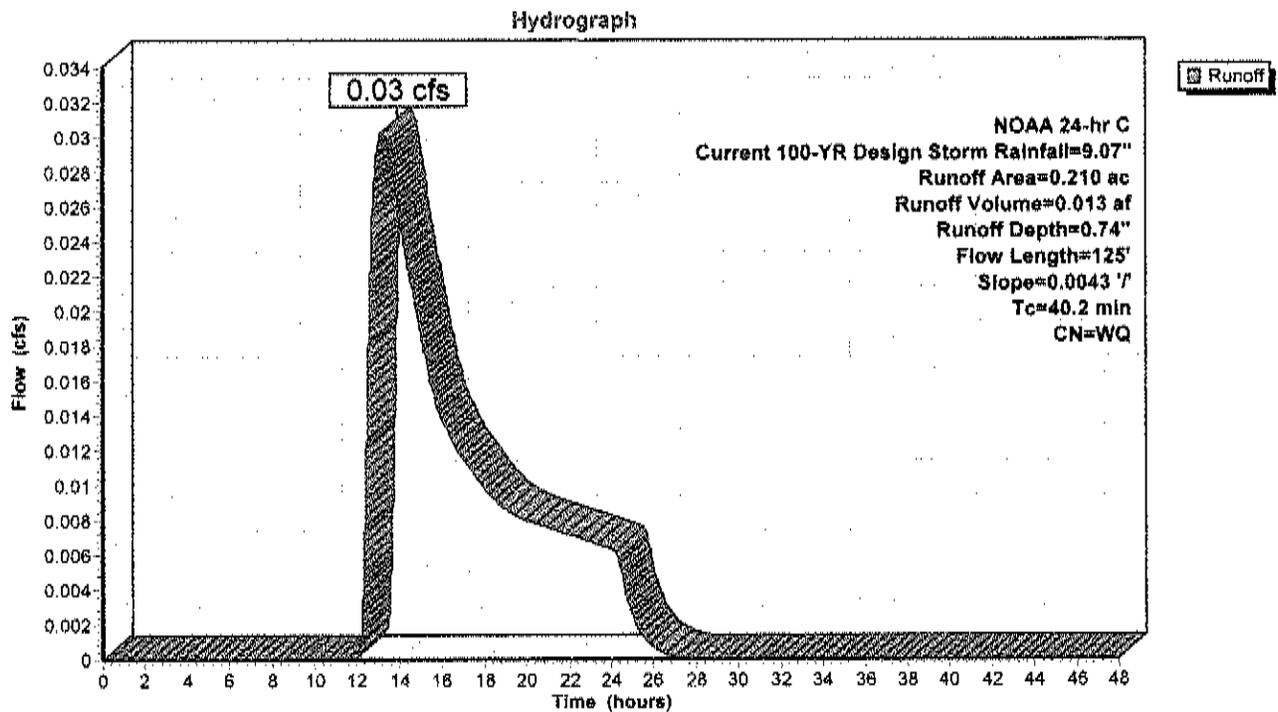
Runoff = 0.03 cfs @ 13.22 hrs, Volume= 0.013 af, Depth= 0.74"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.9	100	0.0043	0.04		<b>Sheet Flow, Woodland</b> Woods: Light underbrush n= 0.400 P2= 3.34"
1.3	25	0.0043	0.33		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
40.2	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

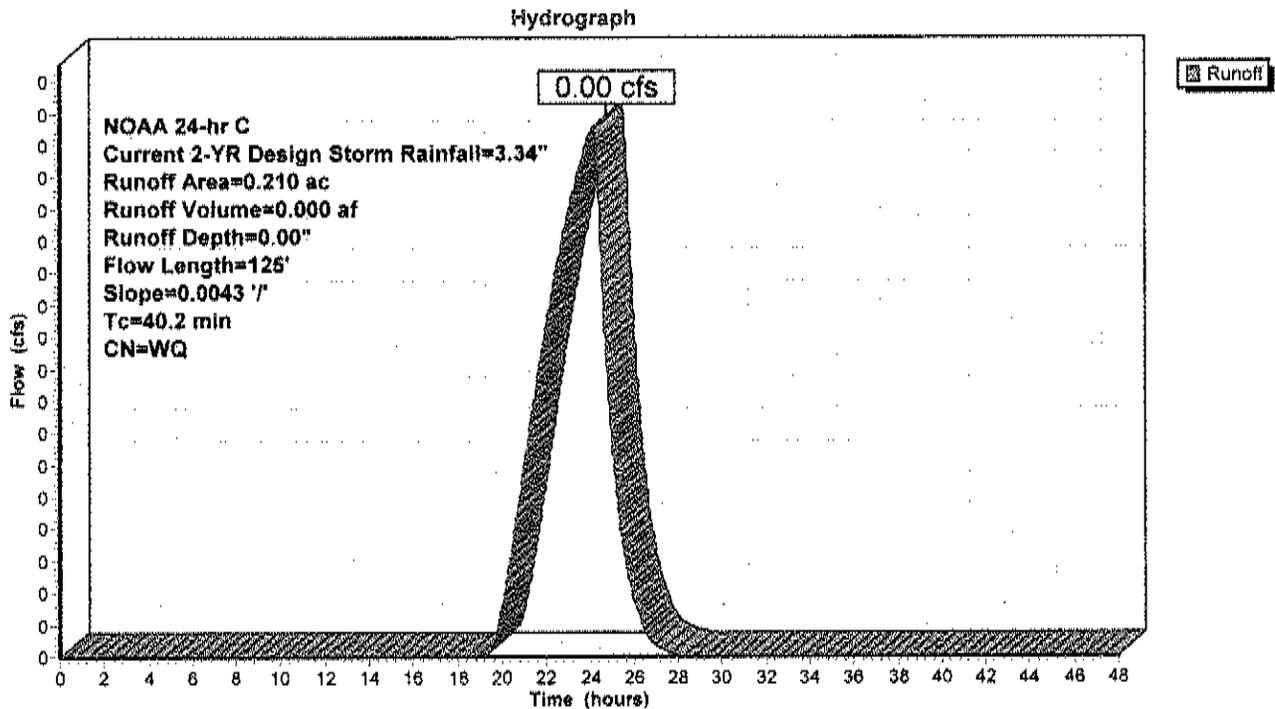
Runoff = 0.00 cfs @ 24.13 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.9	100	0.0043	0.04		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.34"
1.3	25	0.0043	0.33		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
40.2	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

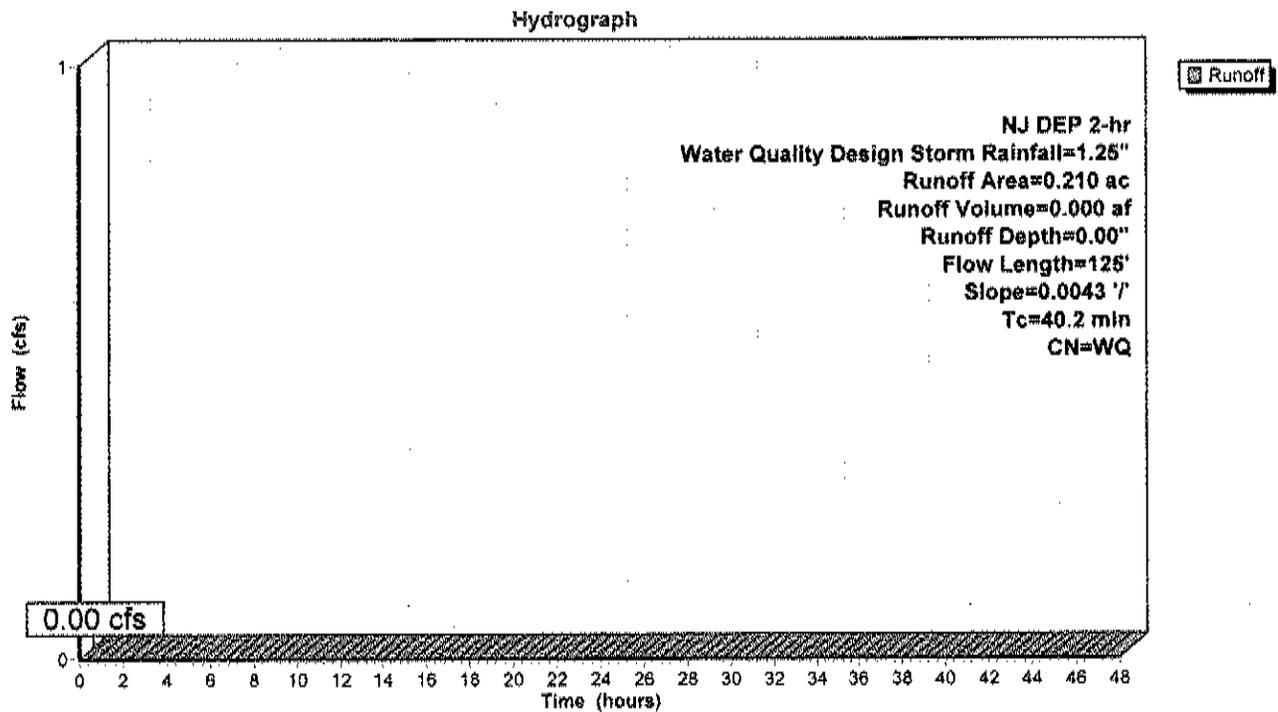
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.9	100	0.0043	0.04		<b>Sheet Flow, Woodland</b> Woods: Light underbrush n= 0.400 P2= 3.34"
1.3	25	0.0043	0.33		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
40.2	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.008 af, Depth= 4.98"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

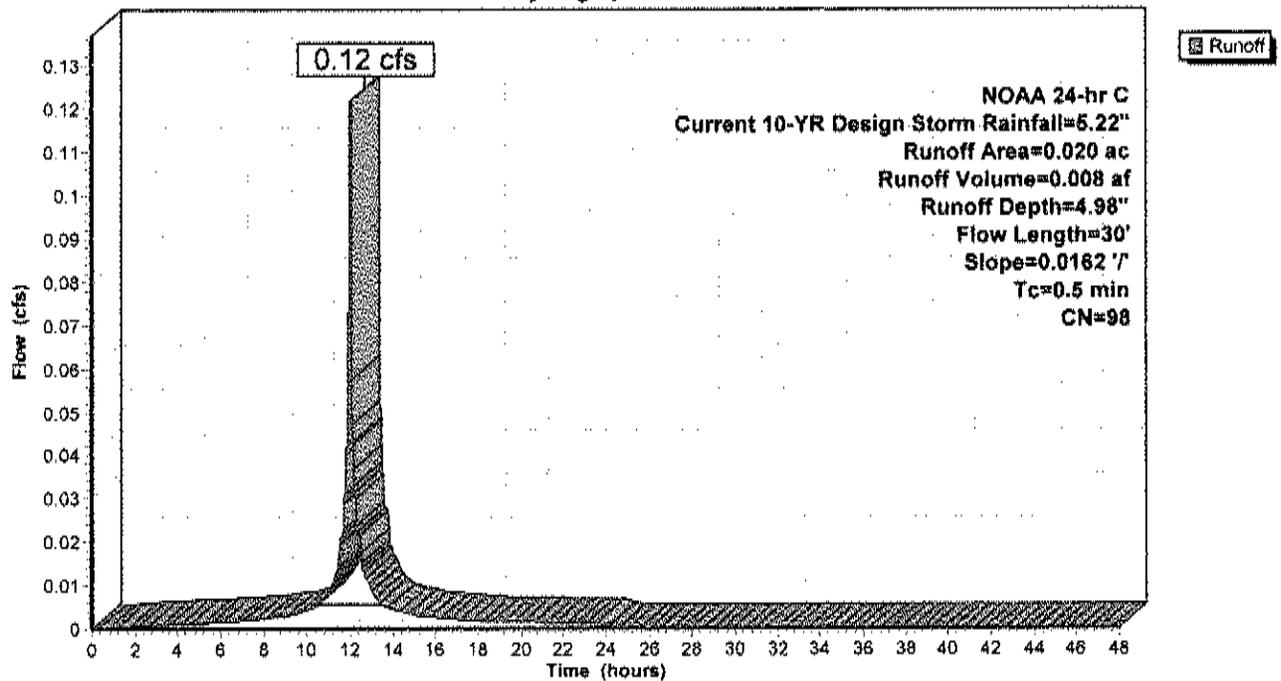
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.02		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

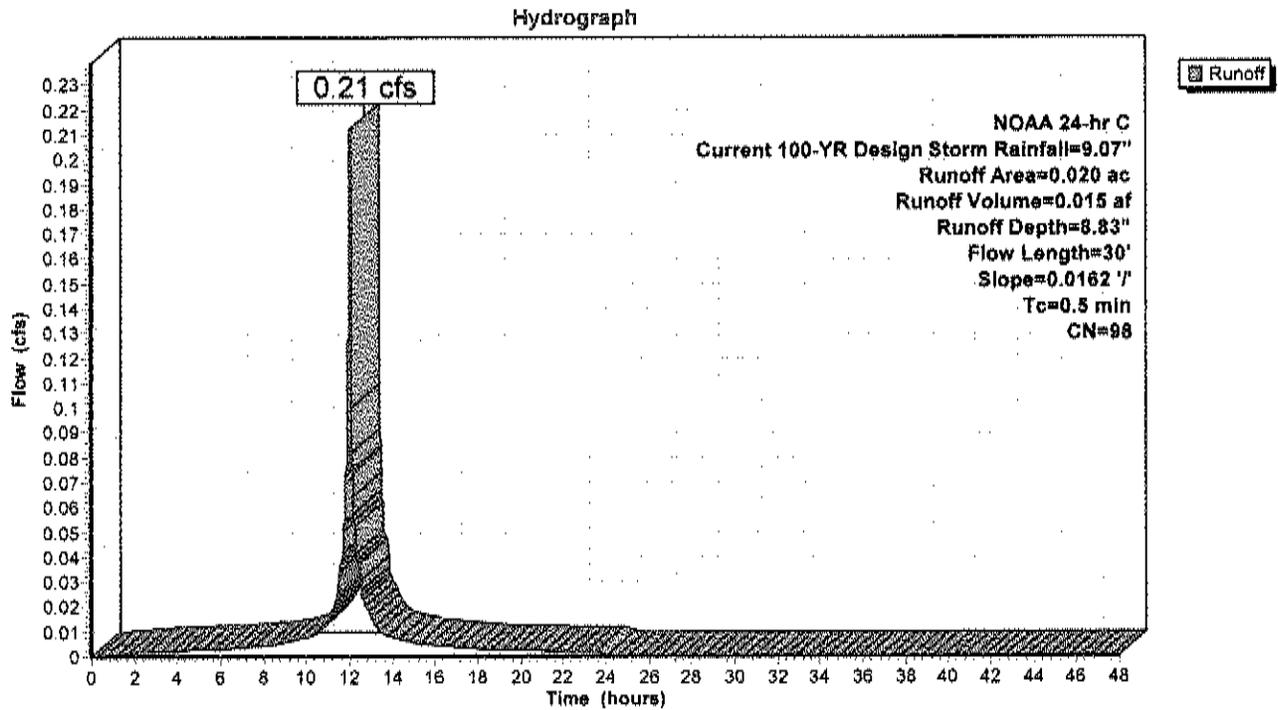
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 8.83"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.02		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**



**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 3.11"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

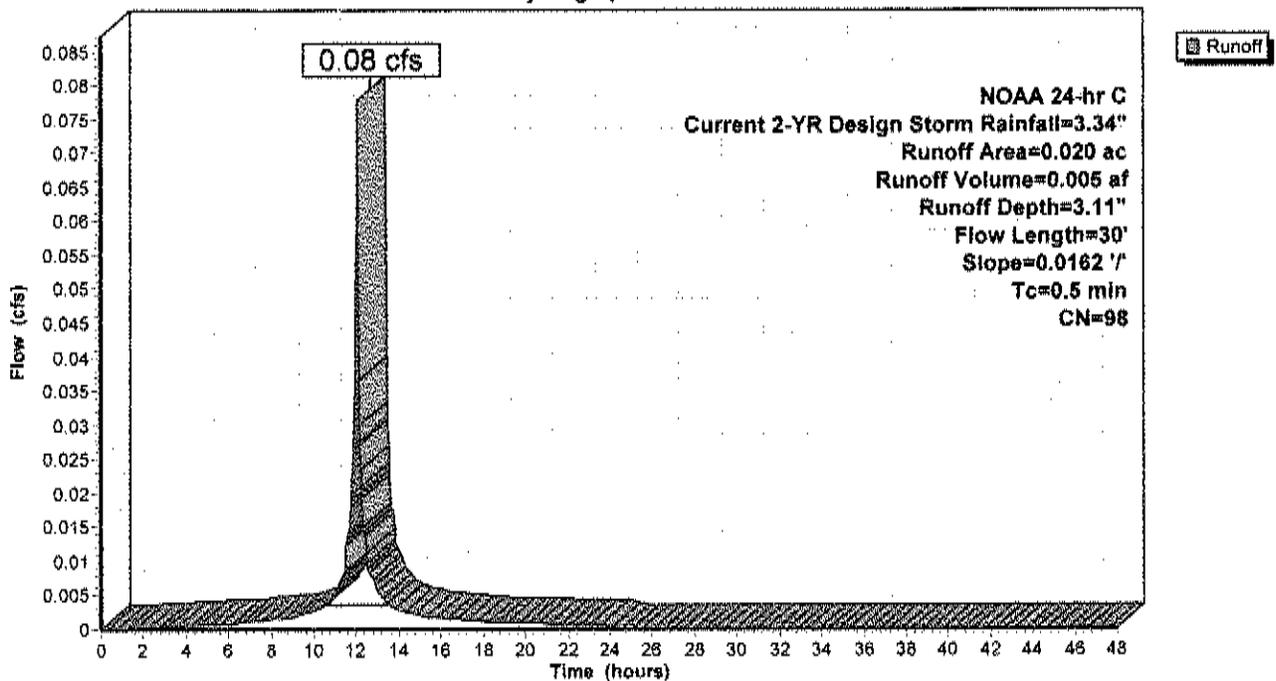
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.02		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

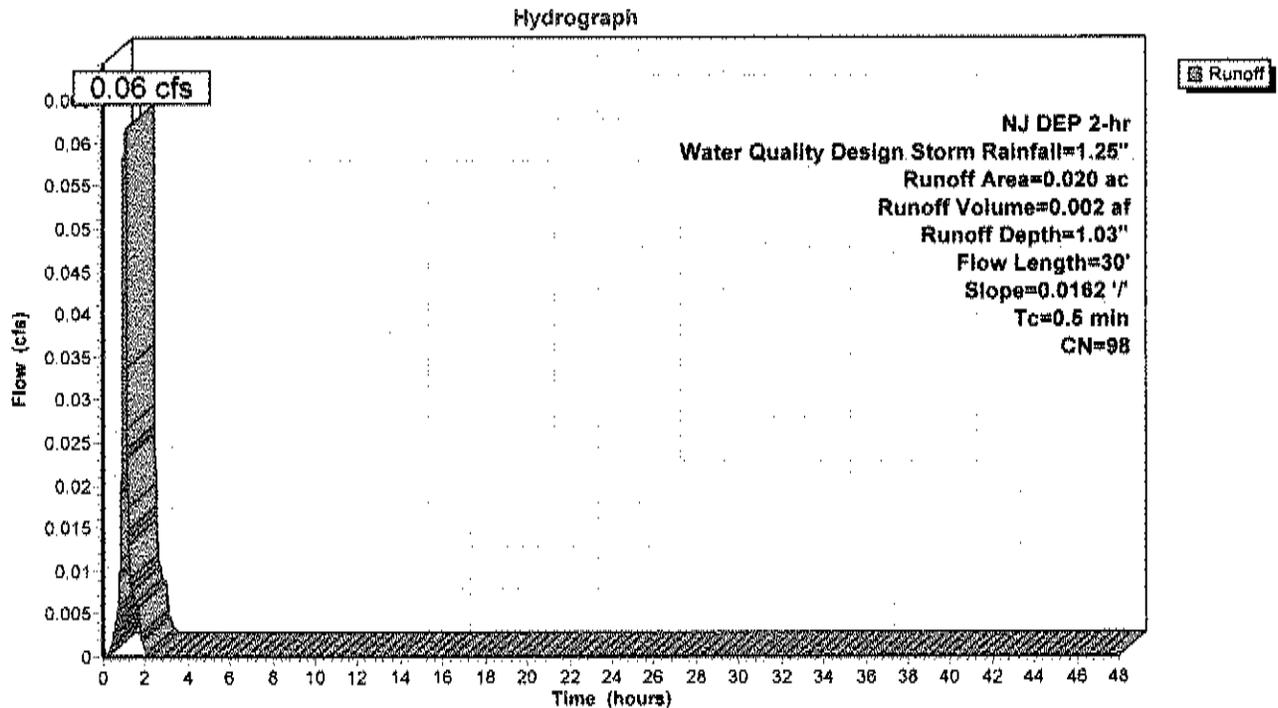
Runoff = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af, Depth= 1.03"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.02		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

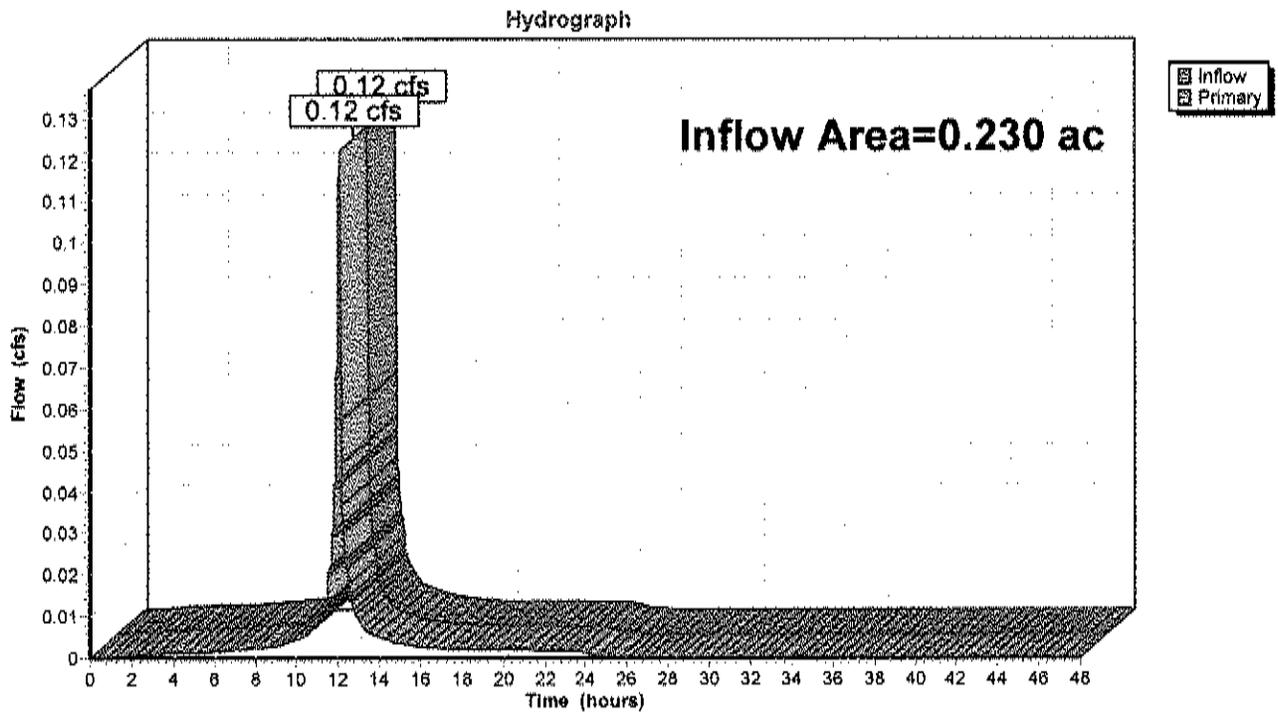
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.46" for Current 10-YR Design Storm event  
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af  
Primary = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

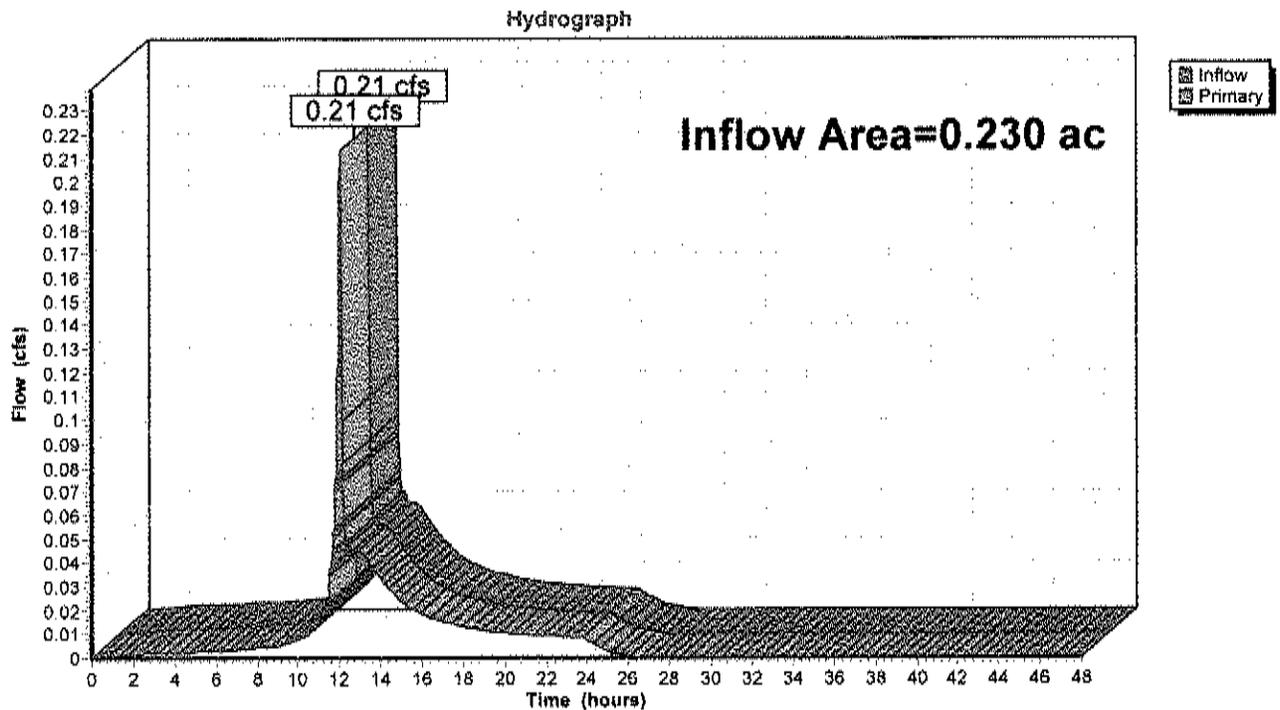


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 1.45" for Current 100-YR Design Storm even  
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.028 af  
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

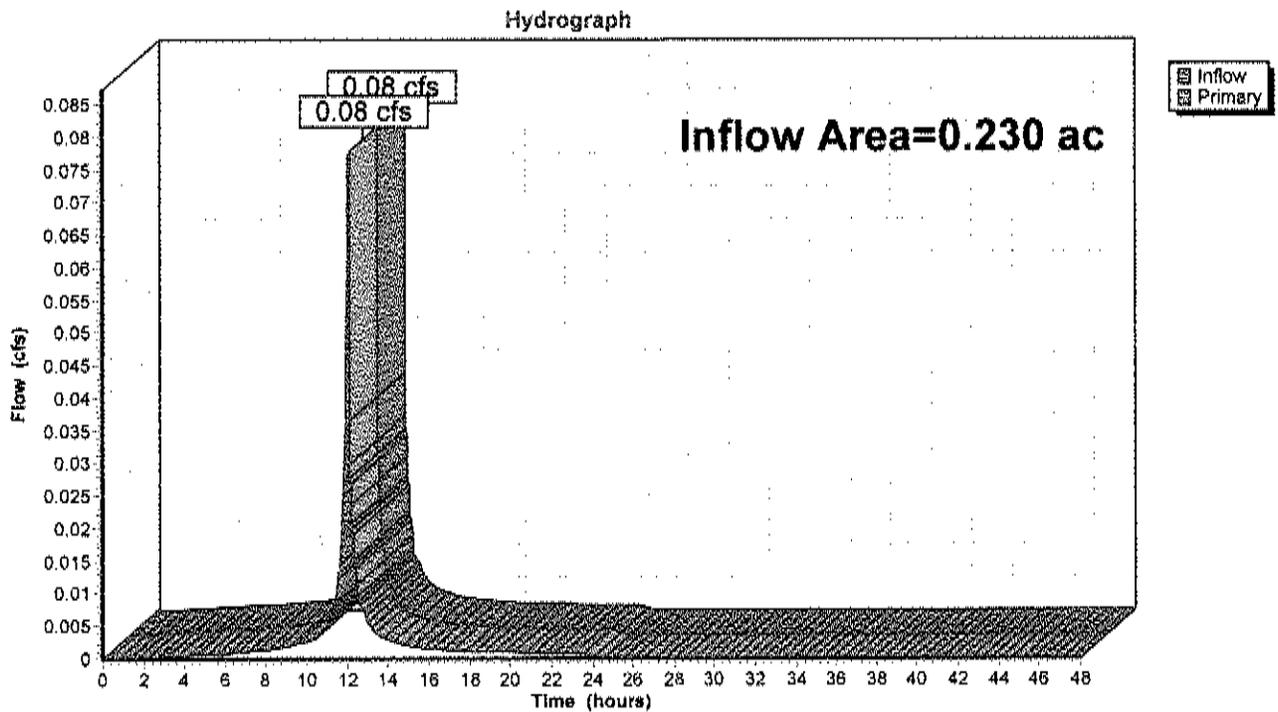


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.27" for Current 2-YR Design Storm event  
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.005 af  
Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

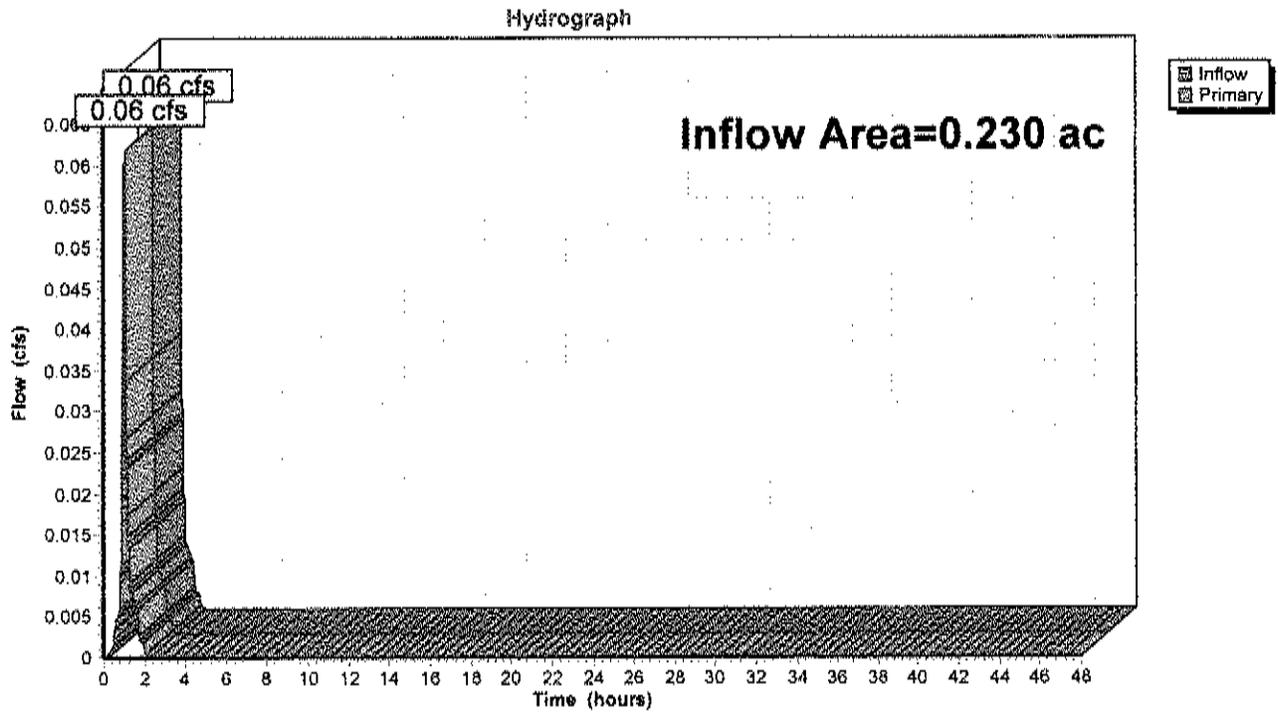


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.09" for Water Quality Design Storm event  
Inflow = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af  
Primary = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

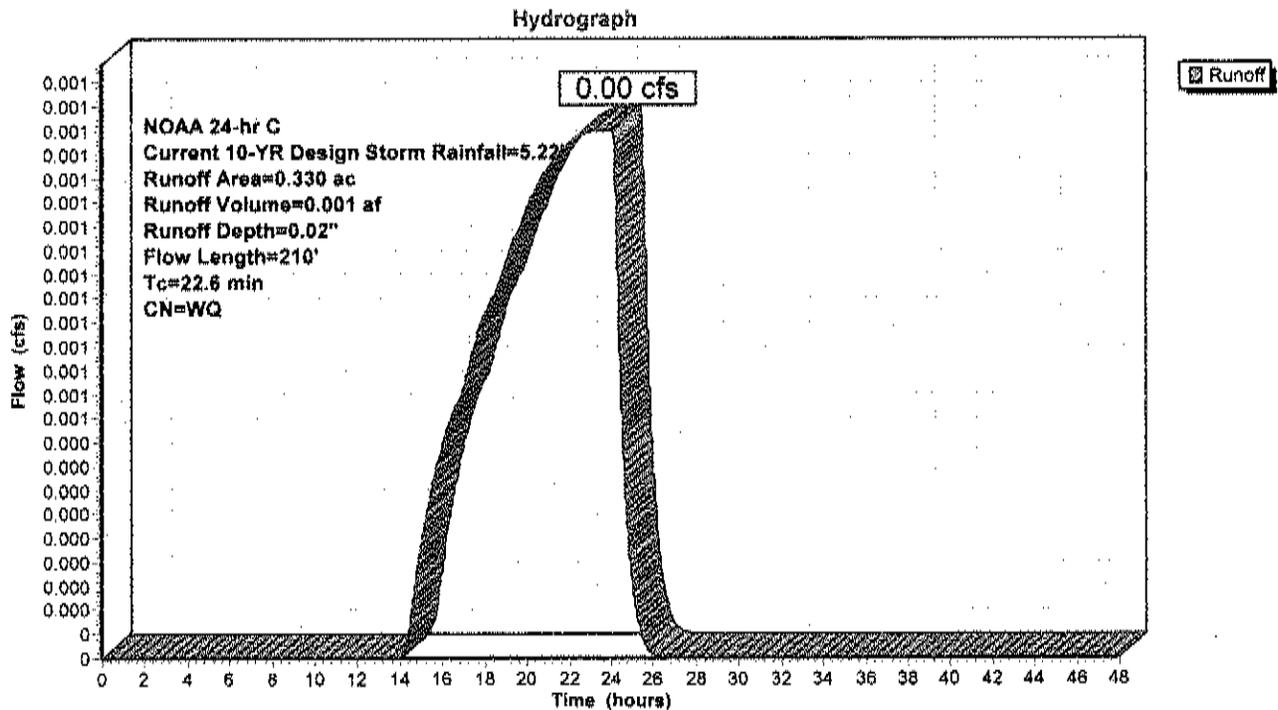
Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	95	0.0200	0.08		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
22.6	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

Runoff = 0.07 cfs @ 12.75 hrs, Volume= 0.021 af, Depth= 0.77"

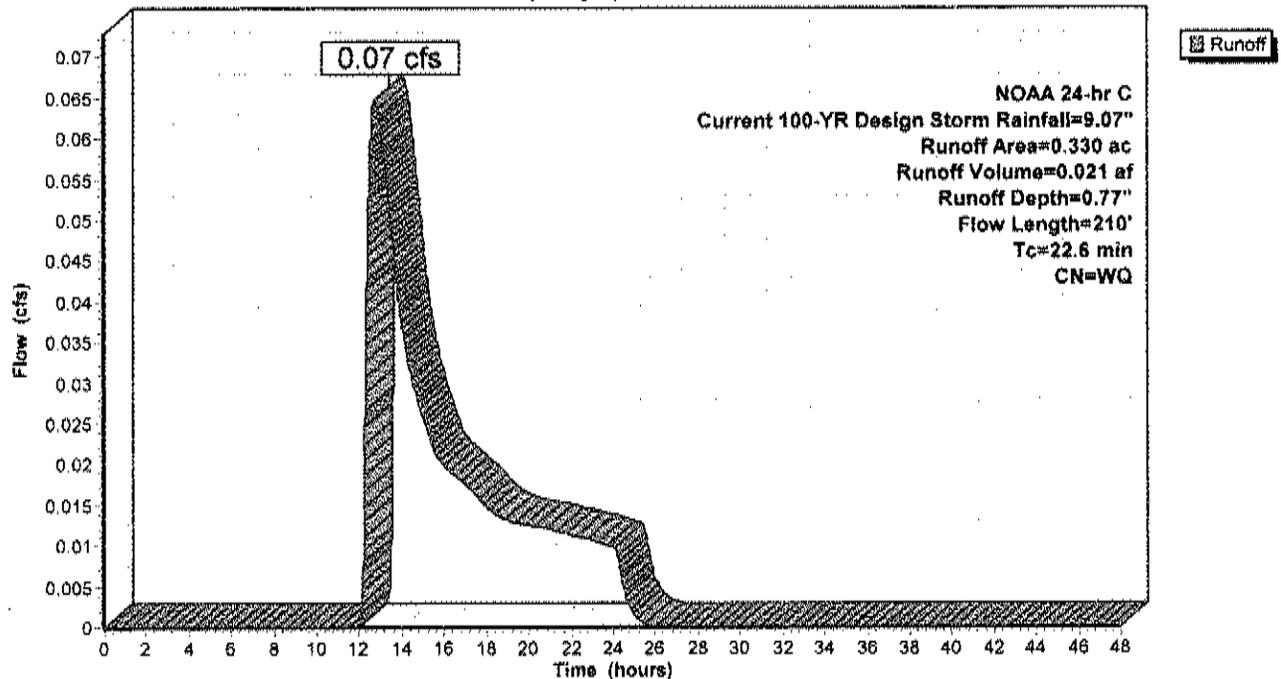
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	95	0.0200	0.08		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
22.6	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

Hydrograph



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

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

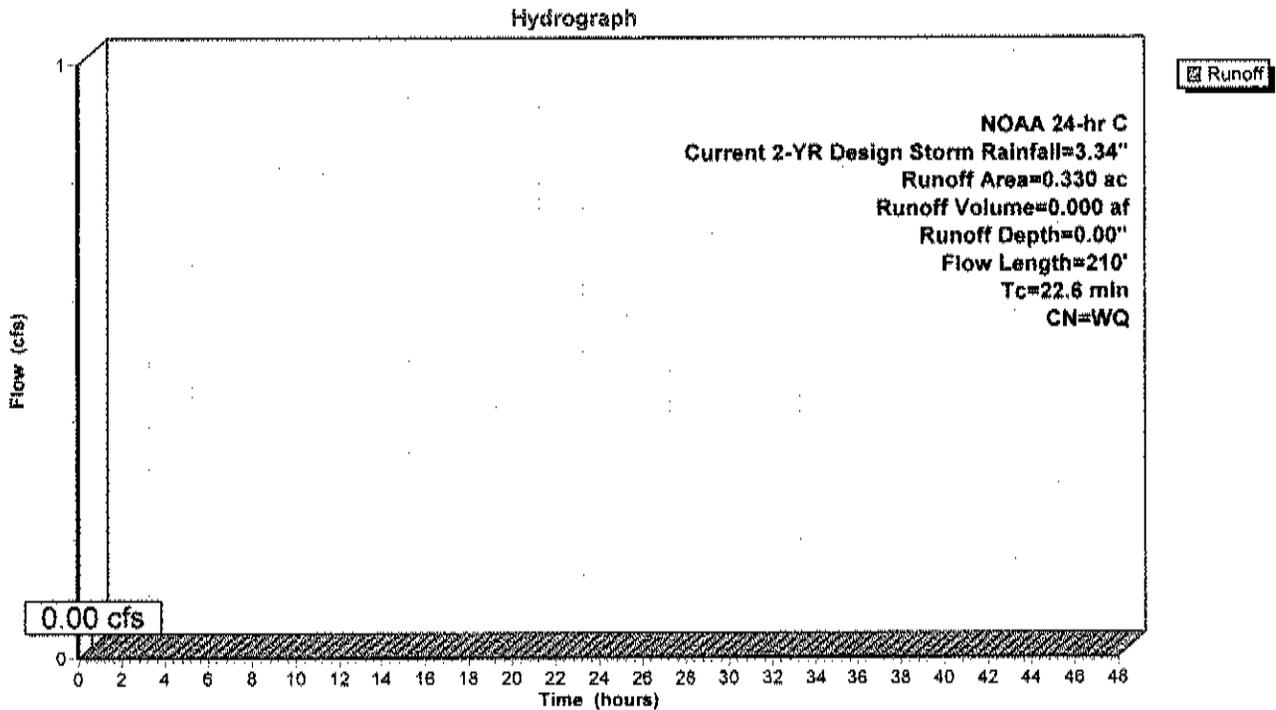
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	95	0.0200	0.08		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
22.6	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

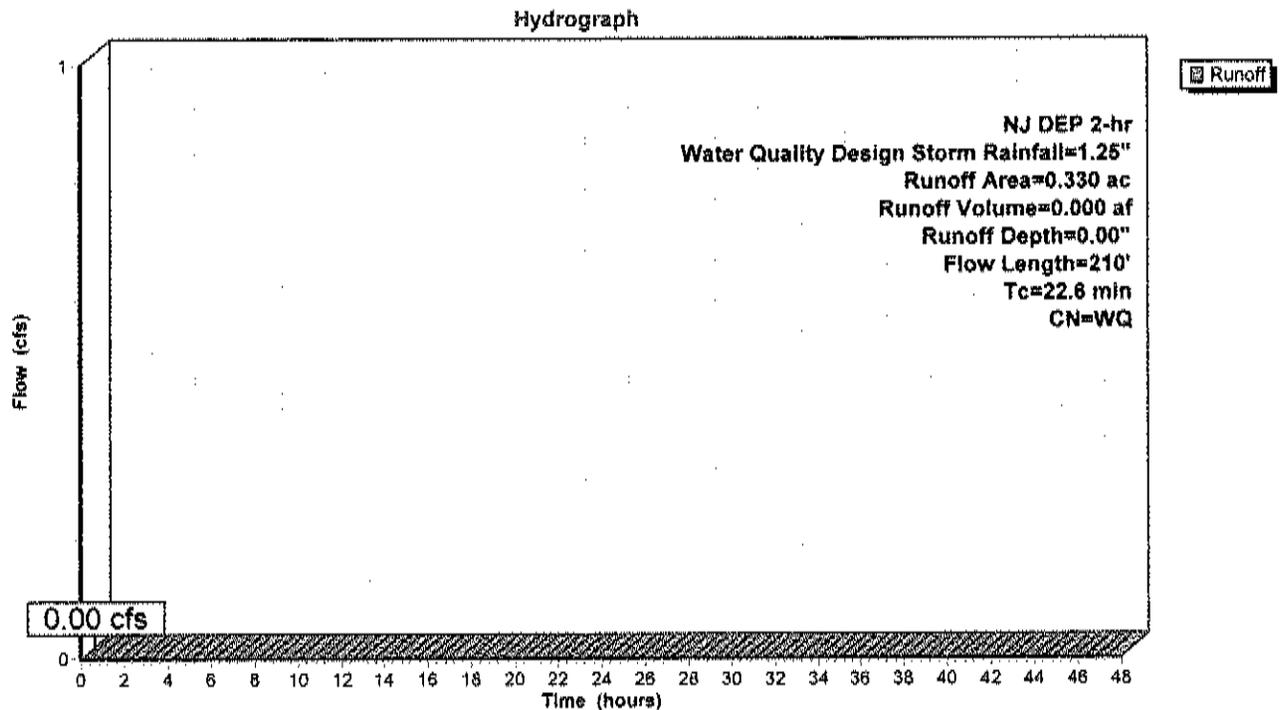
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	95	0.0200	0.08		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
22.6	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

Runoff = 0.00 cfs @ 23.29 hrs, Volume= 0.002 af, Depth= 0.03"

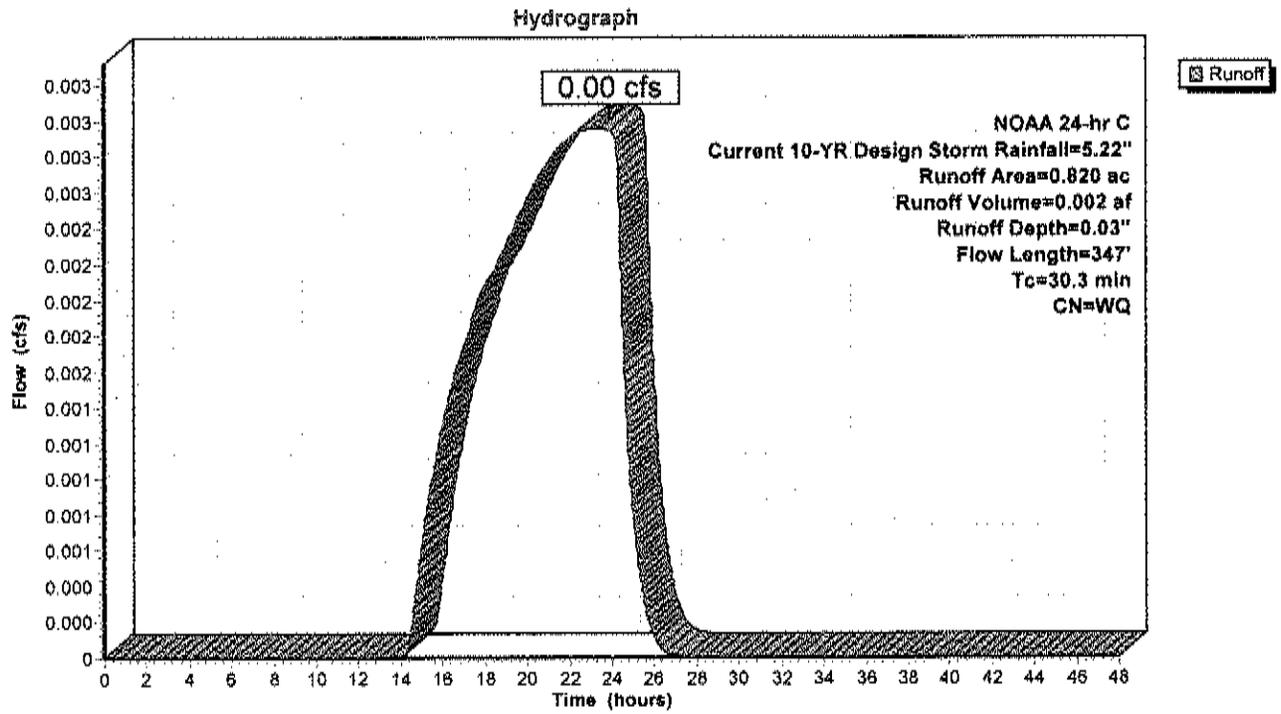
Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	65	0.0181	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
30.3	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

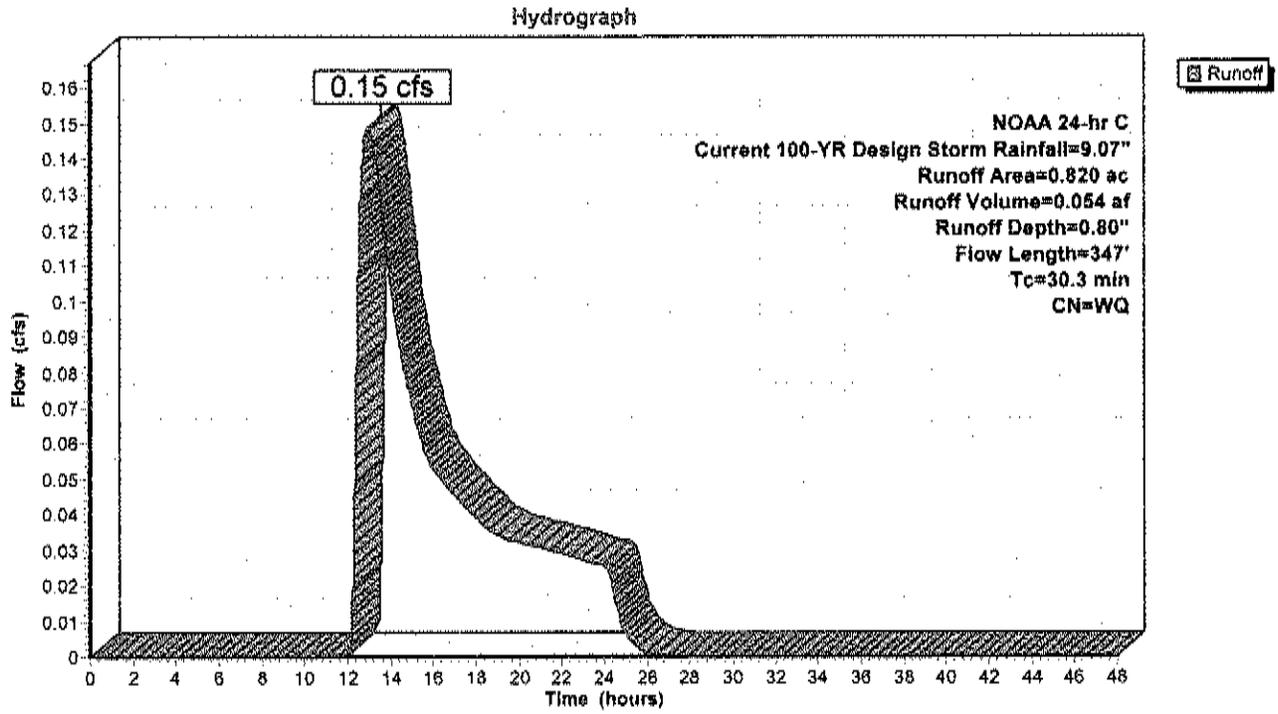
Runoff = 0.15 cfs @ 12.93 hrs, Volume= 0.054 af, Depth= 0.80"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	65	0.0181	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
30.3	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

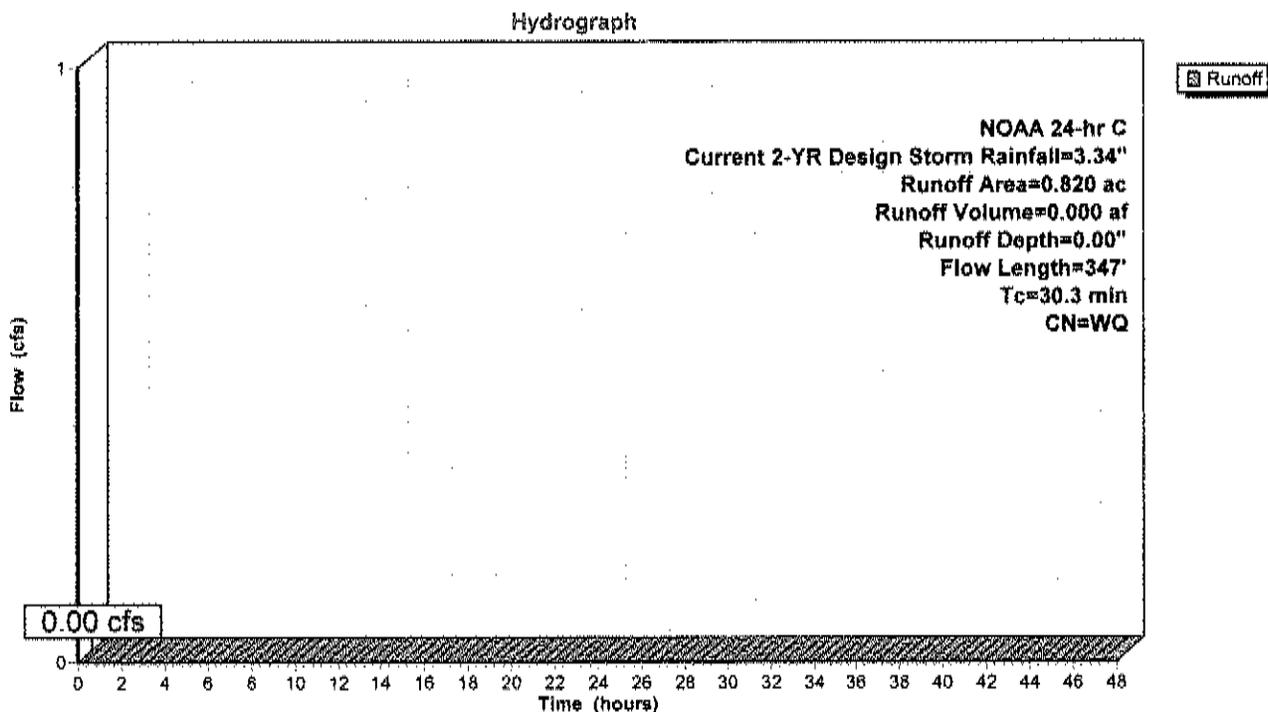
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	65	0.0181	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
30.3	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

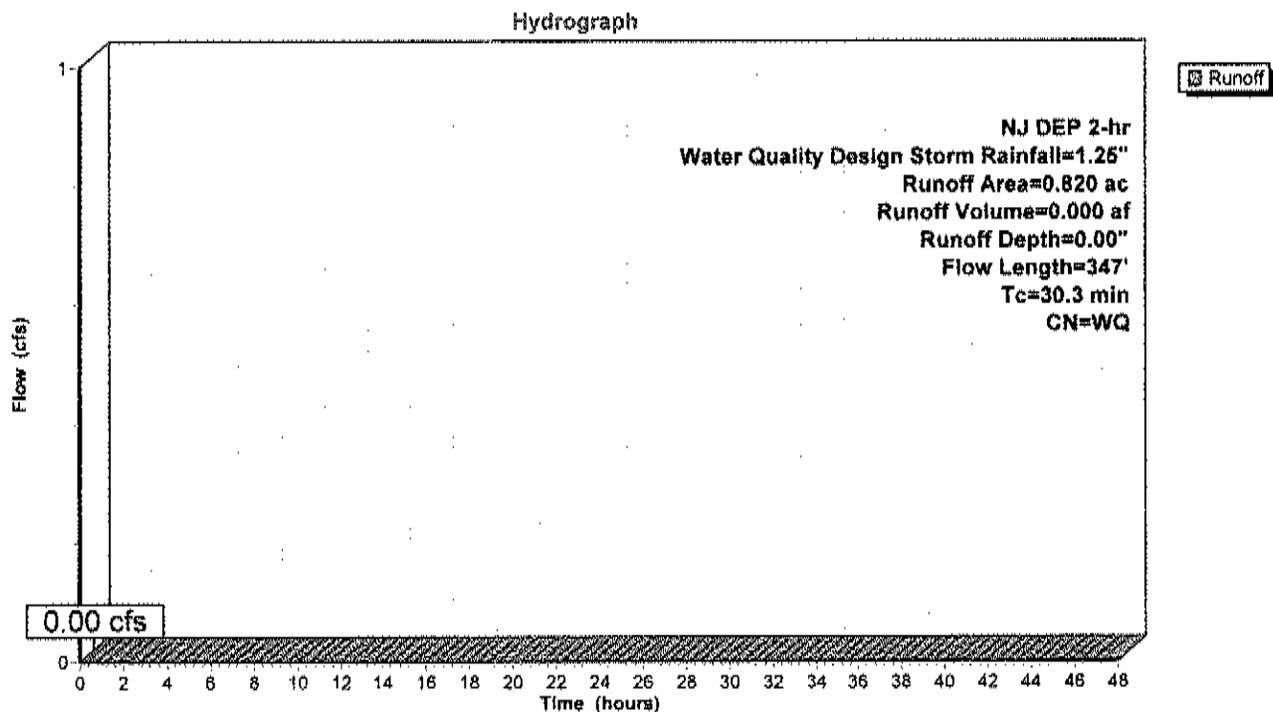
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	65	0.0181	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
30.3	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 0.45 cfs @ 12.11 hrs, Volume= 0.033 af, Depth= 4.98"  
 Routed to Pond 5EL : Existing Low Point

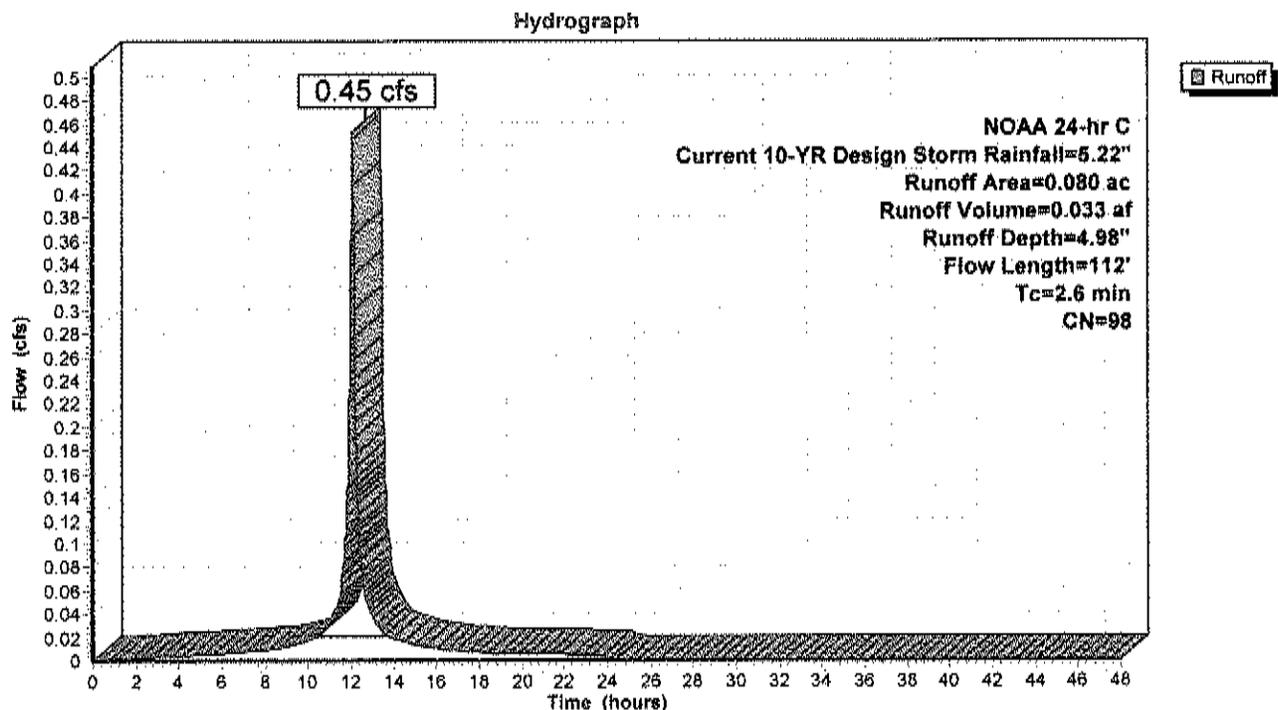
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.6	112	Total			

**Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**



**Summary for Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 0.79 cfs @ 12.11 hrs, Volume= 0.059 af, Depth= 8.83"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

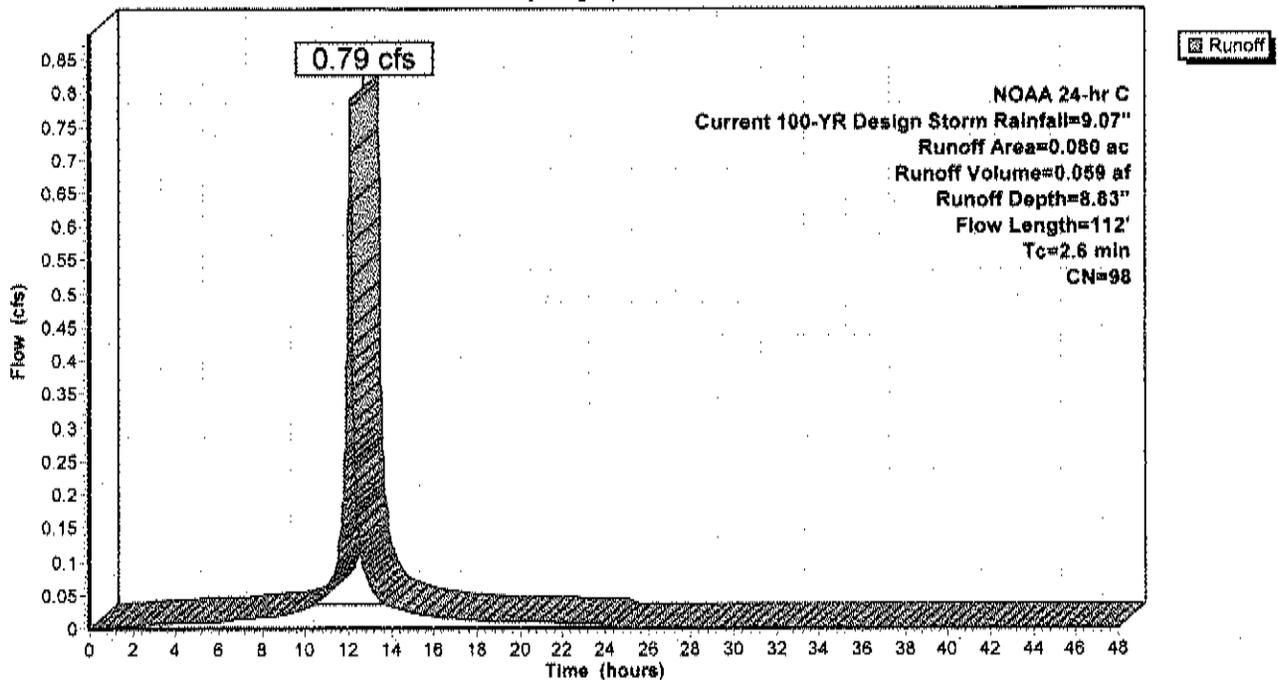
Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.6	112	Total			

**Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 0.29 cfs @ 12.11 hrs, Volume= 0.021 af, Depth= 3.11"  
 Routed to Pond 5EL : Existing Low Point

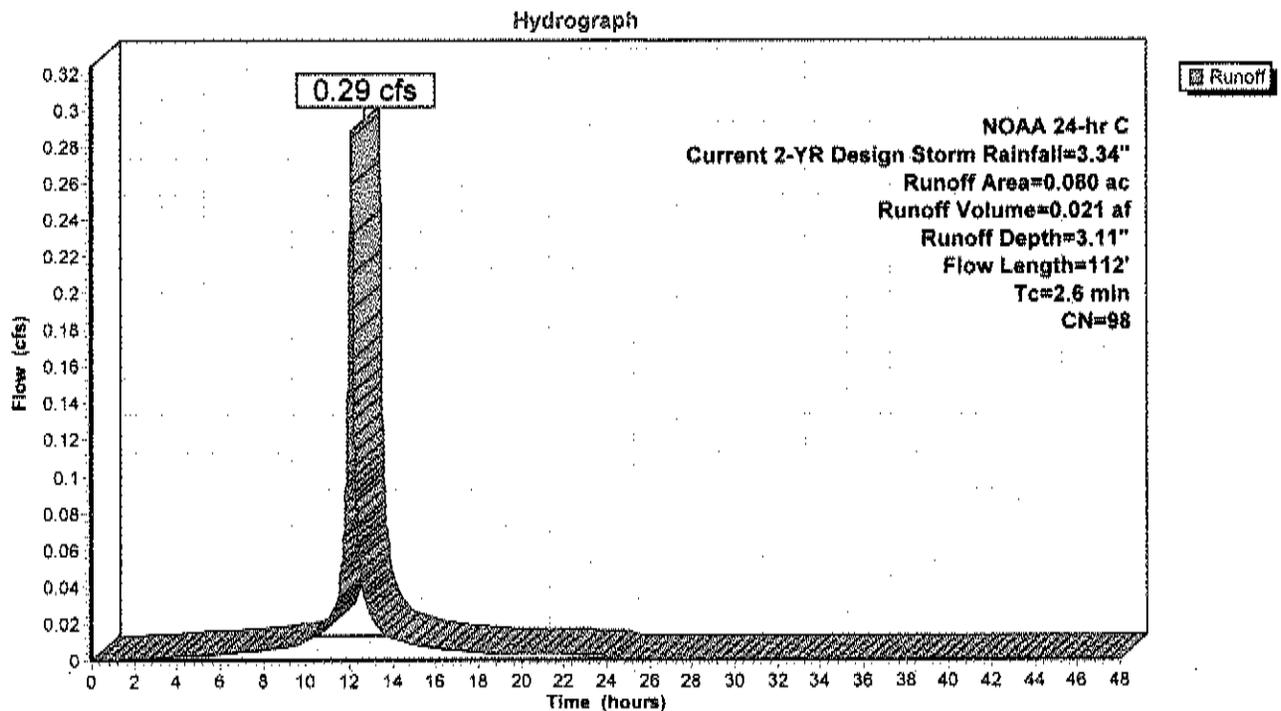
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.6	112	Total			

**Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**



**Summary for Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**

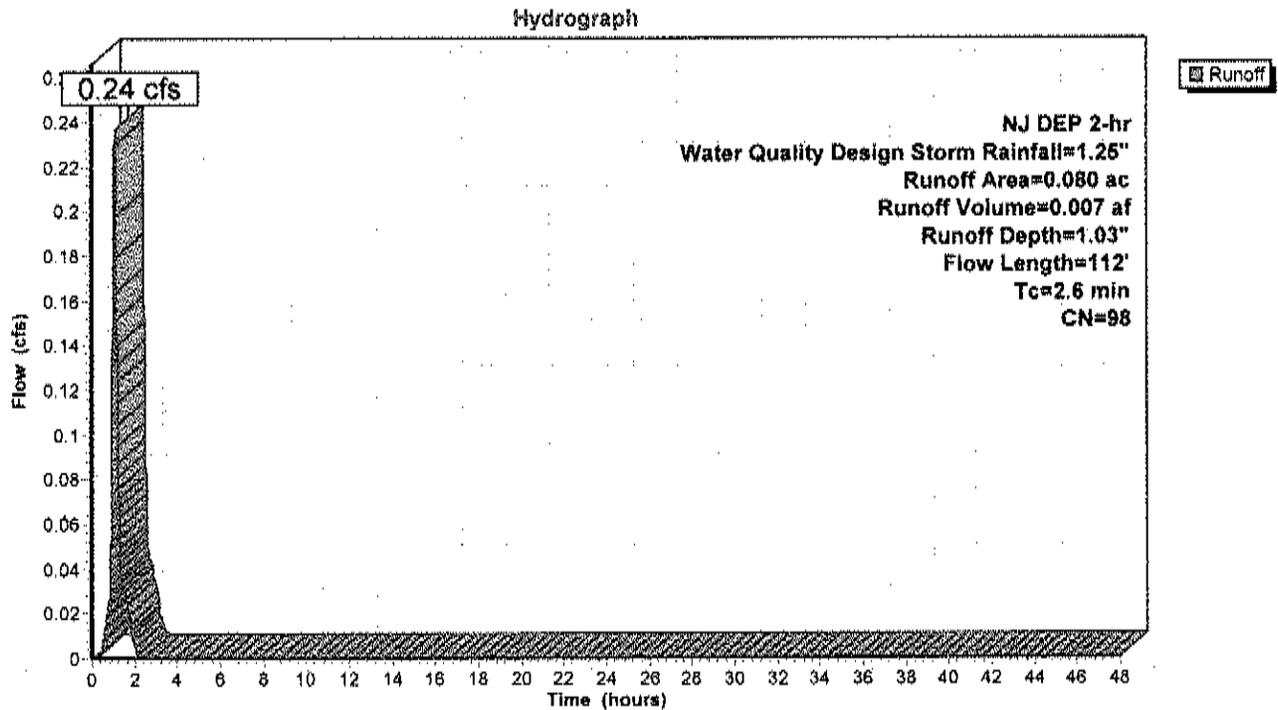
Runoff = 0.24 cfs @ 1.09 hrs, Volume= 0.007 af, Depth= 1.03"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.6	112	Total			

**Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.47" for Current 10-YR Design Storm event  
 Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af  
 Outflow = 0.07 cfs @ 12.57 hrs, Volume= 0.015 af, Atten= 86%, Lag= 27.8 min  
 Primary = 0.07 cfs @ 12.57 hrs, Volume= 0.015 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.01' @ 12.57 hrs Surf.Area= 0.209 ac Storage= 0.022 af

Plug-Flow detention time= 383.9 min calculated for 0.015 af (43% of inflow)  
 Center-of-Mass det. time= 213.9 min ( 987.1 - 773.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

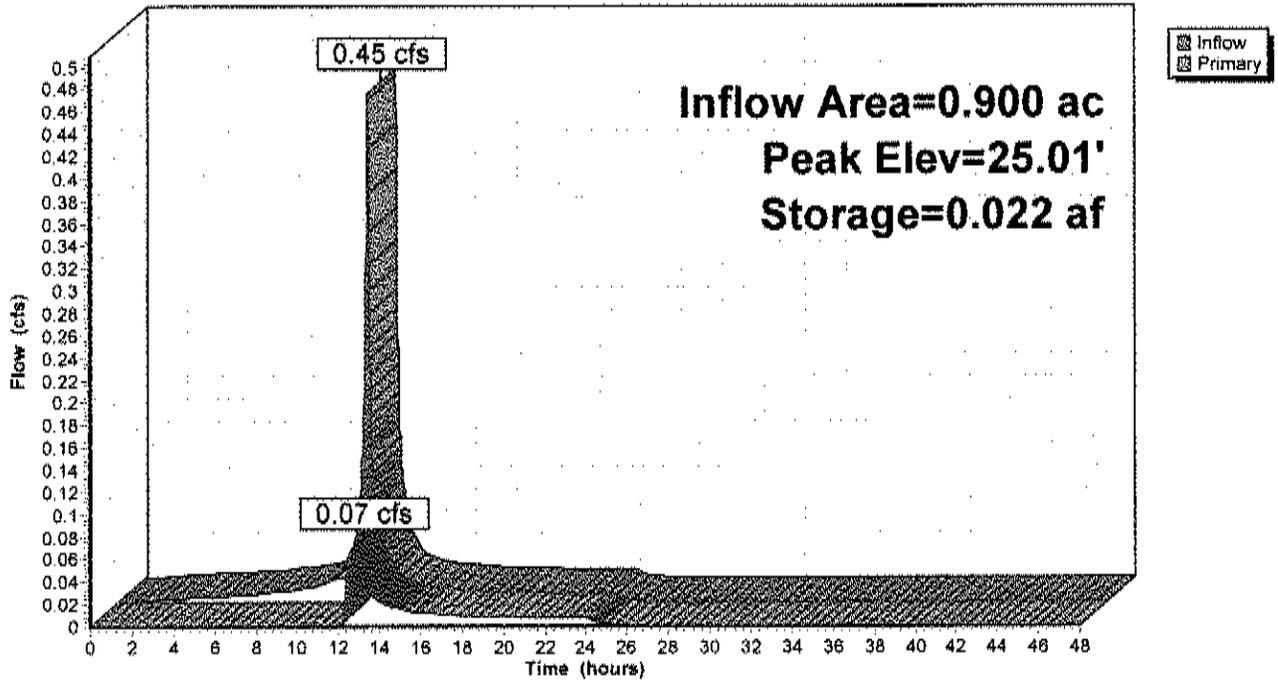
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.06 cfs @ 12.57 hrs HW=25.01' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.25 fps)

### Pond 5EL: Existing Low Point

Hydrograph



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 1.51" for Current 100-YR Design Storm even  
 Inflow = 0.79 cfs @ 12.11 hrs, Volume= 0.113 af  
 Outflow = 0.52 cfs @ 12.16 hrs, Volume= 0.093 af, Atten= 35%, Lag= 3.4 min  
 Primary = 0.52 cfs @ 12.16 hrs, Volume= 0.093 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.03' @ 12.16 hrs Surf.Area= 0.235 ac Storage= 0.027 af

Plug-Flow detention time= 175.0 min calculated for 0.093 af (82% of inflow)  
 Center-of-Mass det. time= 84.9 min ( 946.1 - 861.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

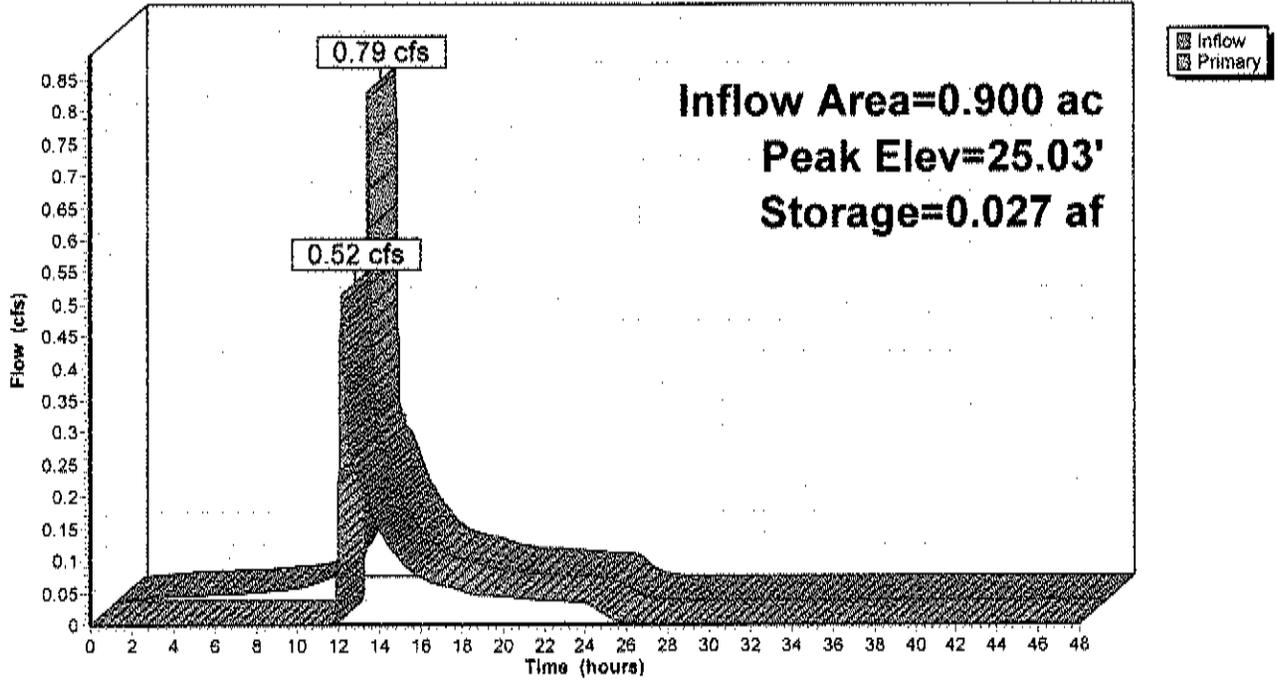
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.52 cfs @ 12.16 hrs HW=25.03' (Free Discharge)  
 ↑=Broad-Crested Rectangular Weir (Weir Controls 0.52 cfs @ 0.50 fps)

### Pond 5EL: Existing Low Point

Hydrograph



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.28" for Current 2-YR Design Storm event  
 Inflow = 0.29 cfs @ 12.11 hrs, Volume= 0.021 af  
 Outflow = 0.00 cfs @ 24.02 hrs, Volume= 0.001 af, Atten= 99%, Lag= 715.0 min  
 Primary = 0.00 cfs @ 24.02 hrs, Volume= 0.001 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.00' @ 24.02 hrs Surf.Area= 0.201 ac Storage= 0.020 af

Plug-Flow detention time= 1,165.1 min calculated for 0.001 af (3% of inflow)  
 Center-of-Mass det. time= 659.4 min ( 1,414.5 - 755.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

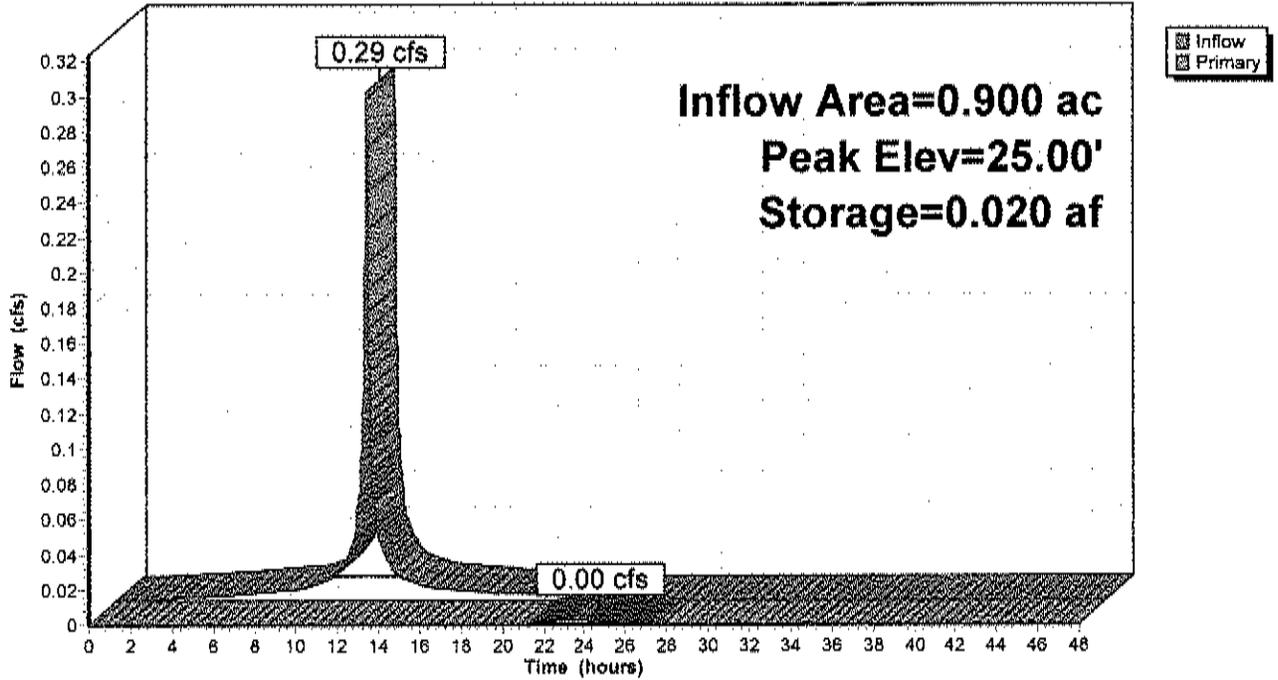
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 24.02 hrs HW=25.00' (Free Discharge)  
 1=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.09 fps)

### Pond 5EL: Existing Low Point

Hydrograph



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.09" for Water Quality Design Storm event  
 Inflow = 0.24 cfs @ 1.09 hrs, Volume= 0.007 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  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.92' @ 2.30 hrs Surf.Area= 0.117 ac Storage= 0.007 af

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	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

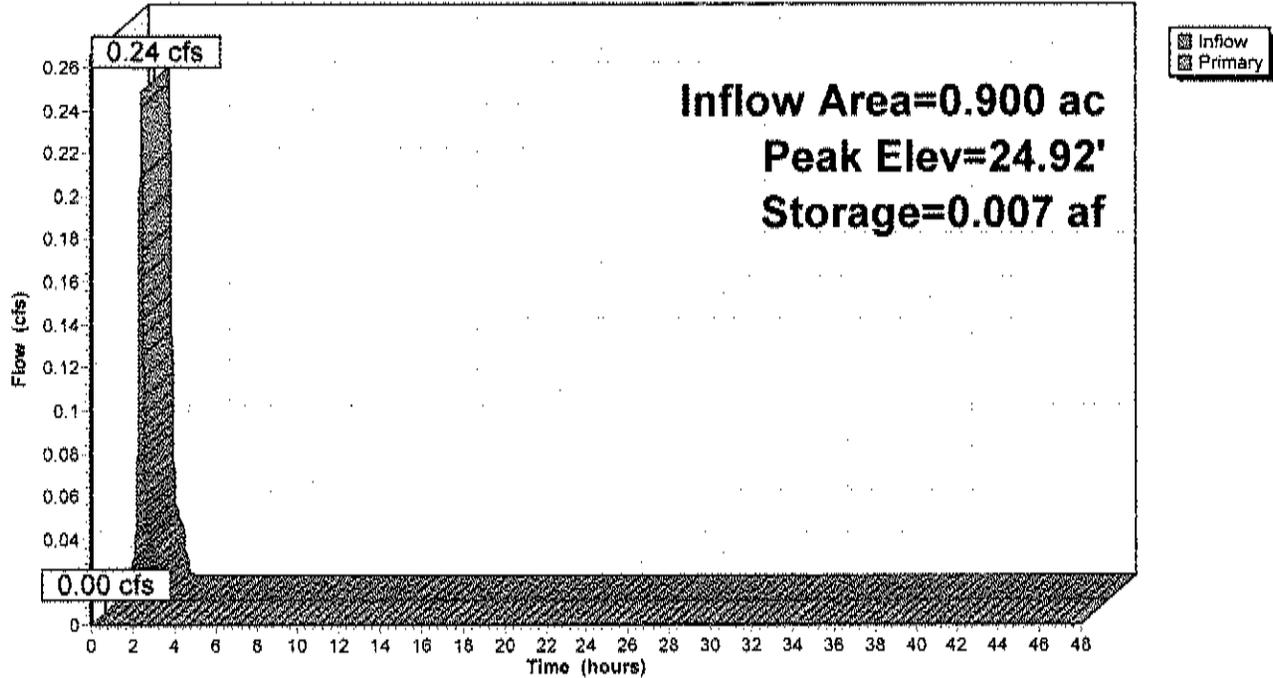
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0' /' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=24.80' (Free Discharge)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 5EL: Existing Low Point

