STORMWATER MANAGEMENT, WATER QUALITY AND GROUNDWATER RECHARGE ANALYSIS

For

Manhattan Beach Phase 1 Renewal, LLC

Proposed Townhouse Development

Rosewell Street
Block 161.02, Lots 20, 23, 24 & 24.01
City of South Amboy
Middlesex County, NJ

Prepared by:

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APPENDIX

1. Site Description & Project Overview

The subject site is located with frontage on Rosewell Street in the City of South Amboy, Middlesex County, New Jersey. The site is identified as Block 161.02, Lots 20, 23, 24 & 24.01 on the City of South Amboy Tax Map Sheet #16. The site is partially developed and contains an existing dilapidated one-story brick building with surrounding paved areas. A JCP&L transmission line Right-of-Way (ROW) easement passes through the site. The southern section of the site is disturbed and composed of a gravel parking area, surrounding maintained lawn, and stormwater management basin.

The site is bordered by undeveloped land to the north, by the Raritan Bay to the east, by Middlesex County Utility Authority – South Amboy Pump Station and John T. O'Leary Boulevard to the south with residential uses beyond, and by Rosewell Street to the west with residential uses beyond.

The proposed project consists of the development of 196 residential townhouse units. The buildings will have a combined total footprint of 119,906 SF, 7.24 acres of impervious surface, and 14.37 acres of land disturbance. The proposed project will also include all associated site improvements including parking areas, landscaping, lighting, amenity areas, stormwater management facilities, and utilities.

2. Design Methodology

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of the subject site. Based upon the fact that the proposed development will result in more than one (1) acre of land disturbance, increase impervious coverage by more than ¼ acre, and increase motor vehicle surfaces by more than ¼ acre, this project is classified as a "major development" as defined in NJAC 7:8. Therefore, the proposed development has been designed to meet the stormwater runoff quantity, quality, and groundwater recharge standards, as set forth by the City of South Amboy Land Use Ordinance and NJAC 7:8.

The following documents and data were used in the support of the design of the project:

- ALTA/NSPS Land Title Survey, prepared by Dynamic Survey, LLC, dated June 19, 2020, Last Revised August 1, 2024;
- Preliminary and Final Site Plan, prepared by Dynamic Engineering Consultants, PC, dated October 13, 2025;
- Field Reconnaissance completed by Dynamic Engineering Consultants, PC on April 26, 2025;
- NRCS Soil Survey; and
- NJDEP Stormwater Management Best Management Practices Manual.

The hydrology for the site was calculated using the NRCS Runoff Equation and Dimensionless Unit Hydrograph as noted in Part 630, Hydrology National Engineering Handbook. The following particular references were used:

- Curve Numbers were established via Chapter 9 – Hydrologic Soil-Cover Complexes
- Time of Concentrations were calculated in accordance with Chapter 15
- Rainfall Distributions are based on NOAA Type D rainfall distribution
- The DelMarVa Unit Hydrograph was utilized
- The rainfall depths are based on Middlesex County NOAA Atlas 14 Data and adjusted per NJAC 7:8-5.7 Tables 5-5 and 5-6 as noted below:

Return Period	NOAA Atlas 14 Rainfall Depth (inches)	Current Adjusted Rainfall Depth (inches)	Projected Adjusted Rainfall Depth (inches)
2 Year Storm	3.35	3.35	3.99
10 Year Storm	5.12	5.17	6.20
100 Year Storm	8.63	8.89	11.48

Based upon the Middlesex County Soil Survey, the soil types native to the site include:

Soil Type	Soil Type Name	Hydrologic Soil Group
DouC	Downer-Urban land complex, 5 to 10 percent slopes	A
PdwAv	Pawcatuck-Transquaking, 0 to 2 percent slopes, very frequently flooded	D
PstA	Psamments, sulfidic substratum, 0 to 3 percent slopes	A
UR	Urban land	

Based on the methodology and data noted above a hydrologic evaluation of the NJDEP Water Quality, 2, 10, and 100-year storm events was prepared.

This report will address compliance with the following standards:

- Groundwater Recharge Standards (NJAC 7:8-5.4)
- Stormwater Runoff Quality Standards (NJAC 7:8-5.5)
- Stormwater Runoff Quantity Standards (NJAC 7:8-5.6)
- Calculation of Stormwater Runoff (NJAC 7:8-5.7)
- Green Infrastructure Standards (NJAC 7:8-5.3)

3. Existing Drainage Conditions

The area to be analyzed consists of approximately 14.11 acres and is comprised of buildings, parking, and lawn areas. Currently, stormwater runoff generated by the existing site drains to the northeast to the Raritan Bay via overland flow. The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included in the Appendix of this report.

Point of Analysis #1 - Raritan North
Existing Study Area Raritan North: This area consists of 10.88 acres in the northern portion of the site which includes open space and lawn areas, as well as a small portion of buildings and paved parking areas. Under existing conditions, stormwater runoff generated by this area flows northeast via overland flow to the to the Raritan Bay.

Point of Analysis #2 - Raritan South
Existing Study Area Raritan South: This area consists of 2.05 acres in the southeastern portion of the site which includes open space and lawn areas, as well as a gravel parking area and paved boat ramp. Under existing conditions, stormwater runoff generated by this area flows north via overland flow to the to the Raritan Bay.

Point of Analysis #3 – Right-of-way

Existing Study Area ROW: This area consists of 1.18 acres in the south portion of the site which includes a narrow strip of lawn areas and driveways along Rosewell Street, as well as a gravel parking area along John T O'Leary Boulevard. Under existing conditions, stormwater runoff generated by this area flows south via overland flow to the existing conveyance system within the right-of-way.

Existing Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
POA #1 - Raritan North Impervious	0.36	3.2	98
POA #1 - Raritan North Pervious	10.52	17.7	73
POA #1	***10.88***	**-**	**-**
POA #2 - Raritan South Impervious	*0.42*	*1.5*	*98*
POA #2 - Raritan South Pervious	*1.63*	*9.5*	*76*
POA #2	***2.05***	**-**	**-**
POA #3 – ROW Impervious	*0.66*	*2.2*	*98*
POA #3 - ROW Pervious	*0.52*	*14.5*	*56*
POA #3	***1.18***	**-**	**-**

Existing Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
Raritan North	6.24	14.64	34.16	9.41	20.77	50.45
Raritan South	2.48	4.70	9.60	3.36	6.27	13.62
ROW	2.15	3.46	6.38	2.61	4.30	8.62

4. Proposed Drainage Conditions

The proposed development will incorporate 27 Contech Filterra Peak Diversion Manufactured Treatment Devices (MTD's) into the layout of the facility for stormwater management. The MTD's are designed to collect, treat, and convey stormwater runoff generated by the development in order to meet the stormwater management requirements. The proposed site conditions have been evaluated using the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map included in the Appendix of this report.

Point of Analysis #1 - Raritan North

Proposed Study Area Raritan North: This area consists of 10.71 acres in the northeastern portion of the site which includes buildings, drive aisles, walkways, and lawn areas. Under proposed conditions, stormwater runoff generated by this area flows via overland flow to the proposed conveyance system on site where it is discharged to the Raritan Bay.

Point of Analysis #2 - Raritan South

Proposed Study Area Raritan South: This area consists of 2.41 acres in the southeastern portion of the site which includes buildings, drive aisles, walkways, and lawn areas. Under proposed conditions, stormwater runoff generated by this area flows via overland flow to the proposed conveyance system on site where it is discharged to the Raritan Bay.

Point of Analysis #3 – Right-of-way

Proposed Study Area ROW: This area consists of 0.99 acres in the south portion of the site which includes a narrow strip of lawn areas, driveways, and walkways along Rosewell Street and John T O'Leary Boulevard. Under proposed conditions, stormwater runoff generated by this area flows south via overland flow to the existing conveyance system within the right-of-way.

Proposed Conditions Input Summary Table

Drainage Area Name	Drainage Area (acres)	Time of Concentration (minutes)	Curve Number (CN)
POA # 1 - Raritan North Impervious	5.80	8.4	98
POA #1 – Raritan North Pervious	4.91	13.8	75
POA #1	***10.71***		
POA #2 – Raritan South Impervious	0.87	4.9	98
POA #2 – Raritan South Pervious	1.54	7.8	76
POA #2	***2.41***		
POA #3 - ROW Impervious	0.31	0.4	98
POA #3 – ROW Pervious	0.68	7.2	52
POA #3	***0.99***		

Proposed Conditions Flow Summary Table

Drainage Area Name	Current Adjusted Rainfall Conditions			Projected Adjusted Rainfall Conditions		
	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)	Q_2 (CFS)	Q_{10} (CFS)	Q_{100} (CFS)
Raritan North	15.96	27.26	51.37	20.14	34.37	69.43
Raritan South	3.80	6.91	13.59	4.95	8.88	18.61
ROW	1.08	1.83	3.93	1.30	2.40	5.69

5. Green Infrastructure Compliance

The proposed development has been designed to comply with the stormwater runoff quantity, quality, and groundwater recharge requirements for the proposed development as applicable. The stormwater management facilities have been designed in accordance with NJAC 7:8 and the New Jersey Stormwater Best Management Practices. The tables below summarize the design considerations for each system, see the Site Plan details for additional information.

Manufactured Treatment Device (Table 5-1 – Quality)

Design Criteria	Required	Provided
Max. Treatment Flow Rate	6'x6' Media Bay: 0.250 cfs	6'x6' Media Bay - MTD 194: 0.157 CFS - MTD 152: 0.204 CFS - MTD 153: 0.205 CFS - MTD 146: 0.228 CFS - MTD 147: 0.235 CFS
	6'x8' Media Bay: 0.333 cfs	6'x8' Media Bay - MTD 156: 0.266 CFS - MTD 154: 0.271 CFS - MTD 159: 0.289 CFS - MTD 189: 0.302 CFS - MTD 141: 0.322 CFS - MTD 143: 0.324 CFS - MTD 188: 0.329 CFS - MTD 252: 0.329 CFS - MTD 149: 0.333 CFS

	6’x10’ Media Bay: 0.417 cfs	6’x10’ Media Bay - MTD 155: 0.347 CFS - MTD 186: 0.355 CFS
	7’x10’ Media Bay: 0.486 cfs	7’x10’ Media Bay - MTD 140: 0.369 CFS - MTD 220: 0.381 CFS - MTD 144: 0.387 CFS - MTD 148: 0.388 CFS - MTD 195: 0.409 CFS - MTD 236: 0.430 CFS - MTD 247: 0.442 CFS - MTD 248: 0.453 CFS - MTD 139: 0.459 CFS
	8’x10.5’ Media Bay: 0.583 cfs	8’x10.5’ Media Bay - MTD 250: 0.516 CFS - MTD 150: 0.536 CFS
Max. Allowable Drainage Area	6’x6’ Media Bay: 0.91 ac	6’x6’ Media Bay - MTD 194: 0.05 ac - MTD 152: 0.07 ac - MTD 153: 0.07 ac - MTD 146: 0.07 ac - MTD 147: 0.08 ac
	6’x8’ Media Bay: 1.21 ac	6’x8’ Media Bay - MTD 156: 0.09 ac - MTD 154: 0.09 ac - MTD 159: 0.09 ac - MTD 189: 0.10 ac - MTD 141: 0.10 ac - MTD 143: 0.11 ac - MTD 188: 0.11 ac - MTD 252: 0.11 ac - MTD 149: 0.11 ac
	6’x10’ Media Bay: 1.51 ac	6’x10’ Media Bay - MTD 155: 0.11 ac - MTD 186: 0.11 ac
	7’x10’ Media Bay: 1.76 ac	7’x10’ Media Bay - MTD 140: 0.12 ac - MTD 220: 0.12 ac - MTD 144: 0.13 ac - MTD 148: 0.13 ac - MTD 195: 0.13 ac - MTD 236: 0.14 ac - MTD 247: 0.14 ac - MTD 248: 0.15 ac - MTD 139: 0.15 ac
	8’x10.5’ Media Bay: 2.11 ac	8’x10.5’ Media Bay - MTD 250: 0.17 ac - MTD 150: 0.18 ac
Max. Bypass Flow	6’x6’ Media Bay: 1.4 cfs 6’x8’ Media Bay: 1.4 cfs 6’x10’ Media Bay: 1.4 cfs 7’x10’ Media Bay: 2.1 cfs 8’x10.5’ Media Bay: 2.5 cfs	6’x6’ Media Bay - MTD 194: 0.27 CFS - MTD 152: 0.41 CFS - MTD 153: 0.41 CFS - MTD 146: 0.41 CFS - MTD 147: 0.48 CFS 6’x8’ Media Bay

		- MTD 156: 0.54 CFS - MTD 154: 0.54 CFS - MTD 159: 0.61 CFS - MTD 189: 0.61 CFS - MTD 141: 0.61 CFS - MTD 143: 0.68 CFS - MTD 188: 0.68 CFS - MTD 252: 0.68 CFS - MTD 149: 0.68 CFS 6'x10' Media Bay - MTD 155: 0.68 CFS - MTD 186: 0.68 CFS 7'x10' Media Bay - MTD 140: 0.75 CFS - MTD 220: 0.75 CFS - MTD 144: 0.82 CFS - MTD 148: 0.82 CFS - MTD 195: 0.82 CFS - MTD 236: 0.07 CFS - MTD 247: 0.07 CFS - MTD 248: 0.95 CFS - MTD 139: 0.95 CFS 8'x10.5' Media Bay - MTD 250: 1.02 CFS - MTD 150: 1.02 CFS
Min. Separation from SHWT	With Precast Vault: N/S	N/A

6. Water Quantity Control Compliance

The site has been designed to meet the flow reduction requirements as noted in NJAC 7:8-5.6(b). The point of analysis has been identified on the Drainage Area Maps as previously described.

Please note the majority of the stormwater runoff is directly tributary to the Raritan Bay, which is an open water tidal waterbody and runoff rate reductions are not required to this point of analysis per NJAC 7:8-5.6(b)4. It is also important to note post-construction runoff hydrographs for the two, 10 and 100-year storm events for the point of analysis to the right-of-way do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events, therefore, stormwater runoff tributary to the existing stormwater conveyance infrastructure within the right-of-way complies with the runoff quantity requirements of NJAC 7:8-5.6(b)1. Below is a summary table demonstrating compliance with the flow reduction requirements.

Point of Analysis #1 – Raritan North

Storm Event	Existing Peak Flow Rate (cfs)	Proposed Peak Flow Rate (cfs)	Proposed Peak Flow Reduction (cfs)
Current 2-year	6.24	15.96	+9.72
Current 10-year	14.64	27.26	+12.62
Current 100-year	34.16	51.37	+17.21
Projected 2-year	9.41	20.14	+10.73
Projected 10-year	20.77	34.37	+13.60
Projected 100-year	50.45	69.43	+18.98

Point of Analysis #2 – Raritan South

Storm Event	Existing Peak Flow Rate (cfs)	Proposed Peak Flow Rate (cfs)	Proposed Peak Flow Reduction (cfs)
Current 2-year	2.48	3.80	+1.32
Current 10-year	4.70	6.91	+2.21
Current 100-year	9.60	13.59	+3.99
Projected 2-year	3.36	4.95	+1.59
Projected 10-year	6.27	8.88	+2.61
Projected 100-year	13.62	18.61	+4.99

Point of Analysis #3 – Right-of-Way*

Storm Event	Existing Peak Flow Rate (cfs)	Proposed Peak Flow Rate (cfs)	Proposed Peak Flow Reduction (cfs)
Current 2-year	2.15	1.08	-1.07
Current 10-year	3.46	1.83	-1.63
Current 100-year	6.38	3.93	-2.45
Projected 2-year	2.61	1.30	-1.31
Projected 10-year	4.30	2.40	-1.90
Projected 100-year	8.62	5.69	-2.93

**Please refer to the appendix of this report for comparative hydrograph plots to illustrate post-construction runoff hydrographs for the 2, 10 and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events to document compliance NJAC 7:8-5.6(b)1.*

7. Water Quality Compliance

In accordance with NJAC 7:8-5.5, stormwater quality standards are applicable when a major development results in an increase of one-quarter acre or more of regulated motor vehicle surface. The proposed development utilizes the following green infrastructure BMPs in order to meet the required 80% TSS removal rate as annual average:

Green Infrastructure BMP	TSS Removal Rate per BMP Manual
Filterra HC Bioretention System	80%

Please note Points of Analysis 2 & 3 (Raritan South and Right-of-Way) result in net reduction of regulated motor vehicle surface; therefore, the stormwater runoff quality standards of NJAC 7:8-5.5 do not apply.

Supporting calculations are included in the Appendix of this report.

8. Groundwater Recharge Compliance

The proposed development is exempt from the groundwater recharge requirements set forth by N.J.A.C 7:8-5.4 due to the fact that the project is located within and “urban redevelopment area” as it is a previously developed portion of the Metropolitan Planning Area as delineated on the State Plan Policy Map (SPPM). Therefore, no groundwater recharge measures have been implemented as part of the proposed development as they are not required.

9. Storm Sewer Design

The proposed stormwater management collection system has designed to have hydraulic capacity for the 25-year storm event. The Rational Method was used to determine inflow rates to each structure and Manning's Equation was used to establish pipe capacity. In accordance with the NJDEP BMP Manual Chapter 5, weighted runoff coefficients were computed for each drainage area based on land cover and hydrologic soil group. A minimum time of concentration of ten minutes was assumed for each area. Rainfall intensity was based upon the Trenton Rainfall intensity curve. Supporting calculations and the Inlet Drainage Area Map can be found in the appendix.

10. Soil Erosion and Sediment Control Compliance

The project has been designed to comply with the Standards for Soil Erosion and Sediment Control in New Jersey. Soil erosion control measures such as a stabilized construction entrance, inlet protection and silt fence are shown on the plans. In addition, conduit outlet protection is proposed at the outflow points of the storm sewer system with supporting calculations included in the Appendix of this report. Finally, this project has been designed to satisfy the off-site stability standards set forth in the Standards for Soil Erosion and Sediment Control in New Jersey.

As noted previously, the proposed peak flows meet the reductions, thereby achieving off-site stability.

Special consideration shall be given to the use of infiltration for peak flow modifications as follows:

Point Of Discharge Stability Analysis
When infiltration practices are proposed, an alternate analysis (failure analysis) must be provided which ignores infiltration (no dead storage volume available, no static or dynamic infiltration loss rates in the routing calculations, etc.) and demonstrates that no erosion will occur at the point of discharge if infiltration fails to function. Flow rates based solely upon basin inlet and outlet hydraulics must be used in comparison to Table 21-1 (below) to document a stable outlet.

Infiltration is not proposed; therefore, this section is not applicable.

Downstream (Off-Site) Stability Analysis
Infiltration may be used to meet peak flow reduction requirements (outlined below) for the purposes of documenting stability of the downstream receiving channel, provided that the complete loss of infiltration function does not result in an increase in peak flow values above the predevelopment levels.

Infiltration is not proposed; therefore, this section is not applicable.

Point of Discharge - Methods for Achieving Stability

1. *Well-defined waterway below the point of discharge:*

   There is a well-defined waterway (Raritan Bay) below the point of discharge; therefore, this method will be used.

A. *Retain pre-developed runoff characteristics. Do not increase the rate of runoff from the development.*

The majority of the stormwater runoff is directly tributary to the Raritan Bay, which is an open water tidal waterbody and runoff rate reductions are not required to this point of analysis per N.J.A.C. 7:8-5.4(a)3iv. As such the point of discharge and downstream area are stable.

A small portion of the stormwater runoff is tributary to the right-of-way where proposed runoff rates do not exceed, at any point in time, the pre-construction peak runoff rates.

B. *Analyze the waterway or channel for stability under the planned rate of discharge using the Standard for Grassed Waterways or Standard for Channel Stabilization, as appropriate. Peak flows from the 2 and 10 year storms shall be analyzed.*

The Raritan Bay is a tidal water body with capacity for the flows from the proposed development, as such the point of discharge and downstream areas are stable.

C. *Modify the waterway or channel to a stable design condition.*

As noted above, the Raritan Bay is a tidal water body with capacity for the flows from the proposed development, thus achieving off-site stability. Therefore; this section is not applicable.

Downstream of the Point of Discharge (Off-Site Stability Analysis)

In addition to ensuring erosion does not occur at the point of discharge, areas downstream and beyond the immediate area of site development may be damaged due to erosive forces resulting from extended duration of hydrograph peak flows. An unintended consequence of the practice of detaining and slowly releasing stormwater is the ability for peak flows to be sustained for longer periods of time, offering an opportunity for upstream discharges to coincide with project site discharges. The resulting combined discharge may be equal to or even exceed that of the pre-development condition.

To limit the potential for such an occurrence the designer may choose either of two approaches for downstream stability protection:

1. *Examine hydraulic characteristics of the receiving stream channel considering upstream discharge in combination with site discharge to assess channel stability. The scope and scale of the analysis shall be appropriate to the scale of the project and the post development peak discharge rate and volume. Of particular concern are hydraulic control points, (culverts, bridges, etc.), bends in streams and sudden changes in channel cross sections downstream of the discharge point. The following may be utilized to assess stability:*

   The proposed design utilizes approach 2 as described below.

2. *In lieu of performing a comprehensive watershed analysis, design a detention facility that reduces peak flows to the following levels. Infiltration may be used to meet these criteria:*

   2-year storm – 50% of the predevelopment peak
   10-year storm – 75% of the predevelopment peak

Reductions in peak flows are to be compared to pre-developed drainage area points of discharge in the event that drainage is re-directed in the post developed condition. Reductions are only required of the developed or modified portions of the project site.

As noted above, the Raritan Bay is a tidal water body with capacity for the flows from the proposed development, thus achieving off-site stability.

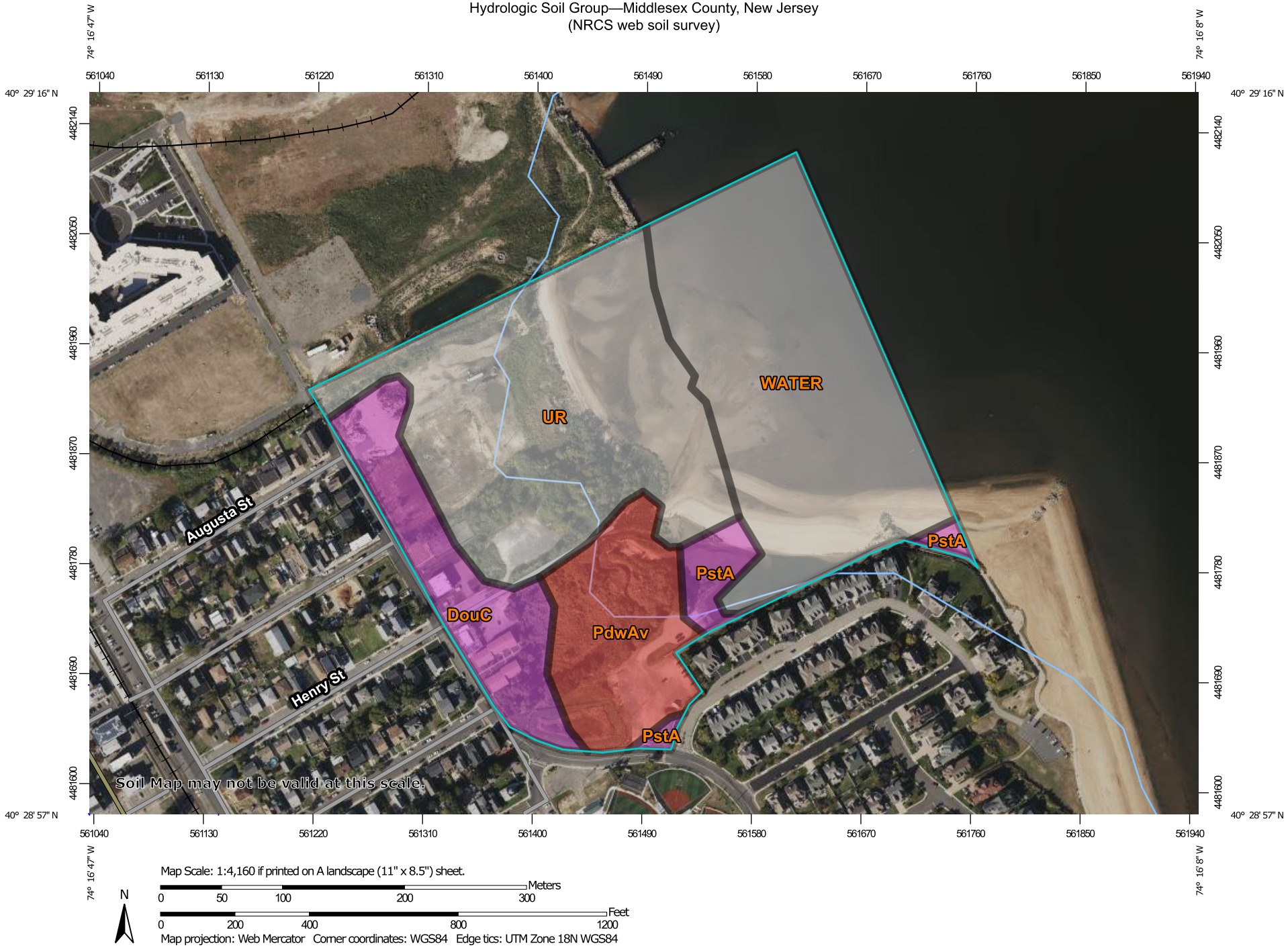
11. Conclusion

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels. In addition, the proposed development satisfies the runoff quantity, quality and groundwater recharge requirements set forth by the City of South Amboy Land Use Ordinance and NJAC 7:8 through the use of the proposed stormwater management system. With this stated, it is evident that the proposed development will not have a negative impact on the existing drainage conditions, water quality or groundwater recharge on-site or within the vicinity of the subject site.

APPENDIX

NRCS WEB SOIL SURVEY

Hydrologic Soil Group—Middlesex County, New Jersey
(NRCS web soil survey)



Map Scale: 1:4,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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: Middlesex 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: Oct 9, 2022—Oct 16, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DouC	Downer-Urban land complex, 5 to 10 percent slopes	A	4.3	12.0%
PdwAv	Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded	D	4.7	12.9%
PstA	Psamments, sulfidic substratum, 0 to 3 percent slopes	A	1.3	3.5%
UR	Urban land		13.1	36.3%
WATER	Water		12.7	35.2%
Totals for Area of Interest			**36.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

MCCUEN-SPEISS CALCULATIONS

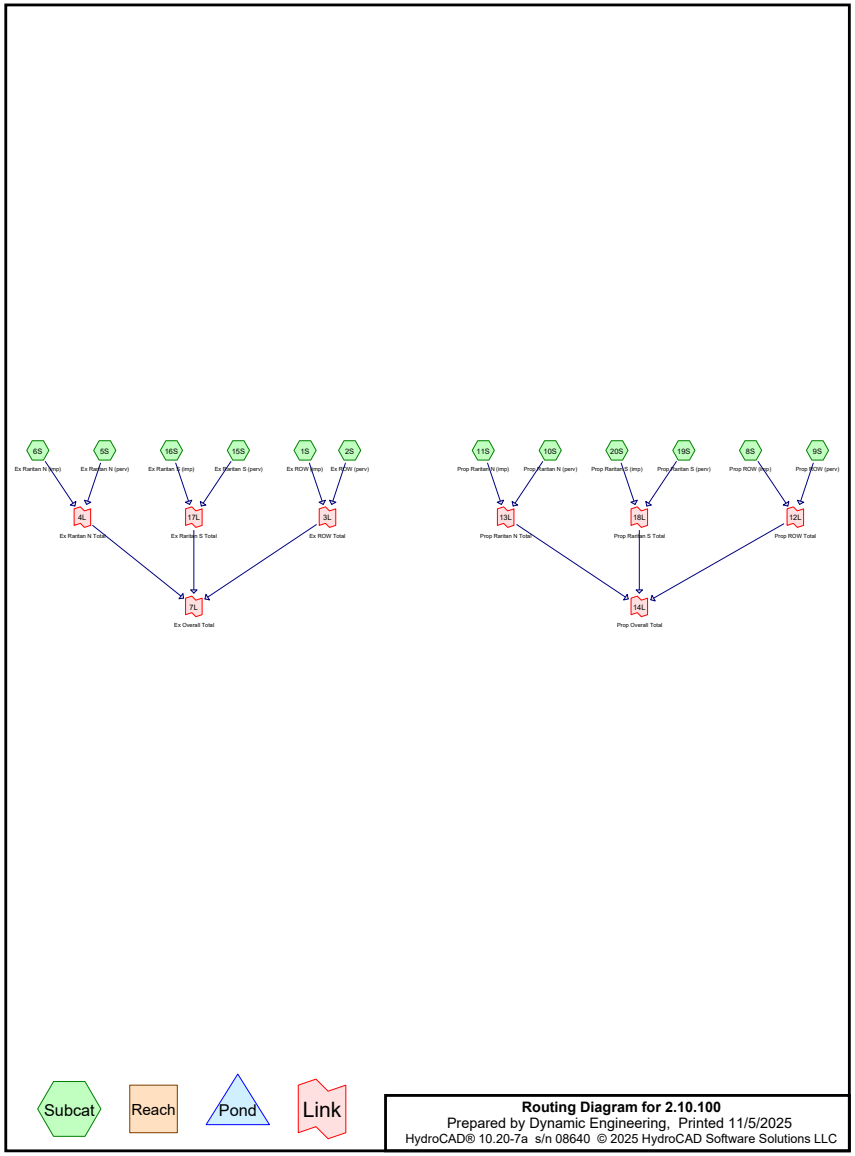
McCuen-Spiess Sheet Flow Equation
Manhattan Beach Phase 1 Urban Renewal, LLC
Proposed Townhouse Development
DEC # 3184-99-001
10/13/2025

McCuen-Spiess Equation: $$L = \frac{100\sqrt{S}}{n}$$

	Slope	Manning's Number	McCuen-Spiess Equation Sheet Flow (FT)	Inputted Sheet Flow (FT)
Drainage Area Prop Raritan North (Perv)	0.020	0.240	58.93	52**
Drainage Area Prop Raritan North (Imp)	0.015	0.011	1113.40	75**
Drainage Area Prop Raritan South (Perv)	0.015	0.240	51.03	22**
Drainage Area Prop Raritan South (Imp)	0.015	0.011	1113.40	100**
Drainage Area ROW (Perv)	0.100	0.240	131.76	99**
Drainage Area ROW (Imp)	0.015	0.011	1113.40	11**

* Maximum length permitted
**Sheet Flow length terminated due to shallow concentrated flow or end of path

HYDROGRAPH SUMMARY REPORTS – EXISTING AND PROPOSED CONDITIONS 2 YR. 10 YR. 100 YR. & WQDS



Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	2-Year-Current	NOAA 24-hr	D	Default	24.00	1	3.35	2	3.35
2	2-Year-Projected	NOAA 24-hr	D	Default	24.00	1	3.99	2	3.99
3	10-Year-Current	NOAA 24-hr	D	Default	24.00	1	5.17	2	3.35
4	10-Year-Projected	NOAA 24-hr	D	Default	24.00	1	6.20	2	3.99
5	100-Year-Current	NOAA 24-hr	D	Default	24.00	1	8.89	2	3.35
6	100-Year-Projected	NOAA 24-hr	D	Default	24.00	1	11.48	2	3.99
7	WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2	3.35

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.490	39	>75% Grass cover, Good, HSG A (2S, 5S, 9S, 10S, 15S, 19S)
16.310	80	>75% Grass cover, Good, HSG D (2S, 5S, 9S, 10S, 15S, 19S)
8.420	98	Paved parking, HSG A (1S, 6S, 8S, 11S, 16S, 20S)
28.220	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.910	HSG A	1S, 2S, 5S, 6S, 8S, 9S, 10S, 11S, 15S, 16S, 19S, 20S
0.000	HSG B	
0.000	HSG C	
16.310	HSG D	2S, 5S, 9S, 10S, 15S, 19S
0.000	Other	
28.220		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
3.490	0.000	0.000	16.310	0.000	19.800	>75% Grass cover, Good	2S, 5S, 9S, 10S, 15S, 19S
8.420	0.000	0.000	0.000	0.000	8.420	Paved parking	1S, 6S, 8S, 11S, 16S, 20S
11.910	**0.000**	**0.000**	**16.310**	**0.000**	**28.220**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=275' Tc=2.2 min CN=98 Runoff=2.15 cfs 0.171 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=0.33"
Flow Length=210' Tc=14.5 min CN=56 Runoff=0.05 cfs 0.014 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=1.08"
Flow Length=392' Tc=17.7 min CN=73 Runoff=5.87 cfs 0.947 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=407' Slope=0.0200 '/' Tc=3.2 min CN=98 Runoff=1.08 cfs 0.094 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=53' Tc=0.4 min CN=98 Runoff=1.08 cfs 0.081 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=0.21"
Flow Length=106' Tc=7.3 min CN=52 Runoff=0.03 cfs 0.012 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=1.20"
Flow Length=752' Slope=0.0200 '/' Tc=13.9 min CN=75 Runoff=3.55 cfs 0.490 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=997' Slope=0.0150 '/' Tc=8.4 min CN=98 Runoff=13.04 cfs 1.507 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=1.26"
Flow Length=88' Slope=0.0400 '/' Tc=9.5 min CN=76 Runoff=1.50 cfs 0.171 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=215' Tc=1.5 min CN=98 Runoff=1.43 cfs 0.109 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=1.26"
Flow Length=439' Slope=0.0150 '/' Tc=7.9 min CN=76 Runoff=1.55 cfs 0.161 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=3.12"
Flow Length=570' Slope=0.0150 '/' Tc=4.9 min CN=98 Runoff=2.33 cfs 0.226 af

Link 3L: Ex ROW Total Inflow=2.15 cfs 0.186 af
Primary=2.15 cfs 0.186 af

Link 4L: Ex Raritan N Total Inflow=6.24 cfs 1.040 af
Primary=6.24 cfs 1.040 af

Link 7L: Ex Overall Total Inflow=8.64 cfs 1.506 af
Primary=8.64 cfs 1.506 af

Link 12L: Prop ROW Total Inflow=1.08 cfs 0.092 af
Primary=1.08 cfs 0.092 af

Link 13L: Prop Raritan N Total Inflow=15.96 cfs 1.996 af
Primary=15.96 cfs 1.996 af

Link 14L: Prop Overall Total Inflow=20.08 cfs 2.476 af
Primary=20.08 cfs 2.476 af

Link 17L: Ex Raritan S Total Inflow=2.48 cfs 0.280 af
Primary=2.48 cfs 0.280 af

Link 18L: Prop Raritan S Total Inflow=3.80 cfs 0.387 af
Primary=3.80 cfs 0.387 af

Total Runoff Area = 28.220 ac Runoff Volume = 3.982 af Average Runoff Depth = 1.69"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

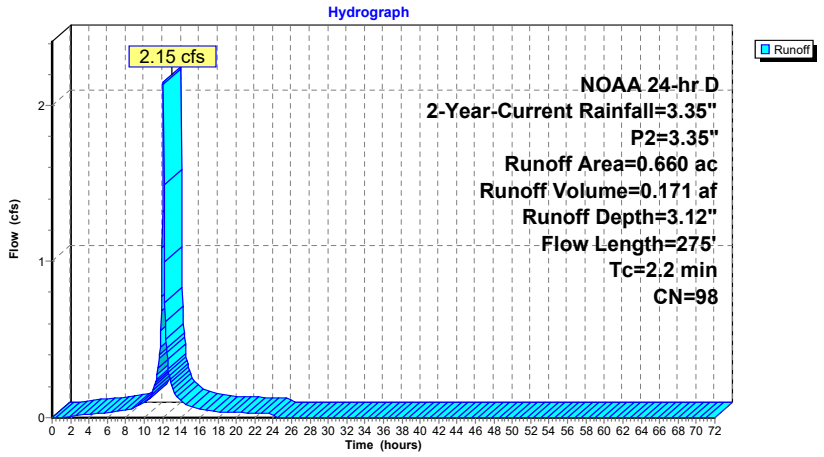
Runoff = 2.15 cfs @ 12.09 hrs, Volume= 0.171 af, Depth= 3.12"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

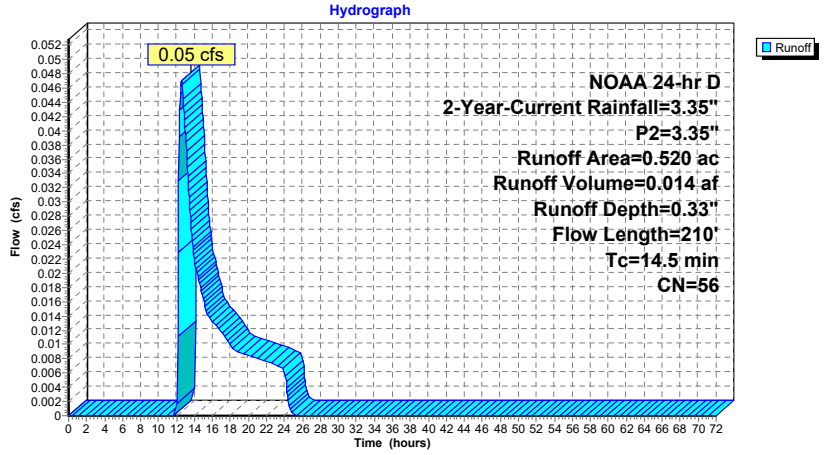
Runoff = 0.05 cfs @ 12.57 hrs, Volume= 0.014 af, Depth= 0.33"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.5	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