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

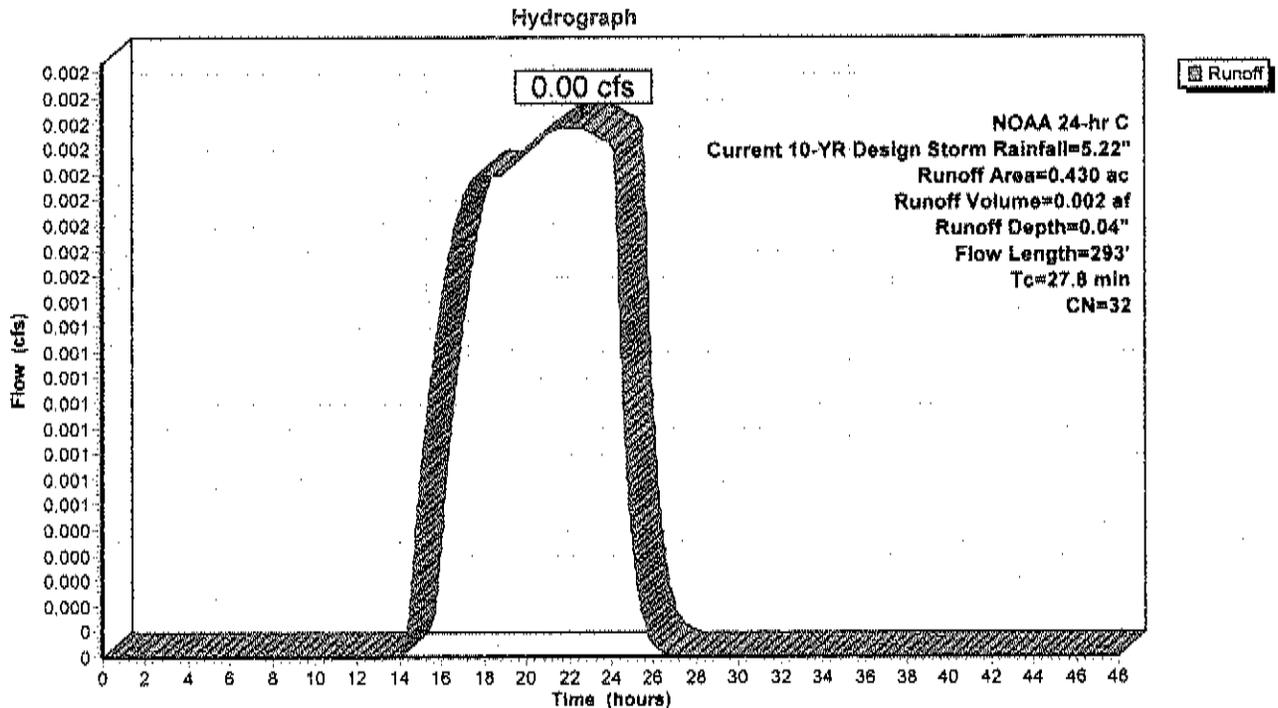
Runoff = 0.00 cfs @ 22.06 hrs, Volume= 0.002 af, Depth= 0.04"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	75	0.0161	0.07		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	30	0.0330	0.91		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
27.8	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

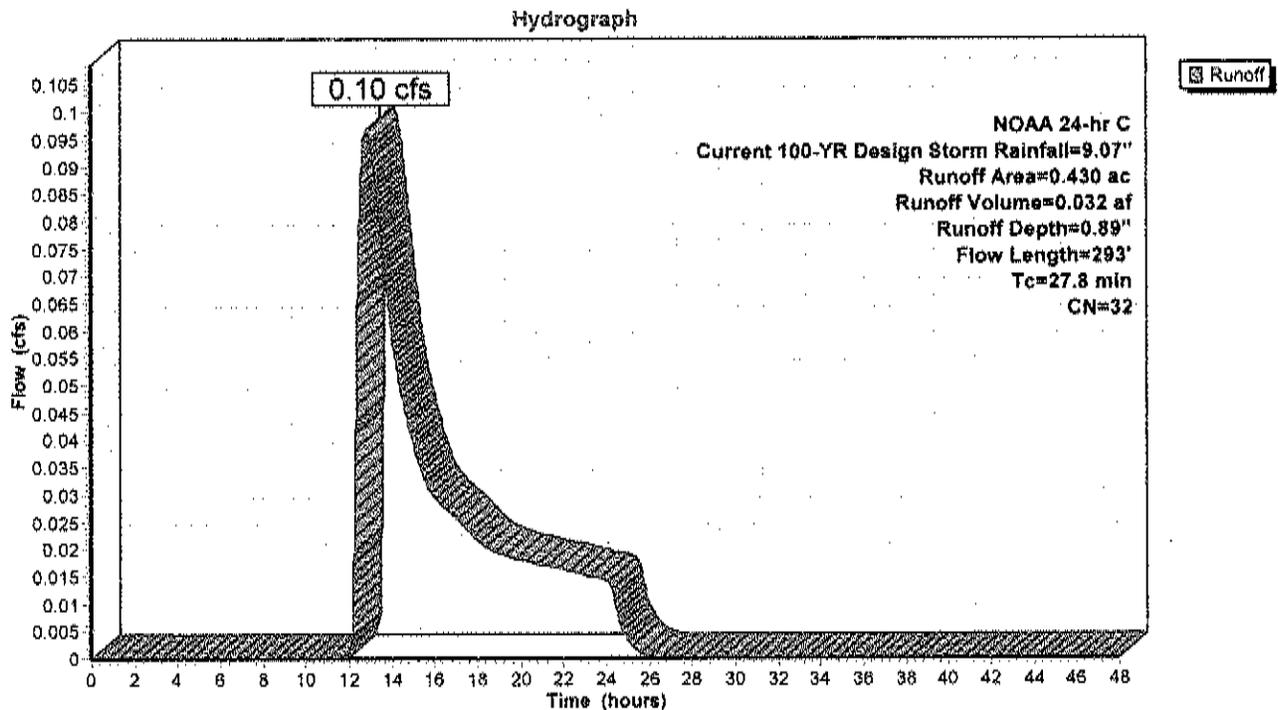
Runoff = 0.10 cfs @ 12.79 hrs, Volume= 0.032 af, Depth= 0.89"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	75	0.0161	0.07		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	30	0.0330	0.91		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
27.8	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

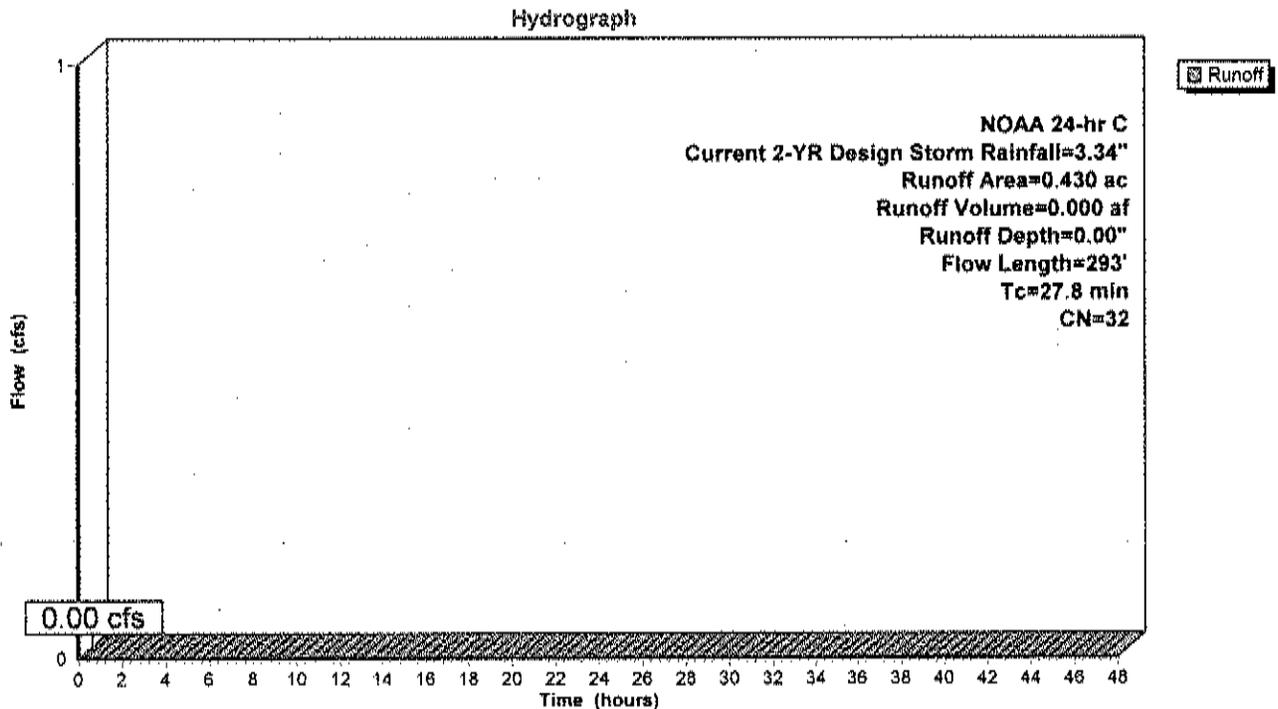
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	75	0.0161	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	30	0.0330	0.91		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
27.8	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

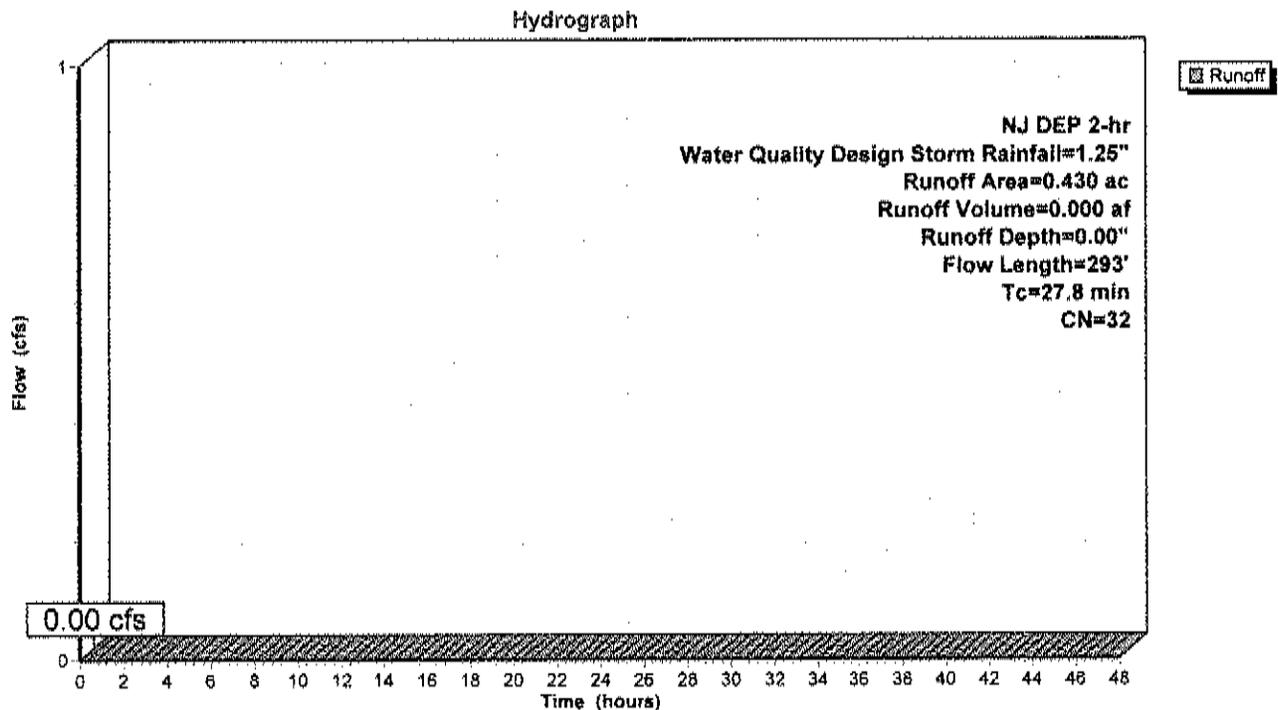
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	75	0.0161	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.34"
0.6	30	0.0330	0.91		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
27.8	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

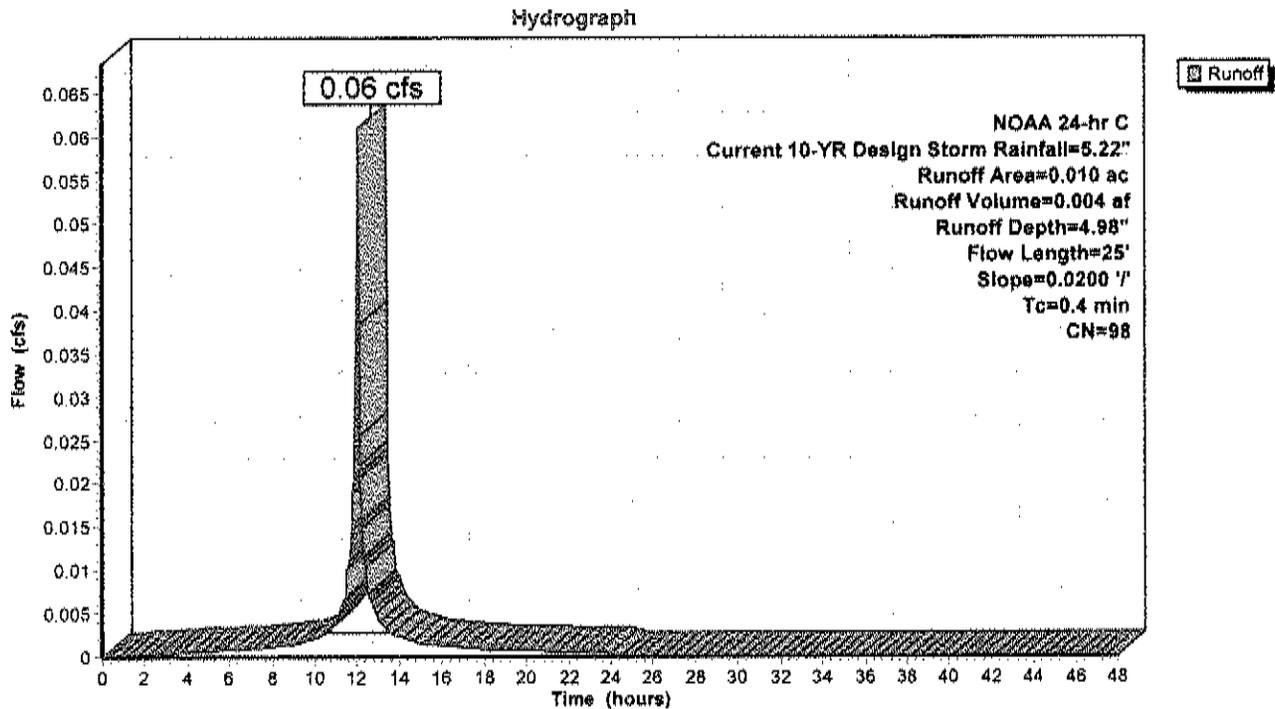
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth= 4.98"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.07		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**



**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

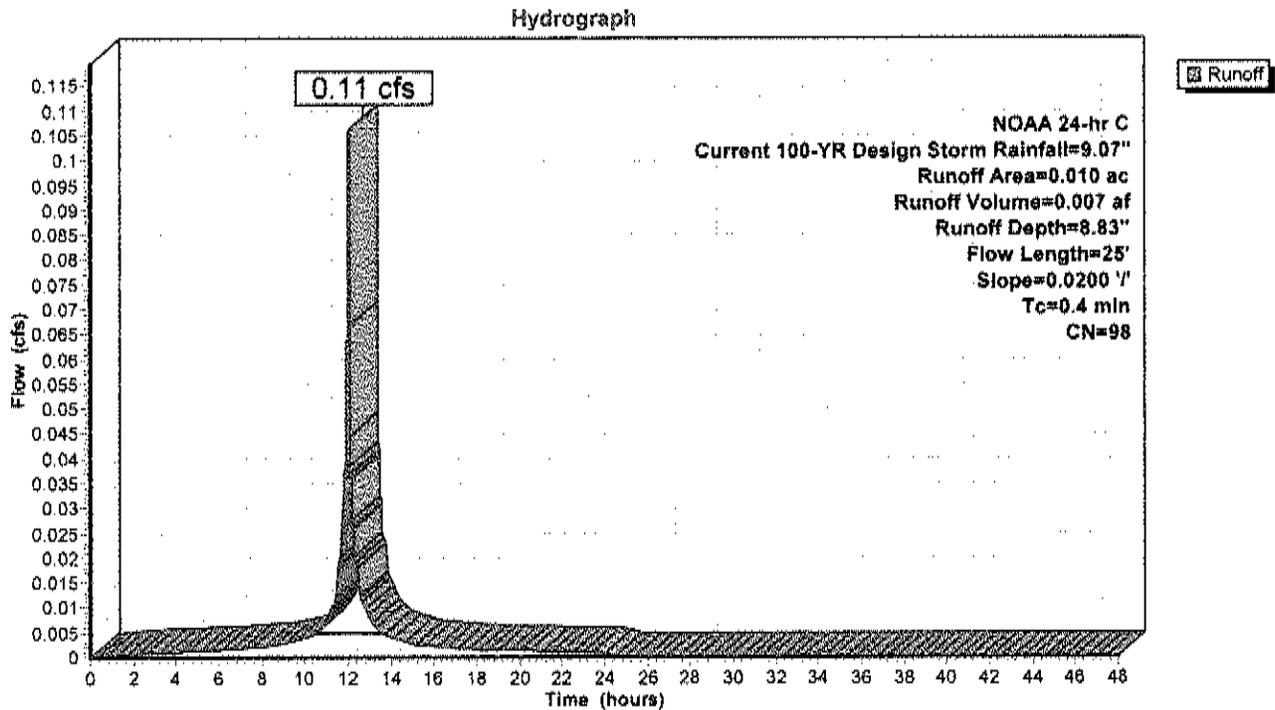
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 8.83"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.07		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**



**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

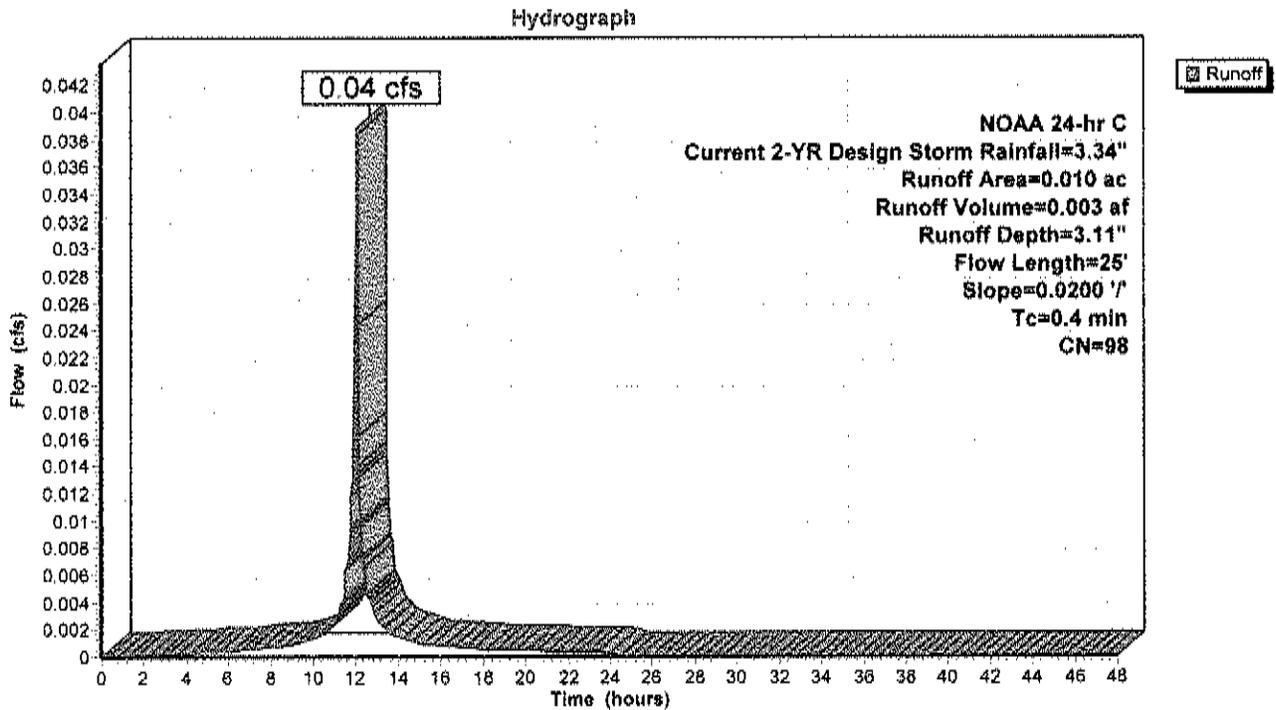
Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 3.11"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.07		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**



**Summary for Subcatchment 6E1: Watershed #6 Pre-Development Impervious Conditions**

Runoff = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af, Depth= 1.03"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

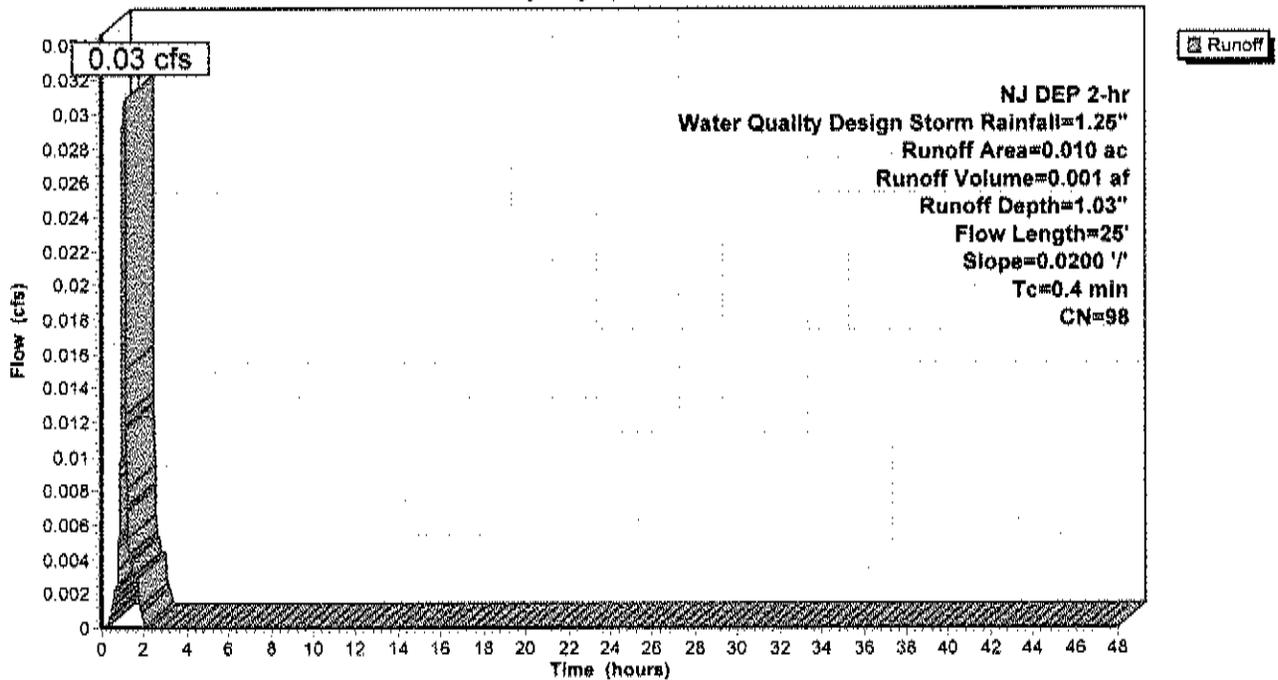
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.07		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"

**Subcatchment 6E1: Watershed #6 Pre-Development Impervious Conditions**

Hydrograph



**Rainfall Events Listing (selected events)**

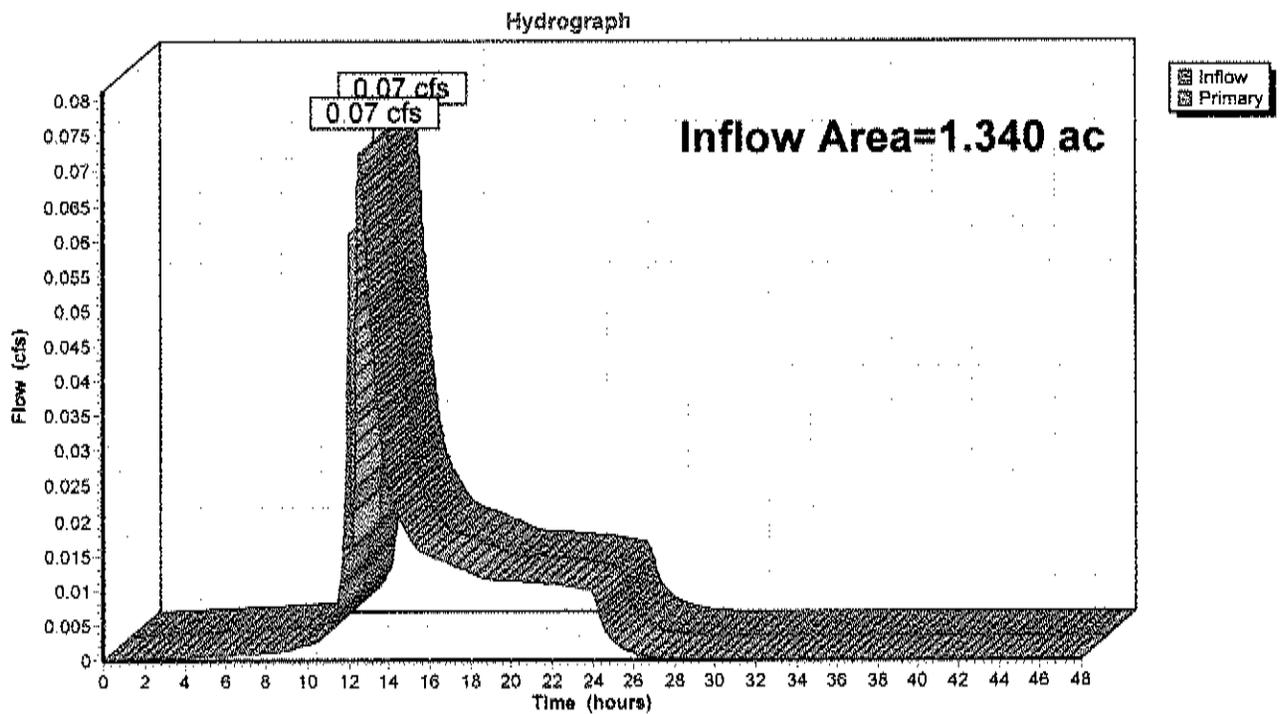
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.19" for Current 10-YR Design Storm event  
Inflow = 0.07 cfs @ 12.57 hrs, Volume= 0.021 af  
Primary = 0.07 cfs @ 12.57 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

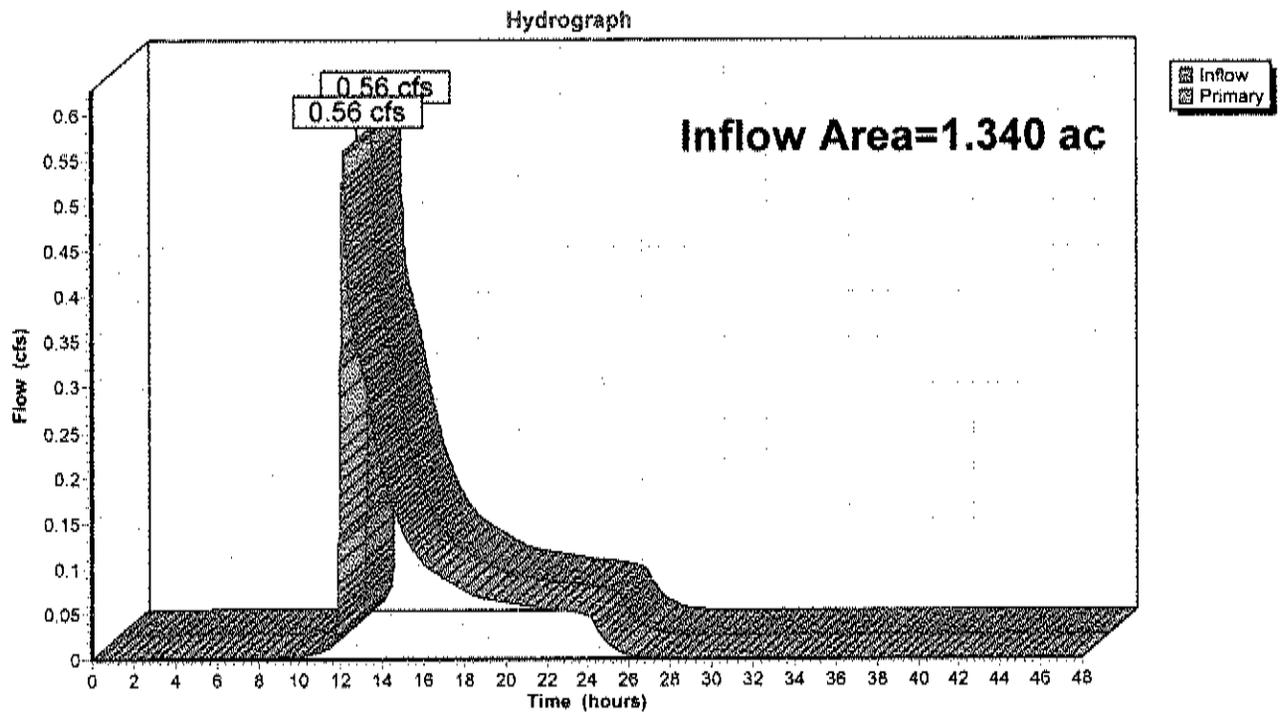


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 1.19" for Current 100-YR Design Storm even  
Inflow = 0.56 cfs @ 12.17 hrs, Volume= 0.133 af  
Primary = 0.56 cfs @ 12.17 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

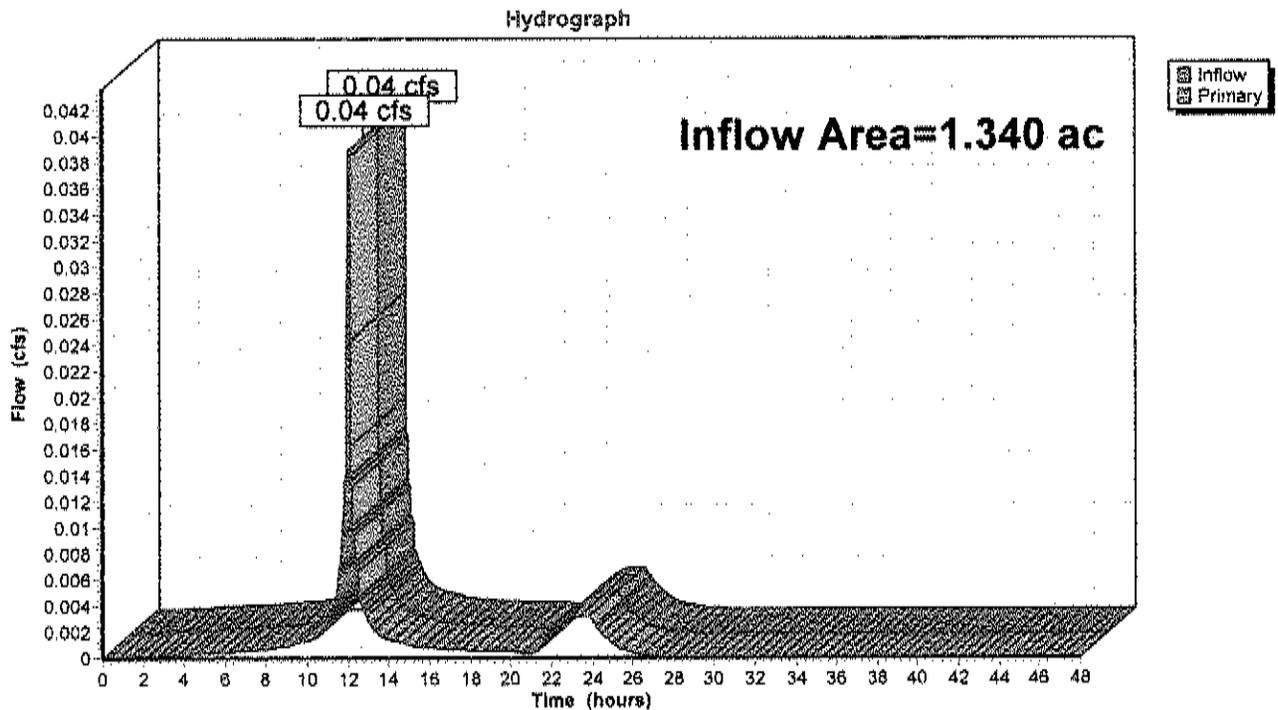


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.03" for Current 2-YR Design Storm event  
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af  
Primary = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

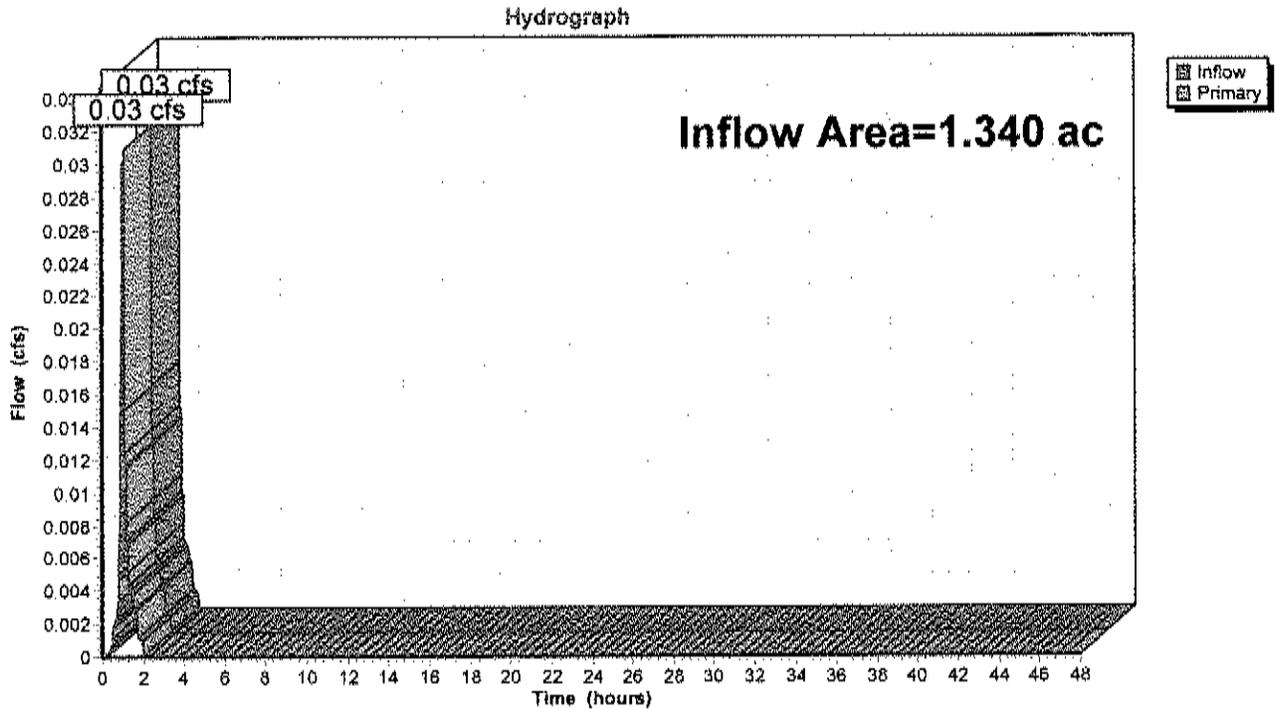


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.01" for Water Quality Design Storm event  
Inflow = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af  
Primary = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious



**Post-Development Runoff**

**Current Rainfall Rates**

**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

Runoff = 0.02 cfs @ 12.34 hrs, Volume= 0.004 af, Depth= 1.64"

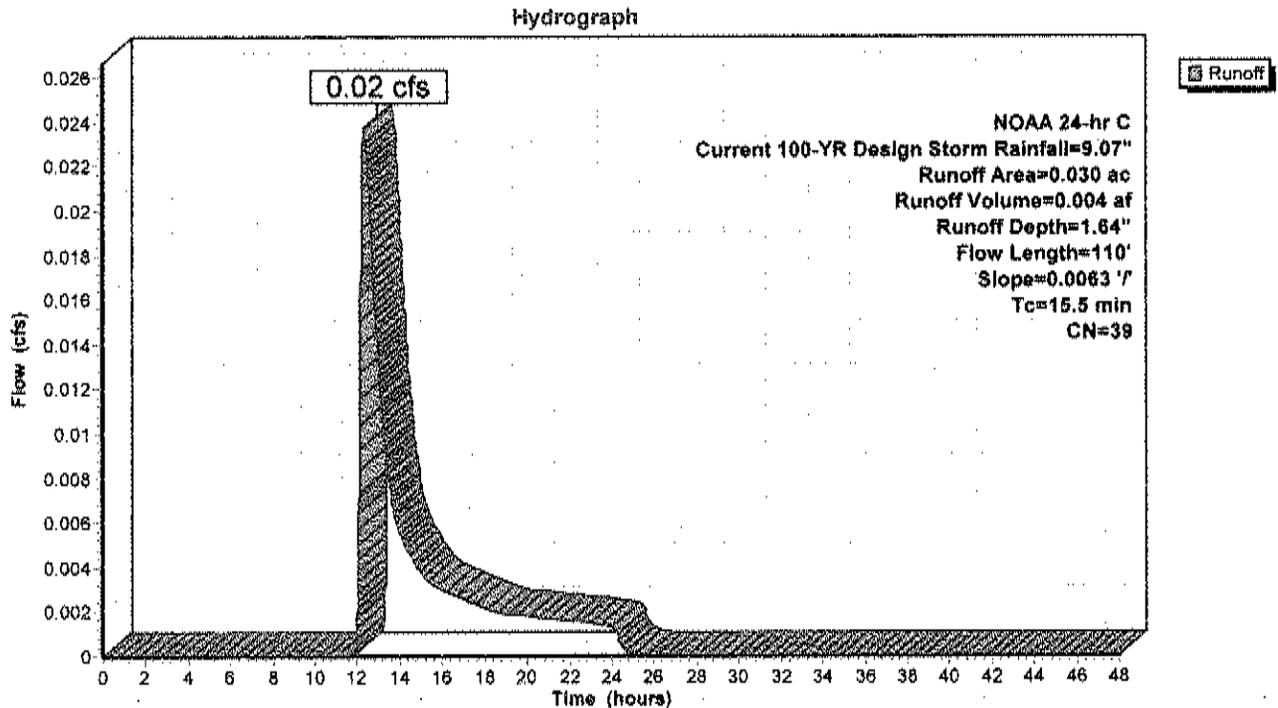
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0063	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
15.5	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

Runoff = 0.00 cfs @ 24.07 hrs, Volume= 0.000 af, Depth= 0.00"

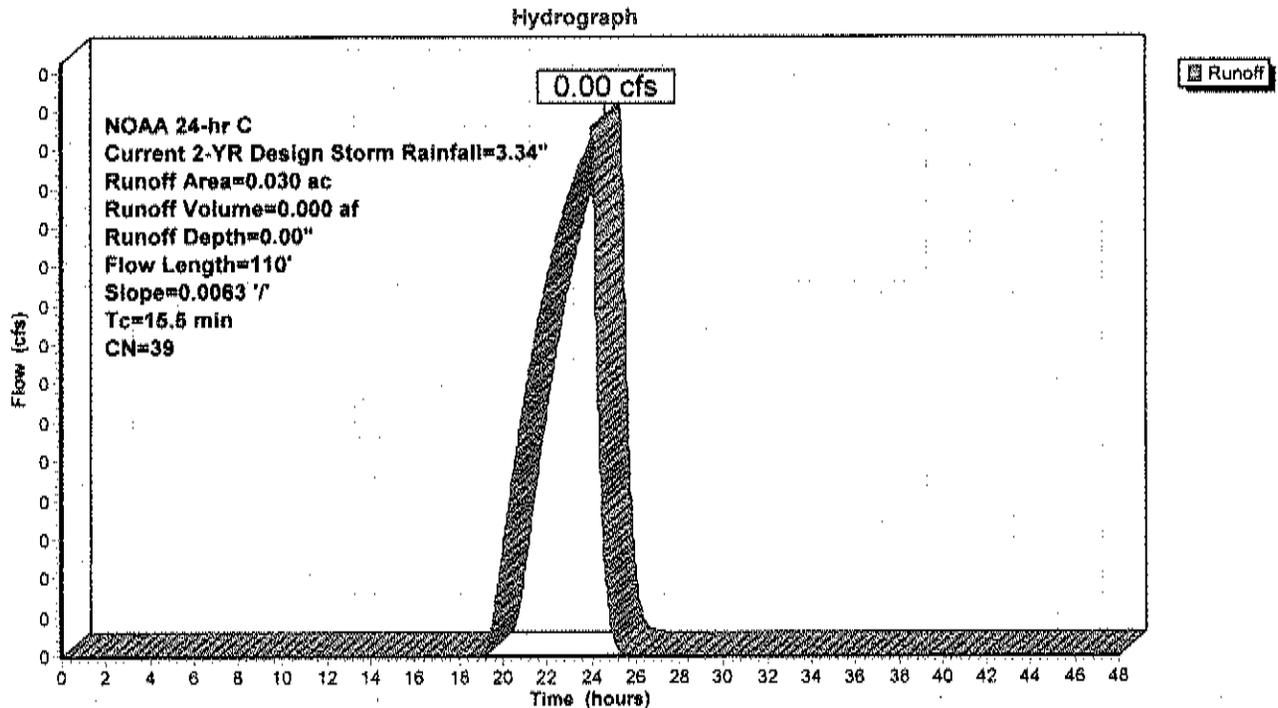
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0063	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
15.5	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

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

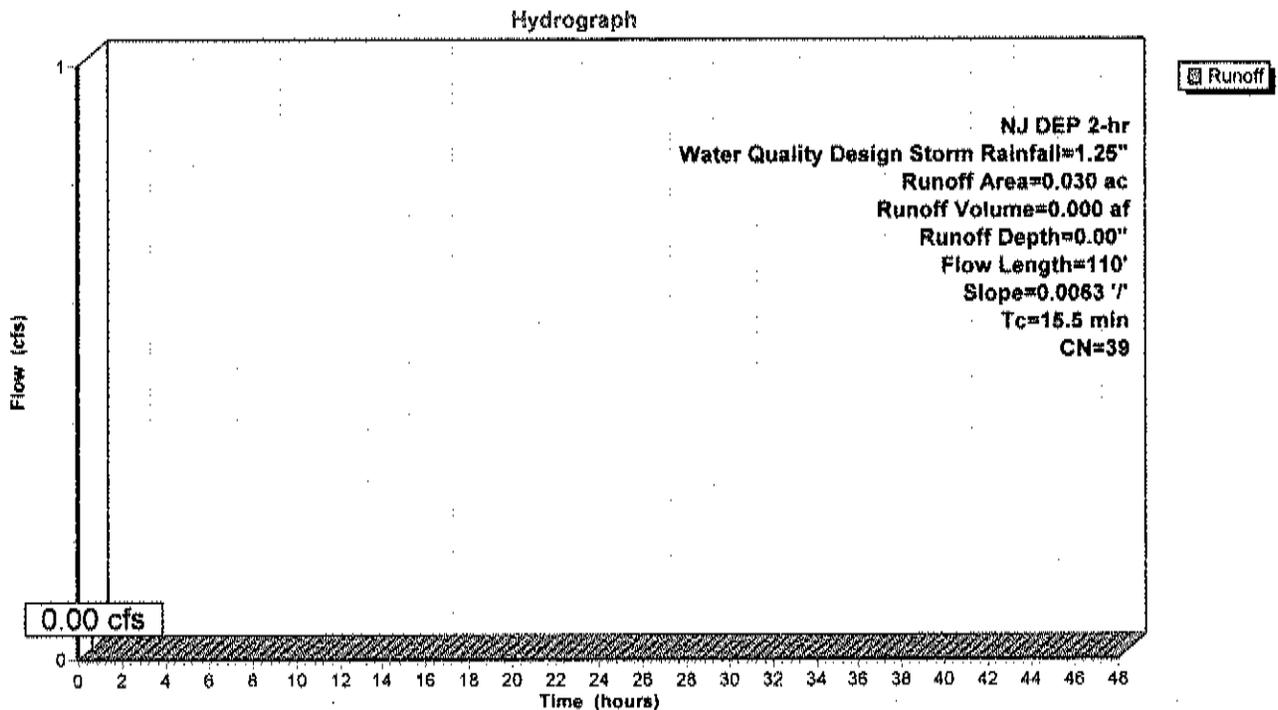
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0063	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
15.5	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

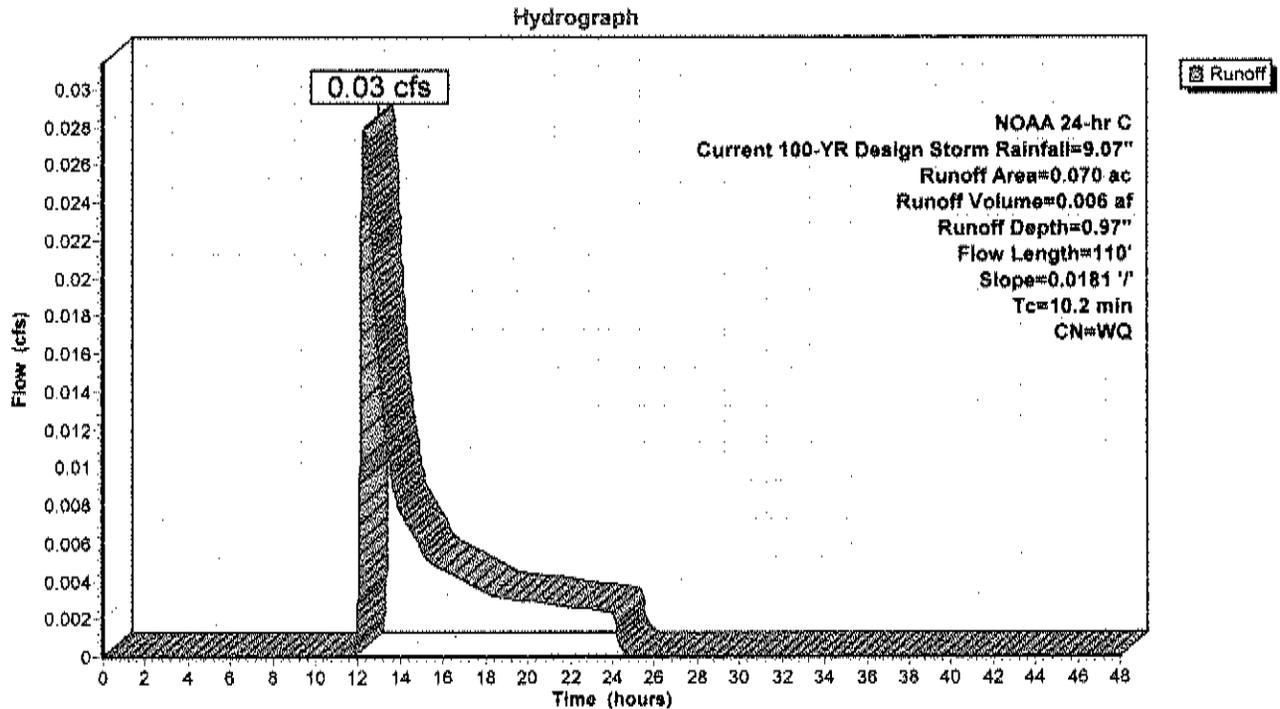
Runoff = 0.03 cfs @ 12.33 hrs, Volume= 0.006 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0181	0.17		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
10.2	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

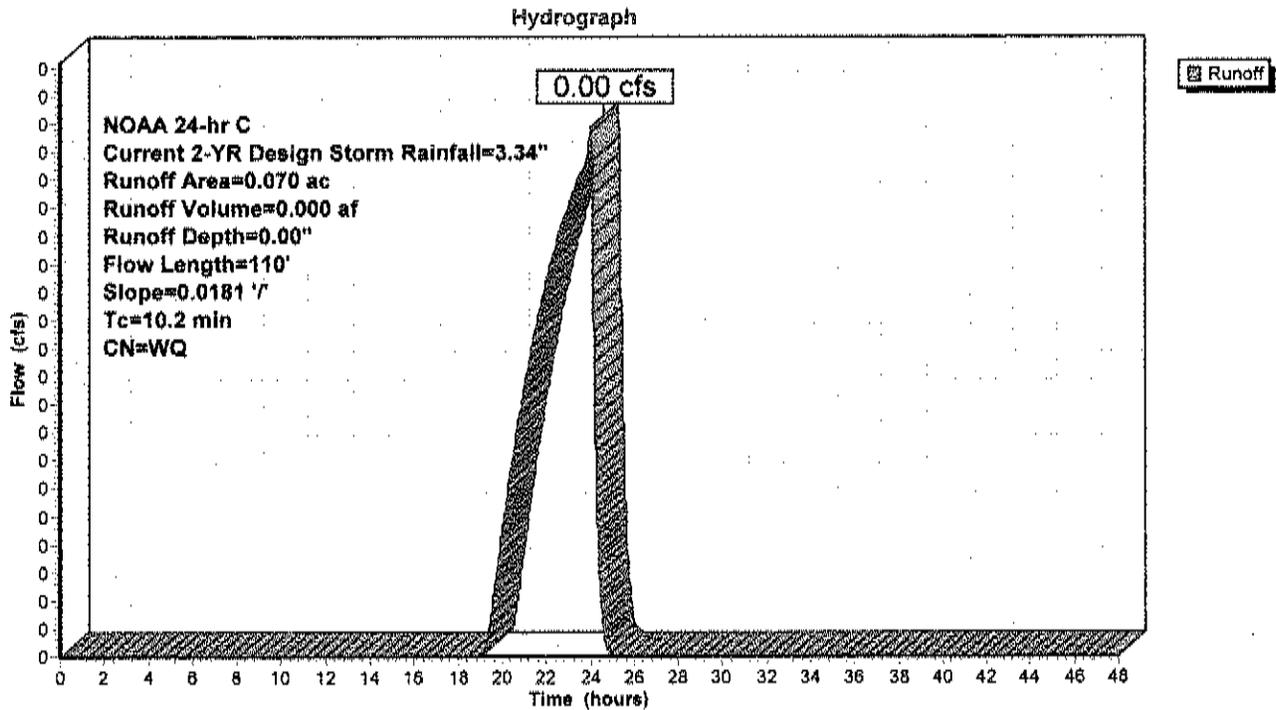
Runoff = 0.00 cfs @ 24.05 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0181	0.17		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
10.2	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

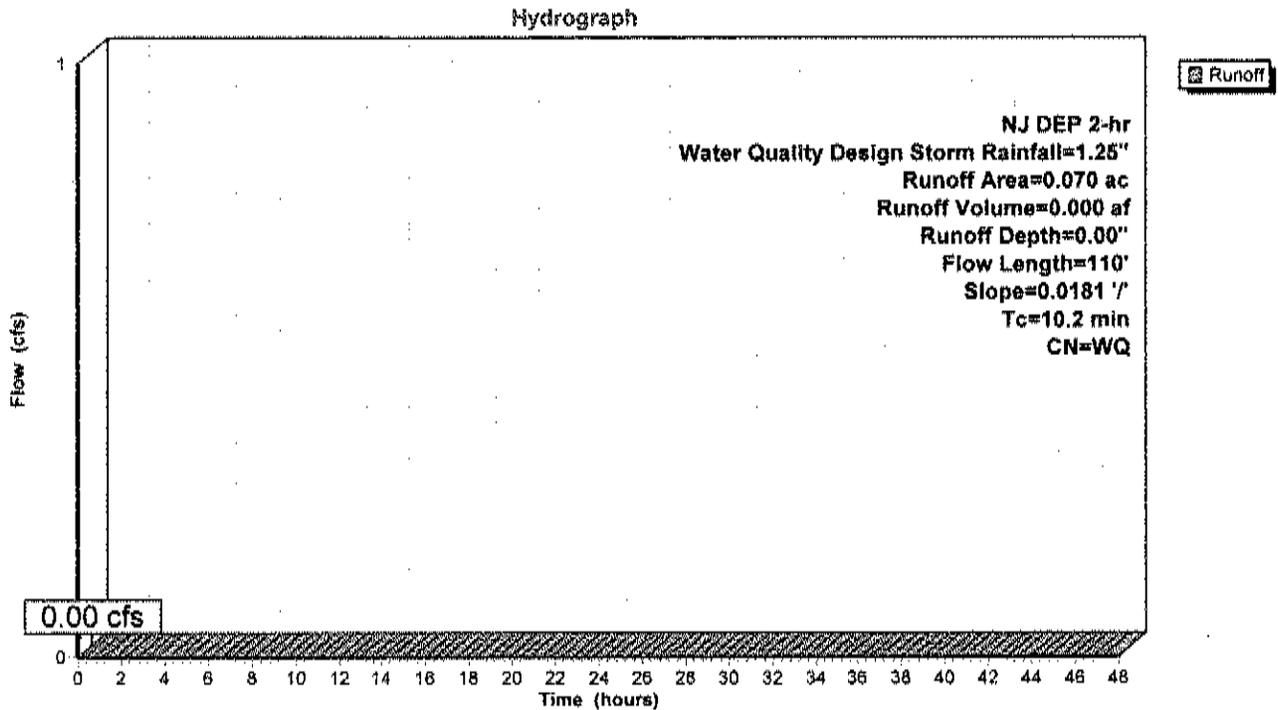
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0181	0.17		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
10.2	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

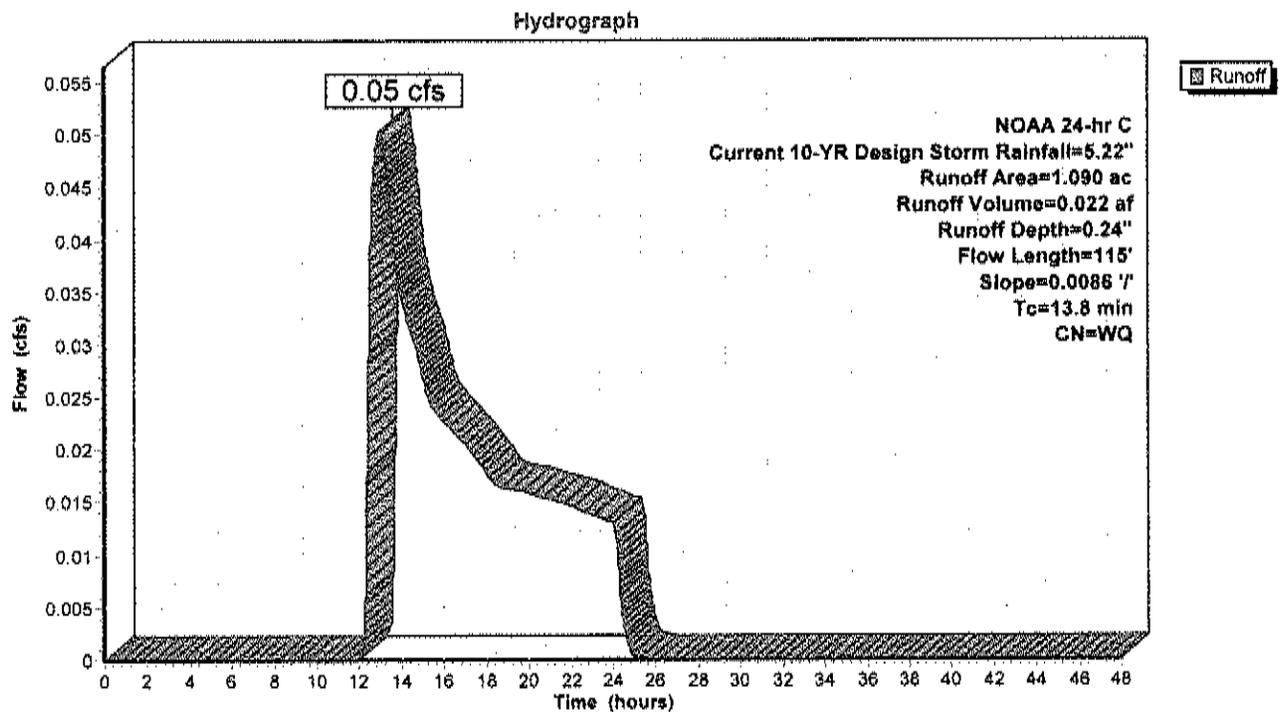
Runoff = 0.05 cfs @ 13.00 hrs, Volume= 0.022 af, Depth= 0.24"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0086	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
13.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

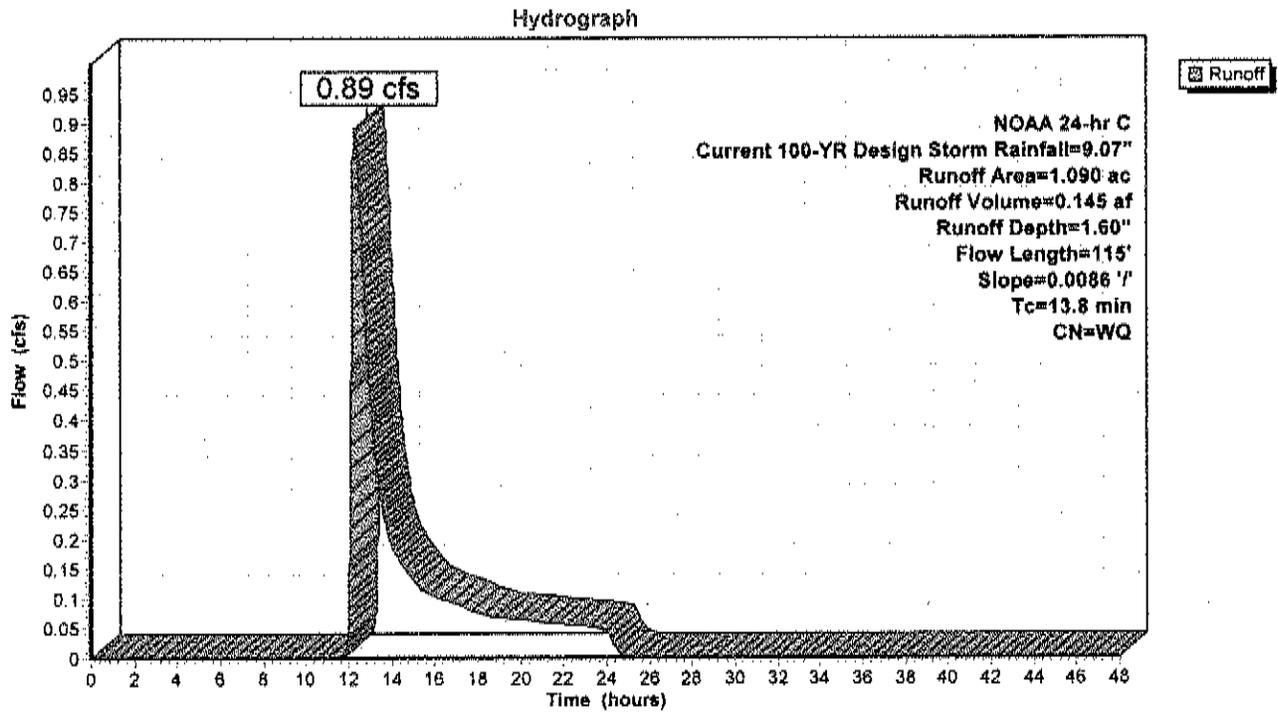
Runoff = 0.89 cfs @ 12.30 hrs, Volume= 0.145 af, Depth= 1.60"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0086	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
13.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

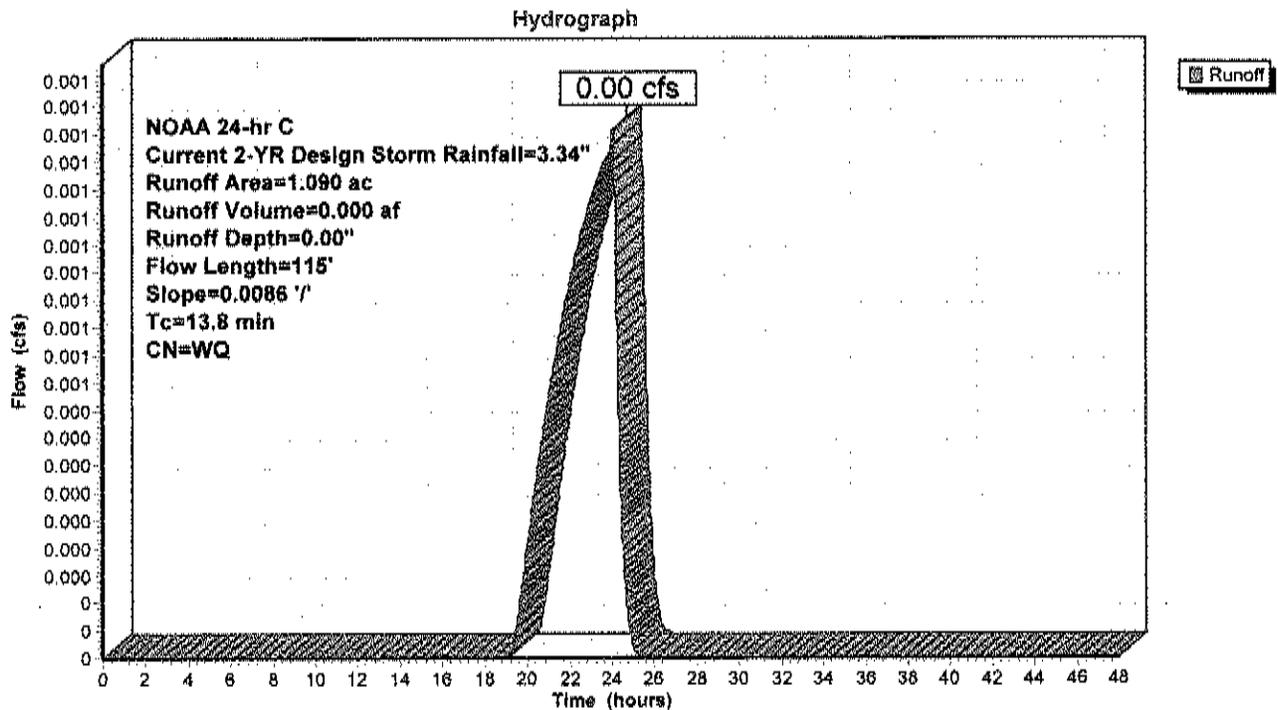
Runoff = 0.00 cfs @ 24.07 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Deimarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0086	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
13.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

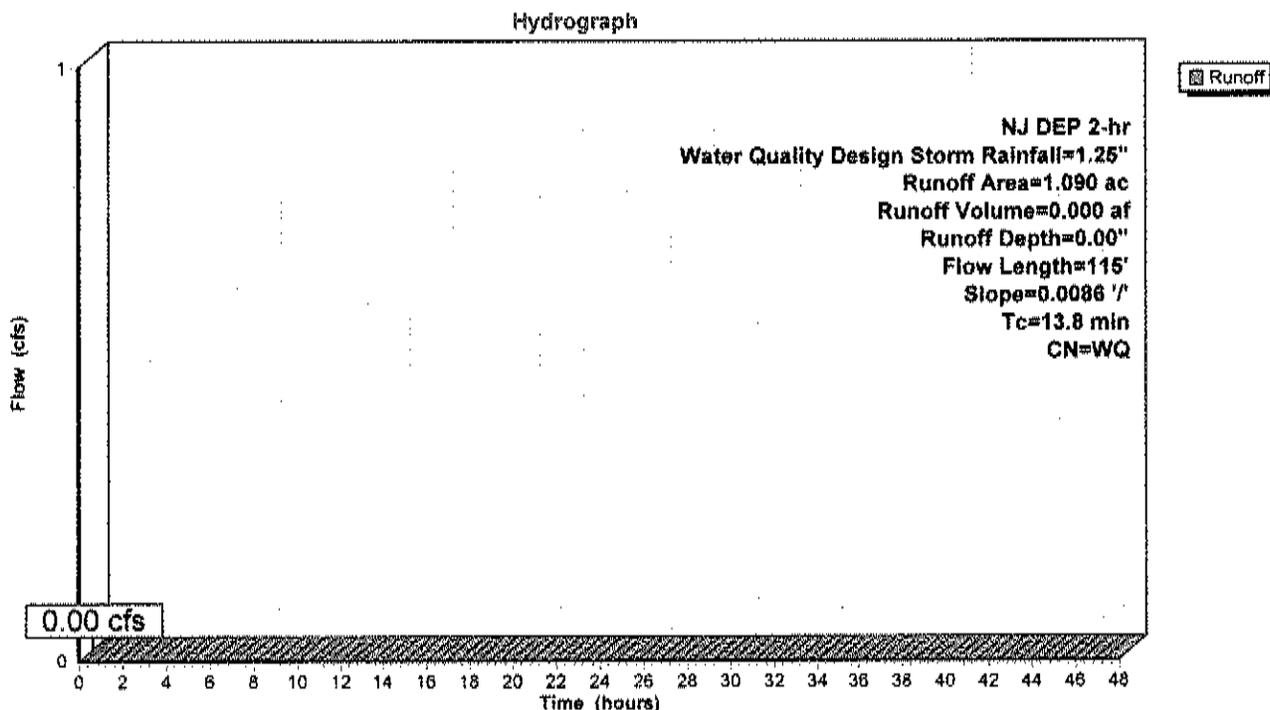
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0086	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
13.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	2API	0.00	0.00	164.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 7.46 cfs @ 12.11 hrs, Volume= 0.561 af, Depth= 4.98"  
 Routed to Pond 2AP : Stormwater Basin #2A

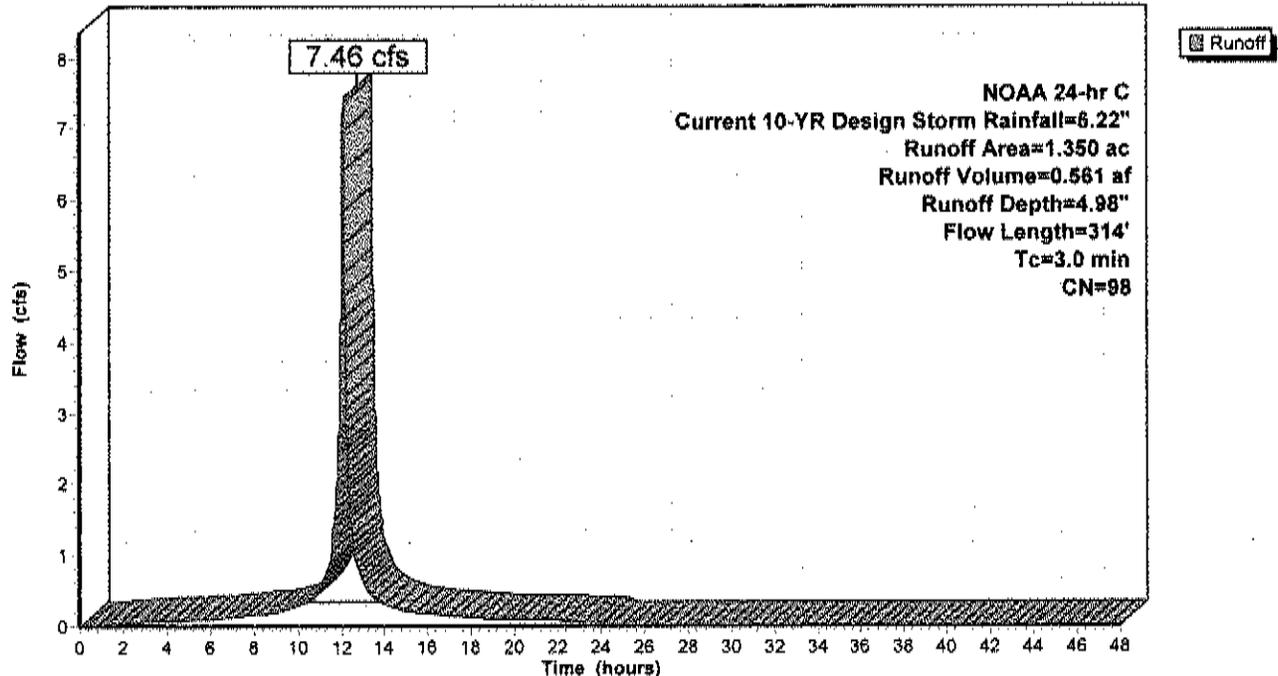
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0065	0.90		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
3.0	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 13.01 cfs @ 12.11 hrs, Volume= 0.993 af, Depth= 8.83"  
 Routed to Pond 2AP : Stormwater Basin #2A

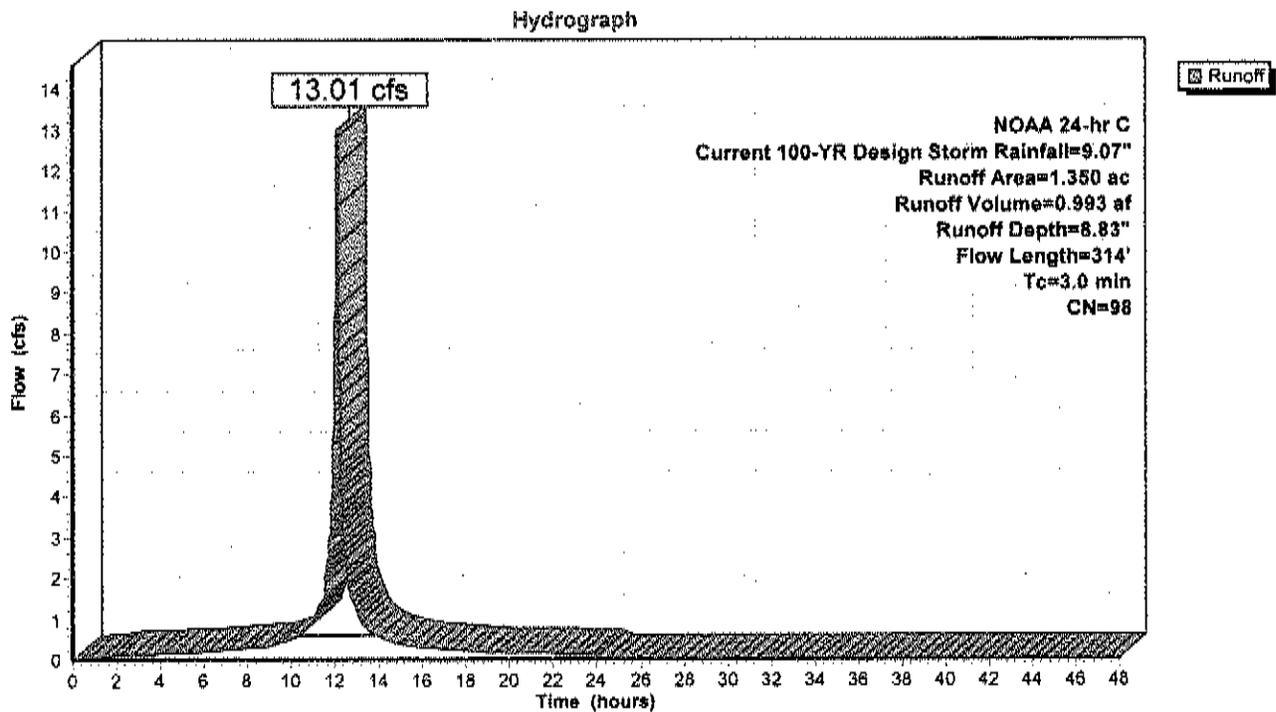
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0065	0.90		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
3.0	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 4.75 cfs @ 12.11 hrs, Volume= 0.350 af, Depth= 3.11"  
 Routed to Pond 2AP : Stormwater Basin #2A

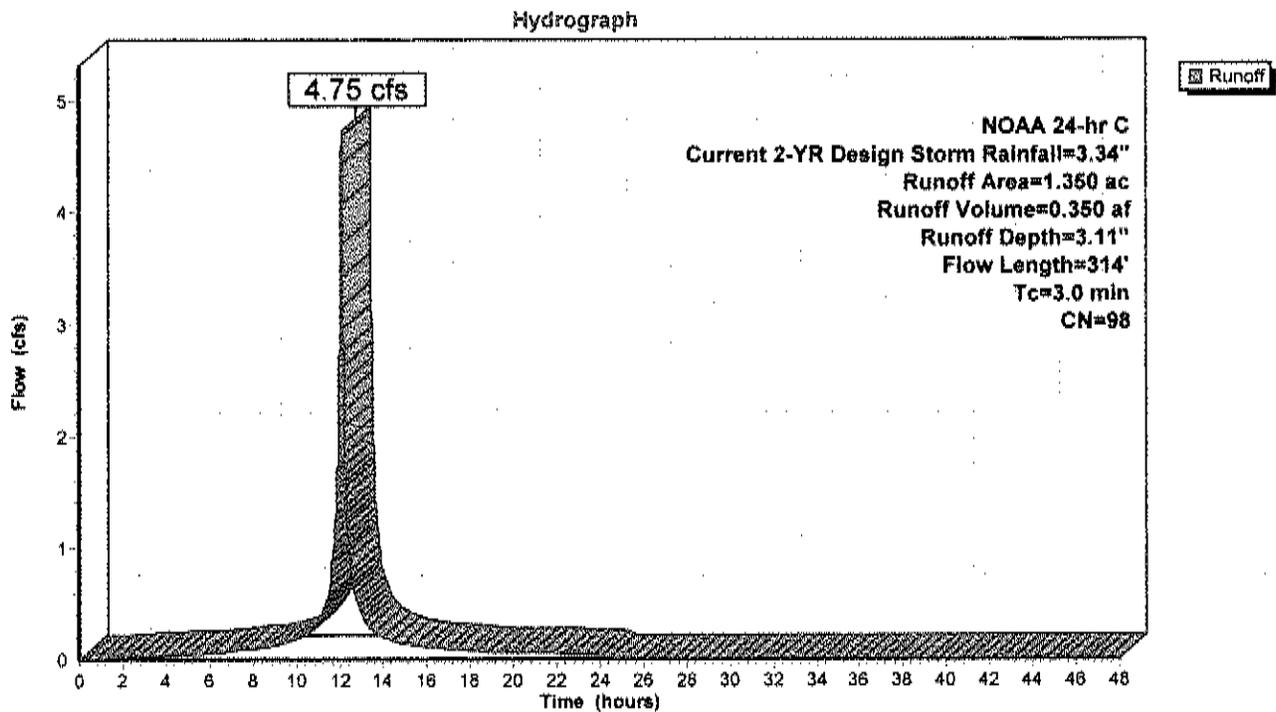
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0065	0.90		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
3.0	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 3.91 cfs @ 1.09 hrs, Volume= 0.116 af, Depth= 1.03"  
 Routed to Pond 2AP : Stormwater Basin #2A

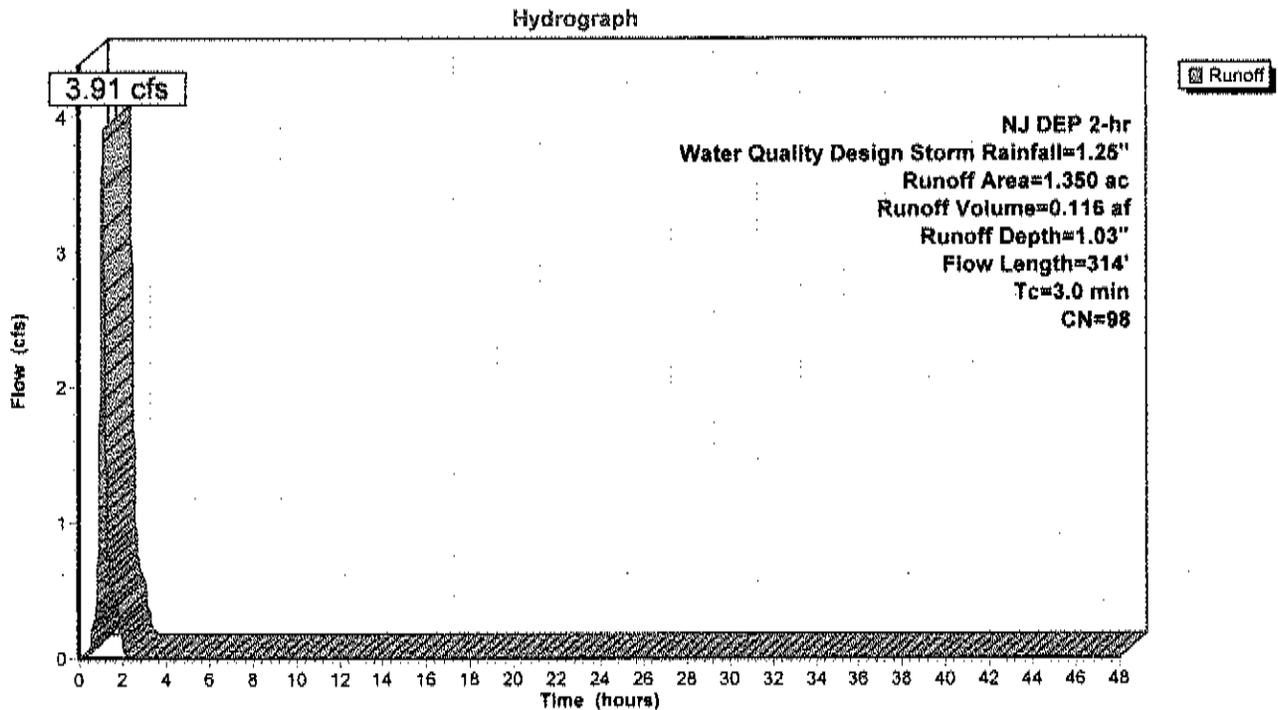
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0065	0.90		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
3.0	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 2.16" for Current 10-YR Design Storm event  
 Inflow = 7.46 cfs @ 12.11 hrs, Volume= 0.582 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.93' @ 25.52 hrs Surf.Area= 0.571 ac Storage= 0.582 af

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	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)

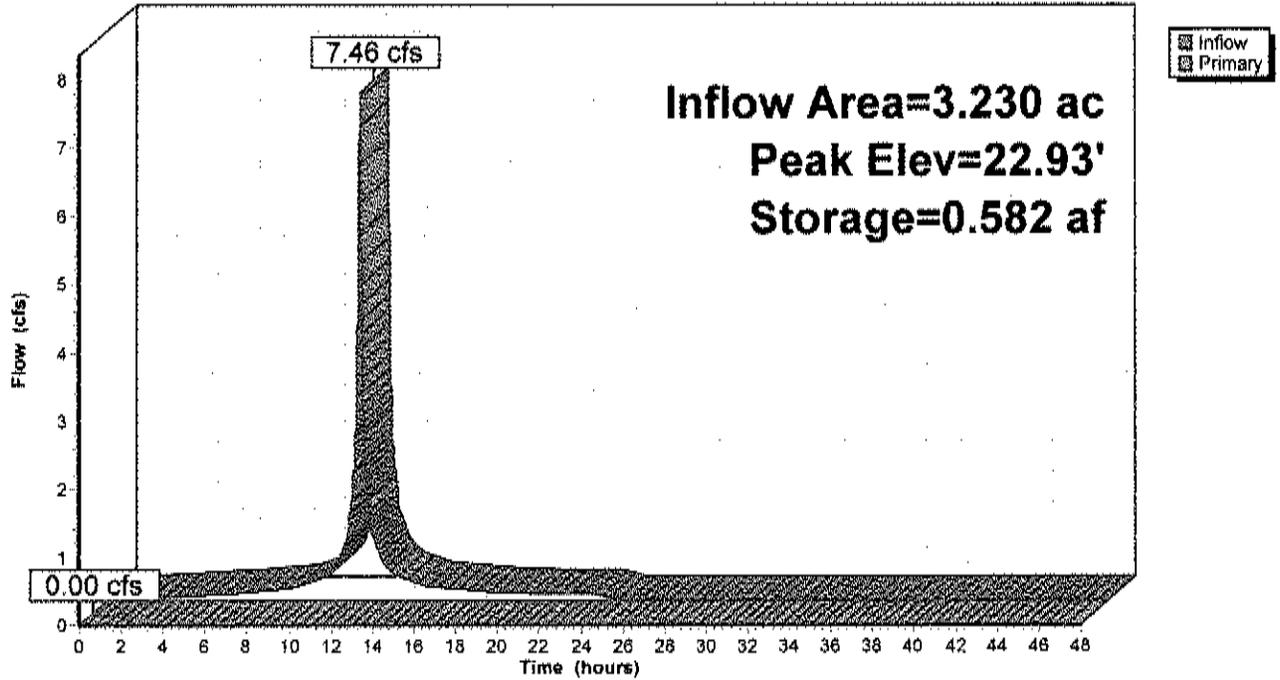
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 1=Orifice/Grate ( Controls 0.00 cfs)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 4.25" for Current 100-YR Design Storm even  
 Inflow = 13.38 cfs @ 12.11 hrs, Volume= 1.145 af  
 Outflow = 0.00 cfs @ 25.88 hrs, Volume= 0.002 af, Atten= 100%, Lag= 826.3 min  
 Primary = 0.00 cfs @ 25.88 hrs, Volume= 0.002 af  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.87' @ 25.88 hrs Surf.Area= 0.632 ac Storage= 1.144 af

Plug-Flow detention time= 2,068.4 min calculated for 0.002 af (0% of inflow)  
 Center-of-Mass det. time= 1,360.3 min ( 2,125.7 - 765.4 )

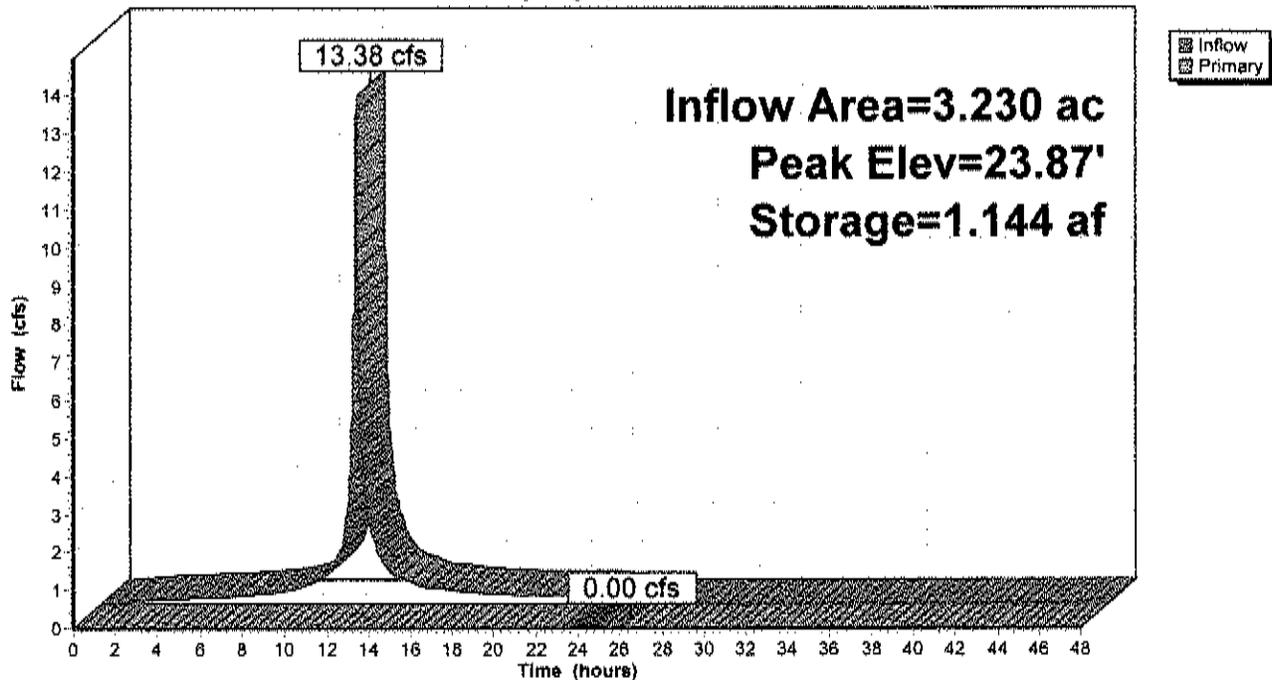
Volume #1	Invert 21.85'	Avail.Storage 2.270 af	Storage Description Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device #1	Routing Primary	Invert 23.85'	Outlet Devices 2.5" Vert. Orifice/Grate	C= 0.600 Limited to weir flow at low heads
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Primary OutFlow Max=0.00 cfs @ 25.88 hrs HW=23.87' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 0.00 cfs @ 0.46 fps)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 1.30" for Current 2-YR Design Storm event  
 Inflow = 4.75 cfs @ 12.11 hrs, Volume= 0.350 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.52' @ 25.52 hrs Surf.Area= 0.545 ac Storage= 0.350 af

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

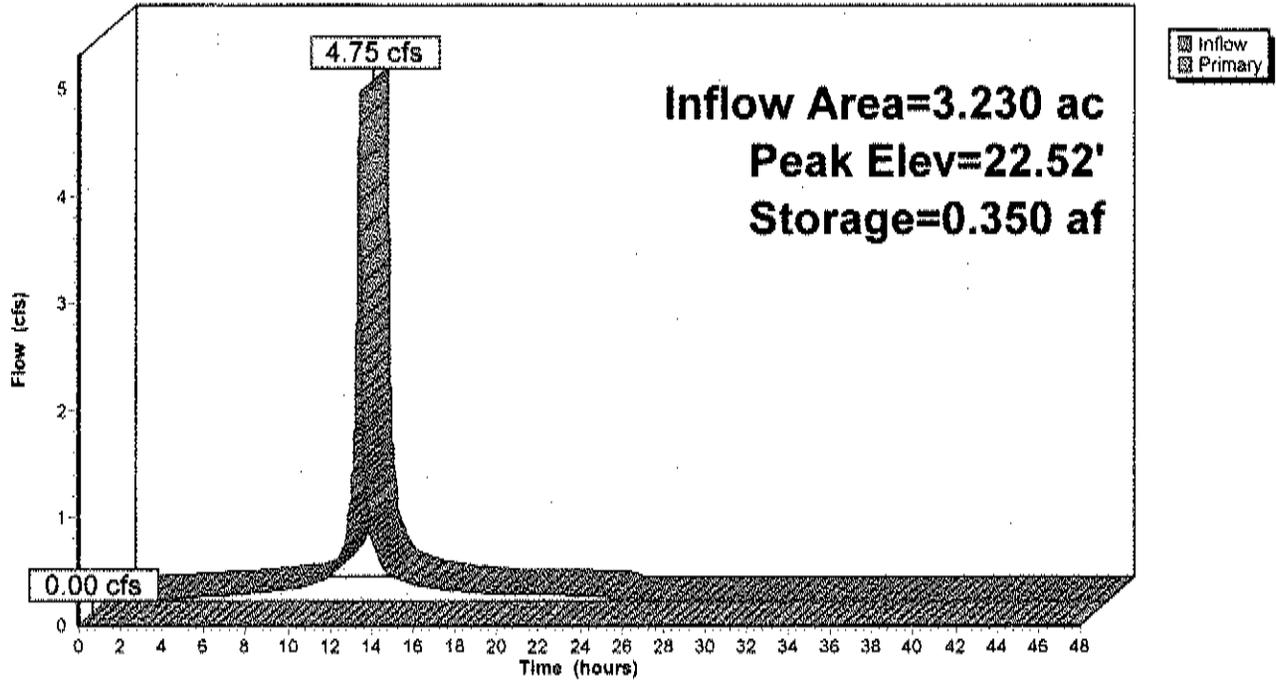
Volume #1	Invert 21.85'	Avail.Storage 2.270 af	Storage Description Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device #1	Routing Primary	Invert 23.85'	Outlet Devices 2.5" Vert. Orifice/Grate	C= 0.600	Limited to weir flow at low heads
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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 1=Orifice/Grate ( Controls 0.00 cfs)

**Pond 2AP: Stormwater Basin #2A**

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 0.43" for Water Quality Design Storm event  
 Inflow = 3.91 cfs @ 1.09 hrs, Volume= 0.116 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.08' @ 2.34 hrs Surf.Area= 0.518 ac Storage= 0.116 af

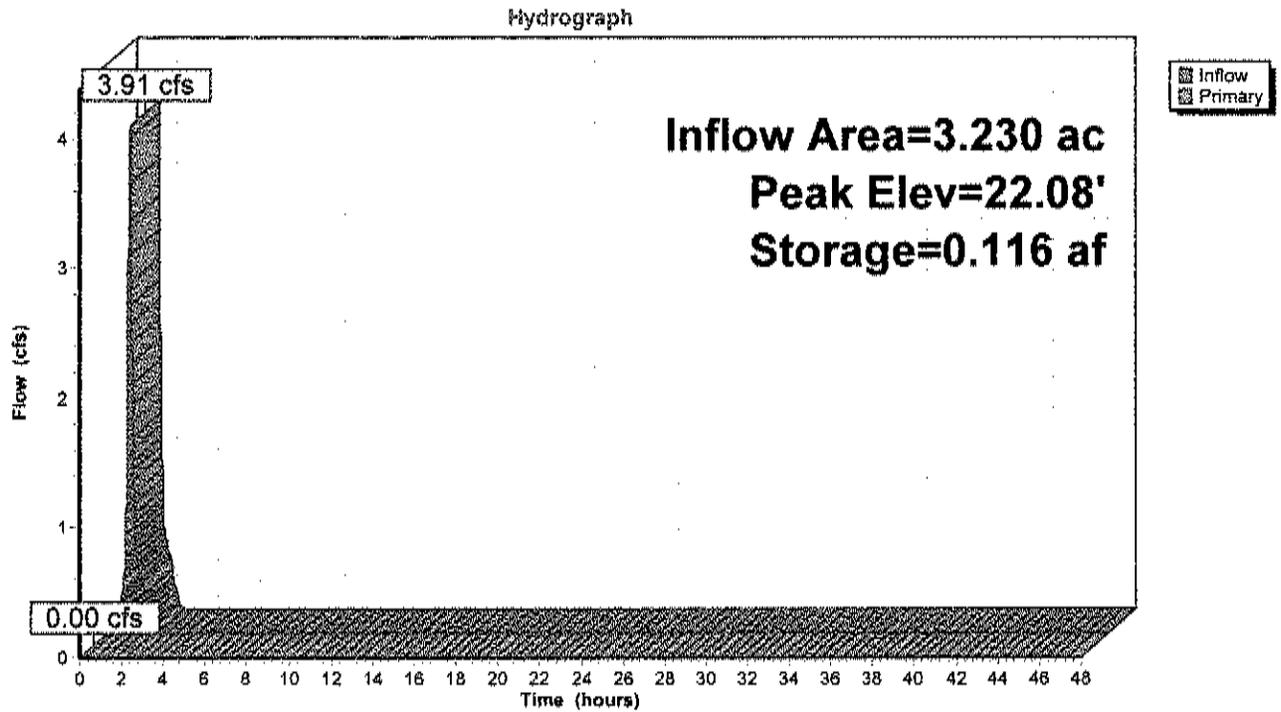
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 1=Orifice/Grate ( Controls 0.00 cfs)

### Pond 2AP: Stormwater Basin #2A



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

Runoff = 0.00 cfs @ 12.50 hrs, Volume= 0.001 af, Depth= 0.25"

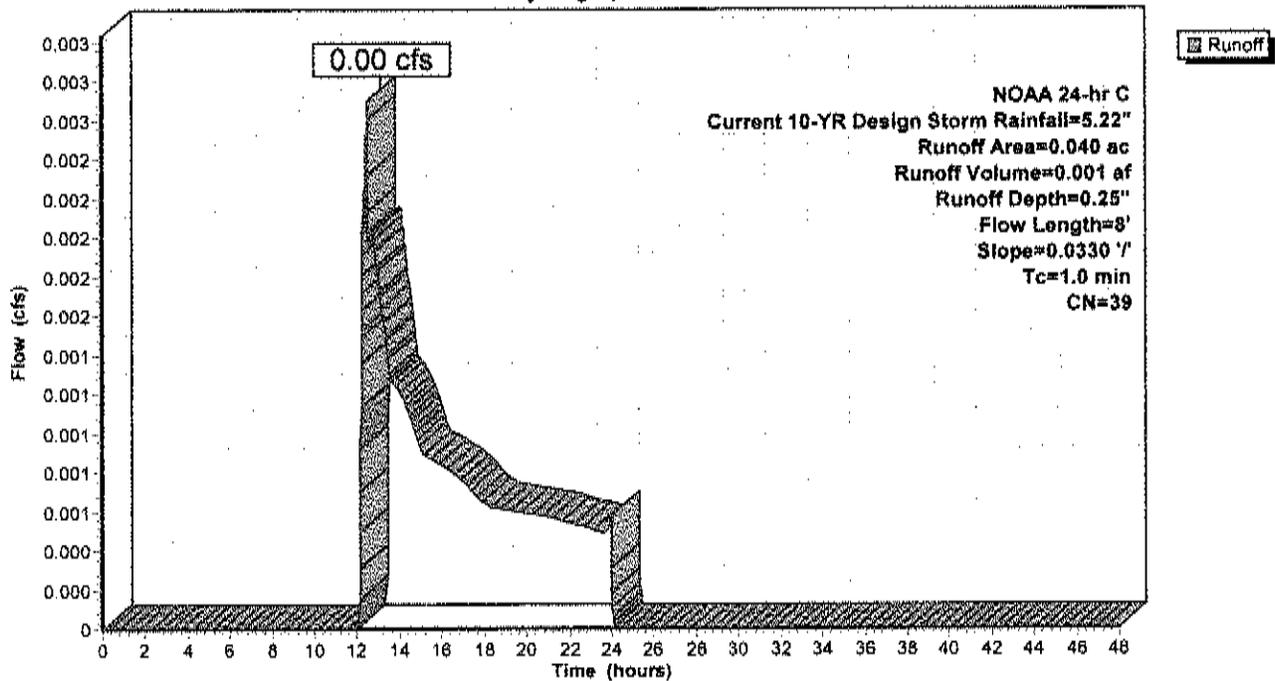
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

Hydrograph



**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

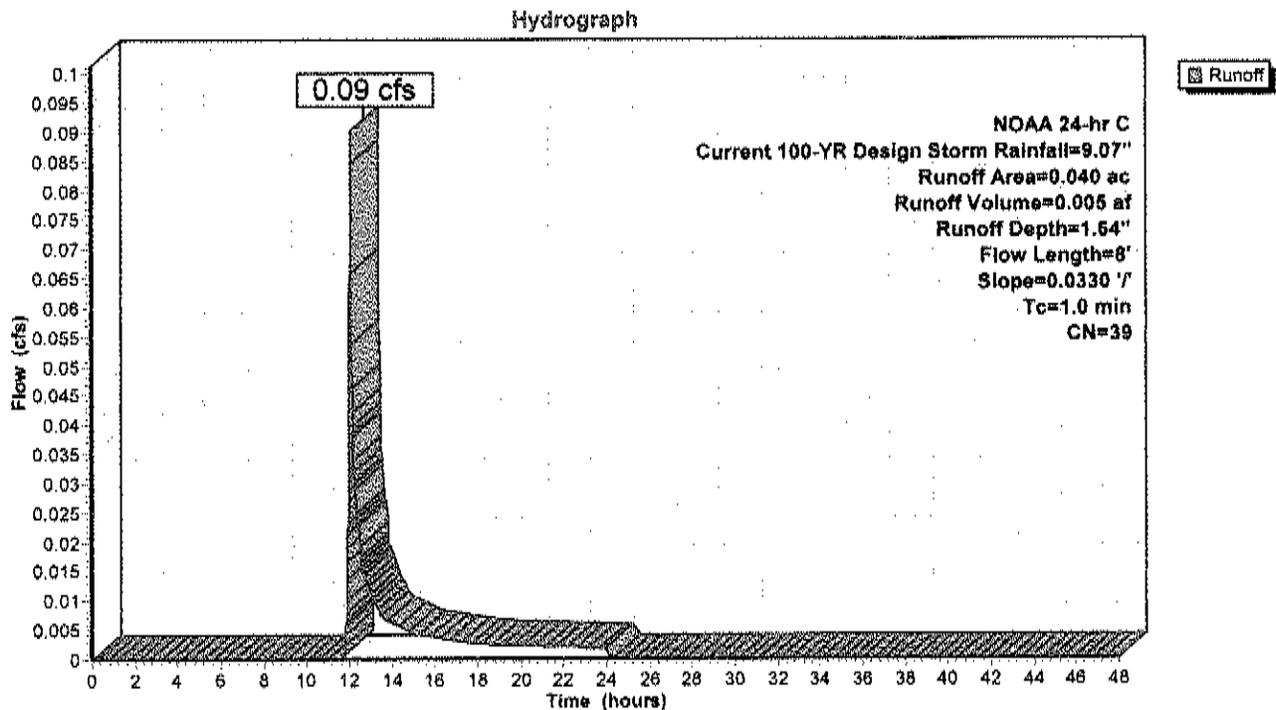
Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**



**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

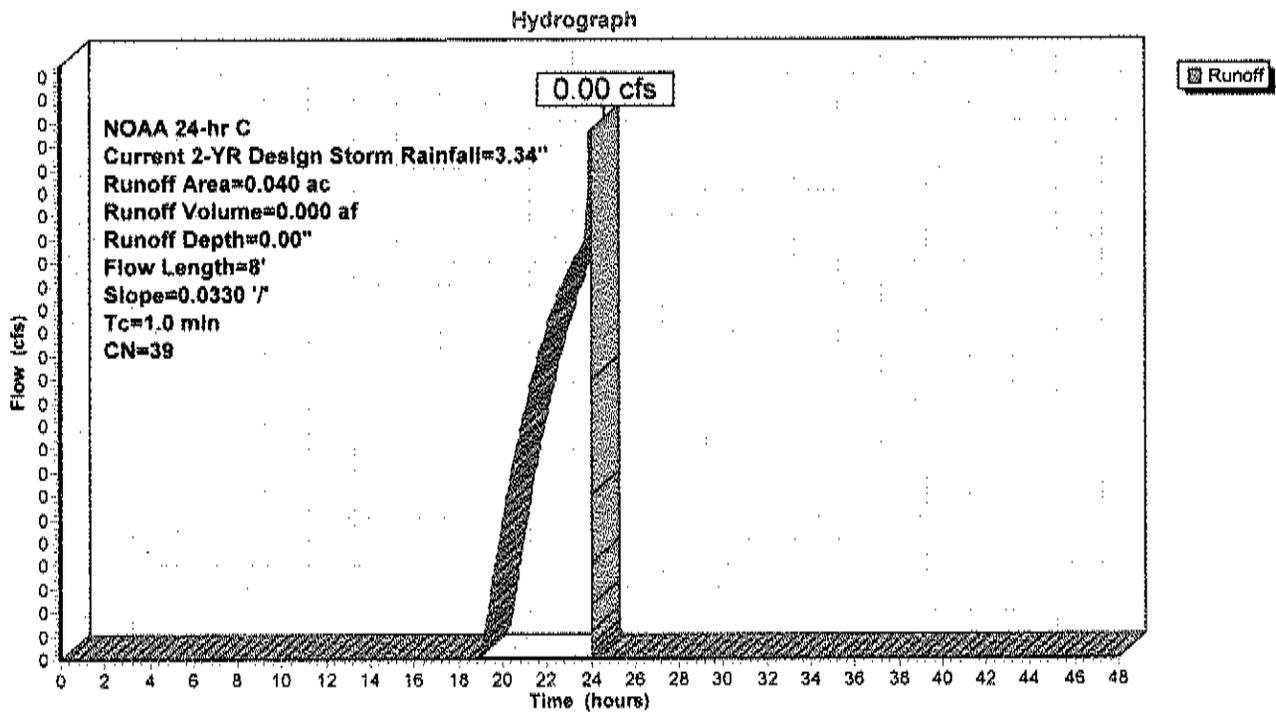
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**



**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

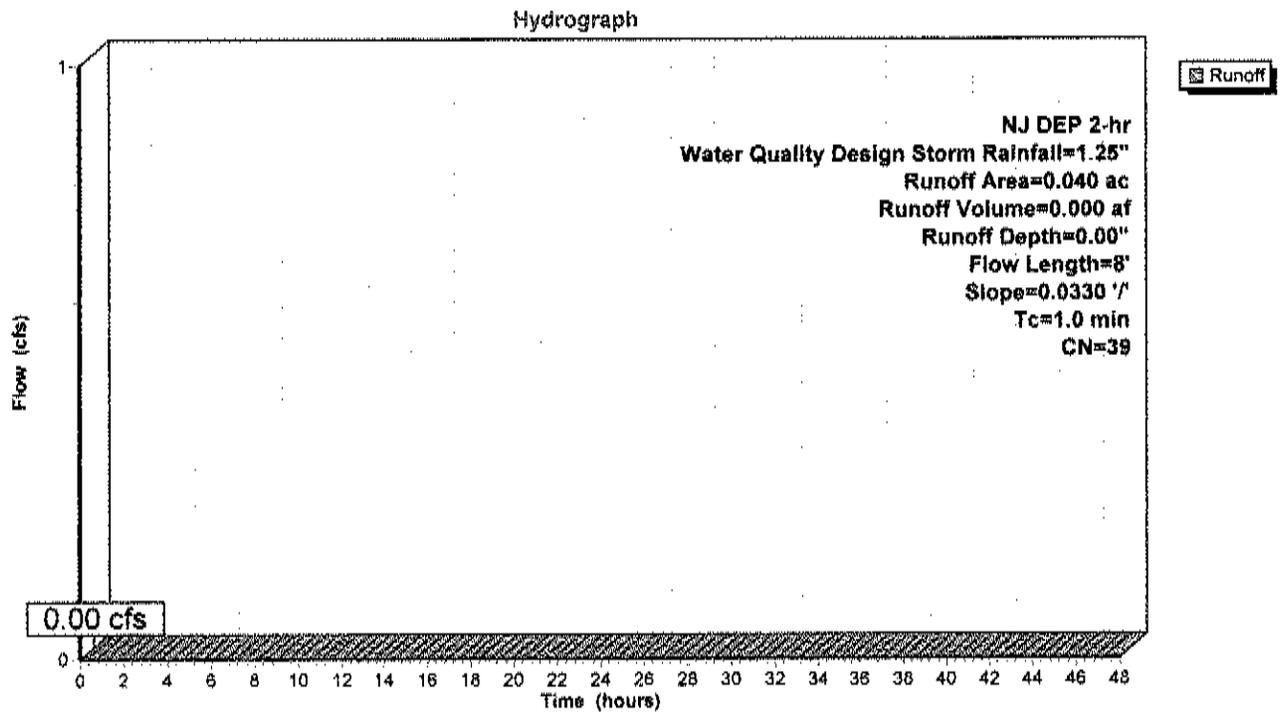
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

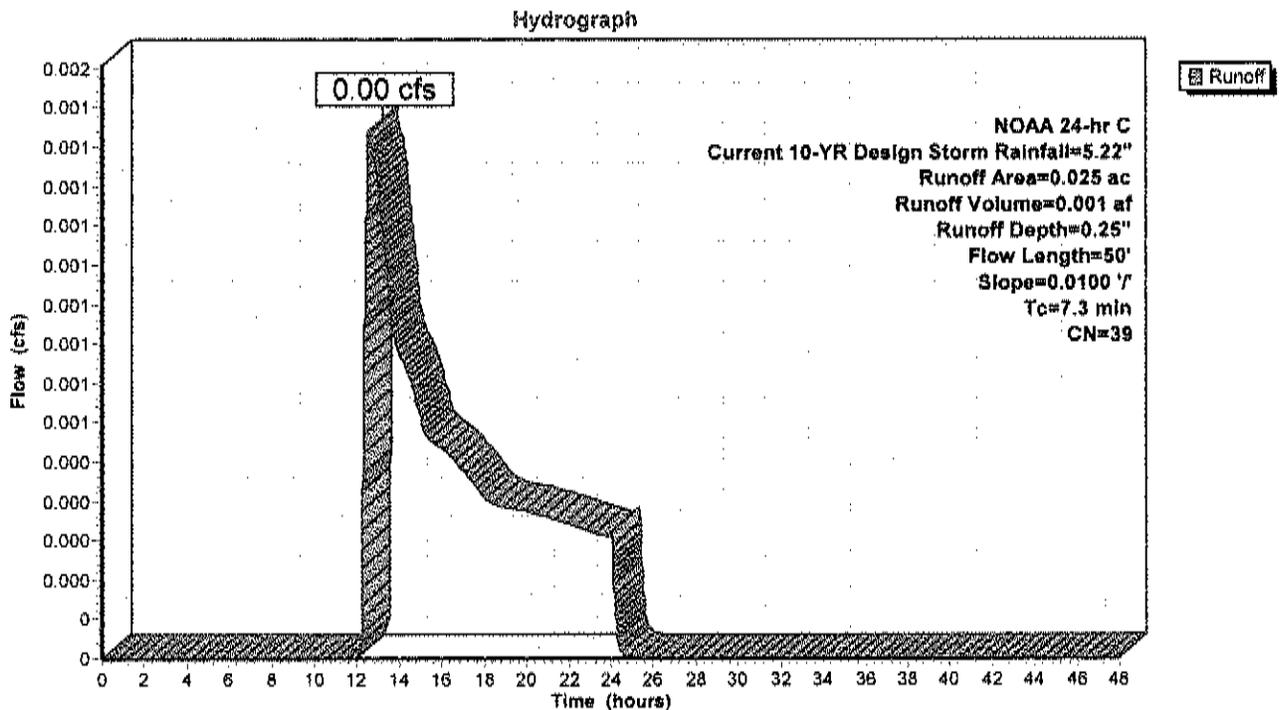
Runoff = 0.00 cfs @ 12.57 hrs, Volume= 0.001 af, Depth= 0.25"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

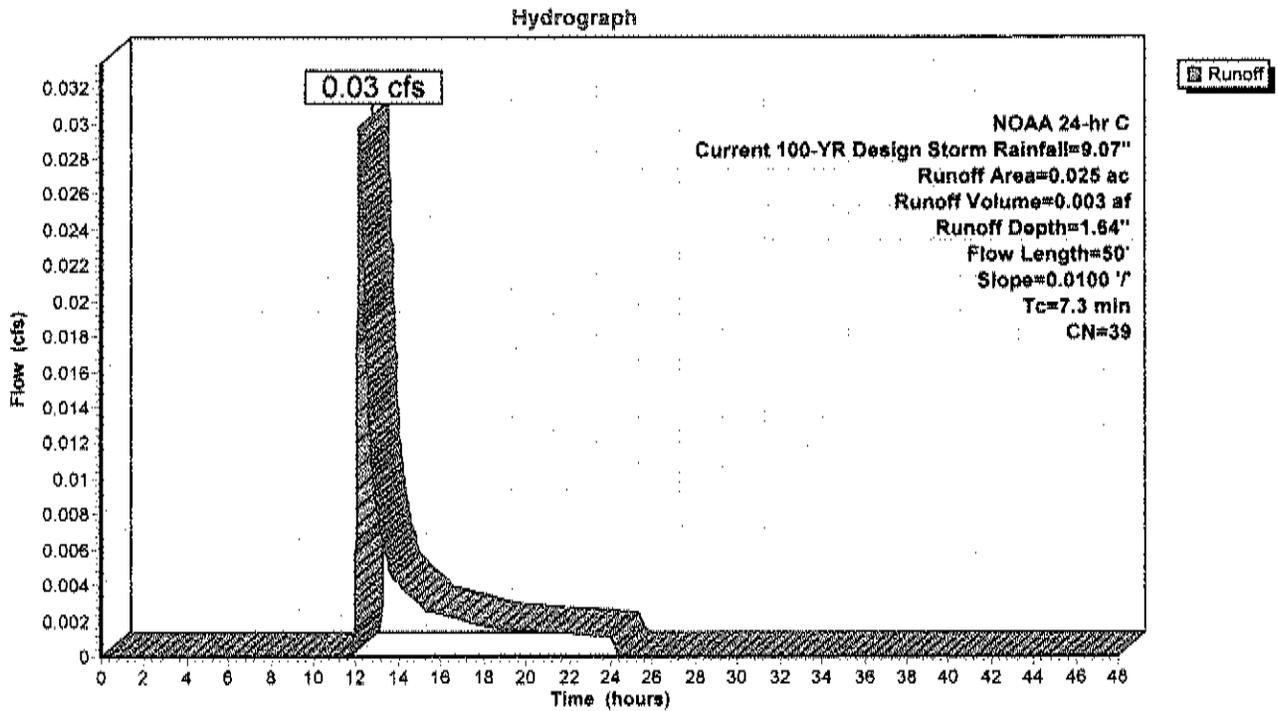
Runoff = 0.03 cfs @ 12.17 hrs, Volume= 0.003 af, Depth= 1.64"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Deimarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

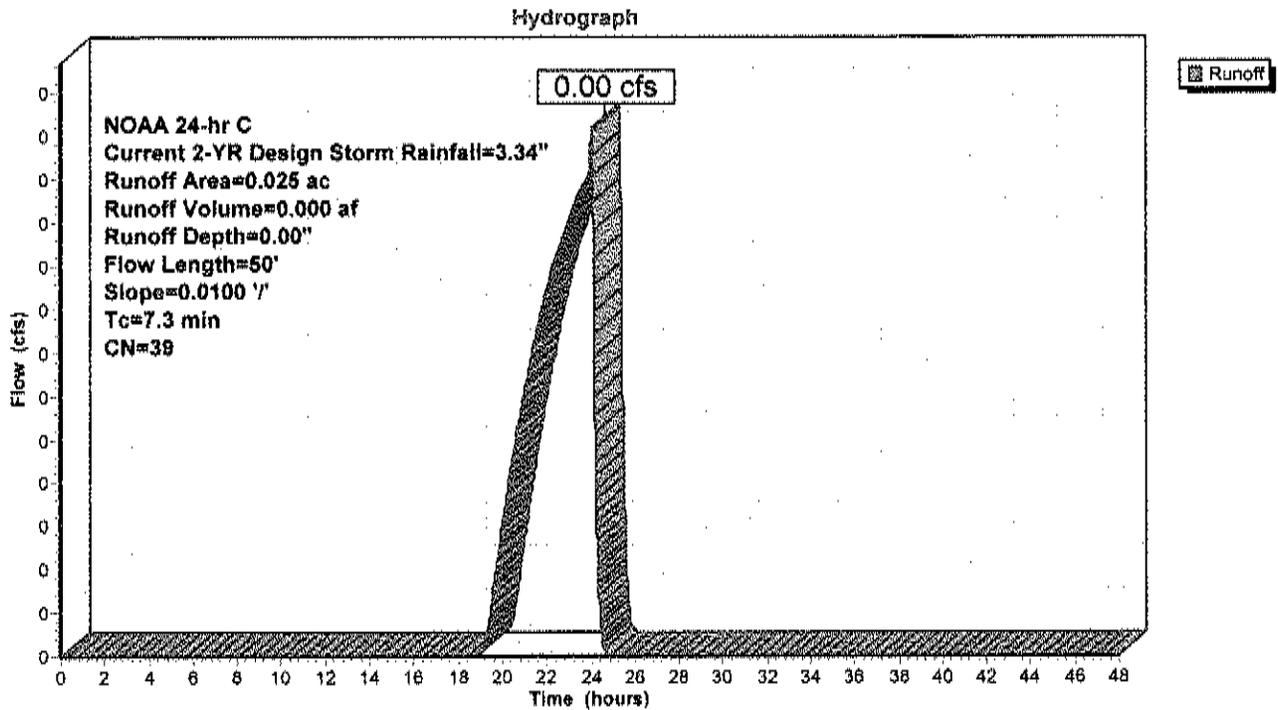
Runoff = 0.00 cfs @ 24.03 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

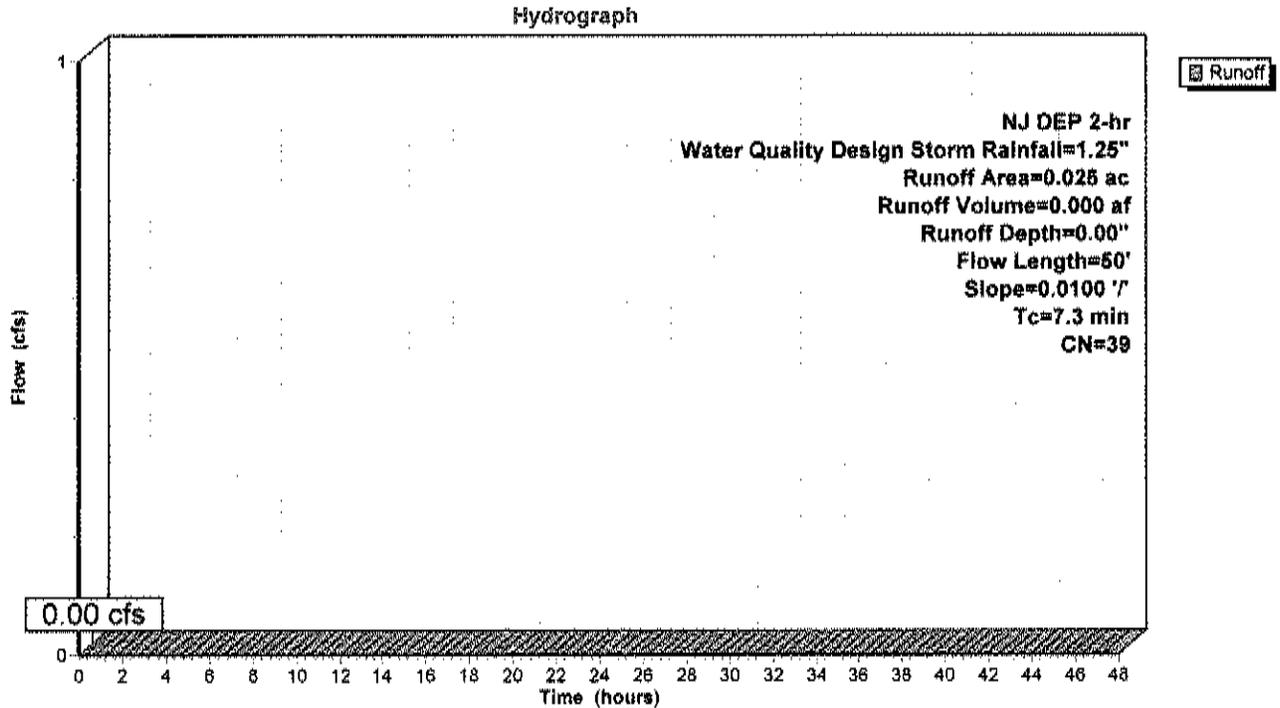
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

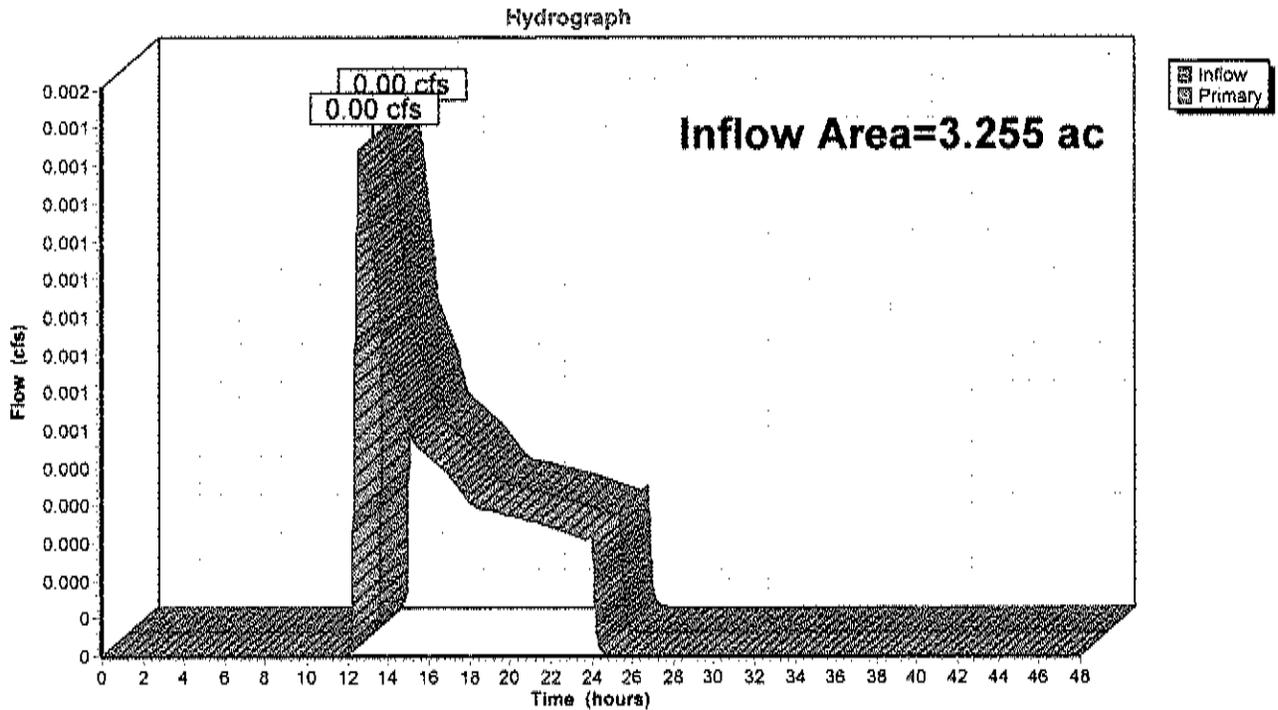
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth = 0.00" for Current 10-YR Design Storm event  
Inflow = 0.00 cfs @ 12.57 hrs, Volume= 0.001 af  
Primary = 0.00 cfs @ 12.57 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4

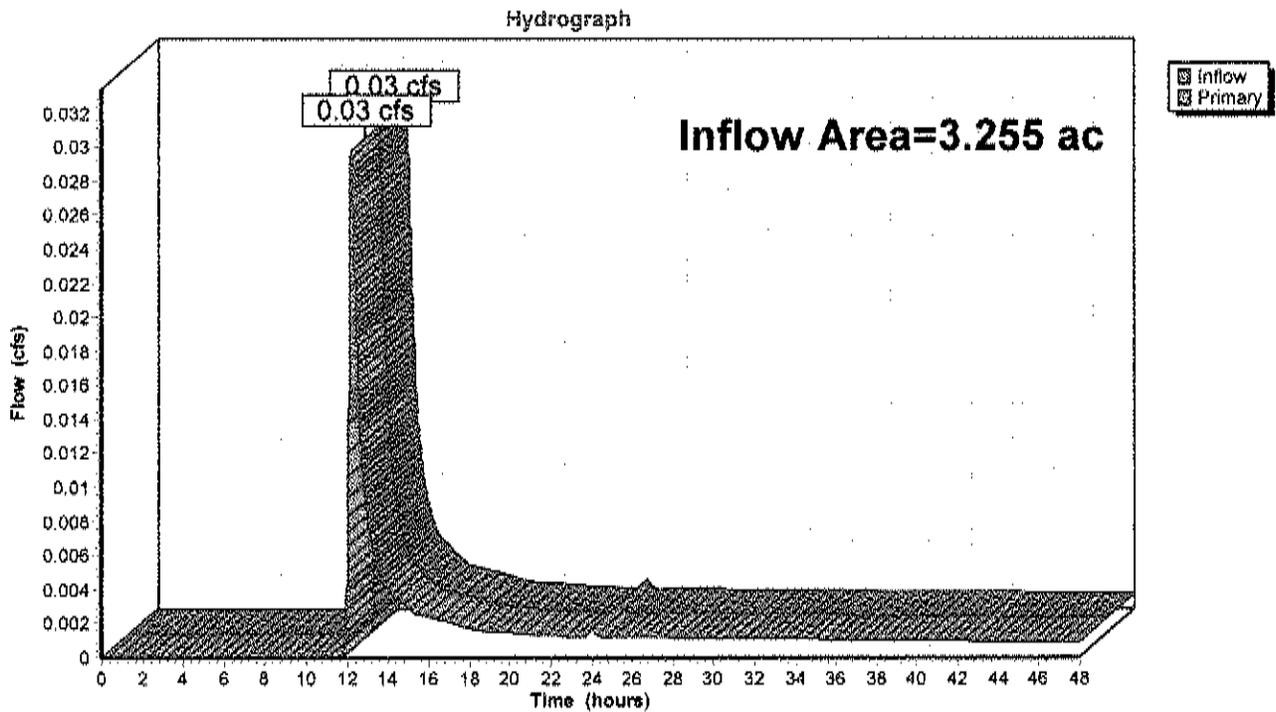


### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth > 0.02" for Current 100-YR Design Storm even  
Inflow = 0.03 cfs @ 12.17 hrs, Volume= 0.006 af  
Primary = 0.03 cfs @ 12.17 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4

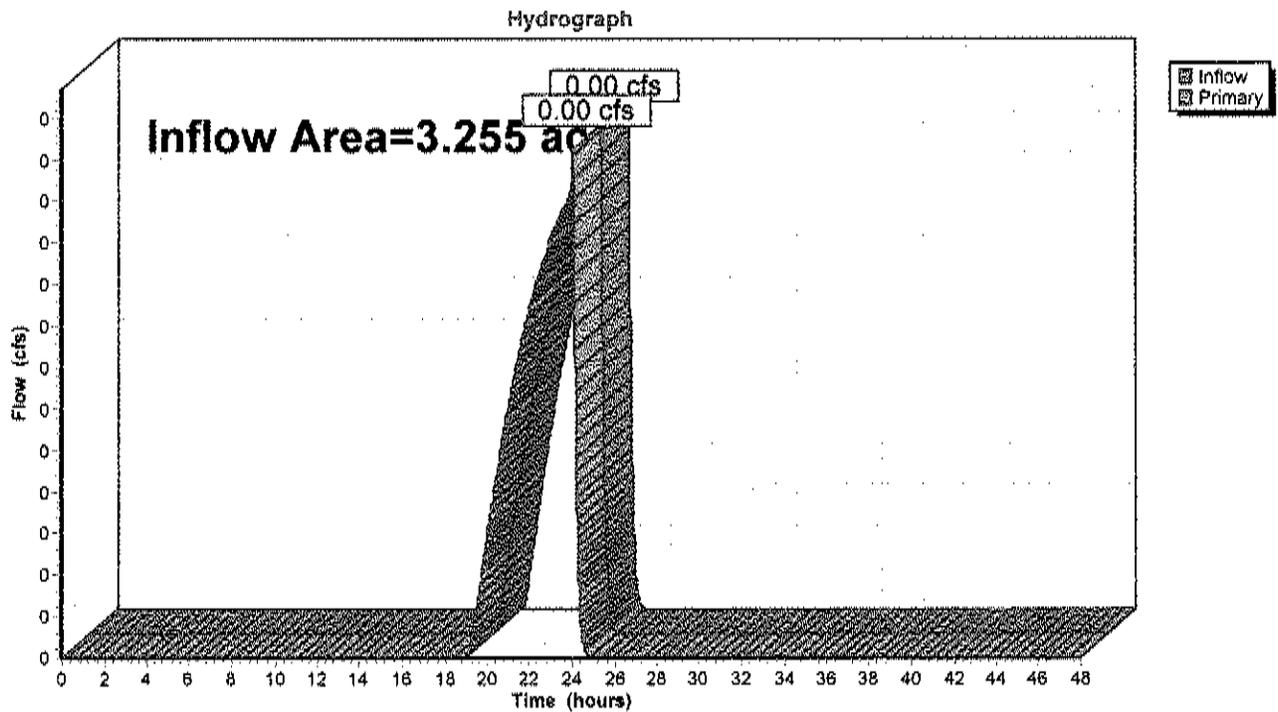


### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth = 0.00" for Current 2-YR Design Storm event  
Inflow = 0.00 cfs @ 24.03 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 24.03 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4

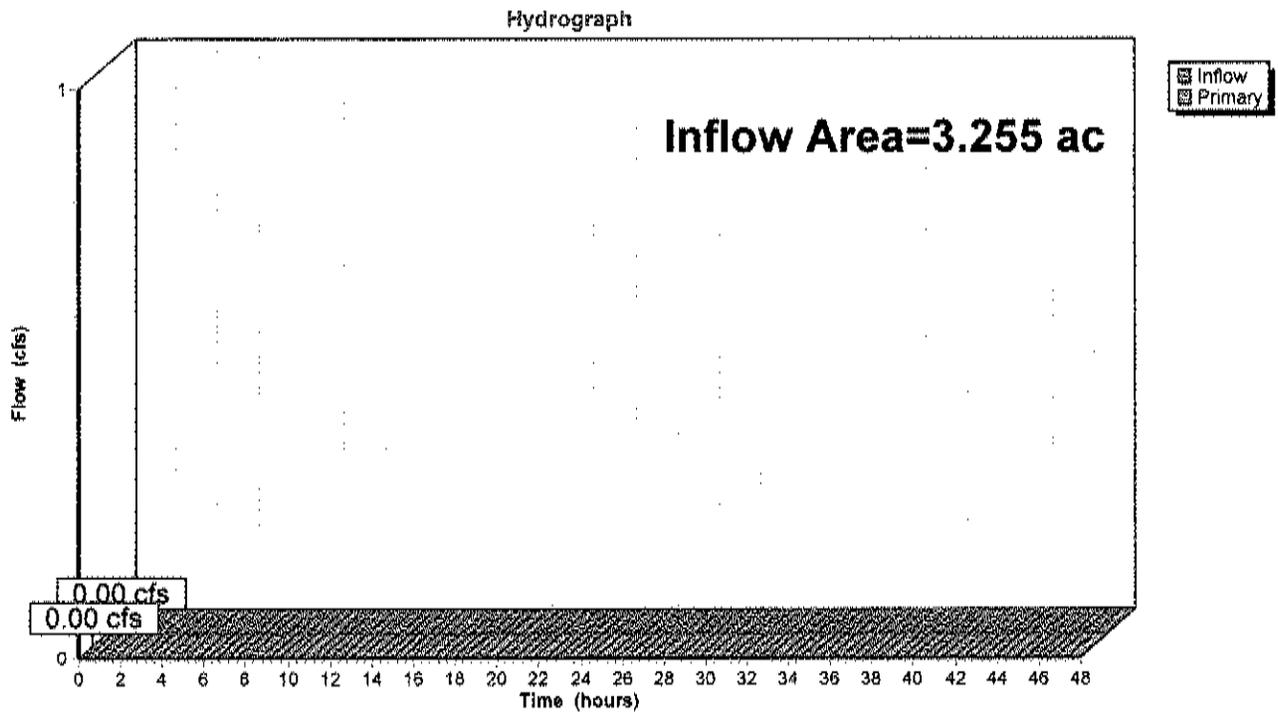


### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth = 0.00" for Water Quality Design Storm event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

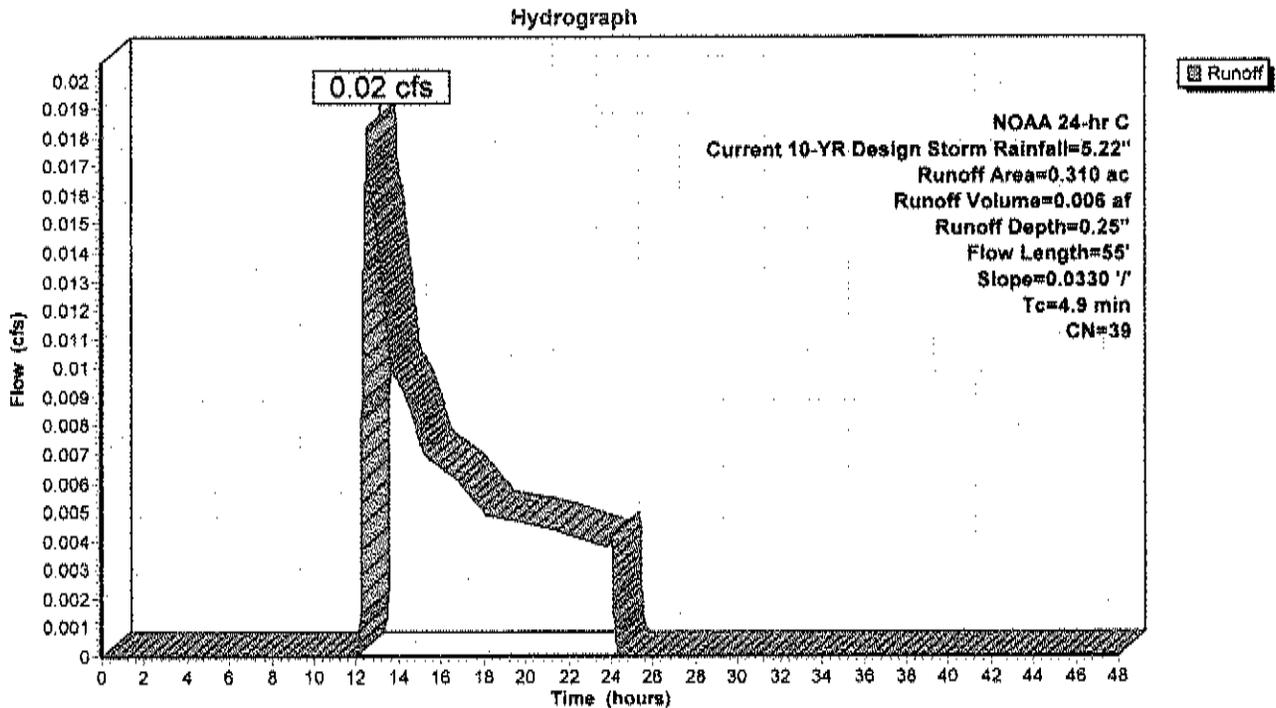
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 0.006 af, Depth= 0.25"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.310	39	Grass/landscaping
0.310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**



**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

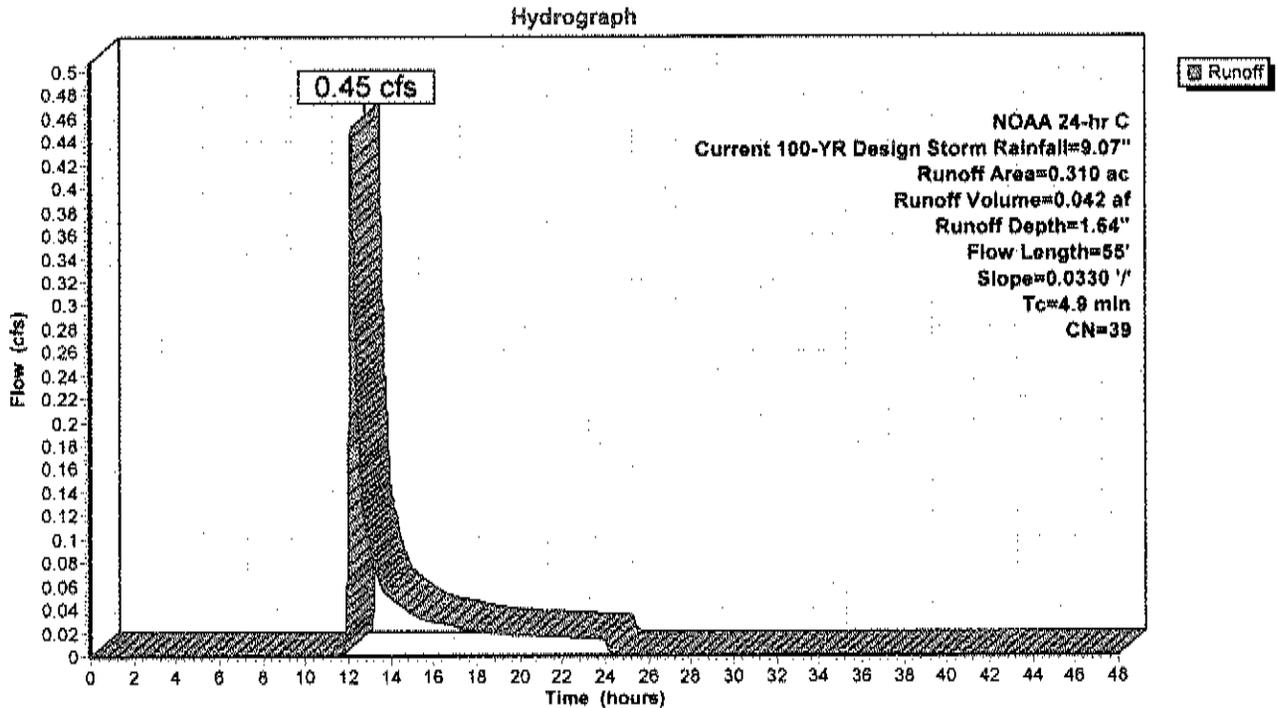
Runoff = 0.45 cfs @ 12.14 hrs, Volume= 0.042 af, Depth= 1.64"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.310	39	Grass/landscaping
0.310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**





**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

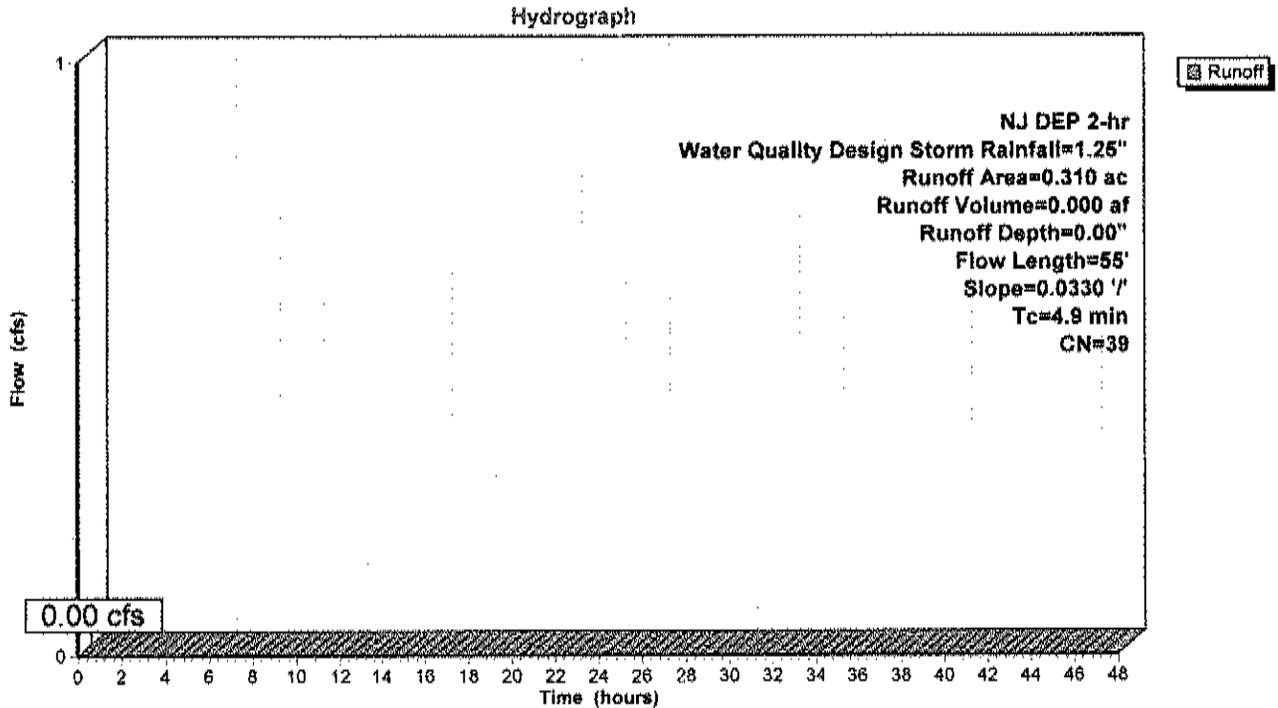
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.310	39	Grass/landscaping
0.310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

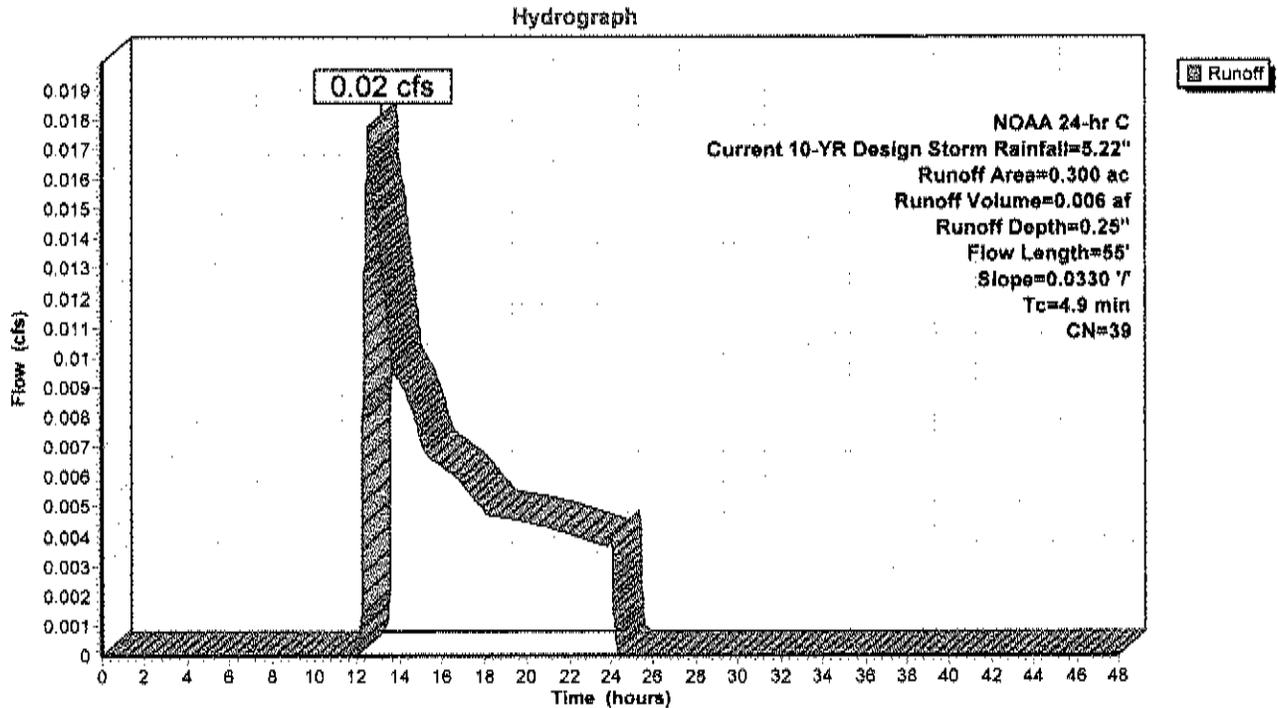
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 0.006 af, Depth= 0.25"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**



**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

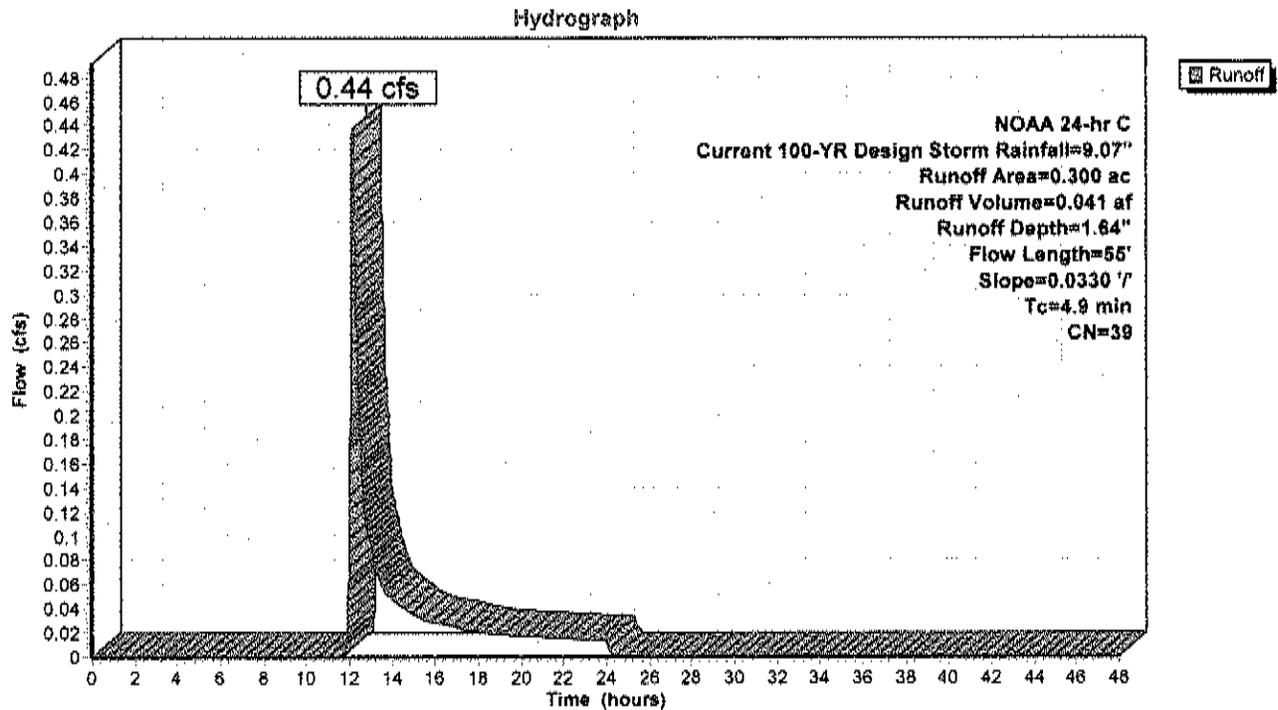
Runoff = 0.44 cfs @ 12.14 hrs, Volume= 0.041 af, Depth= 1.64"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**





**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

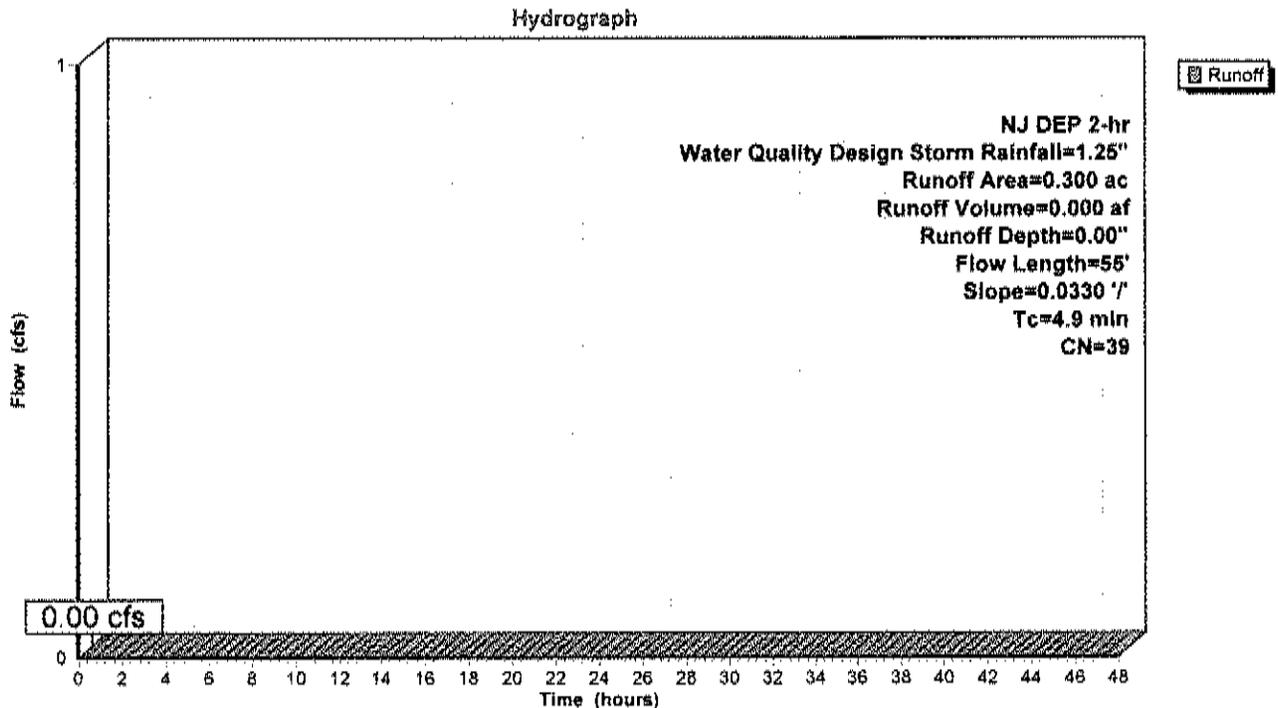
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	5PI	0.00	0.00	28.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.58 cfs @ 12.11 hrs, Volume= 0.042 af, Depth= 4.98"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

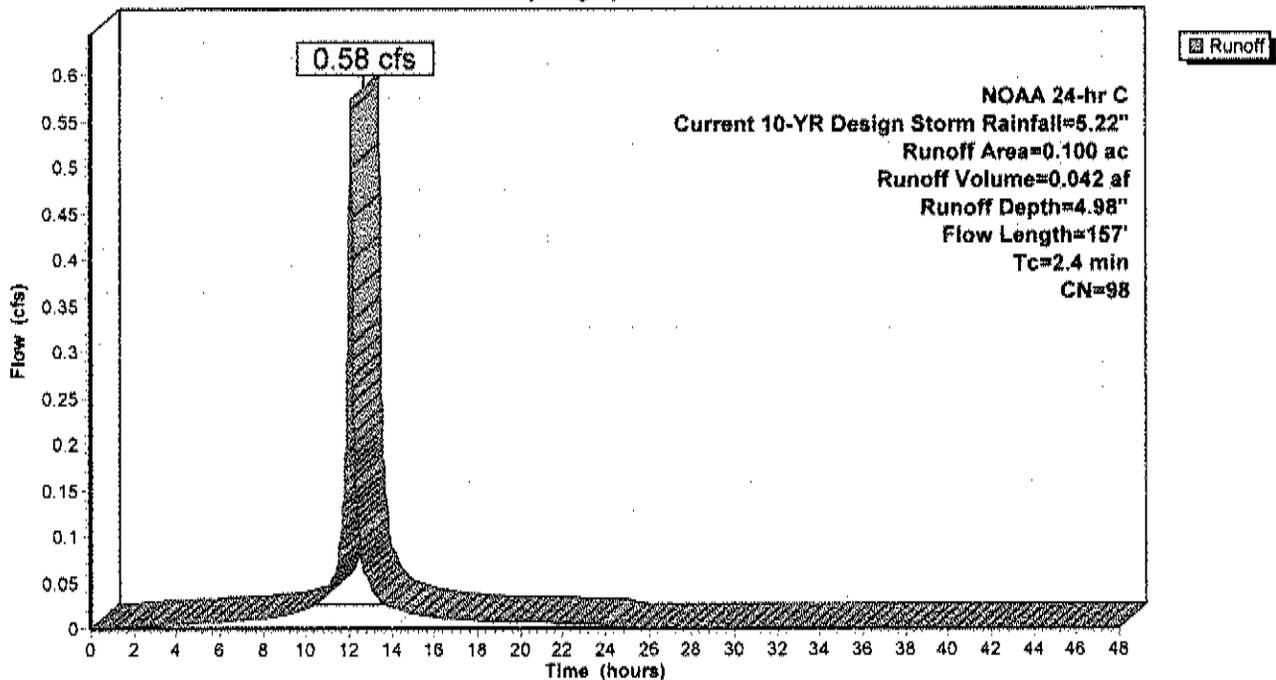
Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.34"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.4	157	Total			

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 1.00 cfs @ 12.11 hrs, Volume= 0.074 af, Depth= 8.83"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

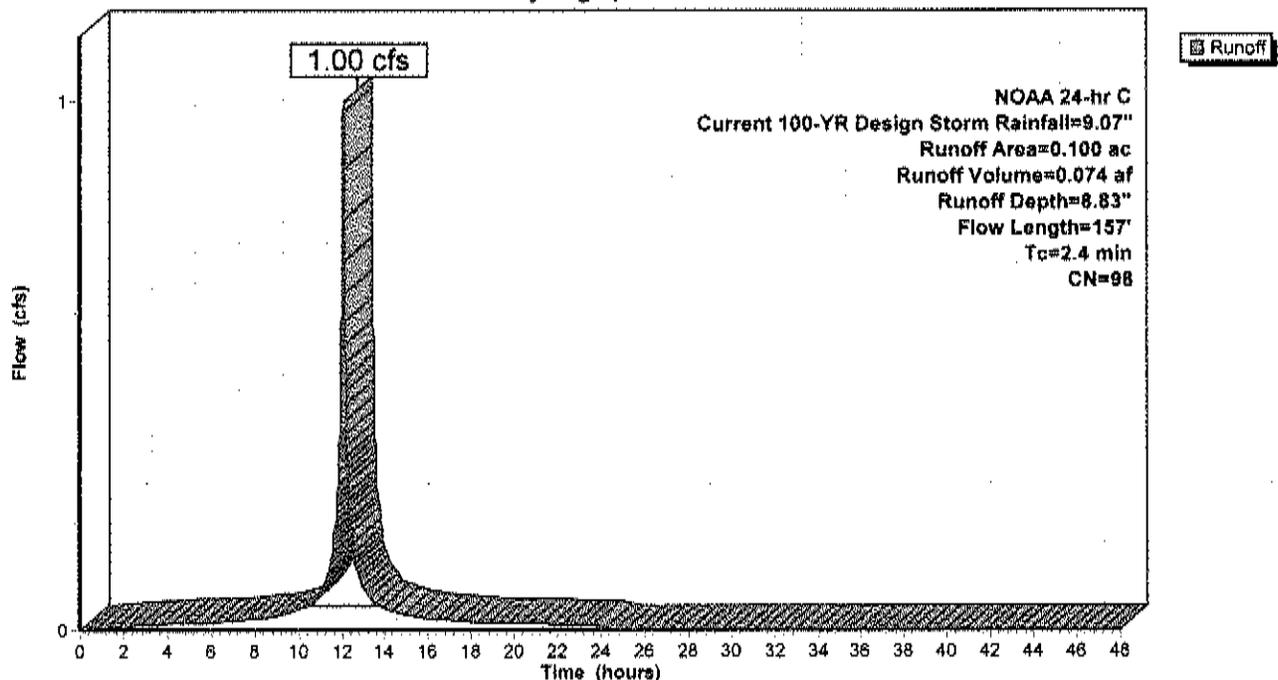
Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.34"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.4 157 Total

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.37 cfs @ 12.11 hrs, Volume= 0.026 af, Depth= 3.11"  
 Routed to Pond 5P : Stormwater Basin #5

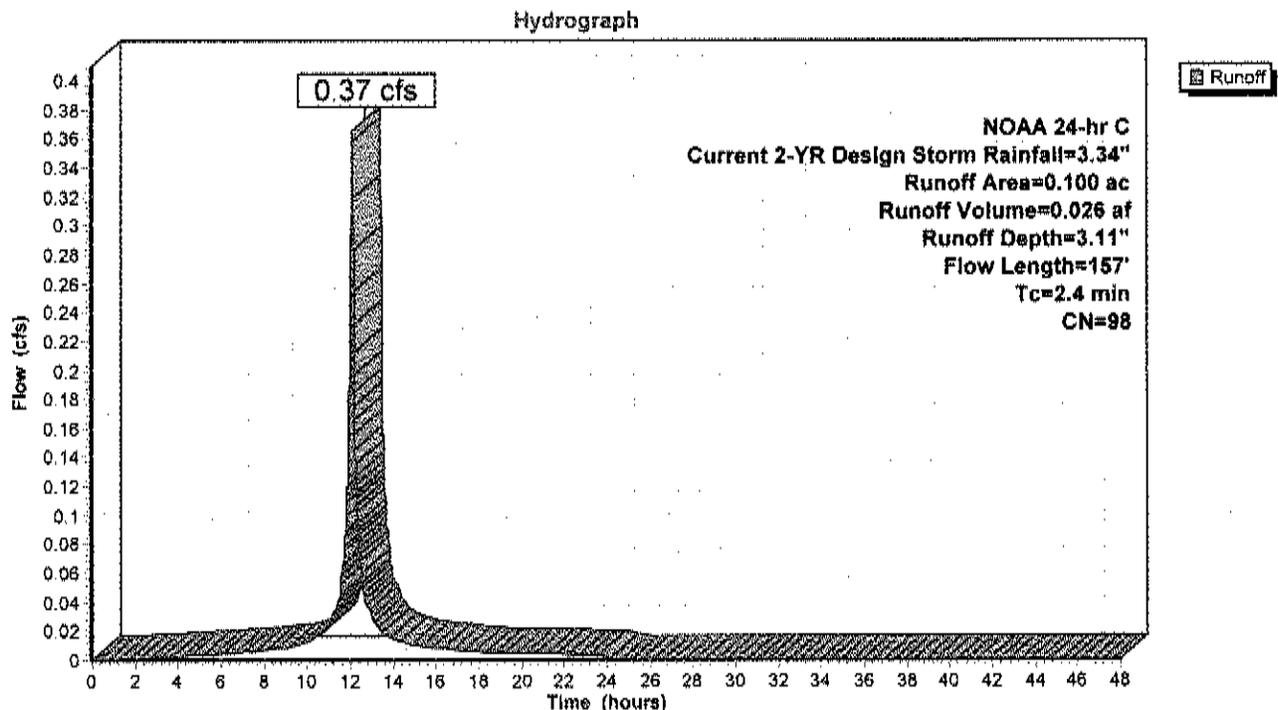
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.34"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.4	157	Total			

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.30 cfs @ 1.09 hrs, Volume= 0.009 af, Depth= 1.03"  
 Routed to Pond 5P : Stormwater Basin #5

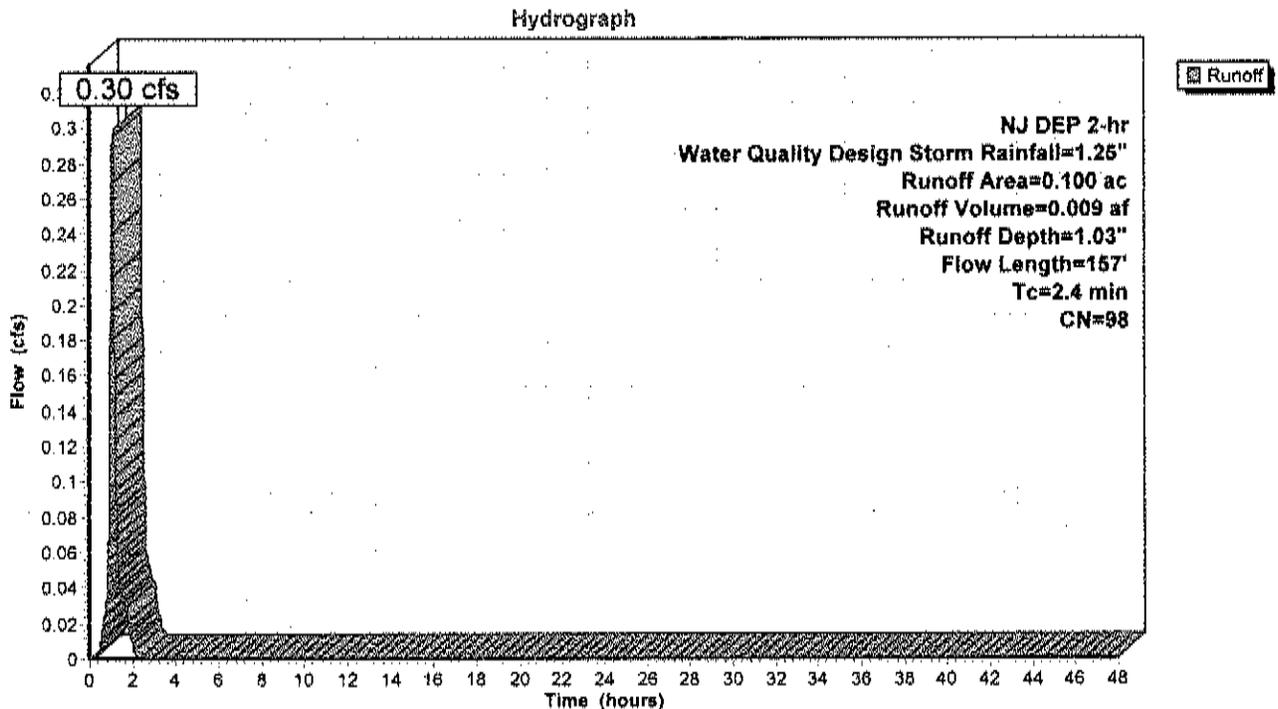
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	47	0.0041	0.64		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.6	45	0.0037	1.23		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.4	157	Total			

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 1.43" for Current 10-YR Design Storm event  
 Inflow = 0.58 cfs @ 12.11 hrs, Volume= 0.048 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.69' @ 24.55 hrs Surf.Area= 0.058 ac Storage= 0.048 af

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

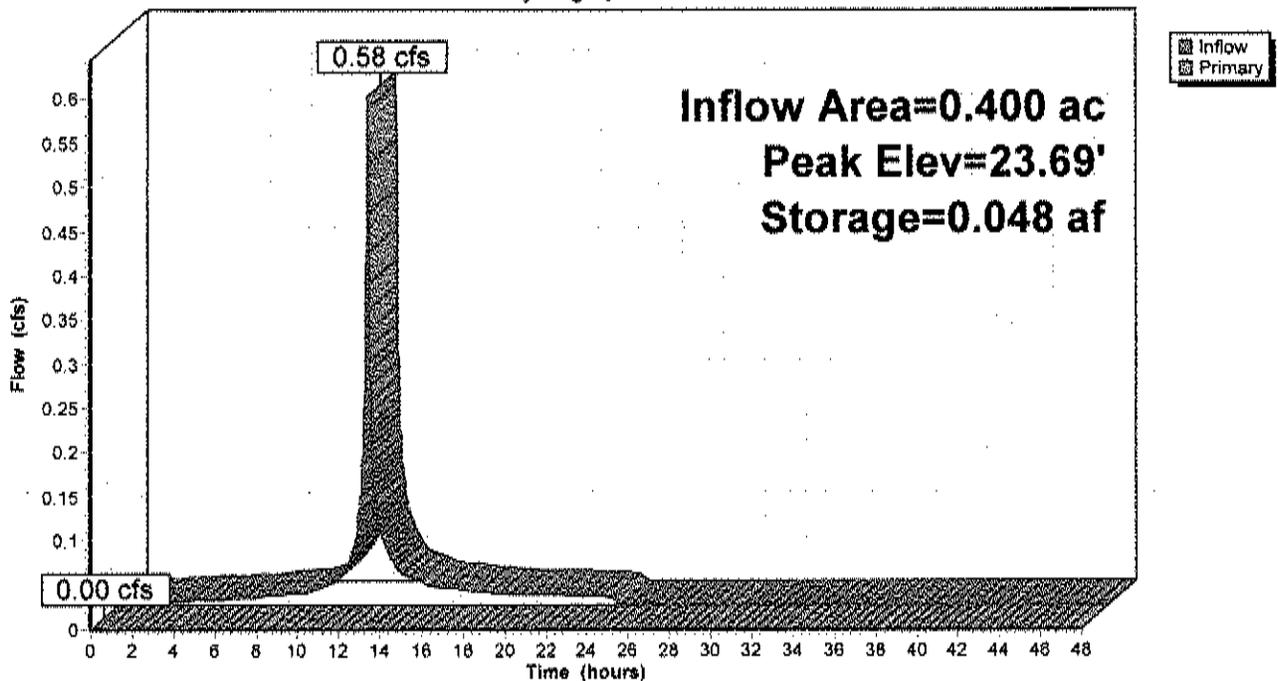
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 3.43" for Current 100-YR Design Storm even  
 Inflow = 1.39 cfs @ 12.11 hrs, Volume= 0.114 af  
 Outflow = 0.02 cfs @ 23.26 hrs, Volume= 0.006 af, Atten= 98%, Lag= 668.6 min  
 Primary = 0.02 cfs @ 23.26 hrs, Volume= 0.006 af  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.56' @ 23.26 hrs Surf.Area= 0.085 ac Storage= 0.110 af

Plug-Flow detention time= 1,127.6 min calculated for 0.006 af (5% of inflow)  
 Center-of-Mass det. time= 600.4 min ( 1,398.1 - 797.7 )

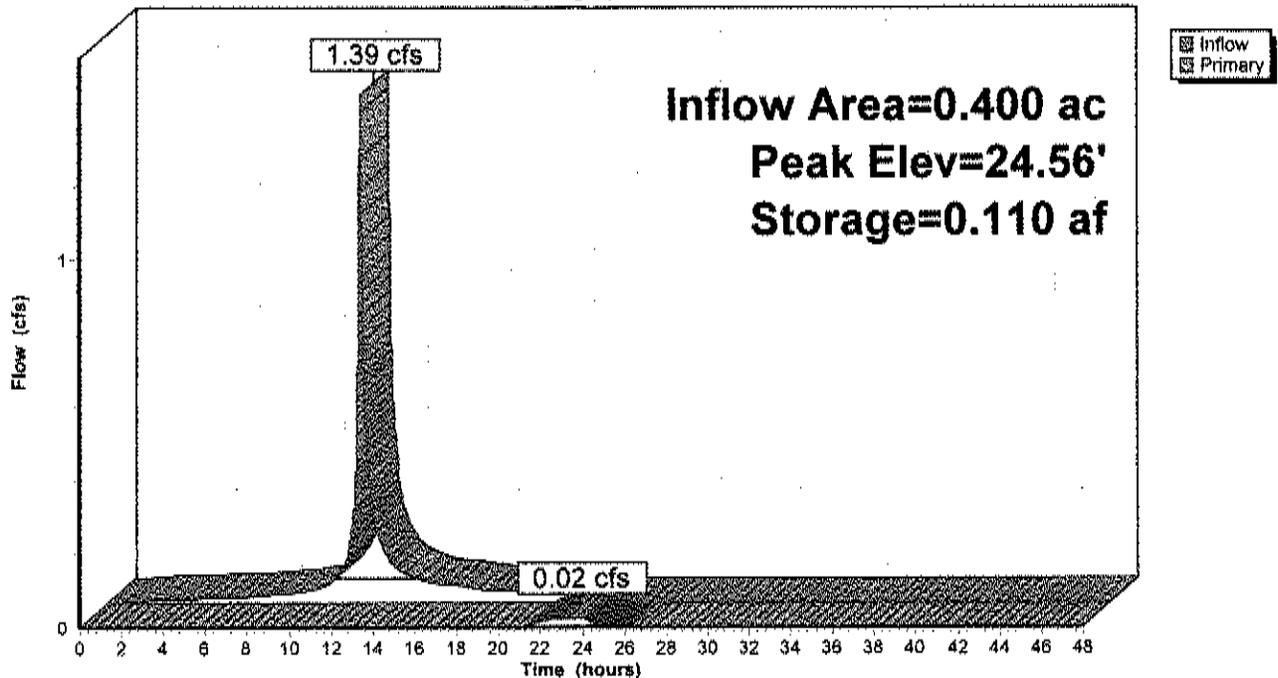
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.02 cfs @ 23.26 hrs HW=24.56' (Free Discharge)  
 1=Broad-Crested Rectangular Weir (Weir Controls 0.02 cfs @ 0.33 fps)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 0.78" for Current 2-YR Design Storm event  
 Inflow = 0.37 cfs @ 12.11 hrs, Volume= 0.026 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.27' @ 24.55 hrs Surf.Area= 0.045 ac Storage= 0.026 af

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

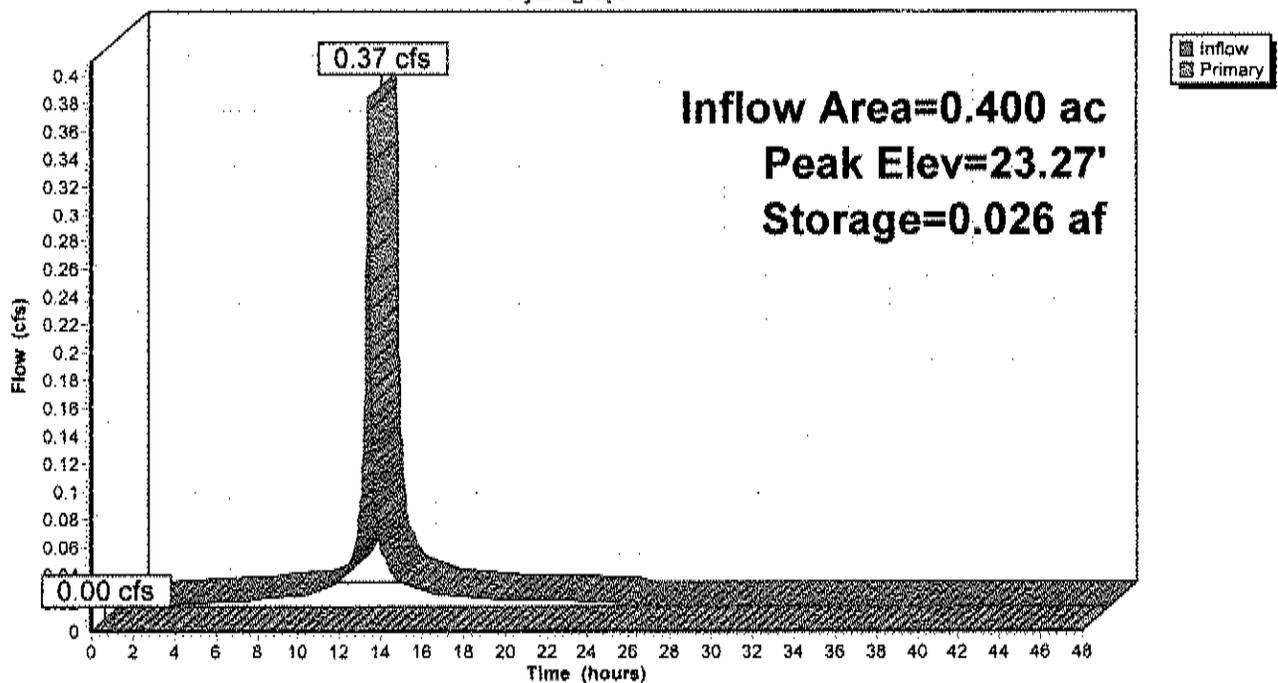
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 0.26" for Water Quality Design Storm event  
 Inflow = 0.30 cfs @ 1.09 hrs, Volume= 0.009 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.81' @ 2.27 hrs Surf.Area= 0.032 ac Storage= 0.009 af