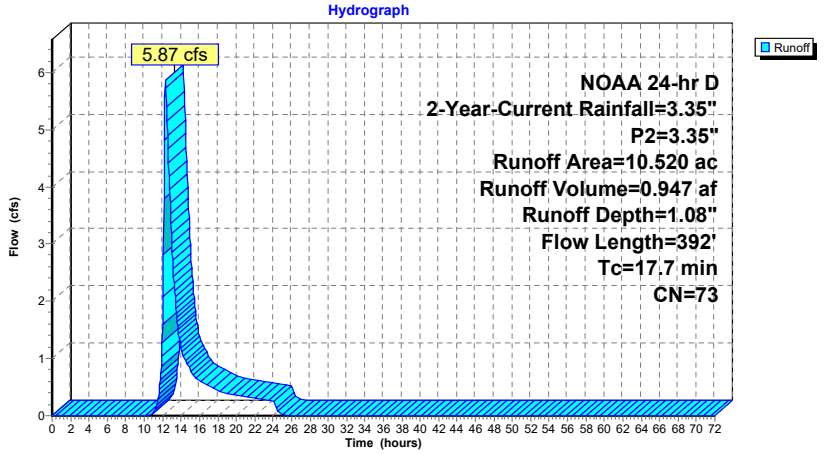
Runoff = 5.87 cfs @ 12.32 hrs, Volume= 0.947 af, Depth= 1.08"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0150	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.7	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

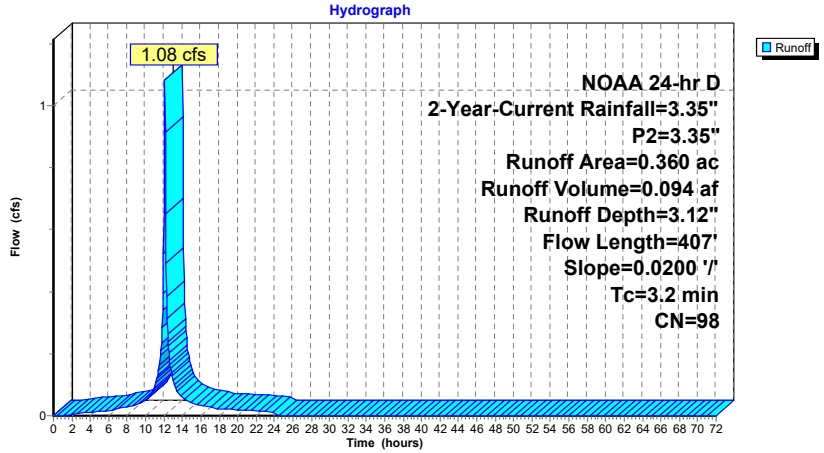
Runoff = 1.08 cfs @ 12.10 hrs, Volume= 0.094 af, Depth= 3.12"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.2	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

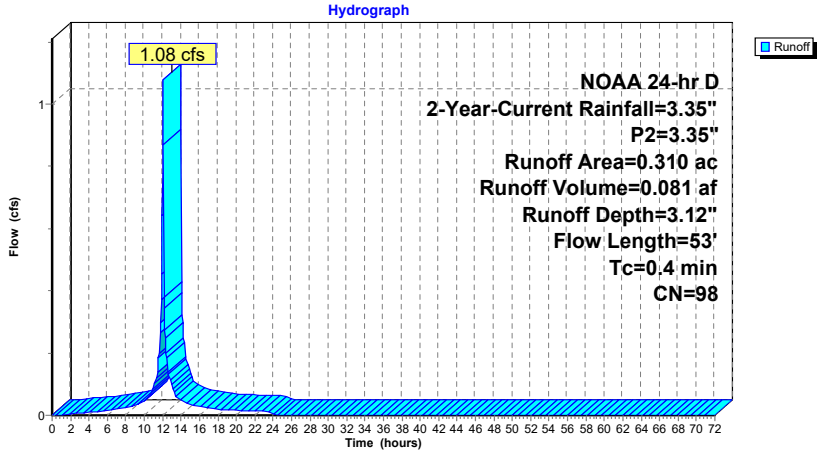
Runoff = 1.08 cfs @ 12.05 hrs, Volume= 0.081 af, Depth= 3.12"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

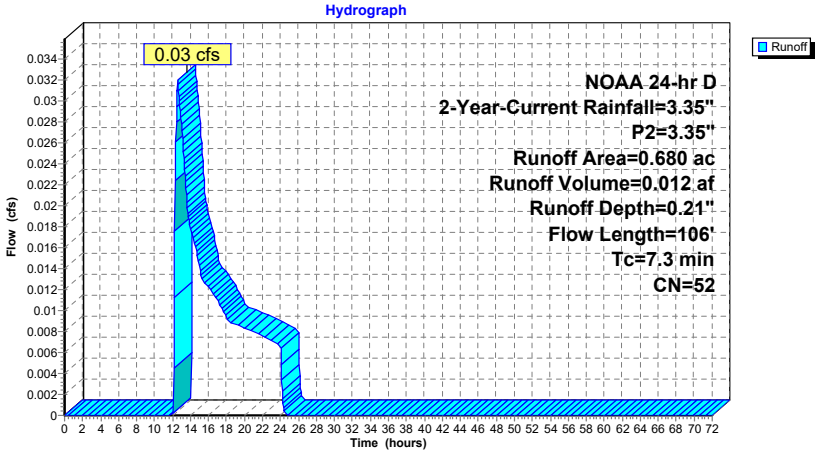
Runoff = 0.03 cfs @ 12.56 hrs, Volume= 0.012 af, Depth= 0.21"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	99	0.1000	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.3	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

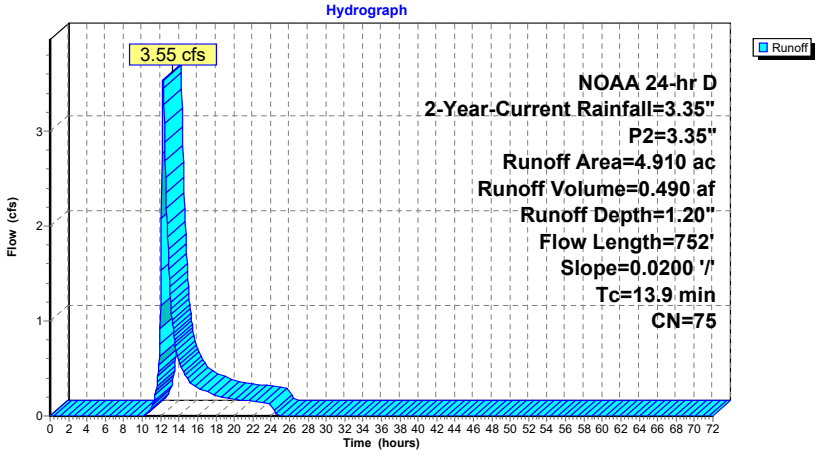
Runoff = 3.55 cfs @ 12.26 hrs, Volume= 0.490 af, Depth= 1.20"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	52	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
5.6	700		2.10		**Direct Entry,**
13.9	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

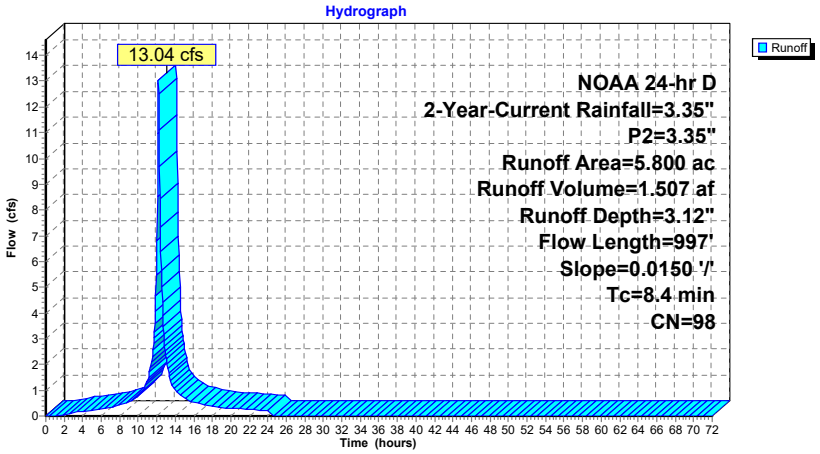
Runoff = 13.04 cfs @ 12.17 hrs, Volume= 1.507 af, Depth= 3.12"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	75	0.0150	1.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.4	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

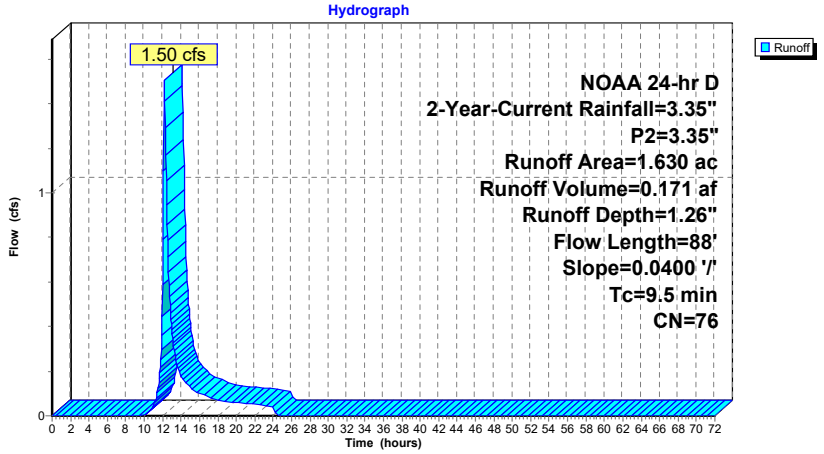
Runoff = 1.50 cfs @ 12.20 hrs, Volume= 0.171 af, Depth= 1.26"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	88	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

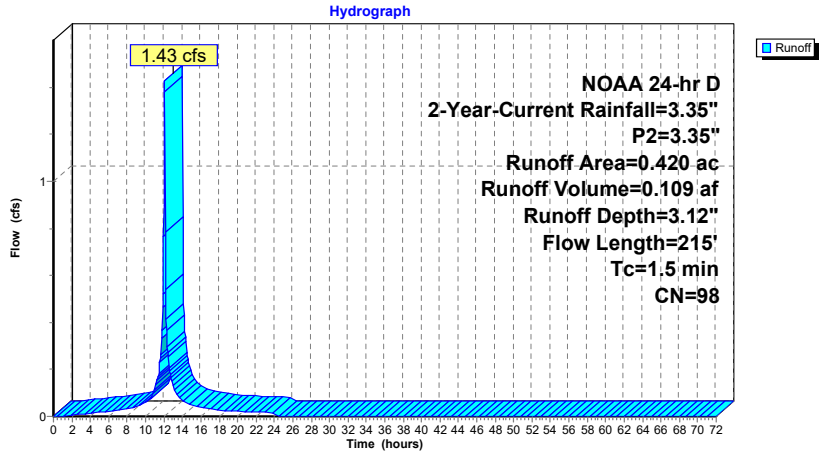
Runoff = 1.43 cfs @ 12.08 hrs, Volume= 0.109 af, Depth= 3.12"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

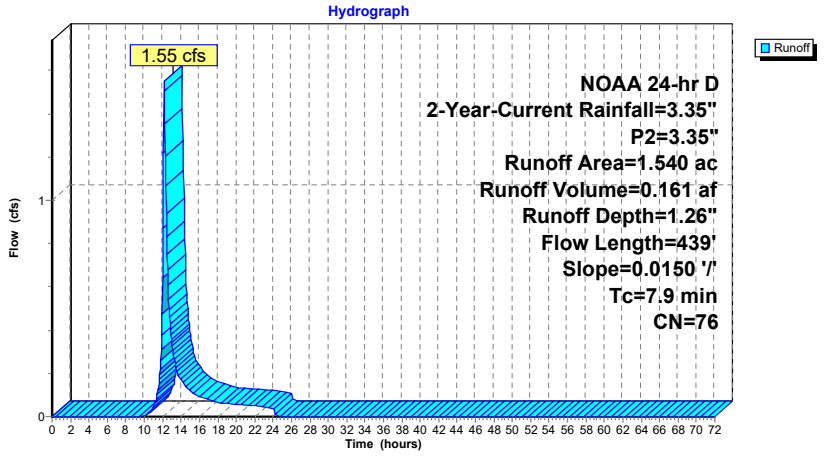
Runoff = 1.55 cfs @ 12.17 hrs, Volume= 0.161 af, Depth= 1.26"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	22	0.0150	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.9	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

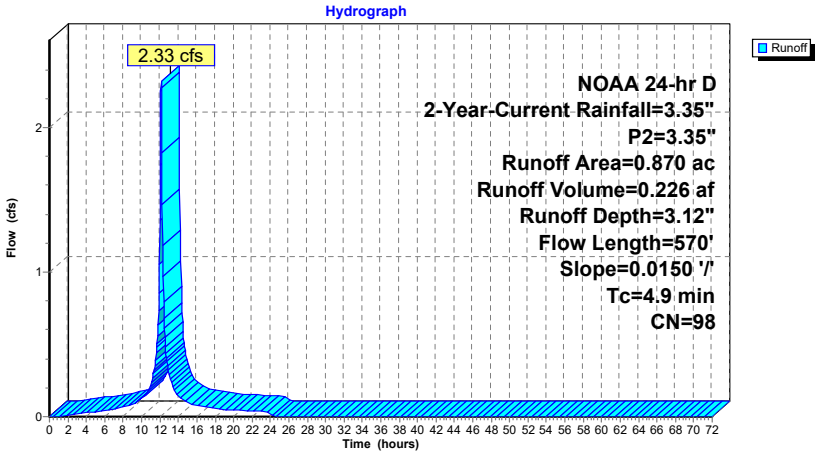
Runoff = 2.33 cfs @ 12.13 hrs, Volume= 0.226 af, Depth= 3.12"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Current Rainfall=3.35", P2=3.35"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.9	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

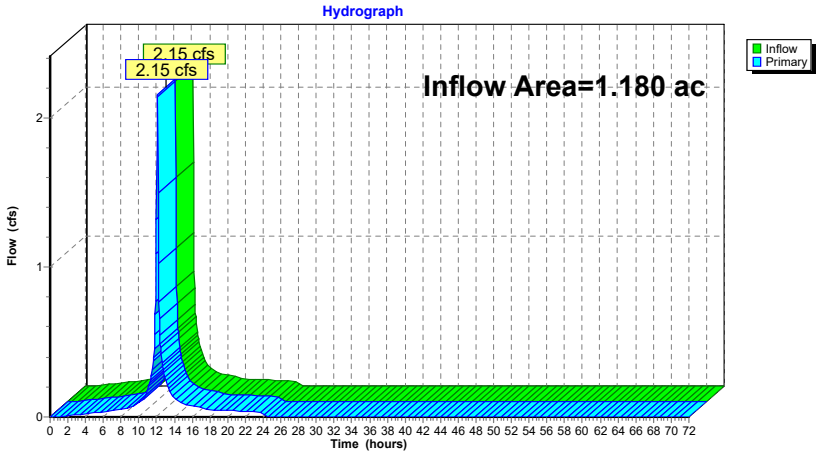


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 1.89" for 2-Year-Current event
Inflow = 2.15 cfs @ 12.09 hrs, Volume= 0.186 af
Primary = 2.15 cfs @ 12.09 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

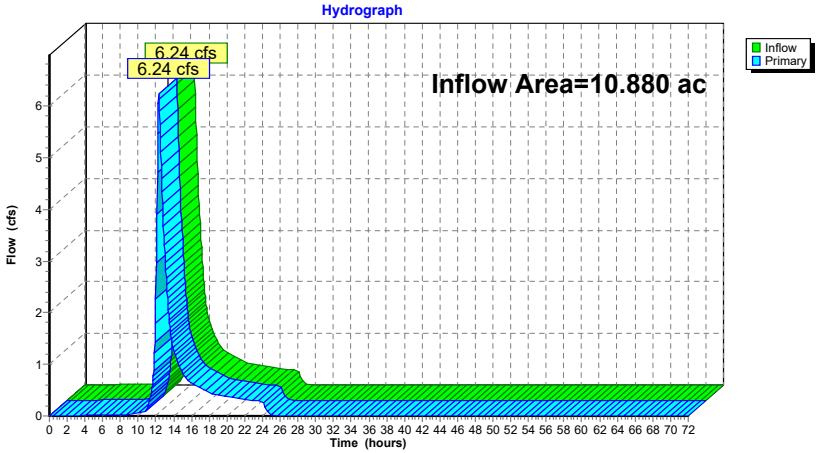


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 1.15" for 2-Year-Current event
Inflow = 6.24 cfs @ 12.31 hrs, Volume= 1.040 af
Primary = 6.24 cfs @ 12.31 hrs, Volume= 1.040 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

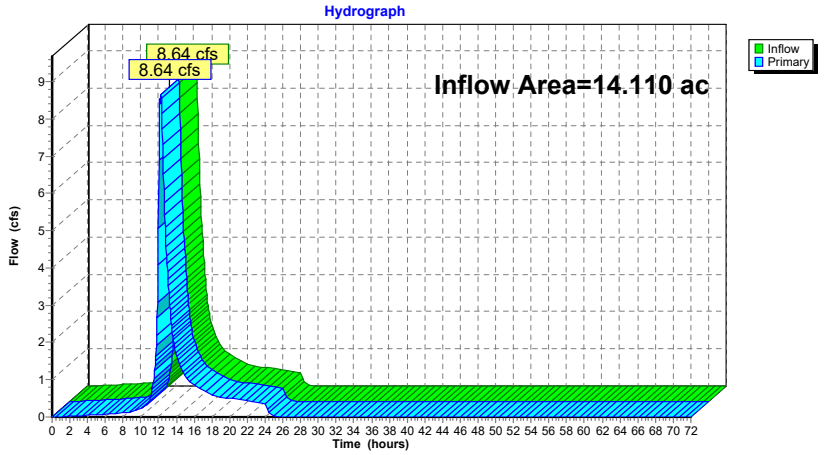


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 1.28" for 2-Year-Current event
Inflow = 8.64 cfs @ 12.25 hrs, Volume= 1.506 af
Primary = 8.64 cfs @ 12.25 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

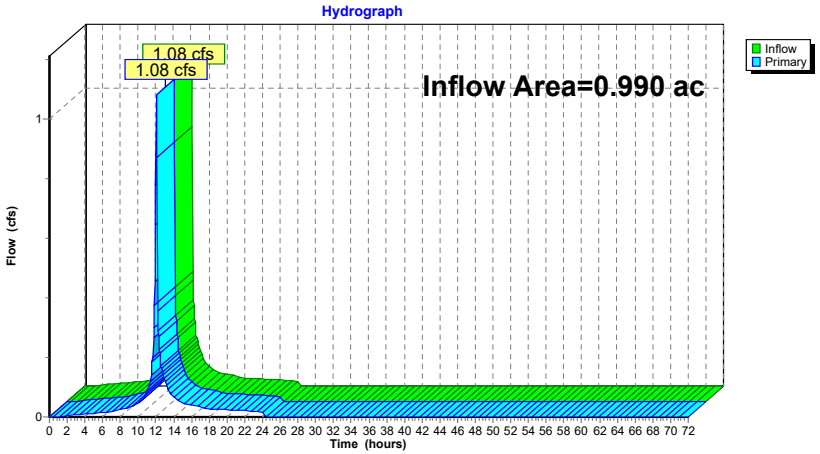


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 1.12" for 2-Year-Current event
Inflow = 1.08 cfs @ 12.05 hrs, Volume= 0.092 af
Primary = 1.08 cfs @ 12.05 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

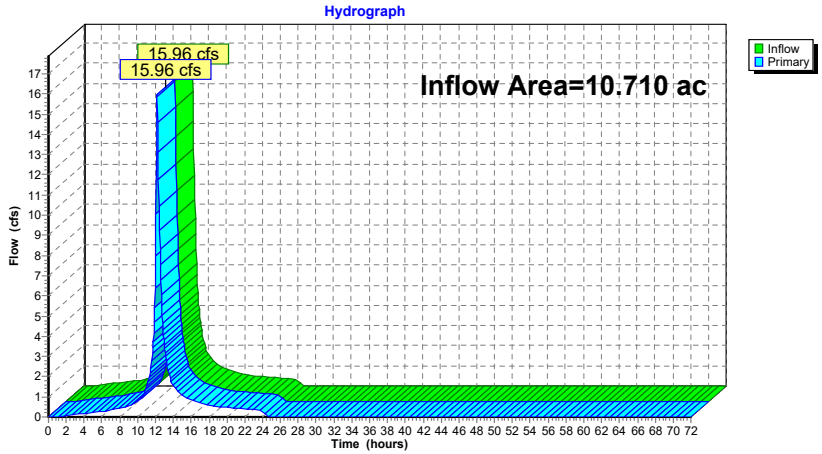


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 2.24" for 2-Year-Current event
Inflow = 15.96 cfs @ 12.18 hrs, Volume= 1.996 af
Primary = 15.96 cfs @ 12.18 hrs, Volume= 1.996 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

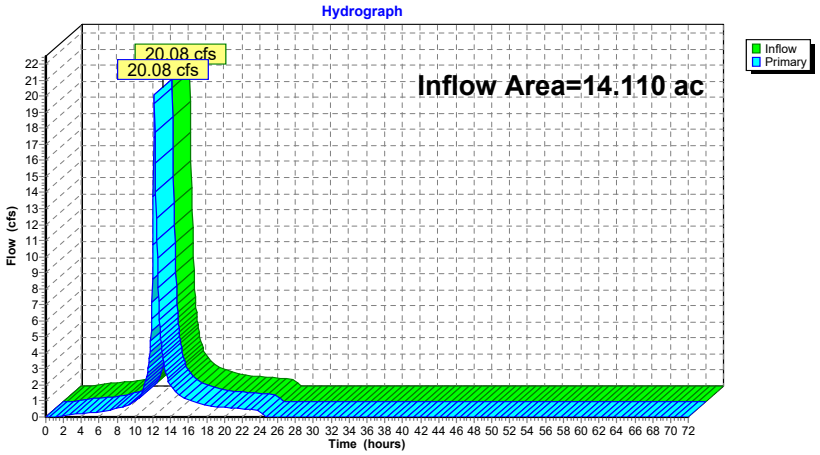


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 2.11" for 2-Year-Current event
Inflow = 20.08 cfs @ 12.17 hrs, Volume= 2.476 af
Primary = 20.08 cfs @ 12.17 hrs, Volume= 2.476 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

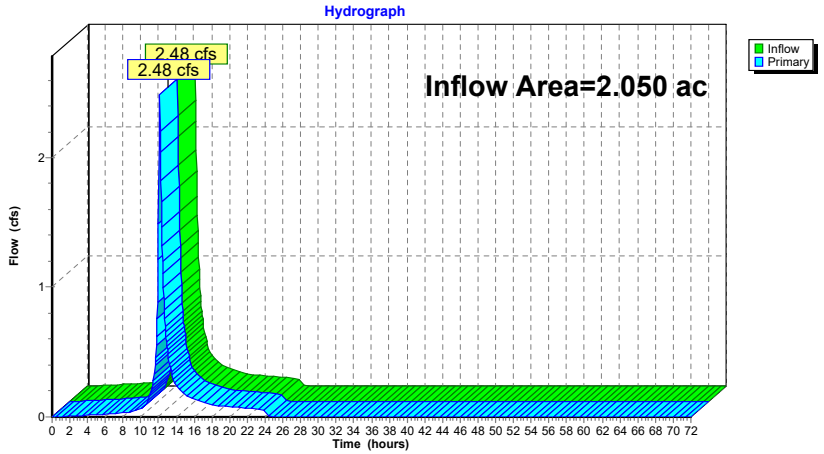


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 1.64" for 2-Year-Current event
Inflow = 2.48 cfs @ 12.10 hrs, Volume= 0.280 af
Primary = 2.48 cfs @ 12.10 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

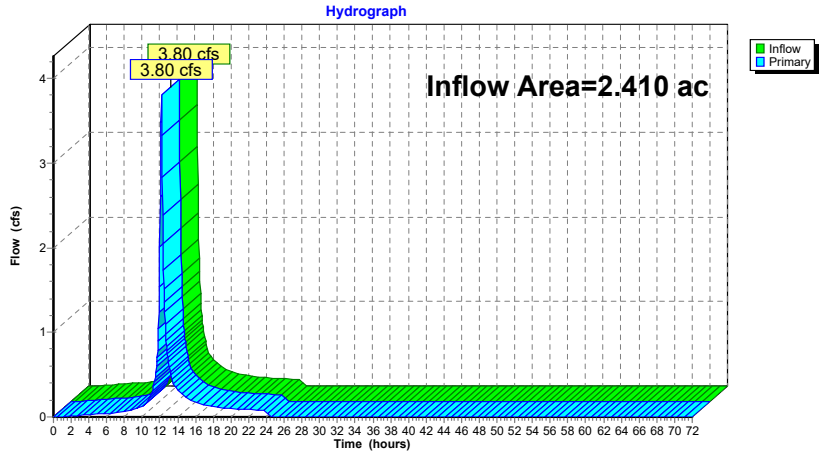


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 1.93" for 2-Year-Current event
Inflow = 3.80 cfs @ 12.15 hrs, Volume= 0.387 af
Primary = 3.80 cfs @ 12.15 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=275' Tc=2.1 min CN=98 Runoff=2.58 cfs 0.207 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=0.57"
Flow Length=210' Tc=13.4 min CN=56 Runoff=0.12 cfs 0.025 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=1.52"
Flow Length=392' Tc=16.4 min CN=73 Runoff=8.92 cfs 1.333 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=407' Slope=0.0200 '/' Tc=3.1 min CN=98 Runoff=1.31 cfs 0.113 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=53' Tc=0.4 min CN=98 Runoff=1.29 cfs 0.097 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=0.40"
Flow Length=106' Tc=6.7 min CN=52 Runoff=0.10 cfs 0.023 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=1.66"
Flow Length=752' Slope=0.0200 '/' Tc=13.2 min CN=75 Runoff=5.17 cfs 0.679 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=997' Slope=0.0150 '/' Tc=8.3 min CN=98 Runoff=15.68 cfs 1.815 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=1.73"
Flow Length=88' Slope=0.0400 '/' Tc=8.7 min CN=76 Runoff=2.19 cfs 0.235 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=215' Tc=1.4 min CN=98 Runoff=1.71 cfs 0.131 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=1.73"
Flow Length=439' Slope=0.0150 '/' Tc=7.5 min CN=76 Runoff=2.24 cfs 0.222 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=3.76"
Flow Length=570' Slope=0.0150 '/' Tc=4.8 min CN=98 Runoff=2.79 cfs 0.272 af

Link 3L: Ex ROW Total Inflow=2.61 cfs 0.231 af
Primary=2.61 cfs 0.231 af

Link 4L: Ex Raritan N Total Inflow=9.41 cfs 1.445 af
Primary=9.41 cfs 1.445 af

Link 7L: Ex Overall Total Inflow=12.82 cfs 2.043 af
Primary=12.82 cfs 2.043 af

Link 12L: Prop ROW Total Inflow=1.30 cfs 0.120 af
Primary=1.30 cfs 0.120 af

Link 13L: Prop Raritan N Total Inflow=20.14 cfs 2.494 af
Primary=20.14 cfs 2.494 af

Link 14L: Prop Overall Total Inflow=25.53 cfs 3.108 af
Primary=25.53 cfs 3.108 af

Link 17L: Ex Raritan S Total Inflow=3.36 cfs 0.367 af
Primary=3.36 cfs 0.367 af

Link 18L: Prop Raritan S Total Inflow=4.95 cfs 0.494 af
Primary=4.95 cfs 0.494 af

Total Runoff Area = 28.220 ac Runoff Volume = 5.151 af Average Runoff Depth = 2.19"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

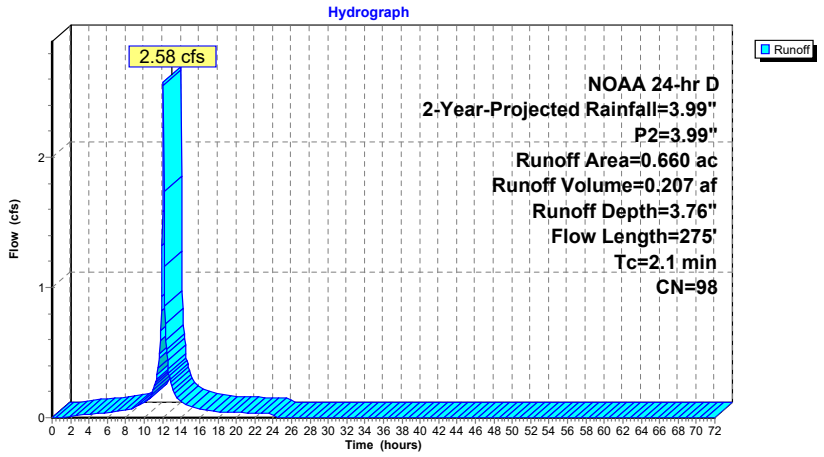
Runoff = 2.58 cfs @ 12.09 hrs, Volume= 0.207 af, Depth= 3.76"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

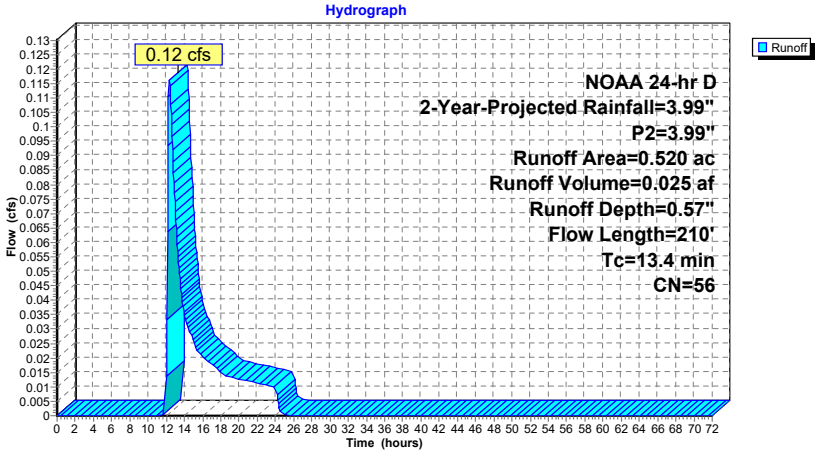
Runoff = 0.12 cfs @ 12.34 hrs, Volume= 0.025 af, Depth= 0.57"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0200	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.4	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

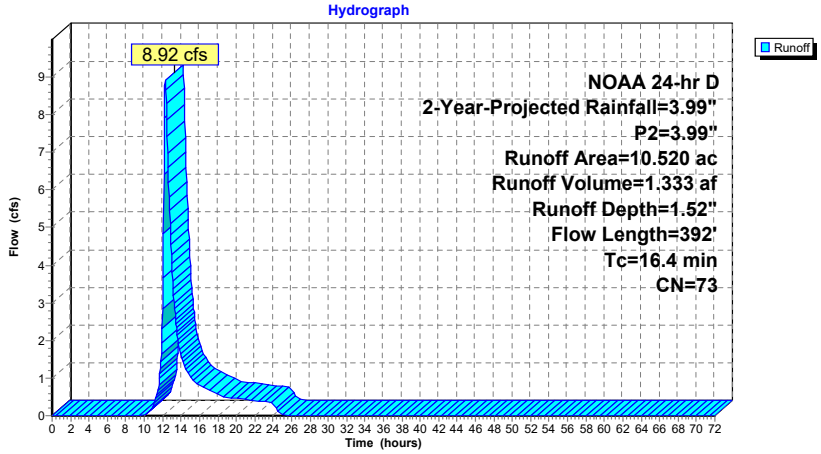
Runoff = 8.92 cfs @ 12.29 hrs, Volume= 1.333 af, Depth= 1.52"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0150	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

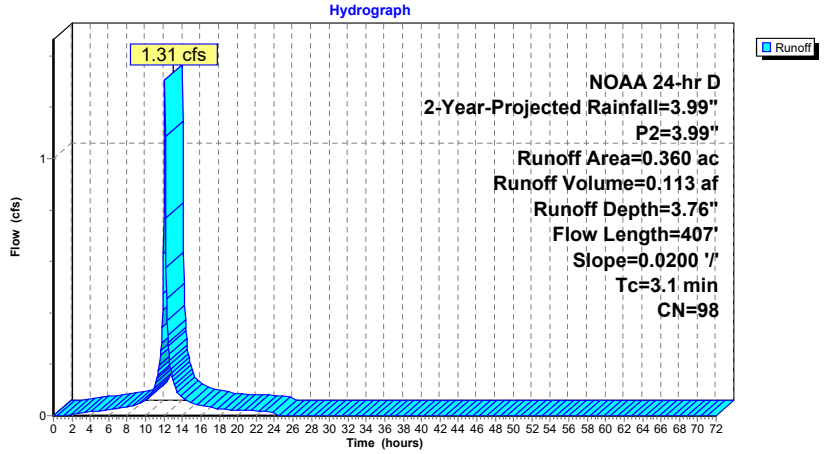
Runoff = 1.31 cfs @ 12.10 hrs, Volume= 0.113 af, Depth= 3.76"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.1	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

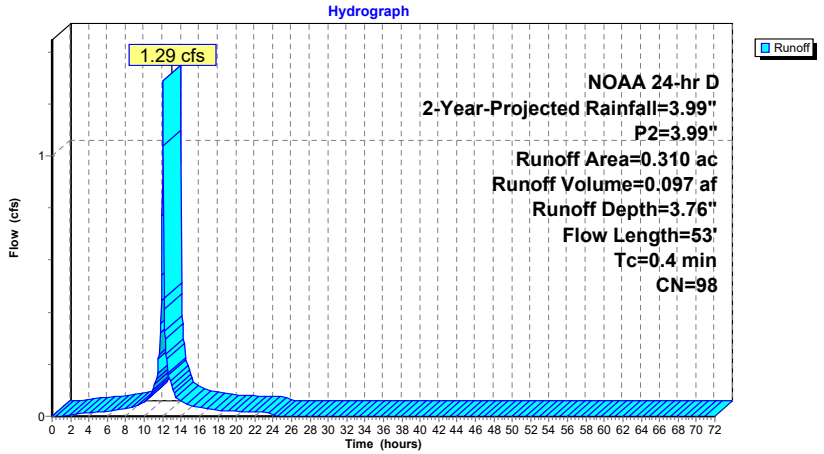
Runoff = 1.29 cfs @ 12.05 hrs, Volume= 0.097 af, Depth= 3.76"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

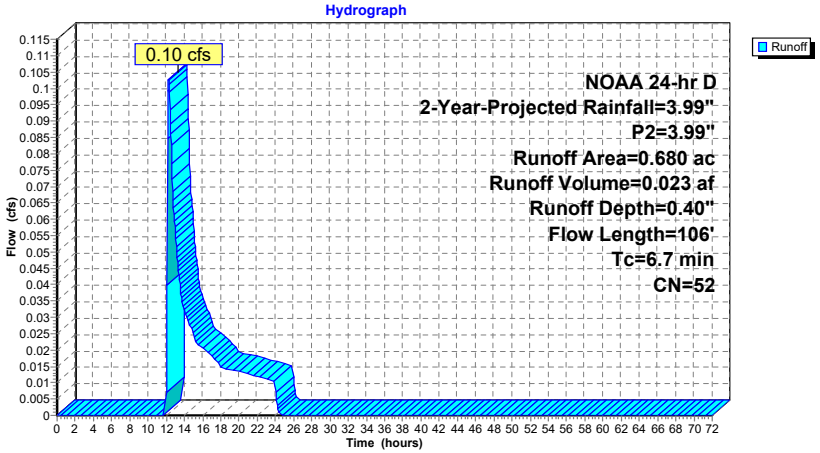
Runoff = 0.10 cfs @ 12.26 hrs, Volume= 0.023 af, Depth= 0.40"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	99	0.1000	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.7	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

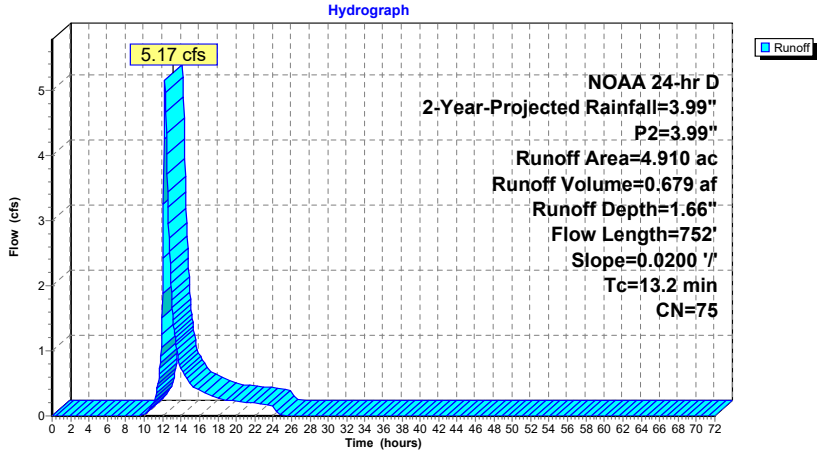
Runoff = 5.17 cfs @ 12.25 hrs, Volume= 0.679 af, Depth= 1.66"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	52	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
5.6	700		2.10		**Direct Entry,**
13.2	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

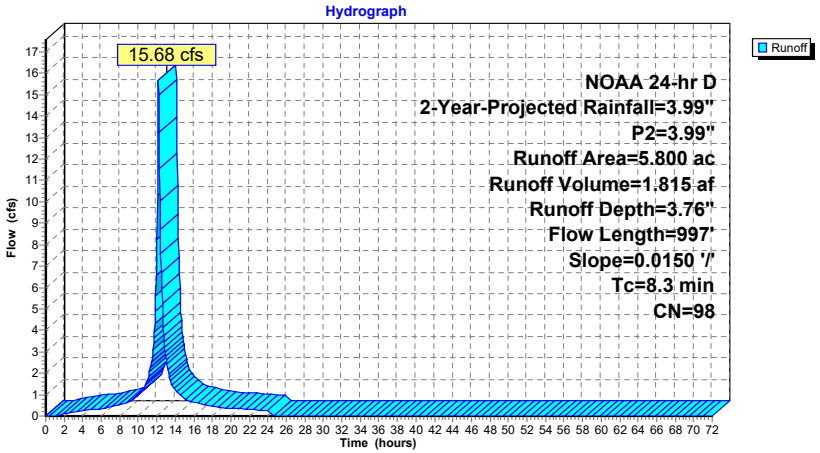
Runoff = 15.68 cfs @ 12.17 hrs, Volume= 1.815 af, Depth= 3.76"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0150	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.3	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