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

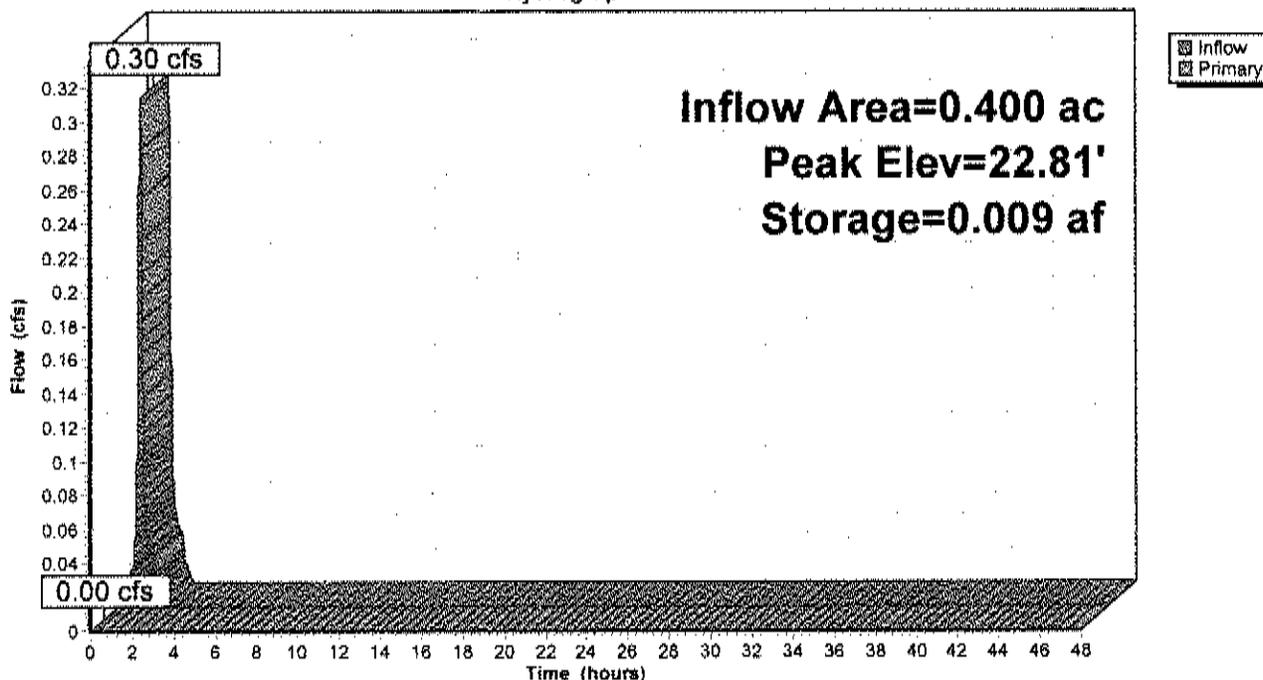
Volume	Invert	Avail. Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

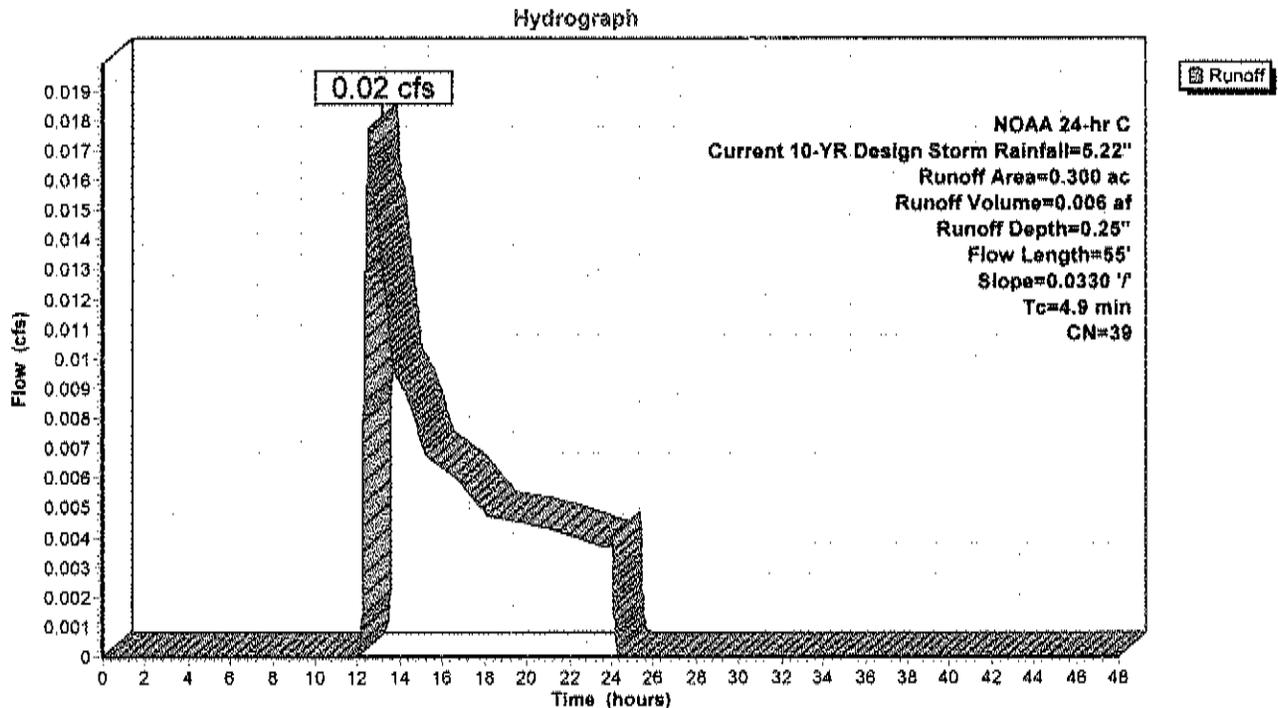
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 0.006 af, Depth= 0.25"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**



**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

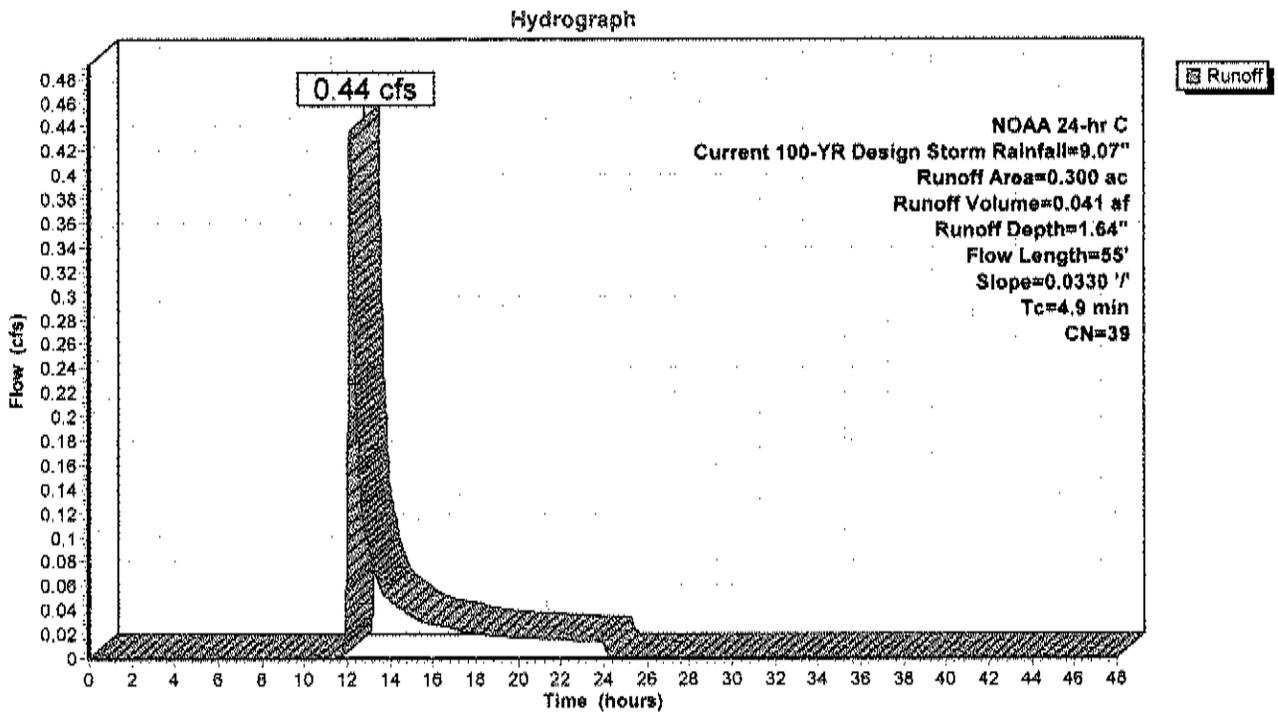
Runoff = 0.44 cfs @ 12.14 hrs, Volume= 0.041 af, Depth= 1.64"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**





**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

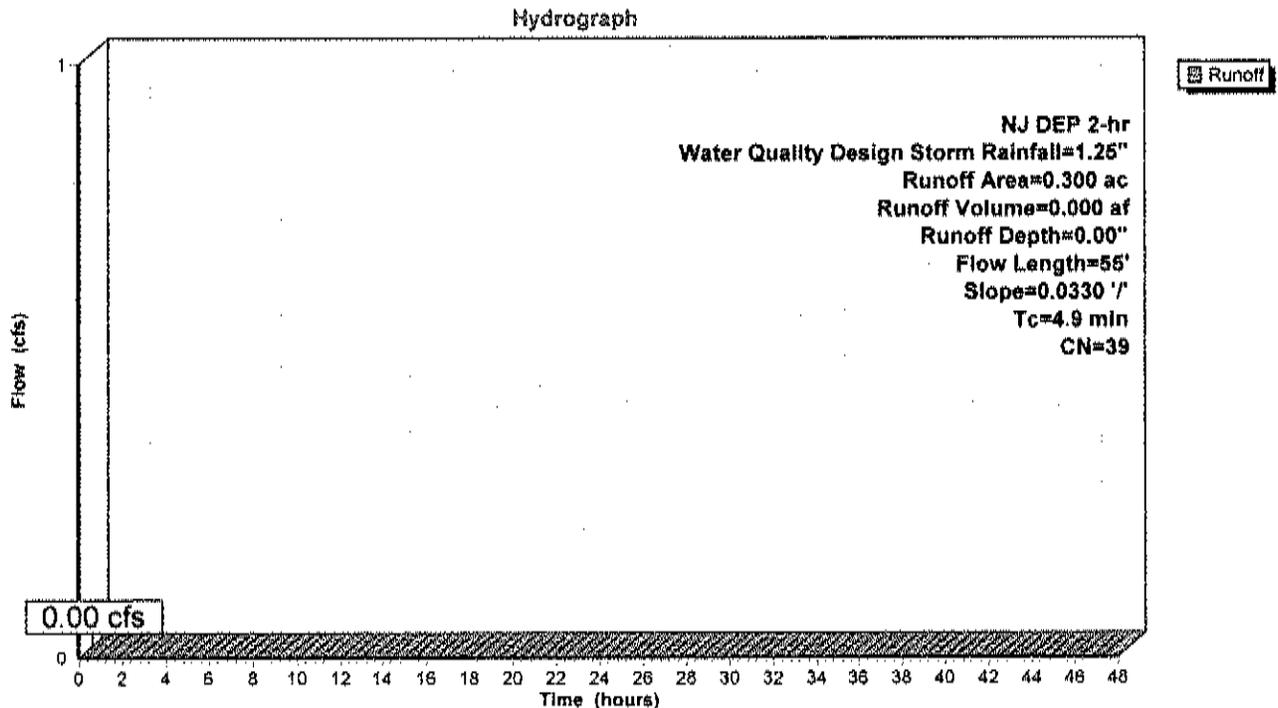
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	55	0.0330	0.19		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	5API	0.00	0.00	27.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.51 cfs @ 12.11 hrs, Volume= 0.037 af, Depth= 4.98"  
 Routed to Pond 5AP : Stormwater Basin #5A

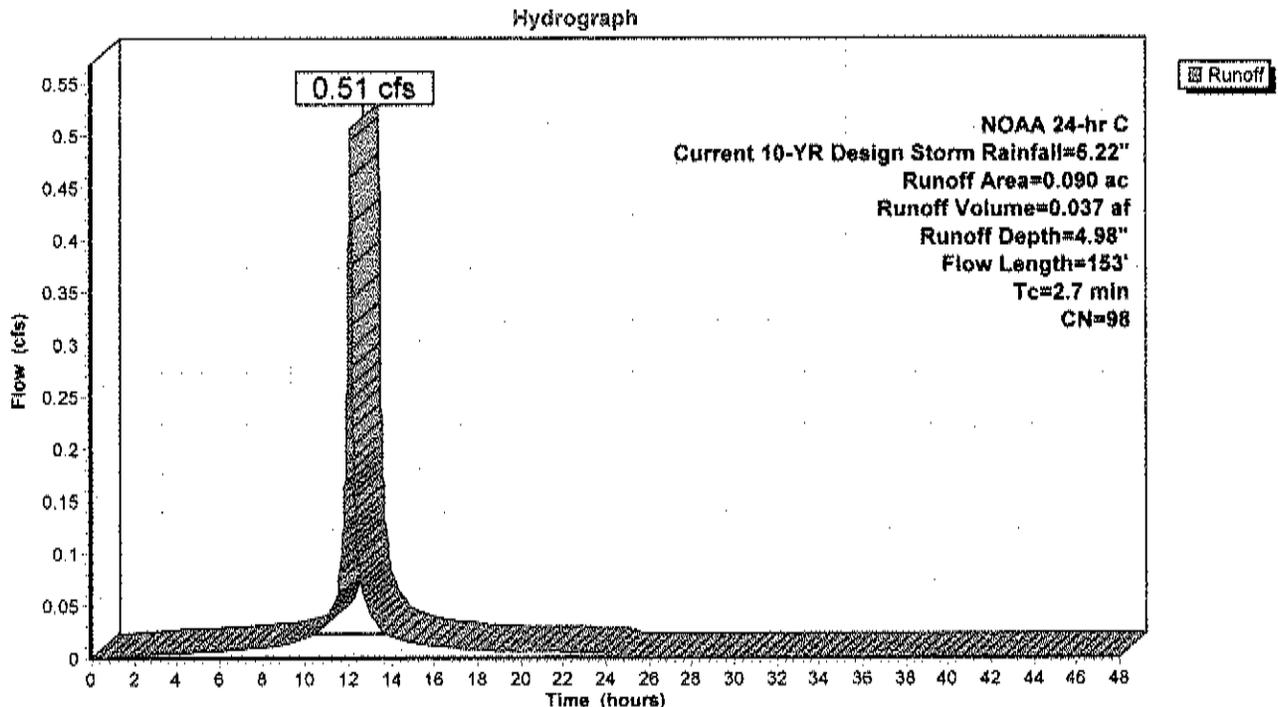
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	65	0.0030	0.60		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	35	0.0034	1.18		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.7	153	Total			

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.88 cfs @ 12.11 hrs, Volume= 0.066 af, Depth= 8.83"  
 Routed to Pond 5AP : Stormwater Basin #5A

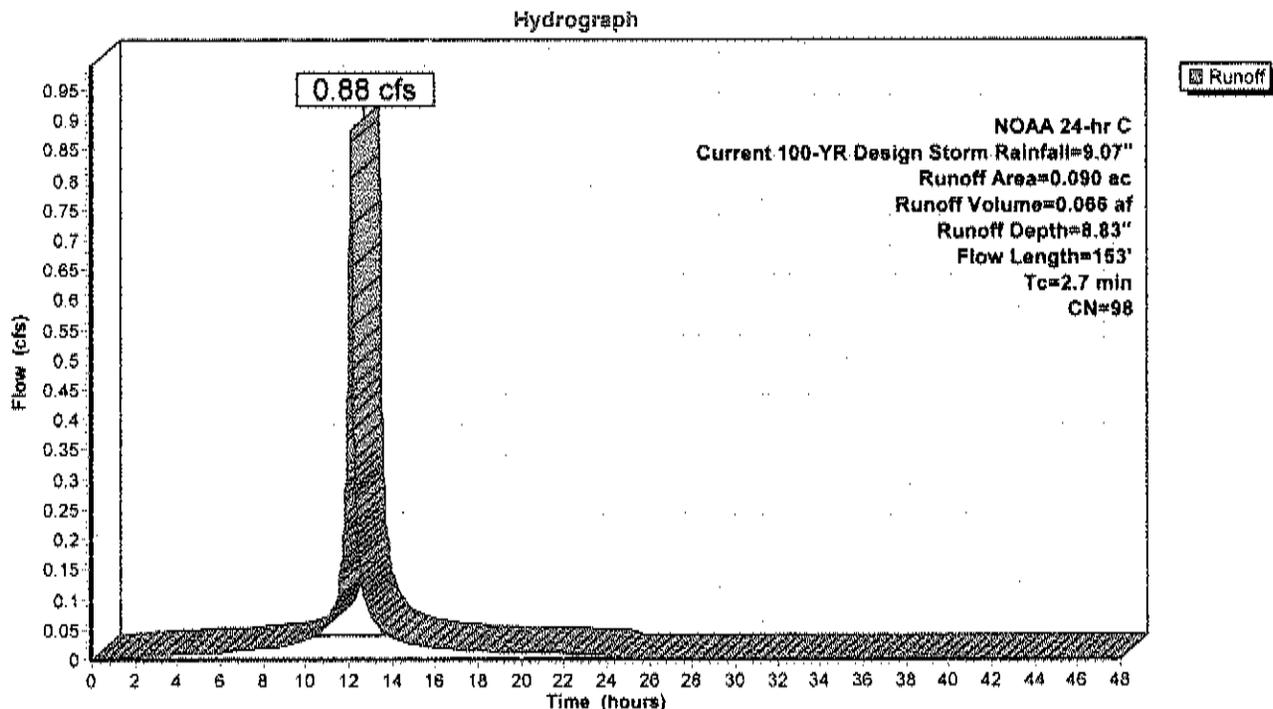
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	65	0.0030	0.60		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	35	0.0034	1.18		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.7	153	Total			

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.32 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 3.11"  
 Routed to Pond 5AP : Stormwater Basin #5A

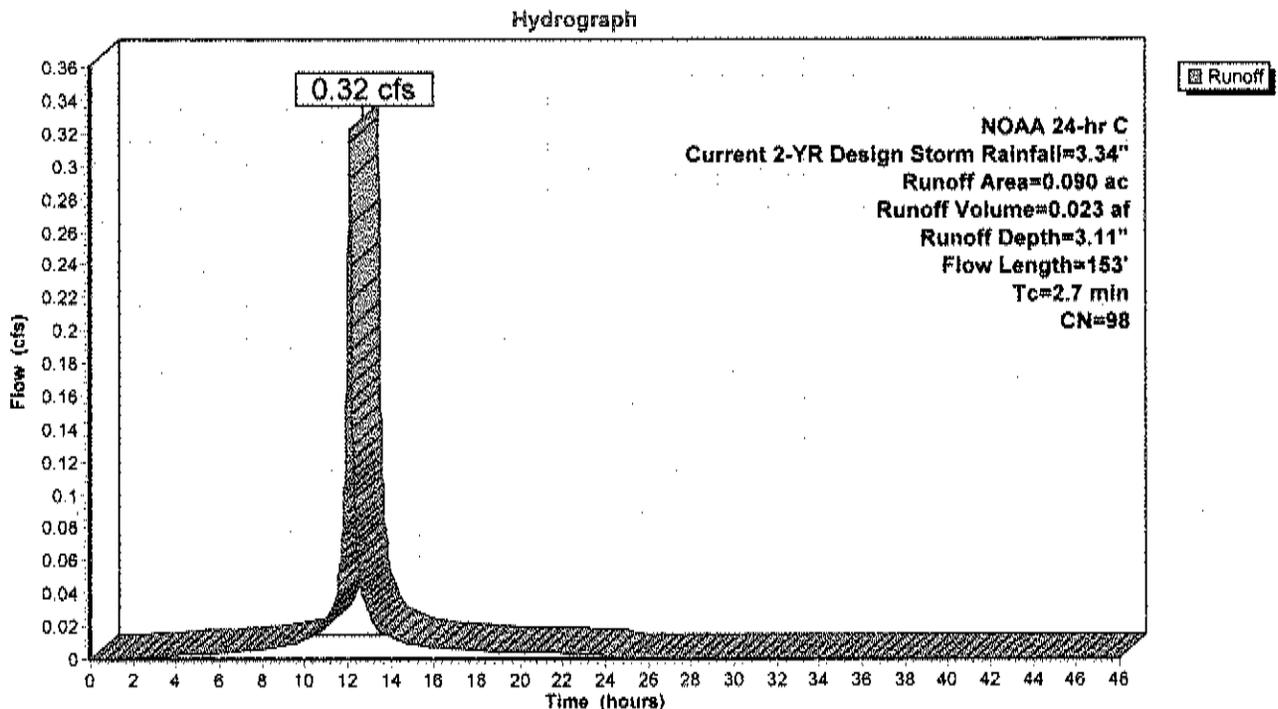
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	65	0.0030	0.60		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	35	0.0034	1.18		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.7	153	Total			

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.27 cfs @ 1.09 hrs, Volume= 0.008 af, Depth= 1.03"  
 Routed to Pond 5AP : Stormwater Basin #5A

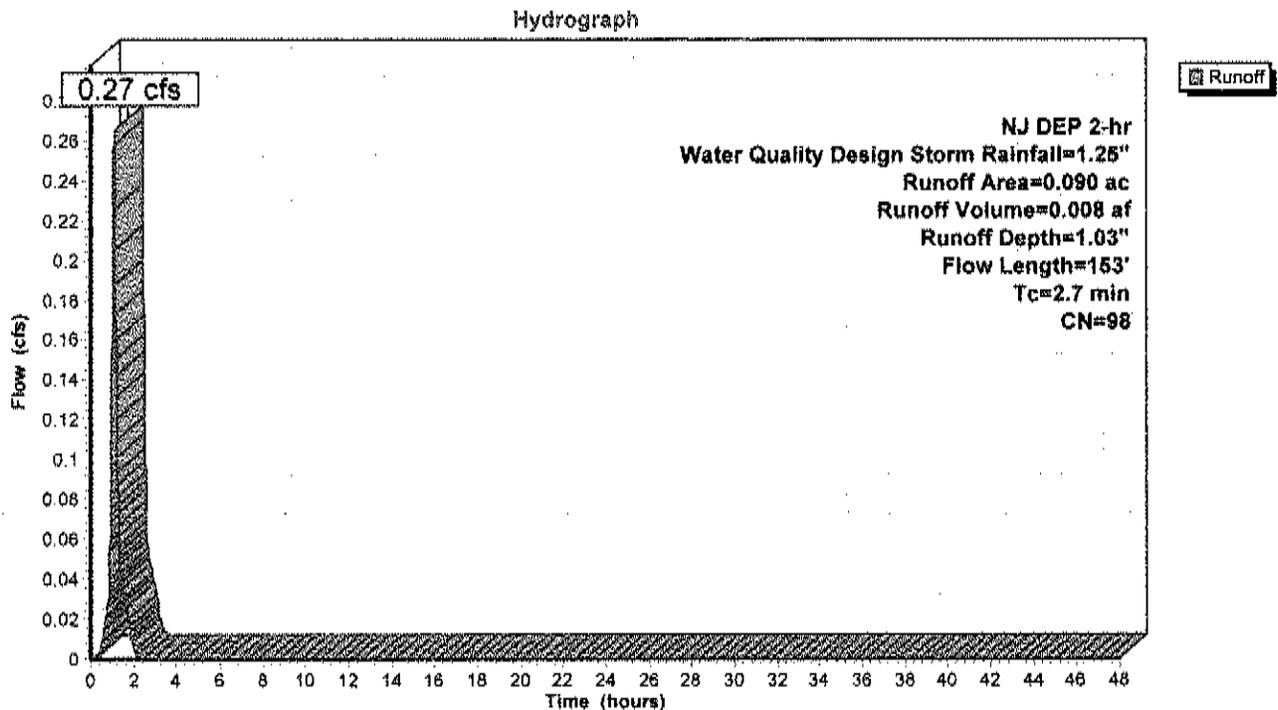
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	65	0.0030	0.60		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.34"
0.5	35	0.0034	1.18		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.7 153 Total

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 1.34" for Current 10-YR Design Storm event  
 Inflow = 0.51 cfs @ 12.11 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.62' @ 24.55 hrs Surf.Area= 0.055 ac Storage= 0.044 af

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

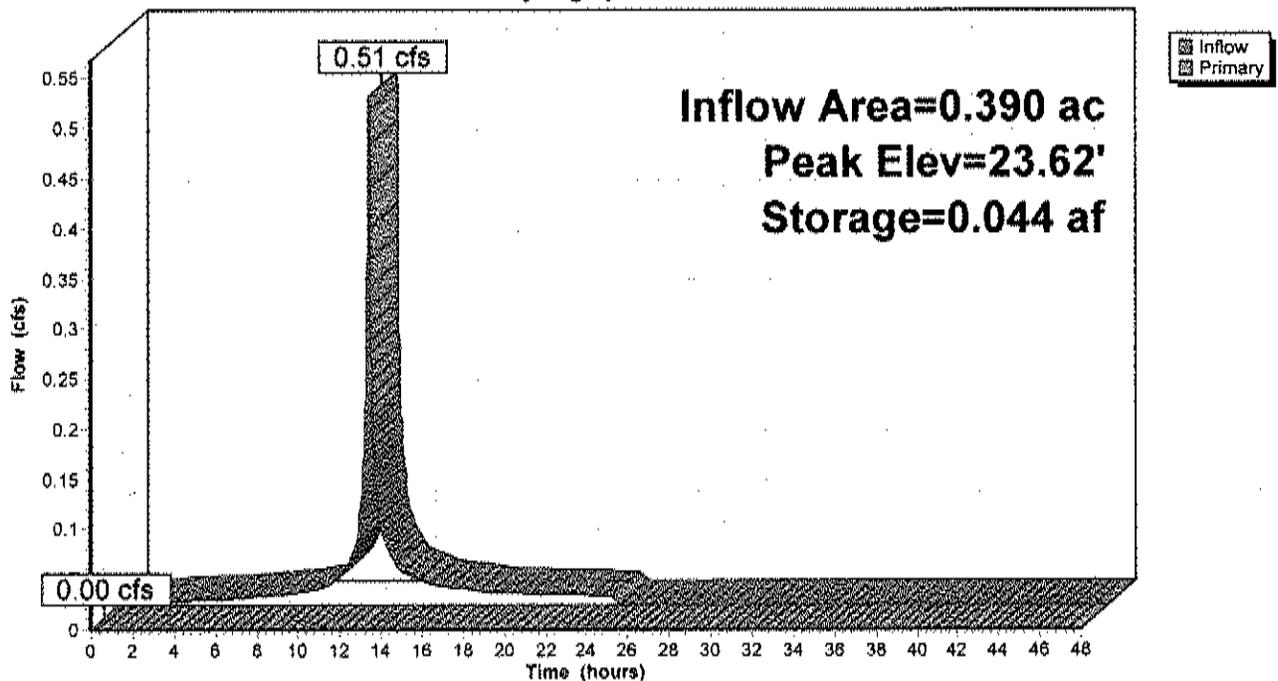
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 3.30" for Current 100-YR Design Storm even  
 Inflow = 1.28 cfs @ 12.12 hrs, Volume= 0.107 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.53' @ 24.55 hrs Surf.Area= 0.084 ac Storage= 0.107 af

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

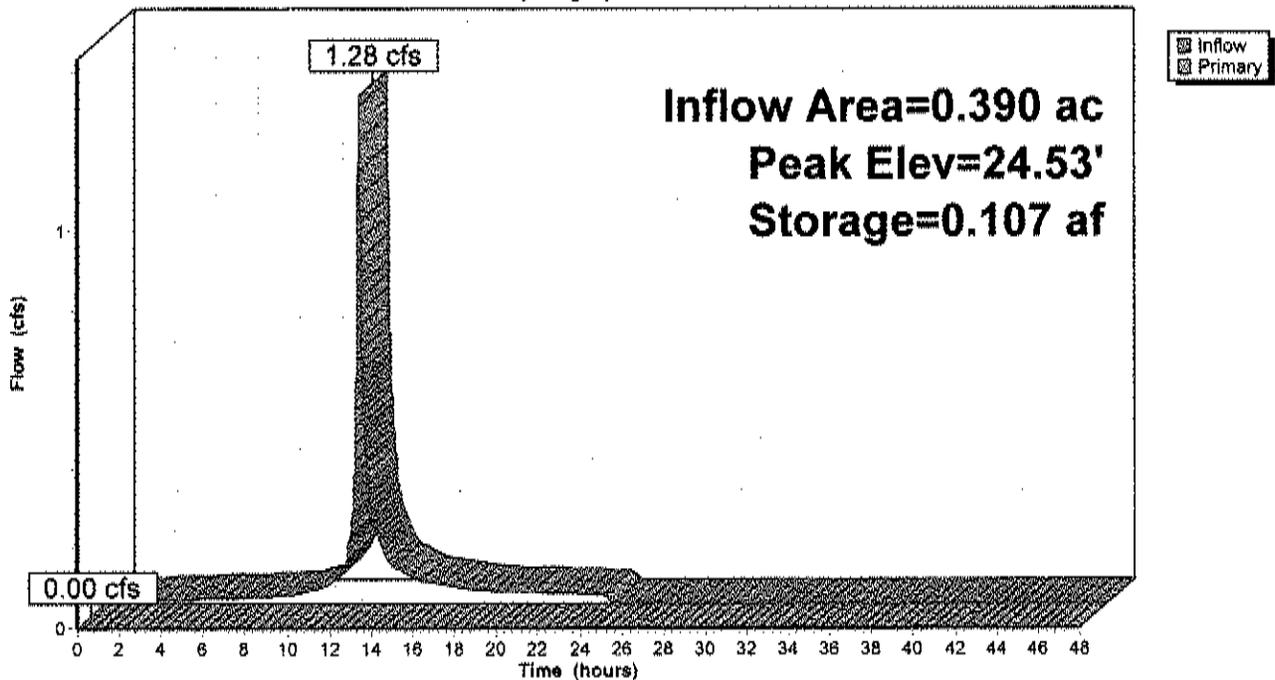
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 0.72" for Current 2-YR Design Storm event  
 Inflow = 0.32 cfs @ 12.11 hrs, Volume= 0.023 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.21' @ 24.55 hrs Surf.Area= 0.043 ac Storage= 0.023 af

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

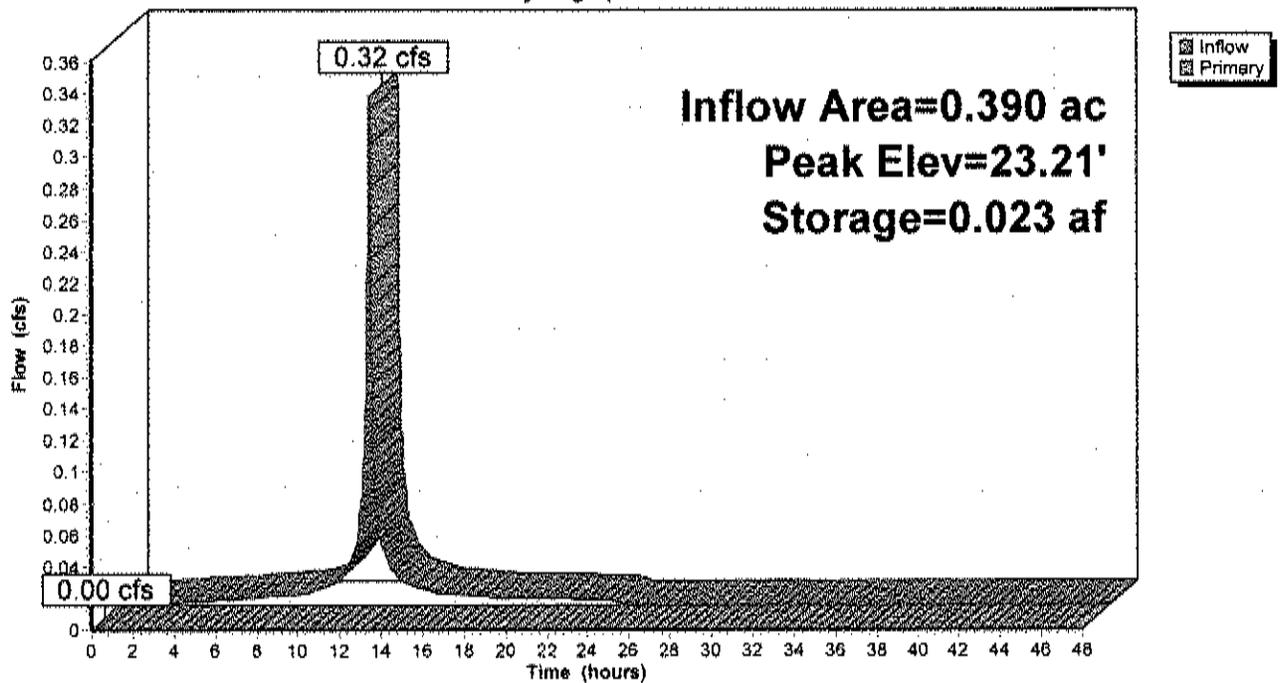
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 0.24" for Water Quality Design Storm event  
 Inflow = 0.27 cfs @ 1.09 hrs, Volume= 0.008 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.79' @ 2.31 hrs Surf.Area= 0.031 ac Storage= 0.008 af

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

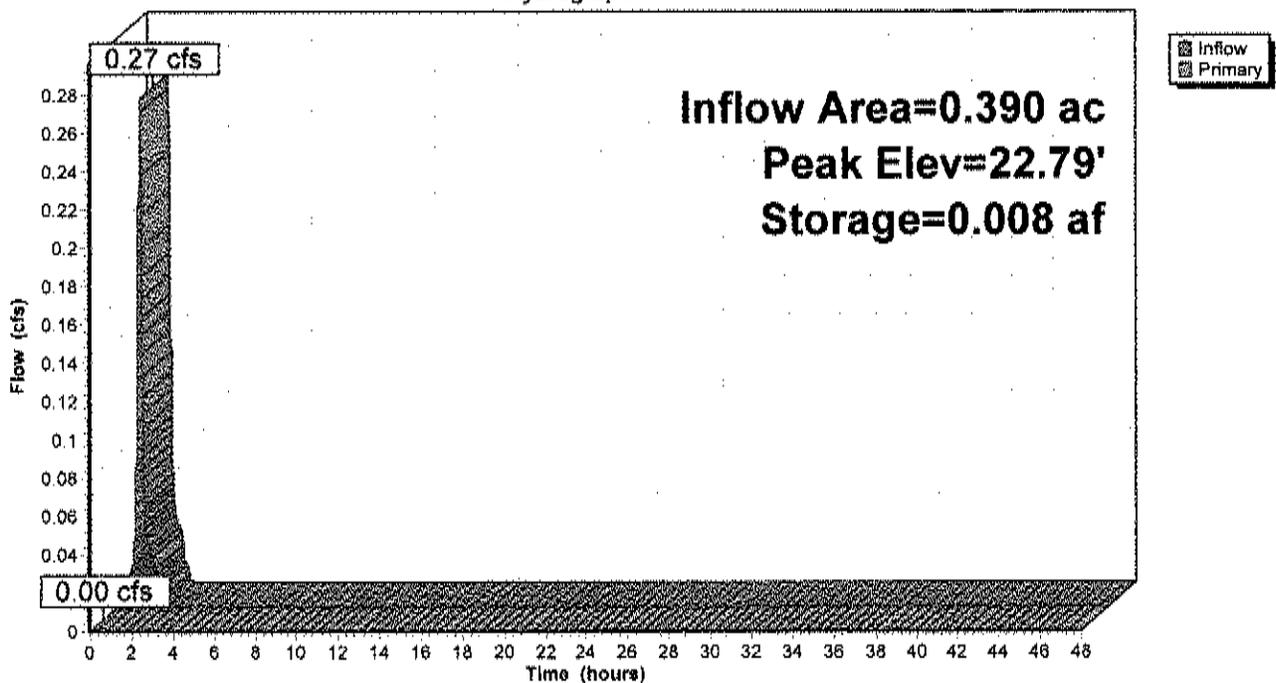
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Current 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	5.22	2
2	Current 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	9.07	2
3	Current 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

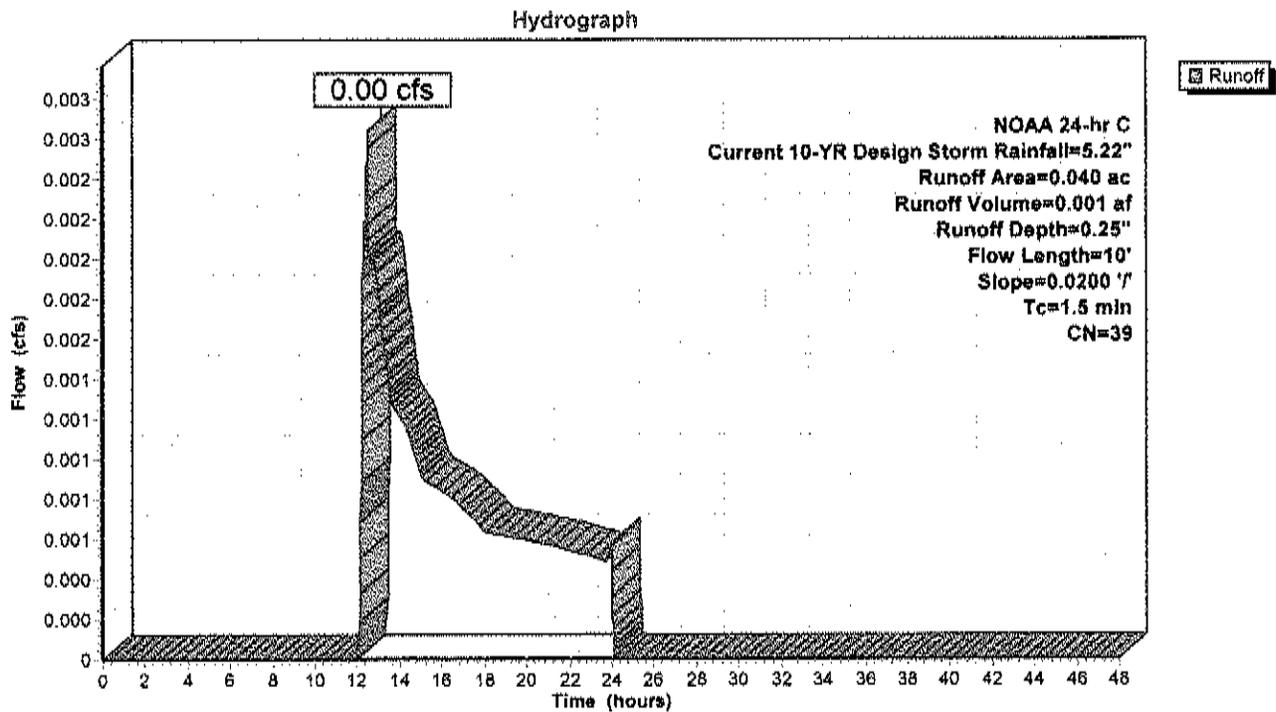
Runoff = 0.00 cfs @ 12.50 hrs, Volume= 0.001 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 10-YR Design Storm Rainfall=5.22"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	10	0.0200	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

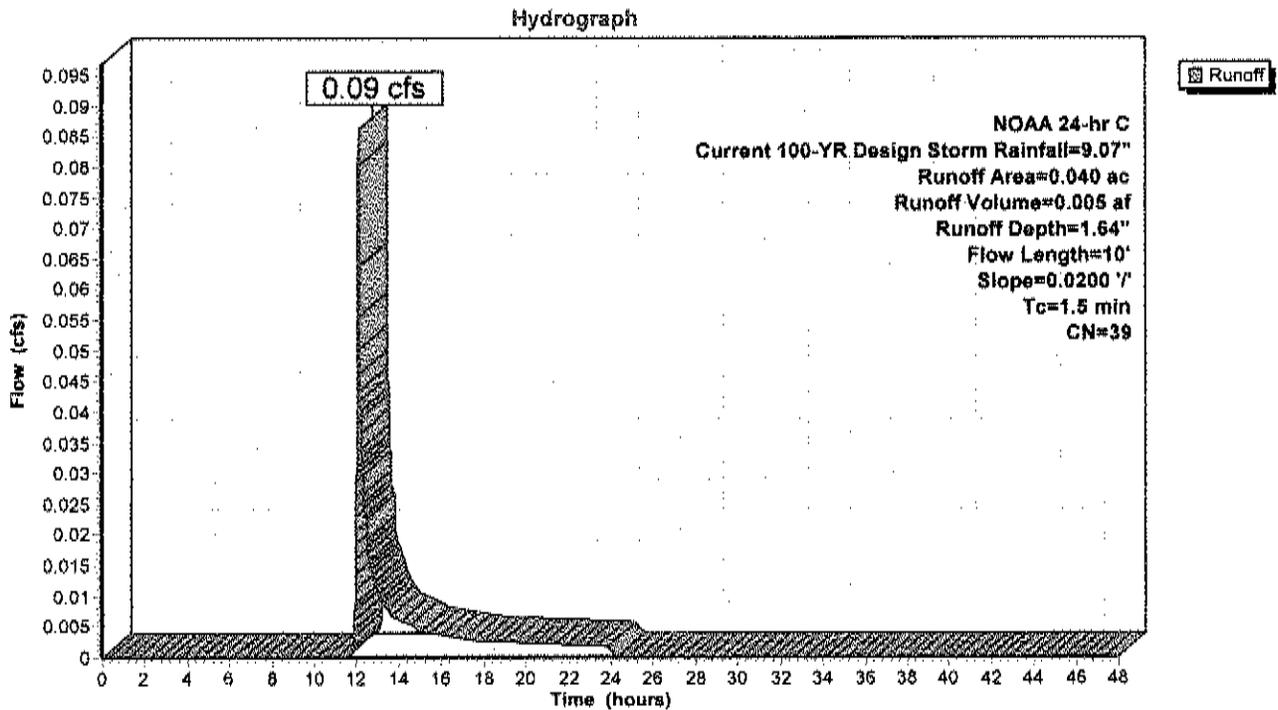
Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.005 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 100-YR Design Storm Rainfall=9.07"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	10	0.0200	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

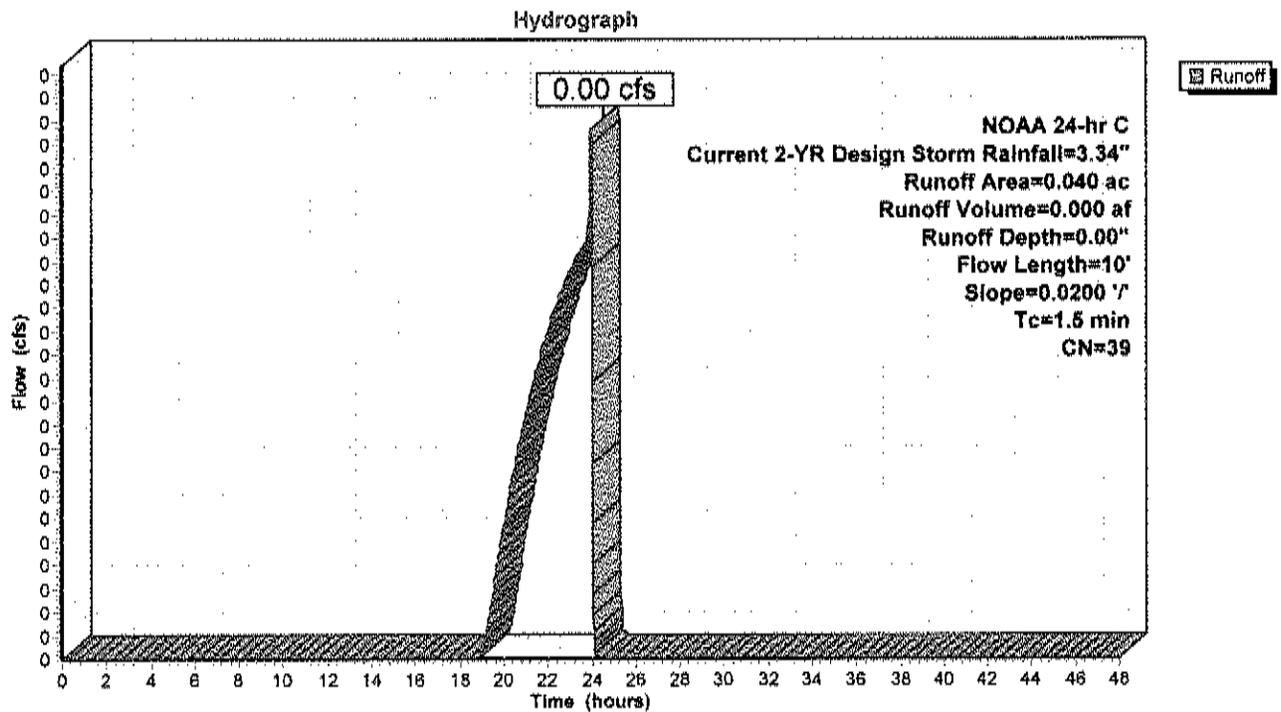
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Current 2-YR Design Storm Rainfall=3.34"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	10	0.0200	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

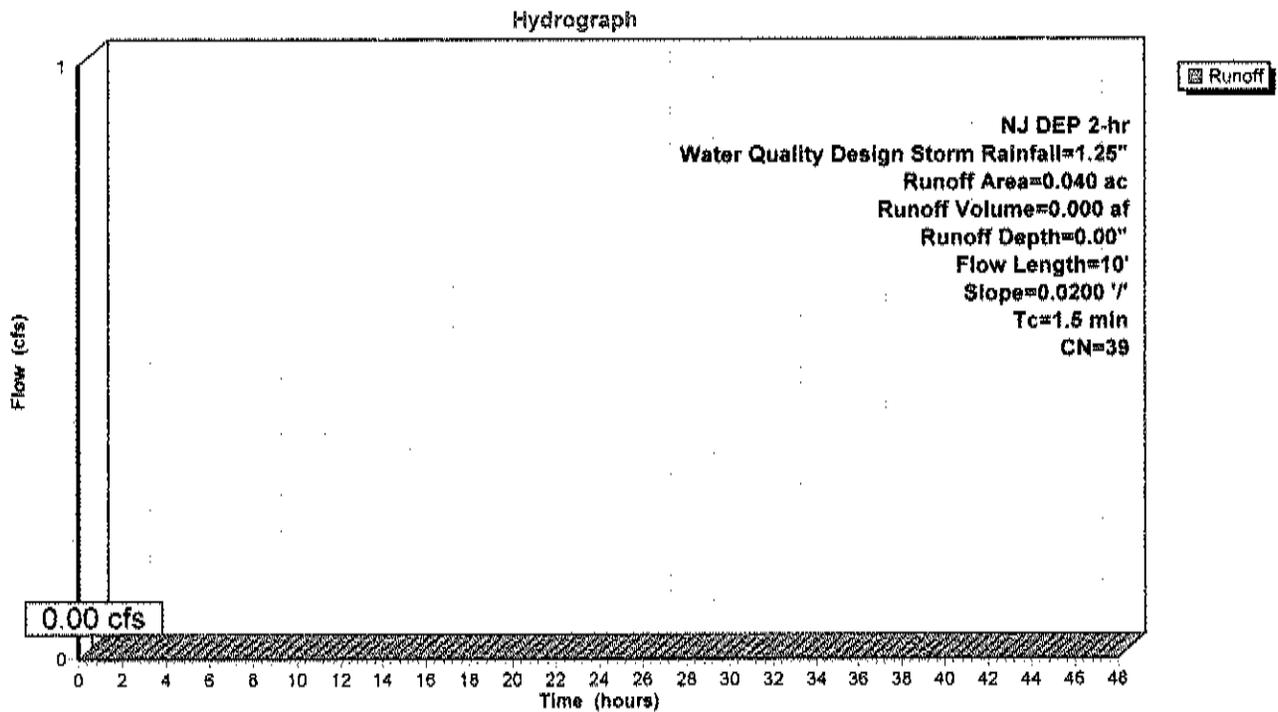
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	10	0.0200	0.11		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.34"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



**Pre-Development Runoff**

**Future Rainfall Rates**

**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

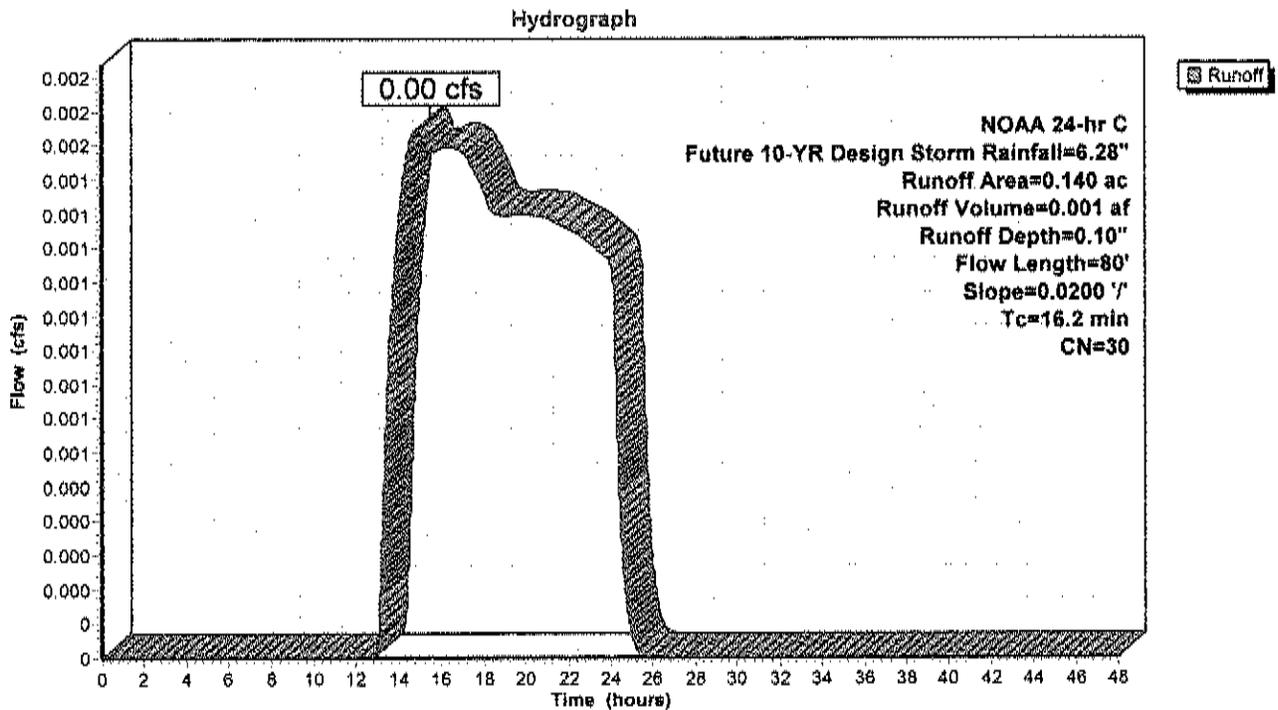
Runoff = 0.00 cfs @ 14.84 hrs, Volume= 0.001 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

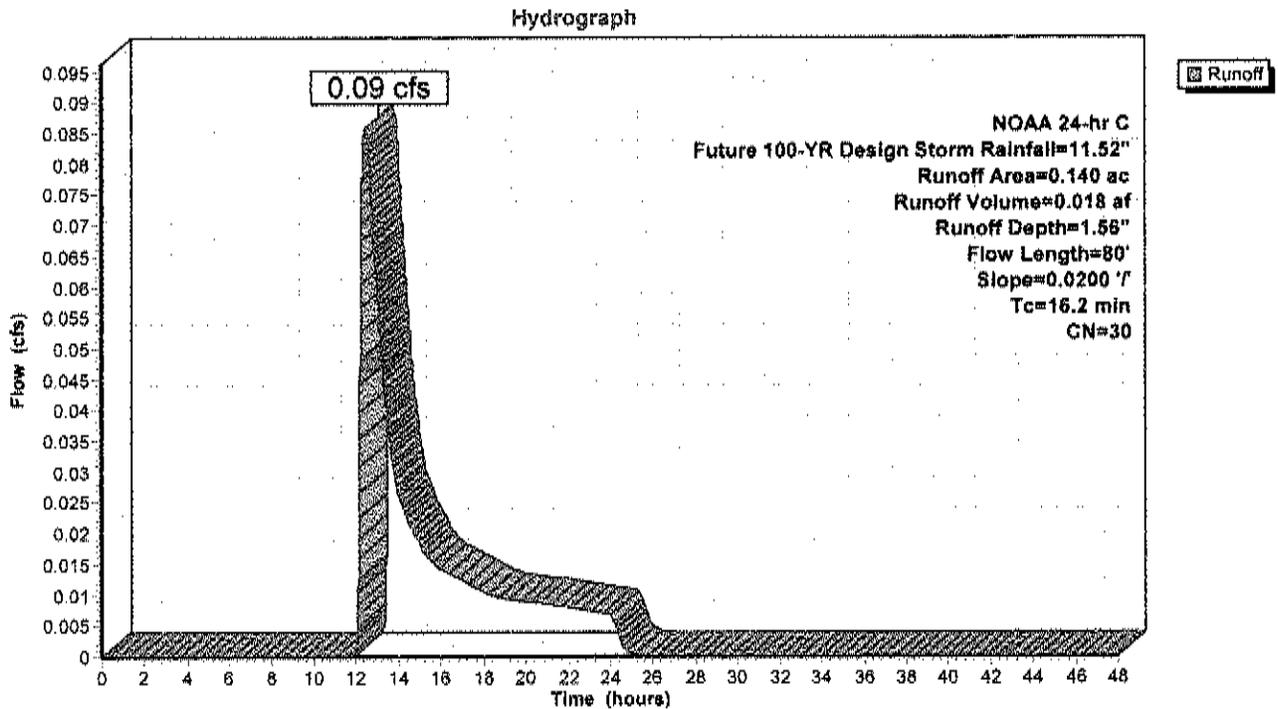
Runoff = 0.09 cfs @ 12.42 hrs, Volume= 0.018 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

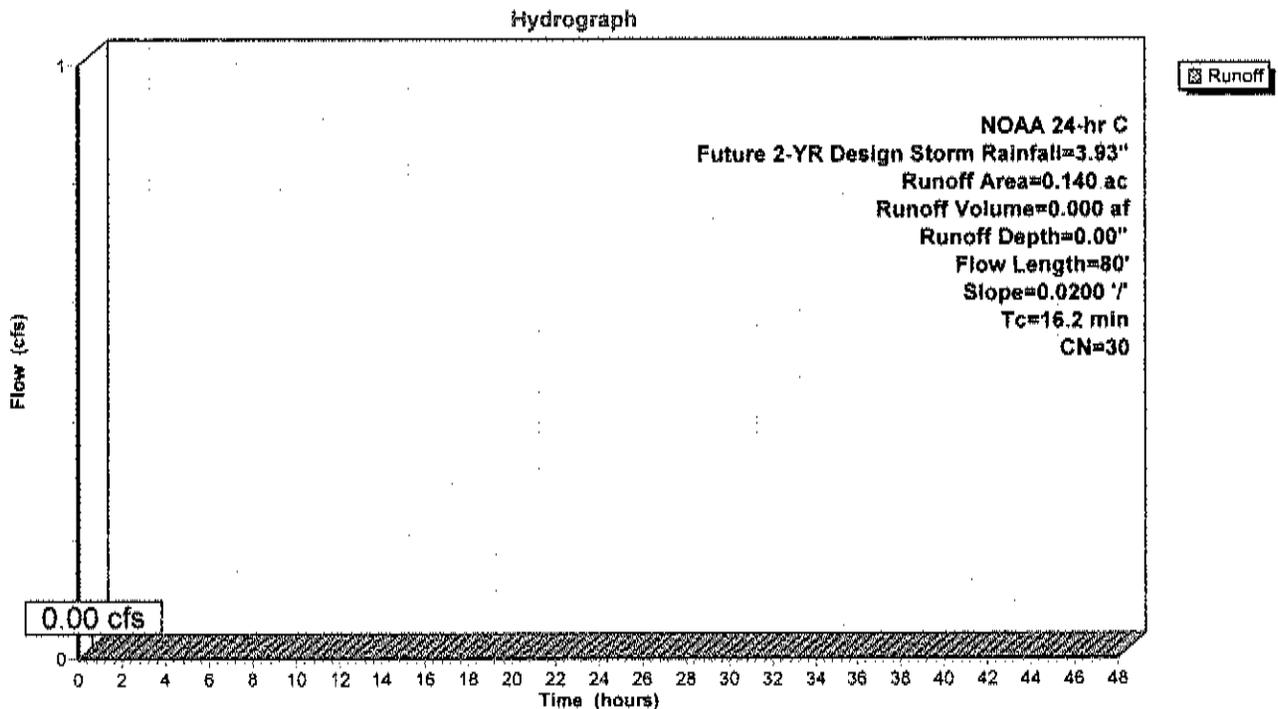
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Summary for Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**

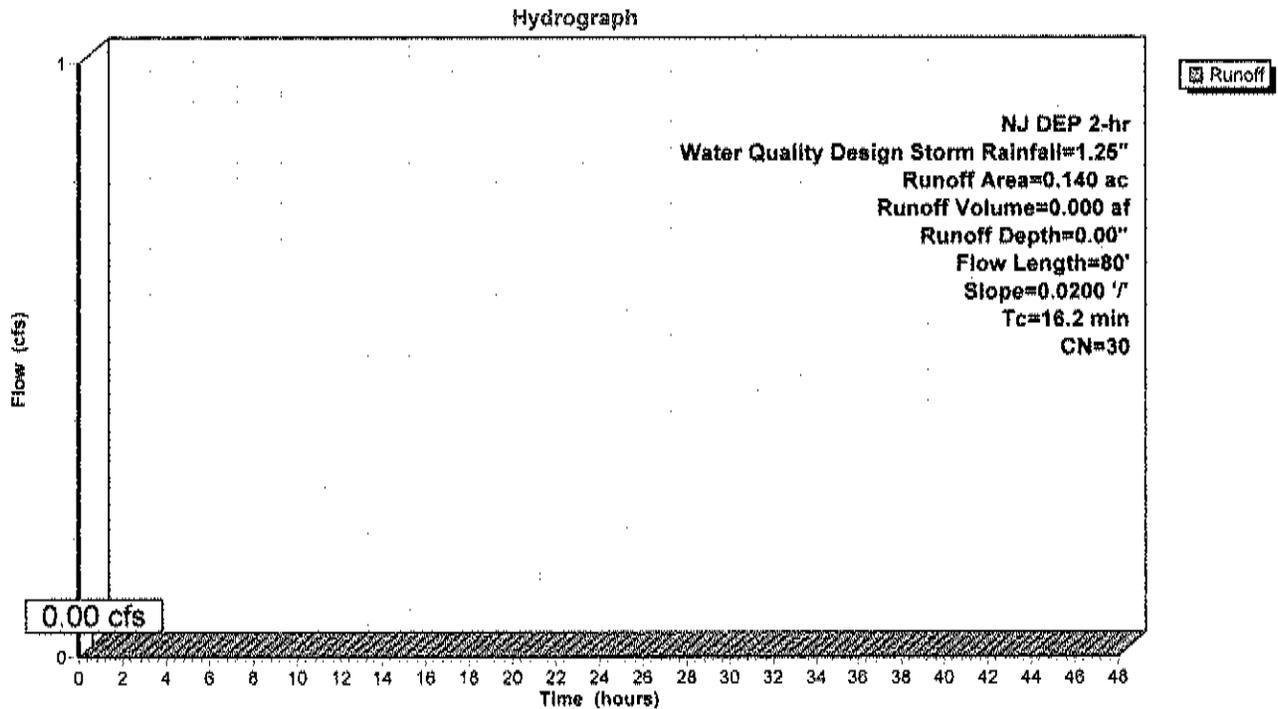
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.140	30	Woodland
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	80	0.0200	0.08		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"

**Subcatchment 1EP: Watershed #1 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

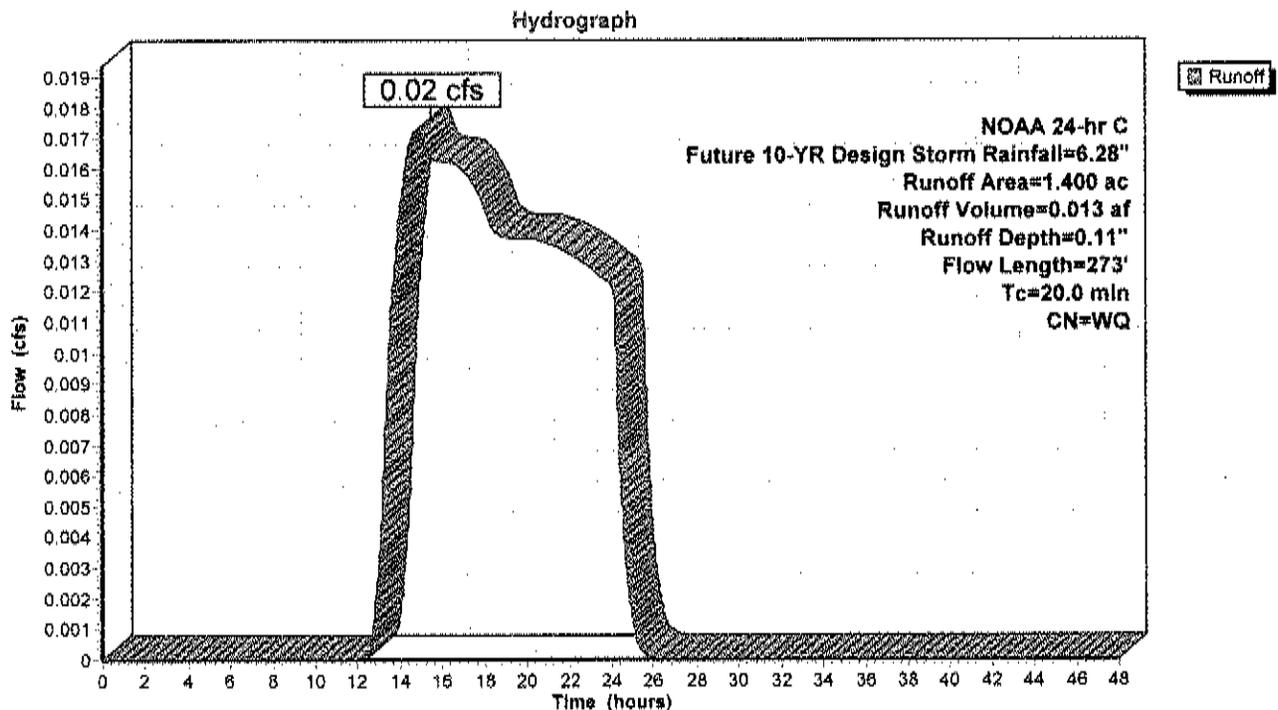
Runoff = 0.02 cfs @ 14.84 hrs, Volume= 0.013 af, Depth= 0.11"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	85	0.0256	0.09		Sheet Flow, Woods/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	28	0.0285	0.84		Shallow Concentrated Flow, Woods/Brush Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
20.0	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

Runoff = 0.81 cfs @ 12.53 hrs, Volume= 0.186 af, Depth= 1.60"  
 Routed to Pond 2EL : Existing Low Point

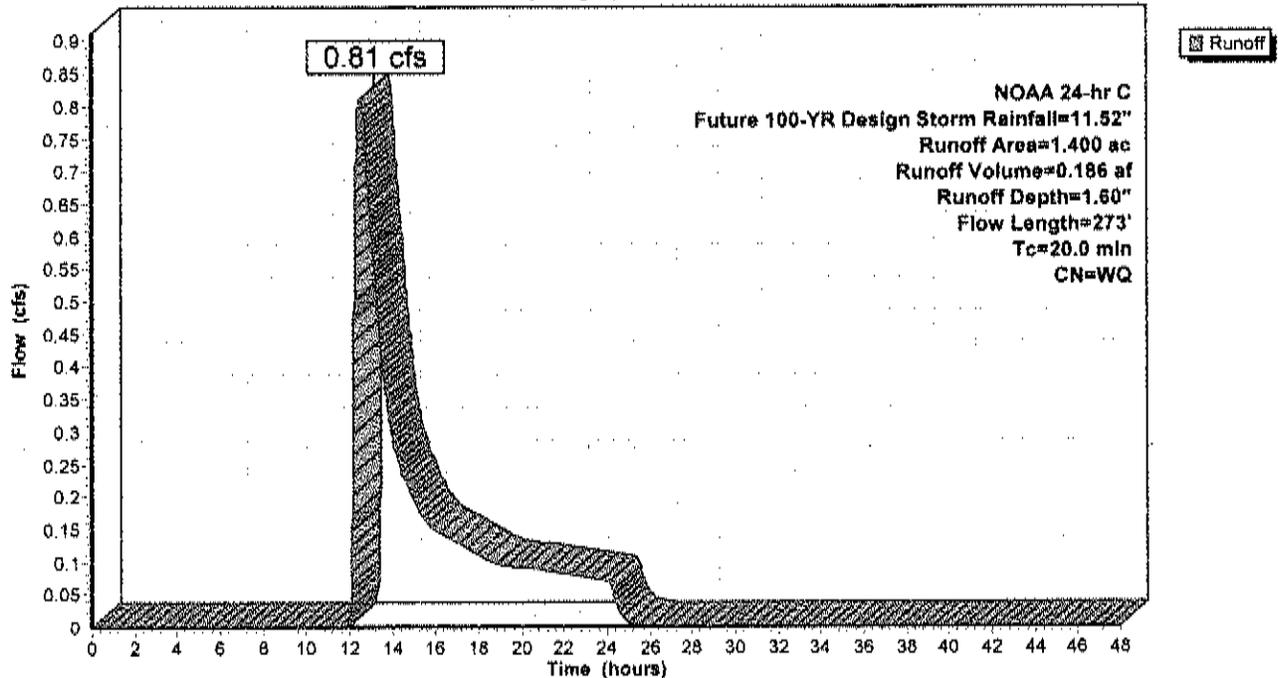
Runoff by SCS TR-20 method, UH=Deimarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	85	0.0256	0.09		Sheet Flow, Woods/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	28	0.0285	0.84		Shallow Concentrated Flow, Woods/Brush Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
20.0	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

Hydrograph



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

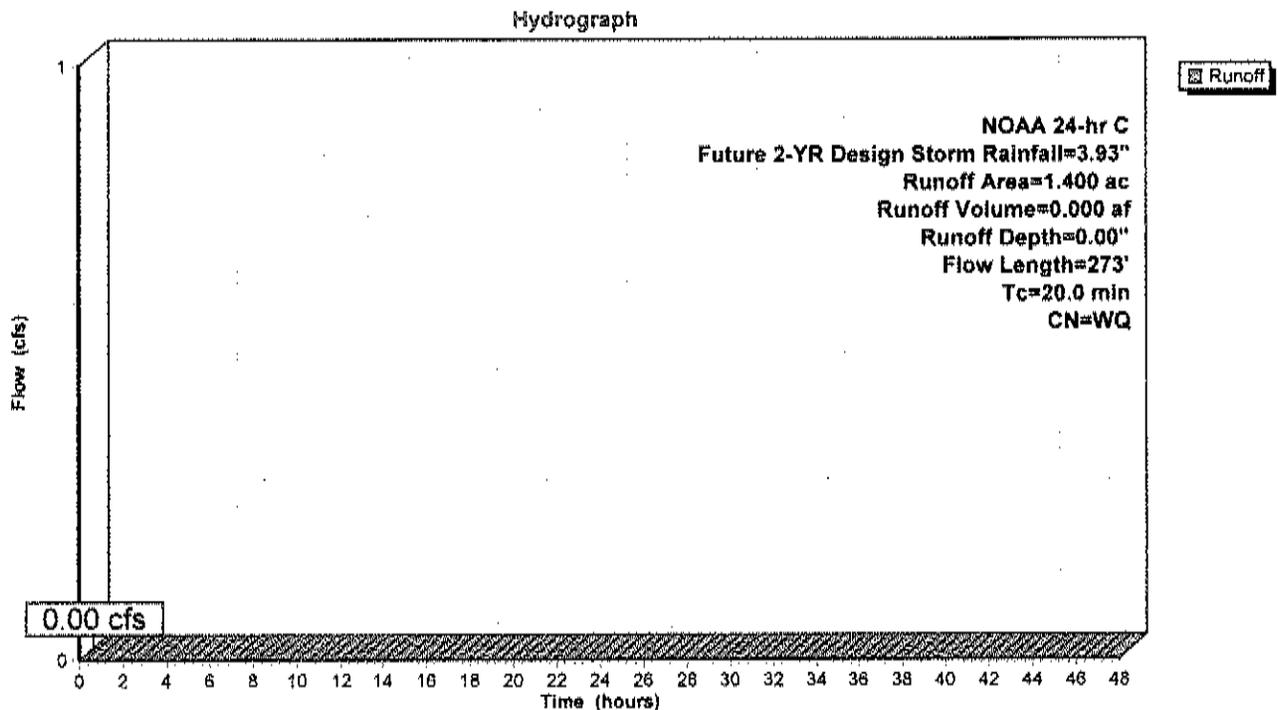
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	85	0.0256	0.09		<b>Sheet Flow, Woods/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	28	0.0285	0.84		<b>Shallow Concentrated Flow, Woods/Brush</b> Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
20.0	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Summary for Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**

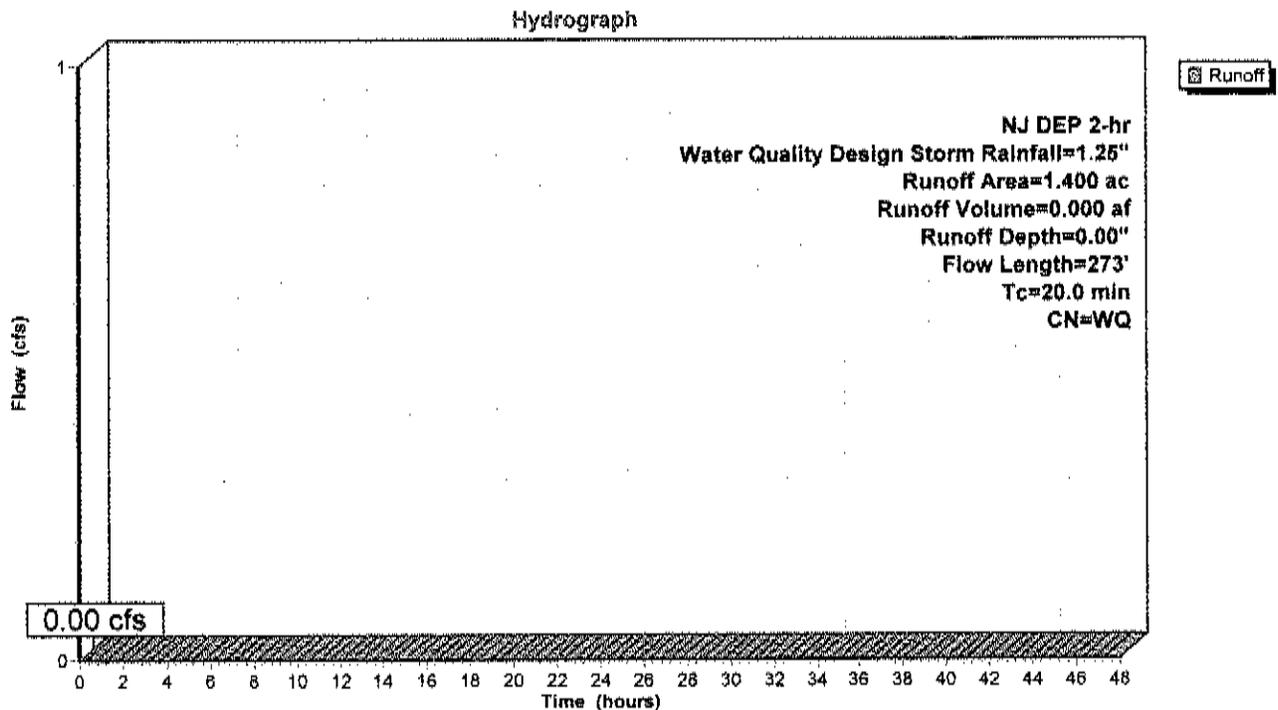
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.200	30	Woodland
* 0.200	32	Woodland/Brush
1.400		Weighted Average
1.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	85	0.0256	0.09		Sheet Flow, Woods/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	28	0.0285	0.84		Shallow Concentrated Flow, Woods/Brush Woodland Kv= 5.0 fps
2.7	105	0.0170	0.65		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
1.3	55	0.0200	0.71		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
20.0	273	Total			

**Subcatchment 2EP: Watershed #2 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.11" for Future 10-YR Design Storm event  
 Inflow = 0.02 cfs @ 14.84 hrs, Volume= 0.013 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= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.75' @ 26.19 hrs Surf.Area= 0.035 ac Storage= 0.013 af

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	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

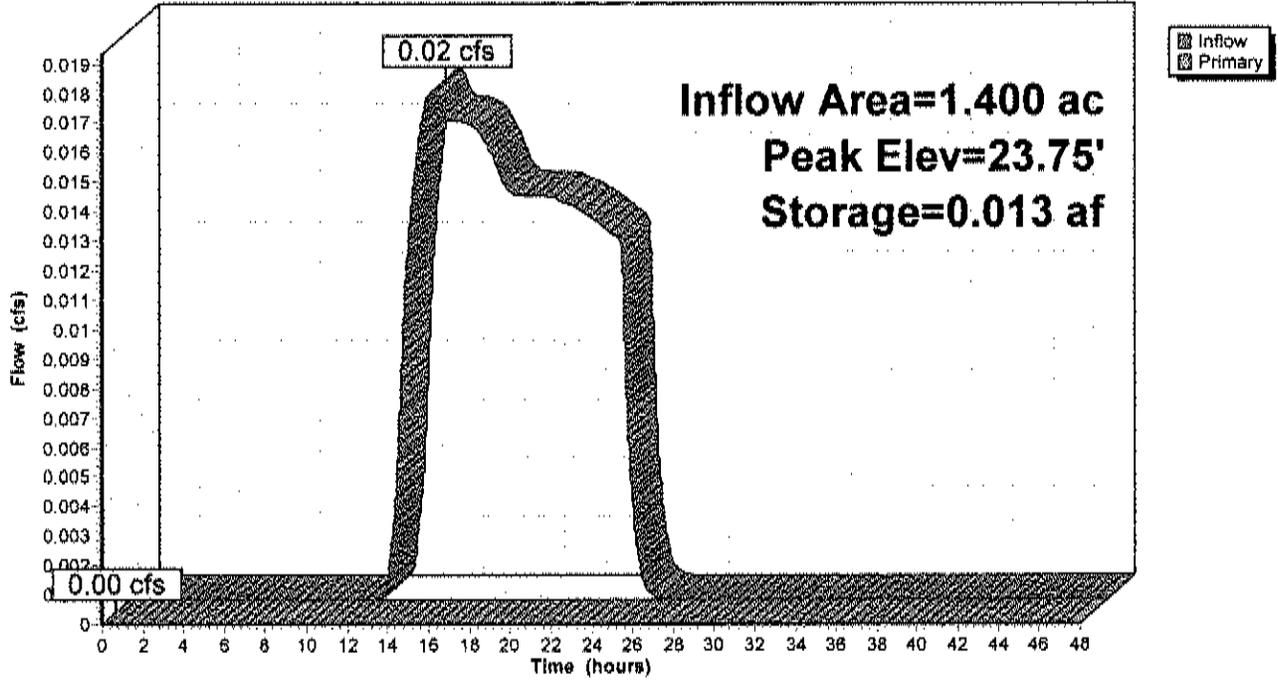
Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 2EL: Existing Low Point

Hydrograph



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 1.60" for Future 100-YR Design Storm event  
 Inflow = 0.81 cfs @ 12.53 hrs, Volume= 0.186 af  
 Outflow = 0.74 cfs @ 12.76 hrs, Volume= 0.158 af, Atten= 9%, Lag= 13.7 min  
 Primary = 0.74 cfs @ 12.76 hrs, Volume= 0.158 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.13' @ 12.76 hrs Surf.Area= 0.066 ac Storage= 0.031 af

Plug-Flow detention time= 110.6 min calculated for 0.158 af (85% of inflow)  
 Center-of-Mass det. time= 39.1 min ( 984.0 - 944.9 )

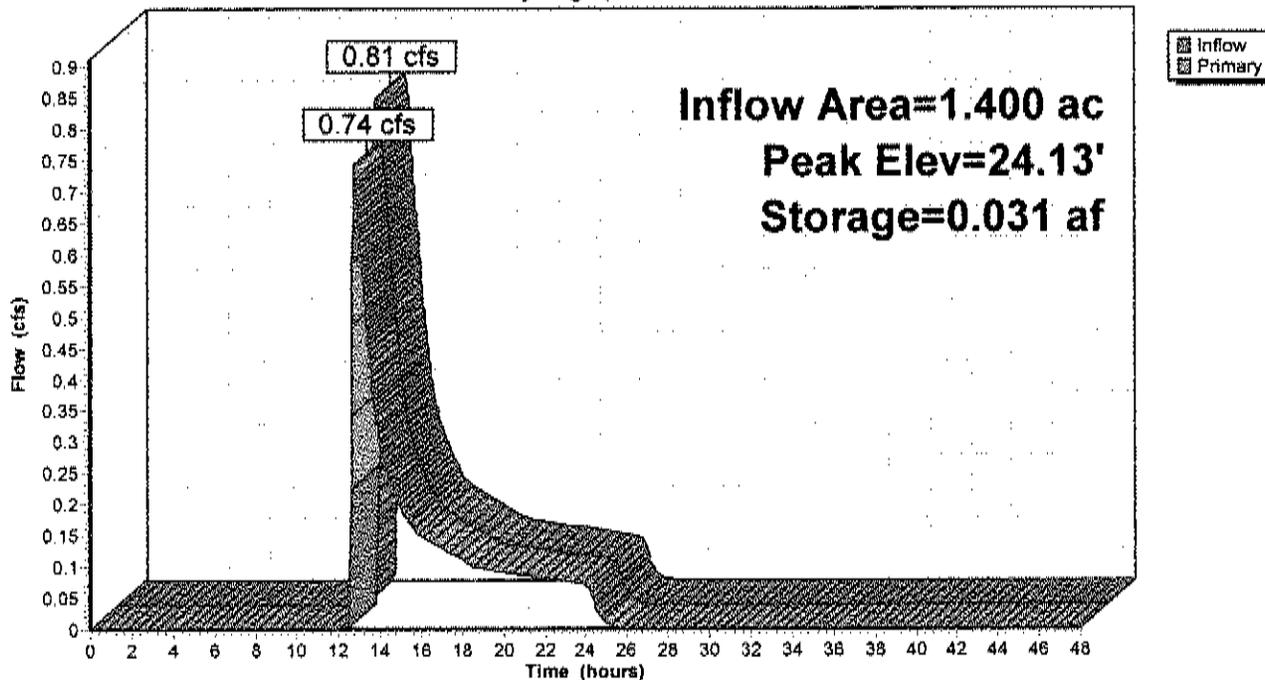
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.72 cfs @ 12.76 hrs HW=24.13' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 0.72 cfs @ 0.45 fps)

### Pond 2EL: Existing Low Point

Hydrograph



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for Future 2-YR Design Storm event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.00' @ 0.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

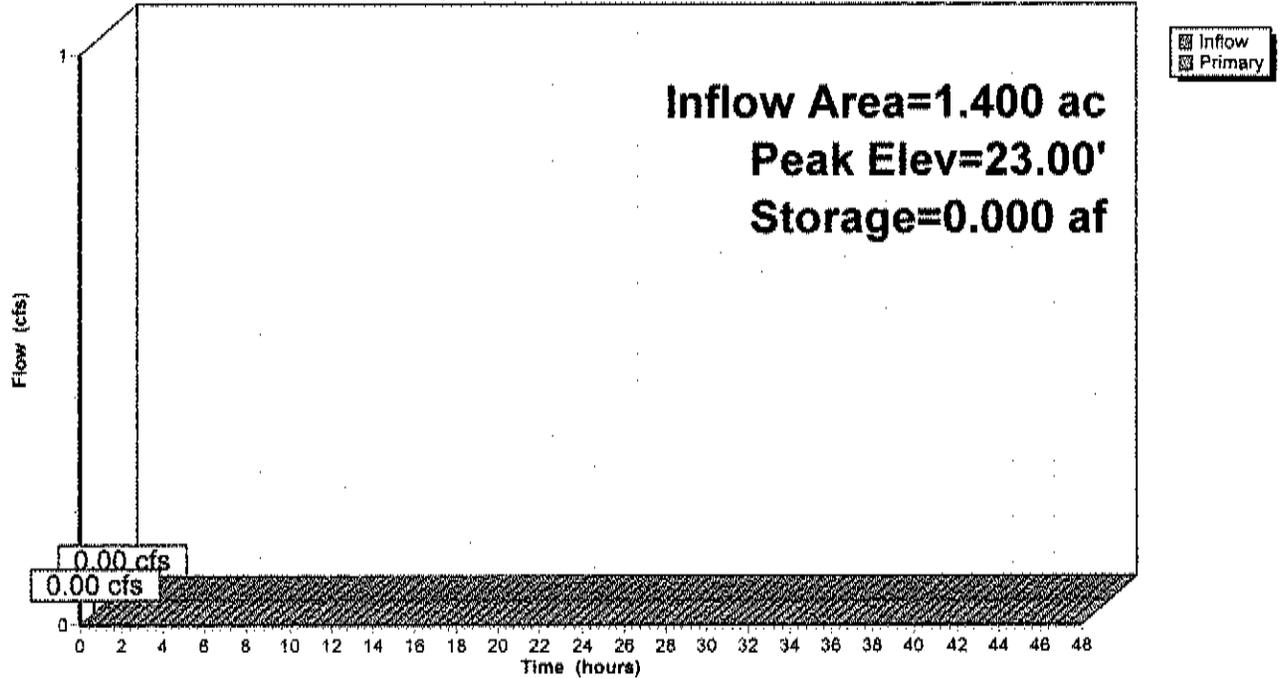
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 2EL: Existing Low Point

Hydrograph



**Summary for Pond 2EL: Existing Low Point**

Inflow Area = 1.400 ac, 0.00% Impervious, Inflow Depth = 0.00" for Water Quality Design Storm event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.00' @ 0.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

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

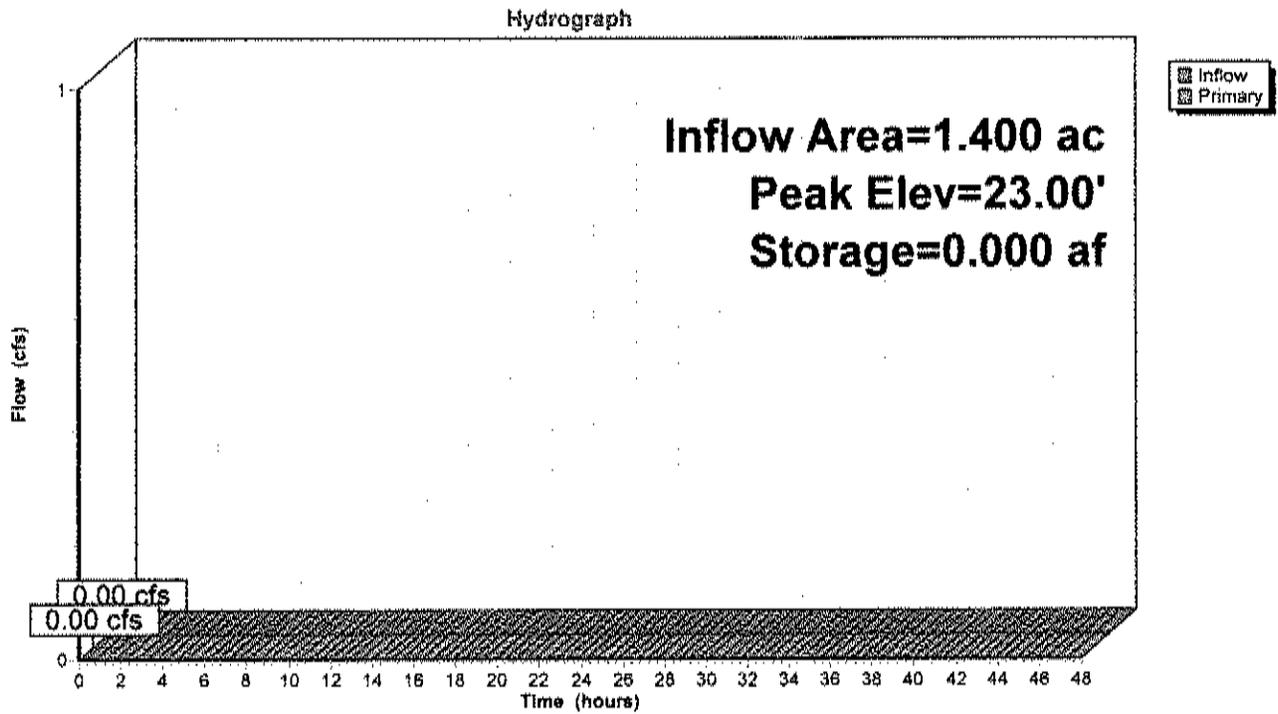
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	0.146 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
23.00	0.001	0.000	0.000
24.00	0.046	0.023	0.023
25.00	0.200	0.123	0.146

Device	Routing	Invert	Outlet Devices
#1	Primary	24.10'	50.0' long + 3.0 ' SideZ x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=23.00' (Free Discharge)  
 ↑=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 2EL: Existing Low Point



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

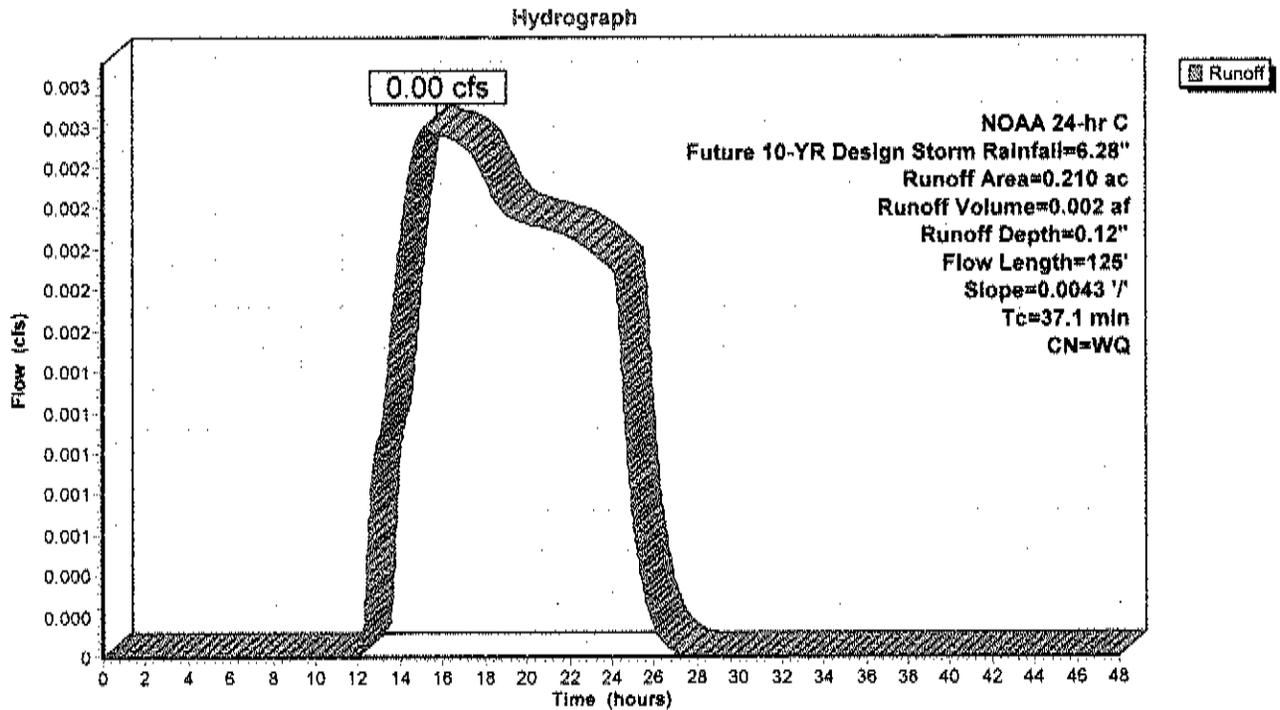
Runoff = 0.00 cfs @ 15.17 hrs, Volume= 0.002 af, Depth= 0.12"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.8	100	0.0043	0.05		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"
1.3	25	0.0043	0.33		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
37.1	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

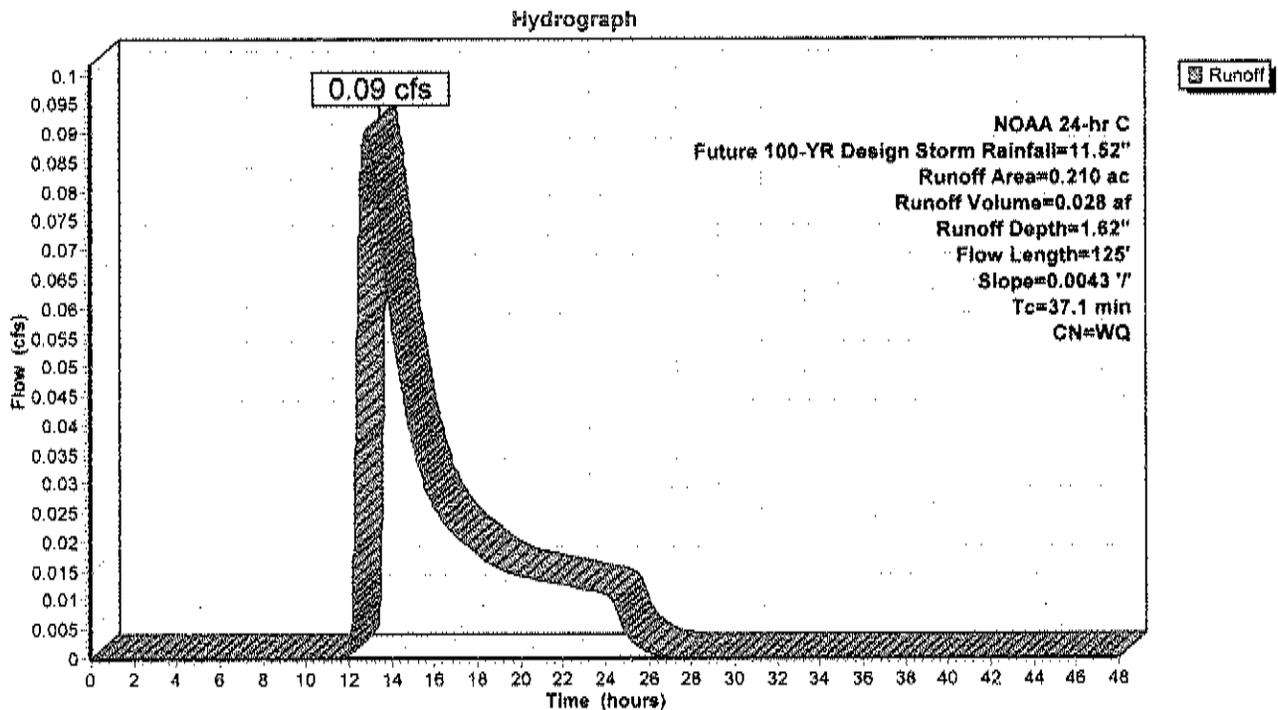
Runoff = 0.09 cfs @ 12.86 hrs, Volume= 0.028 af, Depth= 1.62"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.8	100	0.0043	0.05		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"
1.3	25	0.0043	0.33		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
37.1	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

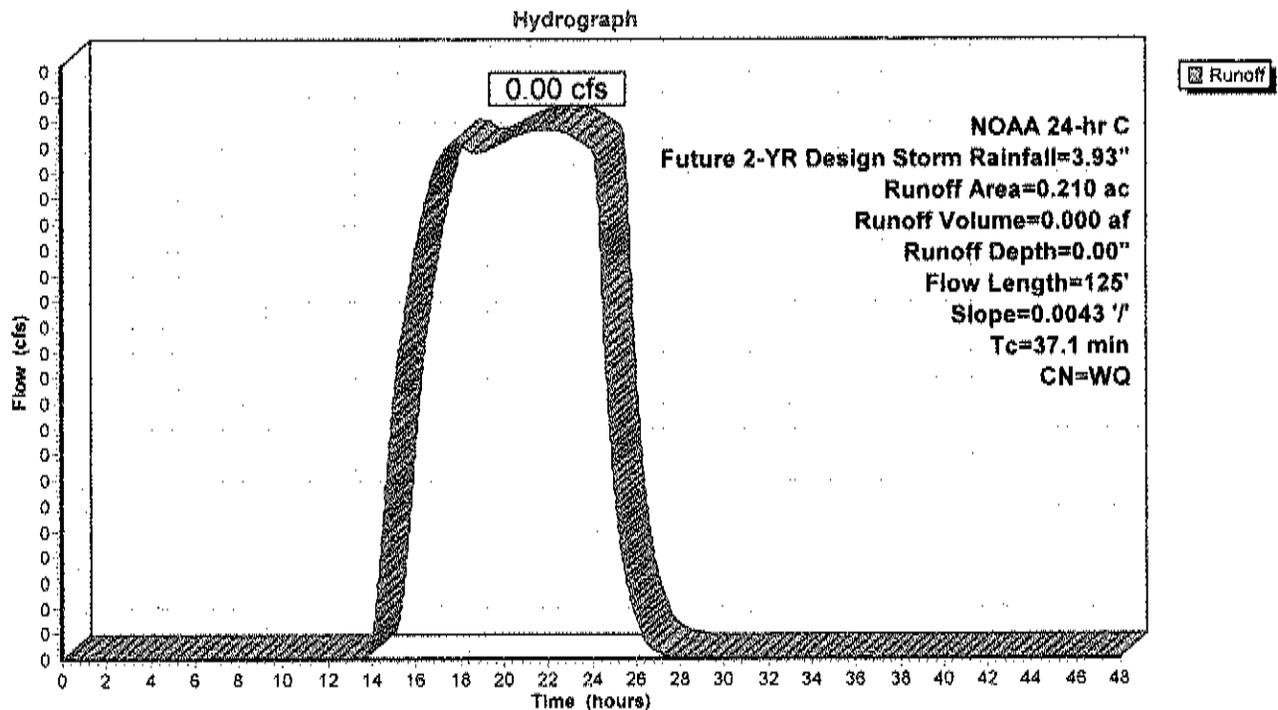
Runoff = 0.00 cfs @ 21.77 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.8	100	0.0043	0.05		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"
1.3	25	0.0043	0.33		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
37.1	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Summary for Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

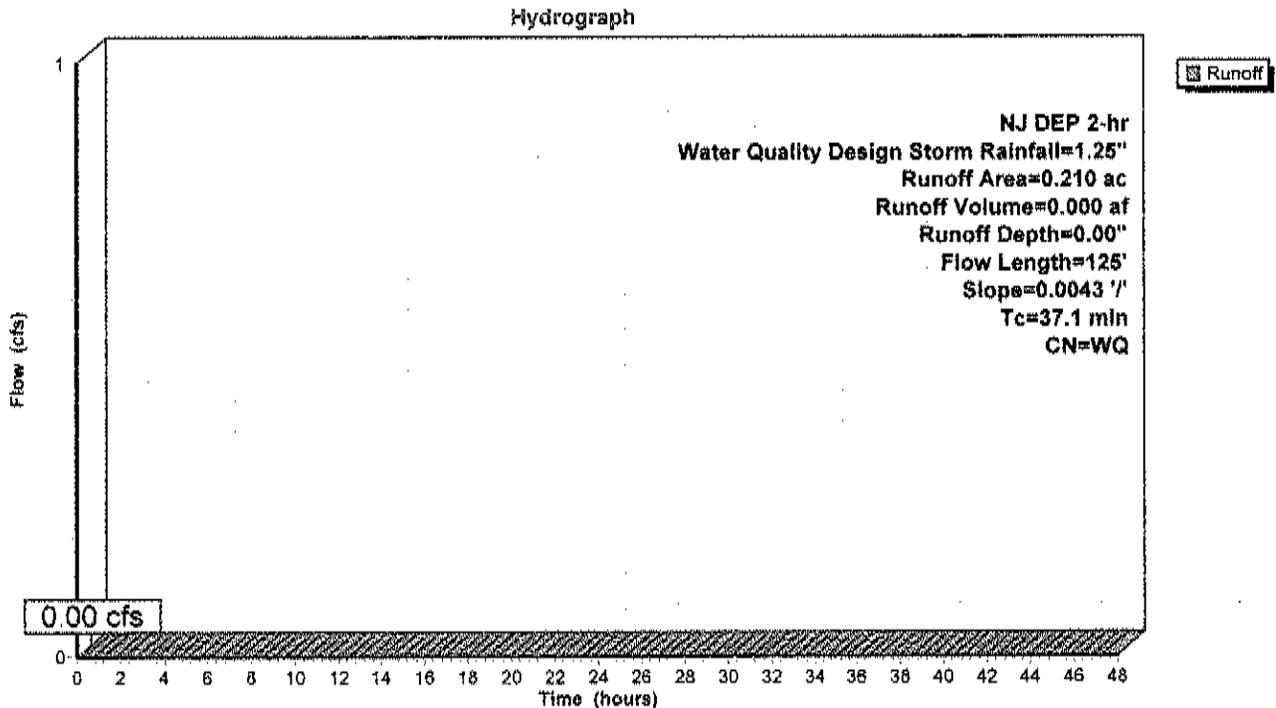
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.010	39	Grass
0.210		Weighted Average
0.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.8	100	0.0043	0.05		Sheet Flow, Woodland Woods: Light underbrush n= 0.400 P2= 3.93"
1.3	25	0.0043	0.33		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
37.1	125	Total			

**Subcatchment 3EP: Watershed #3 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 6.04"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

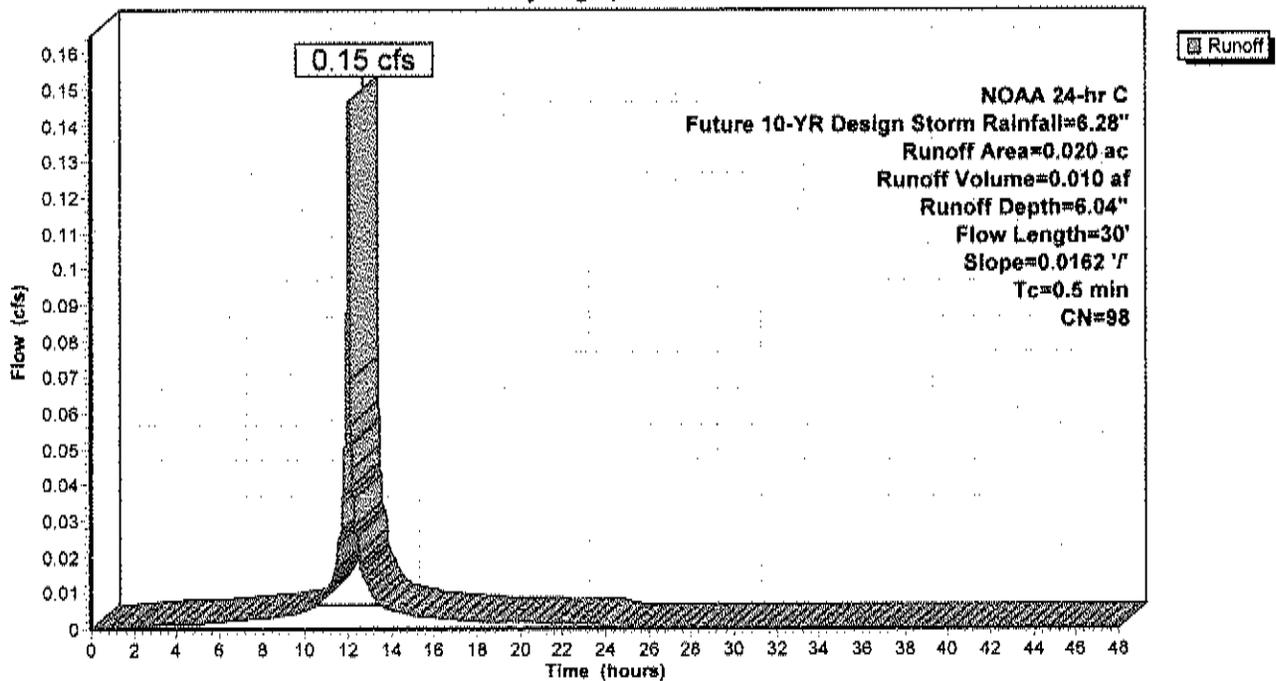
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.10		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 3E1: Watershed #3 Pre-Development Impervious Conditions**

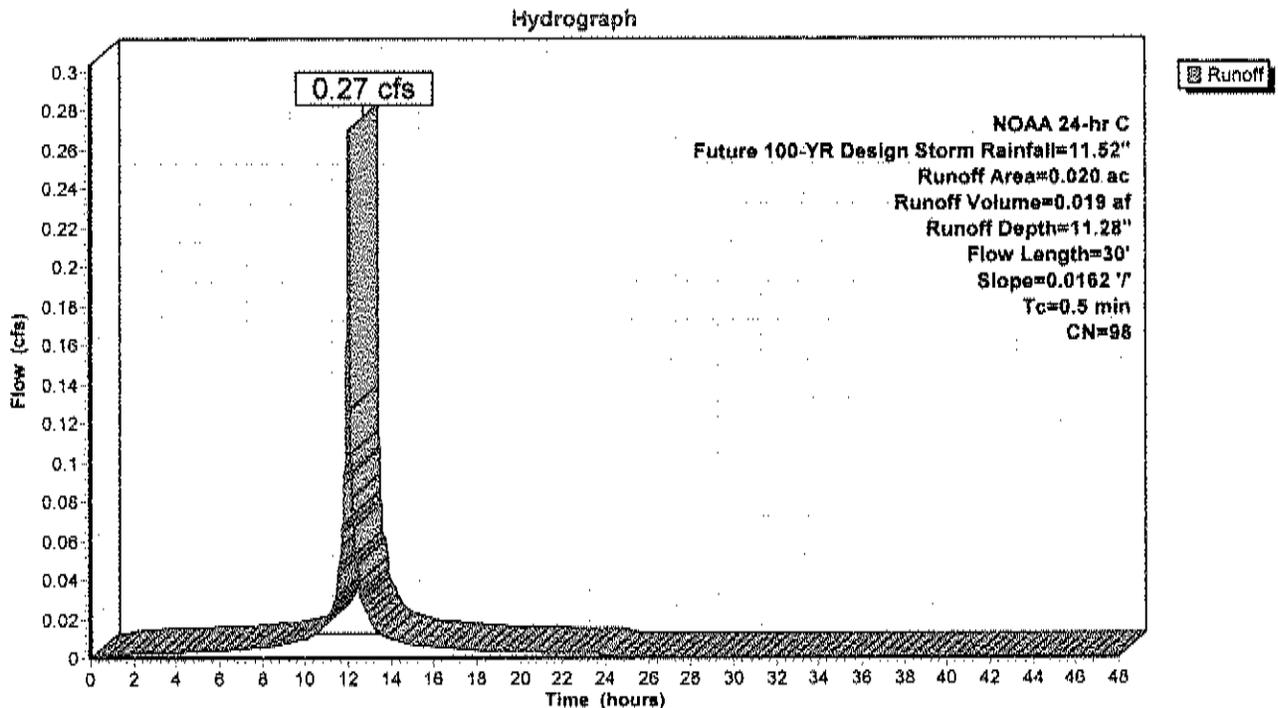
Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af, Depth=11.28"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.10		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 3E1: Watershed #3 Pre-Development Impervious Conditions**



**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

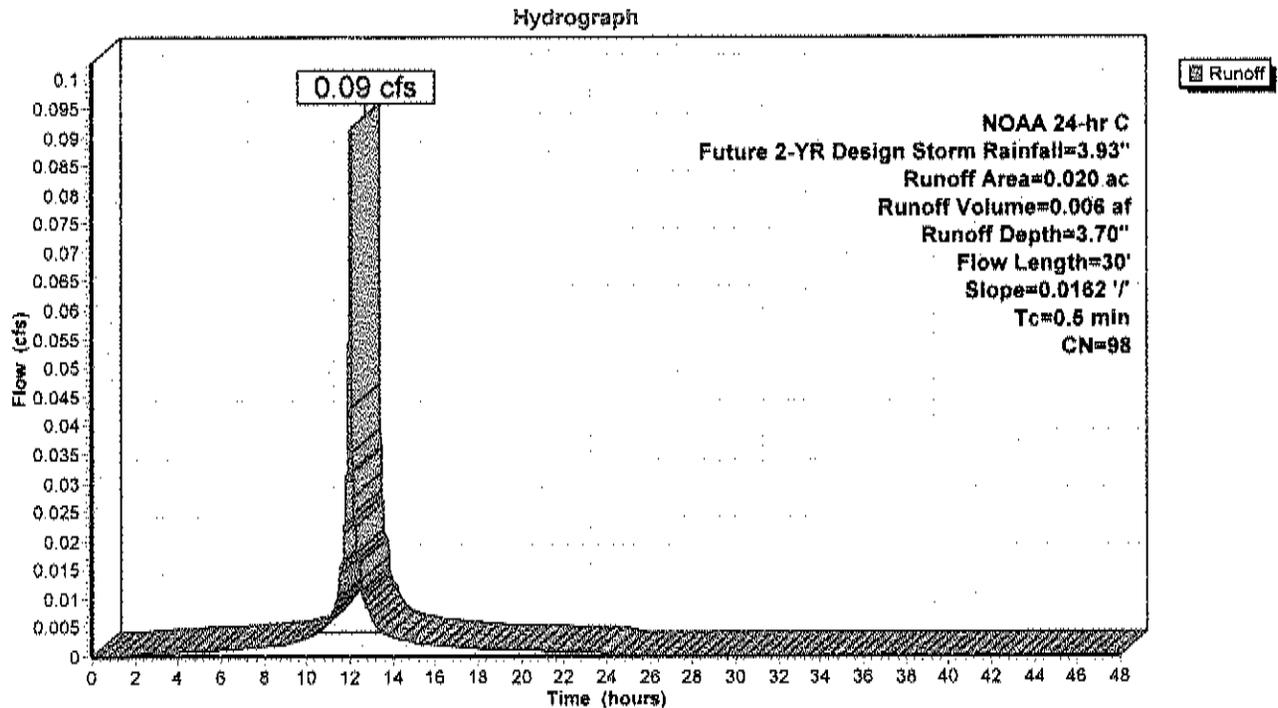
Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af, Depth= 3.70"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.10		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**



**Summary for Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**

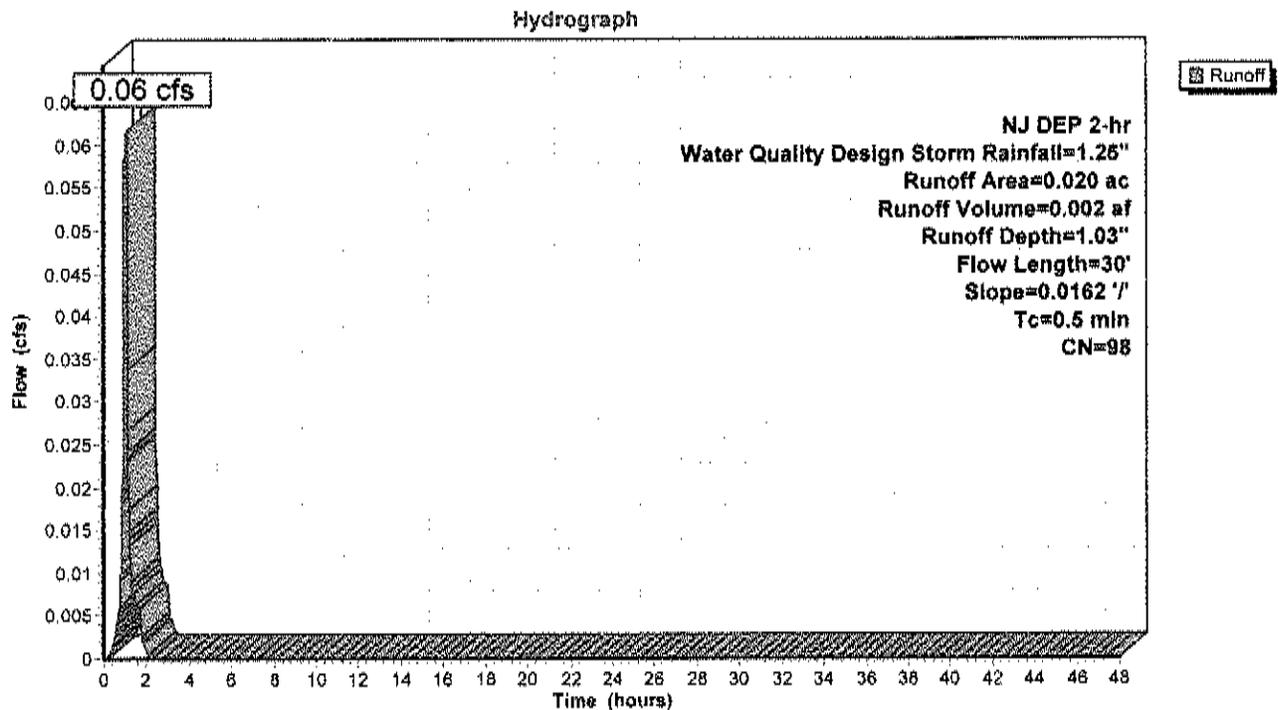
Runoff = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af, Depth= 1.03"  
 Routed to Link 3L : Watershed #3 Composite Hydrograph Impervious / Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.020	98	Impervious
0.020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0162	1.10		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 3EI: Watershed #3 Pre-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

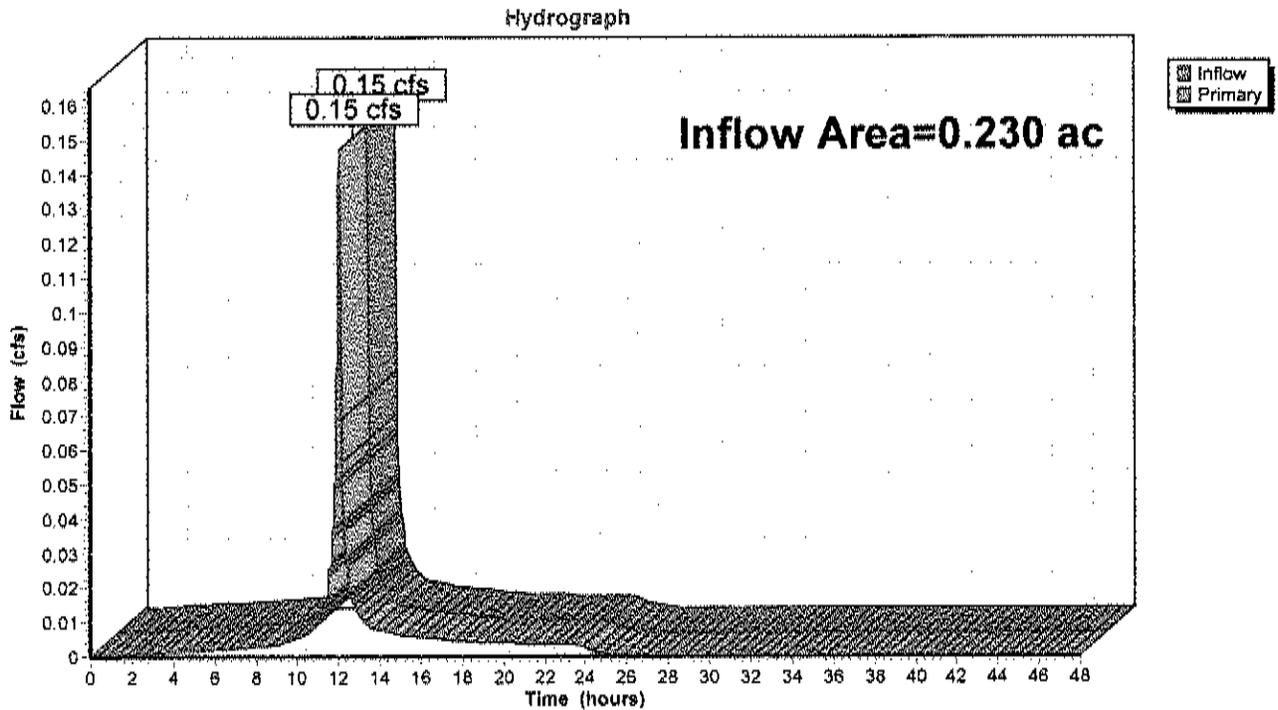
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.64" for Future 10-YR Design Storm event  
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af  
Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

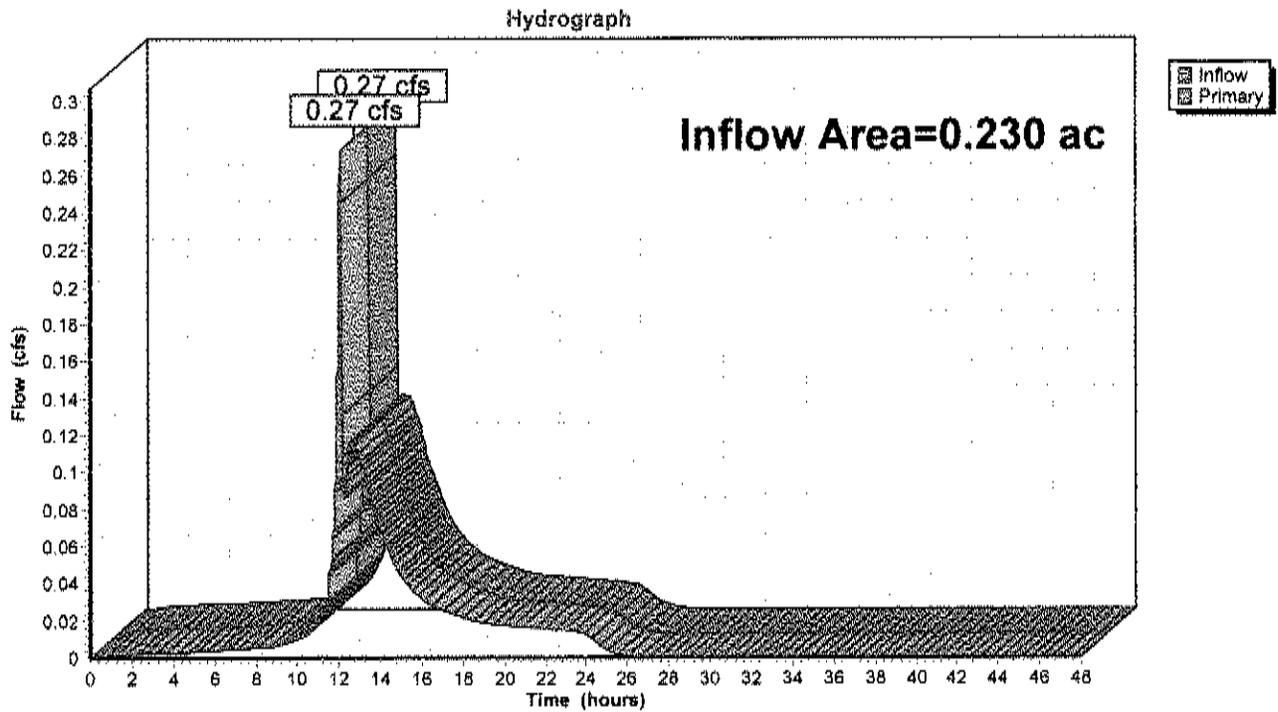


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 2.46" for Future 100-YR Design Storm event  
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.047 af  
Primary = 0.27 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

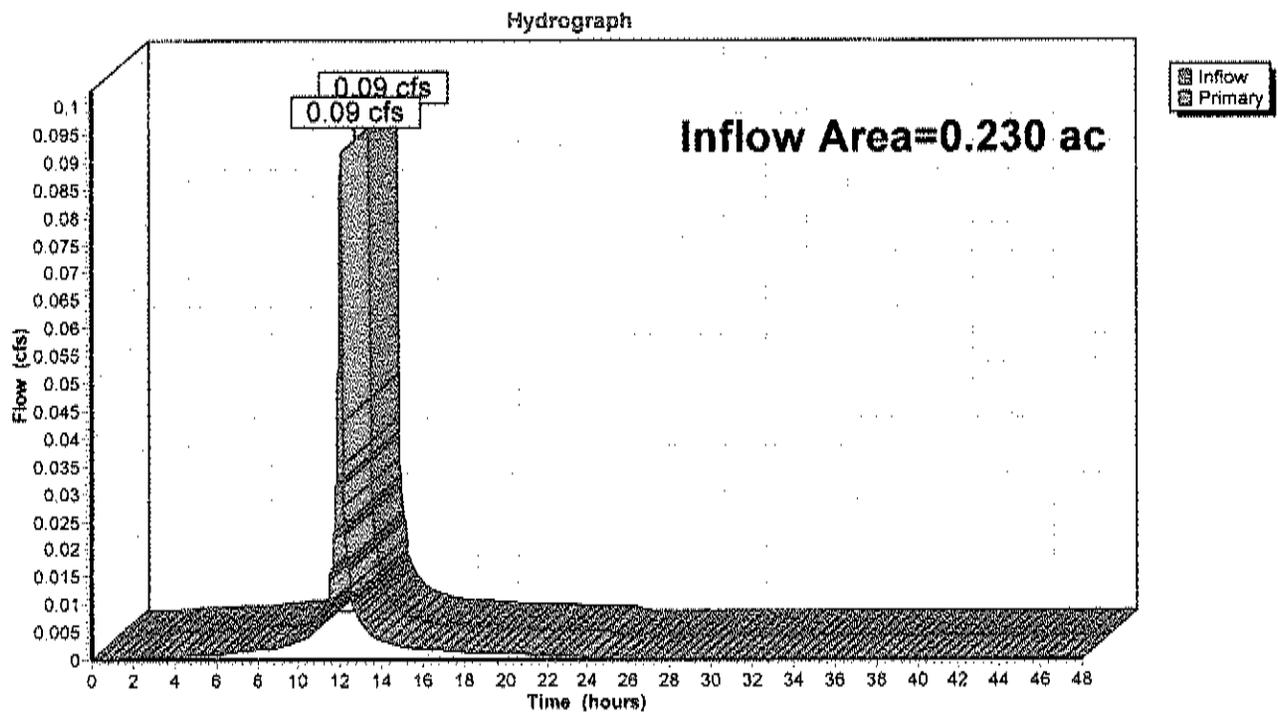


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.32" for Future 2-YR Design Storm event  
Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af  
Primary = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

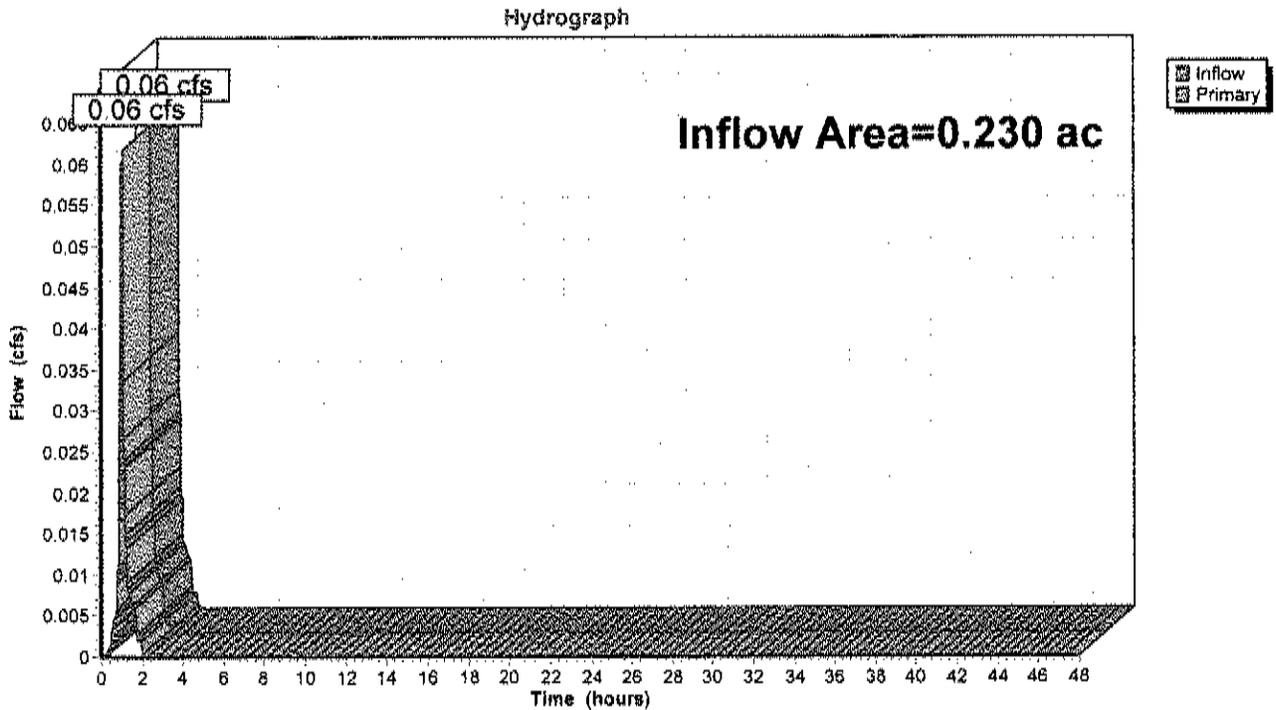


### Summary for Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious

Inflow Area = 0.230 ac, 8.70% Impervious, Inflow Depth = 0.09" for Water Quality Design Storm event  
Inflow = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af  
Primary = 0.06 cfs @ 1.08 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 3L: Watershed #3 Composite Hydrograph Impervious / Pervious



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

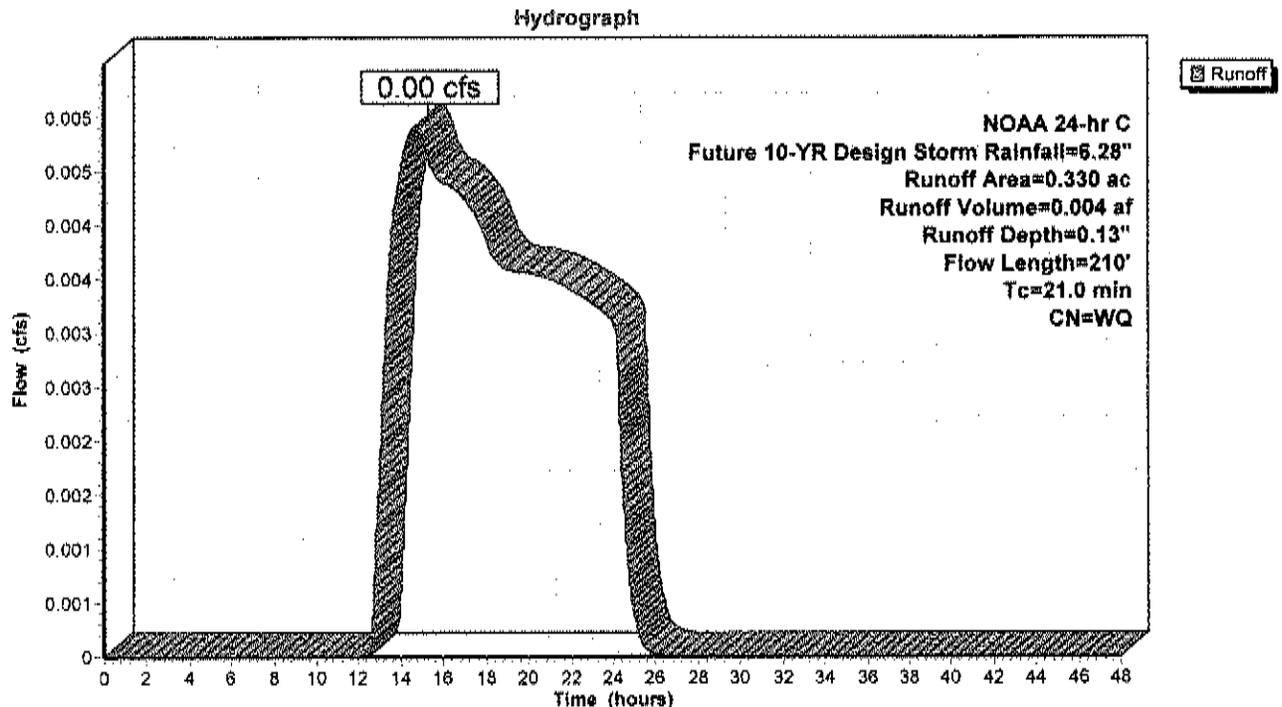
Runoff = 0.00 cfs @ 14.66 hrs, Volume= 0.004 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	95	0.0200	0.09		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
21.0	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

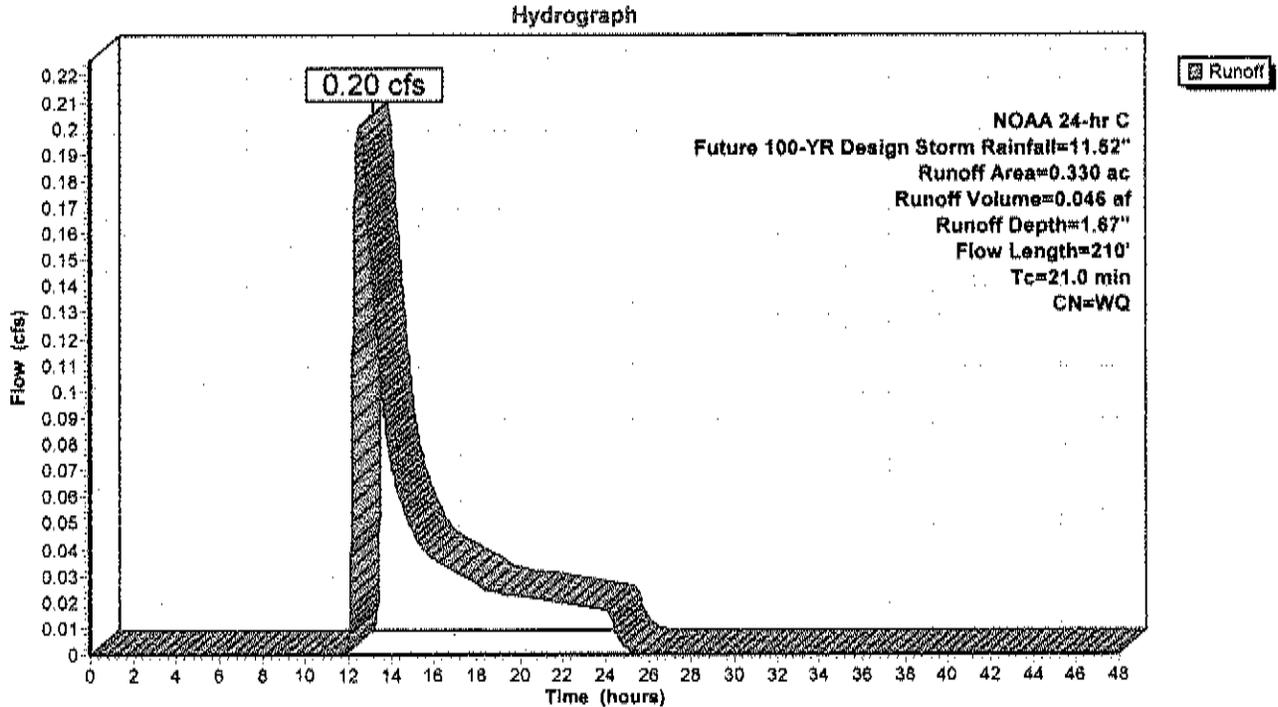
Runoff = 0.20 cfs @ 12.55 hrs, Volume= 0.046 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	95	0.0200	0.09		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
2.4	115	0.0250	0.79		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
21.0	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

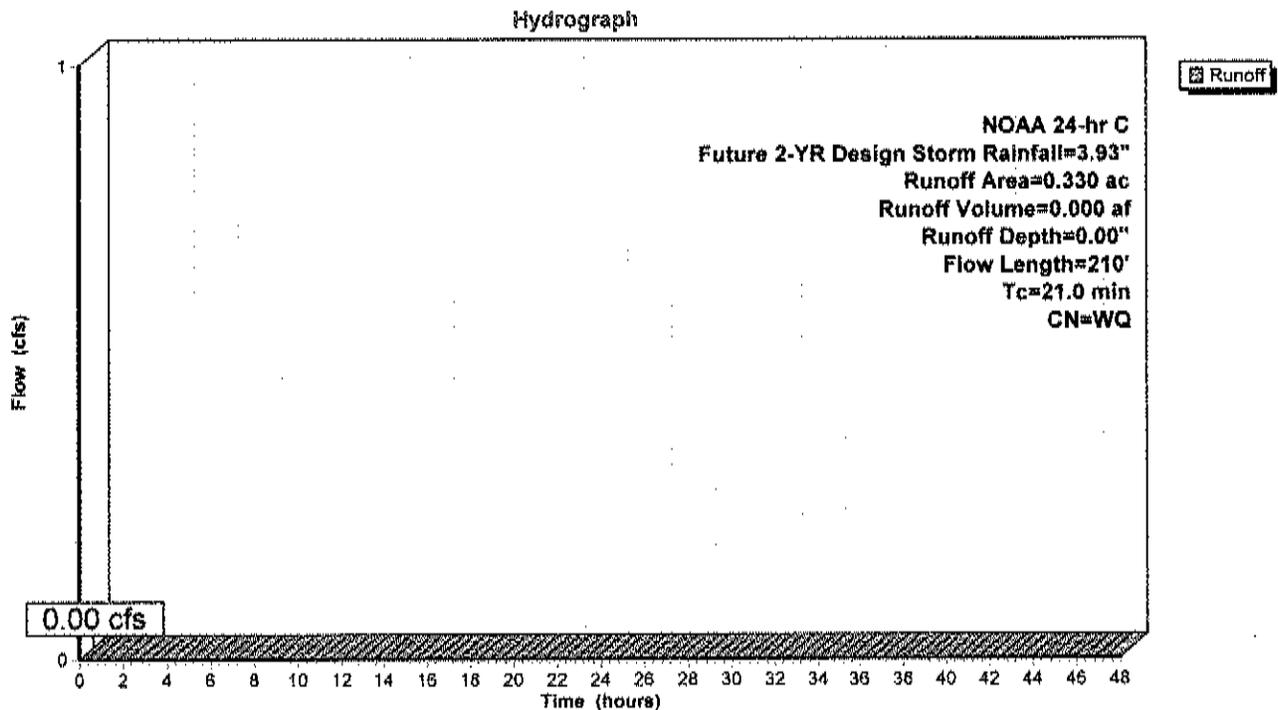
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	95	0.0200	0.09		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
2.4	115	0.0250	0.79		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
21.0	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Summary for Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**

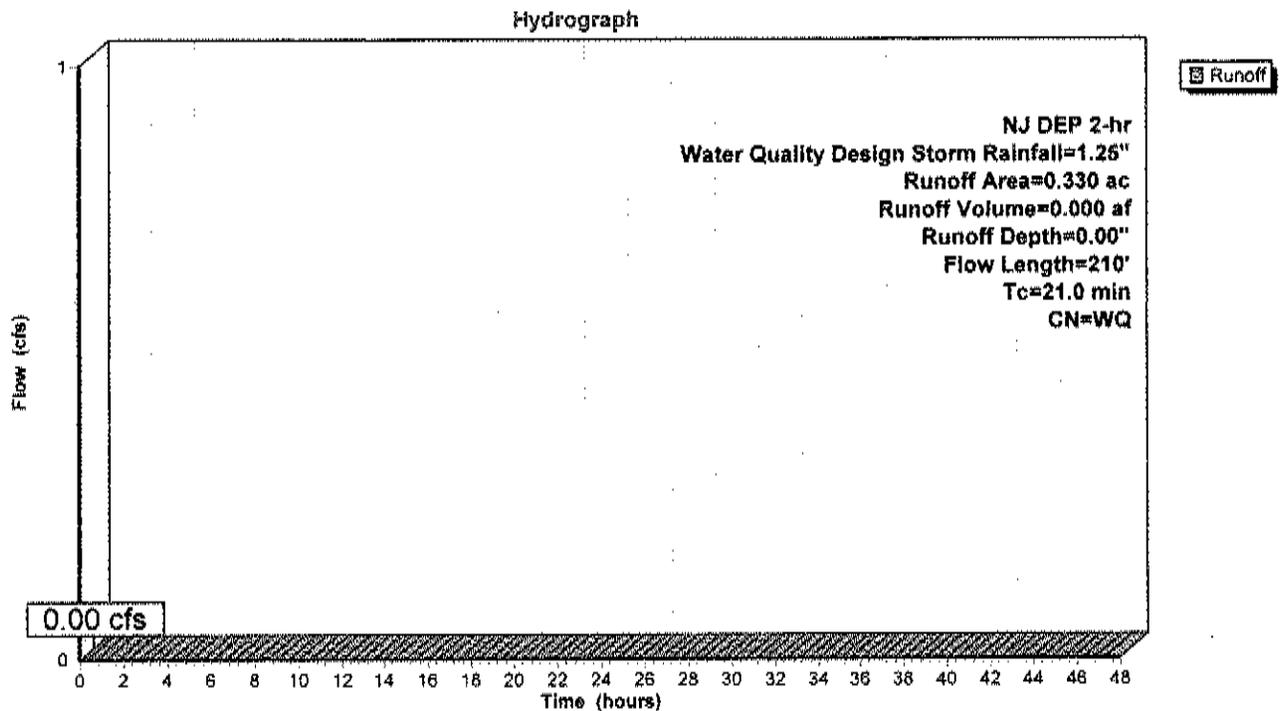
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.200	30	Woodland
* 0.130	32	Woodland/Brush
0.330		Weighted Average
0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	95	0.0200	0.09		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
2.4	115	0.0250	0.79		Shallow Concentrated Flow, Woodland Woodland Kv= 5.0 fps
21.0	210	Total			

**Subcatchment 4EP: Watershed #4 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

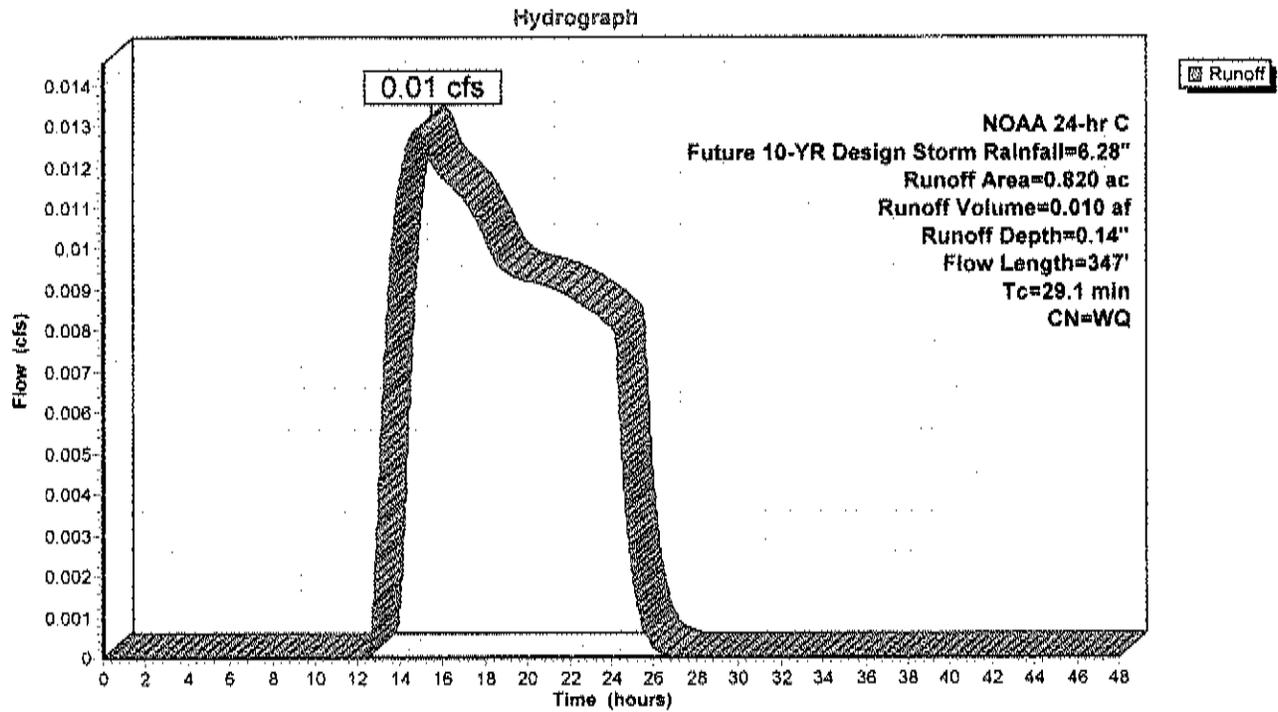
Runoff = 0.01 cfs @ 14.81 hrs, Volume= 0.010 af, Depth= 0.14"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	65	0.0181	0.08		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
29.1	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

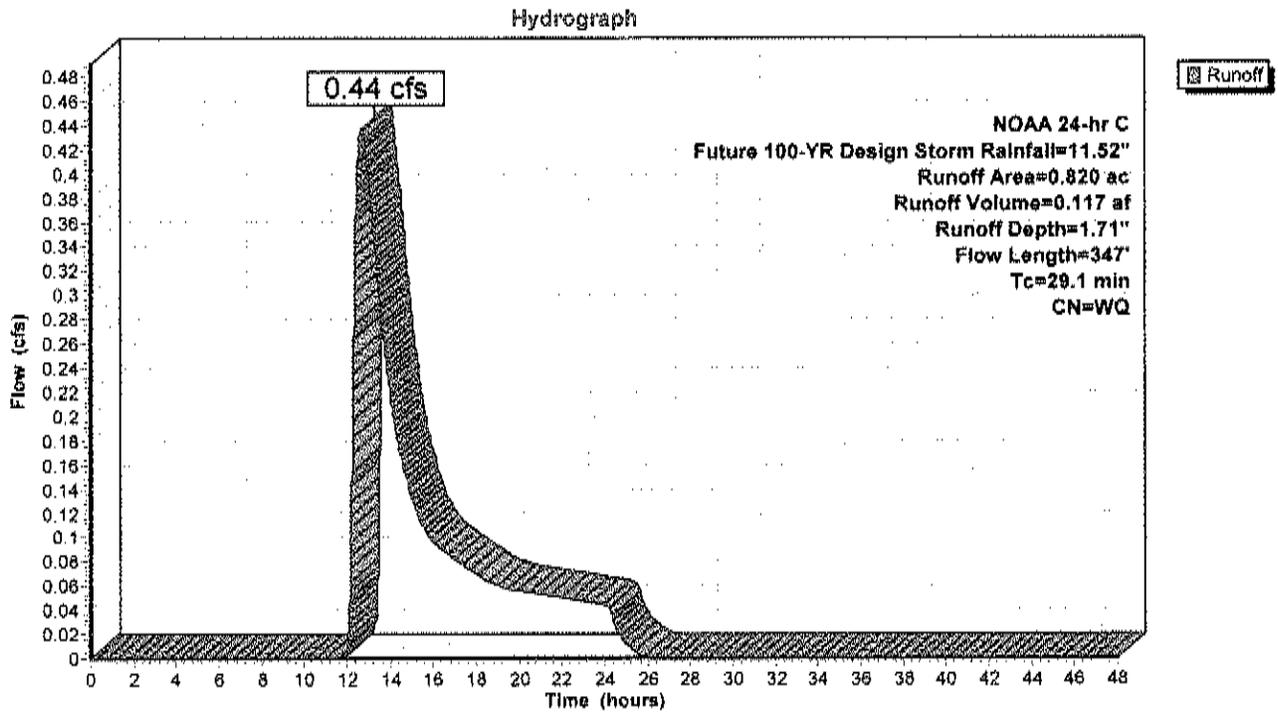
Runoff = 0.44 cfs @ 12.68 hrs, Volume= 0.117 af, Depth= 1.71"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	65	0.0181	0.08		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
29.1	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

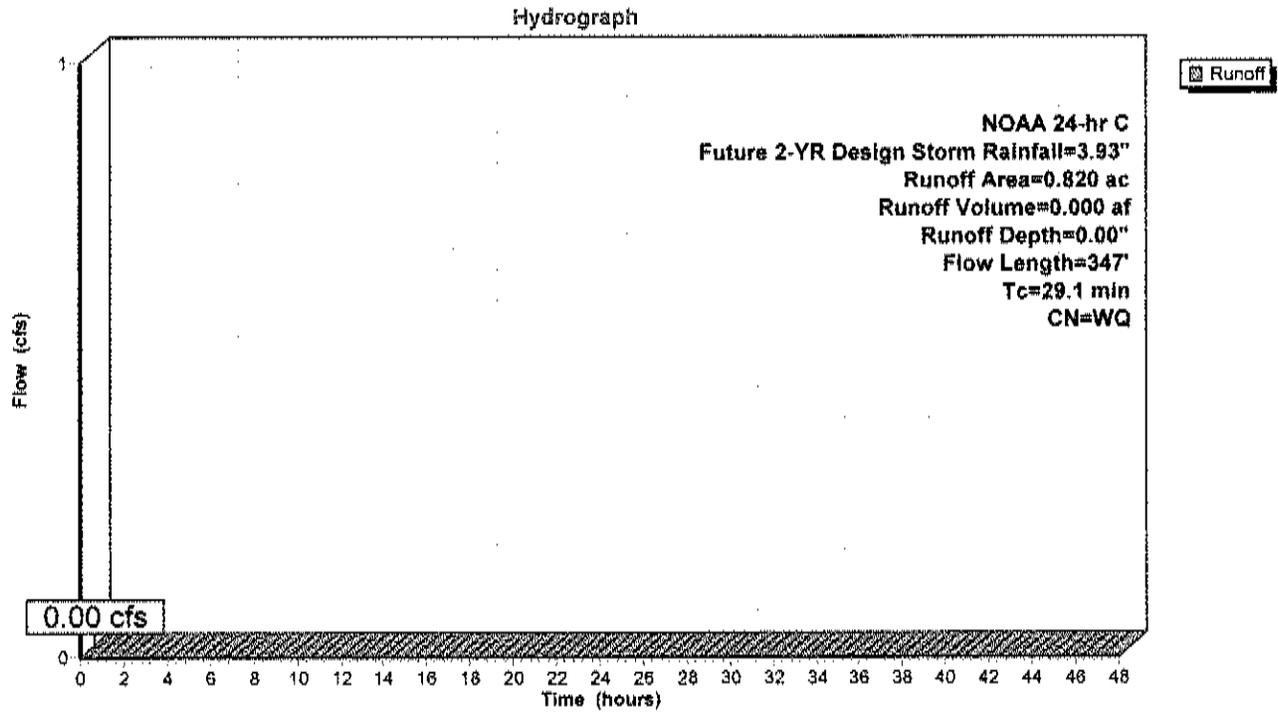
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	65	0.0181	0.08		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
29.1	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Summary for Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions**

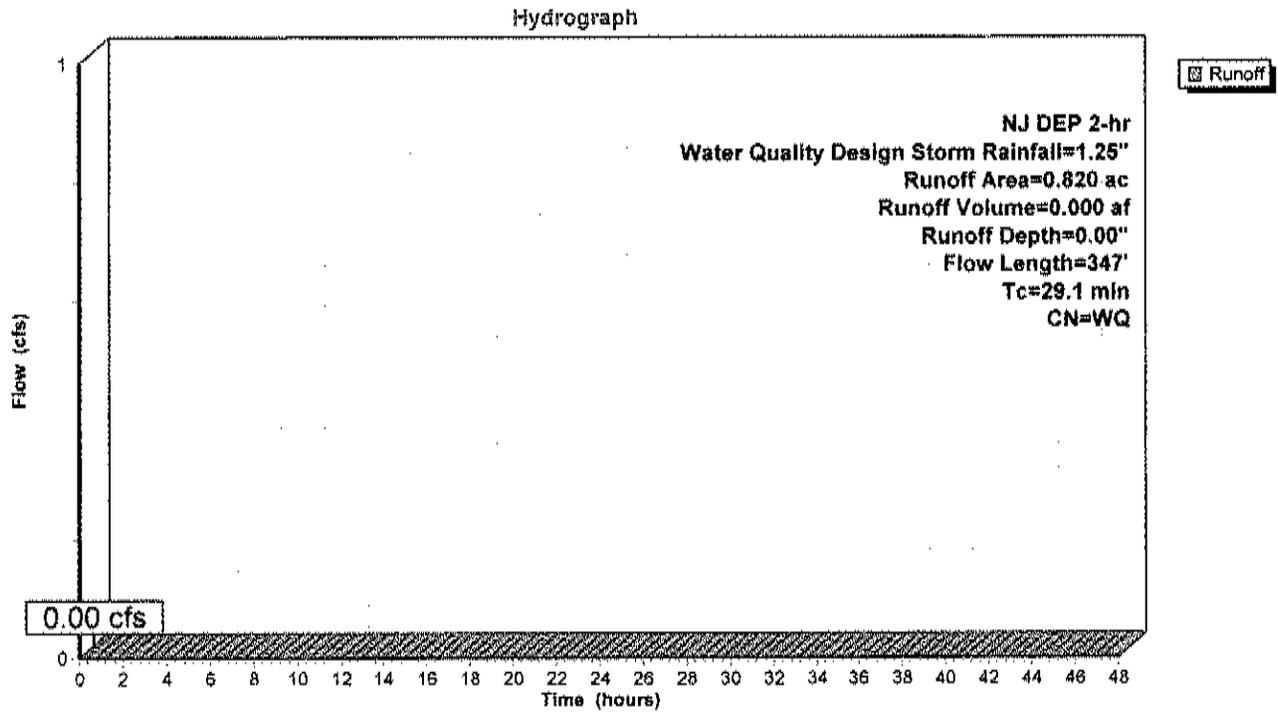
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.400	30	Woodland
* 0.420	32	Woodland/Brush
0.820		Weighted Average
0.820		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	65	0.0181	0.08		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.8	38	0.0263	0.81		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
1.9	47	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
3.5	87	0.0069	0.42		<b>Shallow Concentrated Flow, Woodland</b> Woodland Kv= 5.0 fps
8.6	110	0.0018	0.21		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
29.1	347	Total			

### Subcatchment 5EP: Watershed #5 Pre-Development Pervious Conditions



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

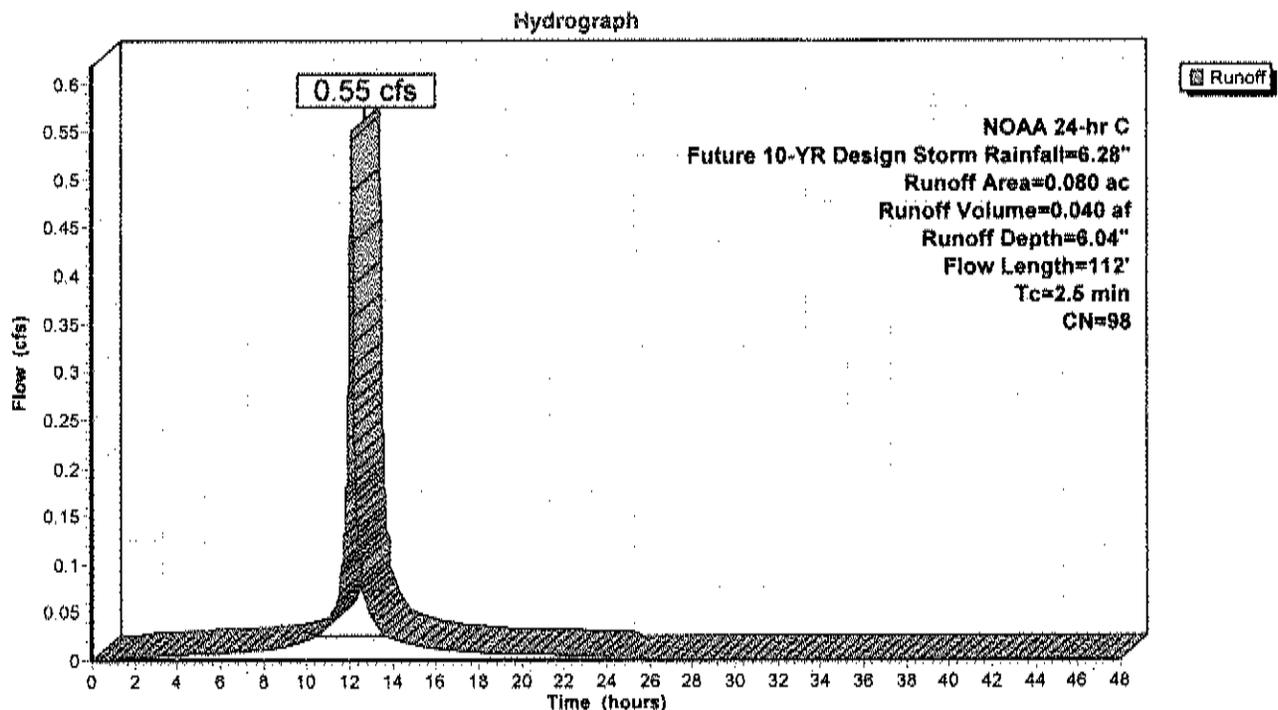
Runoff = 0.55 cfs @ 12.11 hrs, Volume= 0.040 af, Depth= 6.04"  
 Routed to Pond 5EL : Existing Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.5	112	Total			

**Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**



**Summary for Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 1.01 cfs @ 12.11 hrs, Volume= 0.075 af, Depth=11.28"  
 Routed to Pond 5EL : Existing Low Point

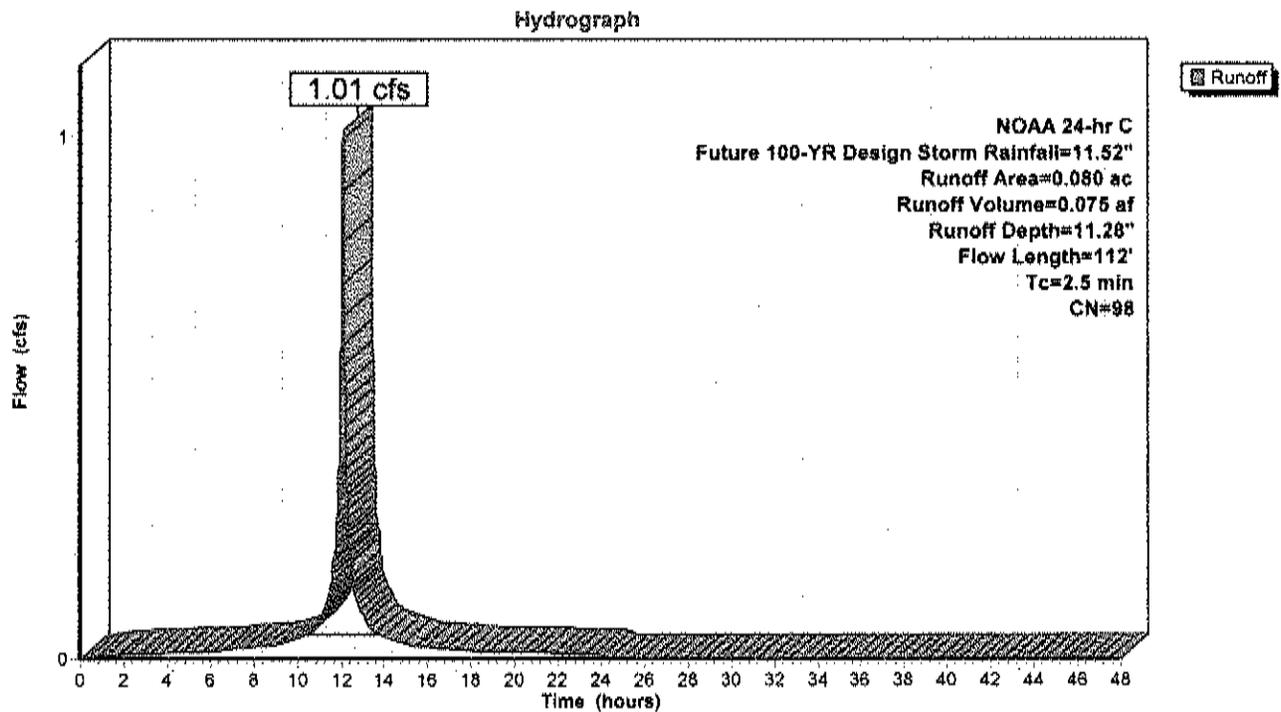
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.5	112	Total			

**Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**



**Summary for Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.025 af, Depth= 3.70"  
 Routed to Pond 5EL : Existing Low Point

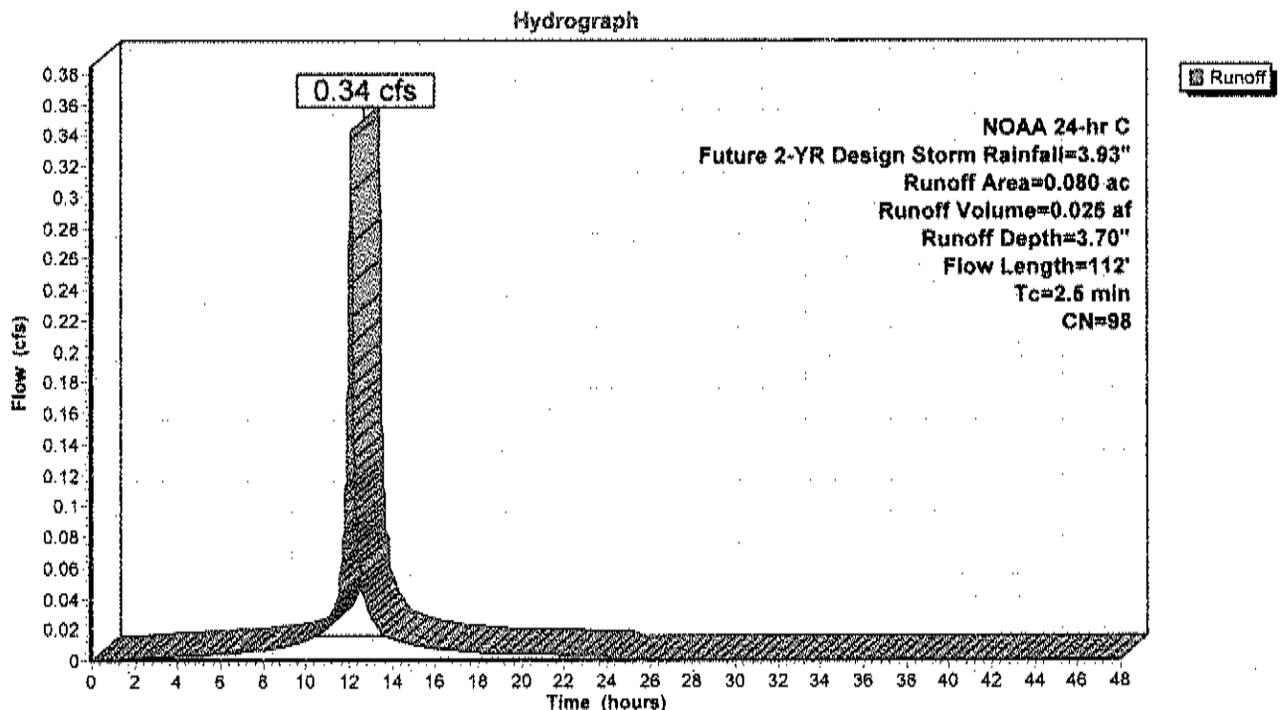
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.5	112	Total			

**Subcatchment 5EI: Watershed #5 Pre-Development Impervious Conditions**



**Summary for Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**

Runoff = 0.24 cfs @ 1.09 hrs, Volume= 0.007 af, Depth= 1.03"  
 Routed to Pond 5EL : Existing Low Point

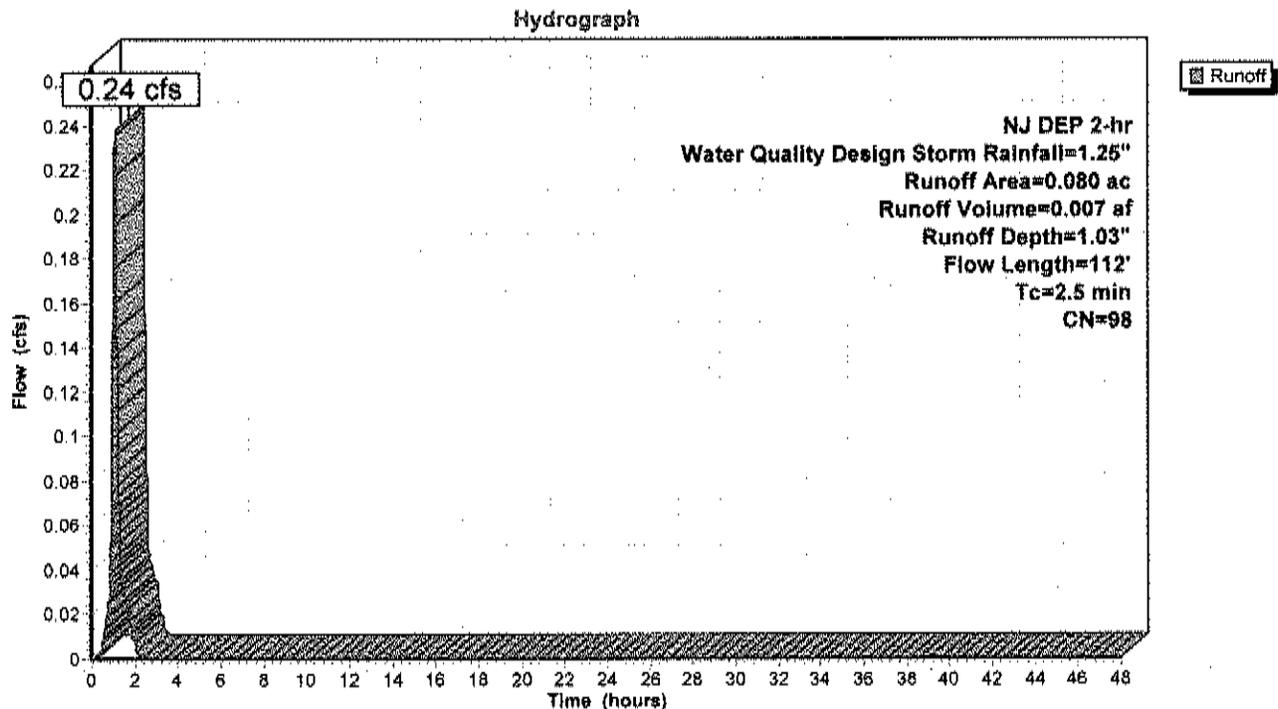
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.080	98	Impervious
0.080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
1.4	65	0.0015	0.79		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
2.5	112	Total			

**Subcatchment 5E1: Watershed #5 Pre-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.67" for Future 10-YR Design Storm event  
 Inflow = 0.55 cfs @ 12.11 hrs, Volume= 0.050 af  
 Outflow = 0.17 cfs @ 12.29 hrs, Volume= 0.030 af, Atten= 70%, Lag= 11.0 min  
 Primary = 0.17 cfs @ 12.29 hrs, Volume= 0.030 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.02' @ 12.29 hrs Surf.Area= 0.216 ac Storage= 0.023 af

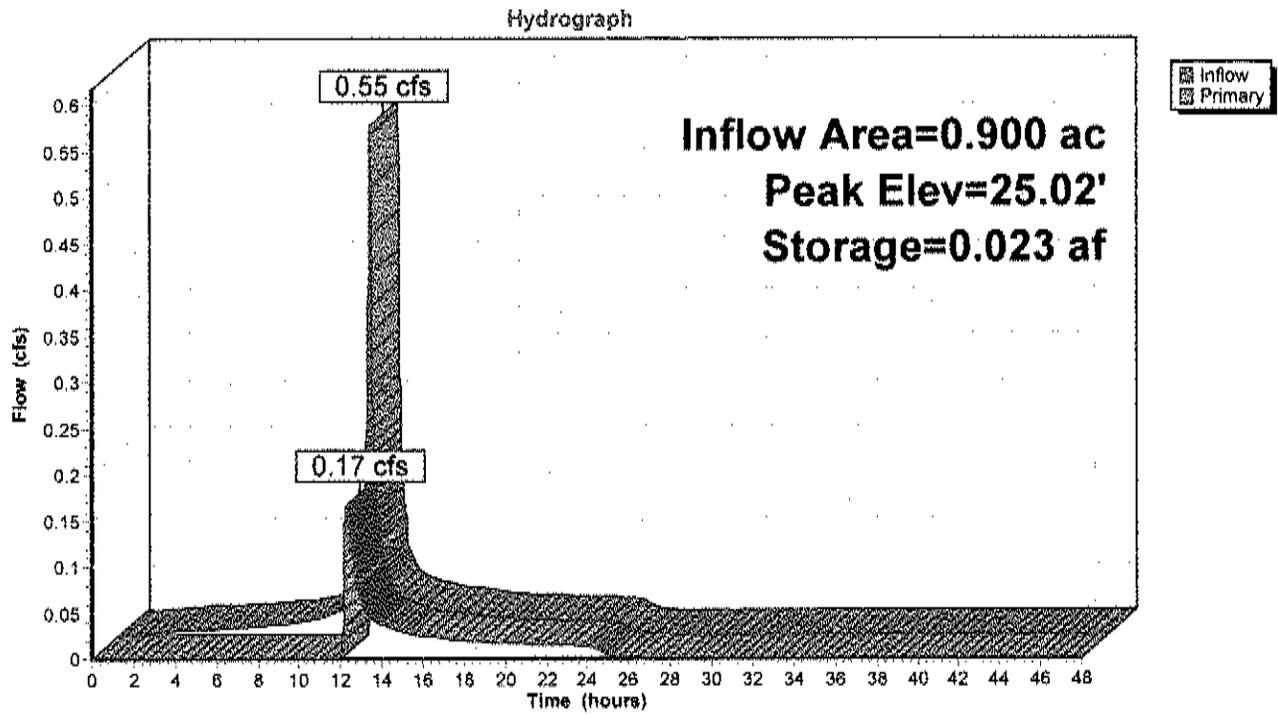
Plug-Flow detention time= 324.1 min calculated for 0.030 af (60% of inflow)  
 Center-of-Mass det. time= 162.1 min ( 976.5 - 814.4 )

Volume #1	Invert 24.80'	Avail.Storage 0.045 af	Storage Description Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device #1	Routing Primary	Invert 25.00'	Outlet Devices 30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60			
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63			

Primary OutFlow Max=0.17 cfs @ 12.29 hrs HW=25.02' (Free Discharge)  
 1=Broad-Crested Rectangular Weir (Weir Controls 0.17 cfs @ 0.34 fps)

### Pond 5EL: Existing Low Point



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 2.56" for Future 100-YR Design Storm event  
 Inflow = 1.04 cfs @ 12.11 hrs, Volume= 0.192 af  
 Outflow = 0.74 cfs @ 12.16 hrs, Volume= 0.172 af, Atten= 29%, Lag= 2.9 min  
 Primary = 0.74 cfs @ 12.16 hrs, Volume= 0.172 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.04' @ 12.16 hrs Surf.Area= 0.244 ac Storage= 0.030 af

Plug-Flow detention time= 113.9 min calculated for 0.172 af (90% of inflow)  
 Center-of-Mass det. time= 57.8 min ( 926.5 - 868.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

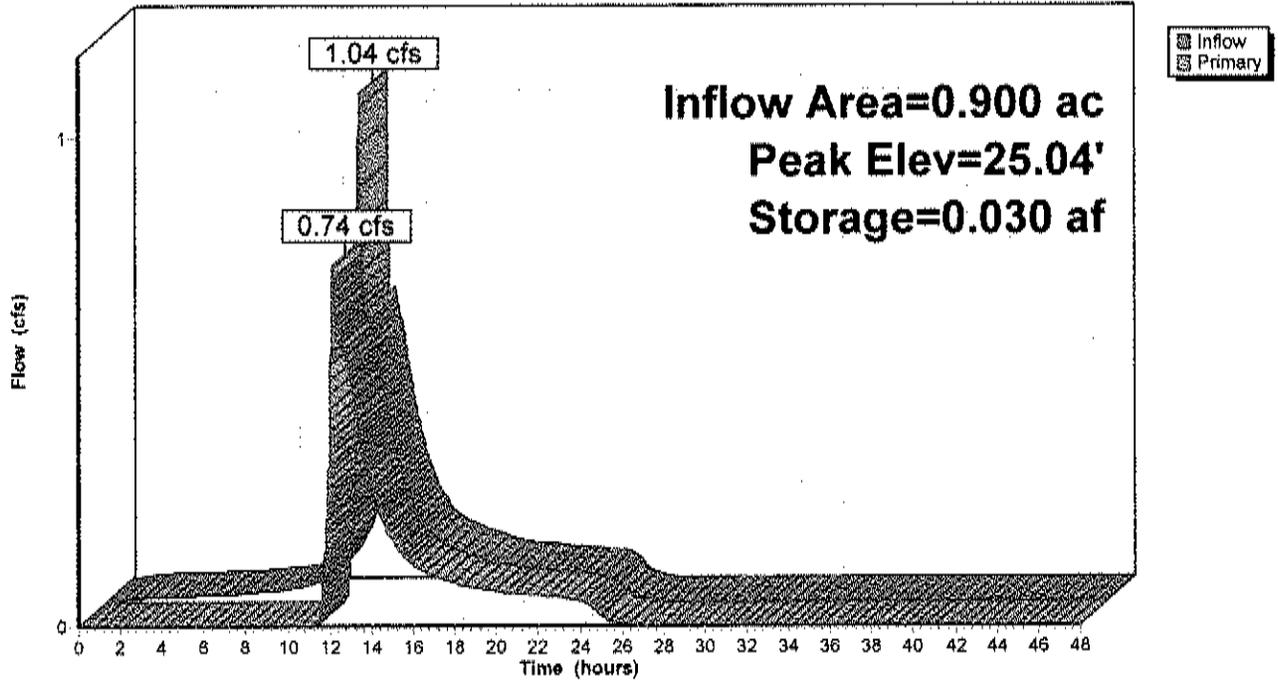
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.74 cfs @ 12.16 hrs HW=25.04' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir (Weir Controls 0.74 cfs @ 0.56 fps)

### Pond 5EL: Existing Low Point

Hydrograph



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.33" for Future 2-YR Design Storm event  
 Inflow = 0.34 cfs @ 12.11 hrs, Volume= 0.025 af  
 Outflow = 0.01 cfs @ 15.17 hrs, Volume= 0.005 af, Atten= 97%, Lag= 183.5 min  
 Primary = 0.01 cfs @ 15.17 hrs, Volume= 0.005 af  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.00' @ 15.17 hrs Surf.Area= 0.202 ac Storage= 0.020 af

Plug-Flow detention time= 644.1 min calculated for 0.005 af (19% of inflow)  
 Center-of-Mass det. time= 374.0 min ( 1,125.5 - 751.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