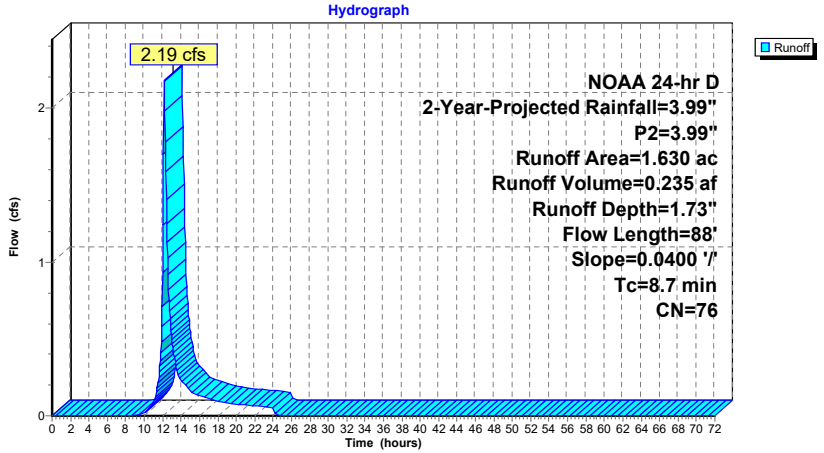
Runoff = 2.19 cfs @ 12.18 hrs, Volume= 0.235 af, Depth= 1.73"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	88	0.0400	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

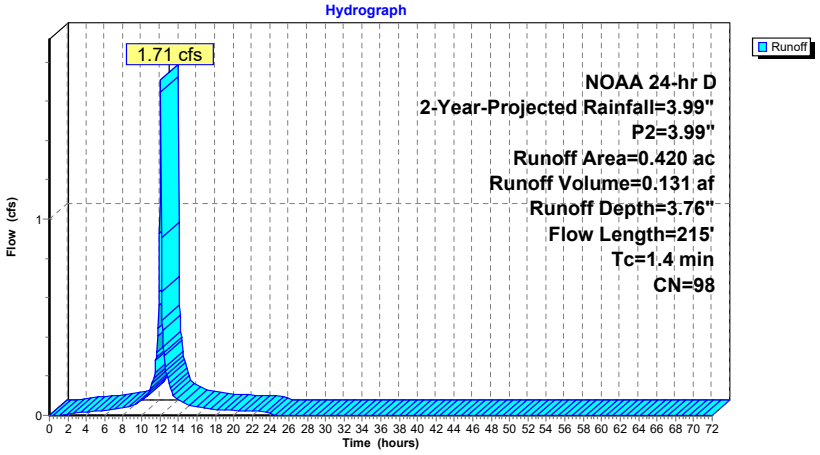
Runoff = 1.71 cfs @ 12.08 hrs, Volume= 0.131 af, Depth= 3.76"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

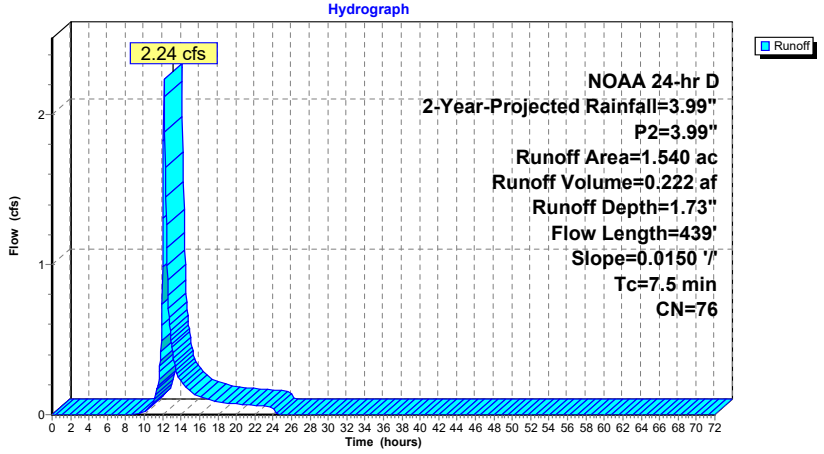
Runoff = 2.24 cfs @ 12.17 hrs, Volume= 0.222 af, Depth= 1.73"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	22	0.0150	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.5	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

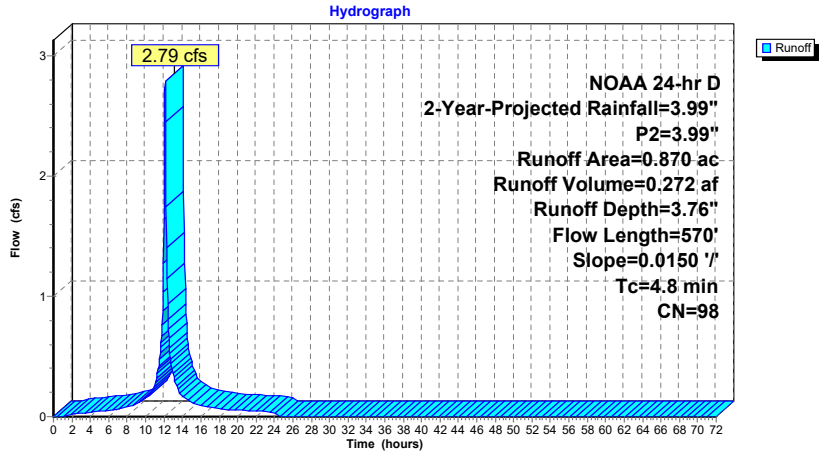
Runoff = 2.79 cfs @ 12.13 hrs, Volume= 0.272 af, Depth= 3.76"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-Year-Projected Rainfall=3.99", P2=3.99"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.8	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

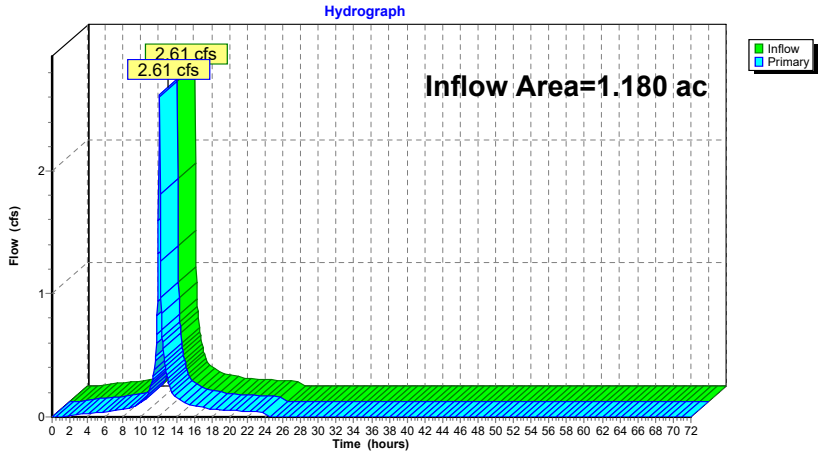


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 2.35" for 2-Year-Projected event
Inflow = 2.61 cfs @ 12.09 hrs, Volume= 0.231 af
Primary = 2.61 cfs @ 12.09 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

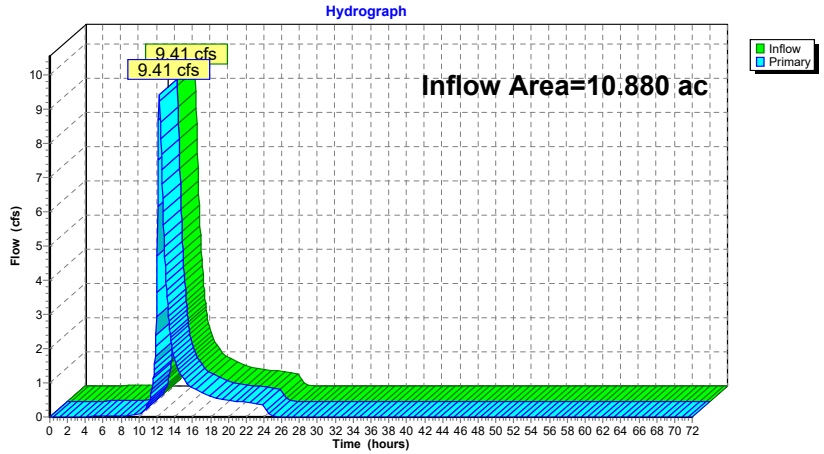


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 1.59" for 2-Year-Projected event
Inflow = 9.41 cfs @ 12.28 hrs, Volume= 1.445 af
Primary = 9.41 cfs @ 12.28 hrs, Volume= 1.445 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

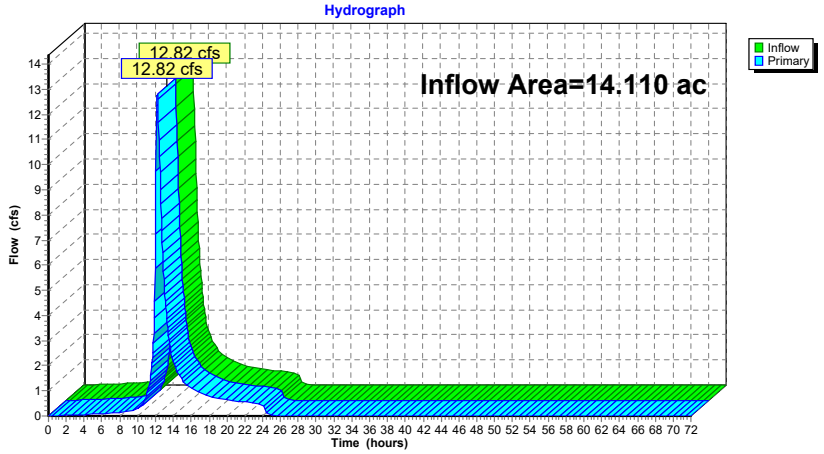


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 1.74" for 2-Year-Projected event
Inflow = 12.82 cfs @ 12.23 hrs, Volume= 2.043 af
Primary = 12.82 cfs @ 12.23 hrs, Volume= 2.043 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

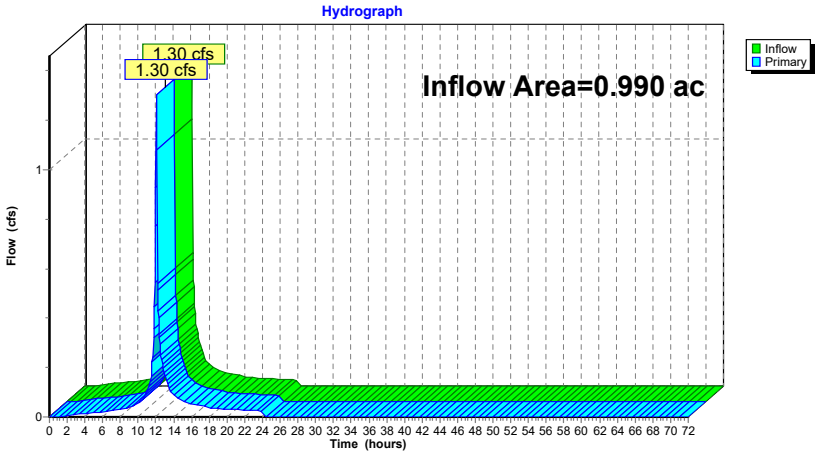


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 1.45" for 2-Year-Projected event
Inflow = 1.30 cfs @ 12.06 hrs, Volume= 0.120 af
Primary = 1.30 cfs @ 12.06 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

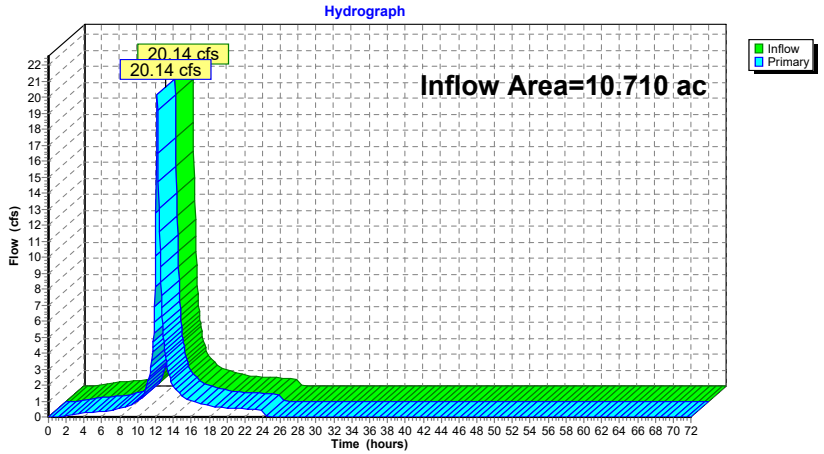


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 2.79" for 2-Year-Projected event
Inflow = 20.14 cfs @ 12.18 hrs, Volume= 2.494 af
Primary = 20.14 cfs @ 12.18 hrs, Volume= 2.494 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

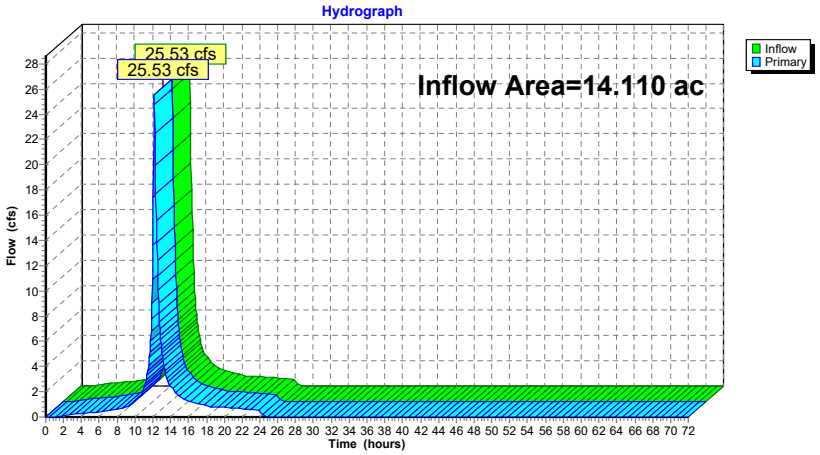


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 2.64" for 2-Year-Projected event
Inflow = 25.53 cfs @ 12.17 hrs, Volume= 3.108 af
Primary = 25.53 cfs @ 12.17 hrs, Volume= 3.108 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

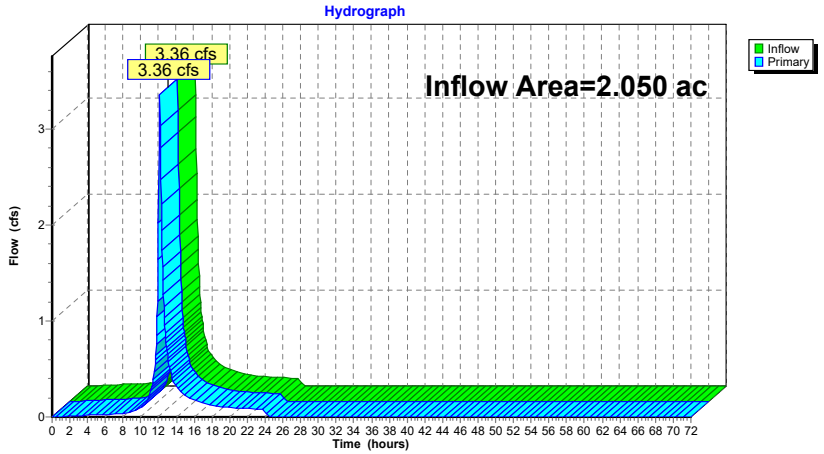


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 2.15" for 2-Year-Projected event
Inflow = 3.36 cfs @ 12.11 hrs, Volume= 0.367 af
Primary = 3.36 cfs @ 12.11 hrs, Volume= 0.367 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

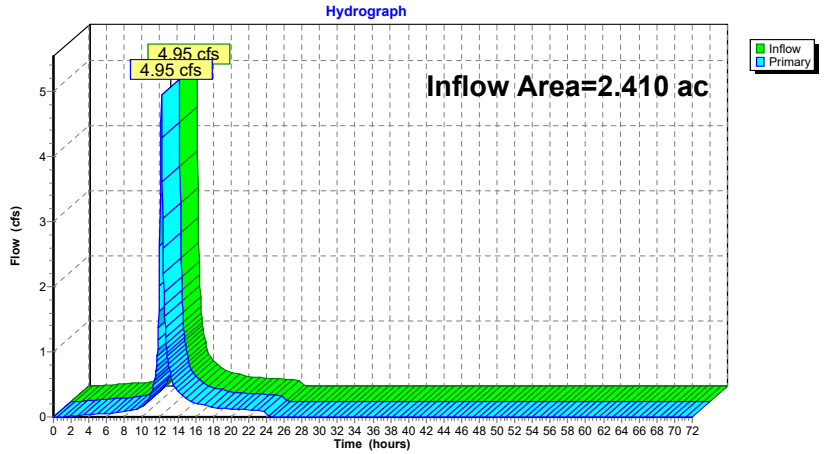


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 2.46" for 2-Year-Projected event
Inflow = 4.95 cfs @ 12.14 hrs, Volume= 0.494 af
Primary = 4.95 cfs @ 12.14 hrs, Volume= 0.494 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=275' Tc=2.2 min CN=98 Runoff=3.34 cfs 0.271 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=1.13"
Flow Length=210' Tc=14.5 min CN=56 Runoff=0.29 cfs 0.049 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=2.41"
Flow Length=392' Tc=17.7 min CN=73 Runoff=14.05 cfs 2.117 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=407' Slope=0.0200 '/' Tc=3.2 min CN=98 Runoff=1.68 cfs 0.148 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=53' Tc=0.4 min CN=98 Runoff=1.68 cfs 0.127 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=0.88"
Flow Length=106' Tc=7.3 min CN=52 Runoff=0.36 cfs 0.050 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=2.59"
Flow Length=752' Slope=0.0200 '/' Tc=13.9 min CN=75 Runoff=8.03 cfs 1.059 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=997' Slope=0.0150 '/' Tc=8.4 min CN=98 Runoff=20.27 cfs 2.384 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=2.68"
Flow Length=88' Slope=0.0400 '/' Tc=9.5 min CN=76 Runoff=3.30 cfs 0.364 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=215' Tc=1.5 min CN=98 Runoff=2.22 cfs 0.173 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=2.68"
Flow Length=439' Slope=0.0150 '/' Tc=7.9 min CN=76 Runoff=3.41 cfs 0.343 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=4.93"
Flow Length=570' Slope=0.0150 '/' Tc=4.9 min CN=98 Runoff=3.61 cfs 0.358 af

Link 3L: Ex ROW Total Inflow=3.46 cfs 0.320 af
Primary=3.46 cfs 0.320 af

Link 4L: Ex Raritan N Total Inflow=14.64 cfs 2.265 af
Primary=14.64 cfs 2.265 af

Link 7L: Ex Overall Total Inflow=19.48 cfs 3.121 af
Primary=19.48 cfs 3.121 af

Link 12L: Prop ROW Total Inflow=1.83 cfs 0.177 af
Primary=1.83 cfs 0.177 af

Link 13L: Prop Raritan N Total Inflow=27.26 cfs 3.443 af
Primary=27.26 cfs 3.443 af

Link 14L: Prop Overall Total Inflow=34.94 cfs 4.321 af
Primary=34.94 cfs 4.321 af

Link 17L: Ex Raritan S Total Inflow=4.70 cfs 0.536 af
Primary=4.70 cfs 0.536 af

Link 18L: Prop Raritan S Total Inflow=6.91 cfs 0.701 af
Primary=6.91 cfs 0.701 af

Total Runoff Area = 28.220 ac Runoff Volume = 7.443 af Average Runoff Depth = 3.16"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

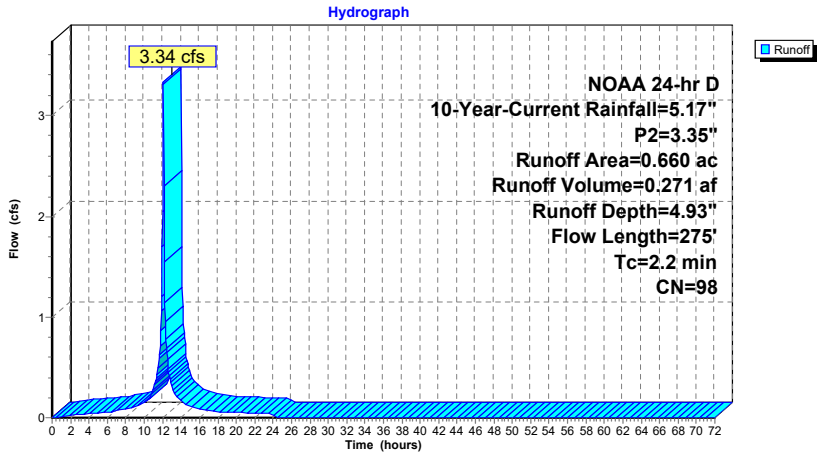
Runoff = 3.34 cfs @ 12.09 hrs, Volume= 0.271 af, Depth= 4.93"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

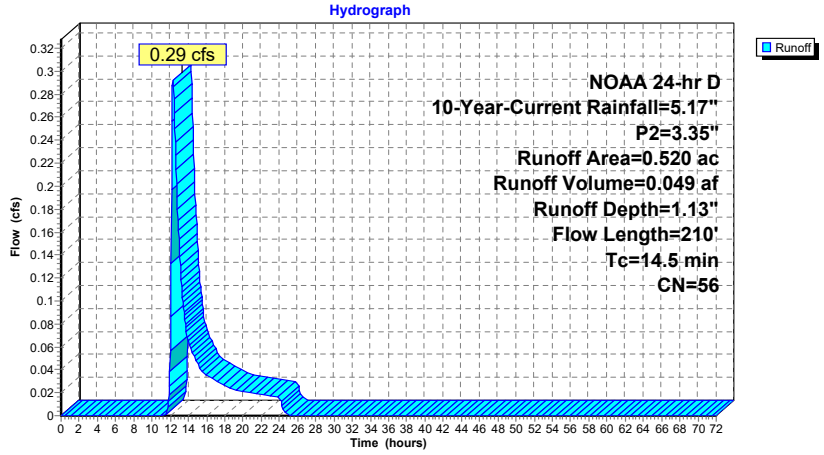
Runoff = 0.29 cfs @ 12.30 hrs, Volume= 0.049 af, Depth= 1.13"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.5	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

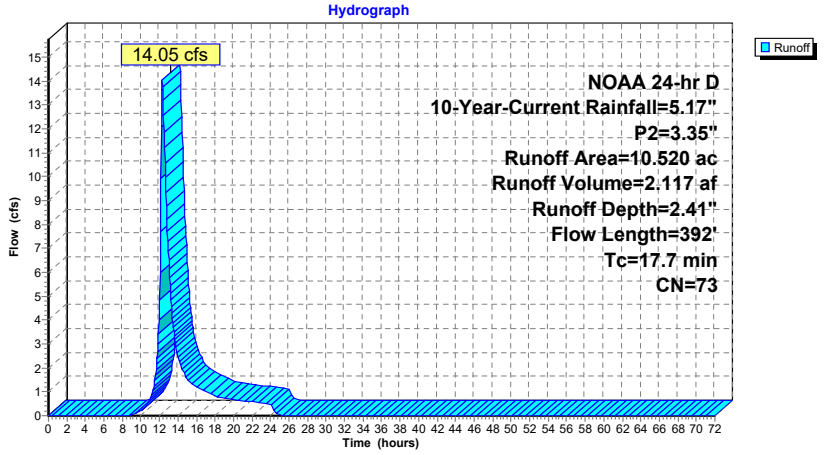
Runoff = 14.05 cfs @ 12.31 hrs, Volume= 2.117 af, Depth= 2.41"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0150	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.7	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

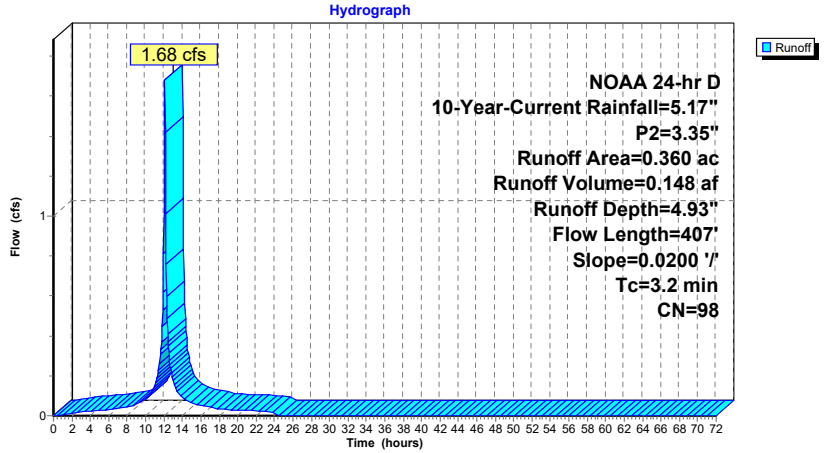
Runoff = 1.68 cfs @ 12.10 hrs, Volume= 0.148 af, Depth= 4.93"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.2	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

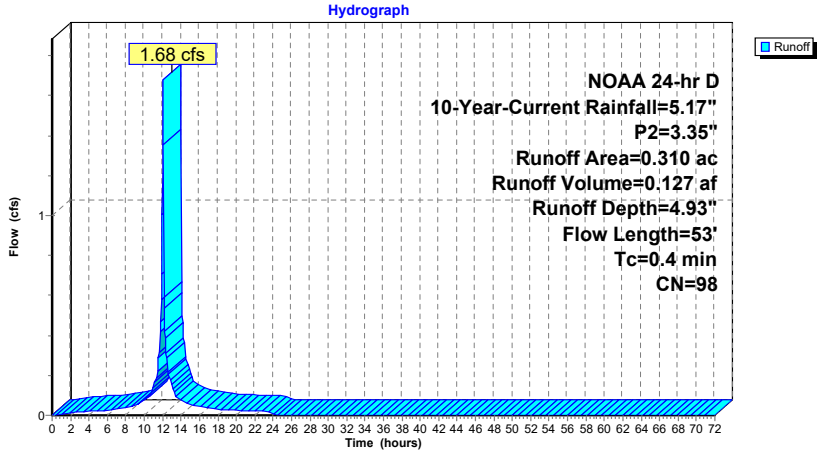
Runoff = 1.68 cfs @ 12.05 hrs, Volume= 0.127 af, Depth= 4.93"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

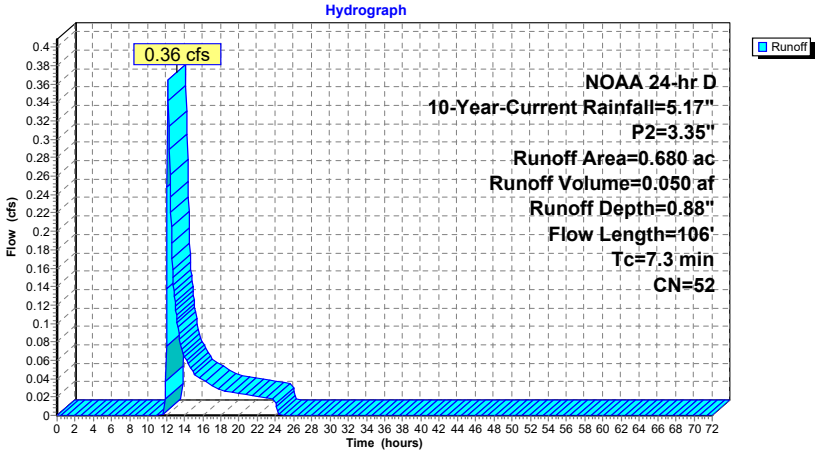
Runoff = 0.36 cfs @ 12.19 hrs, Volume= 0.050 af, Depth= 0.88"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	99	0.1000	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.3	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

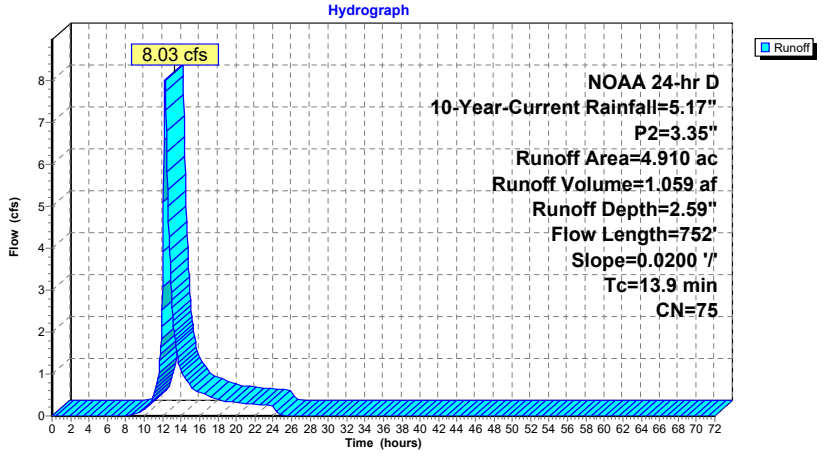
Runoff = 8.03 cfs @ 12.25 hrs, Volume= 1.059 af, Depth= 2.59"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	52	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
5.6	700		2.10		**Direct Entry,**
13.9	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

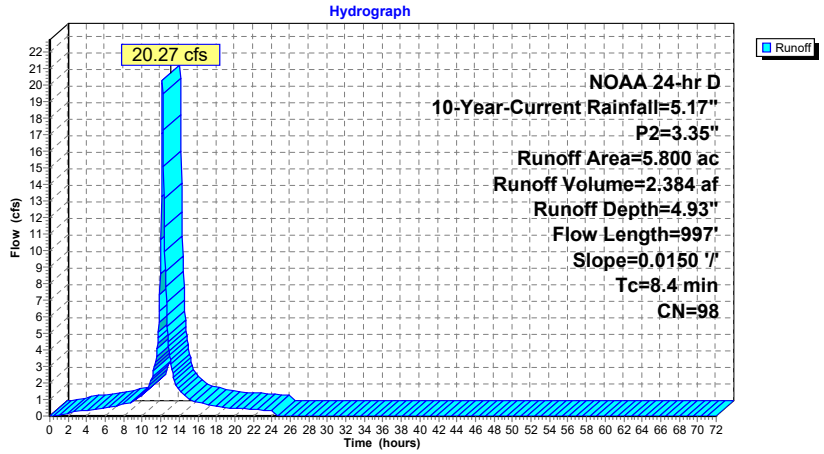
Runoff = 20.27 cfs @ 12.17 hrs, Volume= 2.384 af, Depth= 4.93"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	75	0.0150	1.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.4	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

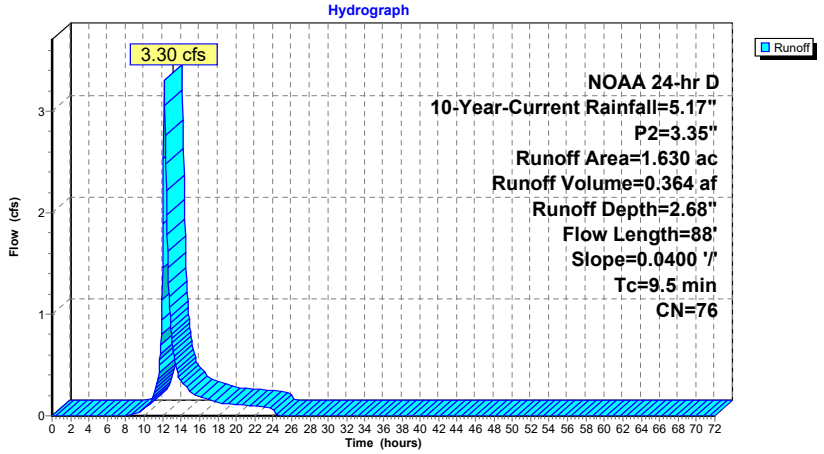
Runoff = 3.30 cfs @ 12.19 hrs, Volume= 0.364 af, Depth= 2.68"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	88	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

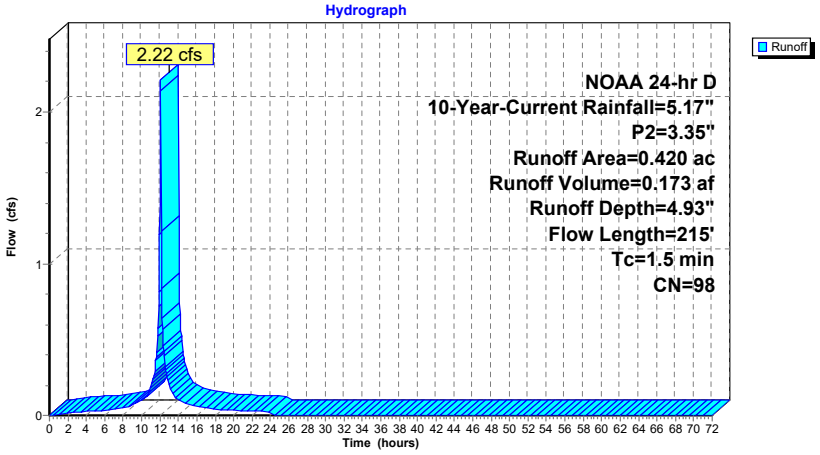
Runoff = 2.22 cfs @ 12.08 hrs, Volume= 0.173 af, Depth= 4.93"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

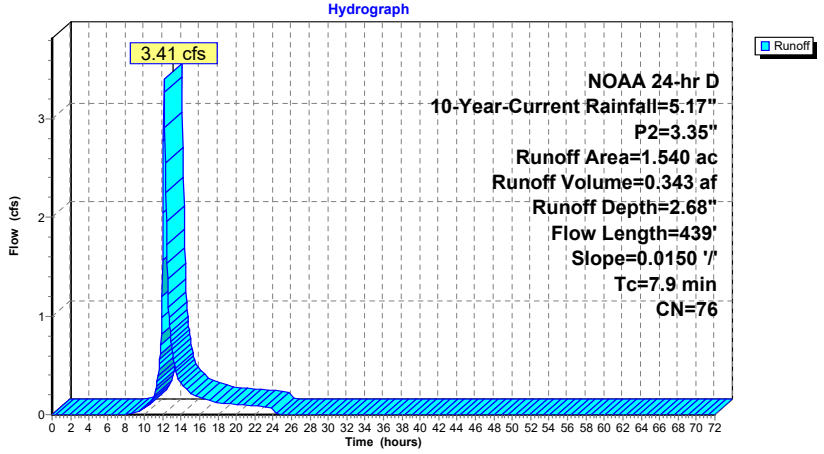
Runoff = 3.41 cfs @ 12.17 hrs, Volume= 0.343 af, Depth= 2.68"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	22	0.0150	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.9	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

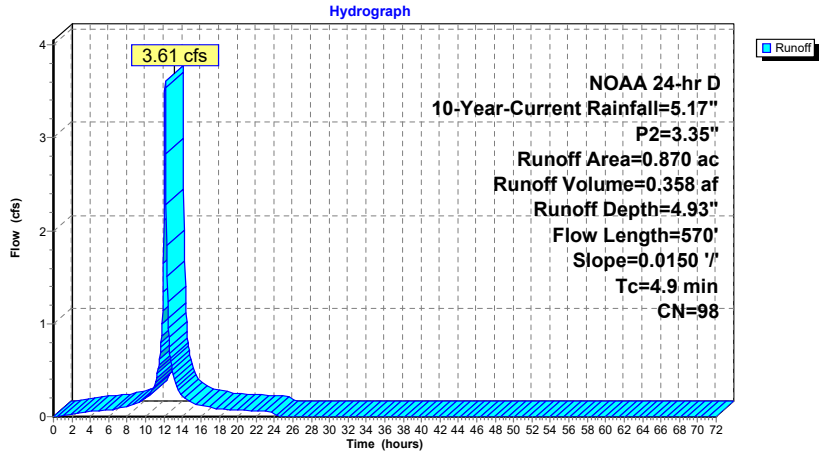
Runoff = 3.61 cfs @ 12.13 hrs, Volume= 0.358 af, Depth= 4.93"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Current Rainfall=5.17", P2=3.35"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.9	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

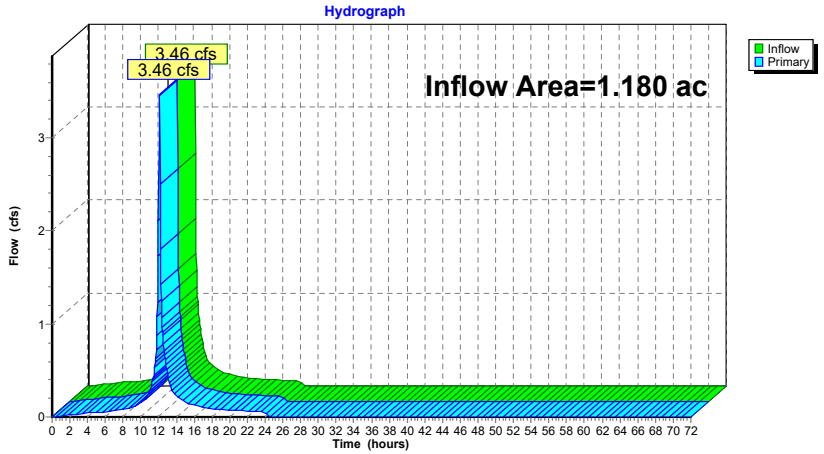


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 3.26" for 10-Year-Current event
Inflow = 3.46 cfs @ 12.09 hrs, Volume= 0.320 af
Primary = 3.46 cfs @ 12.09 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