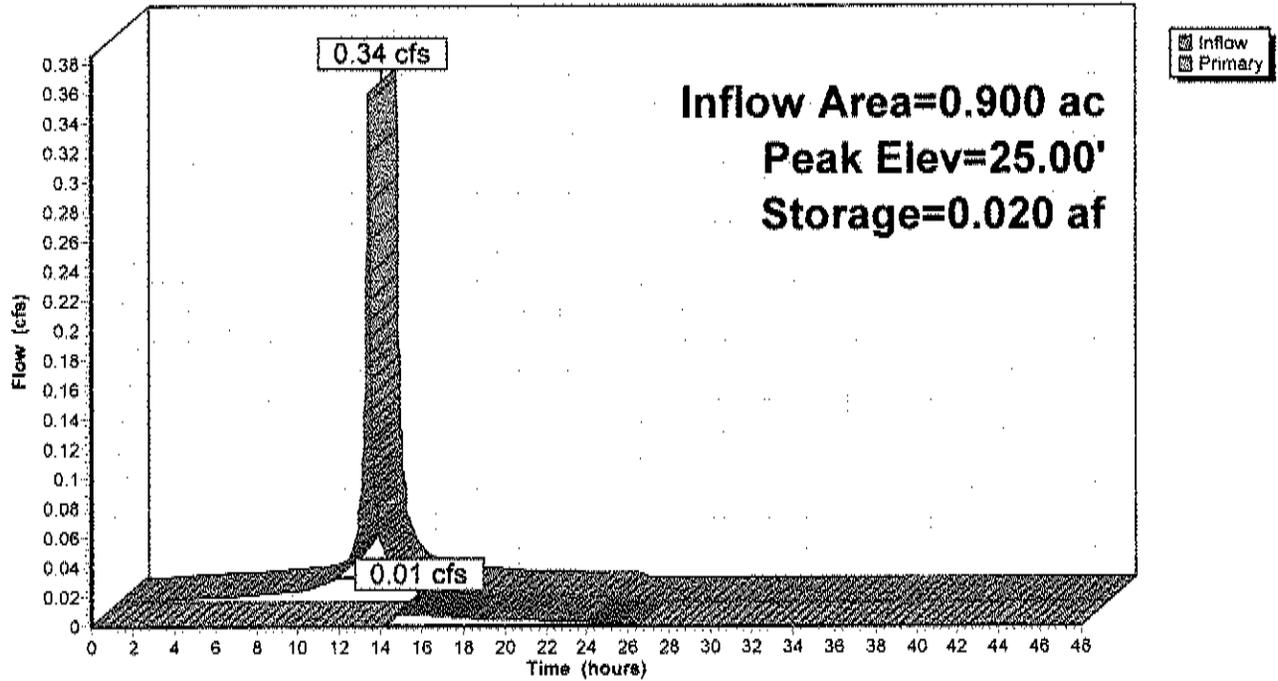
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.01 cfs @ 15.17 hrs HW=25.00' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.12 fps)

### Pond 5EL: Existing Low Point

Hydrograph



**Summary for Pond 5EL: Existing Low Point**

Inflow Area = 0.900 ac, 8.89% Impervious, Inflow Depth = 0.09" for Water Quality Design Storm event  
 Inflow = 0.24 cfs @ 1.09 hrs, Volume= 0.007 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  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.92' @ 2.28 hrs Surf.Area= 0.117 ac Storage= 0.007 af

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

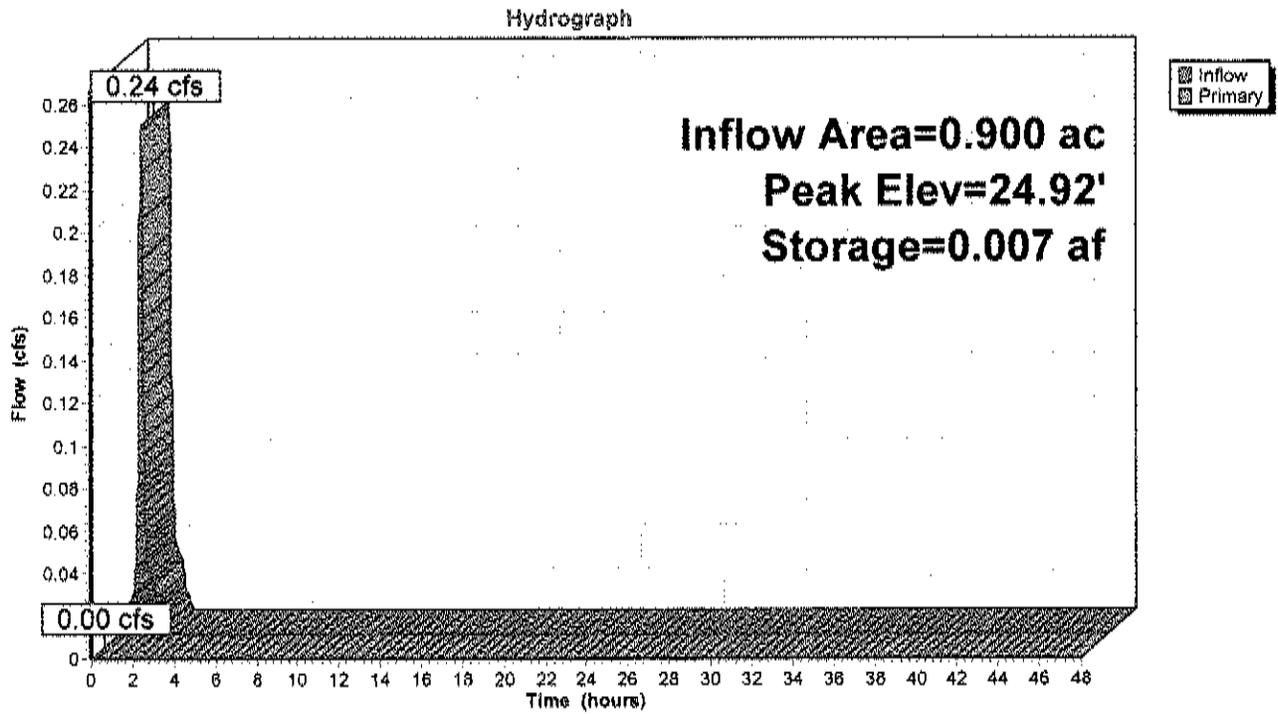
Volume	Invert	Avail.Storage	Storage Description
#1	24.80'	0.045 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
24.80	0.000	0.000	0.000
25.00	0.200	0.020	0.020
25.10	0.300	0.025	0.045

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	30.0' long + 3.0 ' / SideZ x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=24.80' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 5EL: Existing Low Point



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

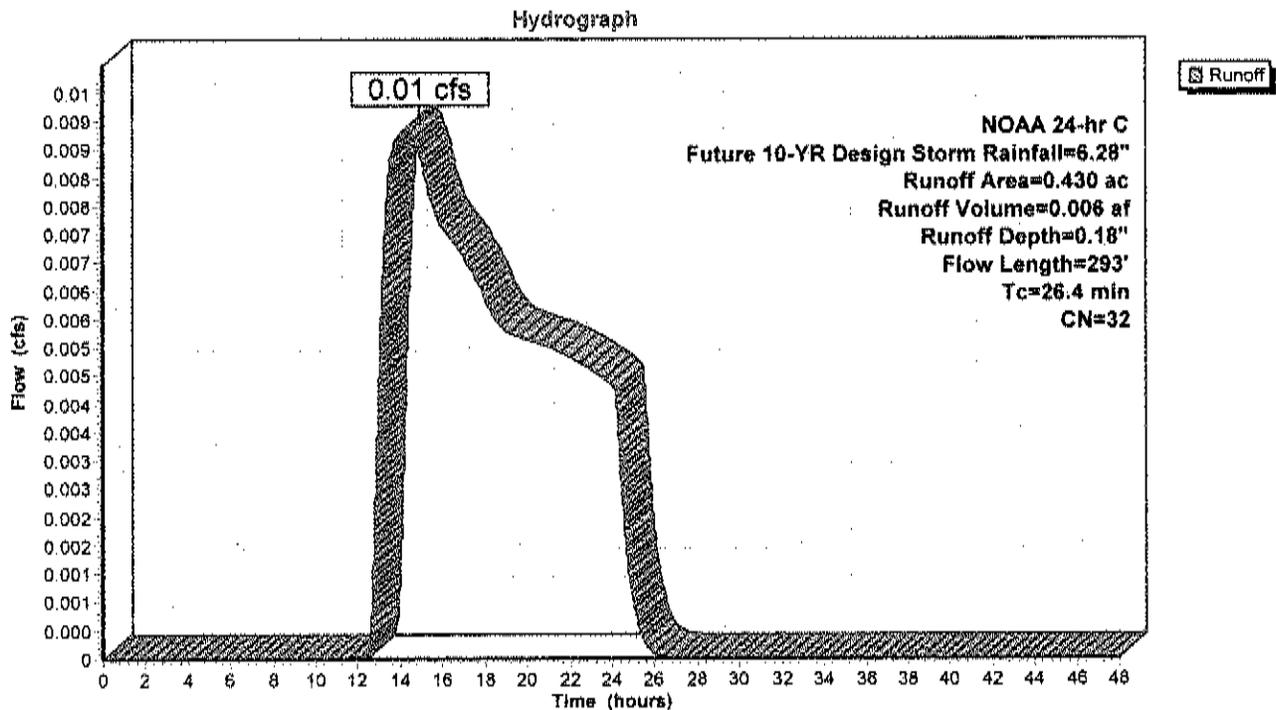
Runoff = 0.01 cfs @ 14.32 hrs, Volume= 0.006 af, Depth= 0.18"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	75	0.0161	0.07		Sheet Flow, Woodland/Brush Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	30	0.0330	0.91		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		Shallow Concentrated Flow, Woodland/Brush Woodland Kv= 5.0 fps
26.4	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

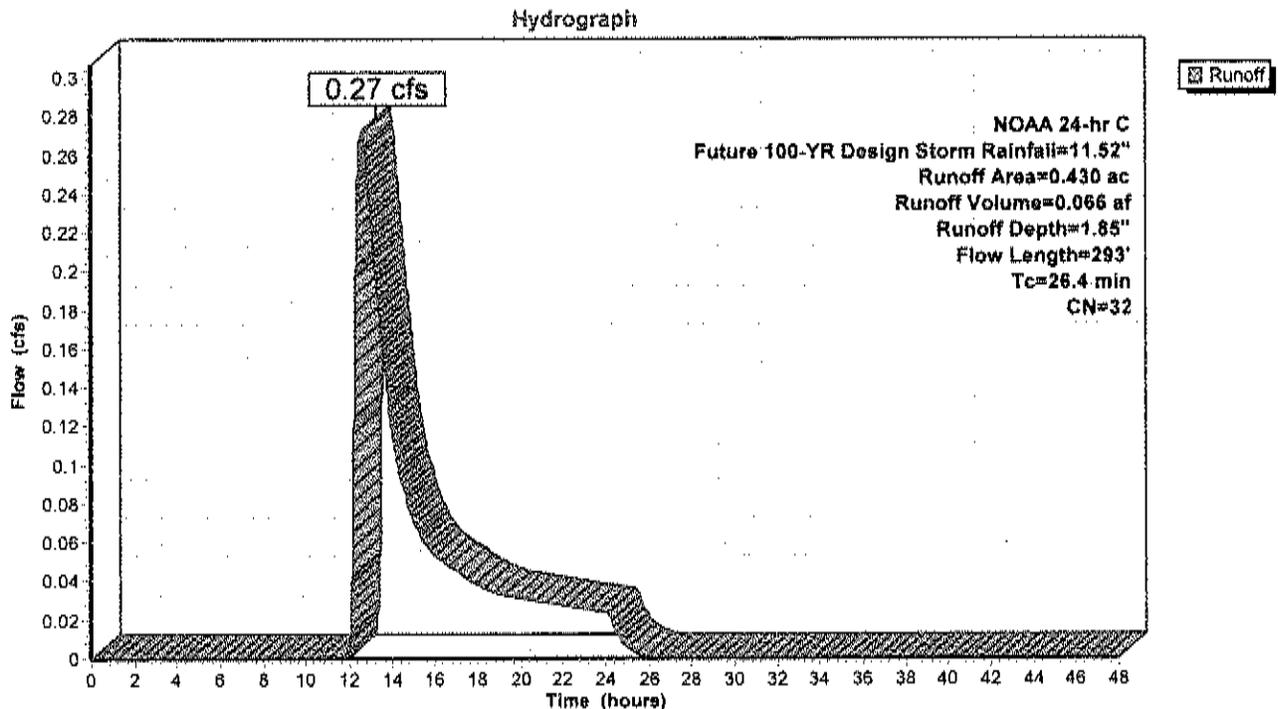
Runoff = 0.27 cfs @ 12.61 hrs, Volume= 0.066 af, Depth= 1.85"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	75	0.0161	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	30	0.0330	0.91		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
26.4	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

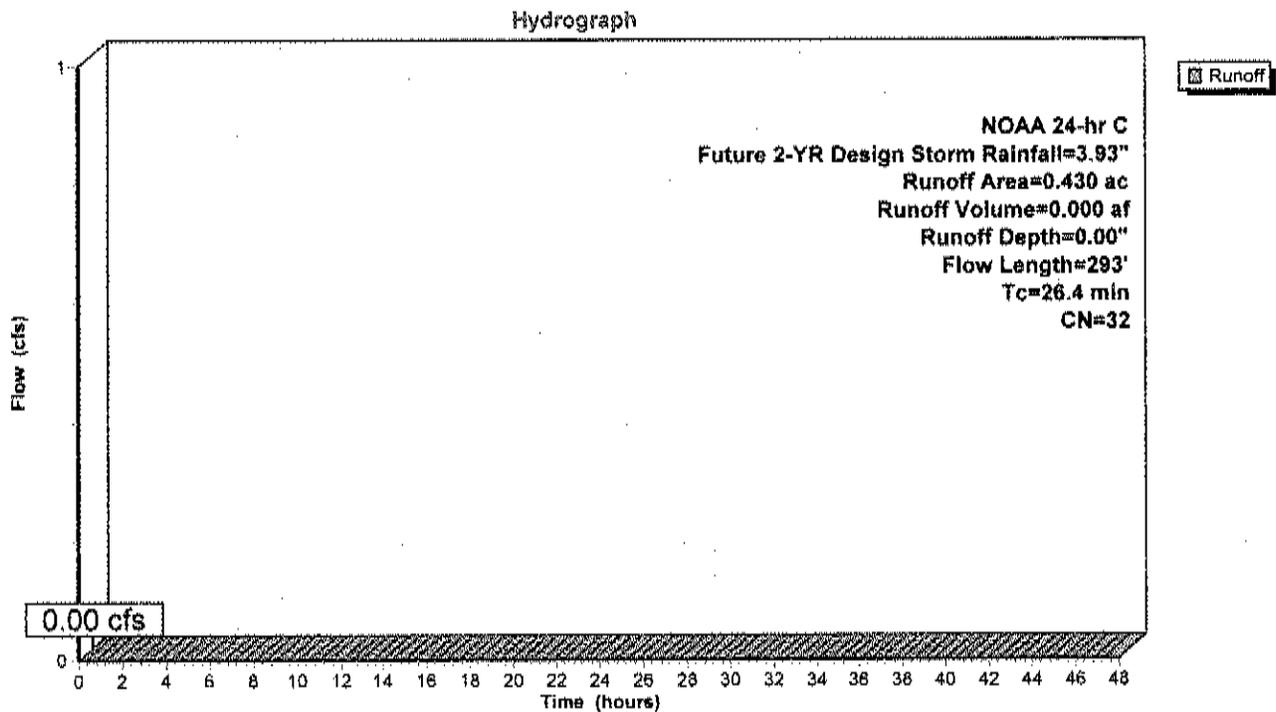
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	75	0.0161	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	30	0.0330	0.91		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
26.4	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Summary for Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**

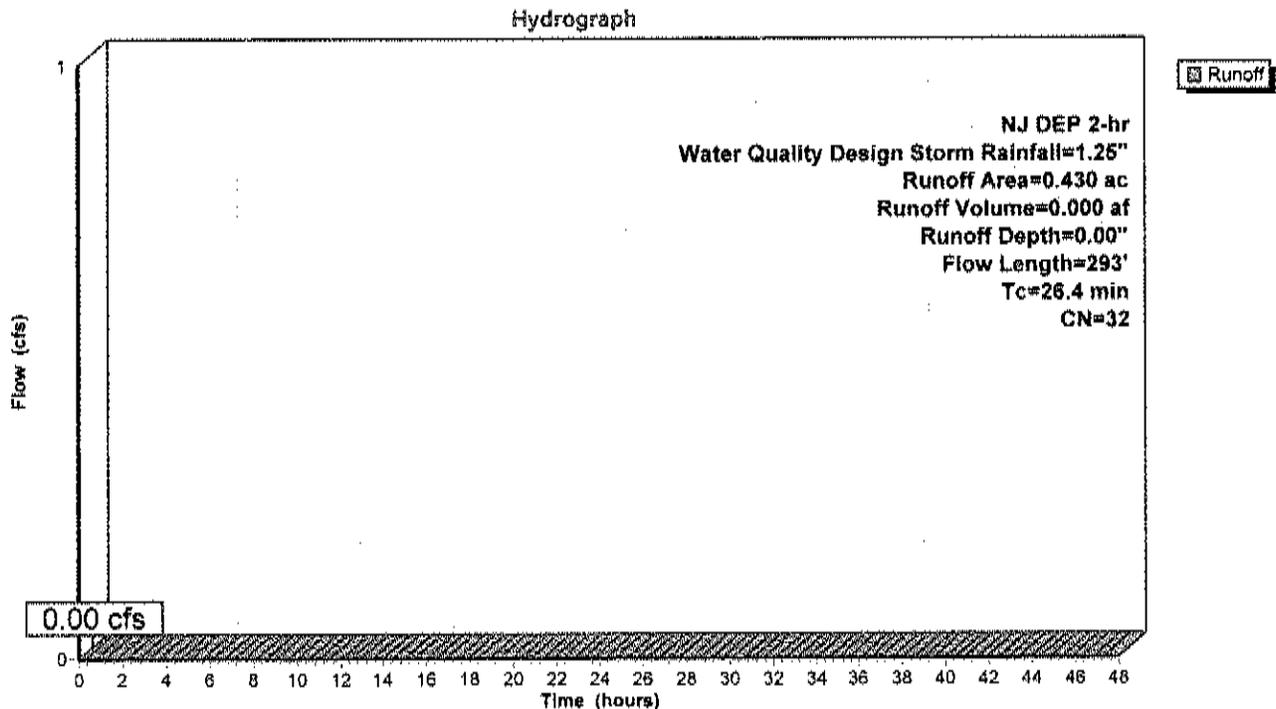
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.430	32	Woodland/Brush
0.430		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	75	0.0161	0.07		<b>Sheet Flow, Woodland/Brush</b> Woods: Light underbrush n= 0.400 P2= 3.93"
0.6	30	0.0330	0.91		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
2.6	85	0.0117	0.54		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
6.4	103	0.0029	0.27		<b>Shallow Concentrated Flow, Woodland/Brush</b> Woodland Kv= 5.0 fps
26.4	293	Total			

**Subcatchment 6EP: Watershed #6 Pre-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 6.04"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

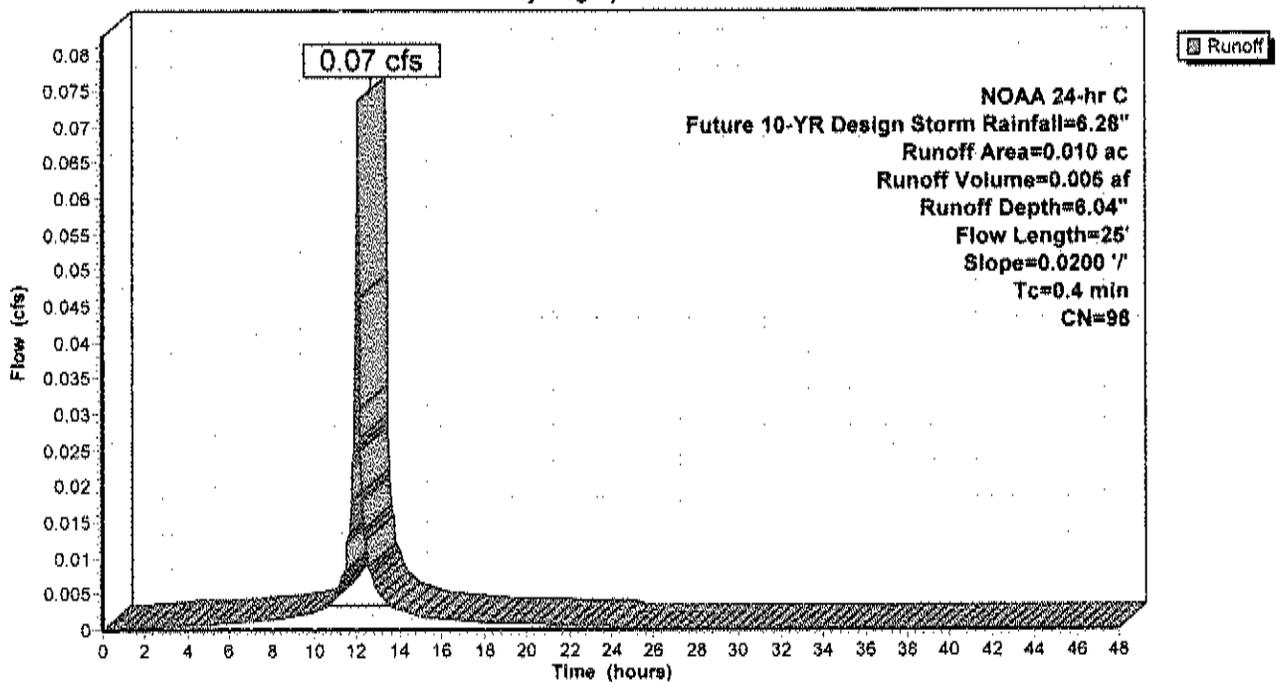
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.16		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.009 af, Depth=11.28"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

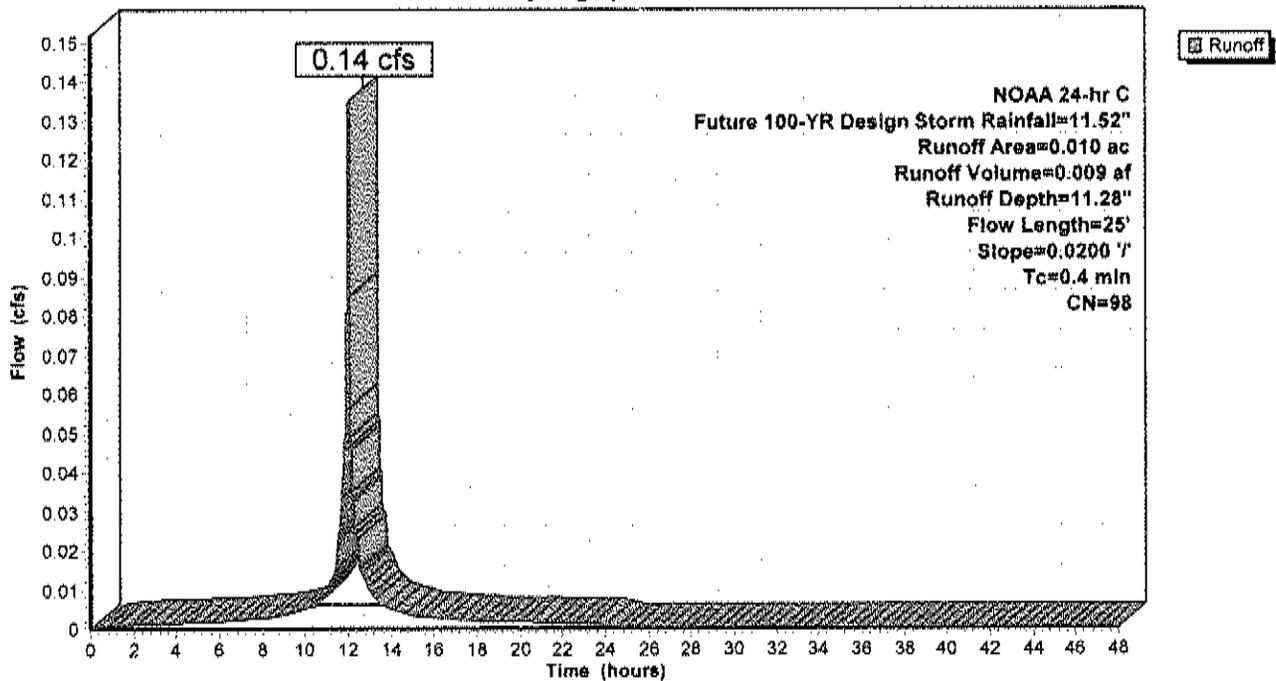
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.16		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 3.70"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

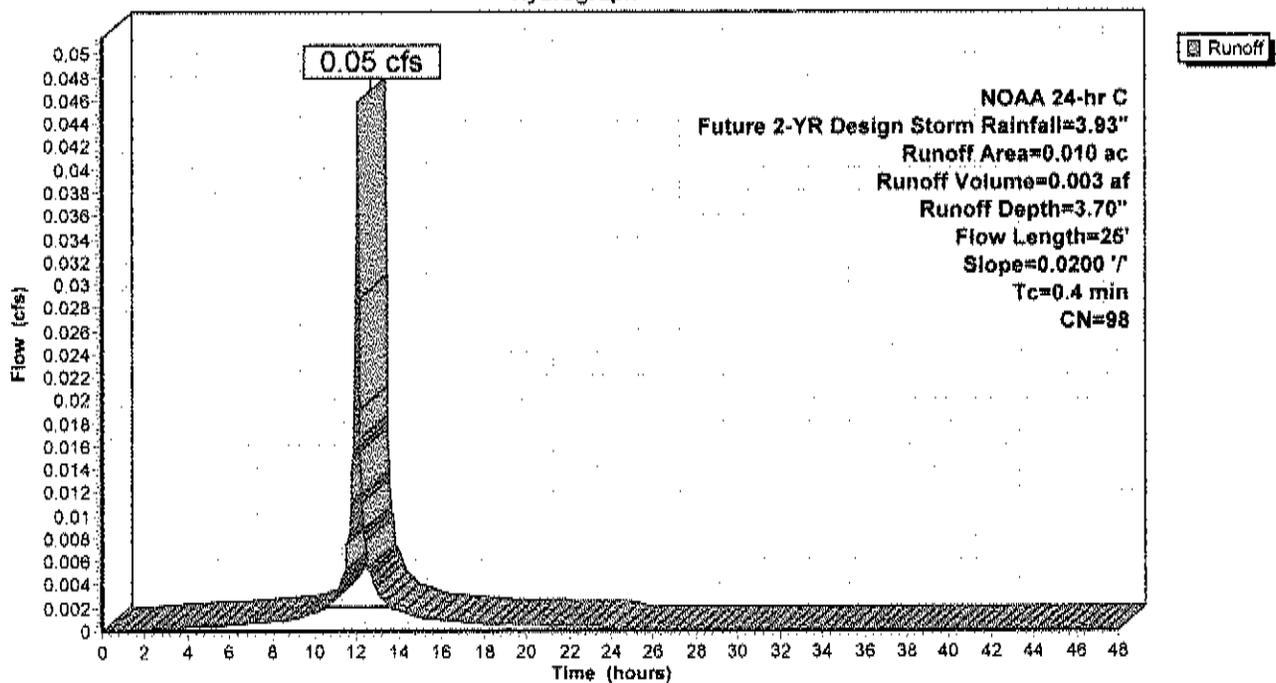
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.16		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**

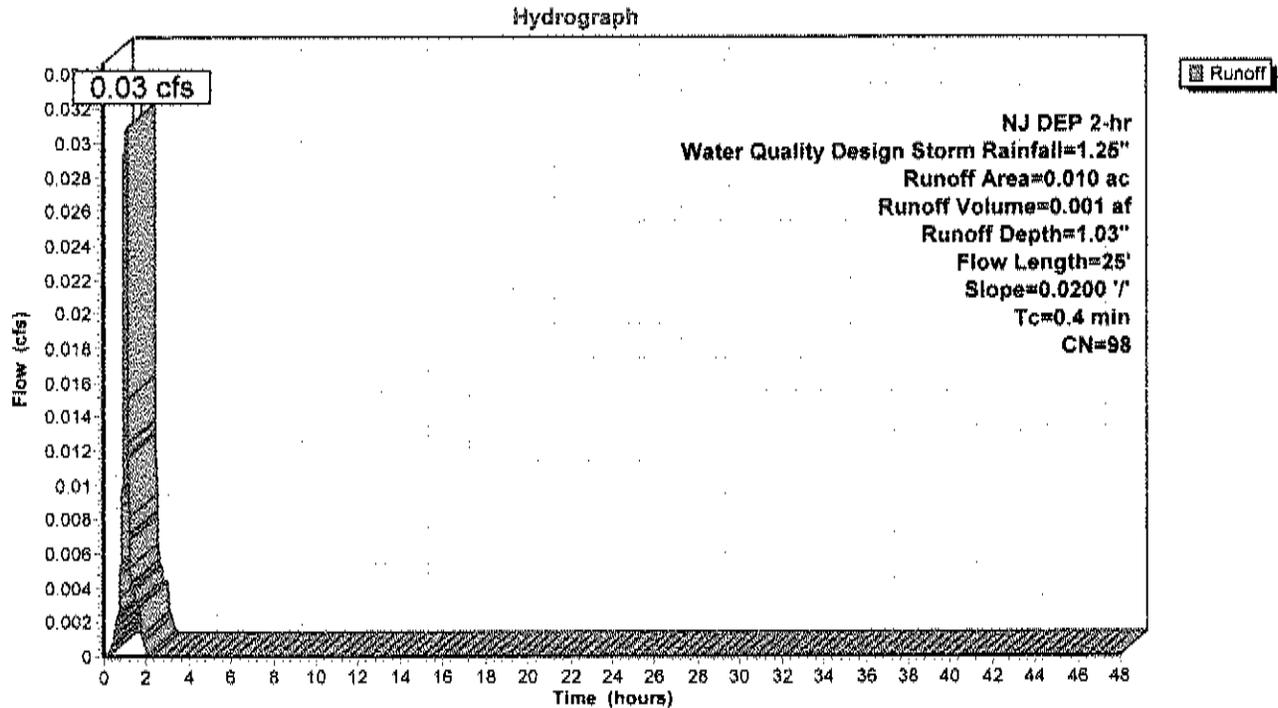
Runoff = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af, Depth= 1.03"  
 Routed to Link 6L : Watershed #6 Composite Hydrograph Impervious/ Pervious

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.010	98	Impervious
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.16		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"

**Subcatchment 6EI: Watershed #6 Pre-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

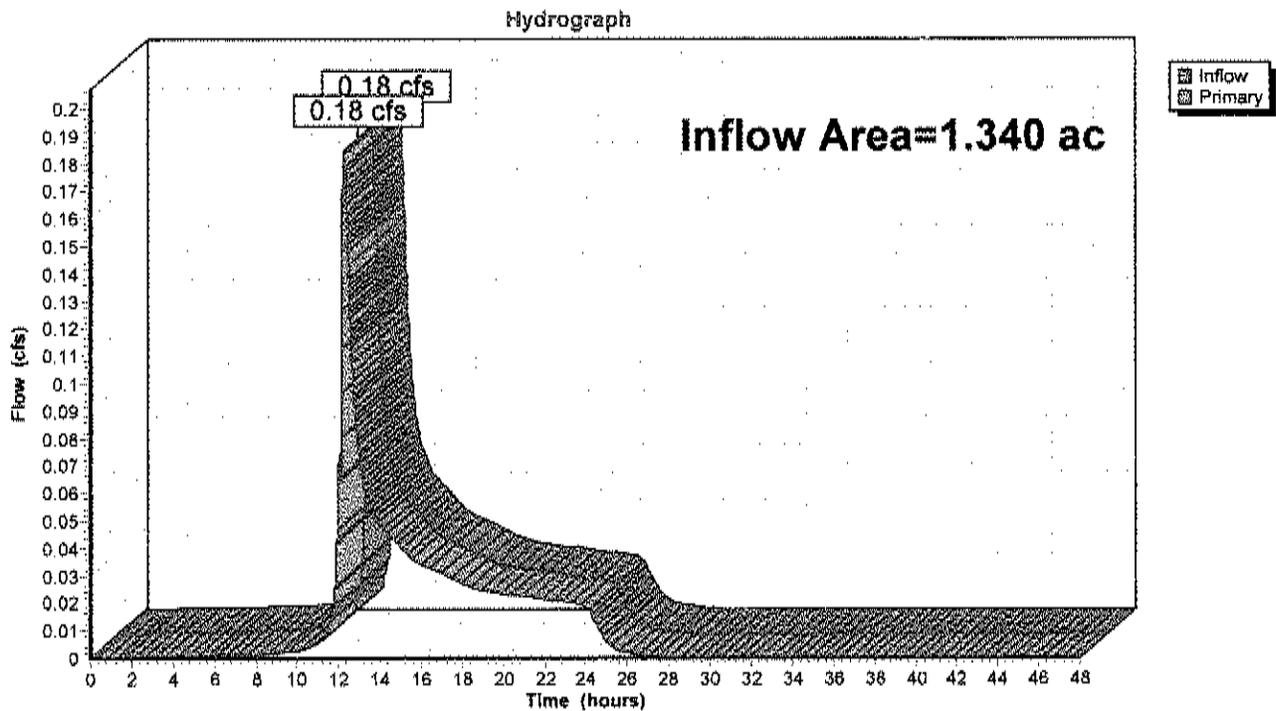
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.37" for Future 10-YR Design Storm event  
Inflow = 0.18 cfs @ 12.29 hrs, Volume= 0.041 af  
Primary = 0.18 cfs @ 12.29 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

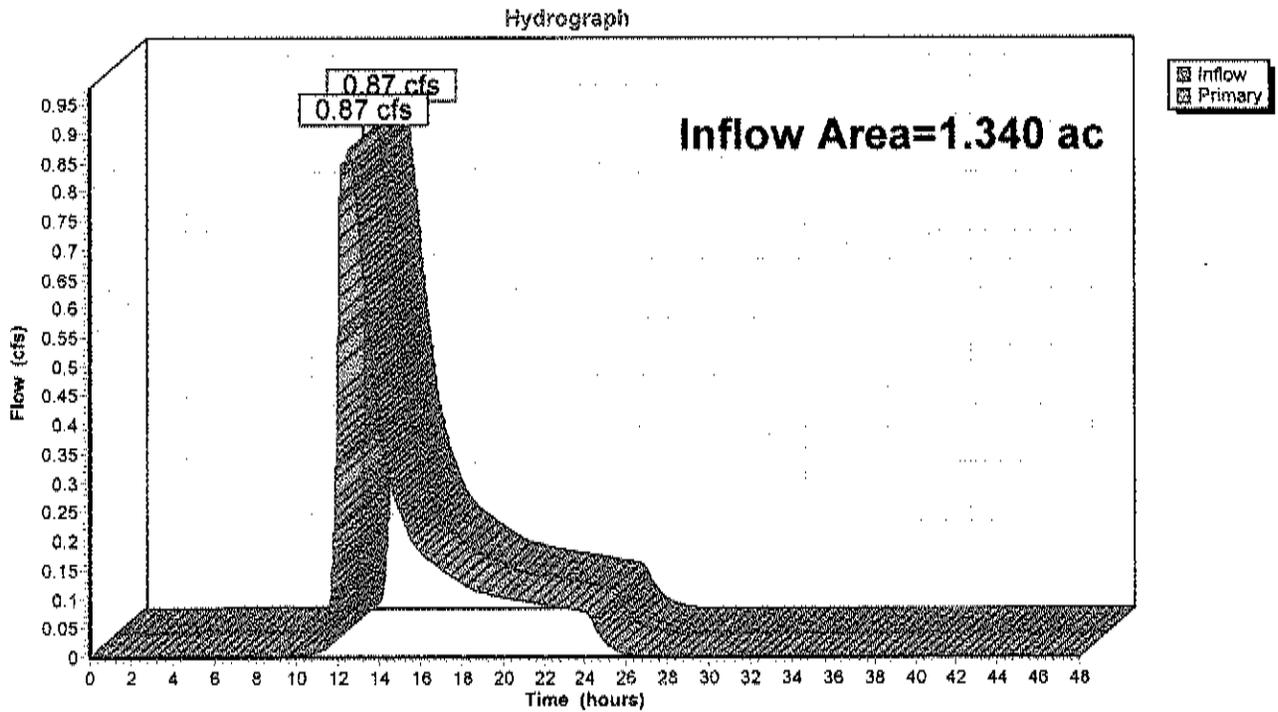


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 2.22" for Future 100-YR Design Storm event  
Inflow = 0.87 cfs @ 12.55 hrs, Volume= 0.248 af  
Primary = 0.87 cfs @ 12.55 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

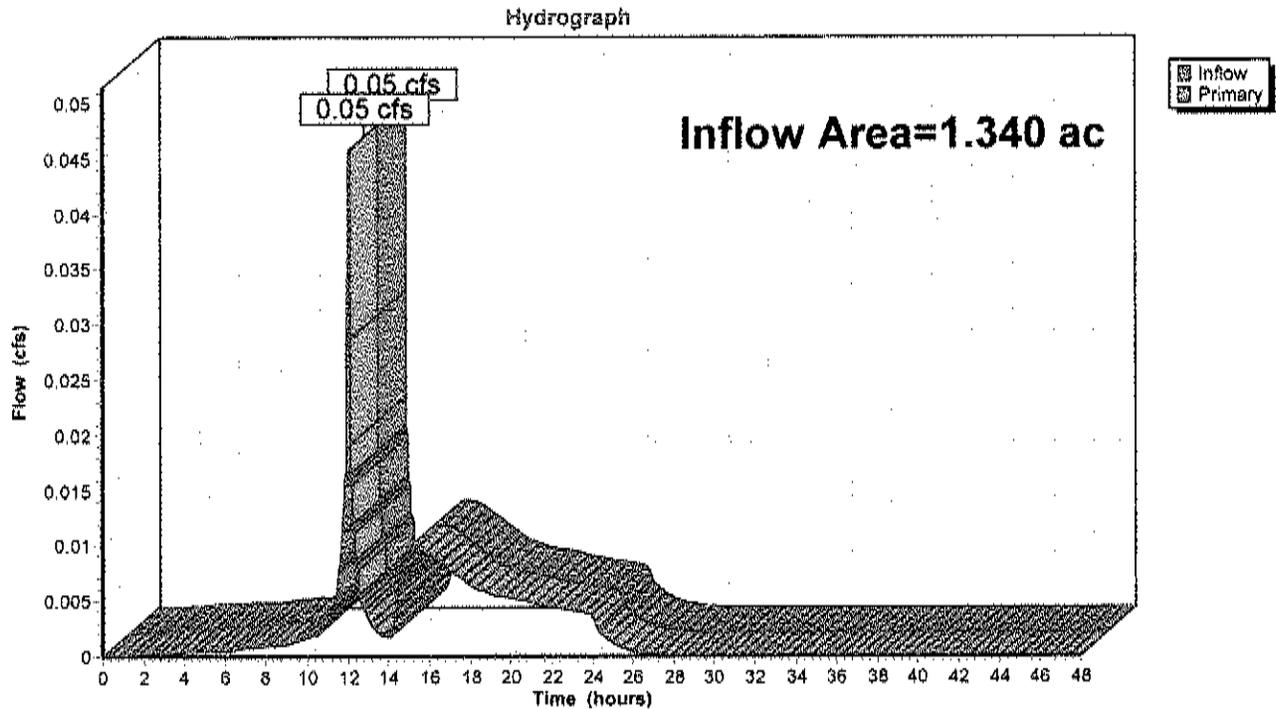


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.07" for Future 2-YR Design Storm event  
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.008 af  
Primary = 0.05 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

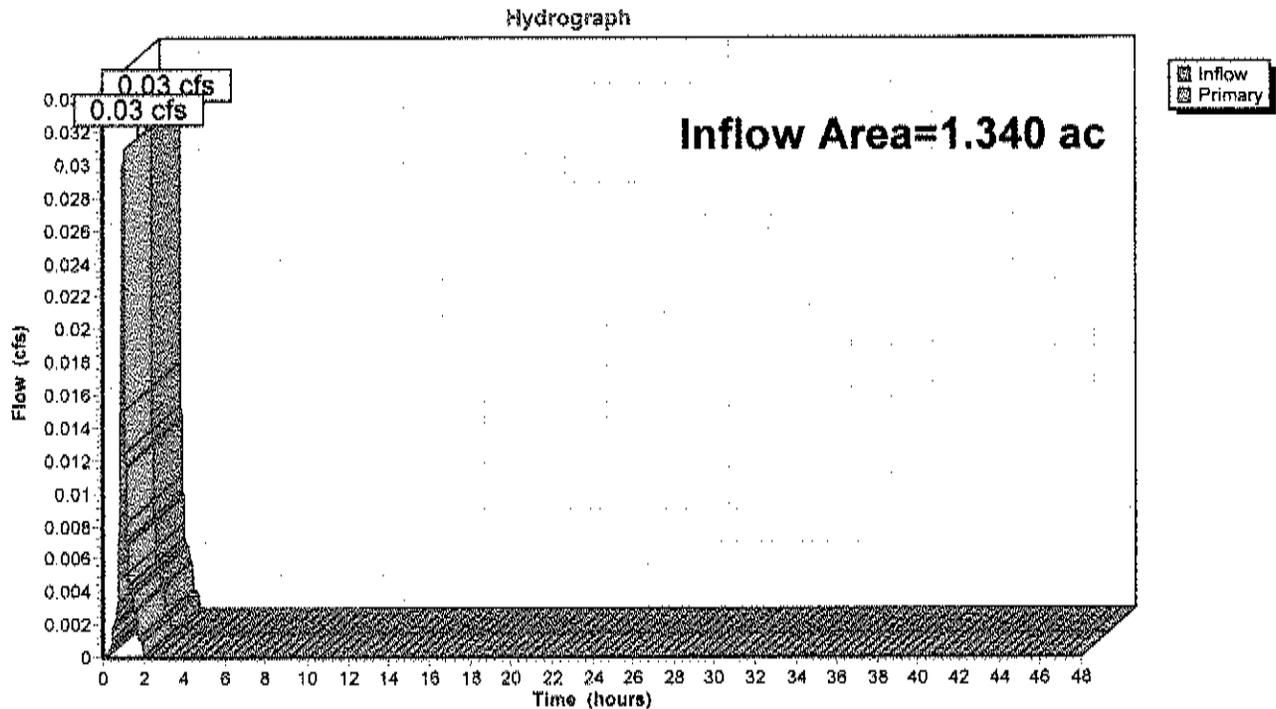


### Summary for Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious

Inflow Area = 1.340 ac, 6.72% Impervious, Inflow Depth = 0.01" for Water Quality Design Storm event  
Inflow = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af  
Primary = 0.03 cfs @ 1.08 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link 6L: Watershed #6 Composite Hydrograph Impervious/ Pervious



**Post-Development Runoff**

**Future Rainfall Rates**

**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

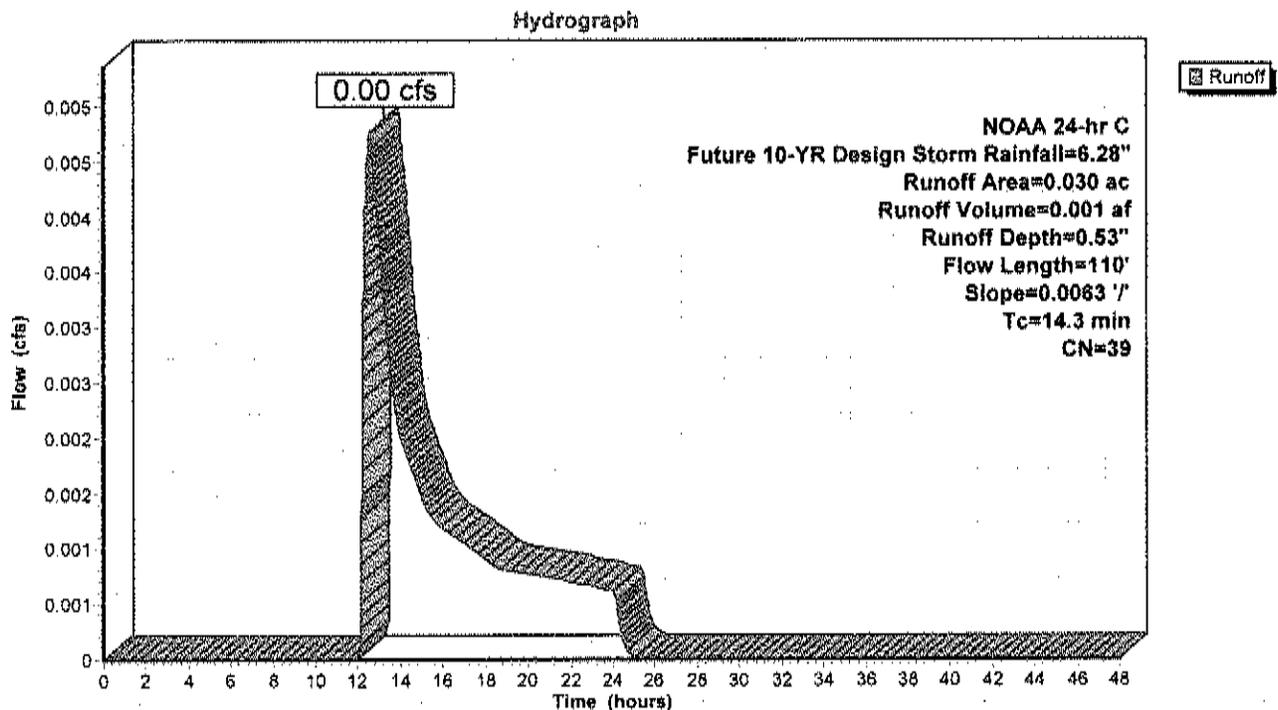
Runoff = 0.00 cfs @ 12.59 hrs, Volume= 0.001 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0063	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
14.3	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

Runoff = 0.05 cfs @ 12.27 hrs, Volume= 0.007 af, Depth= 2.93"

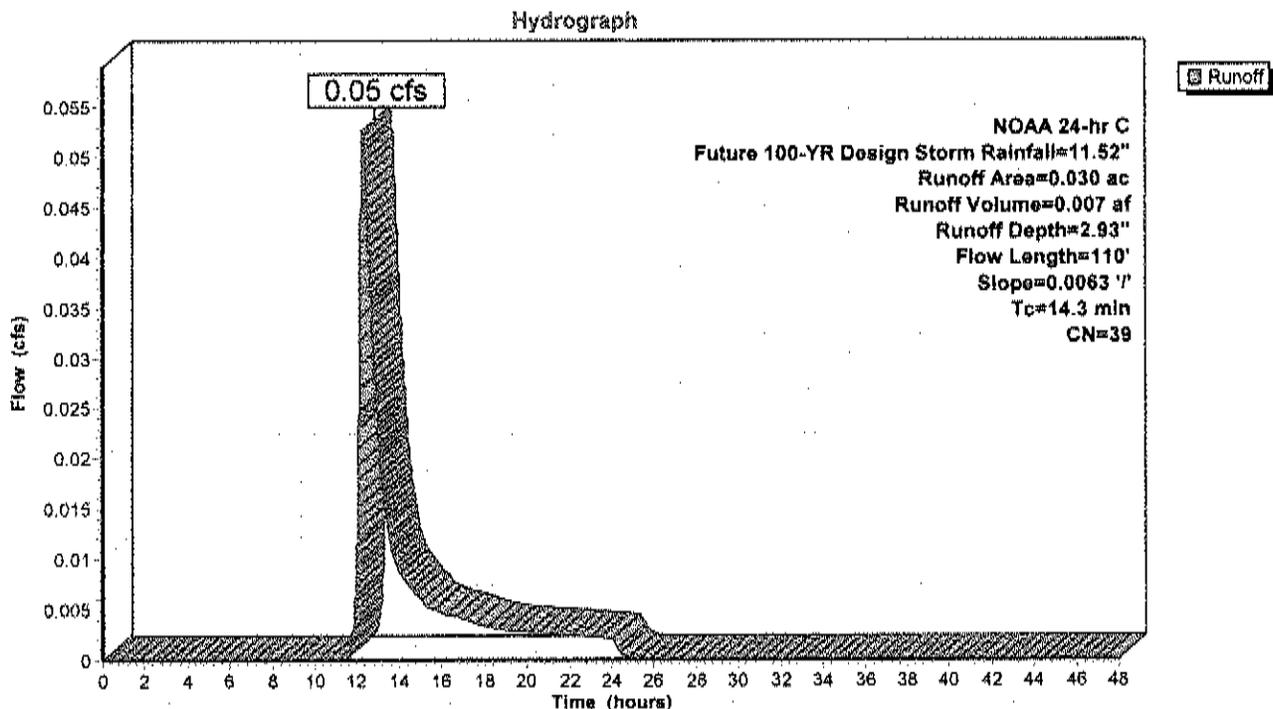
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0063	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
14.3	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

Runoff = 0.00 cfs @ 21.42 hrs, Volume= 0.000 af, Depth= 0.04"

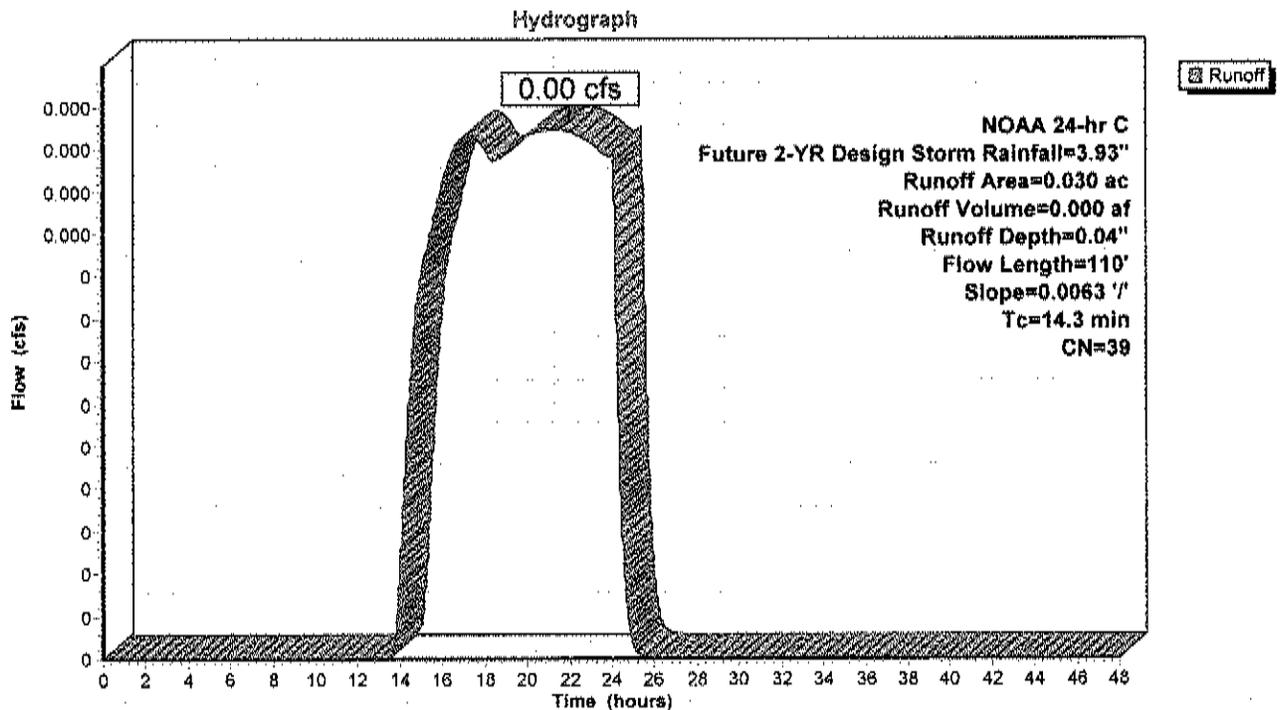
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0063	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
14.3	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Summary for Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**

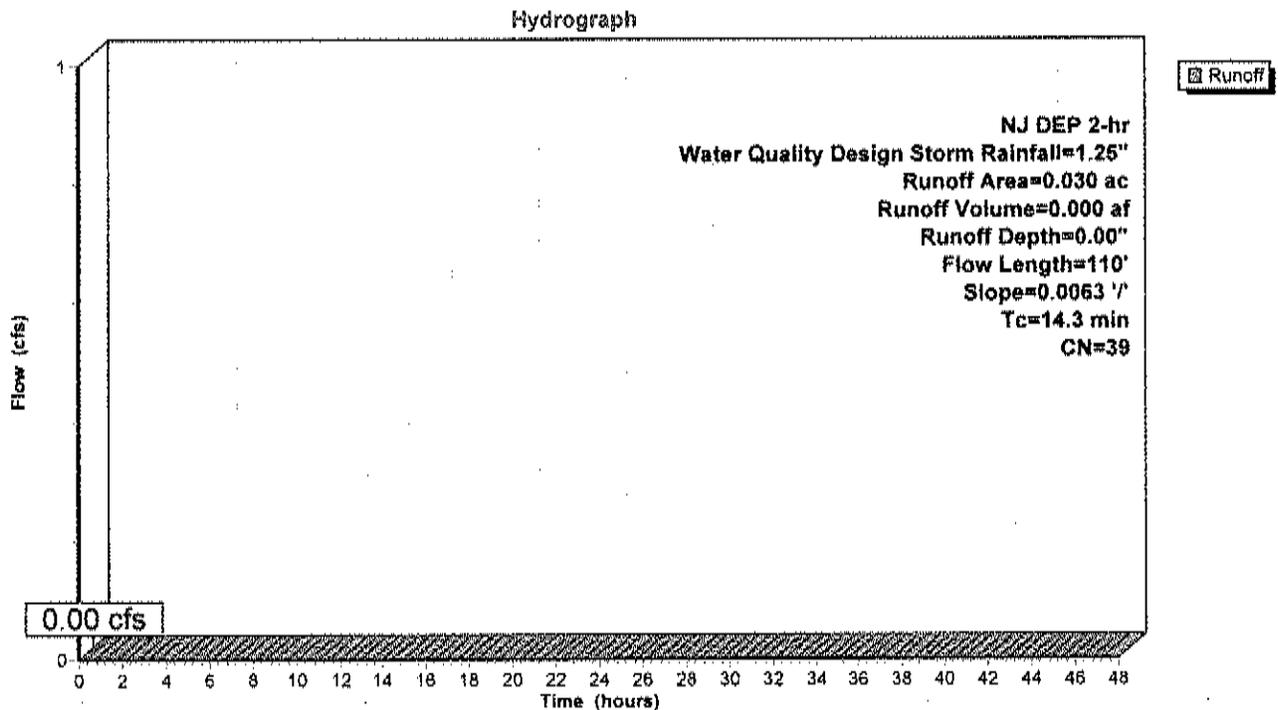
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.030	39	Grass/landscaping
0.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0063	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.3	10	0.0063	0.56		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
14.3	110	Total			

**Subcatchment 1PP: Watershed #1 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

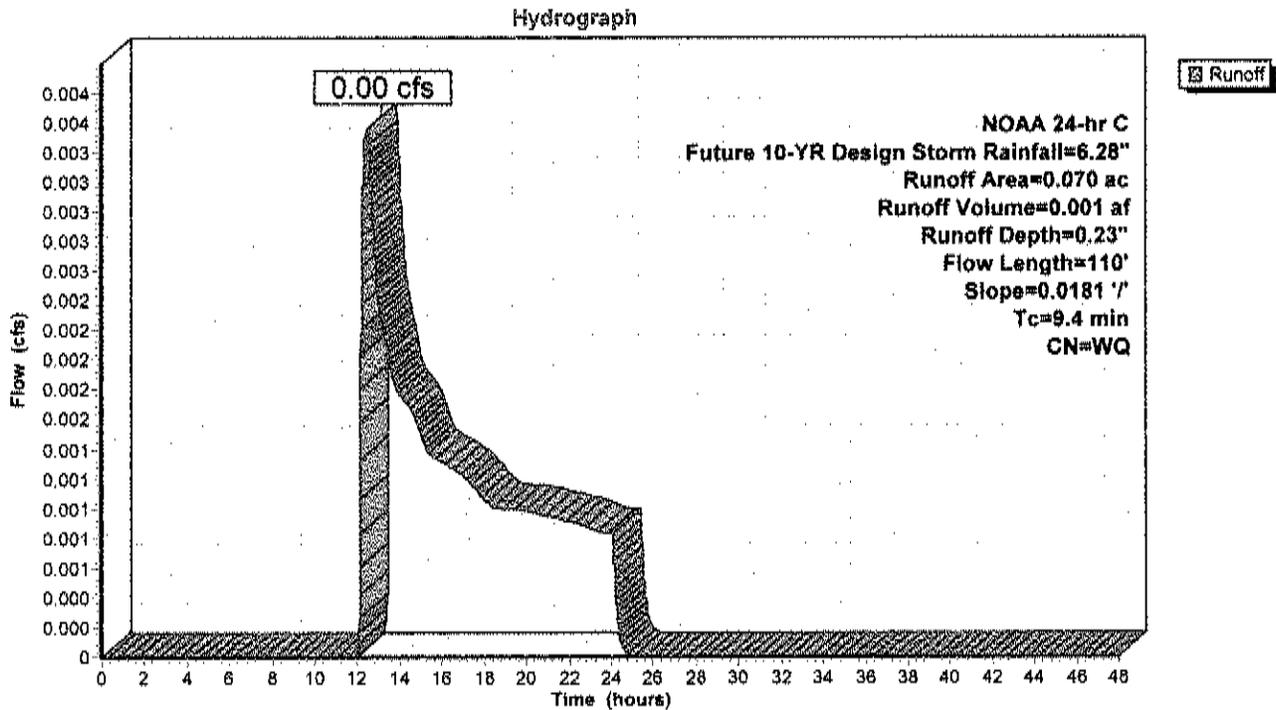
Runoff = 0.00 cfs @ 12.53 hrs, Volume= 0.001 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0181	0.18		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
9.4	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

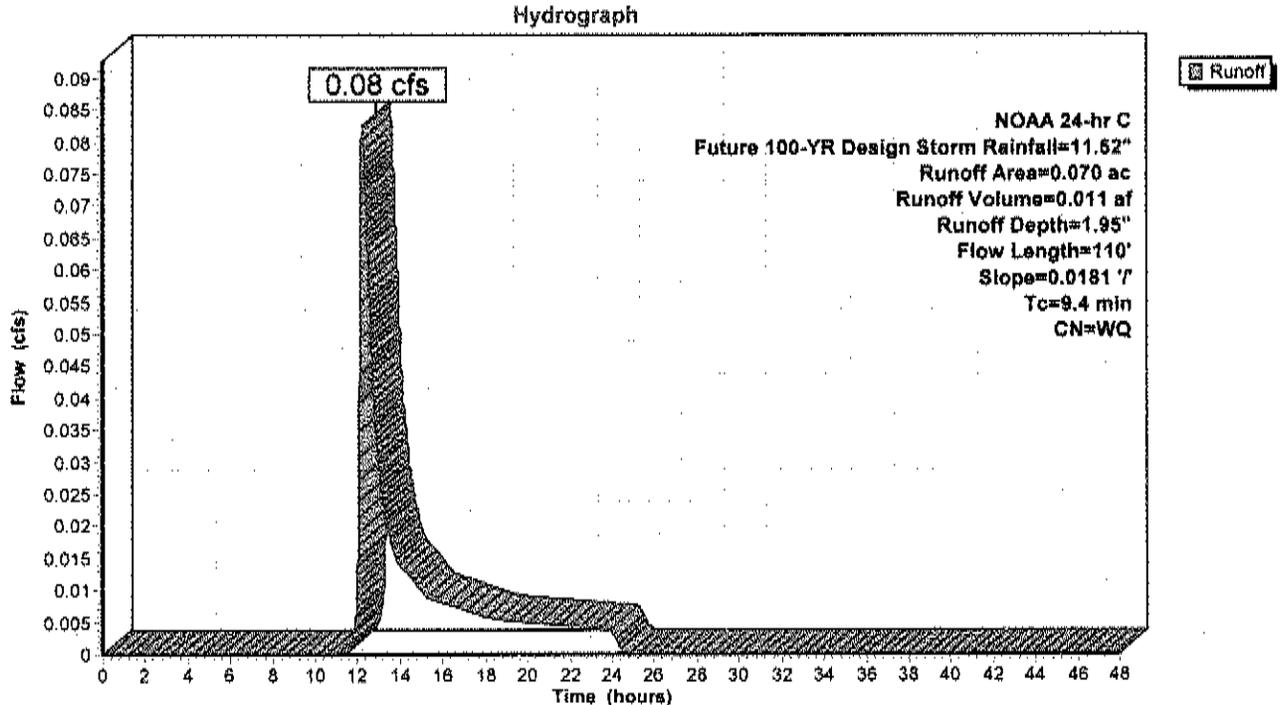
Runoff = 0.08 cfs @ 12.22 hrs, Volume= 0.011 af, Depth= 1.95"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0181	0.18		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
9.4	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

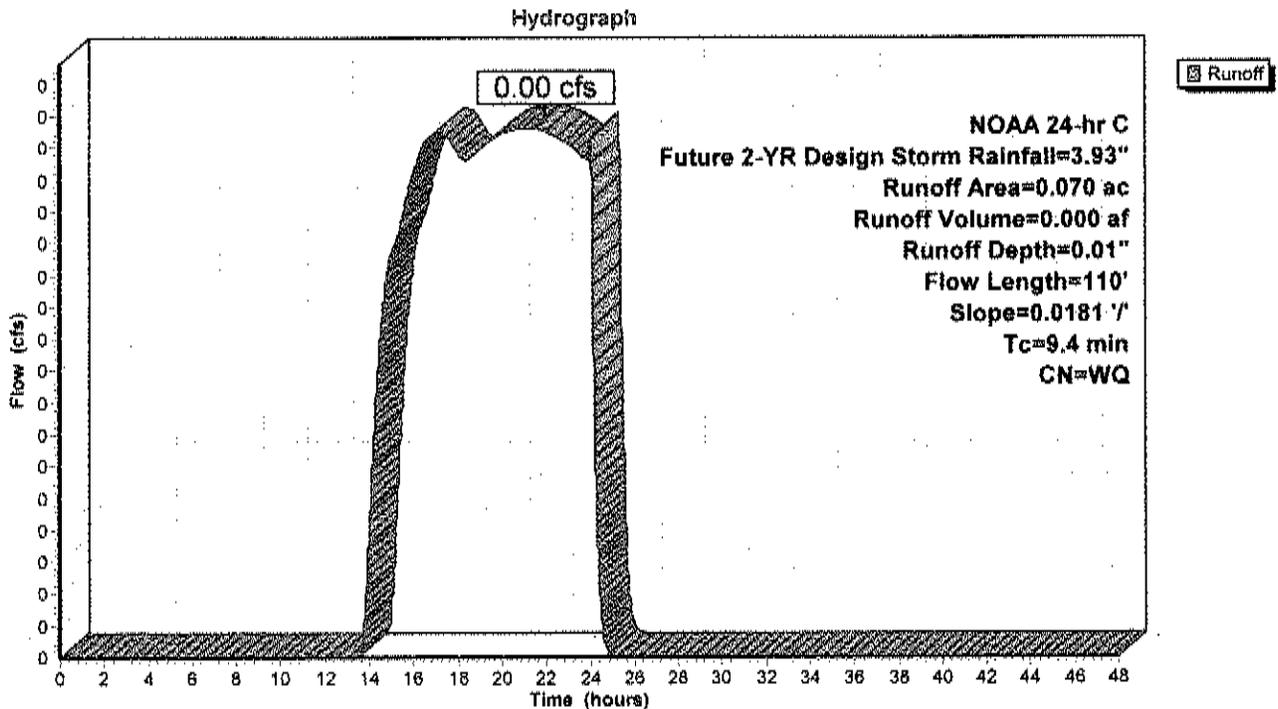
Runoff = 0.00 cfs @ 21.37 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0181	0.18		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
9.4	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Summary for Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**

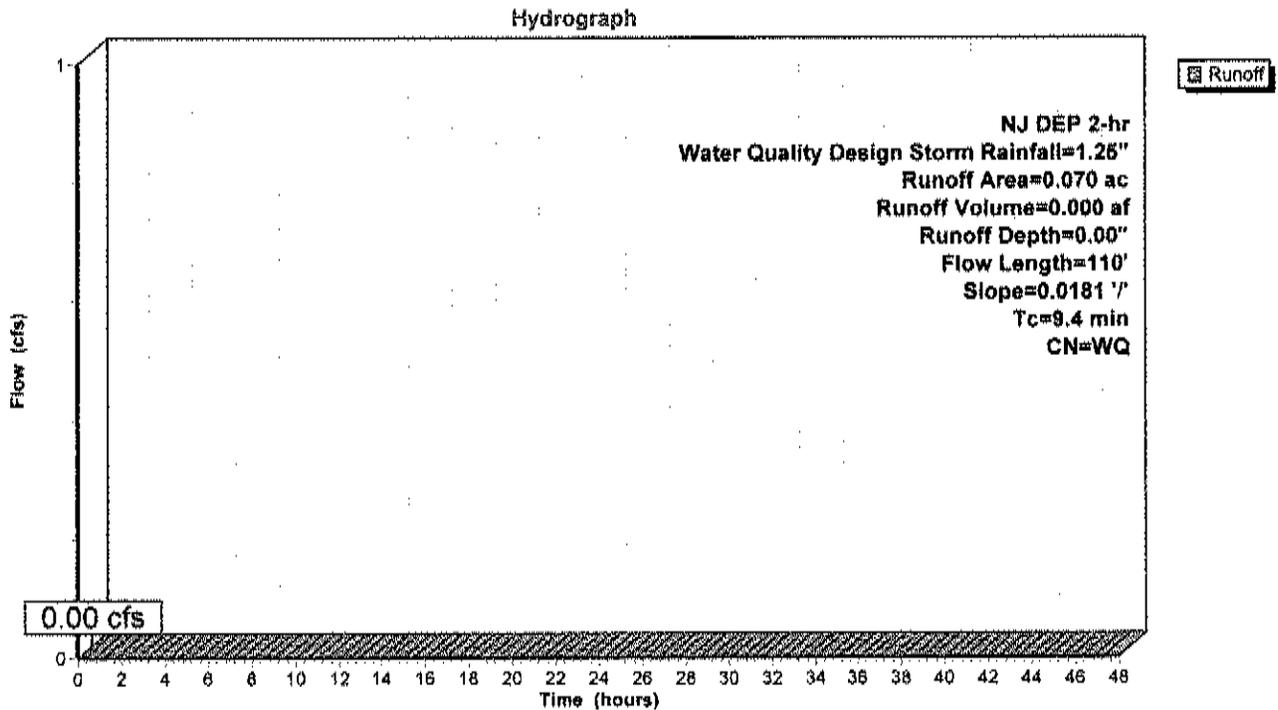
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.020	39	Grass/landscaping
* 0.050	30	Woodland
0.070		Weighted Average
0.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0181	0.18		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.2	10	0.0181	0.94		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
9.4	110	Total			

**Subcatchment 2PP: Watershed #2 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

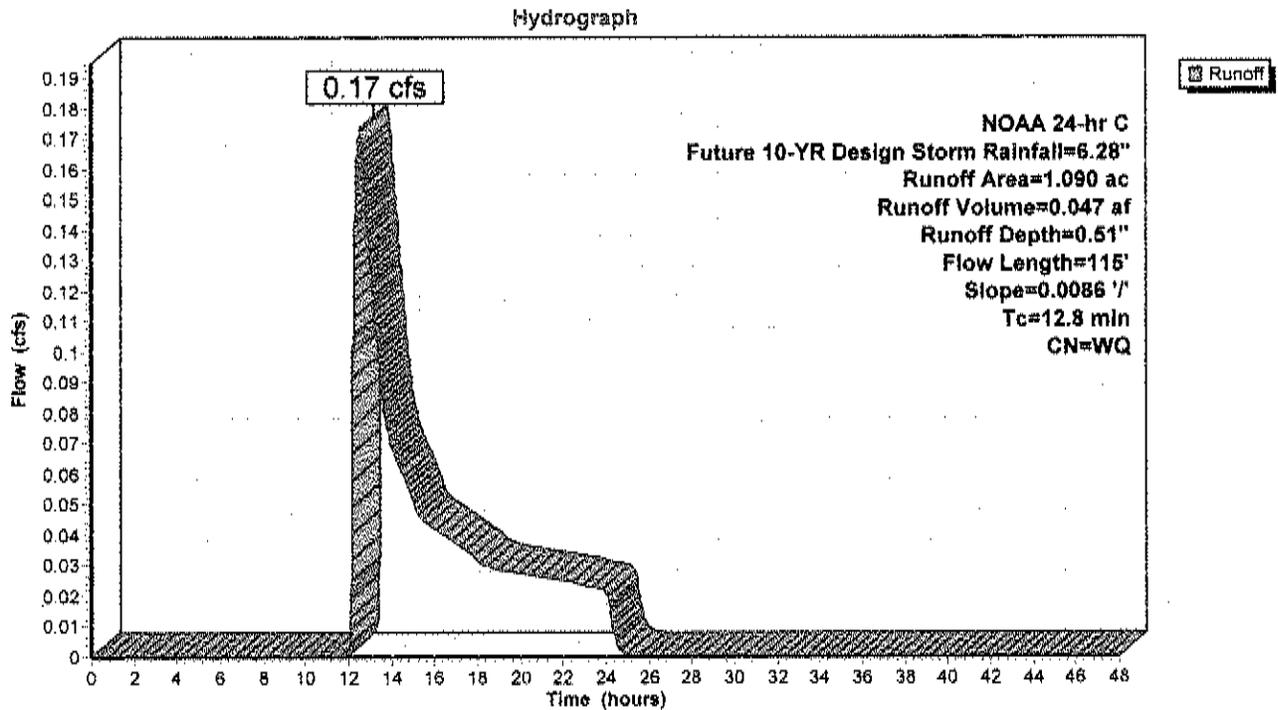
Runoff = 0.17 cfs @ 12.57 hrs, Volume= 0.047 af, Depth= 0.51"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0086	0.13		<b>Sheet Flow, Grass/landscaping</b> Grass: Short n= 0.150 P2= 3.93"
0.4	15	0.0086	0.65		<b>Shallow Concentrated Flow, Grass/landscaping</b> Short Grass Pasture Kv= 7.0 fps
12.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

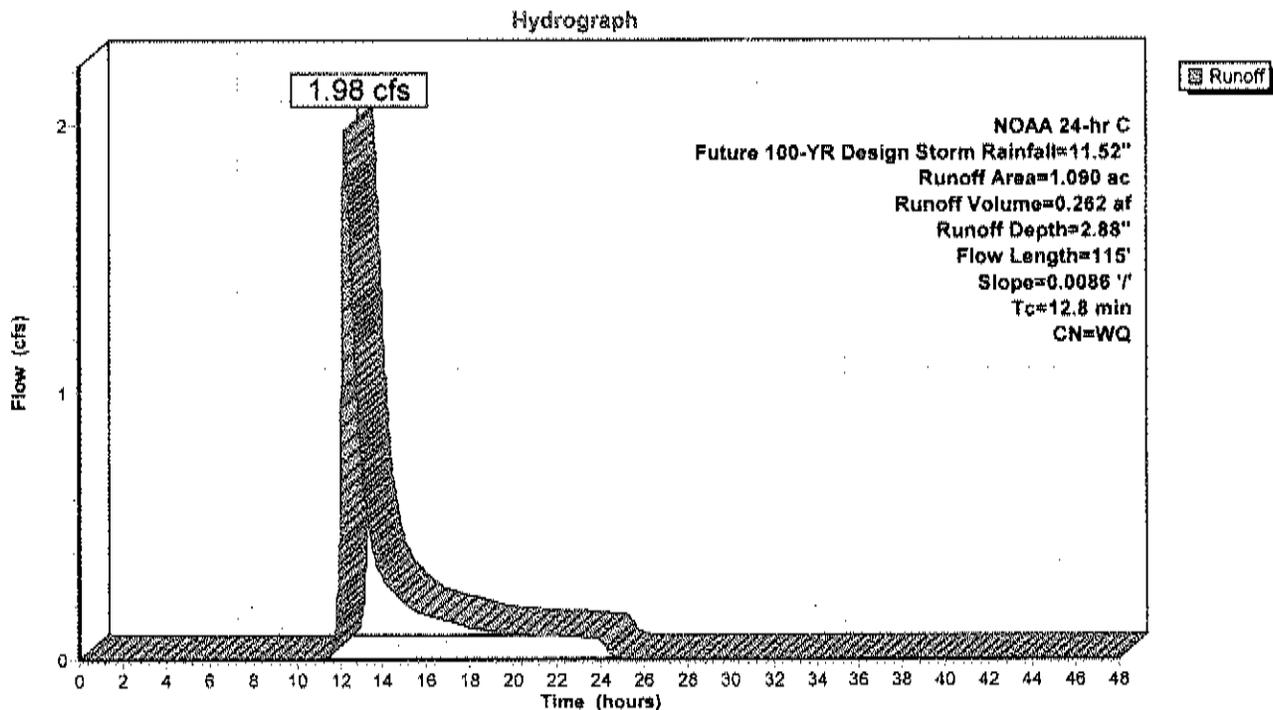
Runoff = 1.98 cfs @ 12.26 hrs, Volume= 0.262 af, Depth= 2.88"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0086	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
12.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

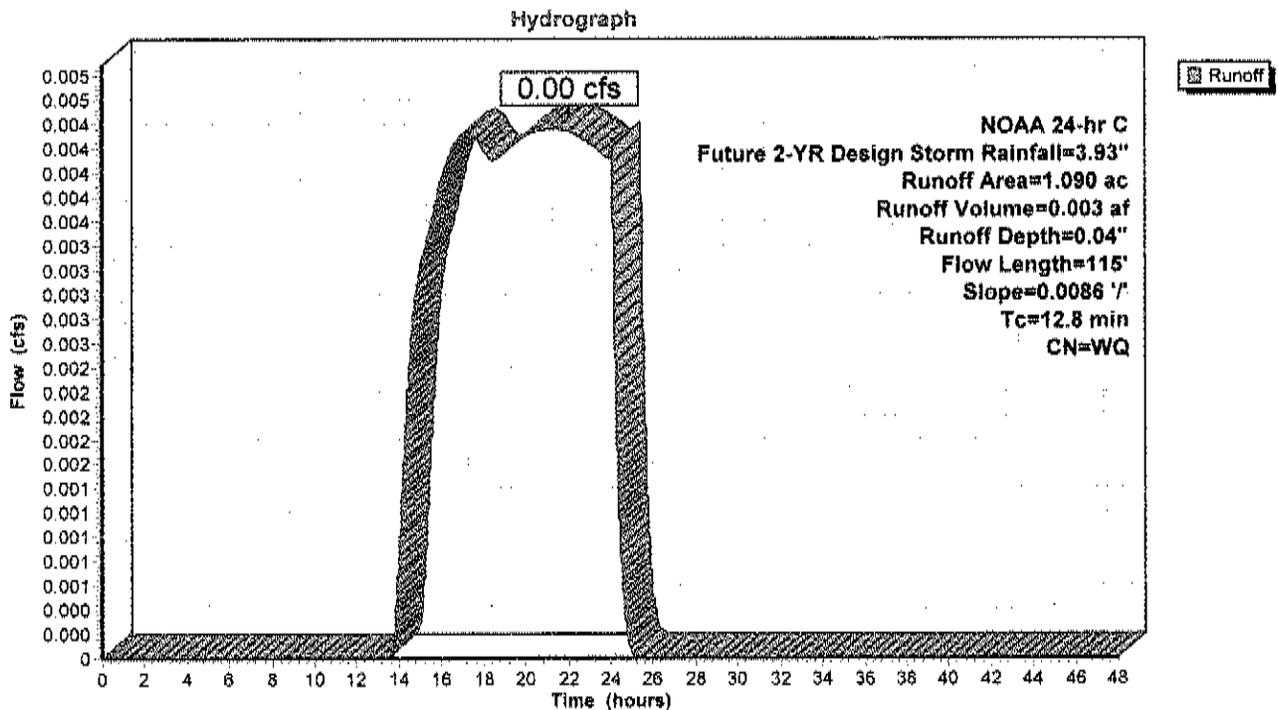
Runoff = 0.00 cfs @ 21.40 hrs, Volume= 0.003 af, Depth= 0.04"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0086	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
12.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Summary for Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**

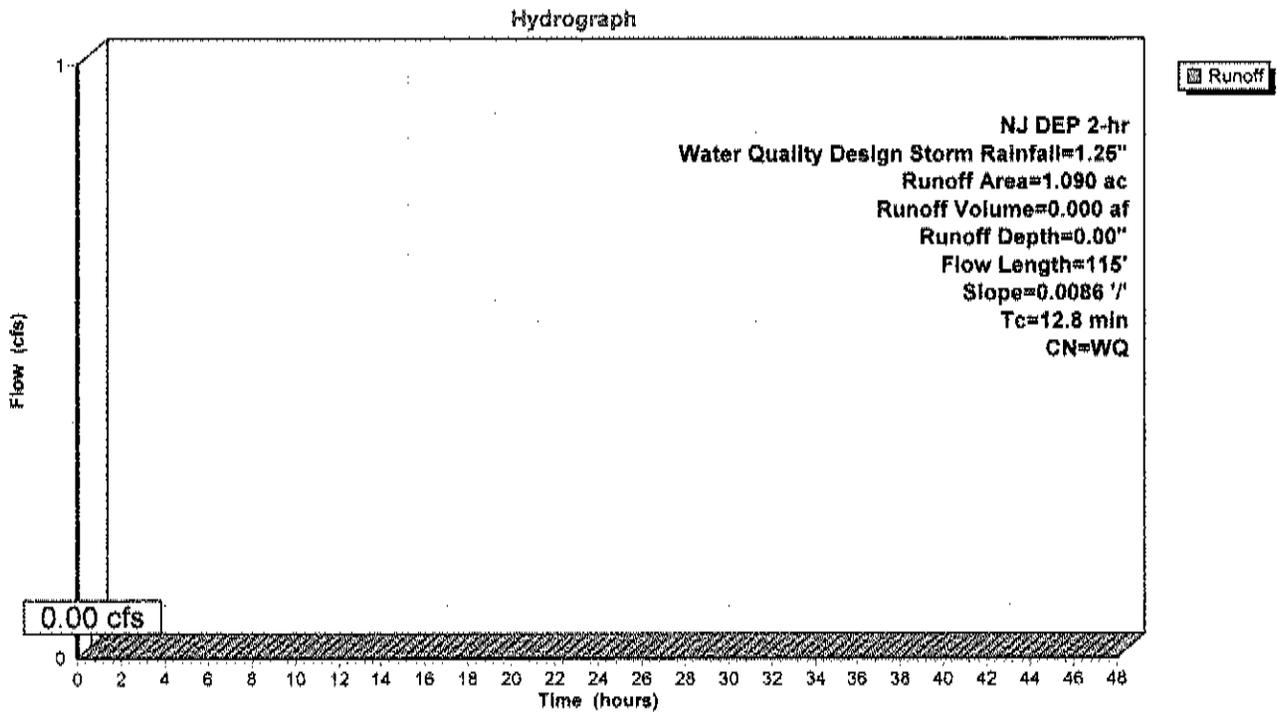
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.050	39	Grass/landscaping
* 0.040	30	Woodland
1.090		Weighted Average
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0086	0.13		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"
0.4	15	0.0086	0.65		Shallow Concentrated Flow, Grass/landscaping Short Grass Pasture Kv= 7.0 fps
12.8	115	Total			

**Subcatchment 2APP: Watershed #2A Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	2API	0.00	0.00	164.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

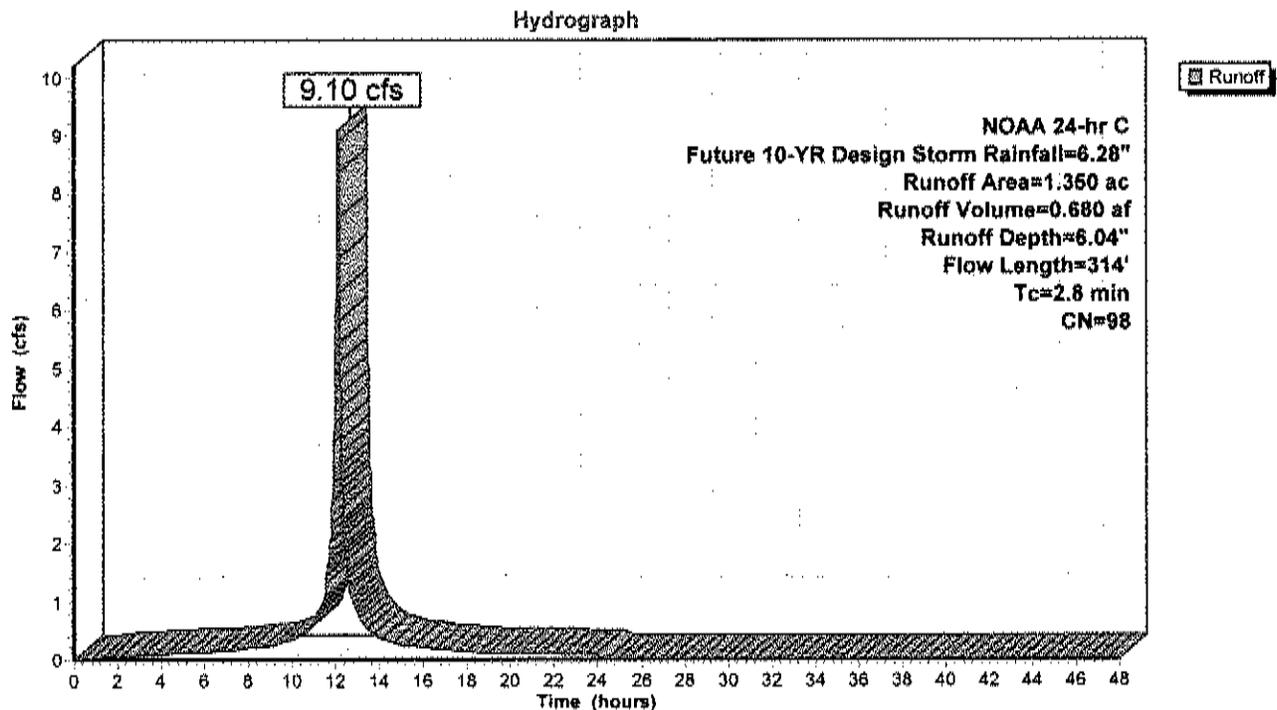
Runoff = 9.10 cfs @ 12.11 hrs, Volume= 0.680 af, Depth= 6.04"  
 Routed to Pond 2AP : Stormwater Basin #2A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0065	0.97		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.8	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 16.74 cfs @ 12.11 hrs, Volume= 1.269 af, Depth=11.28"  
 Routed to Pond 2AP : Stormwater Basin #2A

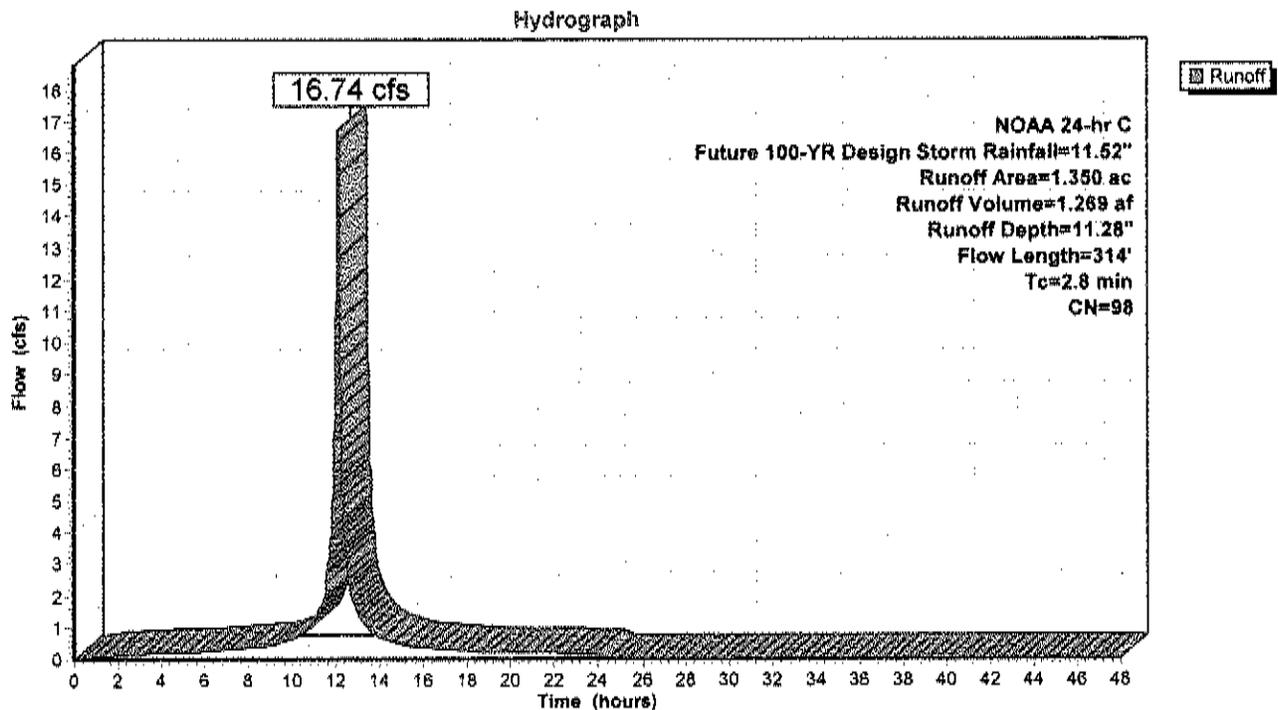
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0065	0.97		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.5	50	0.0065	1.64		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.8	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 5.67 cfs @ 12.11 hrs, Volume= 0.416 af, Depth= 3.70"  
 Routed to Pond 2AP : Stormwater Basin #2A

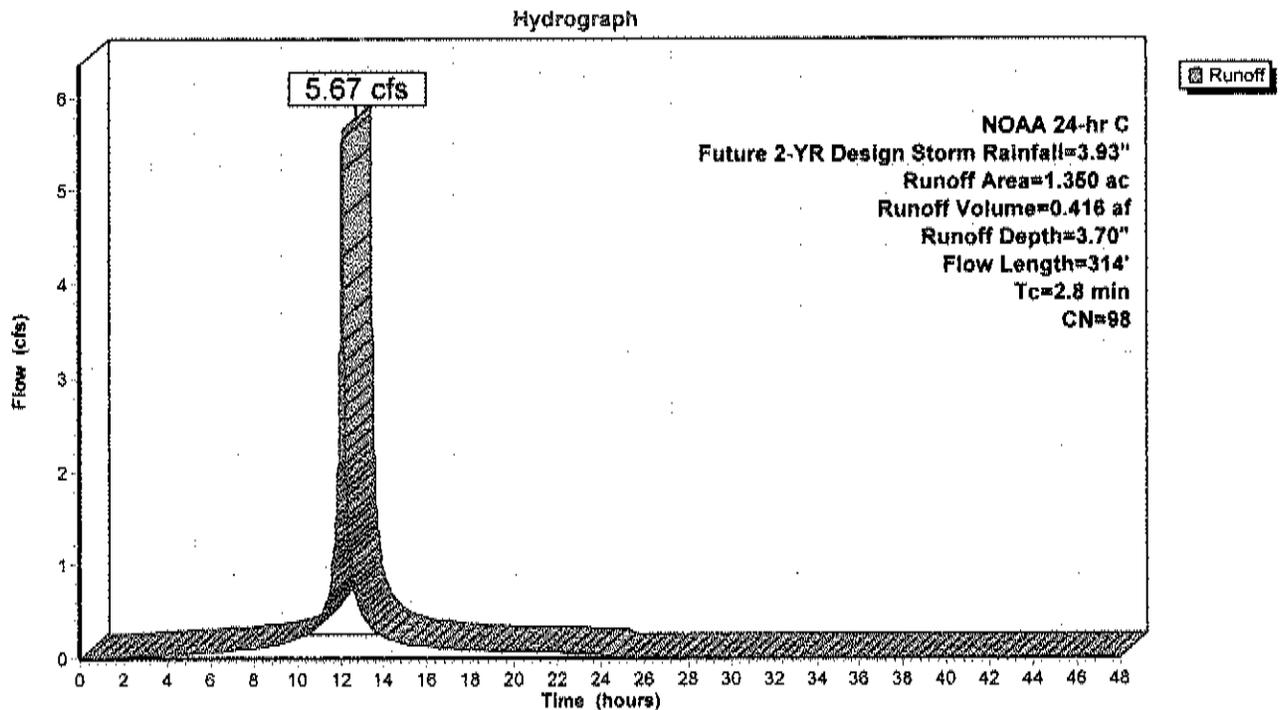
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0065	0.97		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.5	50	0.0065	1.64		<b>Shallow Concentrated Flow, impervious</b> Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.8	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Summary for Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**

Runoff = 3.96 cfs @ 1.09 hrs, Volume= 0.116 af, Depth= 1.03"  
 Routed to Pond 2AP : Stormwater Basin #2A

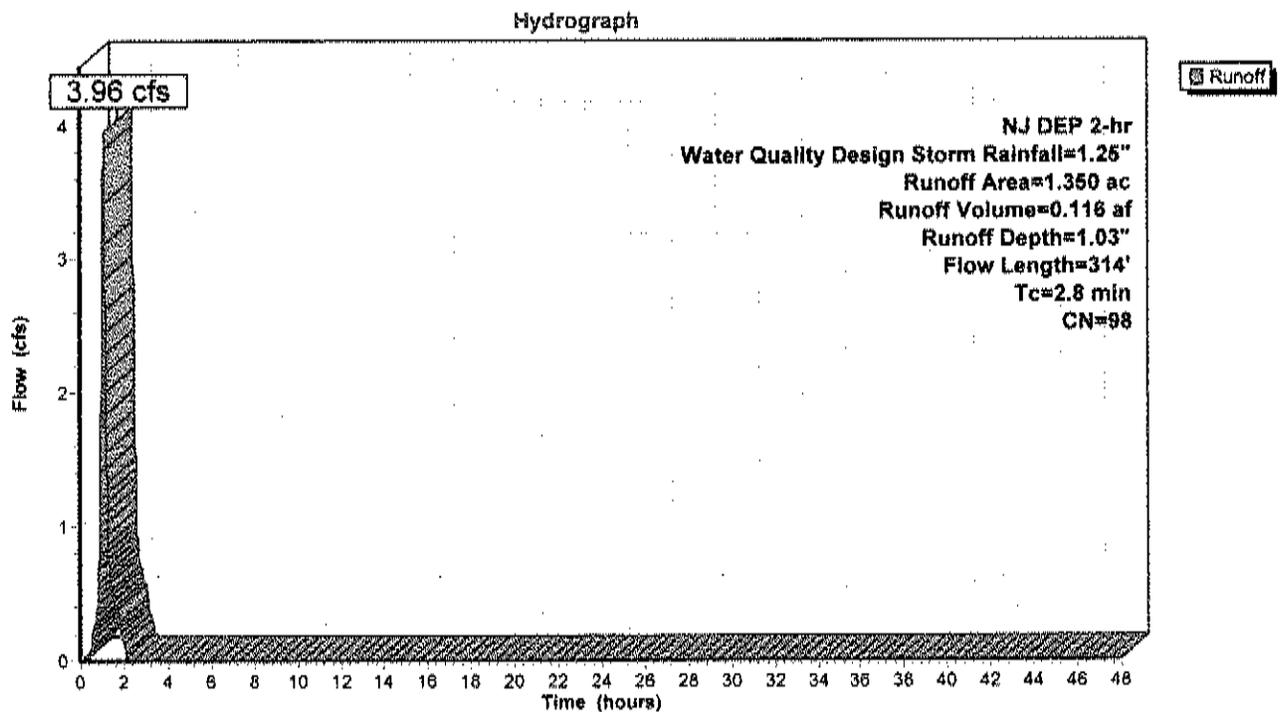
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 1.350	98	Impervious
1.350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0065	0.97		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
0.5	50	0.0065	1.64		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.6	164	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.8	314	Total			

**Subcatchment 2API: Watershed #2A Post-Development Impervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 2.70" for Future 10-YR Design Storm event  
 Inflow = 9.11 cfs @ 12.11 hrs, Volume= 0.726 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.18' @ 25.41 hrs Surf.Area= 0.587 ac Storage= 0.726 af

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

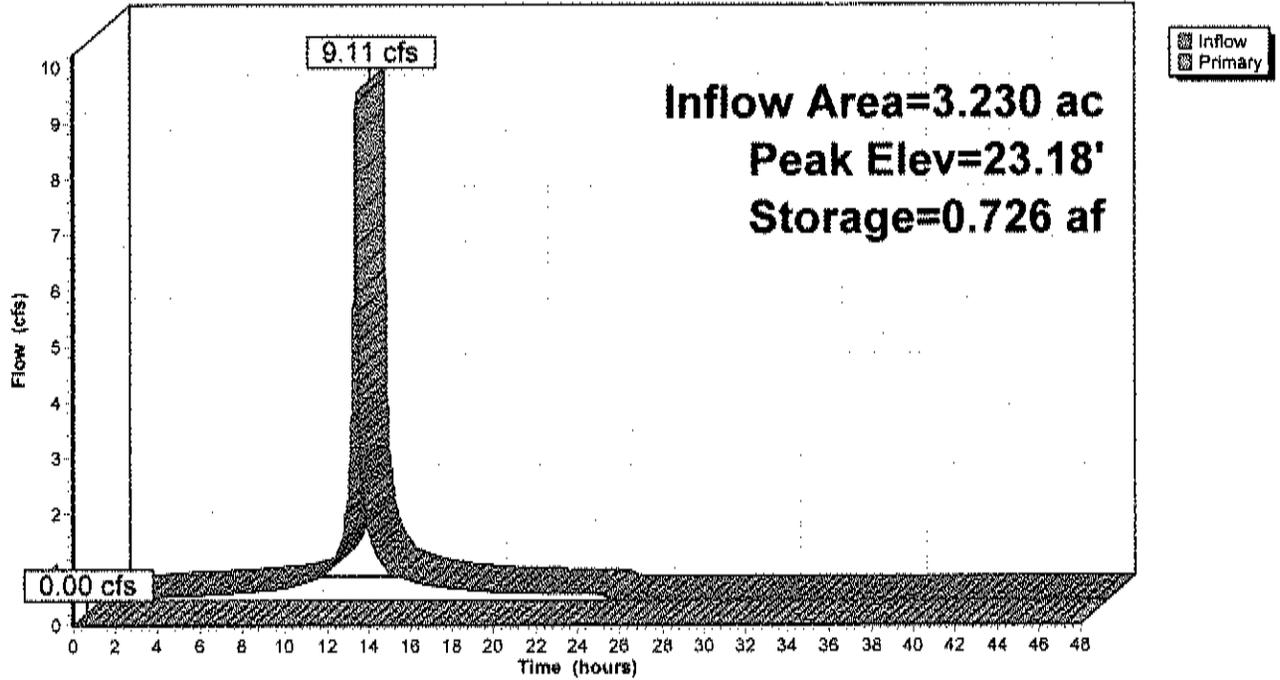
Volume	Invert	Avail.Storage	Storage Description
#1	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 ↑1=Orifice/Grate ( Controls 0.00 cfs)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 6.09" for Future 100-YR Design Storm event  
 Inflow = 17.85 cfs @ 12.11 hrs, Volume= 1.638 af  
 Outflow = 0.12 cfs @ 24.19 hrs, Volume= 0.279 af, Atten= 99%, Lag= 724.7 min  
 Primary = 0.12 cfs @ 24.19 hrs, Volume= 0.279 af  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.50' @ 24.19 hrs Surf.Area= 0.676 ac Storage= 1.555 af

Plug-Flow detention time= 1,397.5 min calculated for 0.279 af (17% of inflow)  
 Center-of-Mass det. time= 1,070.8 min ( 1,854.6 - 783.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)

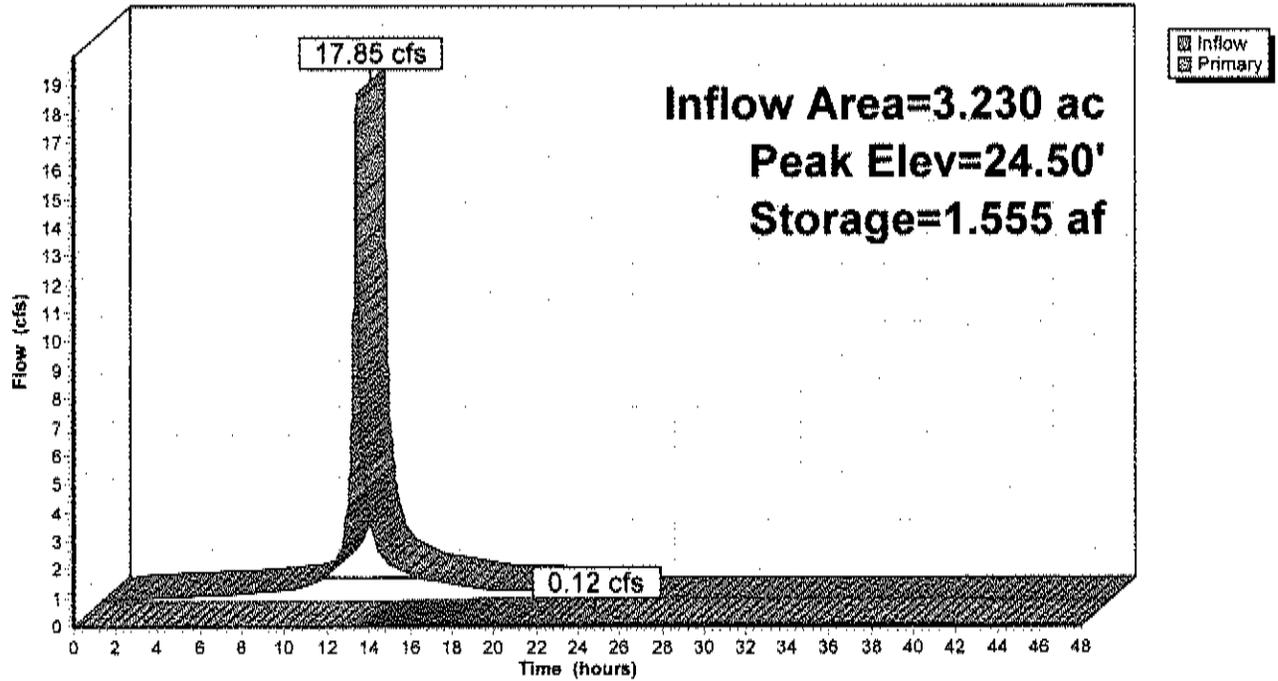
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 24.19 hrs HW=24.50' (Free Discharge)  
 ←1=Orifice/Grate (Orifice Controls 0.12 cfs @ 3.54 fps)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% impervious, Inflow Depth = 1.56" for Future 2-YR Design Storm event  
 Inflow = 5.67 cfs @ 12.11 hrs, Volume= 0.419 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.64' @ 25.41 hrs Surf.Area= 0.553 ac Storage= 0.419 af

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	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)

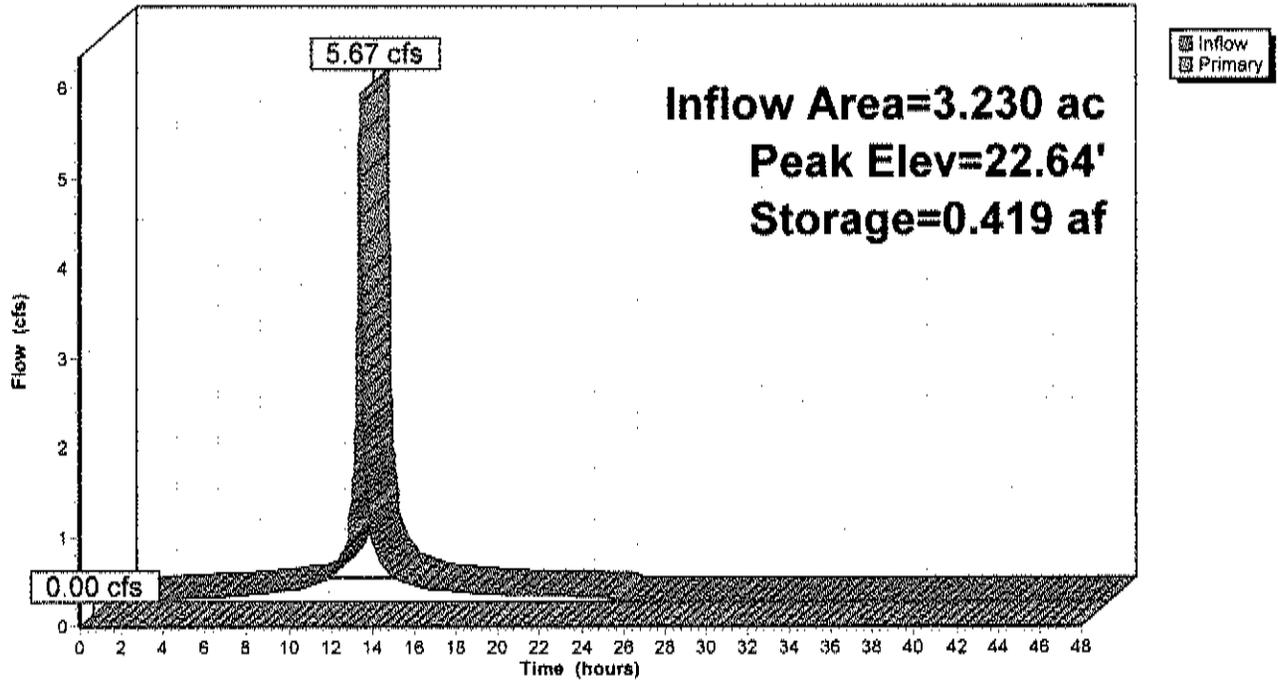
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 1=Orifice/Grate ( Controls 0.00 cfs)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Summary for Pond 2AP: Stormwater Basin #2A**

Inflow Area = 3.230 ac, 47.68% Impervious, Inflow Depth = 0.43" for Water Quality Design Storm event  
 Inflow = 3.96 cfs @ 1.09 hrs, Volume= 0.116 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  
 Routed to Link DP4 : Discharge Point #4

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.08' @ 2.32 hrs Surf.Area= 0.518 ac Storage= 0.116 af

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	21.85'	2.270 af	Custom Stage Data (Prismatic) Listed below (Recalc)

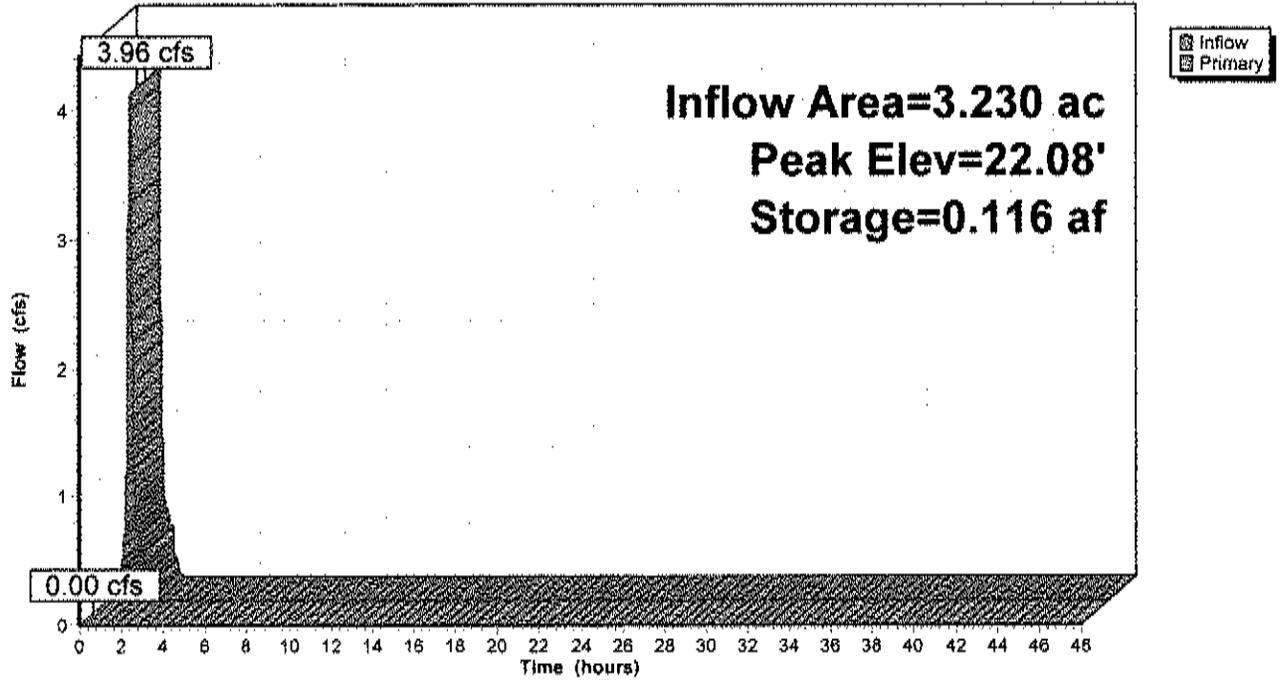
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
21.85	0.501	0.000	0.000
22.00	0.513	0.076	0.076
23.00	0.575	0.544	0.620
24.00	0.641	0.608	1.228
25.00	0.712	0.676	1.905
25.50	0.749	0.365	2.270

Device	Routing	Invert	Outlet Devices
#1	Primary	23.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=21.85' (Free Discharge)  
 ↳1=Orifice/Grate ( Controls 0.00 cfs)

### Pond 2AP: Stormwater Basin #2A

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

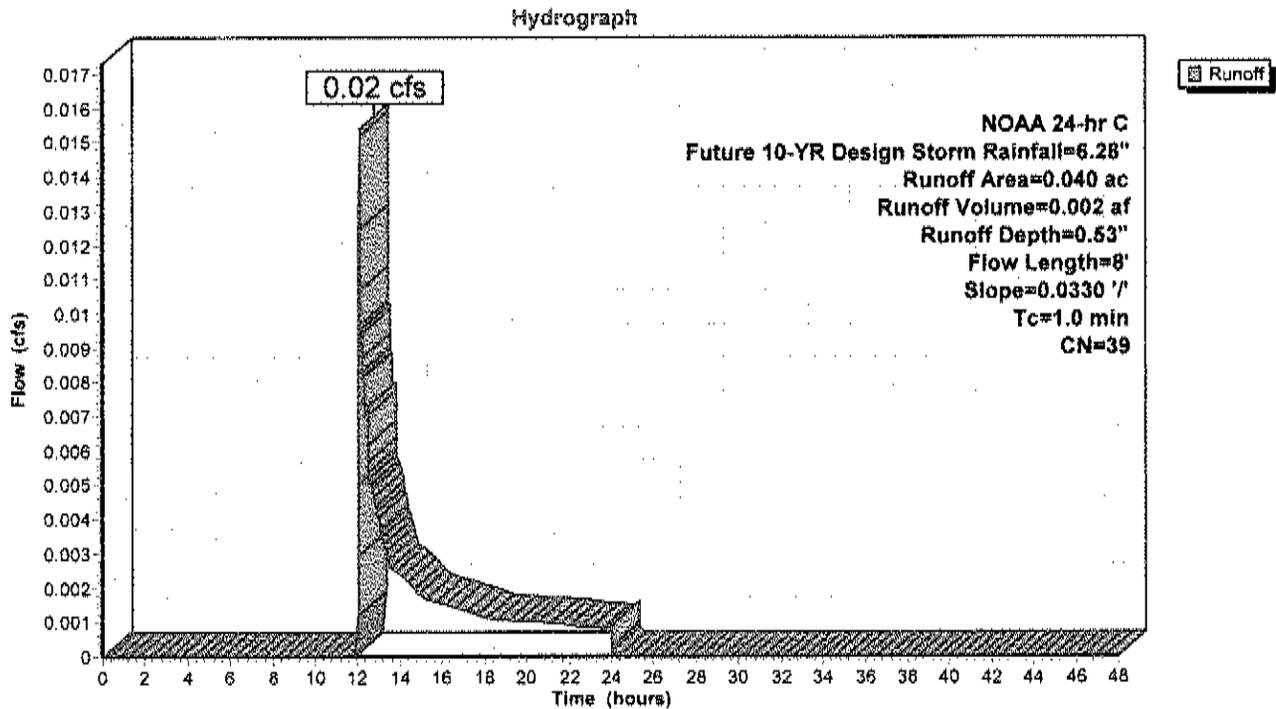
Runoff = 0.02 cfs @ 12.11 hrs, Volume= 0.002 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.14		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**



**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

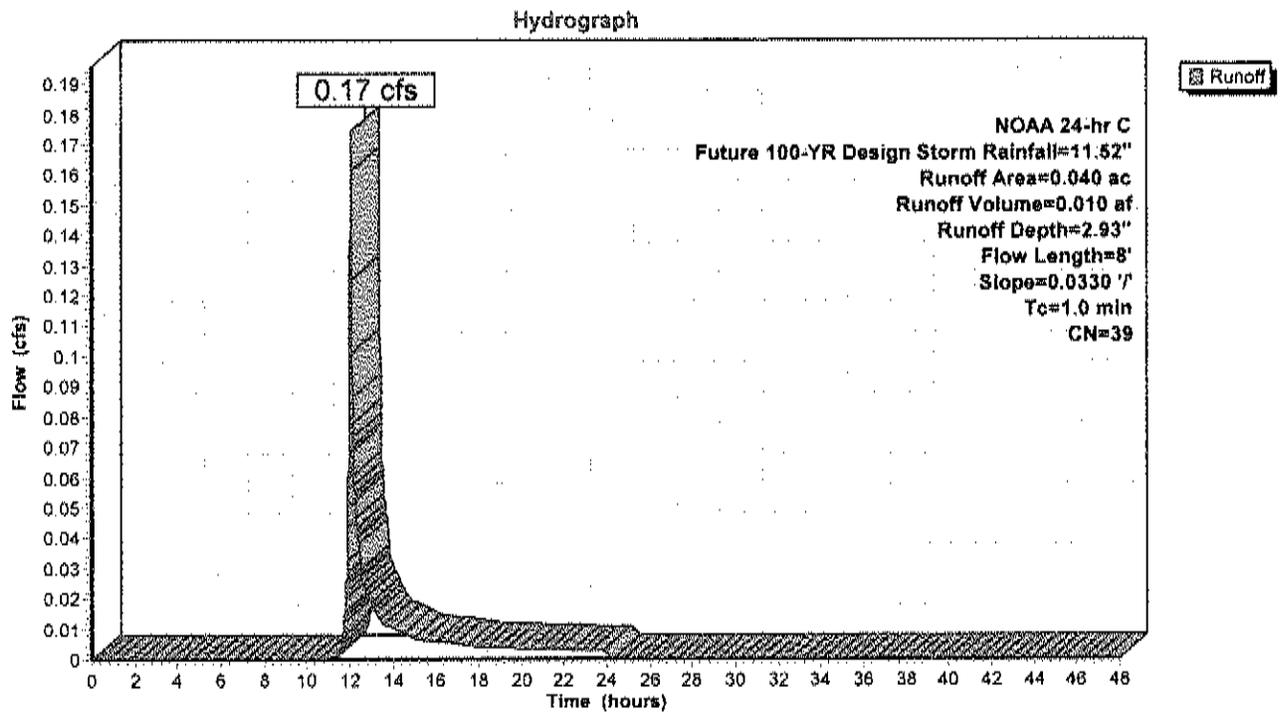
Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.14		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**





**Summary for Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**

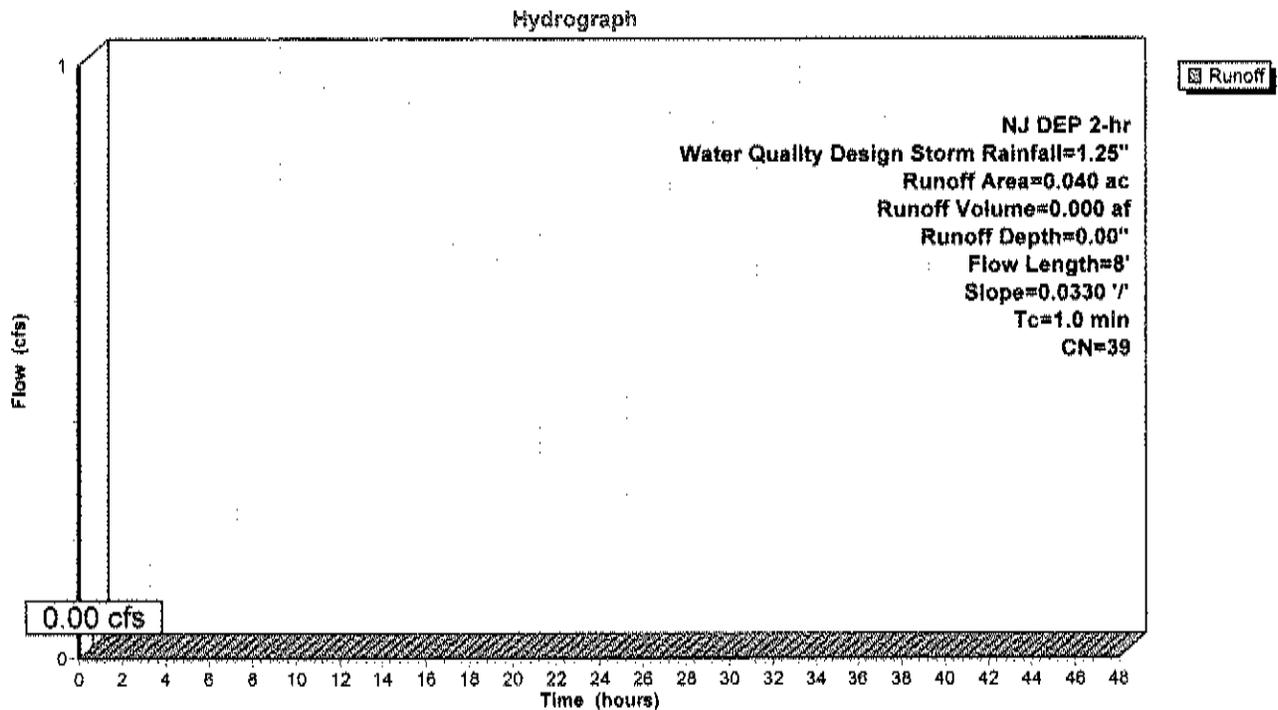
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	8	0.0330	0.14		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 3PP: Watershed #3 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

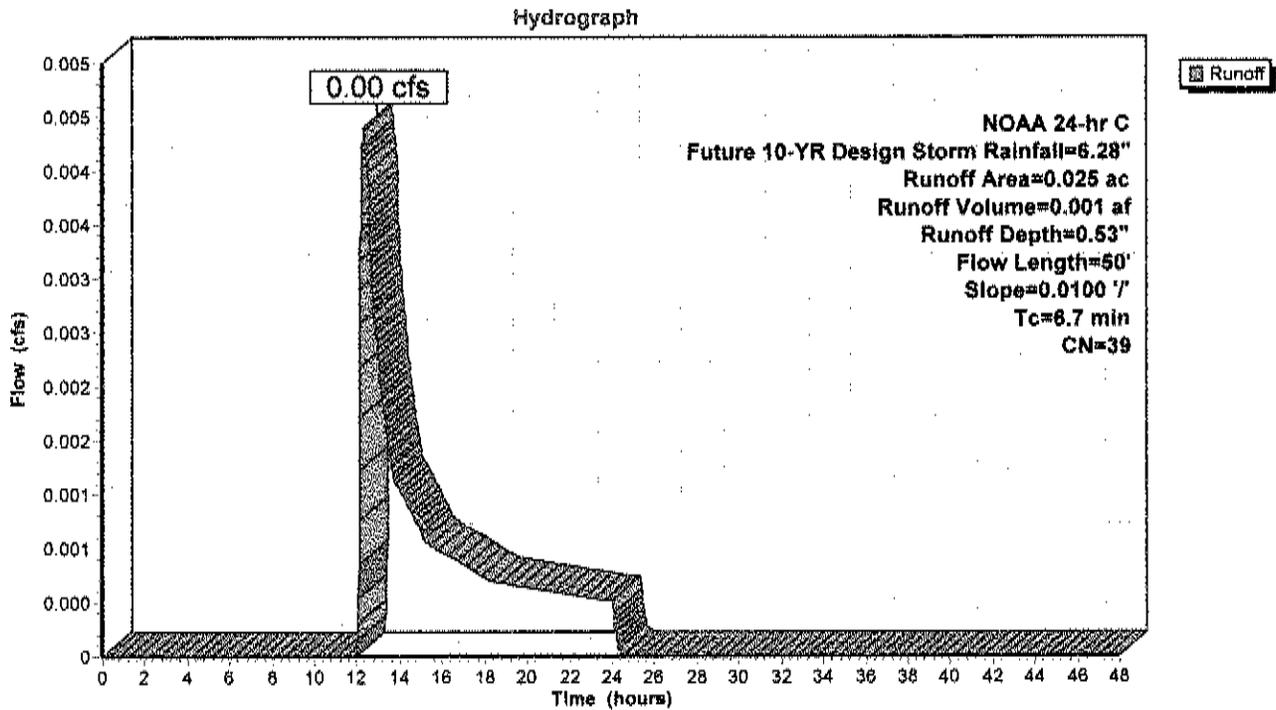
Runoff = 0.00 cfs @ 12.35 hrs, Volume= 0.001 af, Depth= 0.53"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0100	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

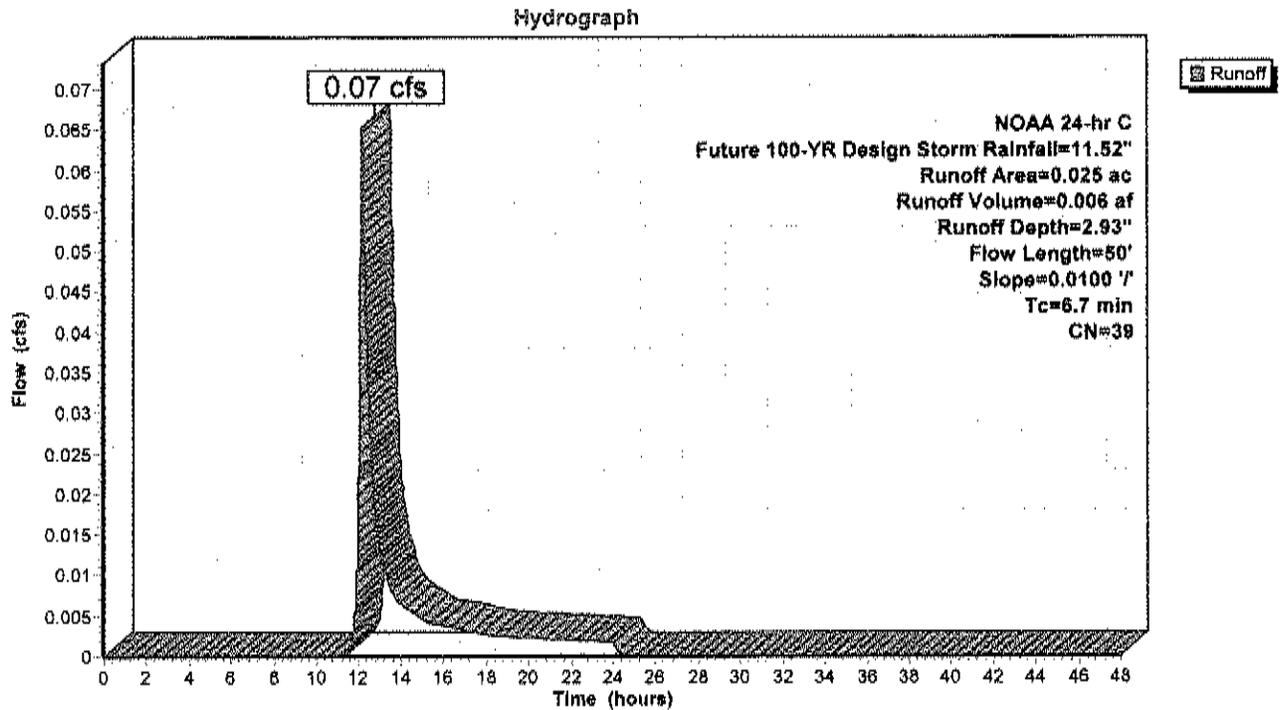
Runoff = 0.07 cfs @ 12.16 hrs, Volume= 0.006 af, Depth= 2.93"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0100	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

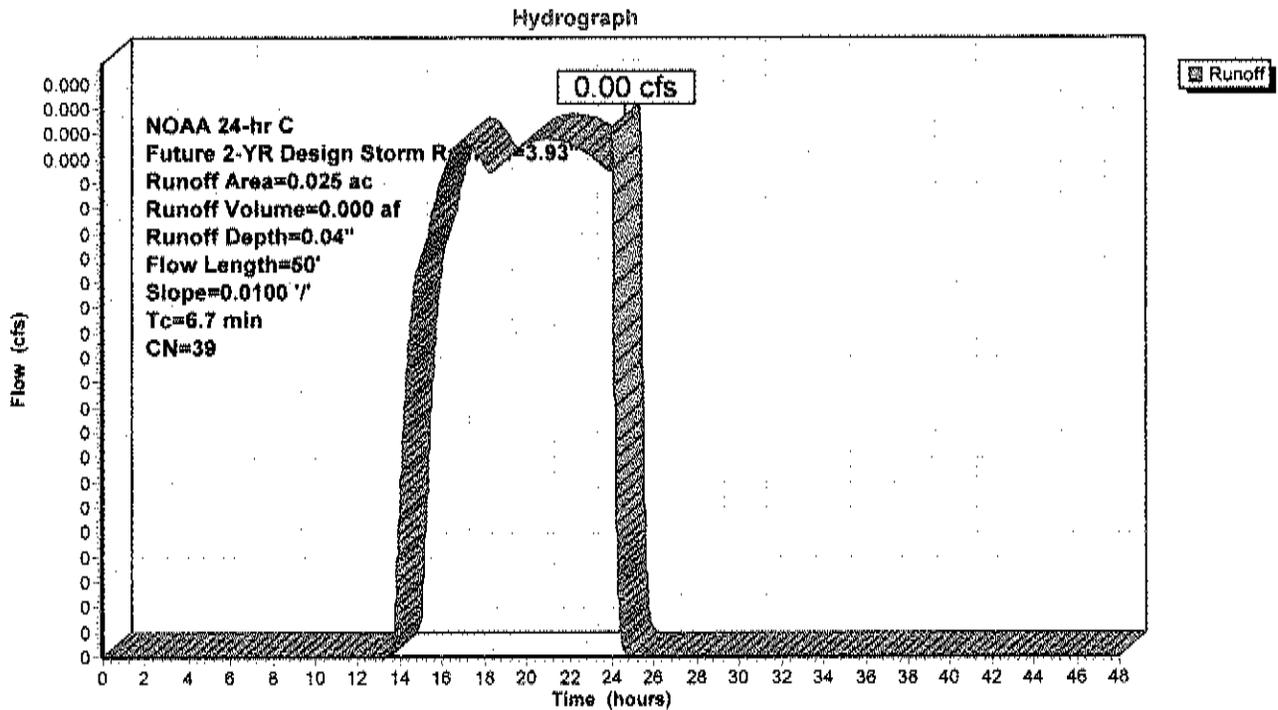
Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.000 af, Depth= 0.04"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0100	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**

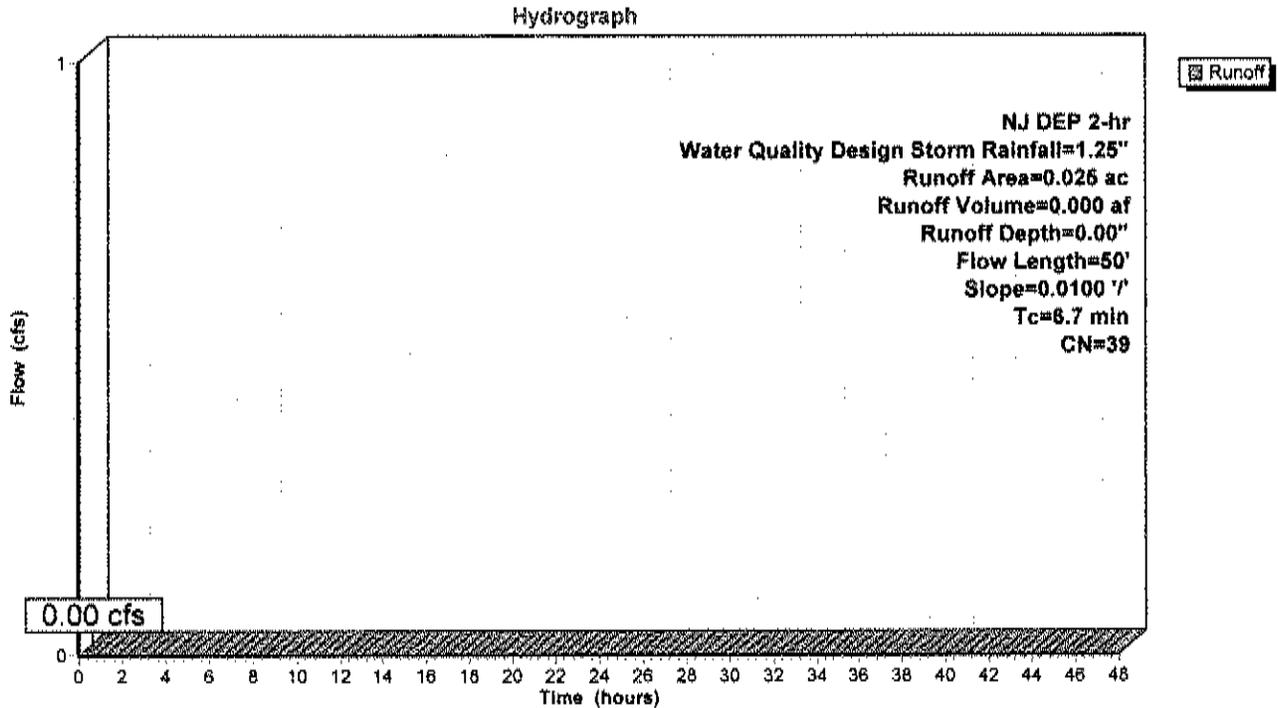
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link DP4 : Discharge Point #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.025	39	Grass/landscaping
0.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0100	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 4PP: Watershed #4 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

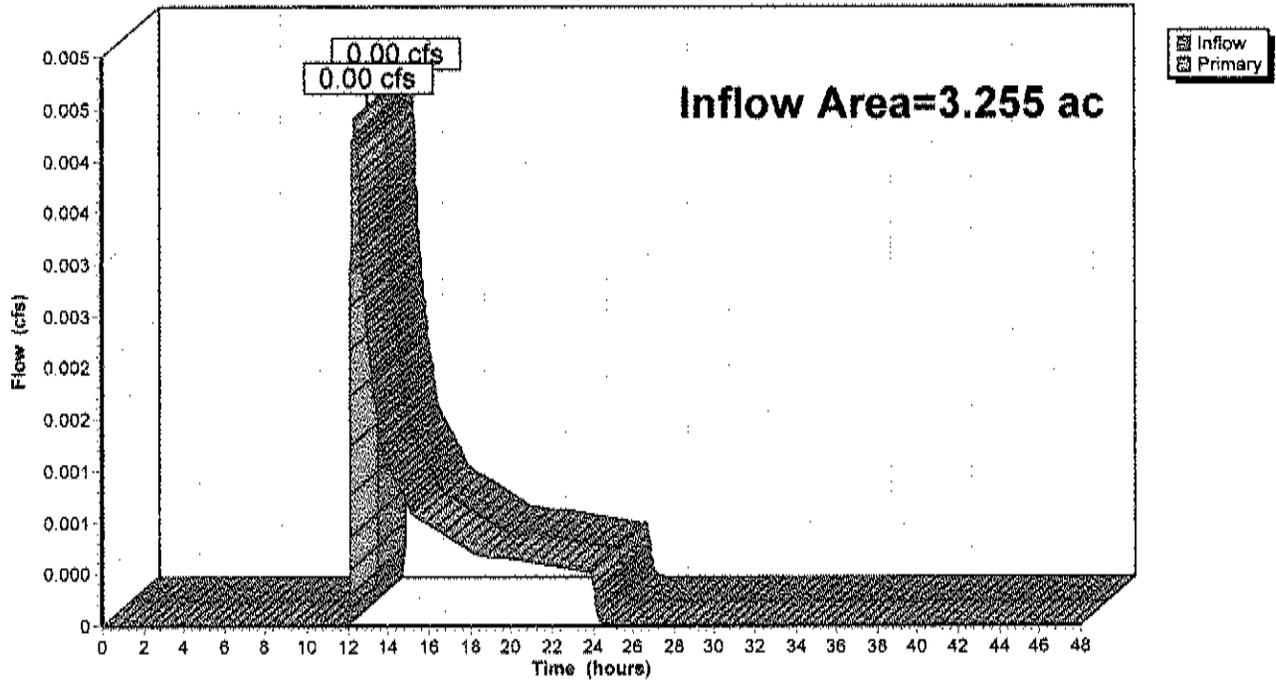
### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth = 0.00" for Future 10-YR Design Storm event  
Inflow = 0.00 cfs @ 12.35 hrs, Volume= 0.001 af  
Primary = 0.00 cfs @ 12.35 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4

Hydrograph

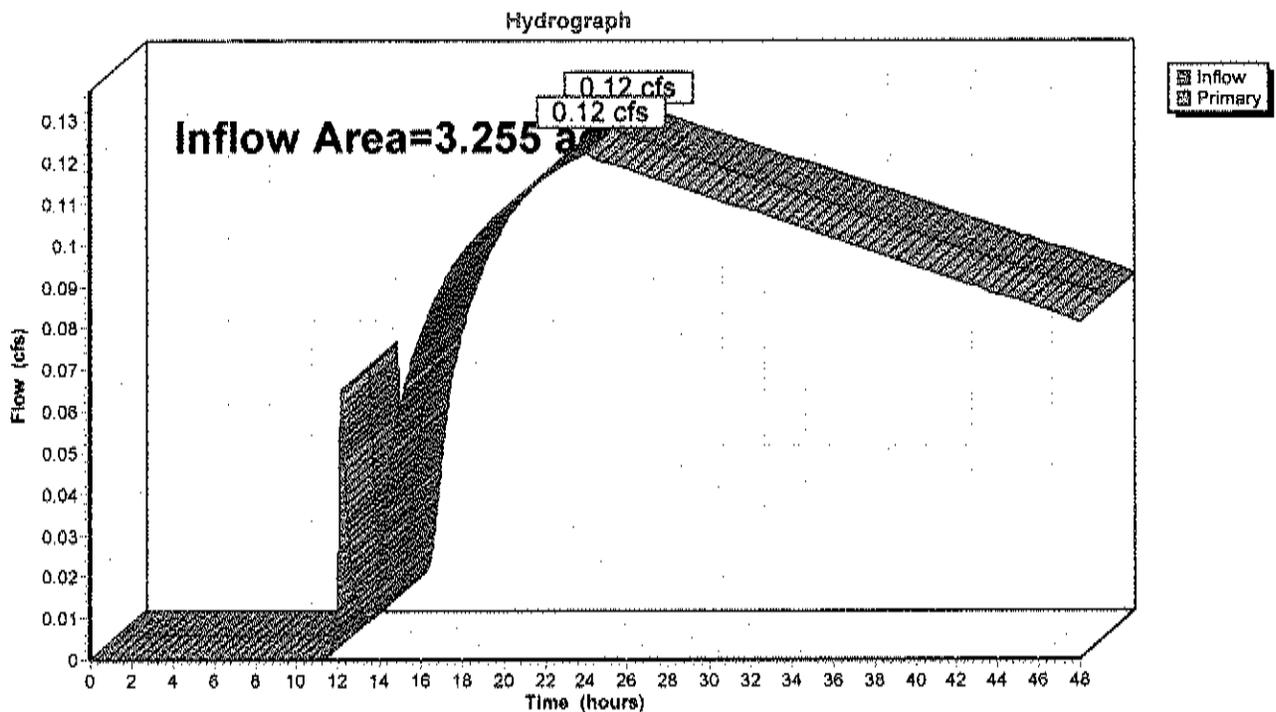


### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth > 1.05" for Future 100-YR Design Storm event  
Inflow = 0.12 cfs @ 24.03 hrs, Volume= 0.285 af  
Primary = 0.12 cfs @ 24.03 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4





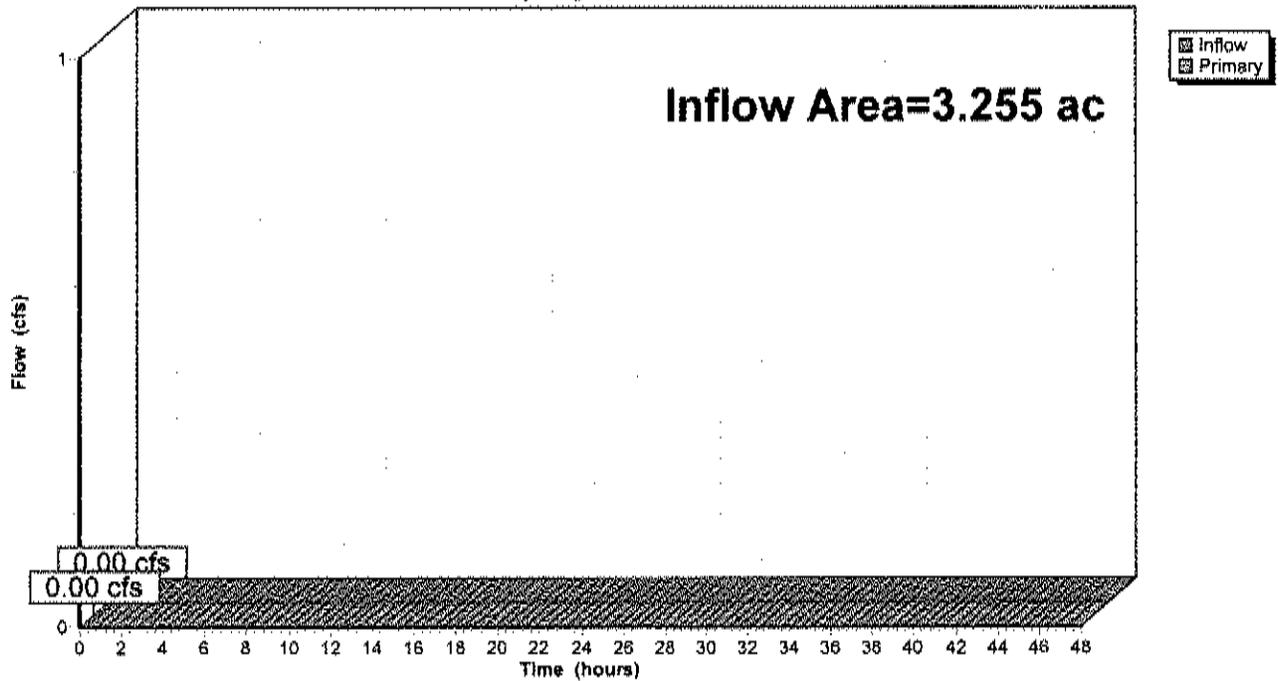
### Summary for Link DP4: Discharge Point #4

Inflow Area = 3.255 ac, 47.31% Impervious, Inflow Depth = 0.00" for Water Quality Design Storm event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP4: Discharge Point #4

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

Runoff = 0.06 cfs @ 12.24 hrs, Volume= 0.013 af, Depth= 0.53"  
 Routed to Pond 5P : Stormwater Basin #5

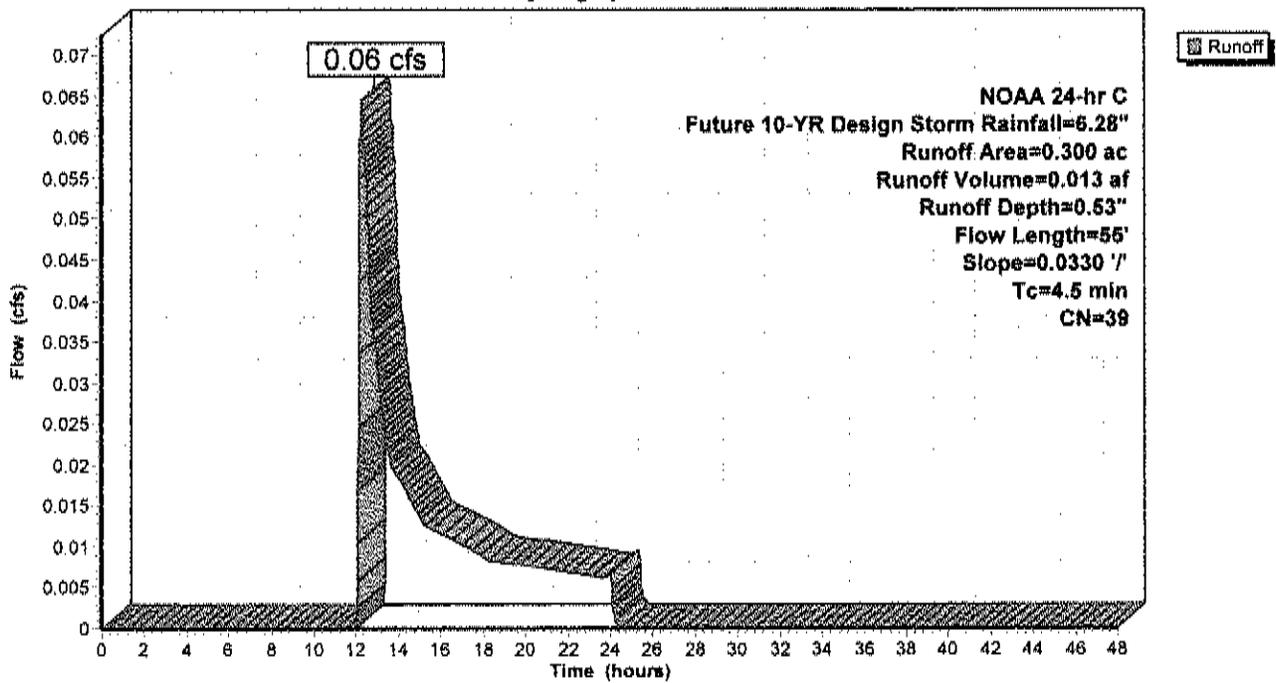
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

Hydrograph



**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

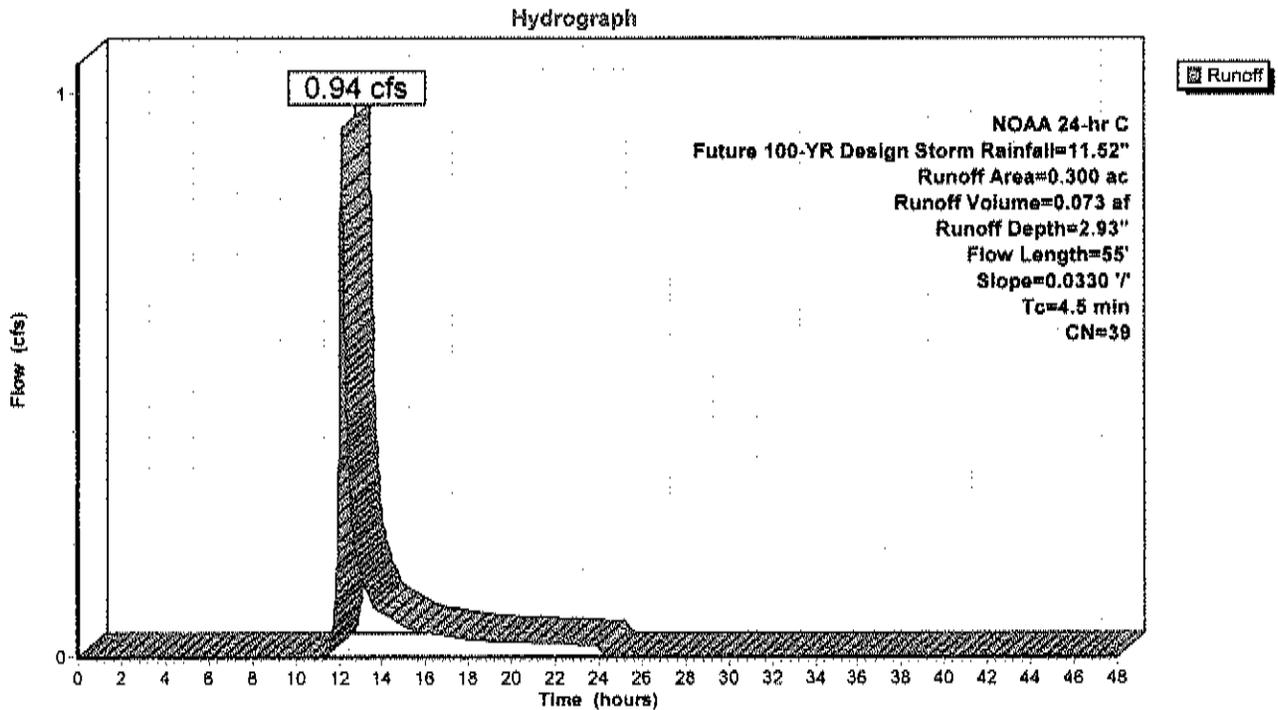
Runoff = 0.94 cfs @ 12.13 hrs, Volume= 0.073 af, Depth= 2.93"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**





**Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**

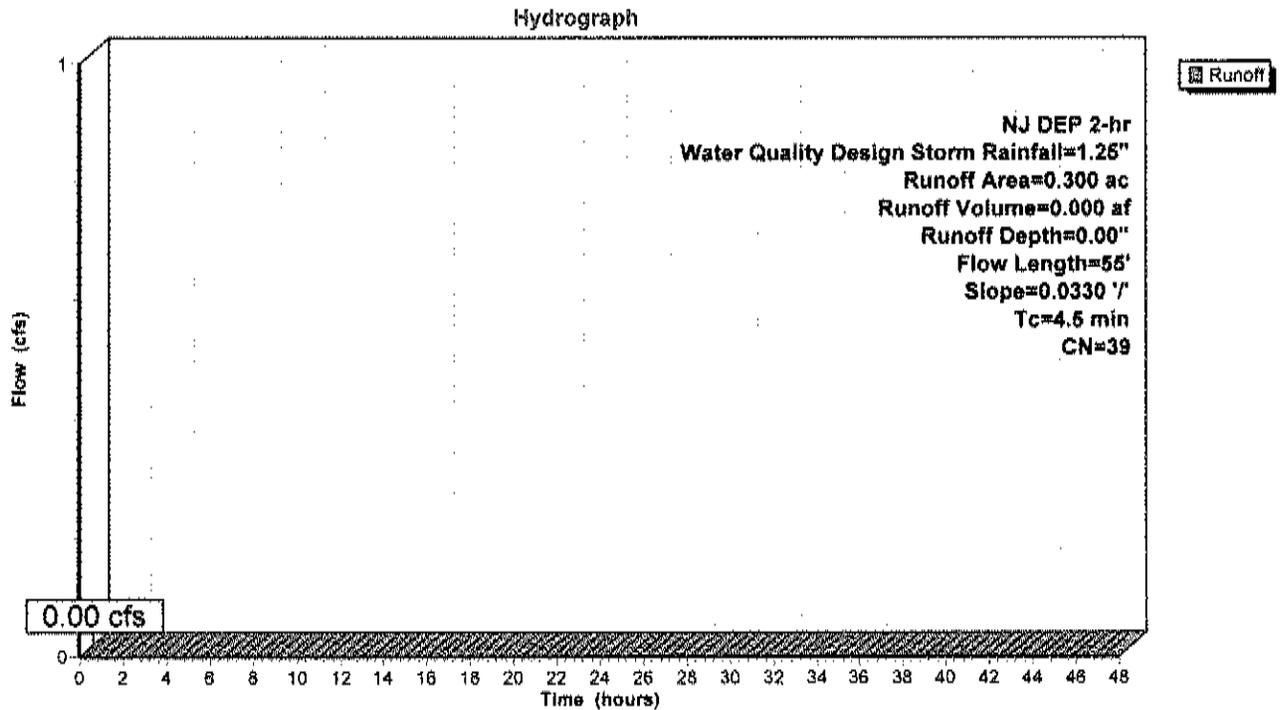
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5PP: Watershed #5 Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	5PI	0.00	0.00	28.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.70 cfs @ 12.11 hrs, Volume= 0.050 af, Depth= 6.04"  
 Routed to Pond 5P : Stormwater Basin #5

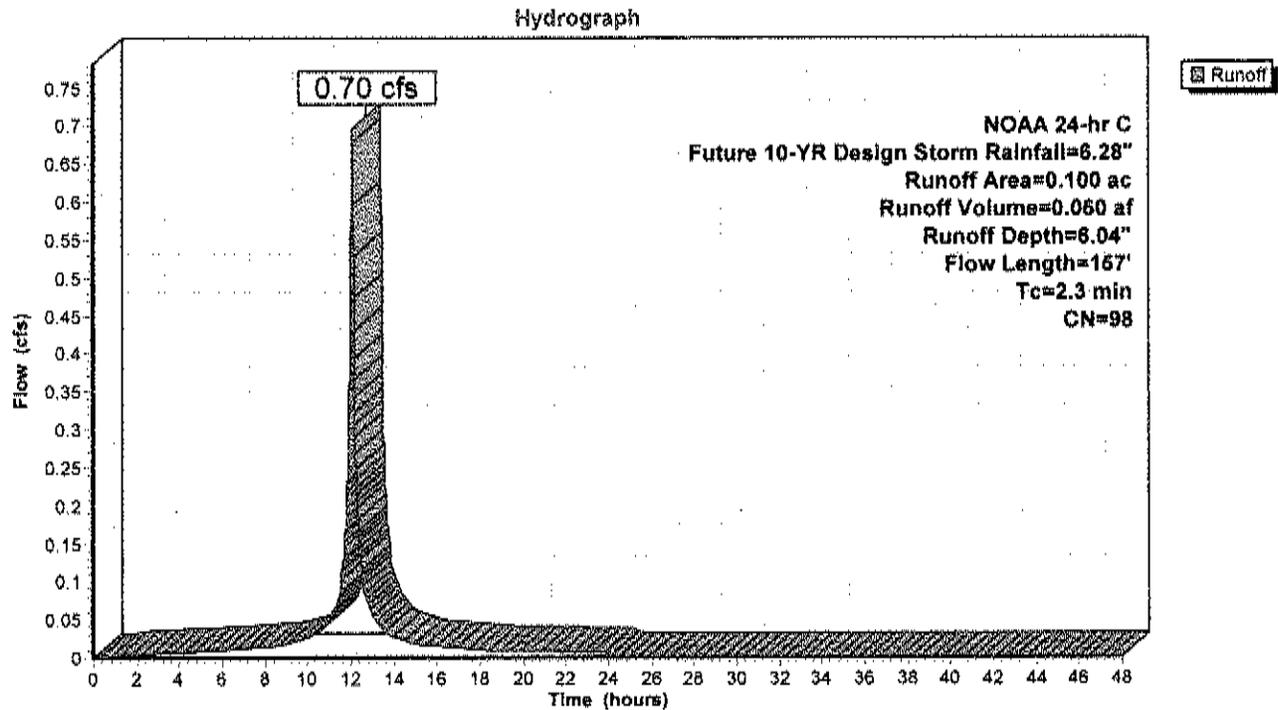
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.3	157	Total			

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 1.28 cfs @ 12.11 hrs, Volume= 0.094 af, Depth=11.28"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

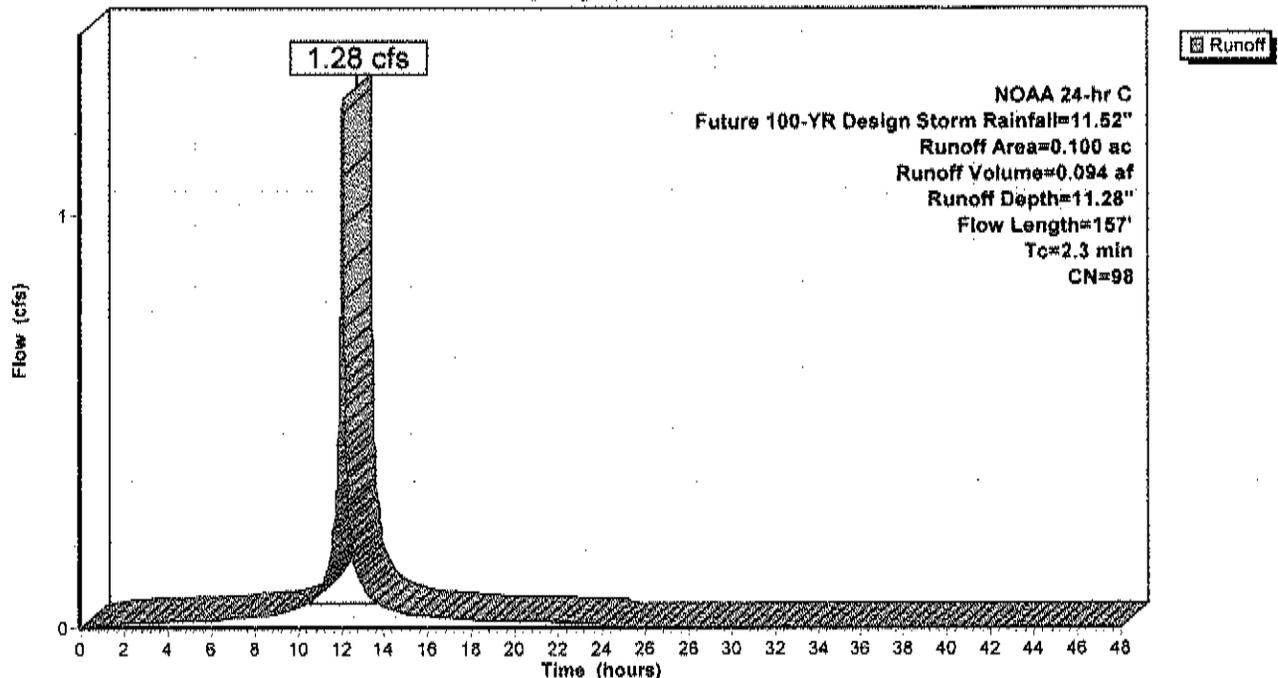
Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
0.6	45	0.0037	1.23		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.3	157	Total			

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.43 cfs @ 12.11 hrs, Volume= 0.031 af, Depth= 3.70"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

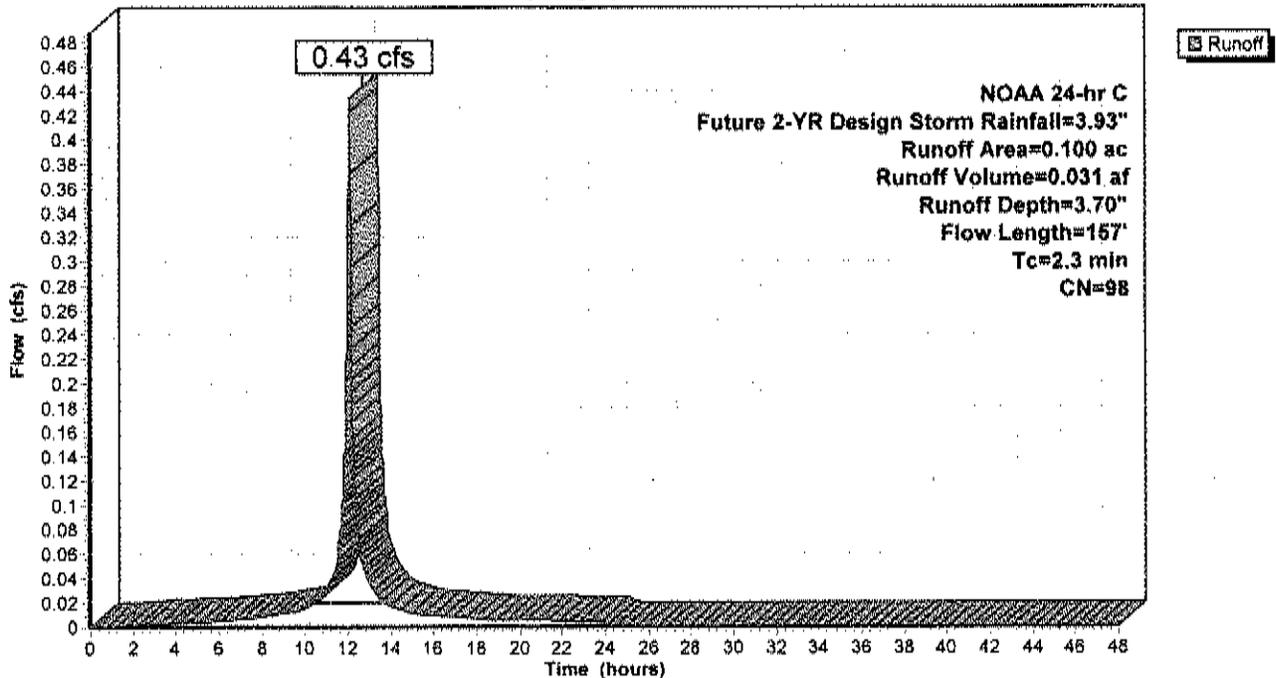
Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.3 157 Total

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Runoff = 0.30 cfs @ 1.09 hrs, Volume= 0.009 af, Depth= 1.03"  
 Routed to Pond 5P : Stormwater Basin #5

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

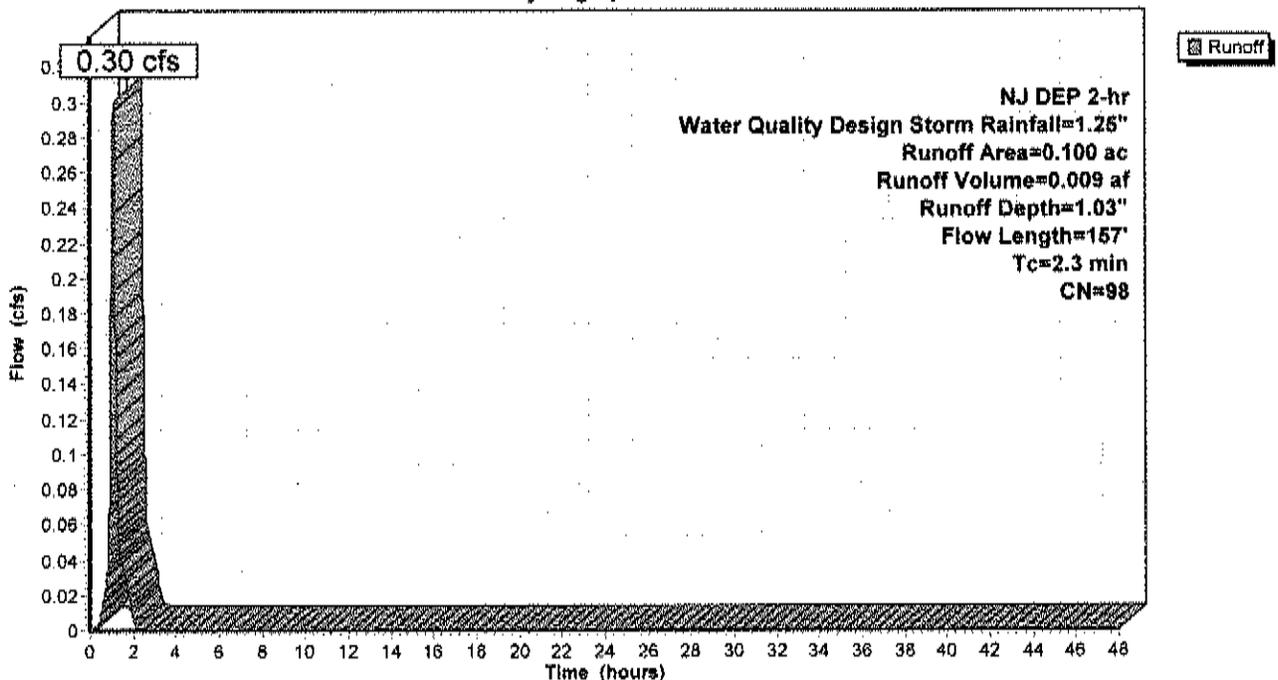
Area (ac)	CN	Description
* 0.100	98	Impervious
0.100		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	47	0.0041	0.70		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.6	45	0.0037	1.23		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.5	37	0.0043	1.33		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	28	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.3 157 Total

**Subcatchment 5PI: Watershed #5 Post-Development Impervious Conditions**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 1.91" for Future 10-YR Design Storm event  
 Inflow = 0.73 cfs @ 12.11 hrs, Volume= 0.064 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.95' @ 24.50 hrs Surf.Area= 0.066 ac Storage= 0.064 af

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

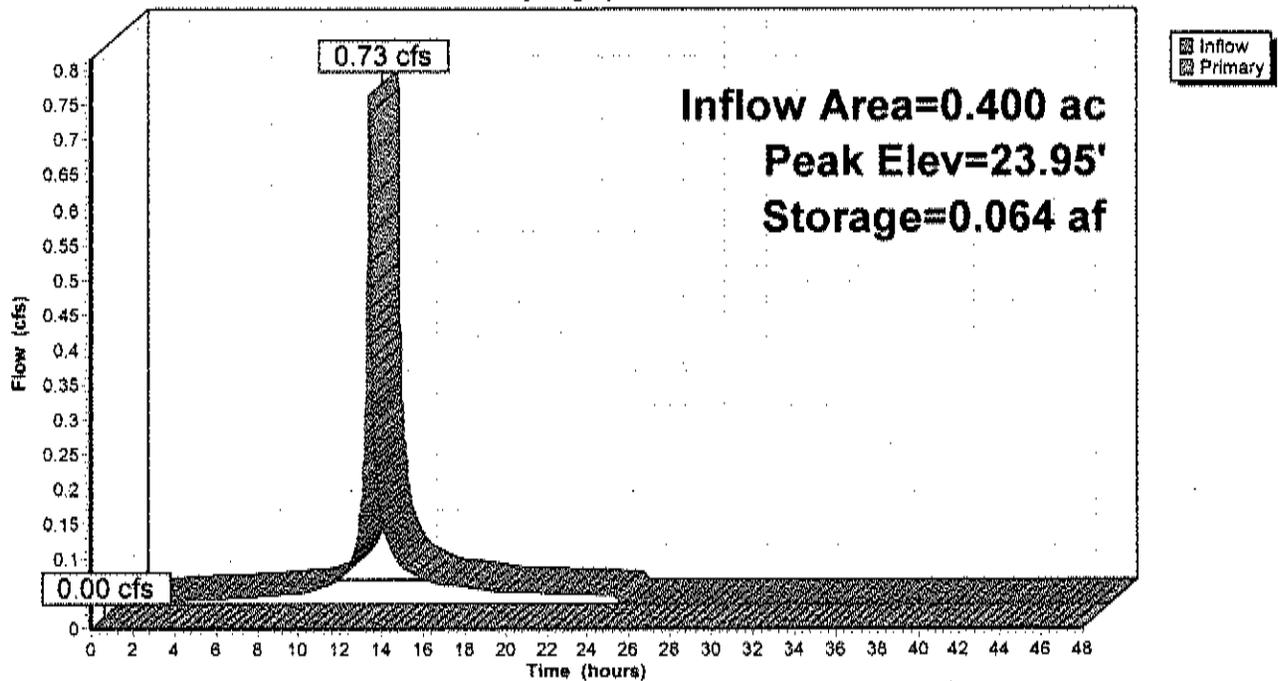
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 5.02" for Future 100-YR Design Storm event  
 Inflow = 2.16 cfs @ 12.11 hrs, Volume= 0.167 af  
 Outflow = 0.14 cfs @ 13.85 hrs, Volume= 0.058 af, Atten= 94%, Lag= 104.4 min  
 Primary = 0.14 cfs @ 13.85 hrs, Volume= 0.058 af  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.60' @ 13.85 hrs Surf.Area= 0.086 ac Storage= 0.113 af

Plug-Flow detention time= 434.4 min calculated for 0.058 af (35% of inflow)  
 Center-of-Mass det. time= 255.3 min ( 1,055.1 - 799.8 )

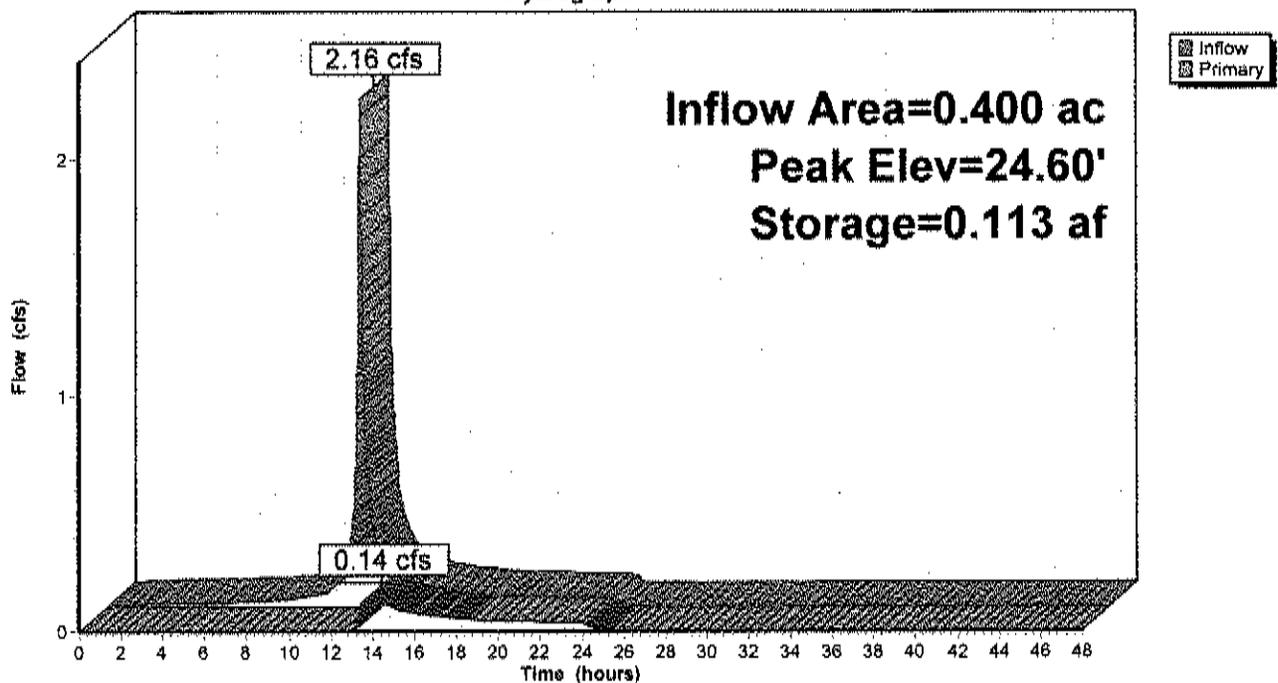
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.13 cfs @ 13.85 hrs HW=24.60' (Free Discharge)  
 1=Broad-Crested Rectangular Weir (Weir Controls 0.13 cfs @ 0.64 fps)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 0.95" for Future 2-YR Design Storm event  
 Inflow = 0.43 cfs @ 12.11 hrs, Volume= 0.032 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.39' @ 24.50 hrs Surf.Area= 0.049 ac Storage= 0.032 af

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

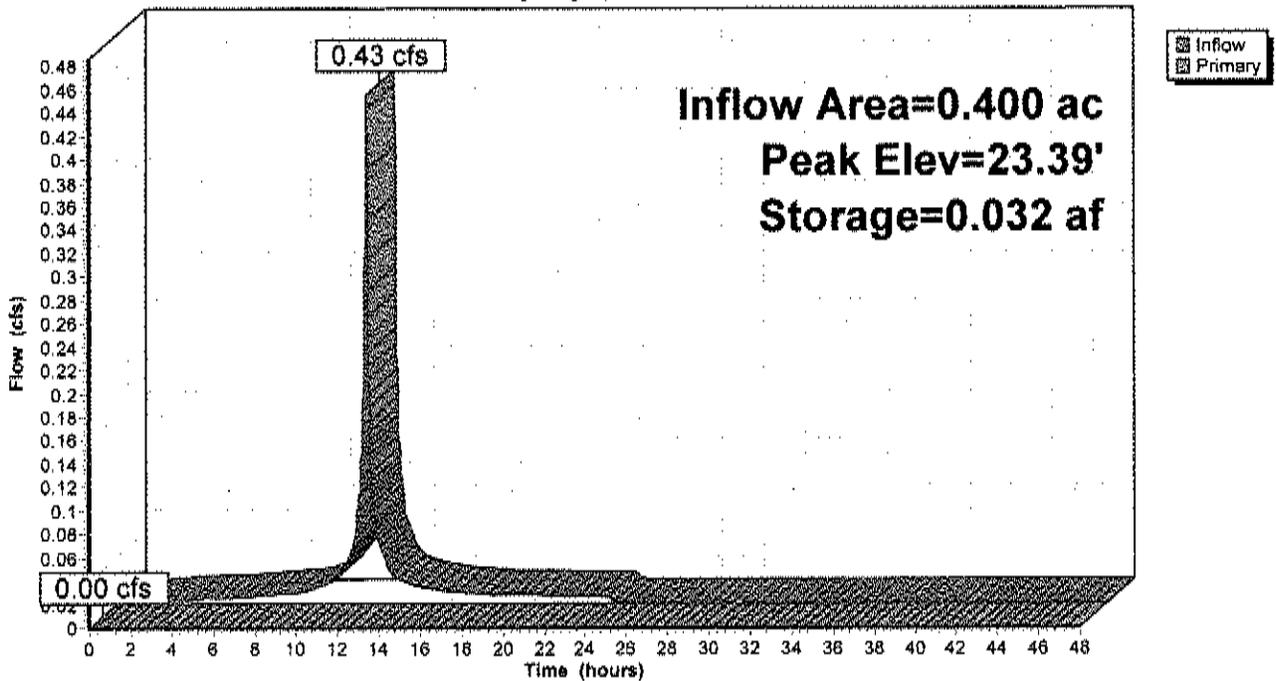
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Summary for Pond 5P: Stormwater Basin #5**