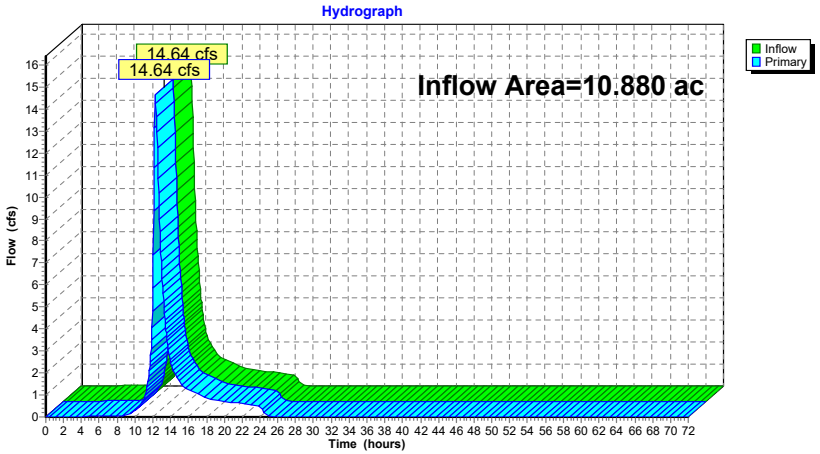


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 2.50" for 10-Year-Current event
Inflow = 14.64 cfs @ 12.30 hrs, Volume= 2.265 af
Primary = 14.64 cfs @ 12.30 hrs, Volume= 2.265 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

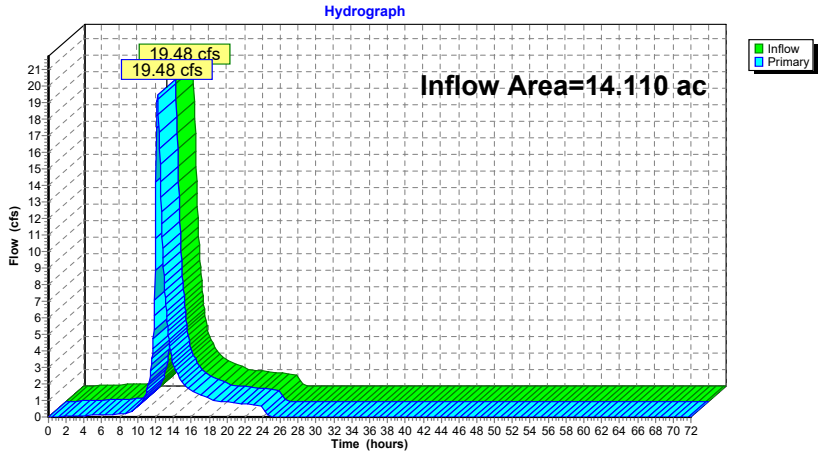


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 2.65" for 10-Year-Current event
Inflow = 19.48 cfs @ 12.26 hrs, Volume= 3.121 af
Primary = 19.48 cfs @ 12.26 hrs, Volume= 3.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

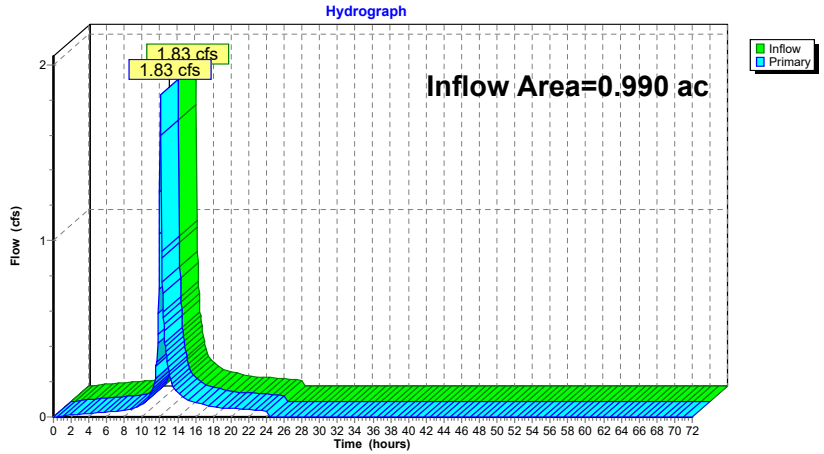


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 2.15" for 10-Year-Current event
Inflow = 1.83 cfs @ 12.06 hrs, Volume= 0.177 af
Primary = 1.83 cfs @ 12.06 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

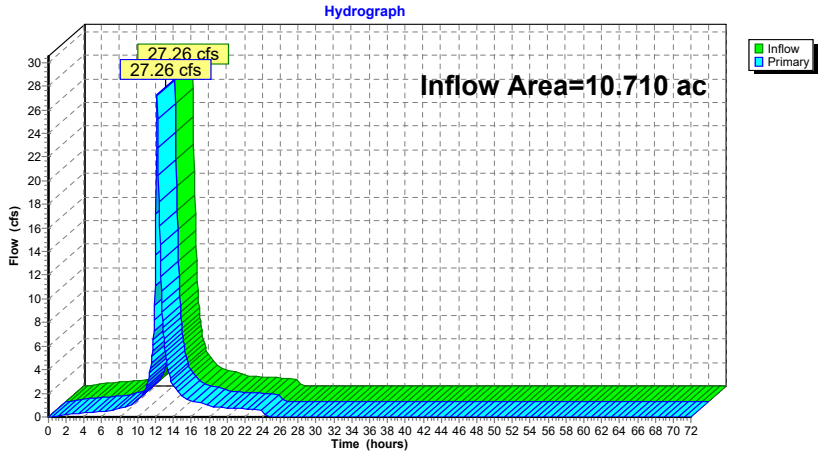


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 3.86" for 10-Year-Current event
Inflow = 27.26 cfs @ 12.19 hrs, Volume= 3.443 af
Primary = 27.26 cfs @ 12.19 hrs, Volume= 3.443 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

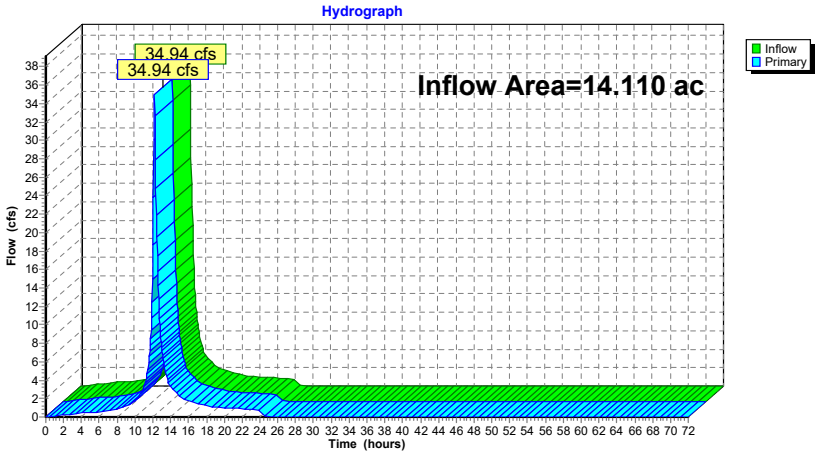


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 3.68" for 10-Year-Current event
Inflow = 34.94 cfs @ 12.17 hrs, Volume= 4.321 af
Primary = 34.94 cfs @ 12.17 hrs, Volume= 4.321 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

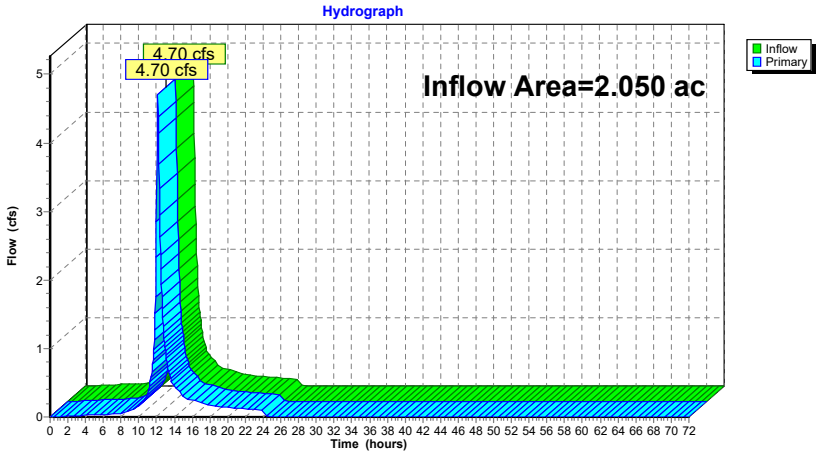


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 3.14" for 10-Year-Current event
Inflow = 4.70 cfs @ 12.11 hrs, Volume= 0.536 af
Primary = 4.70 cfs @ 12.11 hrs, Volume= 0.536 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

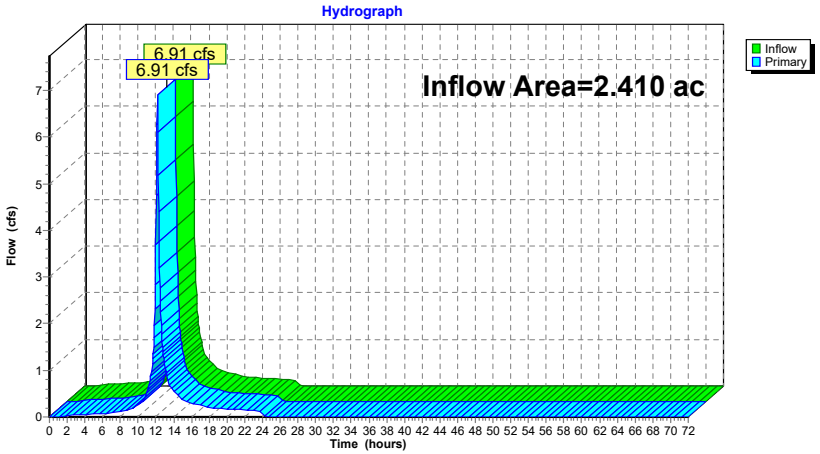


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 3.49" for 10-Year-Current event
Inflow = 6.91 cfs @ 12.15 hrs, Volume= 0.701 af
Primary = 6.91 cfs @ 12.15 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=275' Tc=2.1 min CN=98 Runoff=4.04 cfs 0.328 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=210' Tc=13.4 min CN=56 Runoff=0.51 cfs 0.074 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=3.26"
Flow Length=392' Tc=16.4 min CN=73 Runoff=19.89 cfs 2.854 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=407' Slope=0.0200 '/' Tc=3.1 min CN=98 Runoff=2.04 cfs 0.179 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=53' Tc=0.4 min CN=98 Runoff=2.02 cfs 0.154 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=1.40"
Flow Length=106' Tc=6.7 min CN=52 Runoff=0.72 cfs 0.079 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=3.45"
Flow Length=752' Slope=0.0200 '/' Tc=13.2 min CN=75 Runoff=11.02 cfs 1.413 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=997' Slope=0.0150 '/' Tc=8.3 min CN=98 Runoff=24.50 cfs 2.881 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=3.55"
Flow Length=88' Slope=0.0400 '/' Tc=8.7 min CN=76 Runoff=4.55 cfs 0.483 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=215' Tc=1.4 min CN=98 Runoff=2.67 cfs 0.209 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=3.55"
Flow Length=439' Slope=0.0150 '/' Tc=7.5 min CN=76 Runoff=4.64 cfs 0.456 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=5.96"
Flow Length=570' Slope=0.0150 '/' Tc=4.8 min CN=98 Runoff=4.36 cfs 0.432 af

Link 3L: Ex ROW Total Inflow=4.30 cfs 0.402 af
Primary=4.30 cfs 0.402 af

Link 4L: Ex Raritan N Total Inflow=20.77 cfs 3.033 af
Primary=20.77 cfs 3.033 af

Link 7L: Ex Overall Total Inflow=27.36 cfs 4.126 af
Primary=27.36 cfs 4.126 af

Link 12L: Prop ROW Total Inflow=2.40 cfs 0.233 af
Primary=2.40 cfs 0.233 af

Link 13L: Prop Raritan N Total Inflow=34.37 cfs 4.294 af
Primary=34.37 cfs 4.294 af

Link 14L: Prop Overall Total Inflow=44.44 cfs 5.416 af
Primary=44.44 cfs 5.416 af

Link 17L: Ex Raritan S Total Inflow=6.27 cfs 0.691 af
Primary=6.27 cfs 0.691 af

Link 18L: Prop Raritan S Total Inflow=8.88 cfs 0.888 af
Primary=8.88 cfs 0.888 af

Total Runoff Area = 28.220 ac Runoff Volume = 9.542 af Average Runoff Depth = 4.06"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

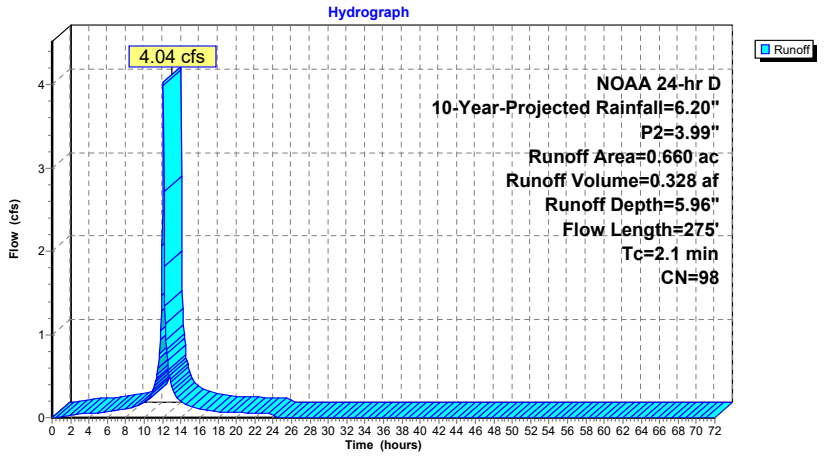
Runoff = 4.04 cfs @ 12.09 hrs, Volume= 0.328 af, Depth= 5.96"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

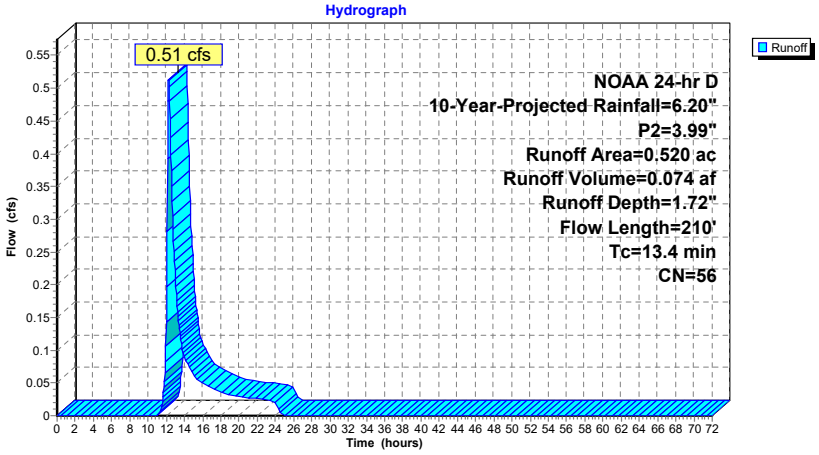
Runoff = 0.51 cfs @ 12.26 hrs, Volume= 0.074 af, Depth= 1.72"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0200	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.4	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

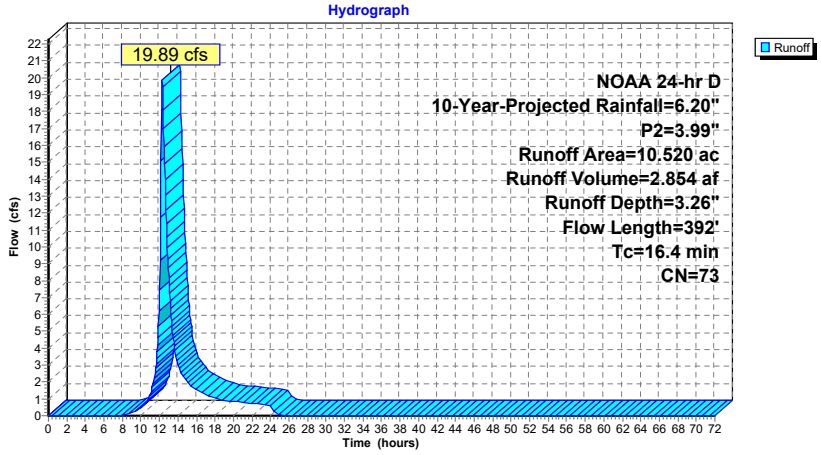
Runoff = 19.89 cfs @ 12.28 hrs, Volume= 2.854 af, Depth= 3.26"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0150	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

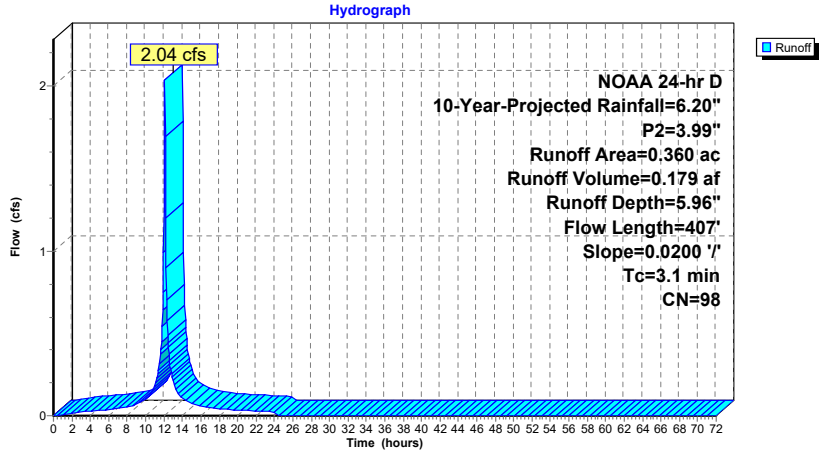
Runoff = 2.04 cfs @ 12.10 hrs, Volume= 0.179 af, Depth= 5.96"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.1	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

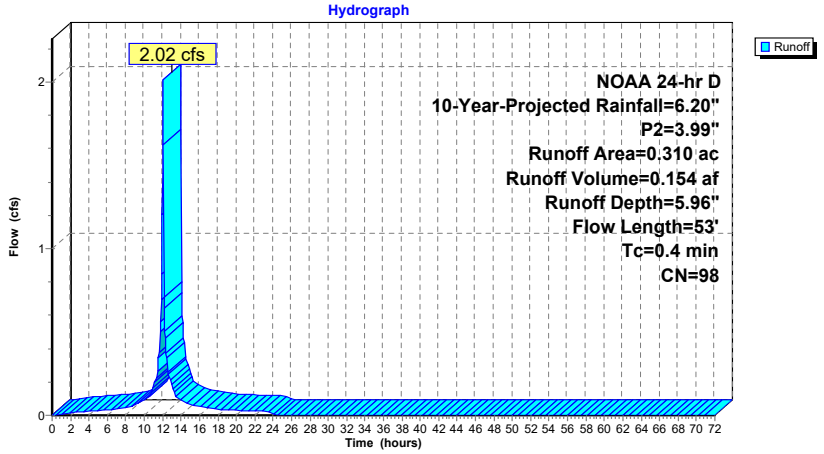
Runoff = 2.02 cfs @ 12.05 hrs, Volume= 0.154 af, Depth= 5.96"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

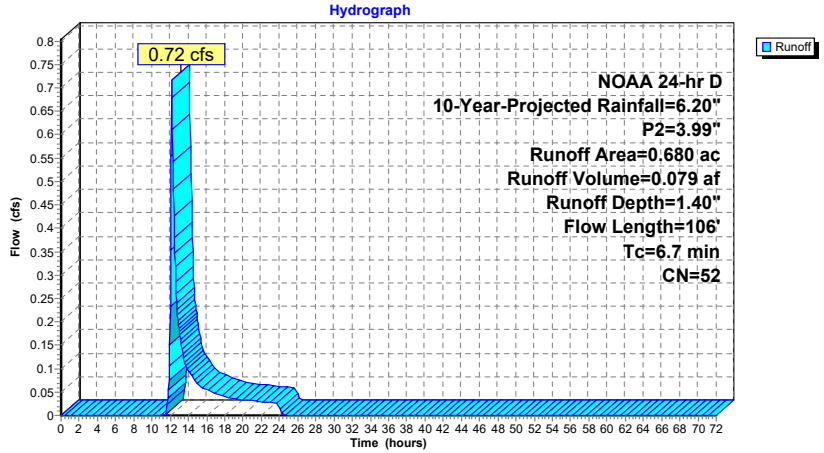
Runoff = 0.72 cfs @ 12.17 hrs, Volume= 0.079 af, Depth= 1.40"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	99	0.1000	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.7	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

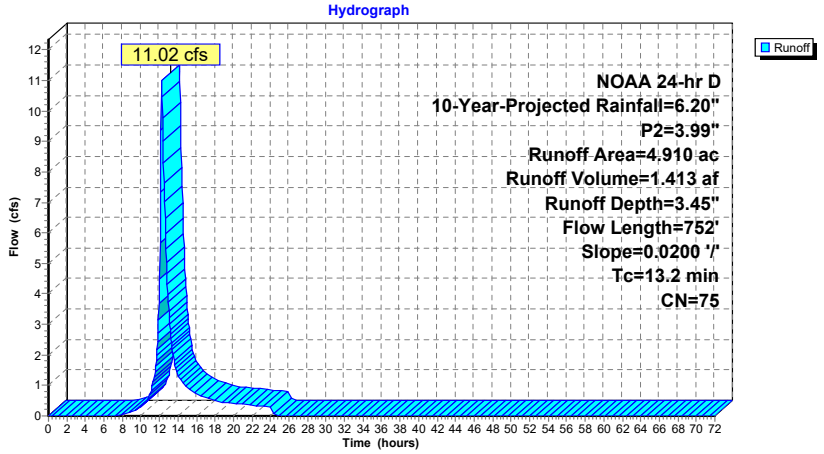
Runoff = 11.02 cfs @ 12.24 hrs, Volume= 1.413 af, Depth= 3.45"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	52	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
5.6	700		2.10		**Direct Entry,**
13.2	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

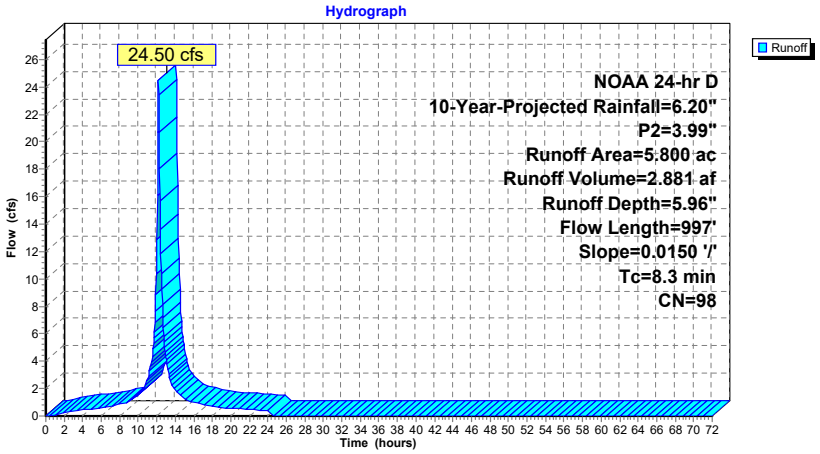
Runoff = 24.50 cfs @ 12.17 hrs, Volume= 2.881 af, Depth= 5.96"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0150	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.3	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

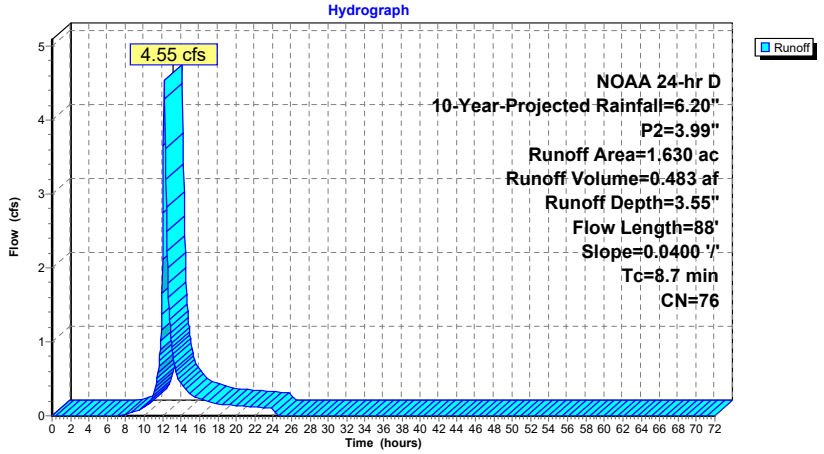
Runoff = 4.55 cfs @ 12.18 hrs, Volume= 0.483 af, Depth= 3.55"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	88	0.0400	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

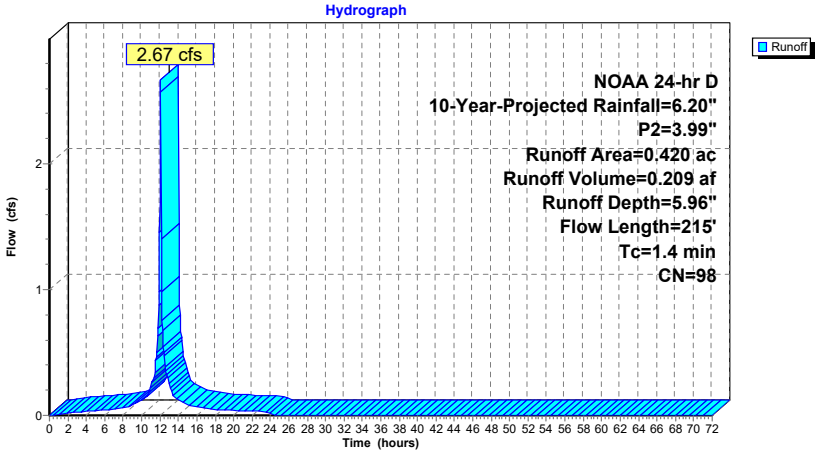
Runoff = 2.67 cfs @ 12.08 hrs, Volume= 0.209 af, Depth= 5.96"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

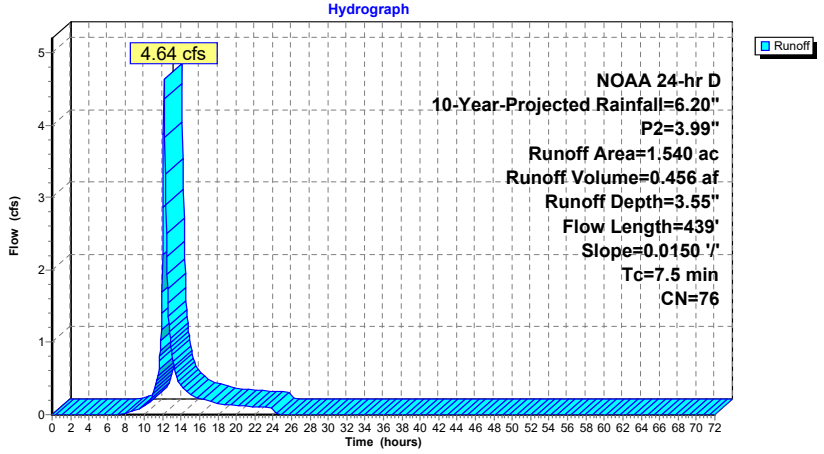
Runoff = 4.64 cfs @ 12.16 hrs, Volume= 0.456 af, Depth= 3.55"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	22	0.0150	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.5	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

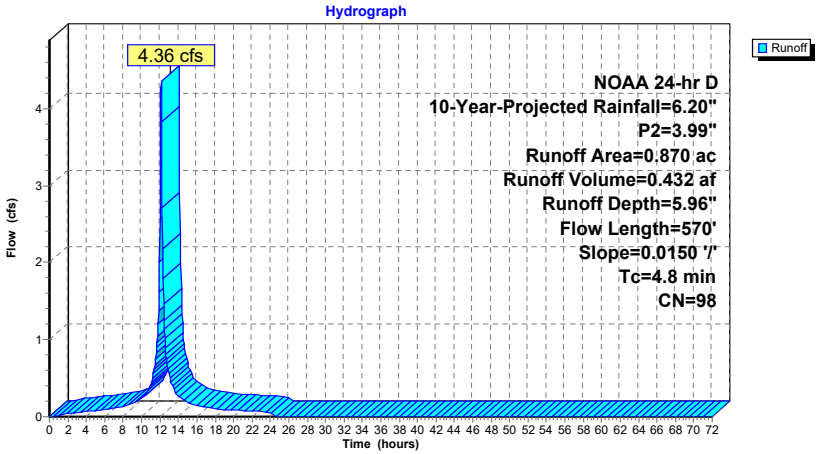
Runoff = 4.36 cfs @ 12.13 hrs, Volume= 0.432 af, Depth= 5.96"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-Year-Projected Rainfall=6.20", P2=3.99"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.8	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

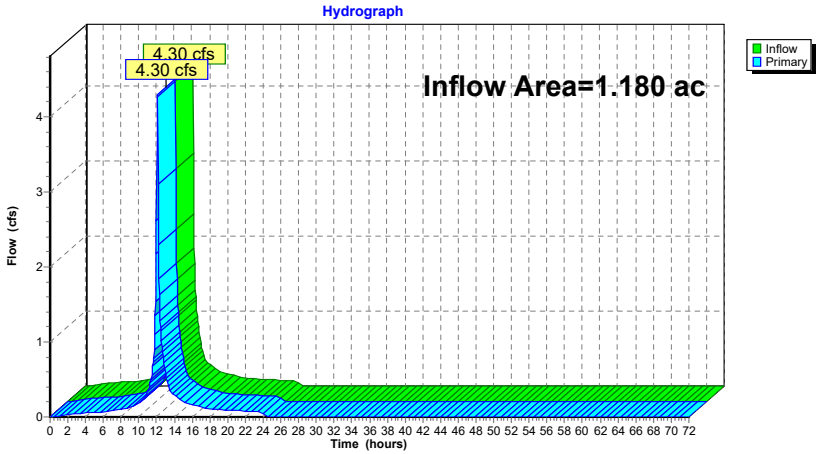


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 4.09" for 10-Year-Projected event
Inflow = 4.30 cfs @ 12.09 hrs, Volume= 0.402 af
Primary = 4.30 cfs @ 12.09 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

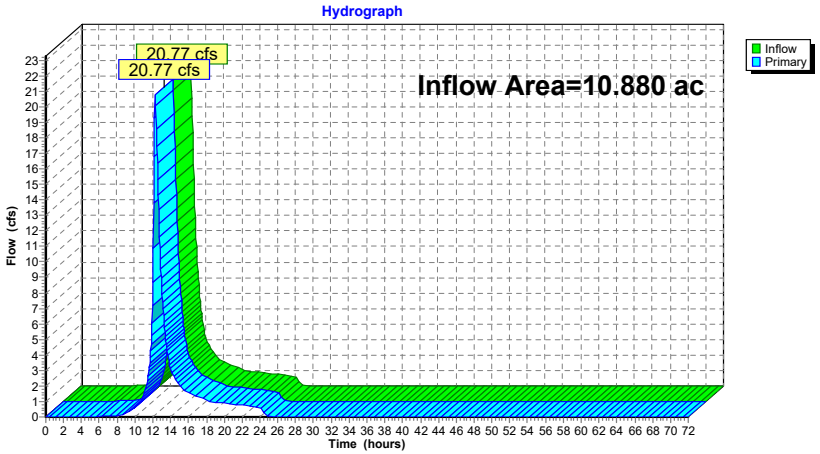


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 3.34" for 10-Year-Projected event
Inflow = 20.77 cfs @ 12.27 hrs, Volume= 3.033 af
Primary = 20.77 cfs @ 12.27 hrs, Volume= 3.033 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

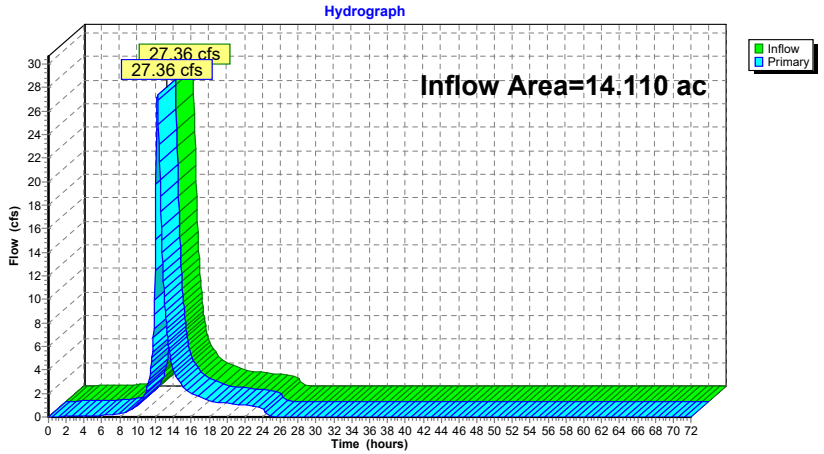


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 3.51" for 10-Year-Projected event
Inflow = 27.36 cfs @ 12.24 hrs, Volume= 4.126 af
Primary = 27.36 cfs @ 12.24 hrs, Volume= 4.126 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

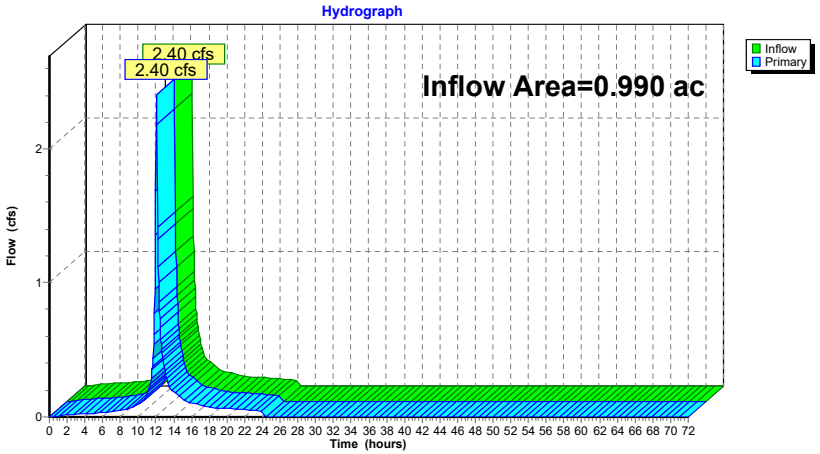


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 2.83" for 10-Year-Projected event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.233 af
Primary = 2.40 cfs @ 12.06 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

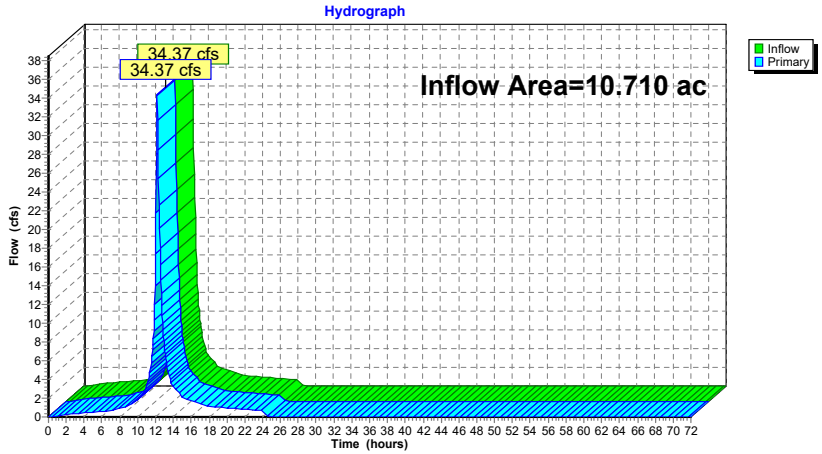


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 4.81" for 10-Year-Projected event
Inflow = 34.37 cfs @ 12.18 hrs, Volume= 4.294 af
Primary = 34.37 cfs @ 12.18 hrs, Volume= 4.294 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

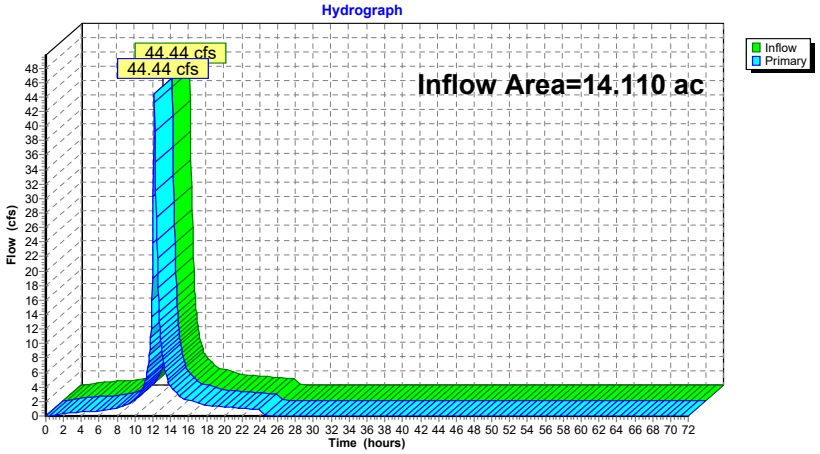


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 4.61" for 10-Year-Projected event
Inflow = 44.44 cfs @ 12.17 hrs, Volume= 5.416 af
Primary = 44.44 cfs @ 12.17 hrs, Volume= 5.416 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

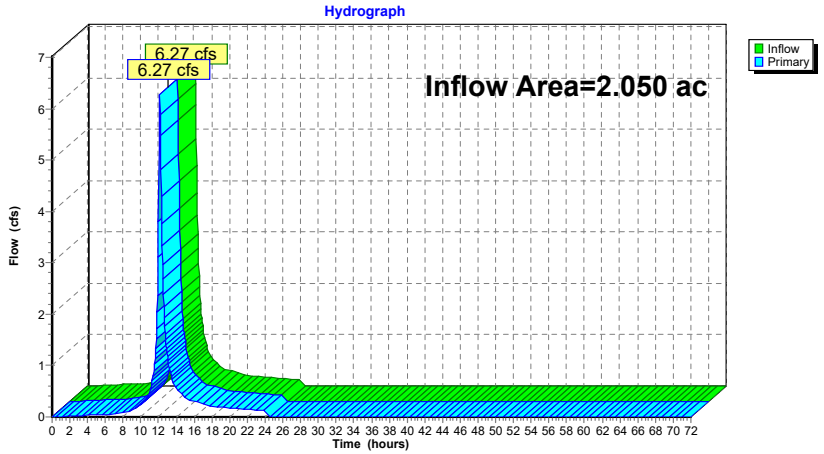


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 4.05" for 10-Year-Projected event
Inflow = 6.27 cfs @ 12.11 hrs, Volume= 0.691 af
Primary = 6.27 cfs @ 12.11 hrs, Volume= 0.691 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