Inflow Area = 0.400 ac, 25.00% Impervious, Inflow Depth = 0.26" for Water Quality Design Storm event  
 Inflow = 0.30 cfs @ 1.09 hrs, Volume= 0.009 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.81' @ 2.26 hrs Surf.Area= 0.032 ac Storage= 0.009 af

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

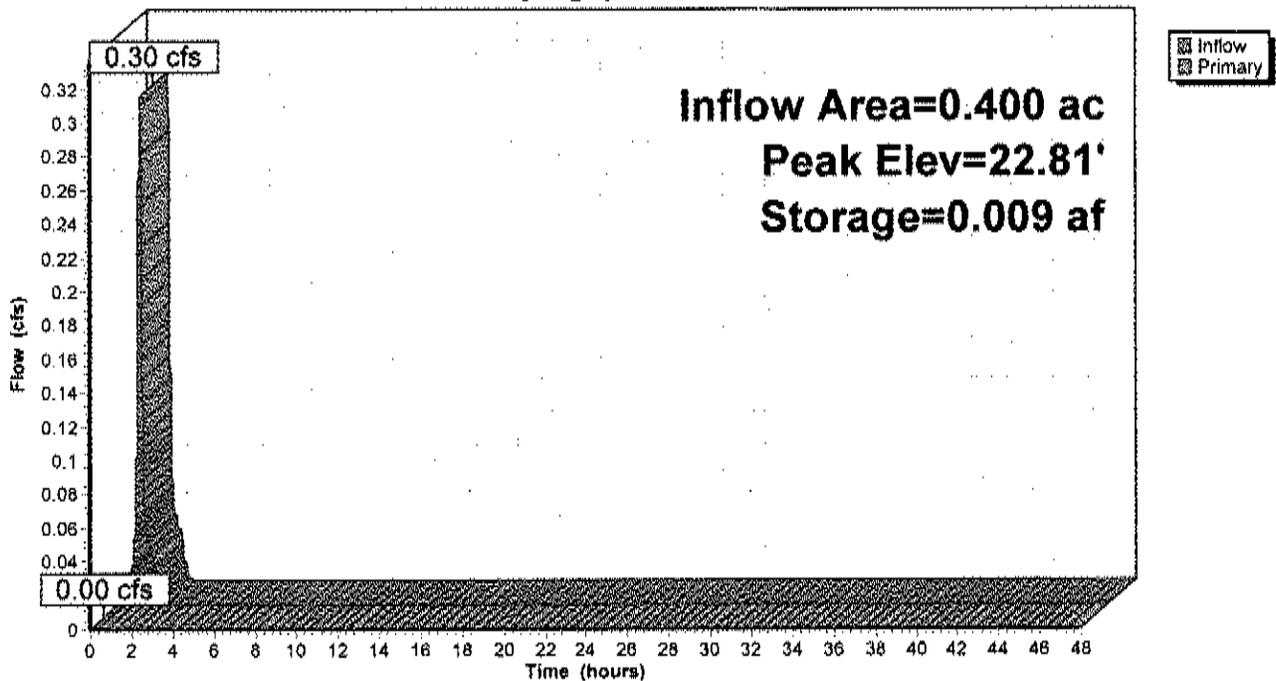
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin #5**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

Runoff = 0.06 cfs @ 12.24 hrs, Volume= 0.013 af, Depth= 0.53"  
 Routed to Pond 5AP : Stormwater Basin #5A

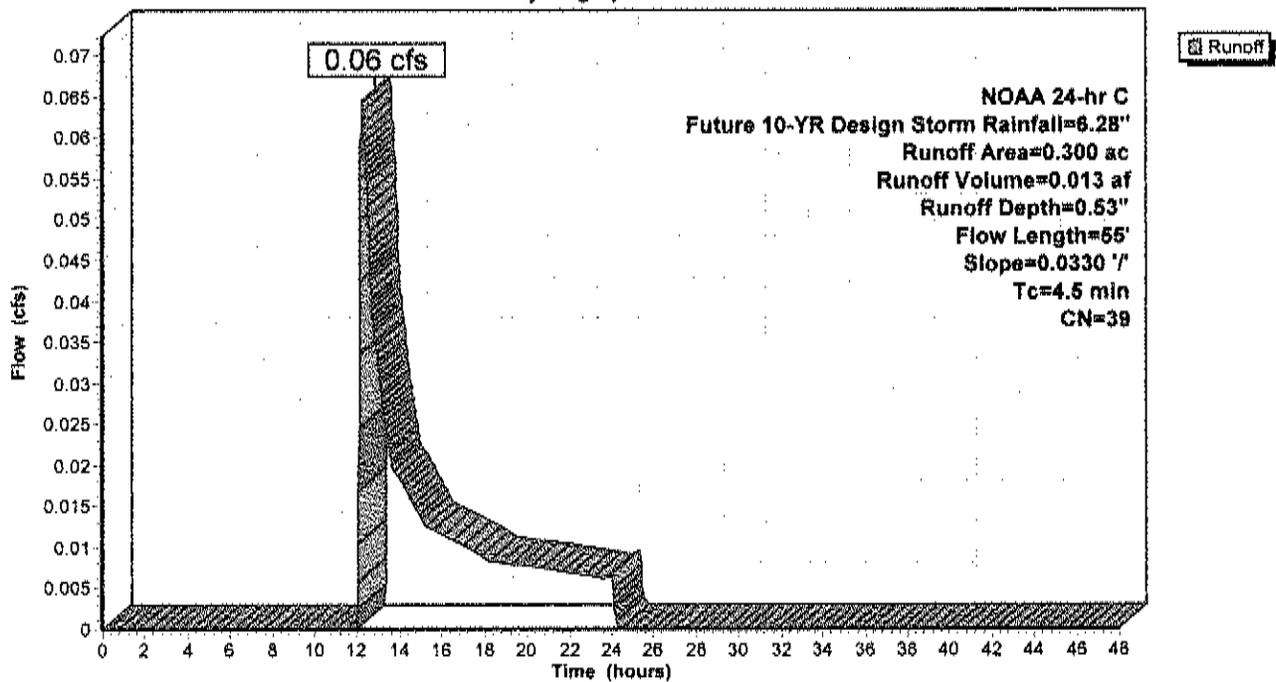
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

Hydrograph



**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

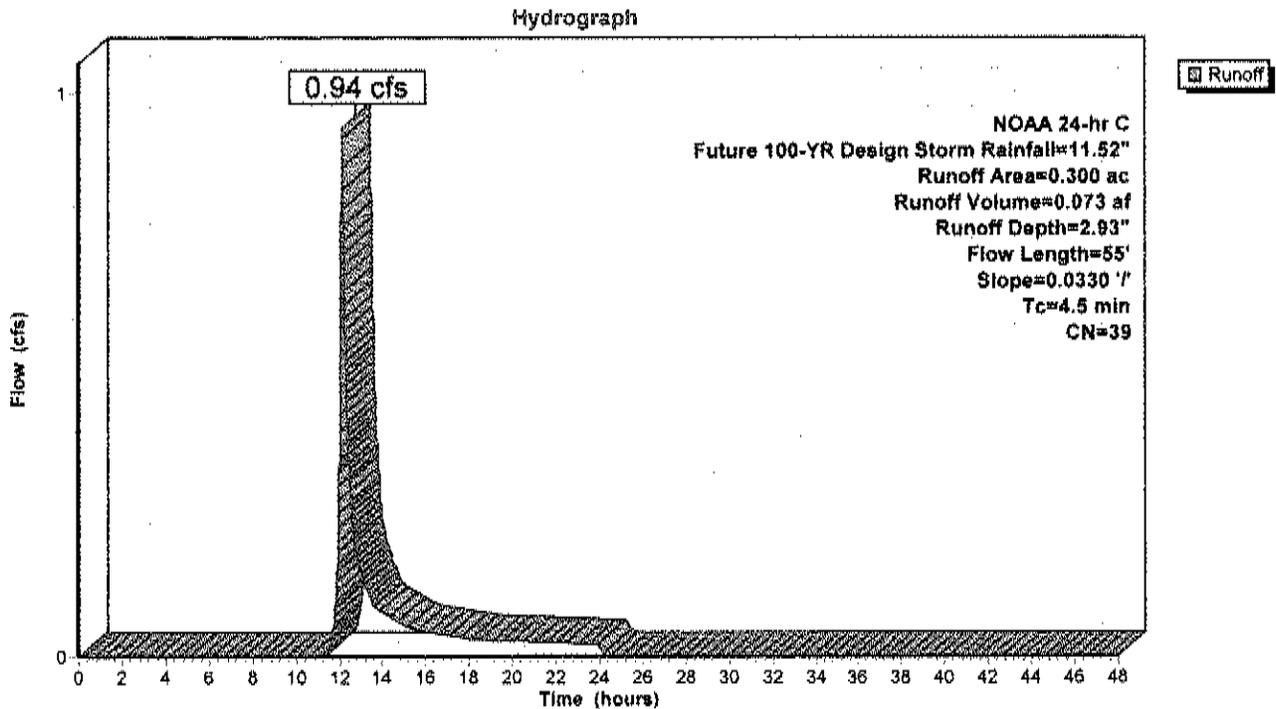
Runoff = 0.94 cfs @ 12.13 hrs, Volume= 0.073 af, Depth= 2.93"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**





**Summary for Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**

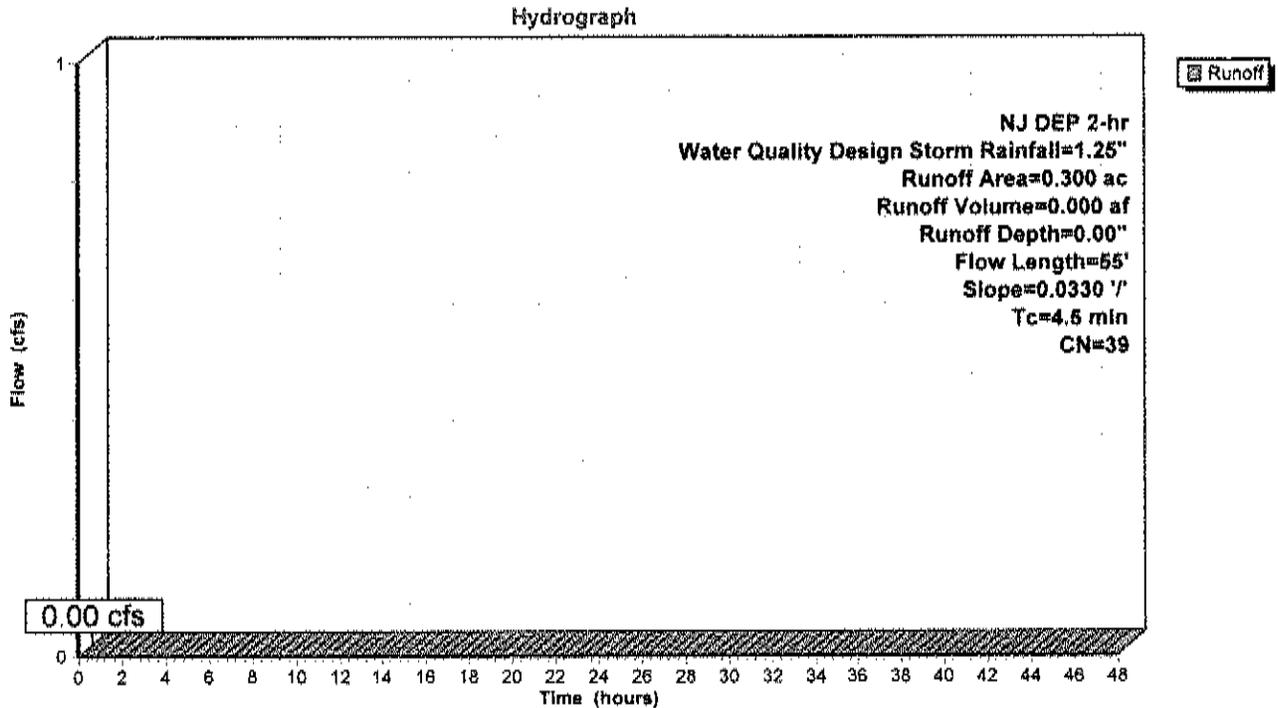
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.300	39	Grass/landscaping
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	55	0.0330	0.20		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 5APP: Watershed #5A Post-Development Pervious Conditions**



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	5API	0.00	0.00	27.0	0.0050	0.011	0.0	15.0	0.0	

**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.62 cfs @ 12.11 hrs, Volume= 0.045 af, Depth= 6.04"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

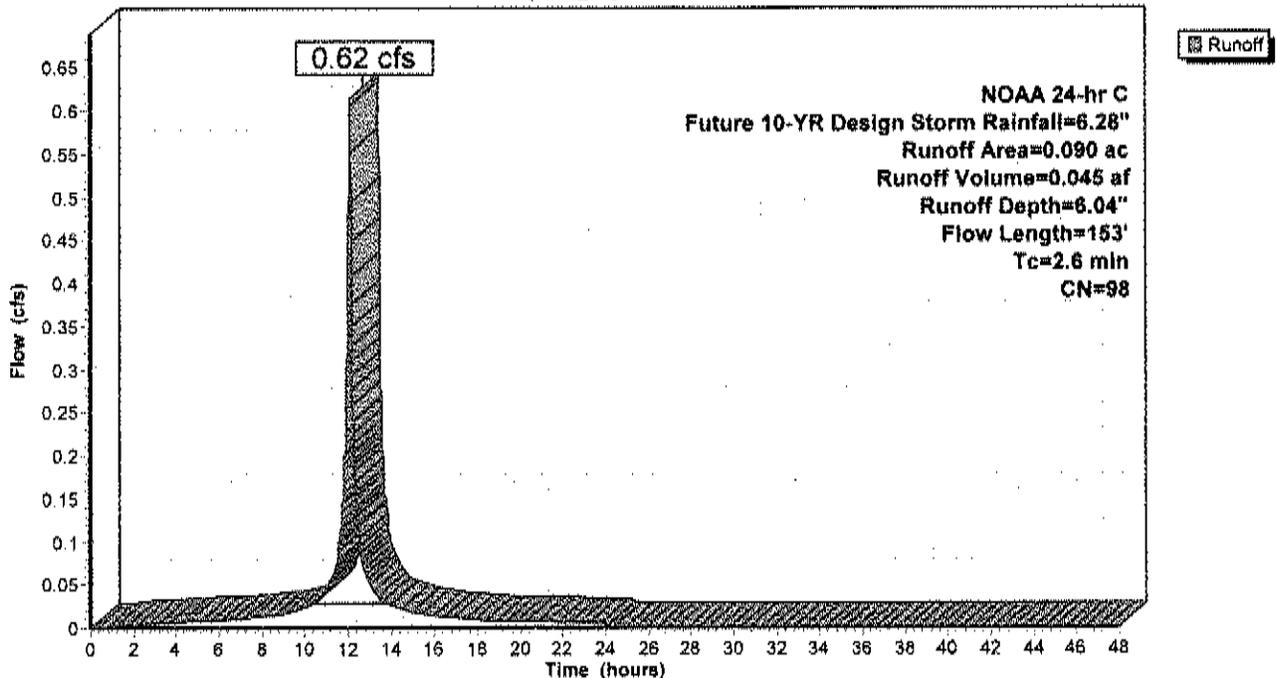
Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	65	0.0030	0.65		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.5	35	0.0034	1.18		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.6 153 Total

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 1.13 cfs @ 12.11 hrs, Volume= 0.085 af, Depth=11.28"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

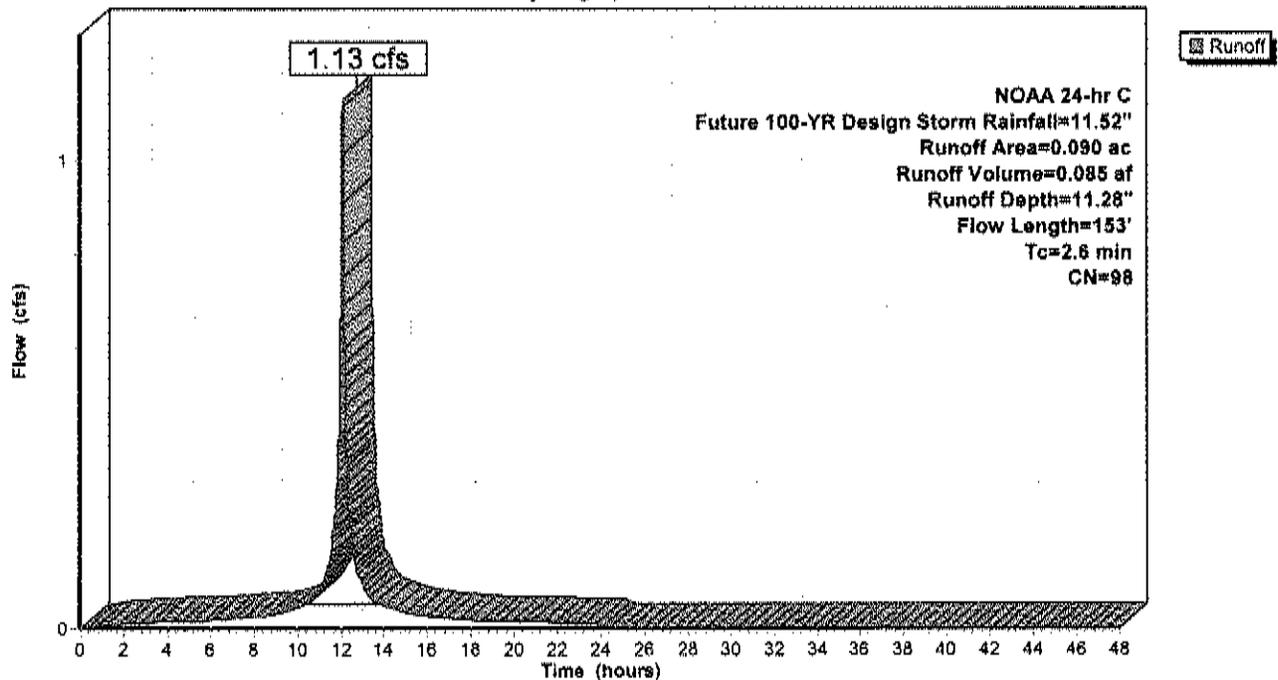
Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	65	0.0030	0.65		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.5	35	0.0034	1.18		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.6 153 Total

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.38 cfs @ 12.11 hrs, Volume= 0.028 af, Depth= 3.70"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 2-YR Design Storm Rainfall=3.93"

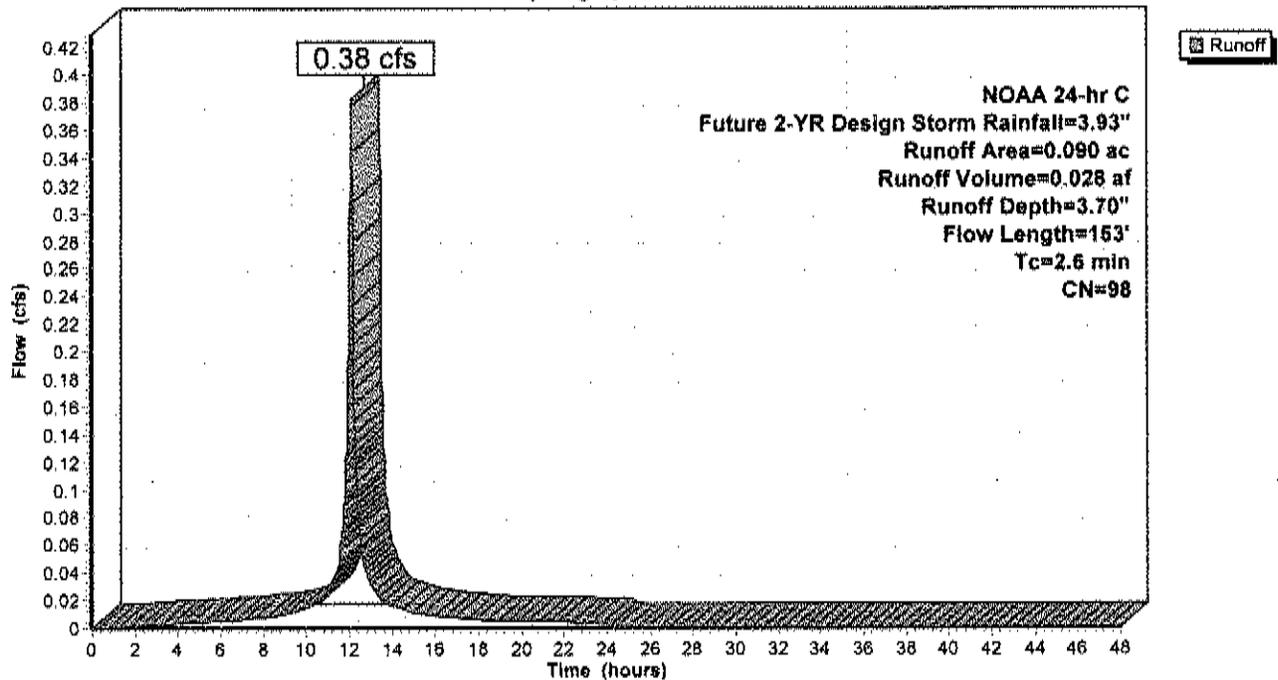
Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	65	0.0030	0.65		<b>Sheet Flow, Impervious</b> Smooth surfaces n= 0.011 P2= 3.93"
0.5	35	0.0034	1.18		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		<b>Shallow Concentrated Flow, Impervious</b> Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	<b>Pipe Channel, 15" Diameter HDPE</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
2.6	153	Total			

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Hydrograph



**Summary for Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Runoff = 0.27 cfs @ 1.09 hrs, Volume= 0.008 af, Depth= 1.03"  
 Routed to Pond 5AP : Stormwater Basin #5A

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

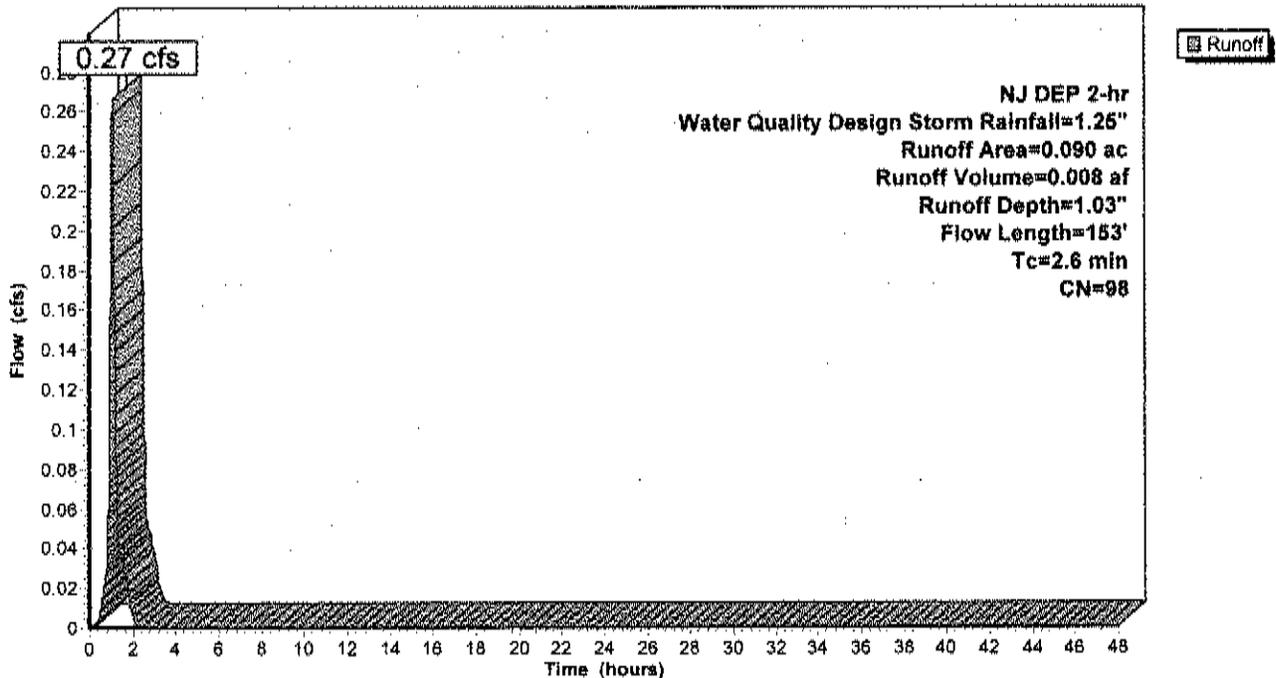
Area (ac)	CN	Description
* 0.090	98	Impervious
0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	65	0.0030	0.65		Sheet Flow, Impervious Smooth surfaces n= 0.011 P2= 3.93"
0.5	35	0.0034	1.18		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.3	26	0.0040	1.28		Shallow Concentrated Flow, Impervious Paved Kv= 20.3 fps
0.1	27	0.0050	4.40	5.40	Pipe Channel, 15" Diameter HDPE 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011

2.6 153 Total

**Subcatchment 5API: Watershed #5A Post-Development Impervious Conditions**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 1.80" for Future 10-YR Design Storm event  
 Inflow = 0.65 cfs @ 12.11 hrs, Volume= 0.059 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.87' @ 24.50 hrs Surf.Area= 0.063 ac Storage= 0.059 af

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

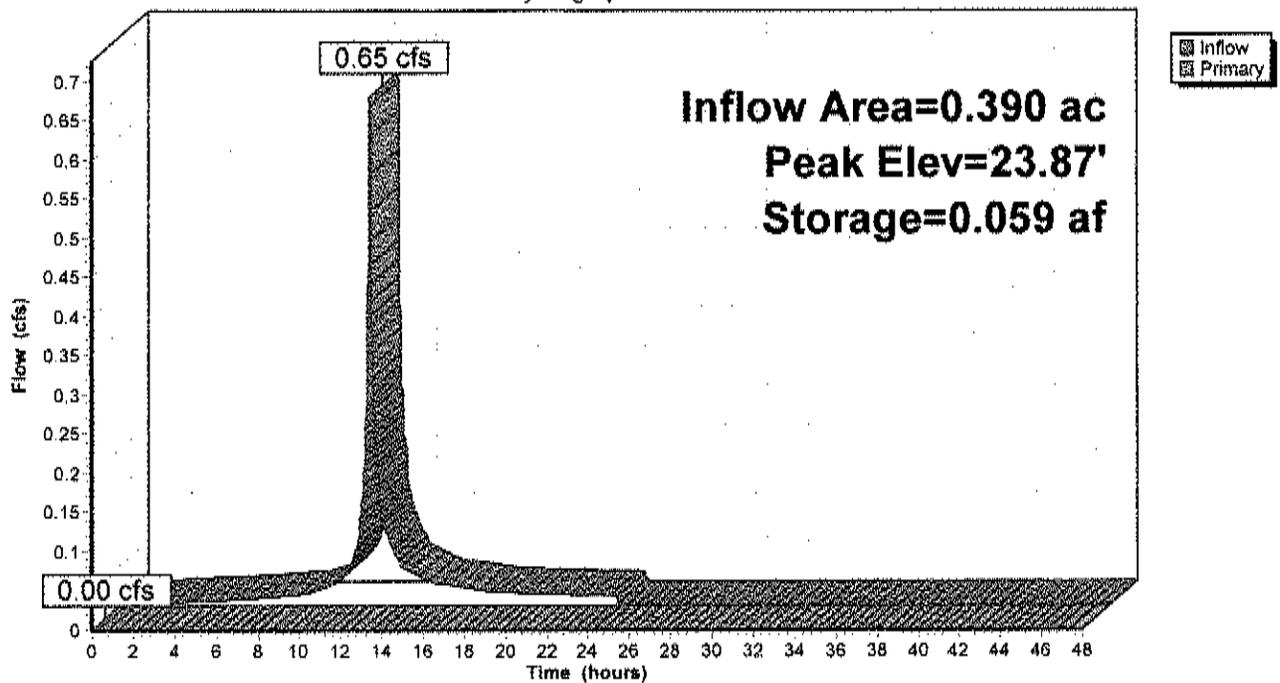
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 4.86" for Future 100-YR Design Storm event  
 Inflow = 2.02 cfs @ 12.12 hrs, Volume= 0.158 af  
 Outflow = 0.11 cfs @ 14.50 hrs, Volume= 0.049 af, Atten= 95%, Lag= 143.2 min  
 Primary = 0.11 cfs @ 14.50 hrs, Volume= 0.049 af  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.59' @ 14.50 hrs Surf.Area= 0.086 ac Storage= 0.112 af

Plug-Flow detention time= 476.4 min calculated for 0.049 af (31% of inflow)  
 Center-of-Mass det. time= 285.7 min ( 1,089.6 - 803.8 )

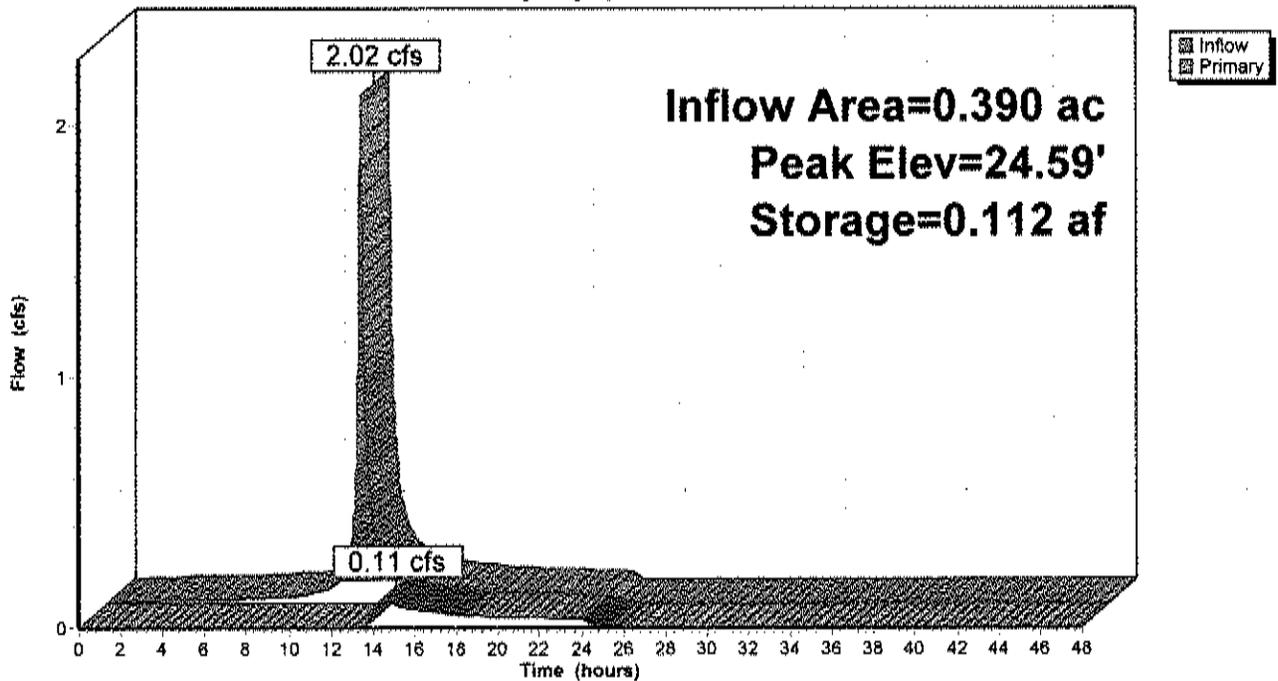
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.10 cfs @ 14.50 hrs HW=24.59' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.58 fps)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 0.88" for Future 2-YR Design Storm event  
 Inflow = 0.38 cfs @ 12.11 hrs, Volume= 0.029 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.32' @ 24.50 hrs Surf.Area= 0.047 ac Storage= 0.029 af

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

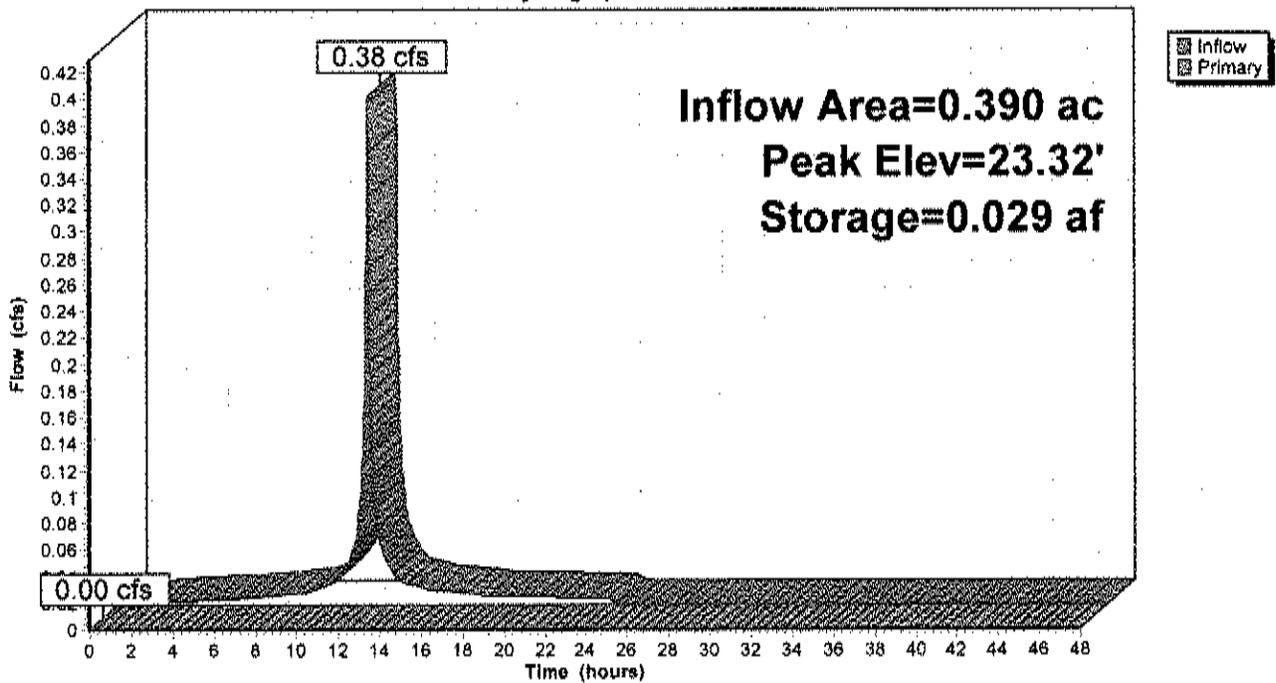
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismatoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Summary for Pond 5AP: Stormwater Basin #5A**

Inflow Area = 0.390 ac, 23.08% Impervious, Inflow Depth = 0.24" for Water Quality Design Storm event  
 Inflow = 0.27 cfs @ 1.09 hrs, Volume= 0.008 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  
 Routed to Pond 2AP : Stormwater Basin #2A

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.79' @ 2.30 hrs Surf.Area= 0.031 ac Storage= 0.008 af

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

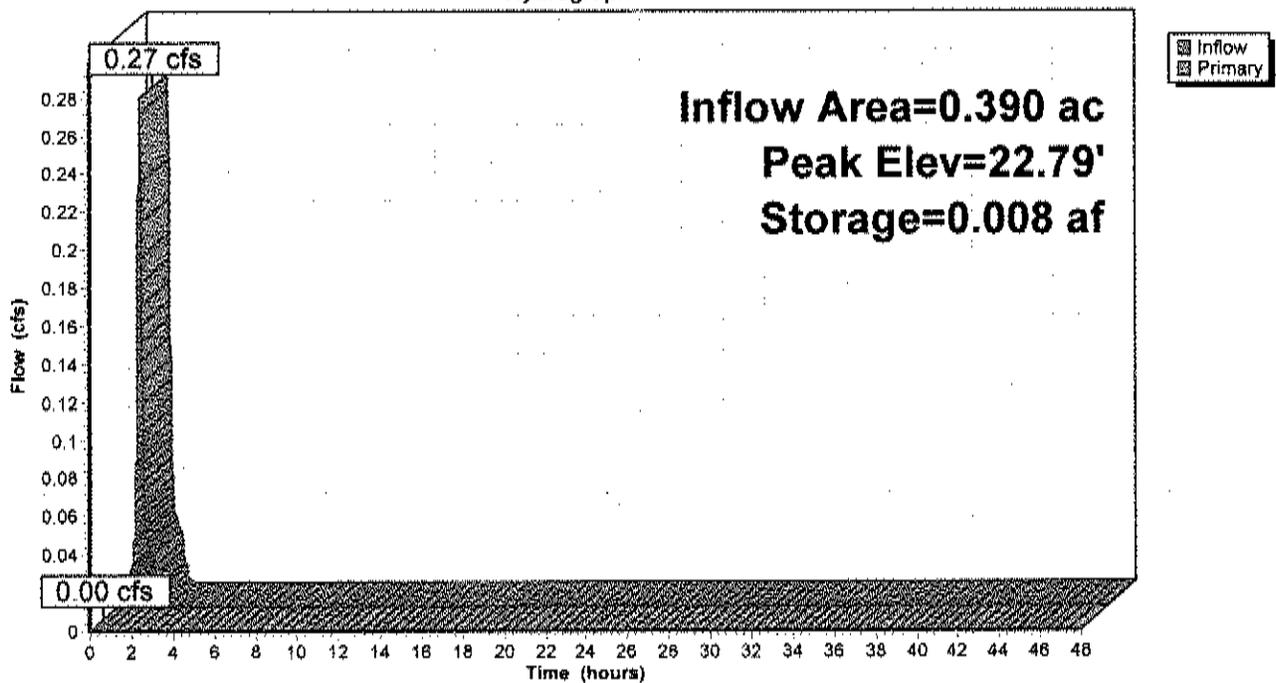
Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	0.209 af	5.00'W x 200.00'L x 3.05'H Prismaoid Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	24.55'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.50' (Free Discharge)  
 ←1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5AP: Stormwater Basin #5A**

Hydrograph



**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Future 10-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	6.28	2
2	Future 100-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	11.52	2
3	Future 2-YR Design Storm	NOAA 24-hr	C	Default	24.00	1	3.93	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

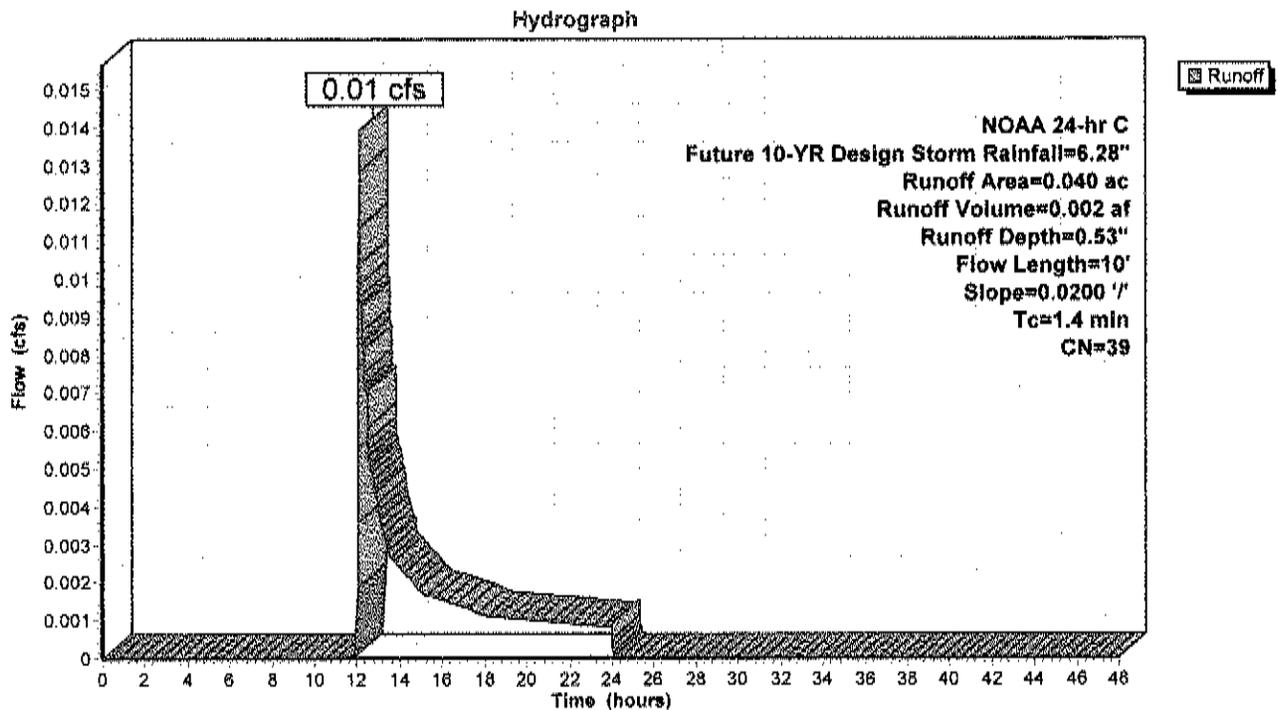
Runoff = 0.01 cfs @ 12.11 hrs, Volume= 0.002 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 10-YR Design Storm Rainfall=6.28"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	10	0.0200	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 2.93"

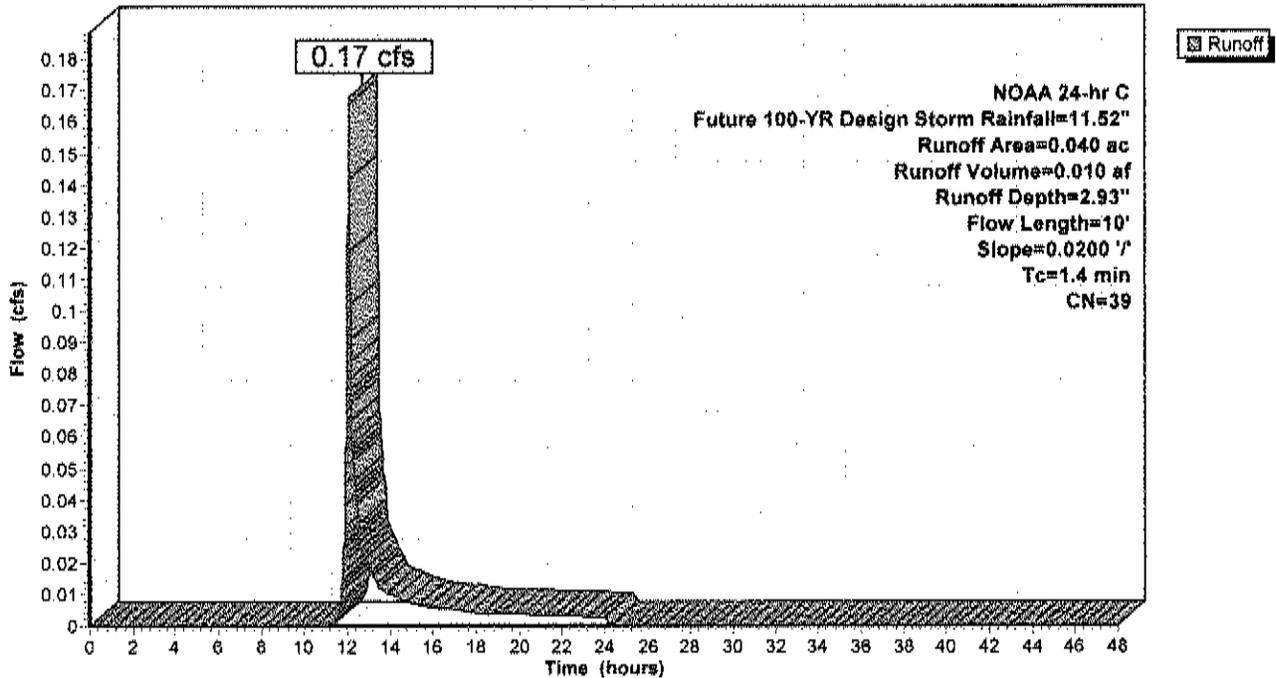
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C Future 100-YR Design Storm Rainfall=11.52"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	10	0.0200	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

Hydrograph





**Summary for Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**

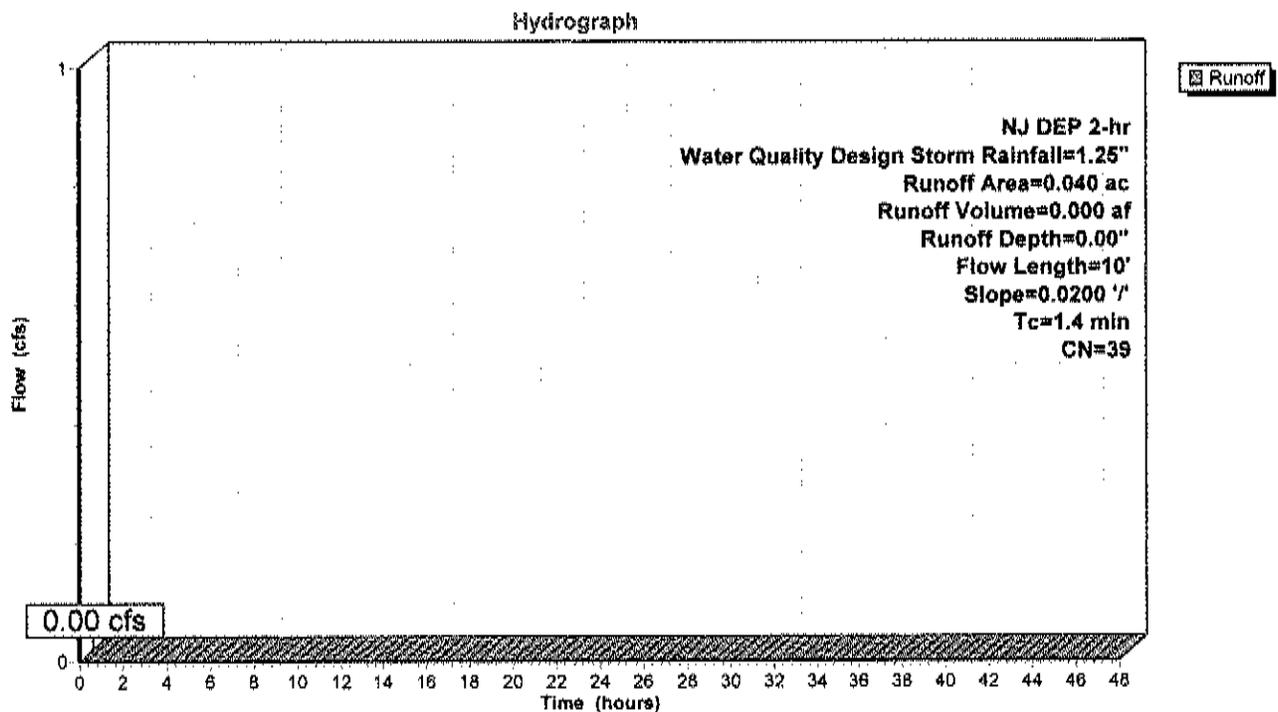
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

Area (ac)	CN	Description
* 0.040	39	Grass/landscaping
0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	10	0.0200	0.12		Sheet Flow, Grass/landscaping Grass: Short n= 0.150 P2= 3.93"

**Subcatchment 6PP: Watershed #6 Post-Development Pervious Conditions**



# **Pipe Routing Calculations**



LINE NUMBER	BEGIN	END	INCREMENTS OF AREA ACRES	"C"	"CA"	TIME OF CONCENTRATION	STORM	"I"	"O"	SLOPE	PIPE DIAMETER	VELOCITY (F.P.S.)	LENGTH OF LINE	TIME FLOW (MIN.)	CAPACITY C.F.S.	Q = CIA Q = CFS I = INTENSITY (IN/HR) C = RUNOFF COEFFICIENT A = AREA (ACRES)
1	WER #5	INLET #2	-	-	-	100	-	-	0.13	.5%	15"	2.09	23	.15	5.37	100 YR FUTURE STORM 0.13 CFS
2	INLET #2	INLET #1	0.32	.99	.3168	25	7.8	-	2.60	.5%	15"	4.23	20	.80	5.37	2.47 CFS + 0.13 CFS
3	INLET #1	O.F. #1	0.62	.99	.6338	25	7.5	-	4.73	.5	15"	4.93	44	.29	5.37	4.60 CFS + 0.13 CFS
4																
5	WER #5A	INLET #4	-	-	-	100	-	-	0.10	.5%	15"	2.01	22	.14	5.37	100 YR FUTURE STORM 0.10 CFS
6	INLET #4	INLET #3	0.32	.99	.3168	25	7.8	-	2.57	.5%	15"	4.19	20	.80	5.37	2.47 CFS + 0.10 CFS
7	INLET #3	O.F. #3	0.67	.93	.6231	25	7.6	-	4.83	.5%	15"	4.98	16	.10	5.37	4.73 CFS + 0.10 CFS
8																
9	INLET #5	O.F. #2	0.20	.54	.108	25	6.8	-	0.73	.5%	15"	2.92	28	.18	5.37	
10																
11	INLET #6	O.F. #4	0.20	.54	.108	25	6.8	-	0.73	.5%	15"	2.92	27	.18	5.37	
12																

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 5 Cambridge drive • ocean view, New Jersey 08230  
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JOB NAME \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_  
 JOB NO. \_\_\_\_\_ DATE \_\_\_\_\_  
 CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 VERIFIED BY \_\_\_\_\_ DATE \_\_\_\_\_

Calculation of Composite "C" Values

Area A

Area = 0.30 ACRES

Impervious/Roadway 0.99 x 0.30 = 0.297

Grass/Landscaping 0.25 x \_\_\_\_\_ = -

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.297

Composite "C" Value 0.297 - 0.30 = 0.99

Area B

Area = 0.32 ACRES

Impervious/Roadway 0.99 x 0.32 = 0.3168

Grass/Landscaping 0.25 x \_\_\_\_\_ = -

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.3168

Composite "C" Value 0.3168 - 0.32 = 0.99

Calculation of Composite "C" Values

Area C

Area = 0.20 ACRES

Impervious/Roadway 0.99 x 0.08 = 0.0792

Grass/Landscaping 0.25 x 0.12 = 0.03

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.1092

Composite "C" Value 0.1092 - 0.20 = 0.54

Area D

Area = 0.35 ACRES

Impervious/Roadway 0.99 x 0.30 = 0.297

Grass/Landscaping 0.25 x 0.05 = 0.0125

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.3095

Composite "C" Value 0.3095 - 0.35 = 0.88

Calculation of Composite "C" Values

Area E

Area = 0.32 ACRES

Impervious/Roadway 0.99 x 0.32 = 0.3168

Grass/Landscaping 0.25 x \_\_\_\_\_ = -

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.3168

Composite "C" Value 0.3168 - 0.32 = 0.99

Area F

Area = 0.20 ACRES

Impervious/Roadway 0.99 x 0.08 = 0.0792

Grass/Landscaping 0.25 x 0.12 = 0.03

Woodland 0.15 x \_\_\_\_\_ = -

Stone 0.76 x \_\_\_\_\_ = -

Total 0.1092

Composite "C" Value 0.1092 - 0.20 = 0.54

or other approved methods may be employed.

<b>TABLE 7.1 TYPICAL RUNOFF COEFFICIENTS (C VALUES) FOR 100-YEAR FREQUENCY STORM</b>				
<b>LAND-USE DESCRIPTION</b>	<b>HYDROLOGIC SOIL GROUP</b>			
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Cultivated land: without conservation treatment with conservation treatment	0.49 0.27	0.67 0.43	0.81 0.61	0.88 0.67
Pasture or range land: poor condition good condition	0.38 NA	0.63 0.25	0.78 0.51	0.84 0.65
Meadow: good condition	NA	NA	0.44	0.61
Wood or forest land: thin stand, poor cover, no mulch good cover	NA NA	NA NA	0.59 0.45	0.79 0.59
Open spaces, lawns, parks, golf courses, cemeteries: good condition, grass cover on 75% or more of area fair condition, grass cover on 50-75% of area	NA NA	0.25 0.45	0.51 0.63	0.65 0.74
Commercial and business areas (85% impervious)	0.84	0.90	0.93	0.96
Industrial districts (72% impervious)	0.67	0.81	0.88	0.92
Residential: <u>Average lot size</u> <u>Average impervious</u>				
1/8 acre                      65%	0.59	0.76	0.86	0.90
1/4 acre                      38%	0.25	0.55	0.70	0.80
1/3 acre                      30%	NA	0.49	0.67	0.78
1/2 acre                      25%	NA	0.45	0.65	0.76
1 acre                        20%	NA	0.41	0.63	0.74
Paved parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
Streets and roads: paved with curbs and storm sewers gravel dirt	0.99 0.57 0.49	0.99 0.76 0.69	0.99 0.84 0.80	0.99 0.88 0.84
<b>NOTE:</b>	NA denotes information is not available; design engineers should rely on another authoritative source.			
<b>SOURCE:</b>	<i>Technical Manual for Land Use Regulation Program, Department of Environmental Protection, Bureau of Inland and Coastal Regulations, Stream Encroachment Permits (Trenton, New Jersey, revised September 1995), p. 12.</i>			

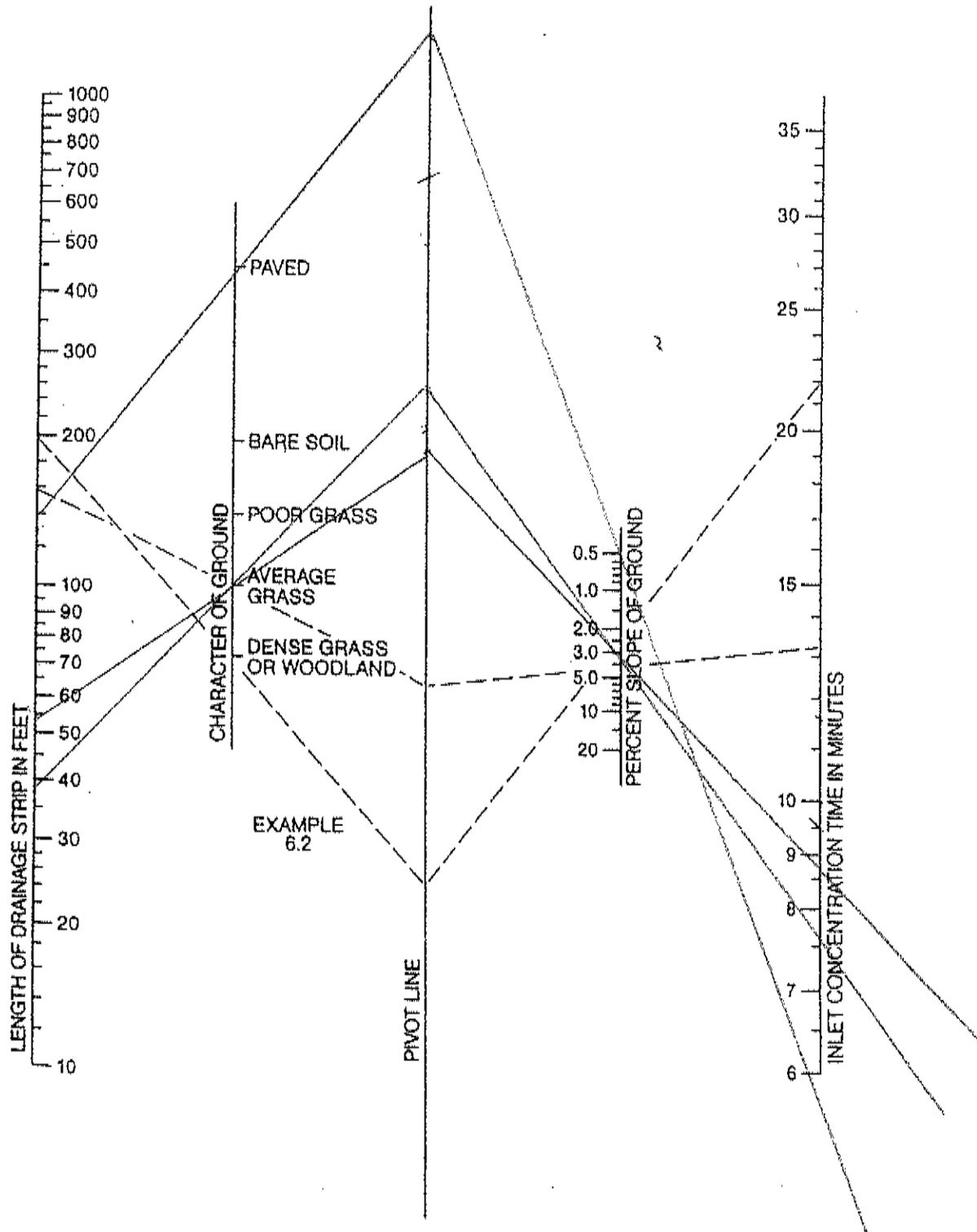
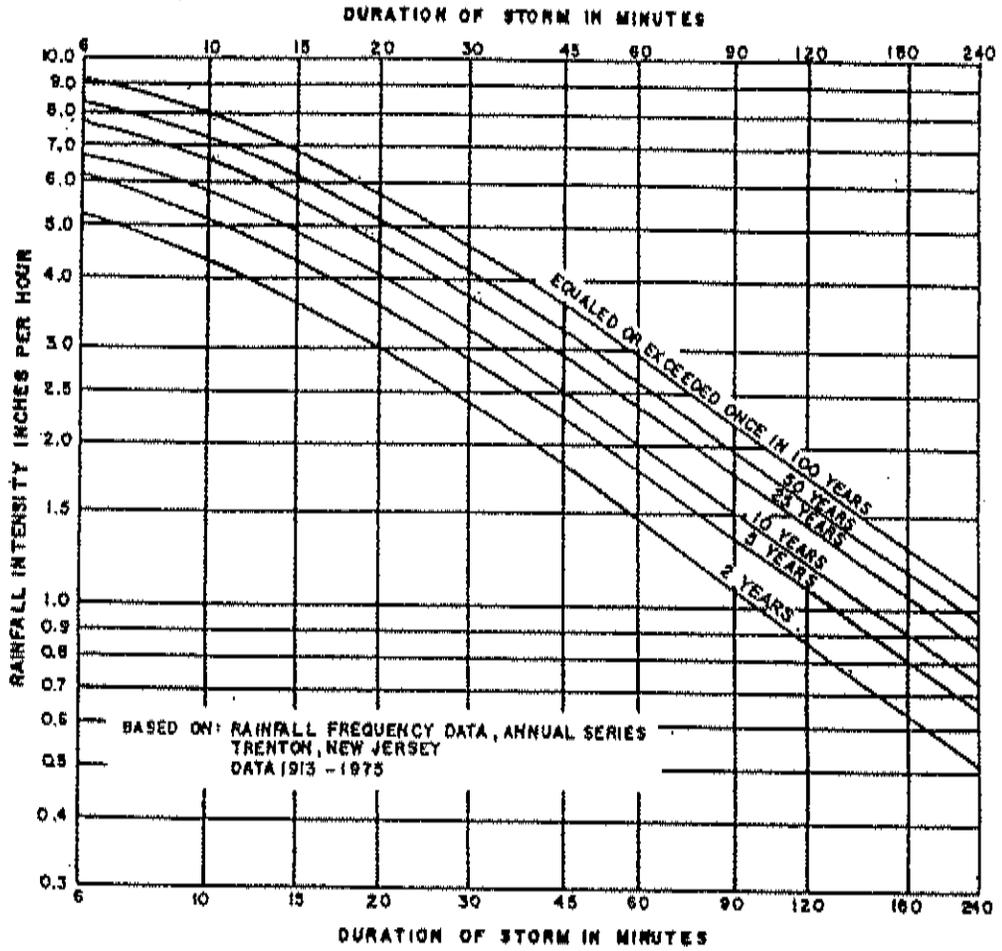


Fig. 6.13. NOMOGRAPH FOR OVERLAND FLOW TIME

FIGURE 7.2 RAINFALL INTENSITY CURVES



Note: Adapted from Figure 2.1-2 in the NJDEP Technical Manual for Stream Encroachment Permits.

# **Low Impact Development**

## **Checklist**

# Low Impact Development Checklist

**A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development**

Municipality: Dennis Township

County: Cape May Date: 12/23/25

Review board or agency: Dennis Township Combined Land Use Board

Proposed land development name: Clark Edward, LLC

Lot(s): 6.18 & 6.19 Block(s): 236

Project or application number: --

Applicant's name: Clark Edward, LLC

Applicant's address: 111 East 9th Street

Ocean City, New Jersey 08226

Telephone: (609) 335-1544 Fax: \_\_\_\_\_

Email address: clark@clarkedward.com

Designer's name: Joesph H. Maffei, P.E., Engineering Design Associates

Designer's address: 5 Cambridge Drive

Ocean View, NJ 08230

Telephone: (609) 390-0332 Fax: (609) 390-9204

Email address: jmaffel@engineeringdesign.com

## Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The project design has utilized the non-structural approach and strategies, as required.

Native ground cover and vegetated buffers are to be protected. Limiting the clearing and grading shall minimize the amount of soil compaction. Indigenous plant material is to be planted in much of the disturbed areas adjacent to the proposed building.

The amount of impervious area is designed to be at a minimum, while remaining in accordance with the Dennis Township Ordinance. Finally, the decrease in the pre-construction time of concentration has been minimized.

## Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

Dennis Township Ordinance

Do regulations include nonstructural requirements? Yes:  No:

If yes, briefly describe: \_\_\_\_\_

List LID-BMPs prohibited by local regulations: None

Pre-design meeting held? Yes:  Date: \_\_\_\_\_ No:

Meeting held with: \_\_\_\_\_

Pre-design site walk held? Yes:  Date: \_\_\_\_\_ No:

Site walk held with: \_\_\_\_\_

Other agencies with stormwater review jurisdiction:

Name: DelAtlantic Conservation District

Required approval: \_\_\_\_\_

Name: \_\_\_\_\_

Required approval: \_\_\_\_\_

Name: \_\_\_\_\_

Required approval: \_\_\_\_\_

## Part 3: Nonstructural Strategies and LID-BMPs in Design

### 3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: \_\_\_\_\_ No:  \_\_\_\_\_

If yes, was this inventory a factor in the site's layout and design? Yes: \_\_\_\_\_ No: \_\_\_\_\_

B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: 5%

Native ground cover? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: 5%

Vegetated buffers? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: 5%

C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: --

Native ground cover? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: --

Vegetated buffers? Yes:  \_\_\_\_\_ No: \_\_\_\_\_ If yes, specify % of site: --

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient: Yes: \_\_\_\_\_ No: \_\_\_\_\_

Reduce runoff pollutant loads through runoff treatment: Yes: \_\_\_\_\_ No: \_\_\_\_\_

Maintain groundwater recharge by preserving natural areas: Yes: \_\_\_\_\_ No: \_\_\_\_\_

### 3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed? Yes:  No:

If yes, were these inventories factors in the site's layout and design? Yes:  No:

B. Does the development's design utilize any of the following nonstructural LID-BMPs?

Restrict permanent site disturbance by land owners? Yes:  No:

If yes, how: Landscape Buffers

\_\_\_\_\_

Restrict temporary site disturbance during construction? Yes:  No:

If yes, how: \_\_\_\_\_

\_\_\_\_\_

Consider soils and slopes in selecting disturbance limits? Yes:  No:

If yes, how: Soils were analyzed for stormwater basin feasibility.

\_\_\_\_\_

C. Specify percentage of site to be cleared: 95% Regraded: 95%

D. Specify percentage of cleared areas done so for buildings: 18.80%

For driveways and parking: 27.19% For roadways: 0%

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above?

None

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F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: 100% HSG B: \_\_\_\_\_ HSG C: \_\_\_\_\_ HSG D: \_\_\_\_\_

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: 95% HSG B: \_\_\_\_\_ HSG C: \_\_\_\_\_ HSG D: \_\_\_\_\_

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

Utilize an infiltration basin to help maintain groundwater recharge.

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I. Does the site include Karst topography?

Yes: \_\_\_\_\_ No:

If yes, discuss measures taken to limit Karst impacts:

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### 3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing 0.00 Acres Proposed 1.40 Acres

B. Specify maximum site impervious coverage allowed by regulations: 50%

C. Compare proposed street cartway widths with those required by regulations.

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity	--	--
Residential access – medium intensity	--	--
Residential access – high intensity with parking	--	--
Residential access – high intensity without parking	--	--
Neighborhood	--	--
Minor collector – low intensity without parking	--	--
Minor collector – with one parking lane	--	--
Minor collector – with two parking lanes	--	--
Minor collector – without parking	--	--
Major collector	--	--

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: 9' x 18' Regulations: 9' x 18'

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: 48 Spaces Regulations: 48 Spaces

F. Specify percentage of total site impervious cover created by buildings: 40.99%

By driveways and parking: 59.01% By roadways: N/A

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

Reduce the areas utilized for the parking.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0% Buildings: 0% Driveways and parking: 0% Roads: 0%

I. Specify percentage of total impervious area that will be porous:

Total site: — Buildings: — Driveways and parking: — Roads: —

J. Specify percentage of total building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

### 3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 25% Vegetated swale: - Natural channel: -  
Stormwater management facility: 25% Other: 50% Overland Flow

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

**None**

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C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: **None**

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Increase overland flow roughness: **None**

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### 3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

#### A. Trash Receptacles

Specify the number of trash receptacles provided: 0

Specify the spacing between the trash receptacles: 0

Compare trash receptacles proposed with those required by regulations:

Proposed: 0 Regulations: 0

#### B. Pet Waste Stations

Specify the number of pet waste stations provided: 0

Specify the spacing between the pet waste stations: 0

Compare pet waste stations proposed with those required by regulations:

Proposed: 0 Regulations: 0

#### C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: N/A

#### D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: Annually Regulations: No Standard

Litter collection: Proposed: Weekly Regulations: Weekly

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

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E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: \_\_\_\_\_ Location: \_\_\_\_\_

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: \_\_\_\_\_ Location: \_\_\_\_\_

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: \_\_\_\_\_ Location: \_\_\_\_\_

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: \_\_\_\_\_ Location: \_\_\_\_\_

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: \_\_\_\_\_ Location: \_\_\_\_\_

## Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	✓	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	✓	
3.	Maximize the protection of natural drainage features and vegetation.	✓	
4.	Minimize the decrease in the pre-construction time of concentration.	✓	
5.	Minimize land disturbance including clearing and grading.	✓	
6.	Minimize soil compaction.	✓	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	✓	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	✓	
9.	Provide preventative source controls.	✓	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.

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**Groundwater Mounding**  
**Analysis & Basin Infiltration**  
**Calculations**

Input Values

0.50
0.150
30.00
95.000
57.500
54.00
10.00

R Recharge rate (permeability rate) (in/hr)  
 Specific yield, Sy (dimensionless)  
 Horizontal hydraulic conductivity (in/hr)  
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan  
 x 1/2 length of basin (x direction, in feet)  
 y 1/2 width of basin (y direction, in feet)  
 t Duration of infiltration period (hours)  
 hi(0) Initial thickness of saturated zone (feet)

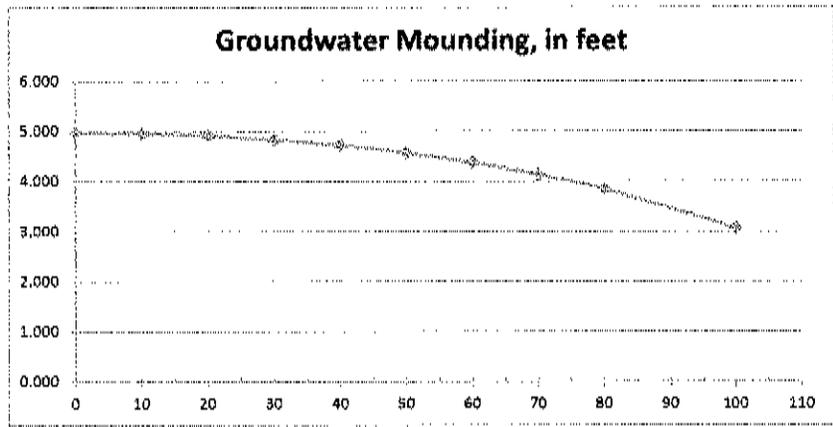
14.967
4.967

h(max) Maximum thickness of saturated zone (beneath center of basin at end of Infiltration period)  
 Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet Distance from center of basin in x direction, in feet

4.967	0
4.952	10
4.903	20
4.826	30
4.713	40
4.563	50
4.370	60
4.130	70
3.835	80
3.059	100

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

**Calculate Time For The Infiltration Basin To Infiltrate Volume Under  
The Proposed Weir Elevation 23.85**

**Infiltration Basin #2A**

$$\text{Infiltration Period} = \frac{\text{Volume of runoff to be infiltrated (cf)} \times 12 \text{ in/hr}}{\text{Infiltration area (sf)} \times \text{recharge rate in/hr}}$$

$$\text{Infiltration Period} = \frac{49,353 \text{ cf} \times 12 \text{ in/hr}}{21,823 \text{ sf} \times 6 \text{ in/hr}}$$

$$\text{Infiltration Period} = 4.52 \text{ Hours}$$

**Adjustment of the Recharge Rate and Adjustment of the Duration of the Infiltration  
Period**

$$6 \text{ in/hr} \times \frac{4.52 \text{ hours}}{54 \text{ hours}} = 0.50 \text{ in/hr}$$

$$\text{Adjusted Rate} = 0.50 \text{ in/hr}$$

$$\text{Adjusted Duration of Infiltration Period} = 54 \text{ hours}$$

**GROUNDWATER RECHARGE MOUNDING ANALYSIS  
BLOCK 236 LOTS 6.18 & 6.19  
DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ  
STORMWATER BASIN #2A**

**EDA #10793**

- |    |   |   |         |                                |
|----|---|---|---------|--------------------------------|
| 1. | Recharge Rate (in./hr)                    | = | 6 in/hr |                                |
| 2. | Horizontal Hydraulic Conductivity (in/hr) | = | 0.15    |                                |
| 3. | Beginning Distance                        | = | 0'      |                                |
|    | Final Distance                            | = | 100'    |                                |
|    | Distance Increment                        | = | 10'     |                                |
| 4. | Initial Thickness of Saturated Zone       | = | 10'     |                                |
| 5. | Width                                     | = | 105' }  | } Bottom of Infiltration Basin |
|    |   |   | }       |                                |
| 6. | Length                                    | = | 190' }  |                                |
| 7. | Angle from Length of Axis                 | = | 0'      |                                |

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	105'
Length	=	190'
Angle	=	0 Degrees

**Results Display**

<u>Distance</u> <u>(Ft.)</u>	<u>Height</u> <u>(Ft.)</u>
0	4.967
10	4.952
20	4.905
30	4.826
40	4.713
50	4.563
60	4.370
70	4.130
80	3.835
90	3.475
100	3.059

Groundwater Recharge Mounding Analysis – Stormwater Basin #2A  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ  
EDA #10793

### **Groundwater Mounding Analysis**

Major Site Plan: Clark Edward, LLC  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that the height or elevation of the seasonal high-water elevation will increase by 4.967 feet (approximately 60 inches).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 15.30. Groundwater mounding associated with the proposed basin will increase this elevation to 20.26, well below the proposed basin bottom elevation of 21.85.

Input Values

2.28
0.150
30.00
100.000
2.500
24.00
10.00

R Recharge rate (permeability rate) (in/hr)  
 Specific yield, Sy (dimensionless)  
 Horizontal hydraulic conductivity (in/hr)  
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan  
 x 1/2 length of basin (x direction, in feet)  
 y 1/2 width of basin (y direction, in feet)  
 t Duration of infiltration period (hours)  
 h(0) Initial thickness of saturated zone (feet)

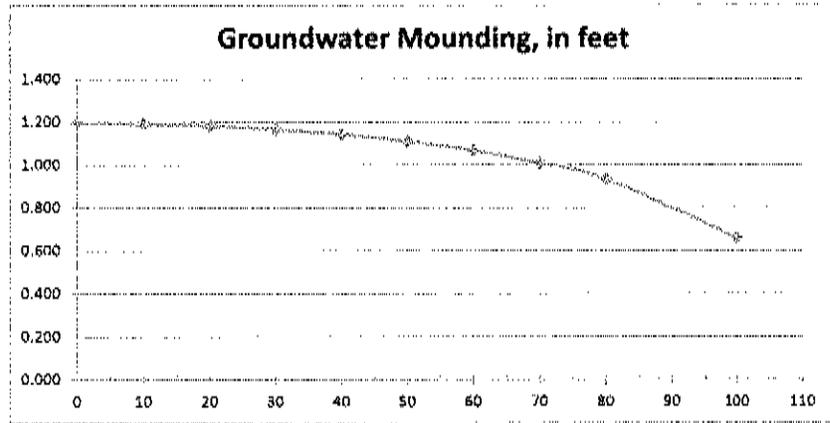
11.194
1.194

h(max) Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)  
 Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from center of basin in x direction, in feet

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
1.194	0
1.191	10
1.181	20
1.165	30
1.142	40
1.109	50
1.066	60
1.009	70
0.934	80
0.658	100

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

**Calculate Time For The Infiltration Basin To Infiltrate Volume Under  
The Proposed Weir Elevation 24.50**

**Infiltration Basin #5**

$$\text{Infiltration Period} = \frac{\text{Volume of runoff to be infiltrated (cf)} \times 12 \text{ in/hr}}{\text{Infiltration area (sf)} \times \text{recharge rate in/hr}}$$

$$\text{Infiltration Period} = \frac{4,573 \text{ cf} \times 12 \text{ in/hr}}{1,000 \text{ sf} \times 6 \text{ in/hr}}$$

$$\text{Infiltration Period} = 9.14 \text{ Hours}$$

**Adjustment of the Recharge Rate and Adjustment of the Duration of the Infiltration  
Period**

$$6 \text{ in/hr} \times \frac{9.14 \text{ hours}}{24 \text{ hours}} = 2.28 \text{ in/hr}$$

$$\text{Adjusted Rate} = 2.28 \text{ in/hr}$$

$$\text{Adjusted Duration of Infiltration Period} = 24 \text{ hours}$$

**GROUNDWATER RECHARGE MOUNDING ANALYSIS**  
**BLOCK 236 LOTS 6.18 & 6.19**  
**DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ**  
**STORMWATER BASIN #5**

**EDA #10793**

- |    |   |   |         |                              |
|----|---|---|---------|------------------------------|
| 1. | Recharge Rate (in./hr)                    | = | 6 in/hr |                              |
| 2. | Horizontal Hydraulic Conductivity (in/hr) | = | 0.15    |                              |
| 3. | Beginning Distance                        | = | 0'      |                              |
|    | Final Distance                            | = | 100'    |                              |
|    | Distance Increment                        | = | 10'     |                              |
| 4. | Initial Thickness of Saturated Zone       | = | 10'     |                              |
| 5. | Width                                     | = | 5' }    | Bottom of Infiltration Basin |
|    |   |   | }       |                              |
| 6. | Length                                    | = | 200' }  |                              |
| 7. | Angle from Length of Axis                 | = | 0'      |                              |

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	5'
Length	=	200'
Angle	=	0 Degrees

**Results Display**

<u>Distance</u> <u>(Ft.)</u>	<u>Height</u> <u>(Ft.)</u>
0	1.194
10	1.191
20	1.181
30	1.165
40	1.142
50	1.109
60	1.066
70	1.009
80	0.934
90	0.828
100	0.658

Groundwater Recharge Mounding Analysis – Stormwater Basin #5  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ  
FDA #10793

### **Groundwater Mounding Analysis**

Major Site Plan: Clark Edward, LLC  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that the height or elevation of the seasonal high-water elevation will increase by 1.194 feet (approximately 14 inches).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 15.85. Groundwater mounding associated with the proposed basin will increase this elevation to 17.04, well below the proposed basin bottom elevation of 22.50.

Input Values

2.28
0.150
30.00
100.000
2.500
24.00
10.00

**R** Recharge rate (permeability rate) (in/hr)  
**Sy** Specific yield, Sy (dimensionless)  
**Kh** Horizontal hydraulic conductivity (in/hr)  
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan  
**x** 1/2 length of basin (x direction, in feet)  
**y** 1/2 width of basin (y direction, in feet)  
**t** Duration of infiltration period (hours)  
**hi(0)** Initial thickness of saturated zone (feet)

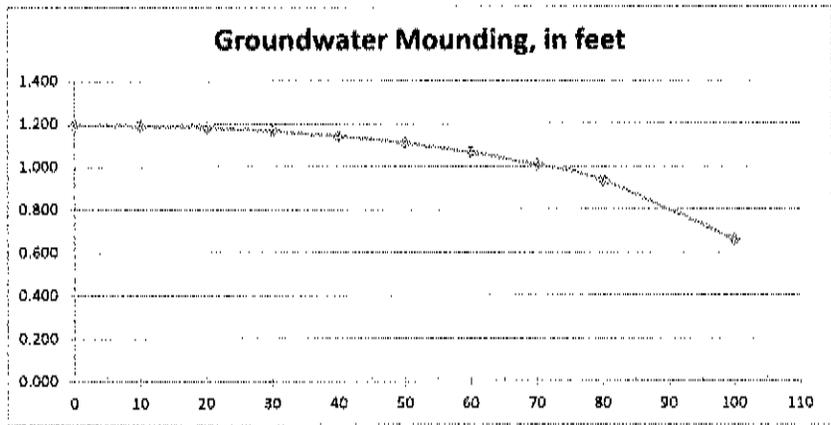
11.194
1.194

**h(max)** Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)  
**Δh(max)** Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from center of basin in x direction, in feet

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
1.194	0
1.191	10
1.181	20
1.165	30
1.142	40
1.109	50
1.066	60
1.009	70
0.934	80
0.658	100

Re-Calculate Now



**Disclaimer**

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

**Calculate Time For The Infiltration Basin To Infiltrate Volume Under The Proposed Weir Elevation 24.50**

**Infiltration Basin #5A**

**Infiltration Period =  $\frac{\text{Volume of runoff to be infiltrated (cf)} \times 12 \text{ in/hr}}{\text{Infiltration area (sf)} \times \text{recharge rate in/hr}}$**

**Infiltration Period =  $\frac{4,573 \text{ cf} \times 12 \text{ in/hr}}{1,000 \text{ sf} \times 6 \text{ in/hr}}$**

**Infiltration Period = 9.14 Hours**

**Adjustment of the Recharge Rate and Adjustment of the Duration of the Infiltration Period**

**$6 \text{ in/hr} \times \frac{9.14 \text{ hours}}{24 \text{ hours}} = 2.28 \text{ in/hr}$**

**Adjusted Rate = 2.28 in/hr**

**Adjusted Duration of Infiltration Period = 24 hours**

**GROUNDWATER RECHARGE MOUNDING ANALYSIS**  
**BLOCK 236 LOTS 6.18 & 6.19**  
**DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ**  
**STORMWATER BASIN #5A**

**EDA #10793**

- |    |   |   |         |                              |
|----|---|---|---------|------------------------------|
| 1. | Recharge Rate (in./hr)                    | = | 6 in/hr |                              |
| 2. | Horizontal Hydraulic Conductivity (in/hr) | = | 0.15    |                              |
| 3. | Beginning Distance                        | = | 0'      |                              |
|    | Final Distance                            | = | 100'    |                              |
|    | Distance Increment                        | = | 10'     |                              |
| 4. | Initial Thickness of Saturated Zone       | = | 10'     |                              |
| 5. | Width                                     | = | 5' }    | Bottom of Infiltration Basin |
| 6. | Length                                    | = | 200' }  |                              |
| 7. | Angle from Length of Axis                 | = | 0'      |                              |

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	5'
Length	=	200'
Angle	=	0 Degrees

**Results Display**

<u>Distance</u> (Ft.)	<u>Height</u> (Ft.)
0	1.194
10	1.191
20	1.181
30	1.165
40	1.142
50	1.109
60	1.066
70	1.009
80	0.934
90	0.828
100	0.658

Groundwater Recharge Mounding Analysis – Stormwater Basin #5A  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ  
EDA #10793

### **Groundwater Mounding Analysis**

Major Site Plan: Clark Edward, LLC  
Block 236 Lots 6.18 & 6.19, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that the height or elevation of the seasonal high-water elevation will increase by 1.194 feet (approximately 14 inches).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 15.96. Groundwater mounding associated with the proposed basin will increase this elevation to 17.15, well below the proposed basin bottom elevation of 22.50.

# **Conduit Outlet Protection Calculations**

Engineering Design Associates

5 Cambridge Drive  
Ocean View, NJ 08230  
(609) 390-0332

JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #1 Q = 4.73 CFS

$$TW \geq \frac{1}{2} D_o$$

CALCULATE LENGTH

$$L_w = 3 \left( \frac{Q}{D_o^{1.5}} \right)$$

$$L_w = 10.15'$$

USE 11'-0"

CALCULATE WIDTH

$$W_w = 3W_o + 0.4 L_w$$

$$W_w = 7.81'$$

USE 8'-0"

CALCULATE D50 STONE SIZE

$$D_{50} = \frac{0.02 Q}{TW} = 1.33$$

$$D_{50} = 0.46'$$

USE 6"  $\phi$  STONE

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JOB \_\_\_\_\_

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CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #2

$$Q = 0.73 \text{ CFS}$$

$$TW \geq \frac{1}{2} D_0$$

CALCULATE LENGTH

$$L_w = 3 \left( \frac{Q}{V / D_0^5} \right)$$

$$L_w = 1.56'$$

USE 5'-0"

CALCULATE WIDTH

$$W_w = 3W_0 + 0.4 L_w$$

$$W_w = 4.37'$$

USE 5'-0"

CALCULATE DSD STONE SIZE

$$DSD = \frac{0.02}{TW} \approx 1.33$$

$$DSD = 0.03'$$

USE 6"  $\phi$  STONE

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JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #3       $Q = 4.83 \text{ CFS}$

$$TW \geq \frac{1}{2} D_o$$

CALCULATE LENGTH

$$L_w = 3 \left( \frac{Q}{D_o^{0.5}} \right)$$

$$L_w = 10.36'$$

USE 11'-0"

CALCULATE WIDTH

$$W_w = 3 W_o + 0.4 L_w$$

$$W_w = 7.89'$$

USE 8'-0"

CALCULATE DSD STONE SIZE

$$DSD = \frac{0.02}{TW} \left( \frac{Q}{D_o} \right)^{1.33}$$

$$DSD = 0.48'$$

USE 6"  $\phi$  STONE

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JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #4 Q = 0.73 CFS

$$TW \geq \frac{1}{2} D_o$$

CALCULATE LENGTH

$$L_w = 3 \left( \frac{Q}{D_o^{0.5}} \right)$$

$$L_w = 11.56'$$

USE 5'-0"

CALCULATE WIDTH

$$W_w = 3 W_o + 0.4 L_w$$

$$W_w = 4.37'$$

USE 5'-0"

CALCULATE DSD STONE SIZE

$$DSD = \frac{0.02 \times 133}{TW}$$

$$DSD = 0.03'$$

USE 6" STONE

Engineering Design Associates

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(609) 390-0332

JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

SCALE \_\_\_\_\_

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #5  $Q = 0.16$  CFS

$$TW \geq \frac{1}{2} D_0$$

CALCULATE LENGTH

$$L_w = 3 \left( \frac{q}{D_0^2} \right)$$

$$L_w = 0.34'$$

USE 5'-0"

CALCULATE WIDTH

$$W_w = 3 W_0 + 0.4 L_w$$

$$W_w = 3.88'$$

USE 5'-0"

CALCULATE DSD STONE SIZE

$$DSD = \frac{0.02 q}{TW} = 1.33$$

$$DSD = 0.005'$$

USE 6"  $\phi$  STONE