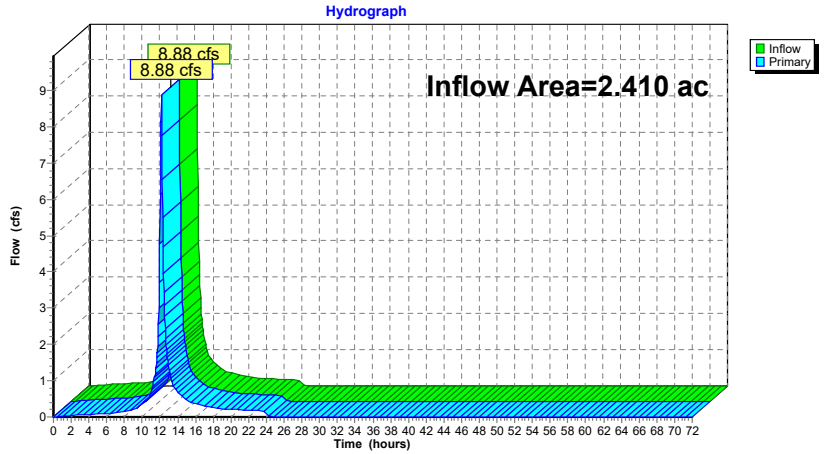


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 4.42" for 10-Year-Projected event
Inflow = 8.88 cfs @ 12.15 hrs, Volume= 0.888 af
Primary = 8.88 cfs @ 12.15 hrs, Volume= 0.888 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=275' Tc=2.2 min CN=98 Runoff=5.76 cfs 0.476 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=3.53"
Flow Length=210' Tc=14.5 min CN=56 Runoff=1.10 cfs 0.153 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=5.61"
Flow Length=392' Tc=17.7 min CN=73 Runoff=33.09 cfs 4.915 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=407' Slope=0.0200 '/' Tc=3.2 min CN=98 Runoff=2.91 cfs 0.259 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=53' Tc=0.4 min CN=98 Runoff=2.90 cfs 0.223 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=3.05"
Flow Length=106' Tc=7.3 min CN=52 Runoff=1.70 cfs 0.173 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=5.85"
Flow Length=752' Slope=0.0200 '/' Tc=13.9 min CN=75 Runoff=18.19 cfs 2.394 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=997' Slope=0.0150 '/' Tc=8.4 min CN=98 Runoff=34.99 cfs 4.181 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=5.97"
Flow Length=88' Slope=0.0400 '/' Tc=9.5 min CN=76 Runoff=7.33 cfs 0.811 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=215' Tc=1.5 min CN=98 Runoff=3.83 cfs 0.303 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=5.97"
Flow Length=439' Slope=0.0150 '/' Tc=7.9 min CN=76 Runoff=7.55 cfs 0.767 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=8.65"
Flow Length=570' Slope=0.0150 '/' Tc=4.9 min CN=98 Runoff=6.24 cfs 0.627 af

Link 3L: Ex ROW Total Inflow=6.38 cfs 0.629 af
Primary=6.38 cfs 0.629 af

Link 4L: Ex Raritan N Total Inflow=34.16 cfs 5.174 af
Primary=34.16 cfs 5.174 af

Link 7L: Ex Overall Total Inflow=44.59 cfs 6.917 af
Primary=44.59 cfs 6.917 af

Link 12L: Prop ROW Total Inflow=3.93 cfs 0.396 af
Primary=3.93 cfs 0.396 af

Link 13L: Prop Raritan N Total Inflow=51.37 cfs 6.575 af
Primary=51.37 cfs 6.575 af

Link 14L: Prop Overall Total Inflow=67.20 cfs 8.365 af
Primary=67.20 cfs 8.365 af

Link 17L: Ex Raritan S Total Inflow=9.60 cfs 1.114 af
Primary=9.60 cfs 1.114 af

Link 18L: Prop Raritan S Total Inflow=13.59 cfs 1.394 af
Primary=13.59 cfs 1.394 af

Total Runoff Area = 28.220 ac Runoff Volume = 15.282 af Average Runoff Depth = 6.50"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

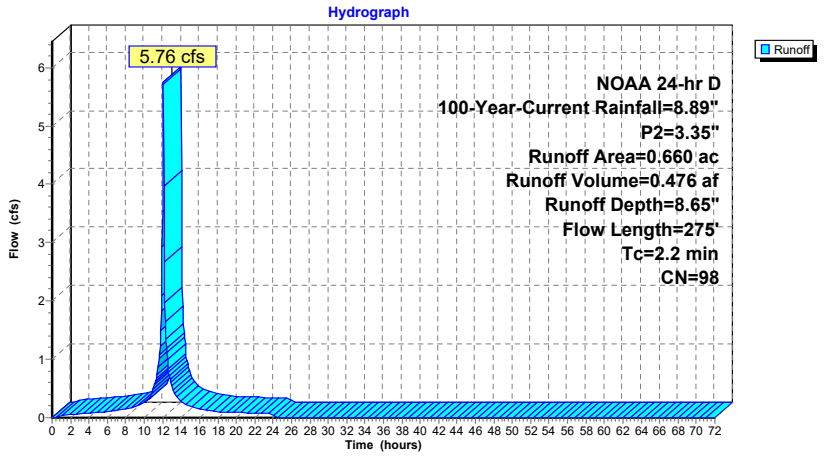
Runoff = 5.76 cfs @ 12.09 hrs, Volume= 0.476 af, Depth= 8.65"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

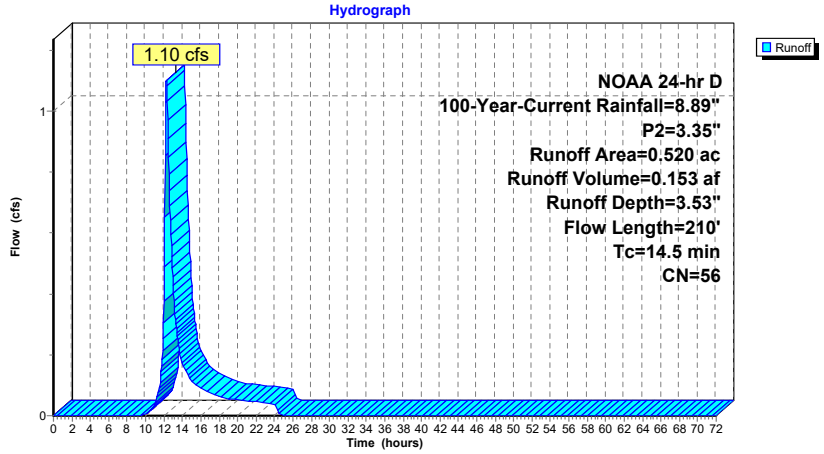
Runoff = 1.10 cfs @ 12.26 hrs, Volume= 0.153 af, Depth= 3.53"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.5	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

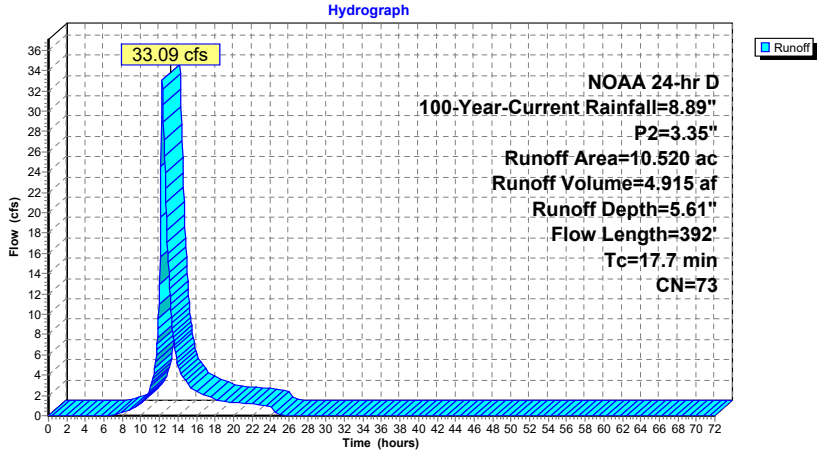
Runoff = 33.09 cfs @ 12.30 hrs, Volume= 4.915 af, Depth= 5.61"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0150	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.7	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

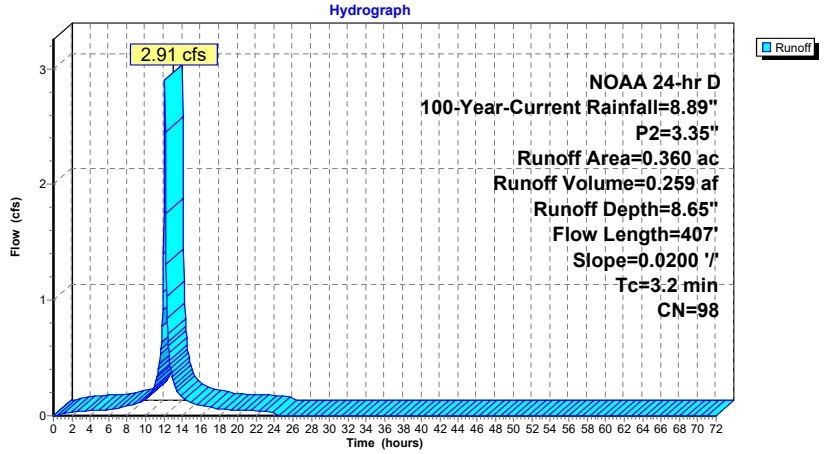
Runoff = 2.91 cfs @ 12.10 hrs, Volume= 0.259 af, Depth= 8.65"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.2	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

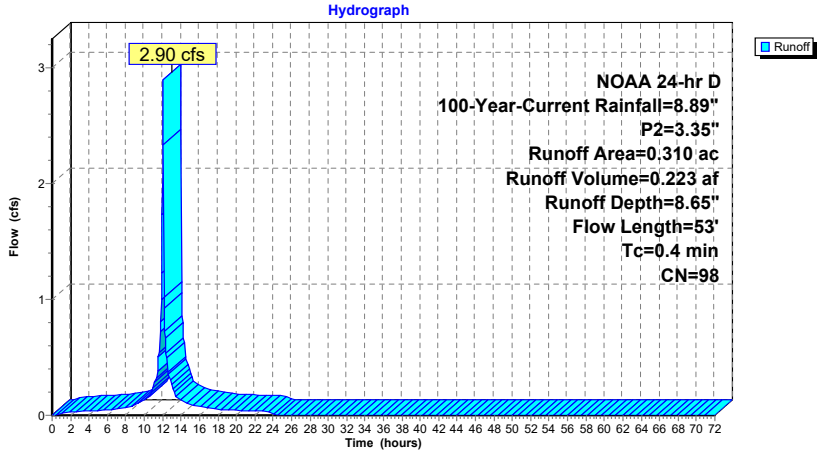
Runoff = 2.90 cfs @ 12.05 hrs, Volume= 0.223 af, Depth= 8.65"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

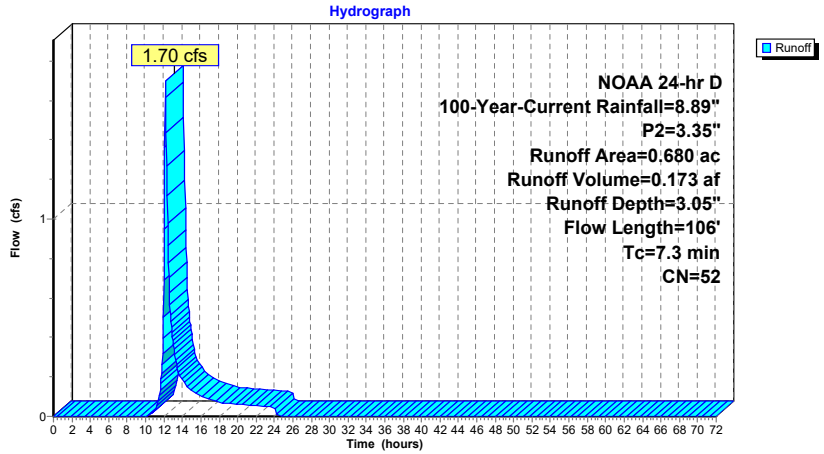
Runoff = 1.70 cfs @ 12.17 hrs, Volume= 0.173 af, Depth= 3.05"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	99	0.1000	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.3	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

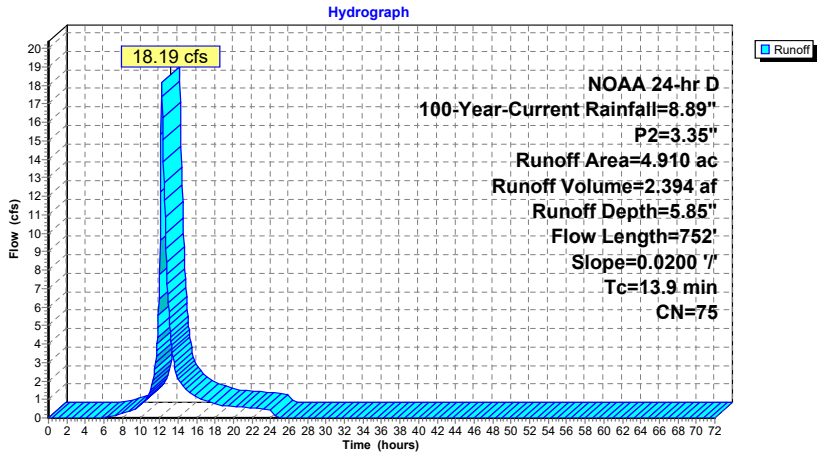
Runoff = 18.19 cfs @ 12.25 hrs, Volume= 2.394 af, Depth= 5.85"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	52	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
5.6	700		2.10		**Direct Entry,**
13.9	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

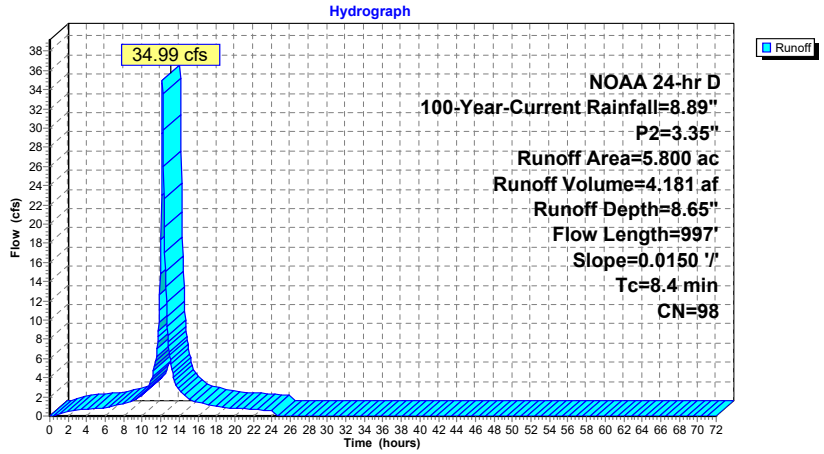
Runoff = 34.99 cfs @ 12.17 hrs, Volume= 4.181 af, Depth= 8.65"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	75	0.0150	1.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.4	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

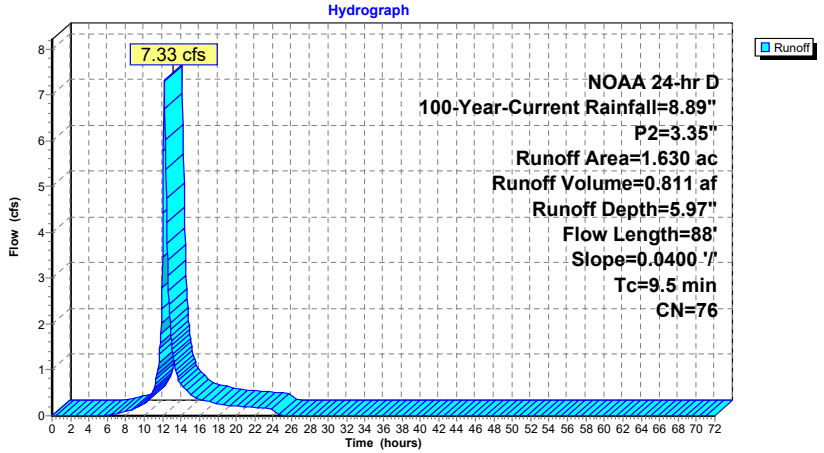
Runoff = 7.33 cfs @ 12.19 hrs, Volume= 0.811 af, Depth= 5.97"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	88	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

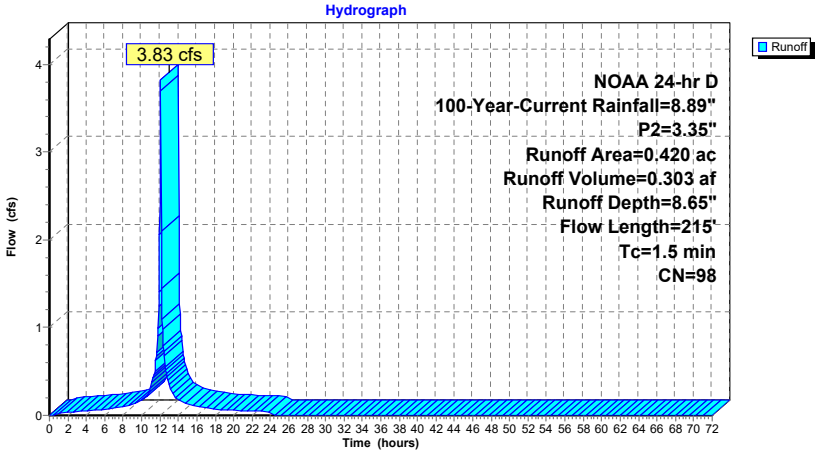
Runoff = 3.83 cfs @ 12.08 hrs, Volume= 0.303 af, Depth= 8.65"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

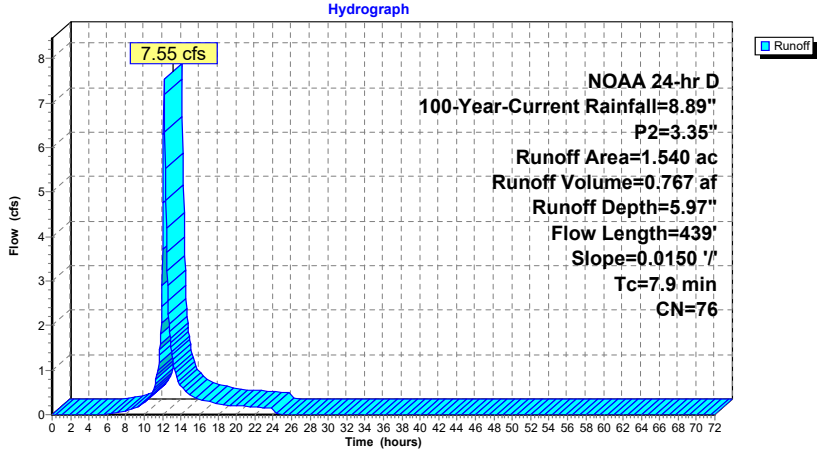
Runoff = 7.55 cfs @ 12.16 hrs, Volume= 0.767 af, Depth= 5.97"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	22	0.0150	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.9	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

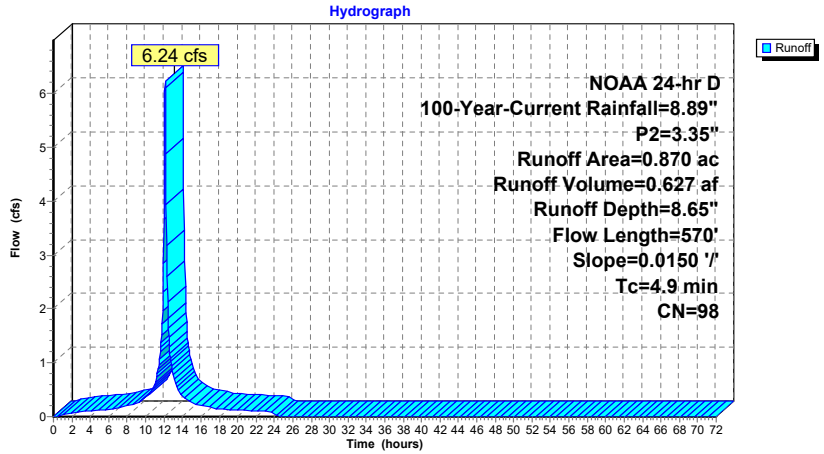
Runoff = 6.24 cfs @ 12.13 hrs, Volume= 0.627 af, Depth= 8.65"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Current Rainfall=8.89", P2=3.35"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.9	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

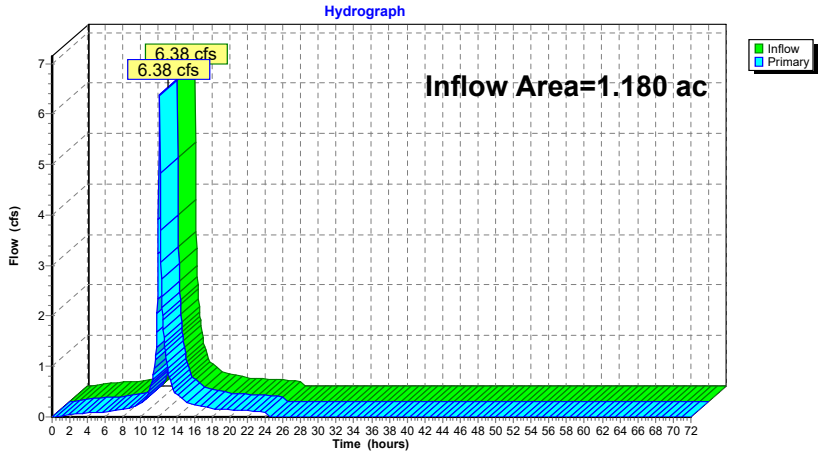


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 6.39" for 100-Year-Current event
Inflow = 6.38 cfs @ 12.09 hrs, Volume= 0.629 af
Primary = 6.38 cfs @ 12.09 hrs, Volume= 0.629 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

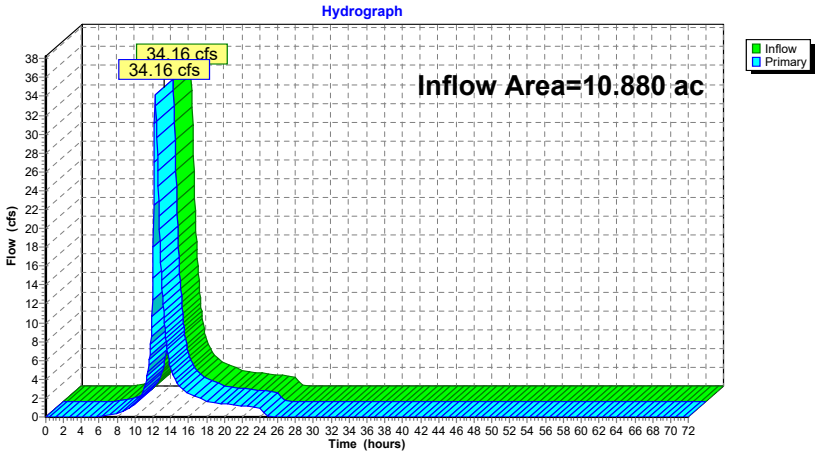


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 5.71" for 100-Year-Current event
Inflow = 34.16 cfs @ 12.29 hrs, Volume= 5.174 af
Primary = 34.16 cfs @ 12.29 hrs, Volume= 5.174 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

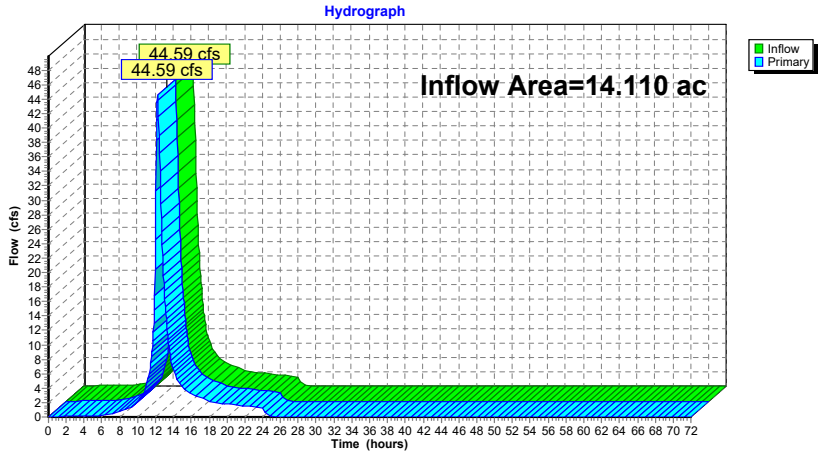


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 5.88" for 100-Year-Current event
Inflow = 44.59 cfs @ 12.25 hrs, Volume= 6.917 af
Primary = 44.59 cfs @ 12.25 hrs, Volume= 6.917 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

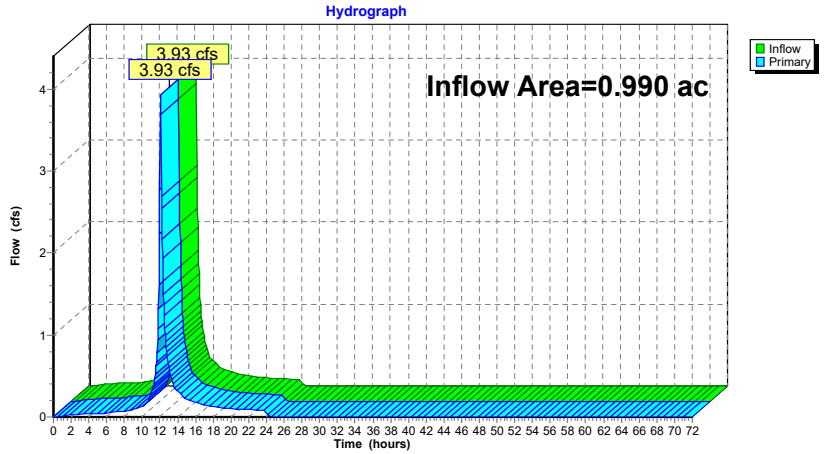


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 4.80" for 100-Year-Current event
Inflow = 3.93 cfs @ 12.07 hrs, Volume= 0.396 af
Primary = 3.93 cfs @ 12.07 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

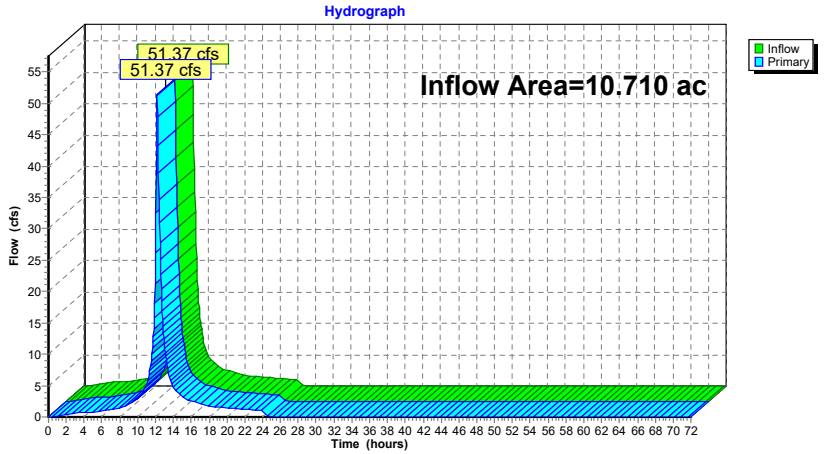


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 7.37" for 100-Year-Current event
Inflow = 51.37 cfs @ 12.19 hrs, Volume= 6.575 af
Primary = 51.37 cfs @ 12.19 hrs, Volume= 6.575 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

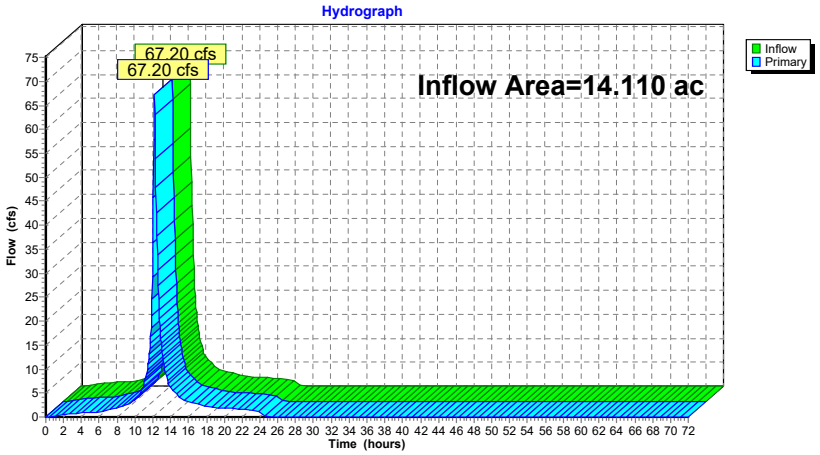


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 7.11" for 100-Year-Current event
Inflow = 67.20 cfs @ 12.17 hrs, Volume= 8.365 af
Primary = 67.20 cfs @ 12.17 hrs, Volume= 8.365 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

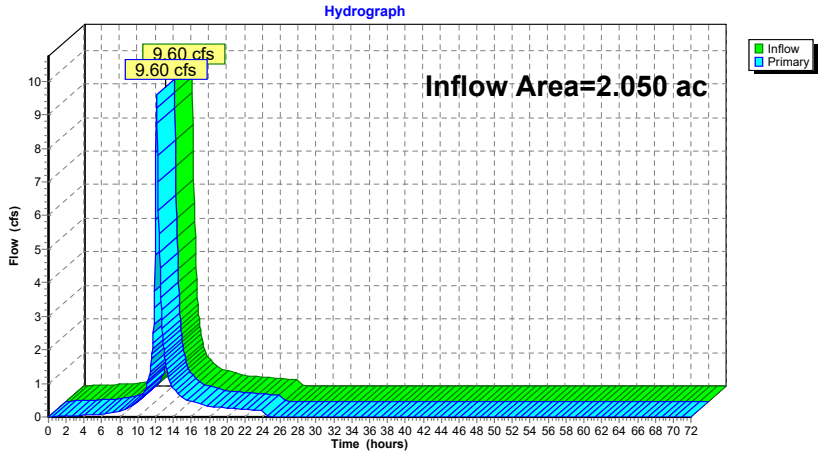


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 6.52" for 100-Year-Current event
Inflow = 9.60 cfs @ 12.12 hrs, Volume= 1.114 af
Primary = 9.60 cfs @ 12.12 hrs, Volume= 1.114 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

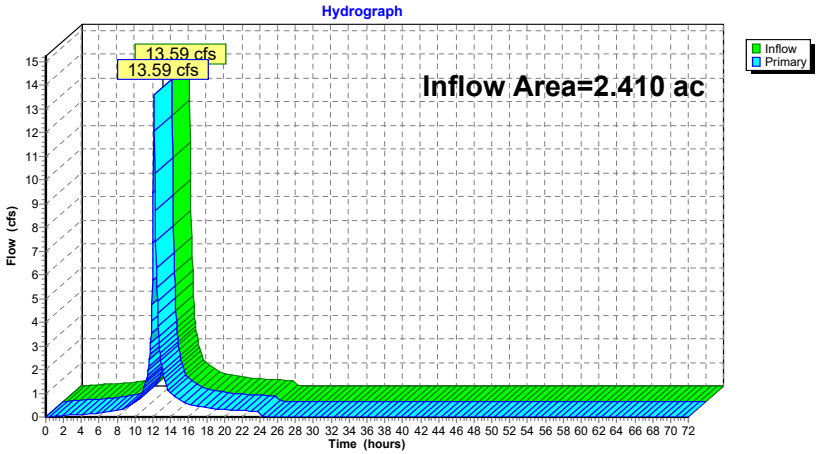


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 6.94" for 100-Year-Current event
Inflow = 13.59 cfs @ 12.15 hrs, Volume= 1.394 af
Primary = 13.59 cfs @ 12.15 hrs, Volume= 1.394 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=275' Tc=2.1 min CN=98 Runoff=7.49 cfs 0.618 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=5.53"
Flow Length=210' Tc=13.4 min CN=56 Runoff=1.84 cfs 0.239 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=7.99"
Flow Length=392' Tc=16.4 min CN=73 Runoff=48.95 cfs 7.004 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=407' Slope=0.0200 '/' Tc=3.1 min CN=98 Runoff=3.79 cfs 0.337 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=53' Tc=0.4 min CN=98 Runoff=3.74 cfs 0.290 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=4.92"
Flow Length=106' Tc=6.7 min CN=52 Runoff=2.93 cfs 0.279 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=8.27"
Flow Length=752' Slope=0.0200 '/' Tc=13.2 min CN=75 Runoff=26.05 cfs 3.382 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=997' Slope=0.0150 '/' Tc=8.3 min CN=98 Runoff=45.50 cfs 5.432 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=8.40"
Flow Length=88' Slope=0.0400 '/' Tc=8.7 min CN=76 Runoff=10.65 cfs 1.141 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=215' Tc=1.4 min CN=98 Runoff=4.96 cfs 0.393 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=8.40"
Flow Length=439' Slope=0.0150 '/' Tc=7.5 min CN=76 Runoff=10.74 cfs 1.078 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=11.24"
Flow Length=570' Slope=0.0150 '/' Tc=4.8 min CN=98 Runoff=8.10 cfs 0.815 af

Link 3L: Ex ROW Total Inflow=8.62 cfs 0.858 af
Primary=8.62 cfs 0.858 af

Link 4L: Ex Raritan N Total Inflow=50.45 cfs 7.341 af
Primary=50.45 cfs 7.341 af

Link 7L: Ex Overall Total Inflow=65.44 cfs 9.733 af
Primary=65.44 cfs 9.733 af

Link 12L: Prop ROW Total Inflow=5.69 cfs 0.569 af
Primary=5.69 cfs 0.569 af

Link 13L: Prop Raritan N Total Inflow=69.43 cfs 8.814 af
Primary=69.43 cfs 8.814 af

Link 14L: Prop Overall Total Inflow=91.66 cfs 11.276 af
Primary=91.66 cfs 11.276 af

Link 17L: Ex Raritan S Total Inflow=13.62 cfs 1.535 af
Primary=13.62 cfs 1.535 af

Link 18L: Prop Raritan S Total Inflow=18.61 cfs 1.893 af
Primary=18.61 cfs 1.893 af

Total Runoff Area = 28.220 ac Runoff Volume = 21.009 af Average Runoff Depth = 8.93"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

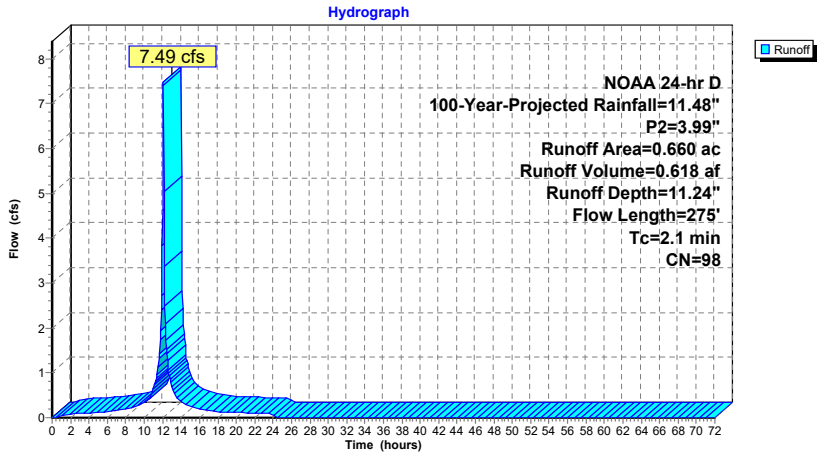
Runoff = 7.49 cfs @ 12.09 hrs, Volume= 0.618 af, Depth=11.24"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

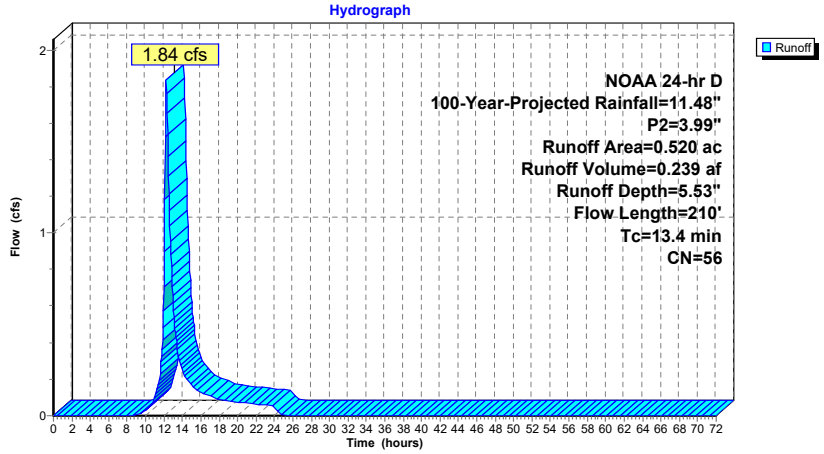
Runoff = 1.84 cfs @ 12.25 hrs, Volume= 0.239 af, Depth= 5.53"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0200	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
13.4	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

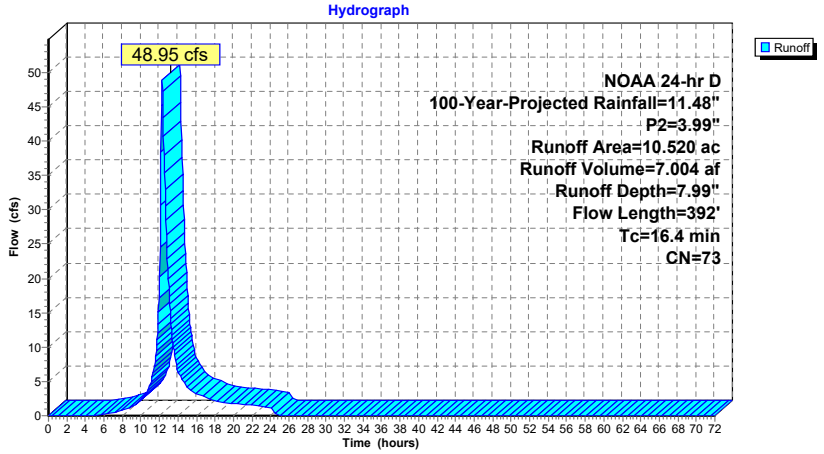
Runoff = 48.95 cfs @ 12.27 hrs, Volume= 7.004 af, Depth= 7.99"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0150	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

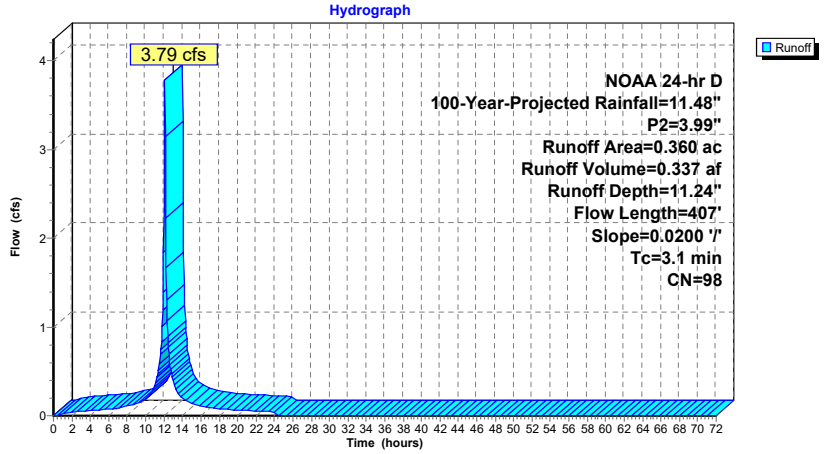
Runoff = 3.79 cfs @ 12.10 hrs, Volume= 0.337 af, Depth=11.24"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.1	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

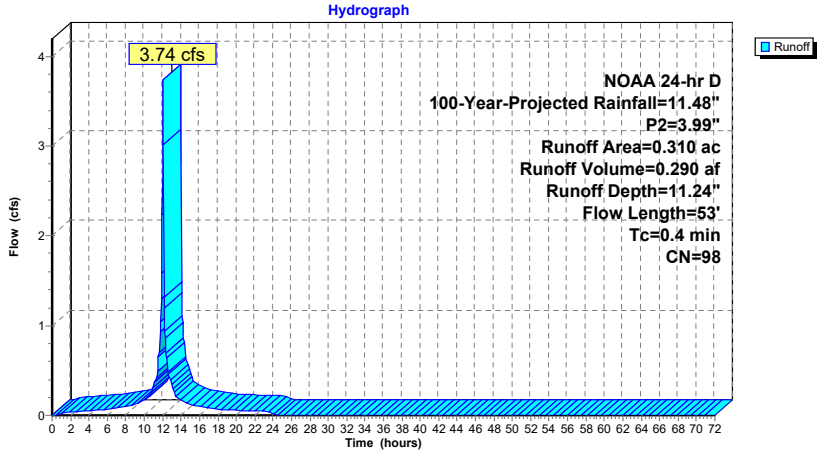
Runoff = 3.74 cfs @ 12.05 hrs, Volume= 0.290 af, Depth=11.24"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

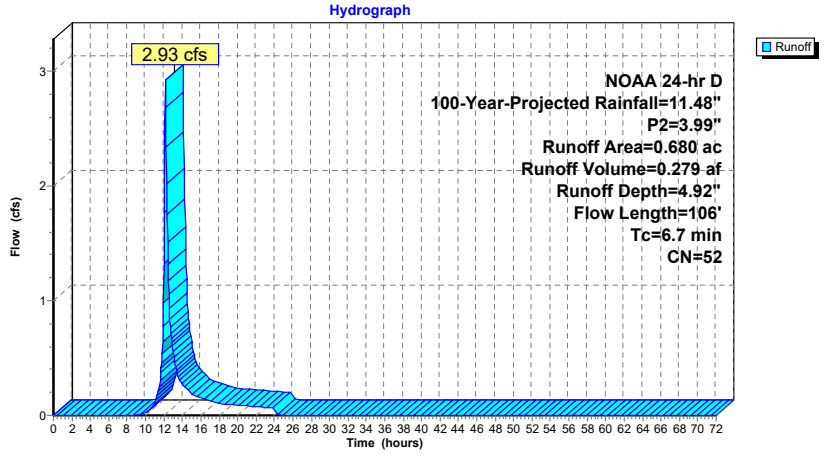
Runoff = 2.93 cfs @ 12.16 hrs, Volume= 0.279 af, Depth= 4.92"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	99	0.1000	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.7	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

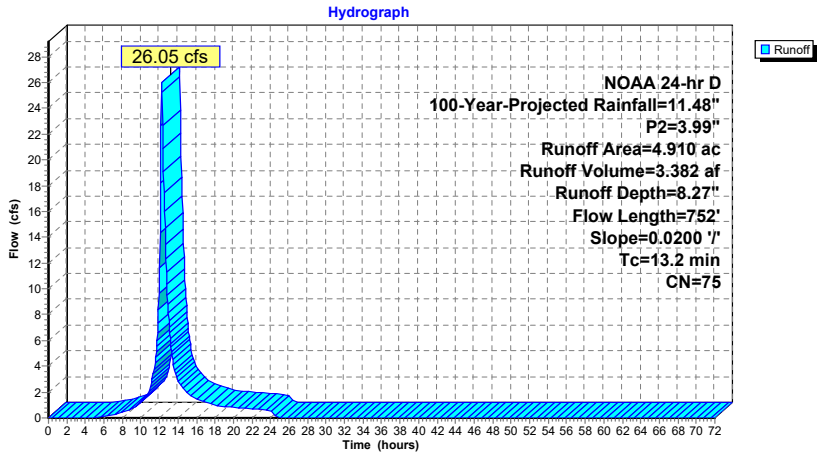
Runoff = 26.05 cfs @ 12.23 hrs, Volume= 3.382 af, Depth= 8.27"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	52	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
5.6	700		2.10		**Direct Entry,**
13.2	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

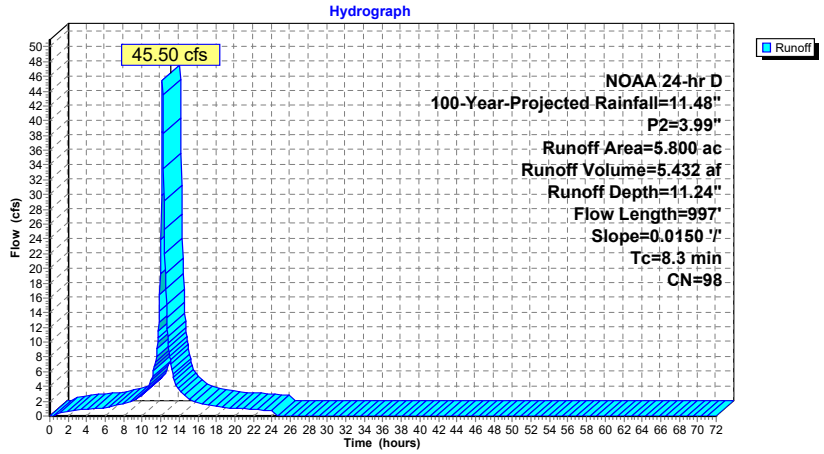
Runoff = 45.50 cfs @ 12.17 hrs, Volume= 5.432 af, Depth=11.24"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	75	0.0150	1.29		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.3	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

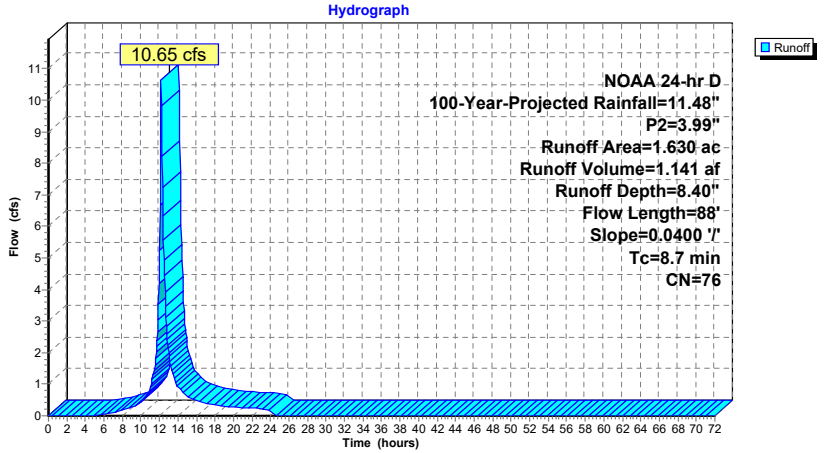
Runoff = 10.65 cfs @ 12.17 hrs, Volume= 1.141 af, Depth= 8.40"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	88	0.0400	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

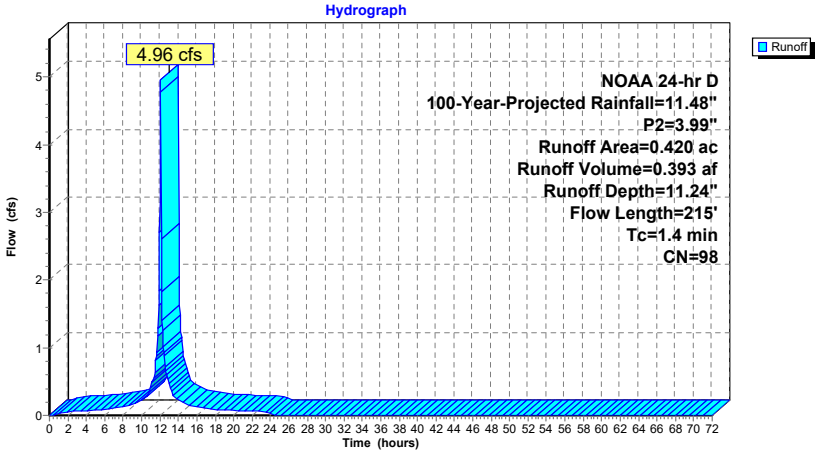
Runoff = 4.96 cfs @ 12.08 hrs, Volume= 0.393 af, Depth=11.24"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0300	1.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

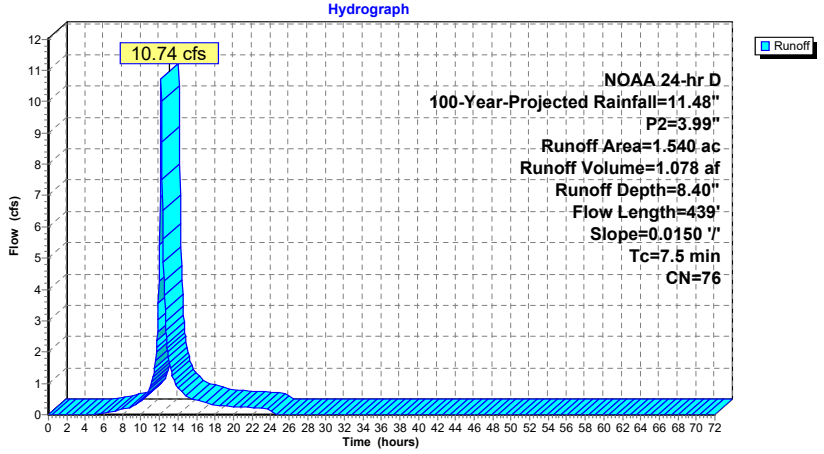
Runoff = 10.74 cfs @ 12.16 hrs, Volume= 1.078 af, Depth= 8.40"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	22	0.0150	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.99"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.5	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

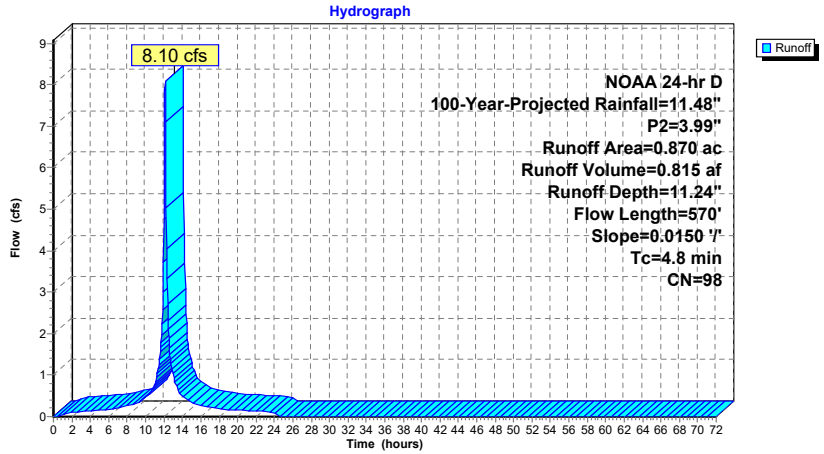
Runoff = 8.10 cfs @ 12.13 hrs, Volume= 0.815 af, Depth=11.24"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-Year-Projected Rainfall=11.48", P2=3.99"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0150	1.37		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.99"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.8	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

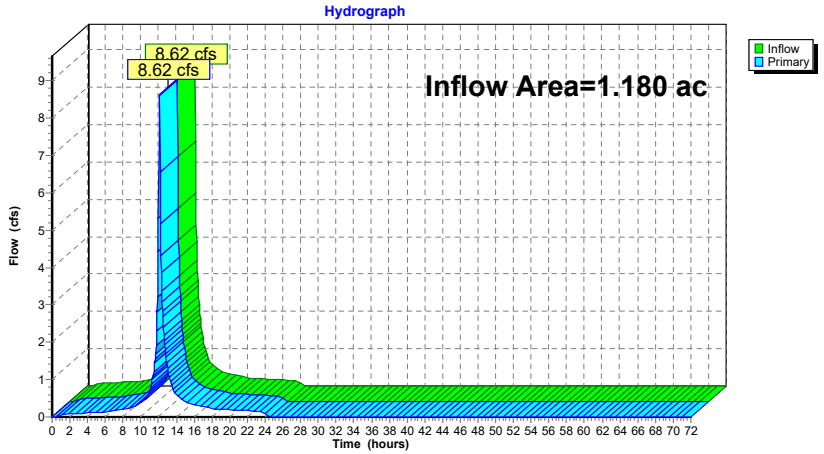


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 8.72" for 100-Year-Projected event
Inflow = 8.62 cfs @ 12.09 hrs, Volume= 0.858 af
Primary = 8.62 cfs @ 12.09 hrs, Volume= 0.858 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

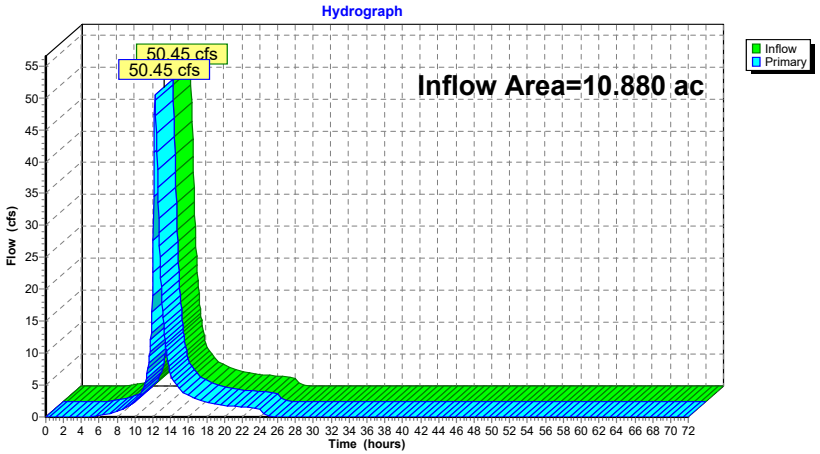


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 8.10" for 100-Year-Projected event
Inflow = 50.45 cfs @ 12.27 hrs, Volume= 7.341 af
Primary = 50.45 cfs @ 12.27 hrs, Volume= 7.341 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

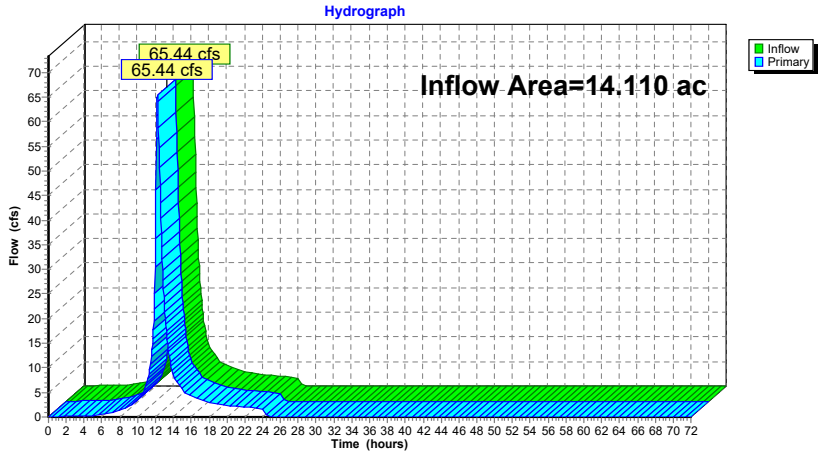


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 8.28" for 100-Year-Projected event
Inflow = 65.44 cfs @ 12.23 hrs, Volume= 9.733 af
Primary = 65.44 cfs @ 12.23 hrs, Volume= 9.733 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

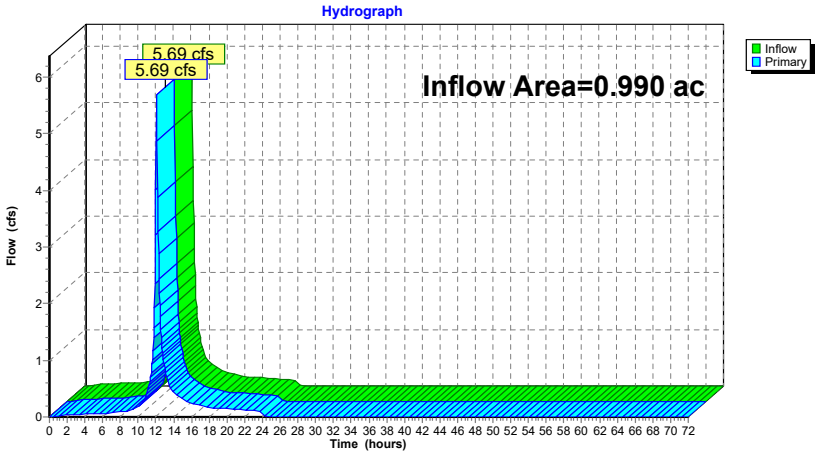


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 6.90" for 100-Year-Projected event
Inflow = 5.69 cfs @ 12.07 hrs, Volume= 0.569 af
Primary = 5.69 cfs @ 12.07 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

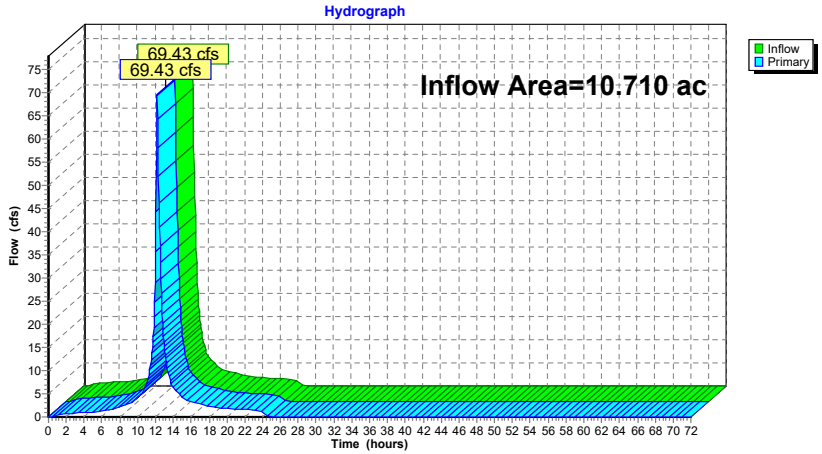


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 9.88" for 100-Year-Projected event
Inflow = 69.43 cfs @ 12.19 hrs, Volume= 8.814 af
Primary = 69.43 cfs @ 12.19 hrs, Volume= 8.814 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

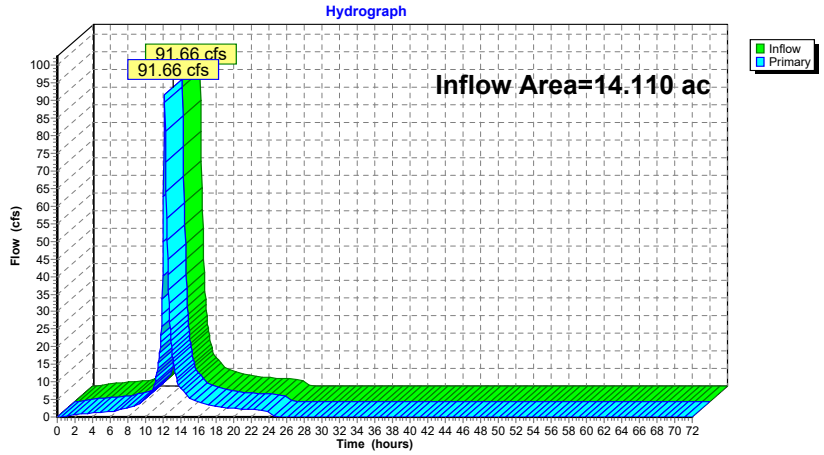


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 9.59" for 100-Year-Projected event
Inflow = 91.66 cfs @ 12.17 hrs, Volume= 11.276 af
Primary = 91.66 cfs @ 12.17 hrs, Volume= 11.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

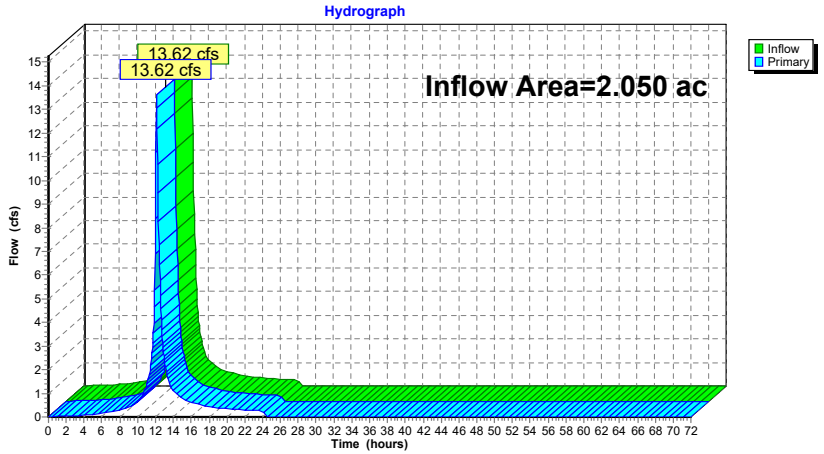


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 8.98" for 100-Year-Projected event
Inflow = 13.62 cfs @ 12.12 hrs, Volume= 1.535 af
Primary = 13.62 cfs @ 12.12 hrs, Volume= 1.535 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

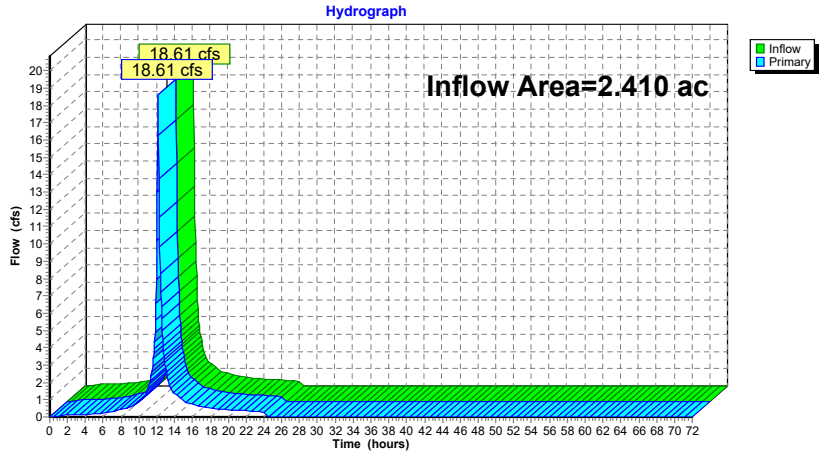


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 9.43" for 100-Year-Projected event
Inflow = 18.61 cfs @ 12.15 hrs, Volume= 1.893 af
Primary = 18.61 cfs @ 12.15 hrs, Volume= 1.893 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex ROW (imp) Runoff Area=0.660 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=275' Tc=2.2 min CN=98 Runoff=1.92 cfs 0.057 af

Subcatchment2S: Ex ROW (perv) Runoff Area=0.520 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=210' Tc=14.5 min CN=56 Runoff=0.00 cfs 0.000 af

Subcatchment5S: Ex Raritan N (perv) Runoff Area=10.520 ac 0.00% Impervious Runoff Depth=0.06"
Flow Length=392' Tc=17.7 min CN=73 Runoff=0.65 cfs 0.054 af

Subcatchment6S: Ex Raritan N (imp) Runoff Area=0.360 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=407' Slope=0.0200 '/' Tc=3.2 min CN=98 Runoff=1.02 cfs 0.031 af

Subcatchment8S: Prop ROW (imp) Runoff Area=0.310 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=53' Tc=0.4 min CN=98 Runoff=0.99 cfs 0.027 af

Subcatchment9S: Prop ROW (perv) Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=106' Tc=7.3 min CN=52 Runoff=0.00 cfs 0.000 af

Subcatchment10S: Prop Raritan N (perv) Runoff Area=4.910 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=752' Slope=0.0200 '/' Tc=13.9 min CN=75 Runoff=0.46 cfs 0.036 af

Subcatchment11S: Prop Raritan N (imp) Runoff Area=5.800 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=997' Slope=0.0150 '/' Tc=8.4 min CN=98 Runoff=11.77 cfs 0.500 af

Subcatchment15S: Ex Raritan S (perv) Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=88' Slope=0.0400 '/' Tc=9.5 min CN=76 Runoff=0.23 cfs 0.014 af

Subcatchment16S: Ex Raritan S (imp) Runoff Area=0.420 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=215' Tc=1.5 min CN=98 Runoff=1.27 cfs 0.036 af

Subcatchment19S: Prop Raritan S (perv) Runoff Area=1.540 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=439' Slope=0.0150 '/' Tc=7.9 min CN=76 Runoff=0.23 cfs 0.013 af

Subcatchment20S: Prop Raritan S (imp) Runoff Area=0.870 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=570' Slope=0.0150 '/' Tc=4.9 min CN=98 Runoff=2.18 cfs 0.075 af

Link 3L: Ex ROW Total Inflow=1.92 cfs 0.057 af
Primary=1.92 cfs 0.057 af

Link 4L: Ex Raritan N Total Inflow=1.02 cfs 0.085 af
Primary=1.02 cfs 0.085 af

Link 7L: Ex Overall Total Inflow=4.15 cfs 0.192 af
Primary=4.15 cfs 0.192 af

Link 12L: Prop ROW Total Inflow=0.99 cfs 0.027 af
Primary=0.99 cfs 0.027 af

Link 13L: Prop Raritan N Total Inflow=11.90 cfs 0.536 af
Primary=11.90 cfs 0.536 af

Link 14L: Prop Overall Total Inflow=14.38 cfs 0.650 af
Primary=14.38 cfs 0.650 af

Link 17L: Ex Raritan S Total Inflow=1.27 cfs 0.050 af
Primary=1.27 cfs 0.050 af

Link 18L: Prop Raritan S Total Inflow=2.26 cfs 0.088 af
Primary=2.26 cfs 0.088 af

Total Runoff Area = 28.220 ac Runoff Volume = 0.842 af Average Runoff Depth = 0.36"
70.16% Pervious = 19.800 ac 29.84% Impervious = 8.420 ac

Summary for Subcatchment 1S: Ex ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

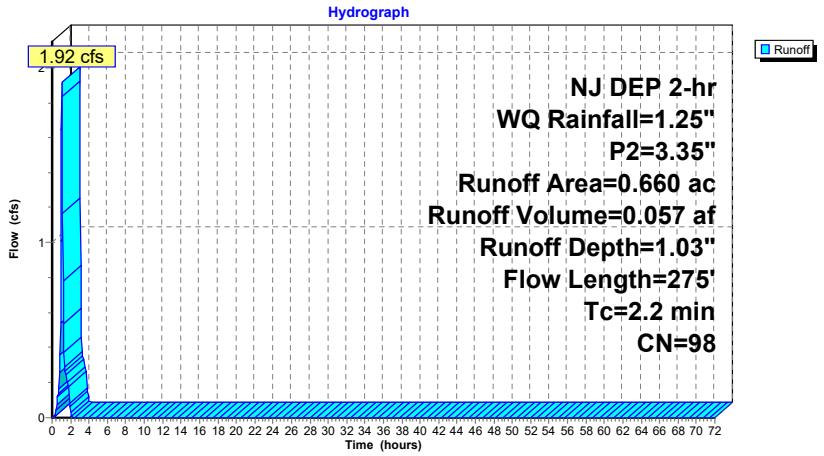
Runoff = 1.92 cfs @ 1.06 hrs, Volume= 0.057 af, Depth= 1.03"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.660	98	Paved parking, HSG A
0.660		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
1.2	175	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.2	275	Total			

Subcatchment 1S: Ex ROW (imp)



Summary for Subcatchment 2S: Ex ROW (perv)

[45] Hint: Runoff=Zero

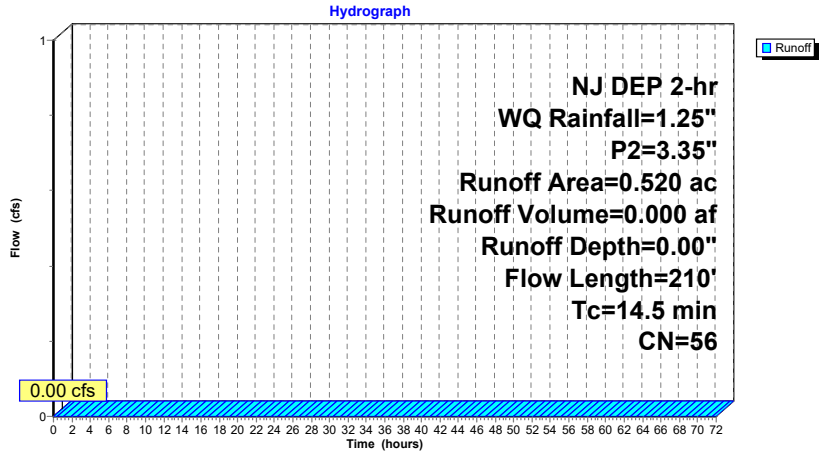
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 3L : Ex ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.300	39	>75% Grass cover, Good, HSG A
0.220	80	>75% Grass cover, Good, HSG D
0.520	56	Weighted Average
0.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0200	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.6	110	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.5	210	Total			

Subcatchment 2S: Ex ROW (perv)



Summary for Subcatchment 5S: Ex Raritan N (perv)

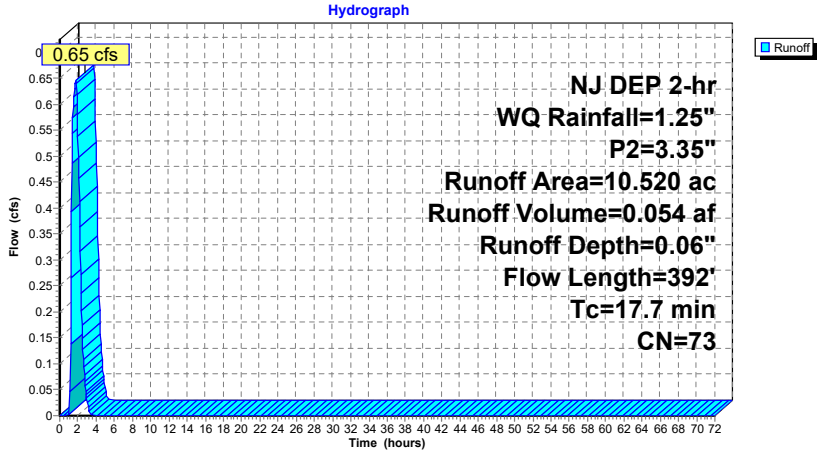
Runoff = 0.65 cfs @ 1.78 hrs, Volume= 0.054 af, Depth= 0.06"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
1.840	39	>75% Grass cover, Good, HSG A
8.680	80	>75% Grass cover, Good, HSG D
10.520	73	Weighted Average
10.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0150	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
2.1	292	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.7	392	Total			

Subcatchment 5S: Ex Raritan N (perv)



Summary for Subcatchment 6S: Ex Raritan N (imp)

[49] Hint: Tc<2dt may require smaller dt

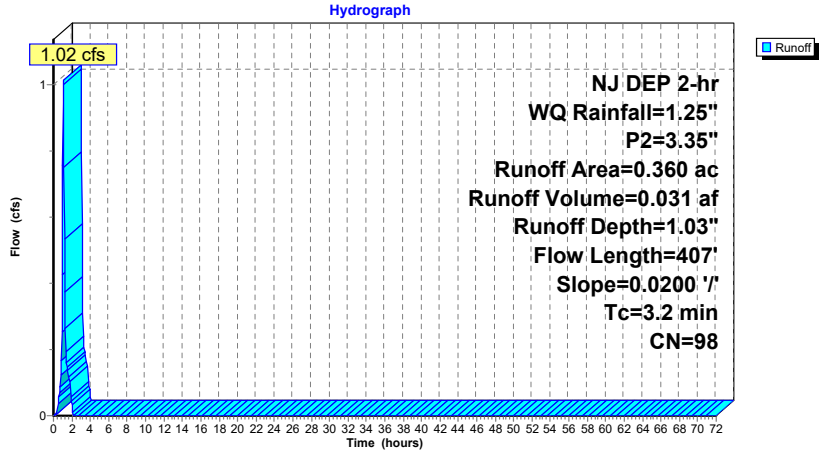
Runoff = 1.02 cfs @ 1.08 hrs, Volume= 0.031 af, Depth= 1.03"
Routed to Link 4L : Ex Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.360	98	Paved parking, HSG A
0.360		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.96		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
2.9	392	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.2	407	Total			

Subcatchment 6S: Ex Raritan N (imp)



Summary for Subcatchment 8S: Prop ROW (imp)

[49] Hint: Tc<2dt may require smaller dt

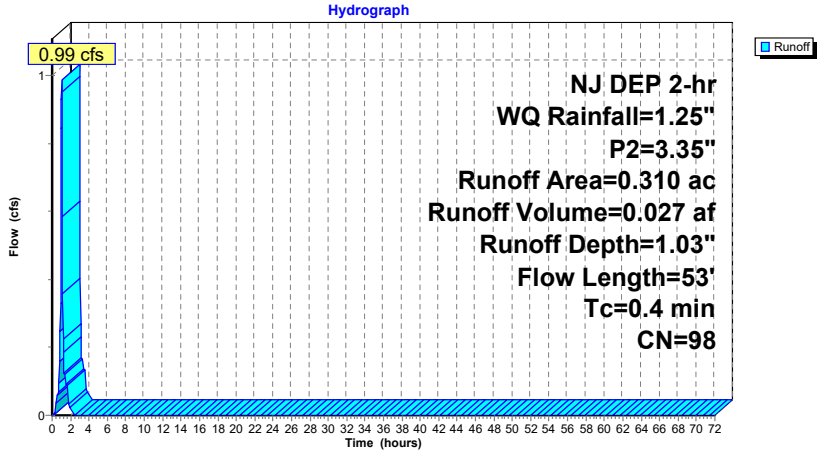
Runoff = 0.99 cfs @ 1.03 hrs, Volume= 0.027 af, Depth= 1.03"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.310	98	Paved parking, HSG A
0.310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0150	0.81		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.2	35	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.4	53	Total			

Subcatchment 8S: Prop ROW (imp)



Summary for Subcatchment 9S: Prop ROW (perv)

[45] Hint: Runoff=Zero

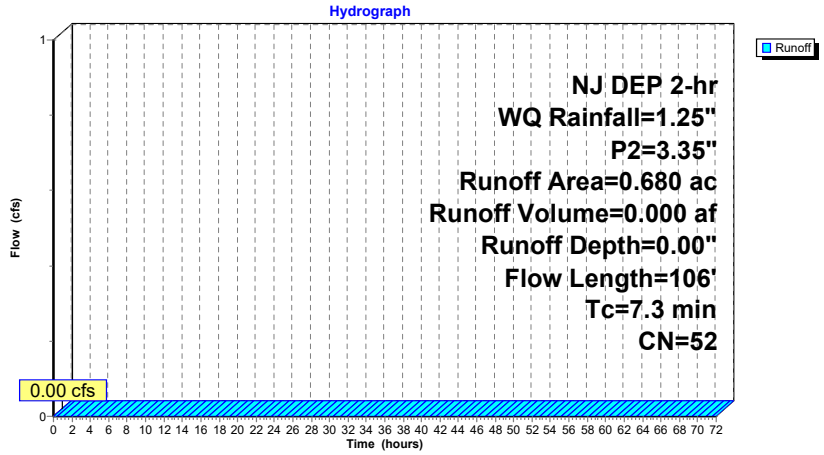
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 12L : Prop ROW Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.470	39	>75% Grass cover, Good, HSG A
0.210	80	>75% Grass cover, Good, HSG D
0.680	52	Weighted Average
0.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	99	0.1000	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.0	4	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	3	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.3	106	Total			

Subcatchment 9S: Prop ROW (perv)



Summary for Subcatchment 10S: Prop Raritan N (perv)

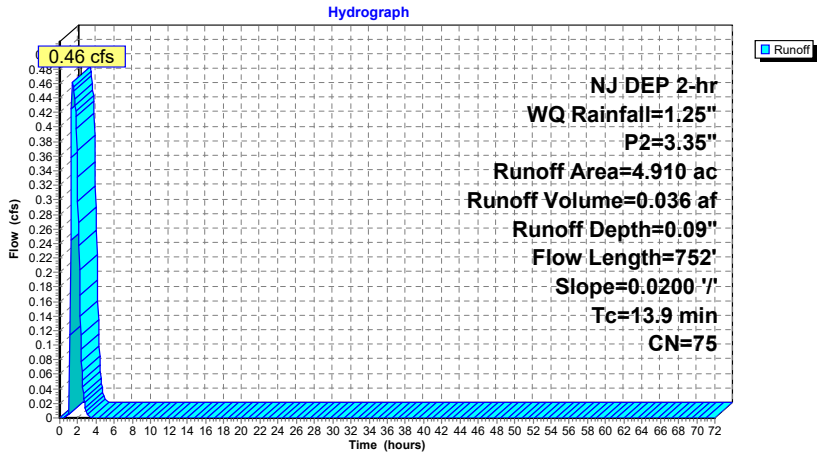
Runoff = 0.46 cfs @ 1.40 hrs, Volume= 0.036 af, Depth= 0.09"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
4.350	80	>75% Grass cover, Good, HSG D
0.560	39	>75% Grass cover, Good, HSG A
4.910	75	Weighted Average
4.910		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	52	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
5.6	700		2.10		**Direct Entry,**
13.9	752	Total			

Subcatchment 10S: Prop Raritan N (perv)



Summary for Subcatchment 11S: Prop Raritan N (imp)

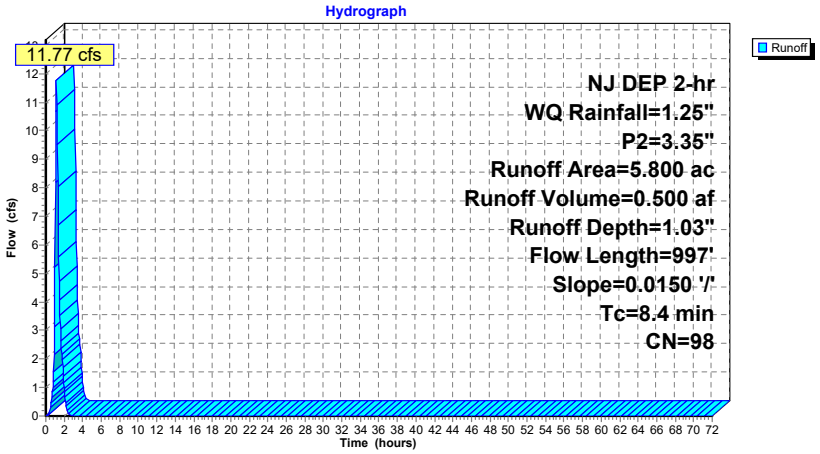
Runoff = 11.77 cfs @ 1.15 hrs, Volume= 0.500 af, Depth= 1.03"
Routed to Link 13L : Prop Raritan N Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
5.800	98	Paved parking, HSG A
5.800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	75	0.0150	1.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
7.3	922		2.10		**Direct Entry, Pipe Flow**
8.4	997	Total			

Subcatchment 11S: Prop Raritan N (imp)



Summary for Subcatchment 15S: Ex Raritan S (perv)

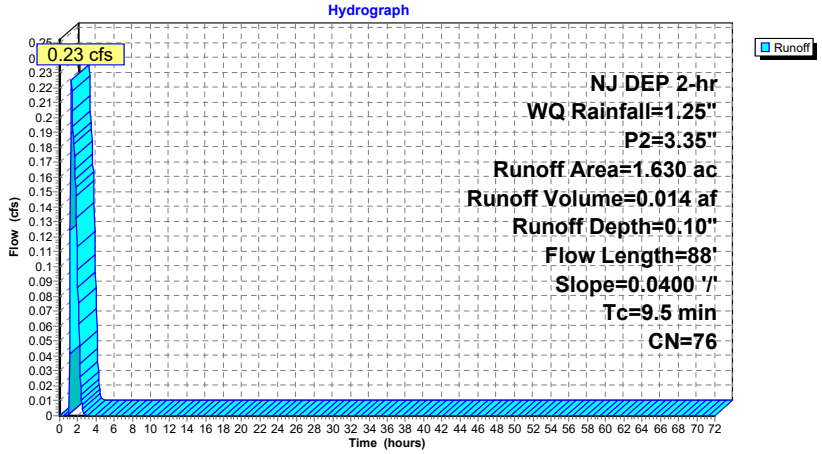
Runoff = 0.23 cfs @ 1.30 hrs, Volume= 0.014 af, Depth= 0.10"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
1.470	80	>75% Grass cover, Good, HSG D
1.630	76	Weighted Average
1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	88	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"

Subcatchment 15S: Ex Raritan S (perv)



Summary for Subcatchment 16S: Ex Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

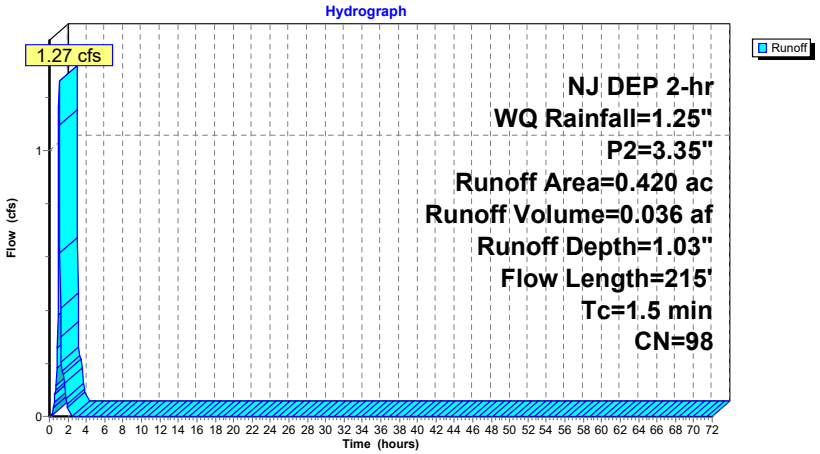
Runoff = 1.27 cfs @ 1.04 hrs, Volume= 0.036 af, Depth= 1.03"
Routed to Link 17L : Ex Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.420	98	Paved parking, HSG A
0.420		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0300	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.4	75	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	215	Total			

Subcatchment 16S: Ex Raritan S (imp)



Summary for Subcatchment 19S: Prop Raritan S (perv)

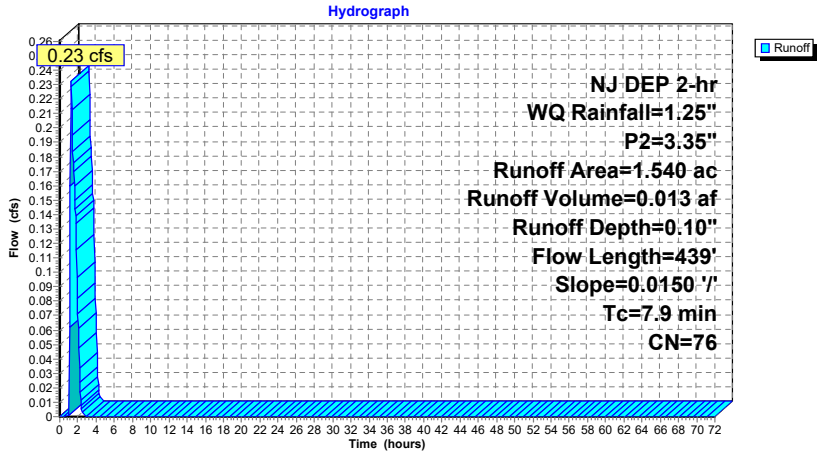
Runoff = 0.23 cfs @ 1.27 hrs, Volume= 0.013 af, Depth= 0.10"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
1.380	80	>75% Grass cover, Good, HSG D
0.160	39	>75% Grass cover, Good, HSG A
1.540	76	Weighted Average
1.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	22	0.0150	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
0.4	60	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	357		2.10		**Direct Entry,**
7.9	439	Total			

Subcatchment 19S: Prop Raritan S (perv)



Summary for Subcatchment 20S: Prop Raritan S (imp)

[49] Hint: Tc<2dt may require smaller dt

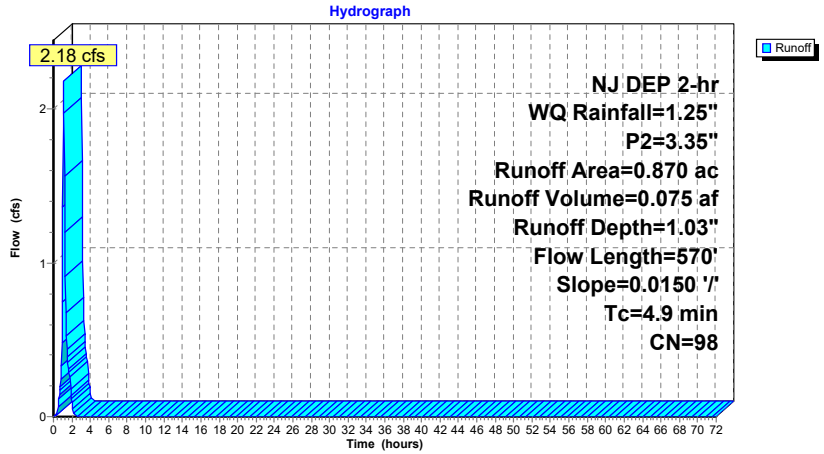
Runoff = 2.18 cfs @ 1.10 hrs, Volume= 0.075 af, Depth= 1.03"
Routed to Link 18L : Prop Raritan S Total

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25", P2=3.35"

Area (ac)	CN	Description
0.870	98	Paved parking, HSG A
0.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.35"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.0	380		2.10		**Direct Entry,**
4.9	570	Total			

Subcatchment 20S: Prop Raritan S (imp)

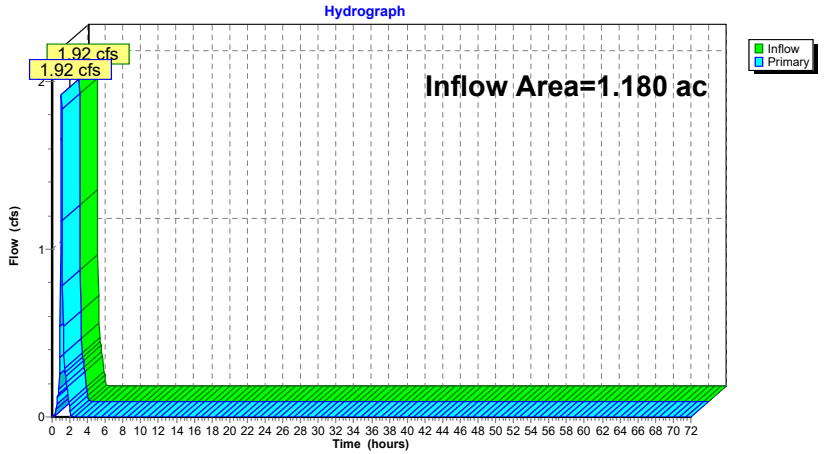


Summary for Link 3L: Ex ROW Total

Inflow Area = 1.180 ac, 55.93% Impervious, Inflow Depth = 0.58" for WQ event
Inflow = 1.92 cfs @ 1.06 hrs, Volume= 0.057 af
Primary = 1.92 cfs @ 1.06 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Ex ROW Total

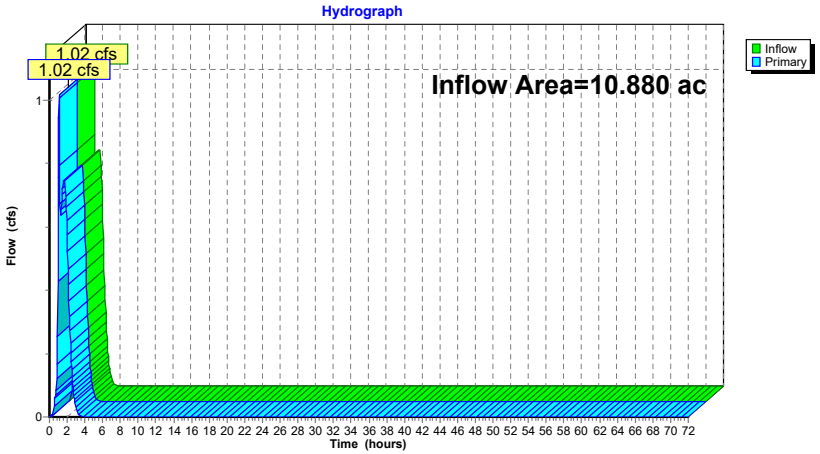


Summary for Link 4L: Ex Raritan N Total

Inflow Area = 10.880 ac, 3.31% Impervious, Inflow Depth = 0.09" for WQ event
Inflow = 1.02 cfs @ 1.09 hrs, Volume= 0.085 af
Primary = 1.02 cfs @ 1.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Ex Raritan N Total

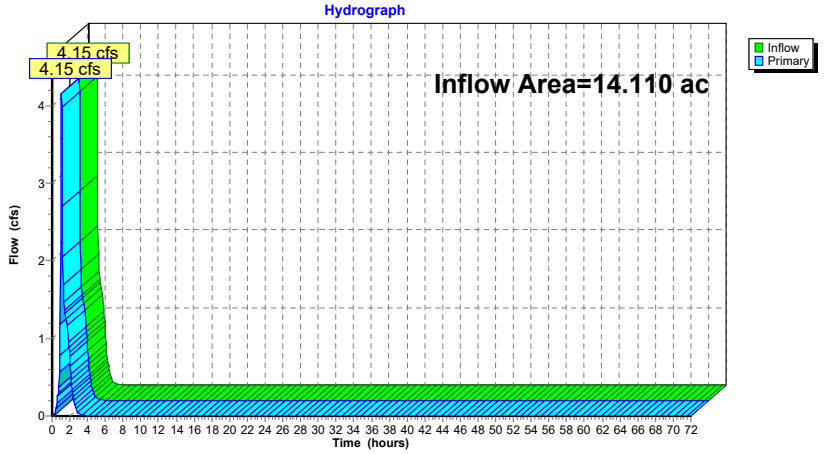


Summary for Link 7L: Ex Overall Total

Inflow Area = 14.110 ac, 10.21% Impervious, Inflow Depth = 0.16" for WQ event
Inflow = 4.15 cfs @ 1.07 hrs, Volume= 0.192 af
Primary = 4.15 cfs @ 1.07 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 7L: Ex Overall Total

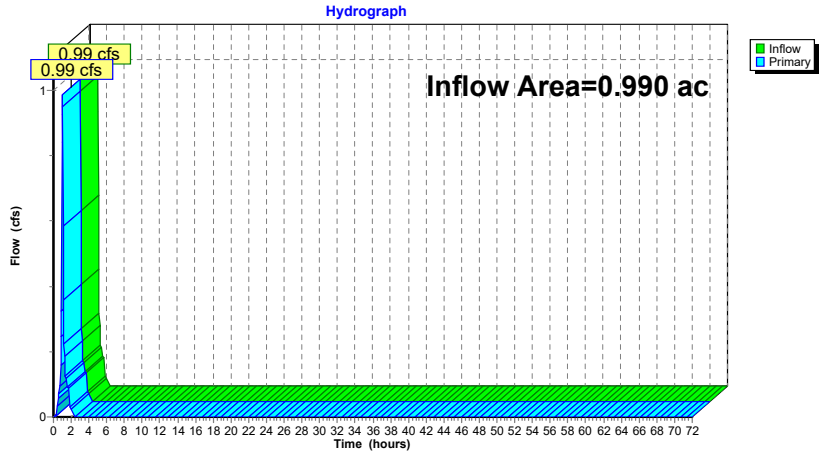


Summary for Link 12L: Prop ROW Total

Inflow Area = 0.990 ac, 31.31% Impervious, Inflow Depth = 0.32" for WQ event
Inflow = 0.99 cfs @ 1.03 hrs, Volume= 0.027 af
Primary = 0.99 cfs @ 1.03 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 12L: Prop ROW Total

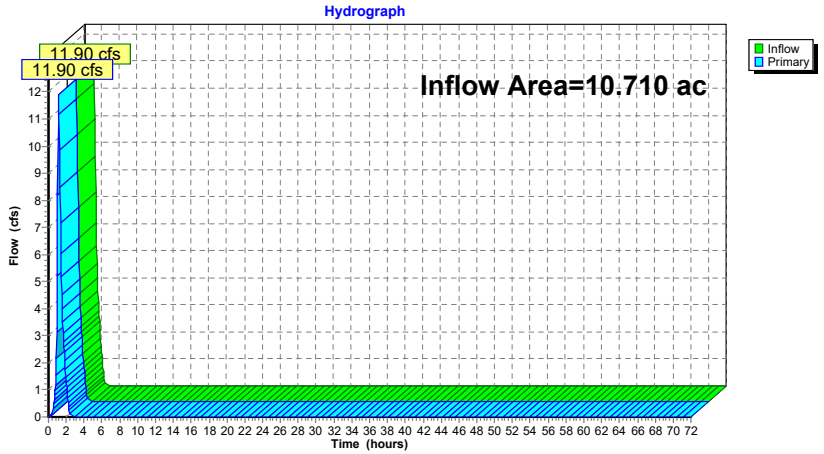


Summary for Link 13L: Prop Raritan N Total

Inflow Area = 10.710 ac, 54.15% Impervious, Inflow Depth = 0.60" for WQ event
Inflow = 11.90 cfs @ 1.16 hrs, Volume= 0.536 af
Primary = 11.90 cfs @ 1.16 hrs, Volume= 0.536 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 13L: Prop Raritan N Total

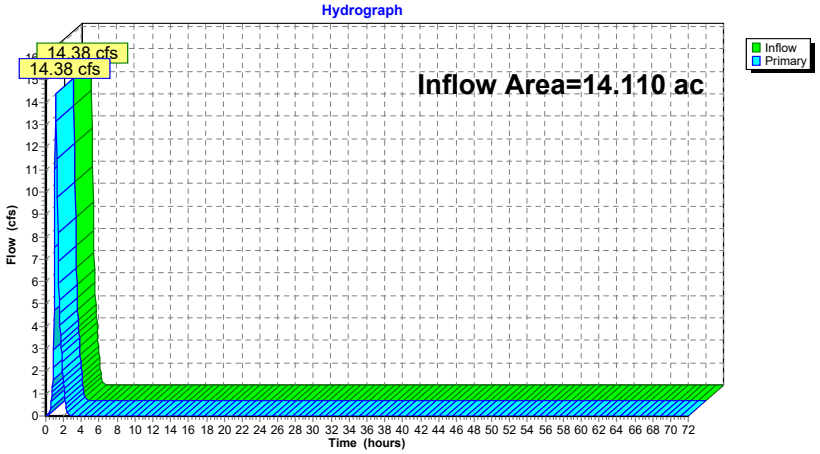


Summary for Link 14L: Prop Overall Total

Inflow Area = 14.110 ac, 49.47% Impervious, Inflow Depth = 0.55" for WQ event
Inflow = 14.38 cfs @ 1.15 hrs, Volume= 0.650 af
Primary = 14.38 cfs @ 1.15 hrs, Volume= 0.650 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 14L: Prop Overall Total

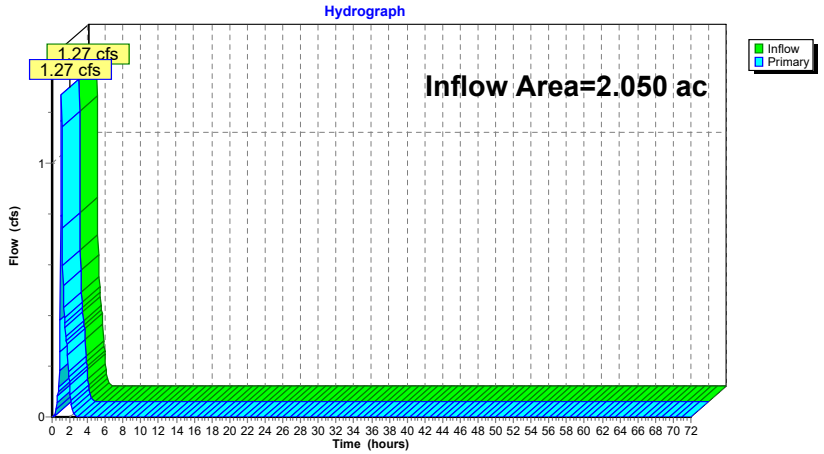


Summary for Link 17L: Ex Raritan S Total

Inflow Area = 2.050 ac, 20.49% Impervious, Inflow Depth = 0.29" for WQ event
Inflow = 1.27 cfs @ 1.05 hrs, Volume= 0.050 af
Primary = 1.27 cfs @ 1.05 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Routed to Link 7L : Ex Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 17L: Ex Raritan S Total

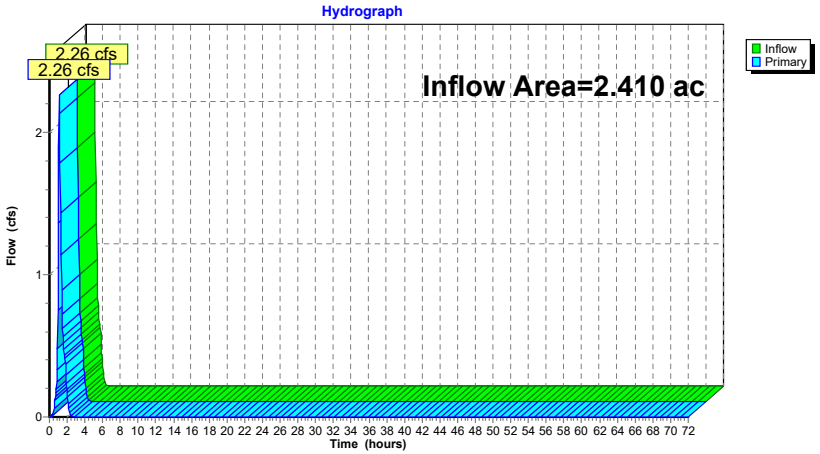


Summary for Link 18L: Prop Raritan S Total

Inflow Area = 2.410 ac, 36.10% Impervious, Inflow Depth = 0.44" for WQ event
Inflow = 2.26 cfs @ 1.11 hrs, Volume= 0.088 af
Primary = 2.26 cfs @ 1.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Routed to Link 14L : Prop Overall Total

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 18L: Prop Raritan S Total



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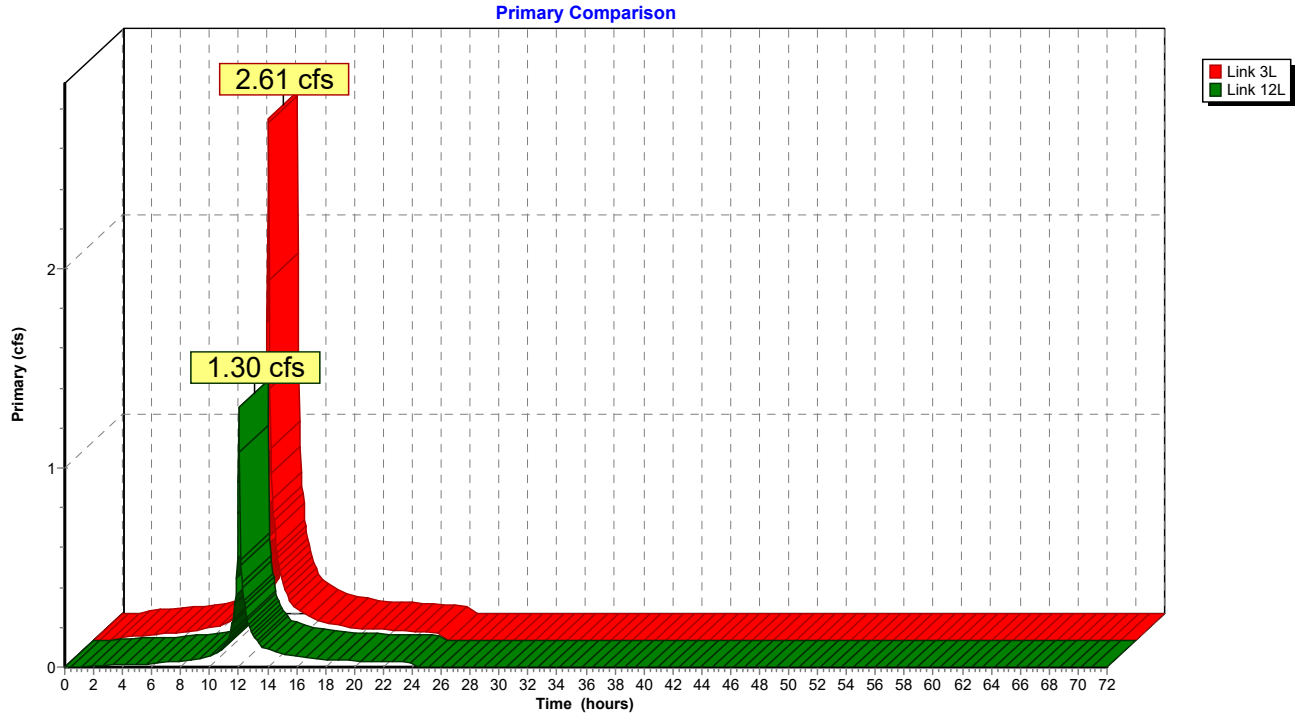
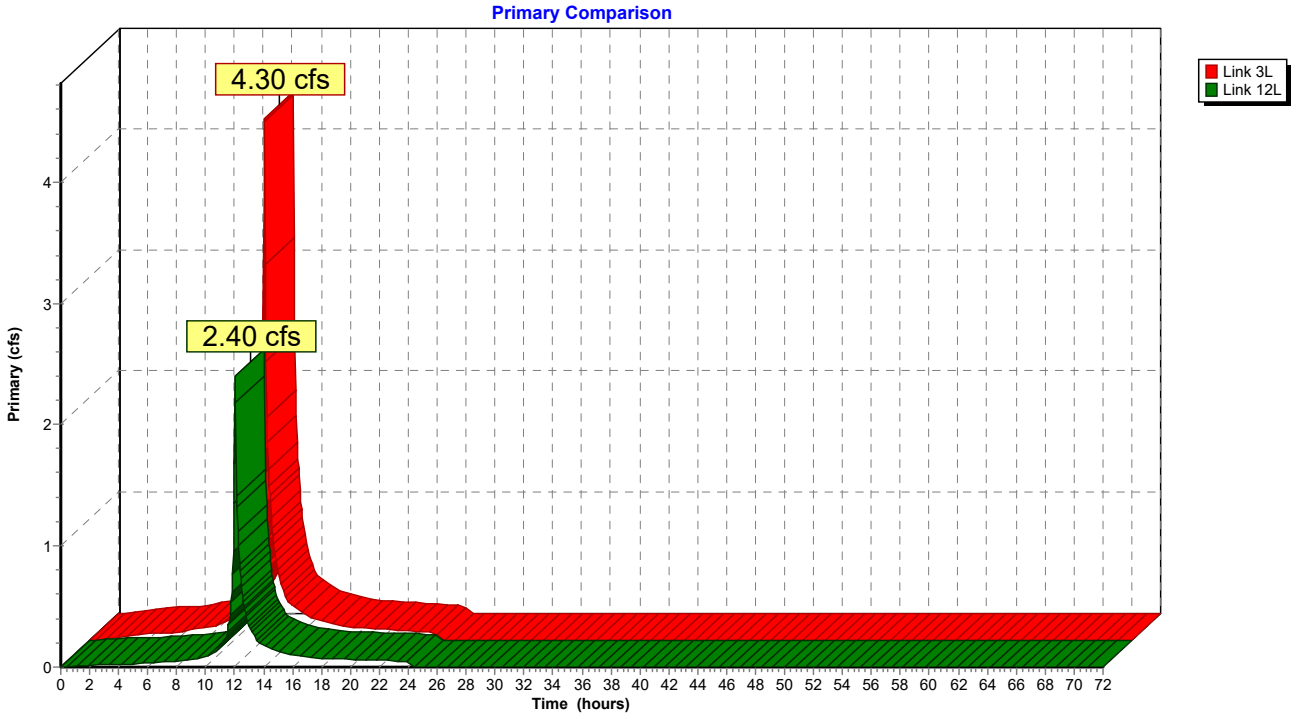
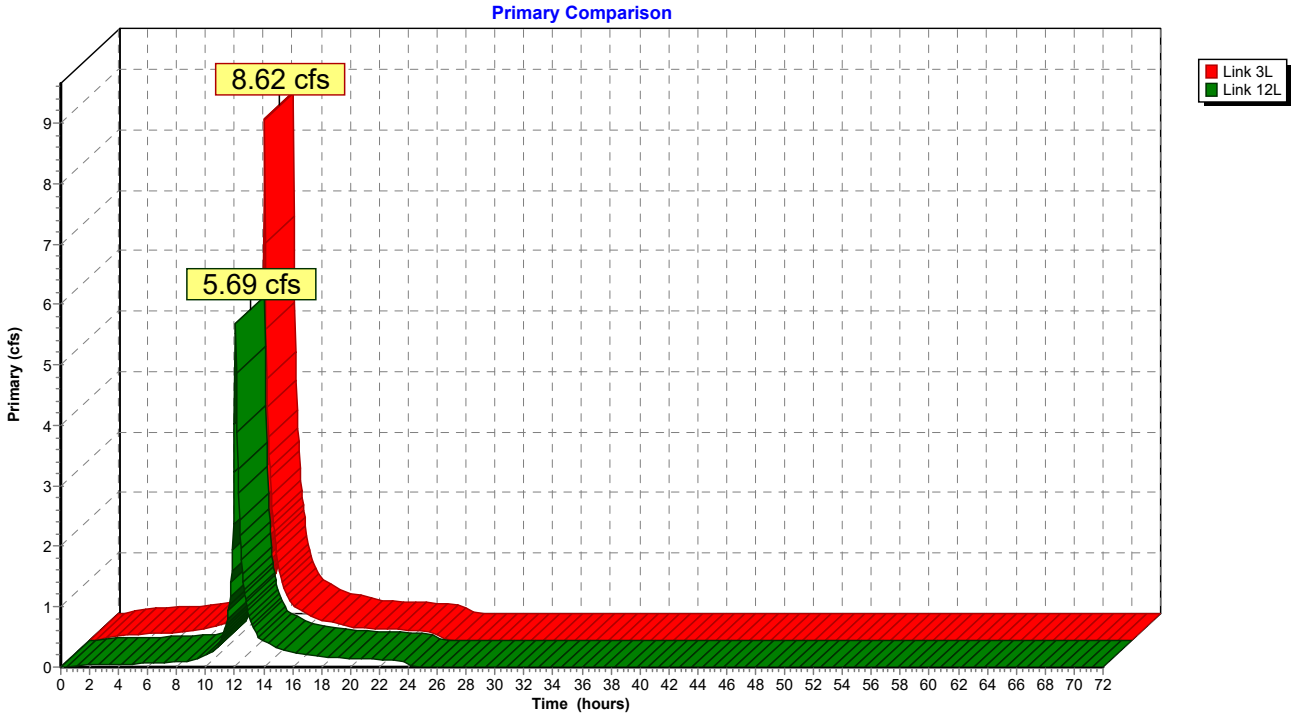
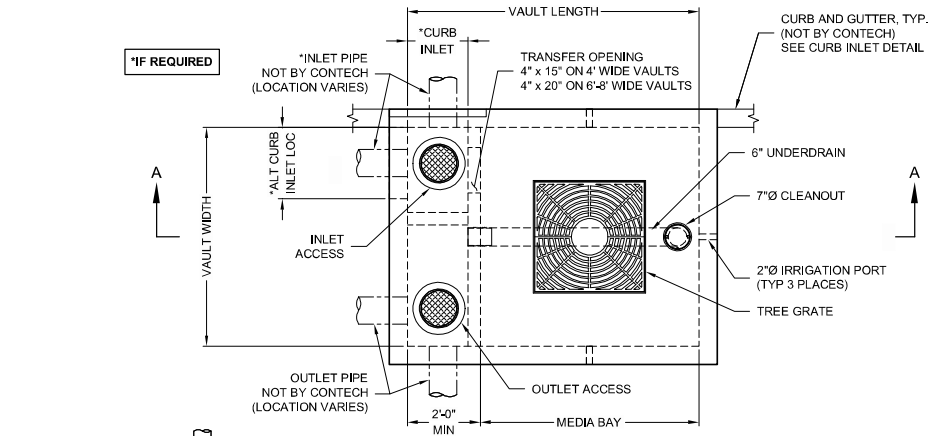
HYDROGRAPH SUMMARY REPORTS – COMPARATIVE HYDROGRAPHS FOR POA ROW


Primary Comparison
2.61 cfs
1.30 cfs
Link 3L
Link 12L
Primary (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

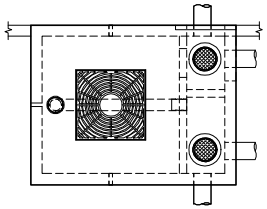

Primary Comparison
4.30 cfs
2.40 cfs
Link 3L
Link 12L
Primary (cfs)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)


Primary Comparison
8.62 cfs
5.69 cfs
Link 3L
Link 12L
Primary (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

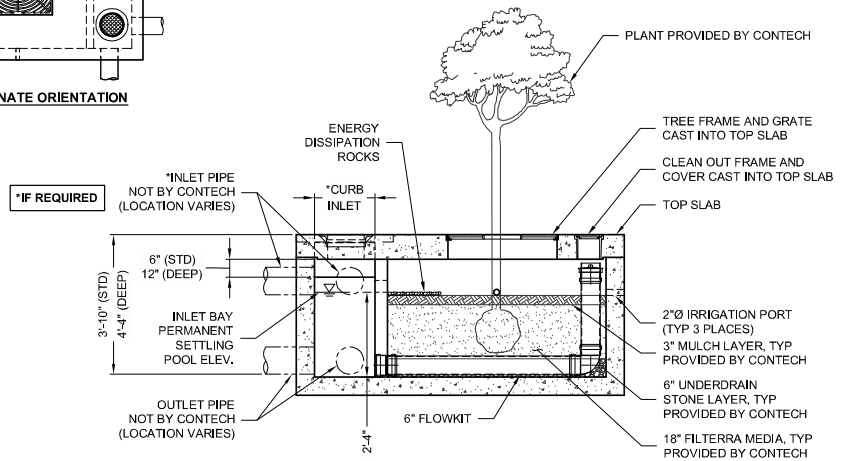
CONTECH FILTERRA PEAK DIVERSION MANUFACTURED TREATMENT DEVICE SCHEMATIC DETAILS



PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION.

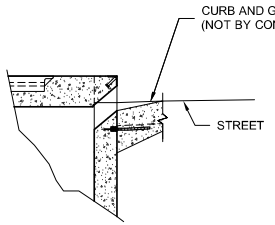
FTPD-HC STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	DESIGNATION (OPTIONS: -P, -T, -PT)	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-HC	ALL	4 x 4	4 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0406-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD045058-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0604-HC	ALL	6 x 4	6 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0606-HC	ALL	6 x 6	6 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0608-HC	ALL	6 x 8	6 x 10	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0610-HC	ALL	6 x 10	6 x 12	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0710-HC	ALL	7 x 10	7 x 13	2'-6"	2.1	24"/24"	(1) 4' x 4'
FTPD08105-HC	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"/24"	(1) 4' x 4'
FTPD08125-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	2.5	24"/24"	(2) 4' x 4'
FTPD09115-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"/24"	(2) 4' x 4'
N/A = NOT AVAILABLE							

FTPD-D-HC DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-D-HC	ALL	4 x 4	4 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0406-D-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD045058-D-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0604-D-HC	ALL	6 x 4	6 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0606-D-HC	ALL	6 x 6	6 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0608-D-HC	ALL	6 x 8	6 x 10	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0610-D-HC	ALL	6 x 10	6 x 12	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0710-D-HC	ALL	7 x 10	7 x 13	2'-6"	6.8	24"/24"	(1) 4' x 4'
FTPD08105-D-HC	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"/24"	(1) 4' x 4'
FTPD08125-D-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	8.2	24"/24"	(2) 4' x 4'
FTPD09115-D-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"/24"	(2) 4' x 4'
N/A = NOT AVAILABLE							

*MAX BYPASS FLOW IS INTERNAL WEIR FLOW. SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE CURB INLET FLOW CAPACITY



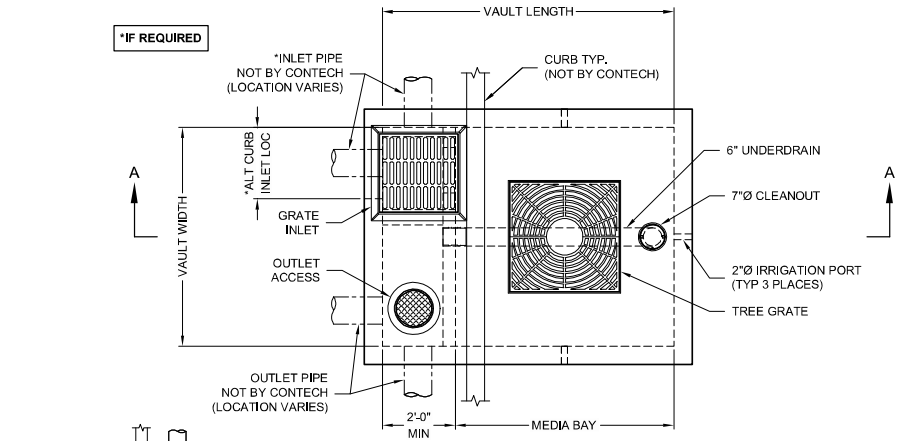
CURB INLET DETAIL

filterra®

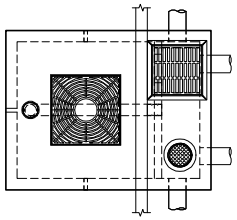
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,425,257; 7,425,261; 7,533,412; RELATED FOREIGN PATENTS.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

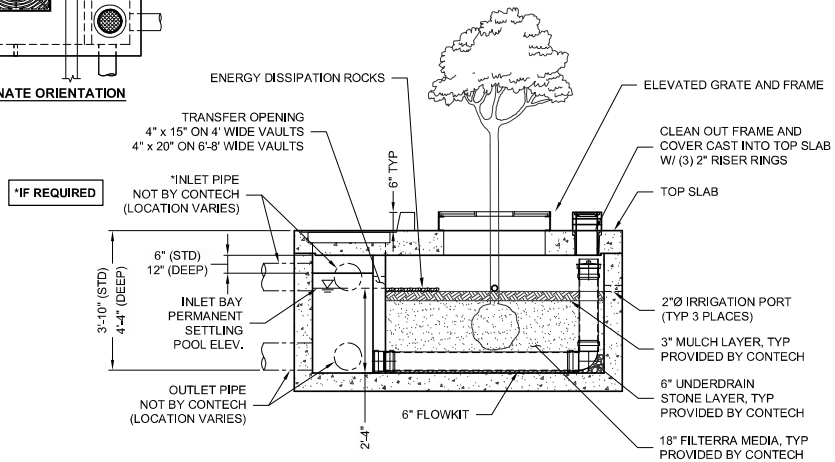
FILTERRA HC PEAK DIVERSION (FTPD-HC)
CONFIGURATION DETAIL



PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY
DEPENDING UPON OUTLET LOCATION.

FTPD-G-HC STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-G-HC	ALL	4 x 4	4 x 6	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD0406-G-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-G-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-G-HC	ALL	6 x 4	6 x 6	1'-8"	1.4	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-G-HC	ALL	6 x 6	6 x 8	1'-8"	1.4	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-G-HC	ALL	6 x 8	6 x 10	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-G-HC	ALL	6 x 10	6 x 12	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-G-HC	ALL	7 x 10	7 x 13	2'-6"	2.1	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-G-HC	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-G-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	2.5	24"SQ/24"Ø	(2) 4' x 4'
FTPD09115-G-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

FTPD-GD-HC DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-GD-HC	ALL	4 x 4	4 x 6	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD0406-GD-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-GD-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-GD-HC	ALL	6 x 4	6 x 6	1'-8"	4.6	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-GD-HC	ALL	6 x 6	6 x 8	1'-8"	4.6	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-GD-HC	ALL	6 x 8	6 x 10	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-GD-HC	ALL	6 x 10	6 x 12	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-GD-HC	ALL	7 x 10	7 x 13	2'-6"	6.8	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-GD-HC	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-GD-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	8.2	24"SQ/24"Ø	(2) 4' x 4'
FTPD09115-GD-HC	OR,WA ONLY	9 x 11.5	9 x 15	3'-0"	8.2	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

* MAX BYPASS FLOW IS INTERNAL WEIR FLOW . SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE GRATE INLET FLOW CAPACITY
** 3' x 3' TREE GRATE ON FTPD0404-G UNITS IS INSTALLED OVER A SMALLER 30" x 30" MAX OPENING FOR STRUCTURAL REASONS

filterra

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FILTERRA HC PEAK DIVERSION - GRATE (FTPD-G-HC) CONFIGURATION DETAIL

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER QUALITY
Bureau of Stormwater Permitting
401 East State Street
P.O. Box 420 Mail Code 401-02B
Trenton, NJ 08625-0420
Tel. (609) 633-7021 • Fax (609) 777-0432
www.nj.gov/dep/dwq/bnpc_home.htm

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LATOURETTE
Acting Commissioner

February 12, 2021

Derek M. Berg
Director – Stormwater Regulatory Management - East
Contech Engineered Solutions LLC
71 US Route 1, Suite F
Scarborough, ME 04074

Re: MTD Lab Certification
Filterra® HC Bioretention System
Off-line Installation Approved

TSS Removal Rate 80%

Dear Mr. Berg:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Contech Engineered Solutions LLC has requested a Laboratory Certification for the Filterra® HC Bioretention System (Filterra® HC.)

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated January 2021) for this device is published online at http://www.njcat.org/uploads/newDocs/NJCATFilterraTechnologyVerificationReportFinal._.pdf.

The NJDEP certifies the use of the Filterra® HC stormwater treatment unit by Contech Engineered Solutions LLC at a TSS removal rate of 80% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5. The MTFR is calculated based on a verified loading rate of 3.12 gpm/ft^2 of effective filtration treatment area.

2. The Filterra® HC stormwater treatment unit shall be installed using the same configuration reviewed by NJCAT, and sized in accordance with the criteria specified in item 7 below.

3. This device cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at www.njstormwater.org.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Filterra® HC. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://www.conteches.com/Portals/0/Documents/Maintenance%20Guides/Filterra%20HC%20OM%20Packet.pdf for any changes to the maintenance requirements.

6. For an MTD to be considered "green infrastructure" (GI) in accordance with the March 2, 2020 amendments to the Stormwater Management rules at N.J.A.C. 7:8, the MTD must meet the GI definition noted at amended N.J.A.C. 7:8-1.2. Specifically, the MTD shall (1) treat stormwater runoff through infiltration into subsoil; and/or (2) treat stormwater runoff through filtration by vegetation or soil; or (3) store stormwater runoff for reuse.

   The Filterra® HC filters stormwater runoff through an engineered biofiltration soil media and, thus, meets the definition of GI. Filterra® HC can be configured with or without a precast vault. Installations that will not include a precast vault will additionally need to comply the NJDEP Stormwater BMP Manual conditions regarding separation from the seasonal high water table and, if infiltration is proposed as an outlet, minimum vertical saturated hydraulic conductivity of the subsoil. Installations without a precast vault that do not rely on infiltration are required to maintain at least a one-foot separation from the seasonal high water table measured from the lowest point of the system. Installations without a precast vault that utilize infiltration are required to have the most hydraulically restrictive soil layer below the MTD meet the minimum tested vertical saturated hydraulic conductivity of one inch per hour and have at least two feet of separation from the seasonal high water table measured from the lowest point of the system.

7. Sizing Requirement:

The example below demonstrates the sizing procedure for the Filterra® HC:

Example: A 0.25-acre impervious site is to be treated to 80% TSS removal using the Filterra® HC. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

The selection of the appropriate model of Filterra® HC is based upon both the maximum inflow drainage area and the MTFR. It is necessary to calculate the required model using both methods and to use the largest model determined by the two methods.

Inflow Drainage Area Evaluation:

The drainage area to the Filterra® HC in this example is 0.25 acres. Included in Table 1 below, all of the Filterra® HC models are designed with a maximum allowable drainage area greater than 0.25 acres. Specifically, the Filterra® HC with a 4'x4' media bay and a maximum allowable drainage area of 0.40 acres would be the smallest model able to treat runoff without exceeding the maximum allowable drainage area.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:
time of concentration = 10 minutes
i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)
c = 0.99 (runoff coefficient for impervious)
Q = ciA = 0.99 x 3.2 x 0.25 = 0.79 cfs

Given the site runoff is 0.79 cfs and based on the MTFR's listed in Table 1 below, the Filterra® HC with a 16'x8' media bay and an MTFR of 0.889 cfs would be the smallest model that could be used to treat the impervious area without exceeding the MTFR. If using more than one unit for treating runoff, the units should be configured such that the flowrate to each unit does not exceed the design MTFR for each unit and ensuring the entire 0.25 acre area is treated.

The MTFR evaluation results will be used since that method results in the highest minimum configuration determined by the two methods.

The sizing table corresponding to the available system models is noted below:

Table 1. Filterra® HC MTFRs and Maximum Allowable Drainage Areas

	Available Filterra® Media Bay Sizes (feet)	Effective Filtration Treatment Area (ft^2)	Treatment Flow Rate (cfs)	Maximum Allowable Drainage Area (ac)
Standard Configuration Filterra and Filterra Biosape Vaults	4x4	16	0.111	0.40
	4x6 or 6x4	24	0.167	0.60
	4.5x7.83 or 7.83x4.5 (Nominal 4x8/8x4)	35.24	0.245	0.89
	6x6	36	0.250	0.91
	6x8 or 8x6	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	6x12 or 12x6	72	0.500	1.81
	7x13 or 13x7	91	0.632	2.29
	14x8	112	0.778	2.82
	16x8	128	0.889	3.22
	18x8	144	1.000	3.62
	20x8	160	1.111	4.03
	22x8	176	1.222	4.43
Peak Diversion Filterra Vaults	4x4	16	0.111	0.40
	4.5x5.83 (Nominal 4x6)	26.24	0.182	0.66
	6x4	24	0.167	0.60
	6x6	36	0.250	0.91
	6x8	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	7x10	70	0.486	1.76
	8x10.5	84	0.583	2.11
	8x12.5	100	0.694	2.52
	Custom and/or Filterra Bioscape	Media Area in ft^2	0.00694 * (Media Area in ft^2)	0.0252 * (Media Area in ft^2)

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact me at (609) 633-7021.

Sincerely,

Gabriel Mahon, Chief
Bureau of Stormwater Permitting

Attachment: Maintenance Plan
cc: Chron File
Richard Magee, NJCAT
Vince Mazzei, NJDEP – Water & Land Management
Nancy Kempel, NJDEP– BSTP
Keith Stampfel, NJDEP – DLRP
Dennis Contois, NJDEP – DLRP

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)

DYNAMIC ENGINEERING

Inlet Area Summary and Average Coefficient (C) Calculations

Project: Proposed Townhouse Development
Job #: 3184-99-001
Location: South Amboy

Computed By: AMN
Checked By: MDC
Date: 10/17/2025
Last Revised:

Drainage Area	Impervious Area (sf)	Coefficient (C) Used	Open Space (SF)	Coefficient (C) Used	Average Coefficient (C) Used	Total Area (SF)	Total Area (acres)
Inlet Area 194	1987	0.95	263	0.35	0.88	2250	0.05
Inlet Area 152	2353	0.95	692	0.35	0.81	3045	0.07
Inlet Area 153	2428	0.95	595	0.35	0.83	3023	0.07
Inlet Area 146	2956	0.95	272	0.35	0.90	3228	0.07
Inlet Area 147	3110	0.95	178	0.35	0.92	3288	0.08
Inlet Area 156	3216	0.95	671	0.35	0.85	3887	0.09
Inlet Area 154	3539	0.95	291	0.35	0.90	3830	0.09
Inlet Area 159	3973	0.95	0	0.35	0.95	3973	0.09
Inlet Area 189	3945	0.95	316	0.35	0.91	4260	0.10
Inlet Area 141	4184	0.95	368	0.35	0.90	4552	0.10
Inlet Area 143	4215	0.95	367	0.35	0.90	4582	0.11
Inlet Area 188	4302	0.95	329	0.35	0.91	4631	0.11
Inlet Area 252	4346	0.95	267	0.35	0.92	4613	0.11
Inlet Area 149	4177	0.95	627	0.35	0.87	4804	0.11
Inlet Area 155	4625	0.95	221	0.35	0.92	4846	0.11
Inlet Area 186	4660	0.95	328	0.35	0.91	4988	0.11
Inlet Area 140	4888	0.95	277	0.35	0.92	5165	0.12
Inlet Area 220	4996	0.95	367	0.35	0.91	5363	0.12
Inlet Area 144	5058	0.95	391	0.35	0.91	5449	0.13
Inlet Area 148	5113	0.95	341	0.35	0.91	5454	0.13
Inlet Area 195	5269	0.95	533	0.35	0.89	5802	0.13
Inlet Area 219	5806	0.95	156	0.35	0.93	5962	0.14
Inlet Area 247	5769	0.95	470	0.35	0.90	6239	0.14
Inlet Area 248	5957	0.95	419	0.35	0.91	6376	0.15
Inlet Area 139	6259	0.95	87	0.35	0.94	6346	0.15
Inlet Area 250	6486	0.95	932	0.35	0.87	7418	0.17
Inlet Area 150	6508	0.95	1323	0.35	0.85	7831	0.18
Inlet Area 233	1710	0.95	1410	0.35	0.68	3120	0.07
Inlet Area 142	1255	0.95	3467	0.35	0.51	4722	0.11
Inlet Area 232	1861	0.95	1755	0.35	0.66	3616	0.08
Inlet Area 249	1183	0.95	2433	0.35	0.55	3616	0.08
Inlet Area 121	1742	0.95	2819	0.35	0.58	4561	0.10
Inlet Area 138	1452	0.95	1420	0.35	0.65	2872	0.07
Inlet Area 255	1255	0.95	3467	0.35	0.51	4722	0.11
Inlet Area 256	1861	0.95	1755	0.35	0.66	3616	0.08
Inlet Area 257	1183	0.95	2433	0.35	0.55	3616	0.08
Inlet Area 258	1742	0.95	2819	0.35	0.58	4561	0.10
Roof 1.1	1956	0.95	0	0.35	0.95	1956	0.04
Roof 1.2	1956	0.95	0	0.35	0.95	1956	0.04
Roof 2.1	4330	0.95	0	0.35	0.95	4330	0.10
Roof 2.2	4330	0.95	0	0.35	0.95	4330	0.10
Roof 3.1	3572	0.95	0	0.35	0.95	3572	0.08
Roof 3.2	3572	0.95	0	0.35	0.95	3572	0.08
Roof 4.1	2993	0.95	0	0.35	0.95	2993	0.07
Roof 4.2	2993	0.95	0	0.35	0.95	2993	0.07
Roof 5.1	2531	0.95	0	0.35	0.95	2531	0.06
Roof 5.2	2531	0.95	0	0.35	0.95	2531	0.06
Roof 6.1	3657	0.95	0	0.35	0.95	3657	0.08
Roof 6.2	3657	0.95	0	0.35	0.95	3657	0.08
Roof 7.1	4286	0.95	0	0.35	0.95	4286	0.10
Roof 7.2	4286	0.95	0	0.35	0.95	4286	0.10
Roof 8.1	3749	0.95	0	0.35	0.95	3749	0.09
Roof 8.2	3749	0.95	0	0.35	0.95	3749	0.09
Roof 9.1	3124	0.95	0	0.35	0.95	3124	0.07
Roof 9.2	3124	0.95	0	0.35	0.95	3124	0.07
Roof 10.1	2335	0.95	0	0.35	0.95	2335	0.05
Roof 10.2	2335	0.95	0	0.35	0.95	2335	0.05
Roof 11.1	3124	0.95	0	0.35	0.95	3124	0.07
Roof 11.2	2134	0.95	0	0.35	0.95	2134	0.05
Roof 12.1	2433	0.95	0	0.35	0.95	2433	0.06
Roof 12.2	2433	0.95	0	0.35	0.95	2433	0.06
Roof 13.1	3124	0.95	0	0.35	0.95	3124	0.07
Roof 13.2	3124	0.95	0	0.35	0.95	3124	0.07
Roof 14.1	3089	0.95	0	0.35	0.95	3089	0.07
Roof 14.2	3089	0.95	0	0.35	0.95	3089	0.07
Roof 15.1	4883	0.95	0	0.35	0.95	4883	0.11
Roof 15.2	4883	0.95	0	0.35	0.95	4883	0.11
Roof 16.1	3664	0.95	0	0.35	0.95	3664	0.08
Roof 16.2	3664	0.95	0	0.35	0.95	3664	0.08
Roof 17.1	4793	0.95	0	0.35	0.95	4793	0.11
Roof 17.2	4793	0.95	0	0.35	0.95	4793	0.11
Roof 18.1	2473	0.95	0	0.35	0.95	2473	0.06
Roof 18.2	2473	0.95	0	0.35	0.95	2473	0.06

DYNAMIC ENGINEERING

Stormwater Collection System Calculations

Project: Proposed Townhouse Development
Job #: 3184-99-001
Location: South Amboy
Design Storm: 25 Yr

Computed By: AMN
Checked By: MDC
Date: 10/17/2025
Last Revised:

NOTES:
1) Design method used is Rational Method, unless otherwise noted.
2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Pipe Velocity (fps)
MTD 156	MH 137	0.09	0.85	0.08	0.08	10.00	0.22	10.00	6.80	0.54	0.54	15	76.0	0.012	0.0100	7.00	5.71
MTD 155	MH 137	0.11	0.92	0.10	0.10	10.00	0.07	10.00	6.80	0.68	0.68	15	23.0	0.012	0.0100	7.00	5.71
MH 137	Inlet 249	0.00	0.00	0.00	0.18	10.00	0.06	10.22	6.80	0.00	1.22	15	30.0	0.012	0.0200	9.89	8.06
Inlet 249	Inlet 121	0.08	0.35	0.03	0.21	10.00	0.20	10.28	6.80	0.20	1.43	15	99.0	0.012	0.0200	9.89	8.06
MTD 149	MH 77	0.11	0.87	0.10	0.10	10.00	0.04	10.00	6.80	0.68	0.68	15	13.0	0.012	0.0100	7.00	5.71
ROOF 13.1	MH 77	0.07	0.95	0.07	0.07	10.00	0.07	10.00	6.80	0.48	0.48	12	20.0	0.012	0.0100	3.86	4.92
MH 77	MH 79	0.00	0.00	0.00	0.17	10.00	0.33	10.07	6.80	0.00	1.16	15	112.0	0.012	0.0100	7.00	5.71
ROOF 14.1	MH 79	0.07	0.95	0.07	0.07	10.00	0.46	10.00	6.80	0.48	0.48	12	135.0	0.012	0.0100	3.86	4.92
MTD 140	MH 79	0.12	0.92	0.11	0.11	10.00	0.03	10.00	6.80	0.75	0.75	15	14.0	0.012	0.0200	9.89	8.06
MH 79	Inlet 121	0.00	0.00	0.00	0.35	10.00	0.16	10.46	6.80	0.00	2.38	15	77.0	0.012	0.0200	9.89	8.06
Roof 14.2	Inlet 121	0.07	0.95	0.07	0.07	10.00	0.05	10.00	6.80	0.48	0.48	12	20.0	0.012	0.0200	5.46	6.96
Inlet 121	Inlet 138	0.10	0.58	0.06	0.69	10.00	0.22	10.62	6.68	0.40	4.61	15	106.0	0.012	0.0200	9.89	8.06
ROOF 13.2	Inlet 138	0.07	0.95	0.07	0.07	10.00	0.05	10.00	6.80	0.48	0.48	12	20.0	0.012	0.0200	5.46	6.96
ROOF 15.1	Inlet 138	0.11	0.95	0.10	0.10	10.00	0.05	10.00	6.80	0.68	0.68	12	20.0	0.012	0.0200	5.46	6.96
Inlet 138	MH 151	0.07	0.65	0.05	0.91	10.00	0.10	10.84	6.68	0.33	6.08	15	47.0	0.012	0.0200	9.89	8.06
MTD 150	MH 151	0.18	0.85	0.15	0.15	10.00	0.01	10.00	6.80	1.02	1.02	15	3.0	0.012	0.0200	9.89	8.06
MH 151	MH 125	0.00	0.00	0.00	1.06	10.00	0.06	10.94	6.68	0.00	7.08	15	31.0	0.012	0.0200	9.89	8.06
MTD 159	MH 125	0.09	0.95	0.09	0.09	10.00	0.10	10.00	6.80	0.61	0.61	15	50.0	0.012	0.0200	9.89	8.06
ROOF 15.2	MH 125	0.11	0.95	0.10	0.10	10.00	0.05	10.00	6.80	0.68	0.68	12	20.0	0.012	0.0200	5.46	6.96
MH 125	MH 129	0.00	0.00	0.00	1.25	10.00	0.13	11.00	6.56	0.00	8.20	15	64.0	0.012	0.0200	9.89	8.06
MTD 139	MH 127	0.15	0.94	0.14	0.14	10.00	0.04	10.00	6.80	0.95	0.95	15	18.0	0.012	0.0200	9.89	8.06
ROOF 16.1	MH 127	0.08	0.95	0.08	0.08	10.00	0.01	10.00	6.80	0.54	0.54	12	5.0	0.012	0.0200	5.46	6.96
MH 127	MH 129	0.00	0.00	0.00	0.22	10.00	0.32	10.04	6.80	0.00	1.50	15	155.0	0.012	0.0200	9.89	8.06
MH 129	MH 133	0.00	0.00	0.00	1.47	0.00	0.14	11.13	6.56	0.00	9.64	15	67.0	0.012	0.0200	9.89	8.06
ROOF 16.2	MH 133	0.08	0.95	0.08	0.08	10.00	0.40	10.00	6.80	0.54	0.54	12	166.0	0.012	0.0200	5.46	6.96
MTD 250	MH 133	0.17	0.87	0.15	0.15	10.00	0.04	10.00	6.80	1.02	1.02	15	20.0	0.012	0.0200	9.89	8.06
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.0	0.000	0.0000	0.00	0.00
MTD 154	MH 251	0.09	0.90	0.08	0.08	10.00	0.02	10.00	6.80	0.54	0.54	15	12.0	0.012	0.0200	9.89	8.06
MTD 252	MH 251	0.11	0.92	0.10	0.10	10.00	0.00	10.00	6.80	0.68	0.68	15	0.0	0.012	20.0000	312.84	255.05
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.0	0.000	0.0000	0.00	0.00
ROOF 3.2	MH 21	0.08	0.95	0.08	0.08	10.00	0.74	10.00	6.80	0.54	0.54	12	154.0	0.012	0.0100	2.73	3.48
ROOF 2.2	MH 21	0.10	0.95	0.10	0.10	10.00	0.60	10.00	6.80	0.68	0.68	12	177.0	0.012	0.0100	3.86	4.92
MH 21	MH 44	0.00	0.00	0.00	0.18	10.00	0.17	10.74	6.68	0.00	1.20	15	59.0	0.012	0.0100	7.00	5.71
ROOF 2.1	MH 44	0.10	0.95	0.10	0.10	10.00	0.03	10.00	6.80	0.68	0.68	12	10.0	0.012	0.0100	3.86	4.92
ROOF 3.1	MH 44	0.08	0.95	0.08	0.08	10.00	0.53	10.00	6.80	0.54	0.54	12	157.0	0.012	0.0100	3.86	4.92
MH 44	MH 50	0.00	0.00	0.00	0.36	10.00	0.06	10.91	6.68	0.00	2.40	15	20.0	0.012	0.0100	7.00	5.71
MTD 220	MH 50	0.12	0.91	0.11	0.11	10.00	0.04	10.00	6.80	0.75	0.75	15	12.0	0.012	0.0100	7.00	5.71
MH 50	MH 246	0.00	0.00	0.00	0.47	10.00	0.48	10.97	6.68	0.00	3.14	15	165.0	0.012	0.0100	7.00	5.71
MTD 153	MH 245	0.07	0.83	0.06	0.06	10.00	0.24	10.00	6.80	0.41	0.41	15	82.0	0.012	0.0100	7.00	5.71
MTD 247	MH 245	0.14	0.09	0.01	0.01	10.00	0.01	10.00	6.80	0.07	0.07	15	4.0	0.012	0.0100	7.00	5.71
MH 245	MH 246	0.00	0.00	0.00	0.07	10.00	0.08	10.24	6.80	0.00	0.48	15	28.0	0.012	0.0100	7.00	5.71
MH 246	MH 244	0.00	0.00	0.00	0.54	10.00	0.18	11.45	6.56	0.00	3.54	15	63.0	0.012	0.0100	7.00	5.71
MTD 152	MH 243	0.07	0.81	0.06	0.06	10.00	0.24	10.00	6.80	0.41	0.41	15	82.0	0.012	0.0100	7.00	5.71
MTD 248	MH 243	0.15	0.91	0.14	0.14	10.00	0.01	10.00	6.80	0.95	0.95	15	4.0	0.012	0.0100	7.00	5.71
MH 243	MH 244	0.00	0.00	0.00	0.20	10.00	0.08	10.24	6.80	0.00	1.36	15	28.0	0.012	0.0100	7.00	5.71
MH 244	MH 31	0.00	0.00	0.00	0.74	10.00	0.25	11.63	6.44	0.00	4.77	15	86.0	0.012	0.0100	7.00	5.71
ROOF 1.2	MH 30	0.04	0.95	0.04	0.04	10.00	0.29	10.00	6.80	0.27	0.27	12	86.0	0.012	0.0100	3.86	4.92
MH 30	MH 31	0.00	0.00	0.00	0.04	10.00	0.27	10.29	6.80	0.00	0.27	12	79.0	0.012	0.0100	3.86	4.92
ROOF 1.1	MH 31	0.04	0.95	0.04	0.04	10.00	0.58	10.00	6.80	0.27	0.27	12	98.0	0.021	0.0100	2.20	2.80
MH 31	MH 145	0.00	0.00	0.00	0.82	10.00	0.51	11.88	6.44	0.00	5.28	15	176.0	0.012	0.0100	7.00	5.71
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.0	0.000	0.0000	0.00	0.00
MTD 146	MH 57	0.07	0.90	0.06	0.06	10.00	0.04	10.00	6.80	0.41	0.41	15	13.0	0.012	0.0100	7.00	5.71
ROOF 4.2	MH 57	0.07	0.95	0.07	0.07	10.00	0.02	10.00	6.80	0.48	0.48	12	5.0	0.012	0.0100	3.86	4.92
MH 57	MH 59	0.00	0.00	0.00	0.13	10.00	0.36	10.04	6.80	0.00	0.88	15	124.0	0.012	0.0100	7.00	5.71
ROOF 5.2	MH 59	0.06	0.95	0.06	0.06	10.00	0.07	10.00	6.80	0.41	0.41	12	20.0	0.012	0.0100	3.86	4.92
MTD 144	MH 59	0.13	0.91	0.12	0.12	10.00	0.04	10.00	6.80	0.82	0.82	15	15.0	0.012	0.0100	7.00	5.71
MH 59	MH 54	0.00	0.00	0.00	0.31	10.00	0.18	10.40	6.80	0.00	2.11	15	62.0	0.012	0.0100	7.00	5.71
ROOF 4.1	MH 54	0.07	0.95	0.07	0.07	10.00	0.62	10.00	6.80	0.48	0.48	12	129.0	0.012	0.0100	2.73	3.48
ROOF 5.1	MH 54	0.06	0.95	0.06	0.06	10.00	0.52	10.00	6.80	0.41	0.41	12	109.0	0.012	0.0100	2.73	3.48
MH 54	MH 145	0.00	0.00	0.00	0.44	10.00	0.07	10.62	6.68	0.00	2.94	15	25.0	0.012	0.0100	7.00	5.71
MH 145	MH 235	0.00	0.00	0.00	1.26	10.00	0.28	12.39	6.32	0.00	7.96	18	108.0	0.012	0.0100	11.38	6.44
MTD 236	MH 235	0.14	0.09	0.01	0.01	10.00	0.01	10.00	6.80	0.07	0.07	15	4.0	0.012	0.0100	7.00	5.71
MH 235	MH 32	0.00	0.00	0.00	1.27	10.00	0.06	12.67	6.20	0.00	7.87	18	22.0	0.012	0.0100	11.38	6.44
MTD 147	MH 62	0.08	0.92	0.07	0.07	10.00	0.05	10.00	6.80	0.48	0.48	15	11.0	0.012	0.0100	4.95	4.04
ROOF 9.1	MH 62	0.07	0.95	0.07	0.07	10.00	0.02	10.00	6.80	0.48	0.48	12	5.0	0.012	0.0100	2.73	3.48
MH 62	MH 64	0.00	0.00	0.00	0.14	10.00	0.36	10.05	6.80	0.00	0.95	15	125.0	0.012	0.0100	7.00	5.71
ROOF 10.1	MH 64	0.05	0.95	0.05	0.05	10.00	0.54	10.00	6.80	0.34	0.34	12	113.0	0.012	0.0100	2.73	3.48
MTD 143	MH 64	0.11	0.90	0.10	0.10	10.00	0.04	10.00	6.80	0.68	0.68	15	9.0	0.012	0.0100	4.95	4.04
MH 64	MH 101	0.00	0.00	0.00	0.29	10.00	0.18	10.54	6.68	0.00	1.94	15	62.0	0.012	0.0100	7.00	5.71
ROOF 9.2	MH 101	0.07	0.95	0.07	0.07	10.00	0.65	10.00	6.80	0.48	0.48	12	135.0	0.012	0.0100	2.73	3.48
ROOF 10.2	MH 101	0.05	0.95	0.05	0.05	10.00	0.54	10.00	6.80	0.34	0.34	12	113.0	0.012	0.0100	2.73	3.48
MH 101	Inlet 142	0.00	0.00	0.00	0.41	10.00	0.04	10.72	6.68	0.00	2.74	15	15.0	0.012	0.0100	7.00	5.71
Inlet 232	Inlet 142	0.08	0.66	0.05	0.05	10.00	0.33	10.00	6.80	0.34	0.34	15	80.0	0.012	0.0050	4.95	4.04
MTD 148	MH 72	0.13	0.91	0.12	0.12	10.00	0.06	10.00	6.80	0.82	0.82	15	14.0	0.012	0.0100	4.95	4.04
ROOF 11.2	MH 72	0.05	0.95	0.05	0.05	10.00	0.02	10.00	6.80	0.34	0.34	12	5.0	0.012	0.0100	2.73	3.48
MH 72	MH 74	0.00	0.00	0.00	0.17	10.00	0.52	10.06	6.80	0.00	1.16	15	125.0	0.012	0.0100	4.95	4.04

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Pipe Velocity (fps)
MTD 141	MH 74	0.10	0.90	0.09	0.09	10.00	0.04	10.00	6.80	0.61	0.61	15	9.0	0.012	0.0100	4.95	4.04
ROOF 12.2	MH 74	0.06	0.95	0.06	0.06	10.00	0.52	10.00	6.80	0.41	0.41	12	108.0	0.012	0.0100	2.73	3.48
MH 74	MH 69	0.00	0.00	0.00	0.32	10.00	0.26	10.58	6.68	0.00	2.14	15	62.0	0.012	0.0100	4.95	4.04
ROOF 11.1	MH 69	0.07	0.95	0.07	0.07	10.00	0.62	10.00	6.80	0.48	0.48	12	130.0	0.012	0.0100	2.73	3.48
ROOF 12.1	MH 69	0.06	0.95	0.06	0.06	10.00	0.52	10.00	6.80	0.41	0.41	12	108.0	0.012	0.0100	2.73	3.48
MH 69	Inlet 142	0.00	0.00	0.00	0.45	10.00	0.04	10.84	6.68	0.00	3.01	15	14.0	0.012	0.0100	7.00	5.71
Inlet 142	Inlet 233	0.11	0.51	0.06	0.97	10.00	0.20	10.88	6.68	0.40	6.48	15	67.0	0.012	0.0100	7.00	5.71
Inlet 233	MH 190	0.07	0.68	0.05	1.02	10.00	0.12	11.08	6.56	0.33	6.69	15	40.0	0.012	0.0100	7.00	5.71
MTD 189	MH 190	0.10	0.91	0.09	0.09	10.00	0.31	10.00	6.80	0.61	0.61	15	76.0	0.012	0.0100	4.95	4.04
MH 190	MH 191	0.00	0.00	0.00	1.11	10.00	0.12	11.20	6.56	0.00	7.28	18	46.0	0.012	0.0100	11.38	6.44
MH 191	MH 192	0.00	0.00	0.00	1.11	10.00	0.10	11.32	6.56	0.00	7.28	18	39.0	0.012	0.0100	11.38	6.44
MTD 195	MH 192	0.13	0.89	0.12	0.12	10.00	0.03	10.00	6.80	0.82	0.82	15	8.0	0.012	0.0100	4.95	4.04
MH 192	MH 193	0.00	0.00	0.00	1.23	10.00	0.13	11.42	6.56	0.00	8.07	18	51.0	0.012	0.0100	11.38	6.44
MTD 194	MH 193	0.05	0.88	0.04	0.04	10.00	0.06	10.00	6.80	0.27	0.27	15	14.0	0.012	0.0100	4.95	4.04
MH 193	MH 32	0.00	0.00	0.00	1.27	10.00	0.25	11.55	6.44	0.00	8.18	18	96.0	0.012	0.0100	11.38	6.44
MH 32	MH 176	0.00	0.00	0.00	2.54	10.00	0.09	12.73	6.20	0.00	15.75	24	42.0	0.012	0.0100	24.50	7.80
ROOF 8.2	MH 242	0.09	0.95	0.09	0.09	10.00	0.70	10.00	6.80	0.61	0.61	12	147.0	0.012	0.0100	2.73	3.48
MTD 186	MH 242	0.11	0.91	0.10	0.10	10.00	0.04	10.00	6.80	0.68	0.68	15	9.0	0.012	0.0100	4.95	4.04
ROOF 7.2	MH 242	0.10	0.95	0.10	0.10	10.00	0.02	10.00	6.80	0.68	0.68	12	10.0	0.012	0.0200	5.46	6.96
MH 242	MH 174	0.00	0.00	0.00	0.29	10.00	0.39	10.70	6.68	0.00	1.94	15	187.0	0.012	0.0200	9.89	8.06
ROOF 6.2	MH 174	0.08	0.95	0.08	0.08	10.00	0.02	10.00	6.80	0.54	0.54	12	10.0	0.012	0.0200	5.46	6.96
MTD 188	MH 174	0.11	0.91	0.10	0.10	10.00	0.03	10.00	6.80	0.68	0.68	15	9.0	0.012	0.0100	7.00	5.71
MH 174	MH 176	0.00	0.00	0.00	0.47	10.00	0.33	11.09	6.56	0.00	3.08	15	160.0	0.012	0.0200	9.89	8.06
MH 176	MH 33	0.00	0.00	0.00	3.01	10.00	0.09	12.82	6.20	0.00	18.66	24	62.0	0.012	0.0200	34.65	11.04
Roof 8.1	Roof 7.1	0.09	0.95	0.09	0.09	10.00	0.24	10.00	6.80	0.61	0.61	12	100.0	0.012	0.0200	5.46	6.96
Roof 7.1	Roof 6.1	0.10	0.95	0.10	0.19	10.00	0.24	10.24	6.80	0.68	1.29	12	100.0	0.012	0.0200	5.46	6.96
Roof 6.1	MH 33	0.08	0.95	0.08	0.27	10.00	0.24	10.48	6.80	0.54	1.84	12	100.0	0.012	0.0200	5.46	6.96
MH 33	Scour 33	0.00	0.00	0.00	3.28	10.00	0.27	12.91	6.20	0.00	20.34	24	181.0	0.012	0.0200	34.65	11.04
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.0	0.000	0.0000	0.00	0.00
Inlet 256	Inlet 255	0.08	0.66	0.05	0.05	10.00	0.13	10.00	6.80	0.34	0.34	15	26.0	0.012	0.0035	4.14	3.38
Inlet 255	MH 215	0.11	0.51	0.06	0.11	10.00	0.18	10.13	6.80	0.41	0.75	15	37.0	0.012	0.0035	4.14	3.38
Roof 18.1	MH 215	0.06	0.95	0.06	0.06	10.00	0.02	10.00	6.80	0.41	0.41	12	5.0	0.012	0.0100	3.86	4.92
MH 215	MH 214	0.00	0.00	0.00	0.17	10.00	0.49	10.31	6.80	0.00	1.16	15	100.0	0.012	0.0035	4.14	3.38
Roof 18.2	MH 214	0.06	0.95	0.06	0.06	10.00	0.34	10.00	6.80	0.41	0.41	12	100.0	0.012	0.0100	3.86	4.92
MH 214	Inlet 258	0.00	0.00	0.00	0.23	10.00	0.10	10.80	6.68	0.00	1.54	15	20.0	0.012	0.0035	4.14	3.38
Inlet 258	Inlet 257	0.10	0.58	0.06	0.29	10.00	0.12	10.90	6.68	0.40	1.94	15	24.0	0.012	0.0035	4.14	3.38
Inlet 257	MH R17	0.08	0.55	0.04	0.33	10.00	0.25	11.02	6.56	0.26	2.16	15	50.0	0.012	0.0035	4.14	3.38
Roof 17.1	MH R17	0.11	0.95	0.10	0.10	10.00	0.34	10.00	6.80	0.68	0.68	12	100.0	0.012	0.0100	3.86	4.92
Roof 17.2	MH R17	0.11	0.95	0.10	0.10	10.00	0.34	10.00	6.80	0.68	0.68	12	100.0	0.012	0.0100	3.86	4.92
MH R17	Sour Hole B	0.00	0.00	0.00	0.53	10.00	0.21	11.27	6.56	0.00	3.48	15	50.0	0.012	0.0050	4.95	4.04

MTD SIZING SPREADSHEET

DYNAMIC ENGINEERING

MTD Sizing Spreadsheet
Manhattan Beach Phase 1 Urban Renewal, LLC
Proposed Townhouse Development
DEC # 3184-99-001
10/13/2025

Drainage Area	Total Area (SF)	Lawn areas	Impervious	C	i	A	Treatment Flow	Media Bay	Vault
Inlet Area 194	2250	263	1987	0.95	3.2	0.05	0.157	6'x6'	6'x8'
Inlet Area 152	3045	692	2353	0.91	3.2	0.07	0.204		
Inlet Area 153	3023	595	2428	0.92	3.2	0.07	0.205		
Inlet Area 146	3228	272	2956	0.96	3.2	0.07	0.228		
Inlet Area 147	3288	178	3110	0.97	3.2	0.08	0.235		
Inlet Area 156	3887	671	3216	0.93	3.2	0.09	0.266	6'x8'	6'x10'
Inlet Area 154	3830	291	3539	0.96	3.2	0.09	0.271		
Inlet Area 159	3973	0	3973	0.99	3.2	0.09	0.289		
Inlet Area 189	4260	316	3945	0.96	3.2	0.10	0.302		
Inlet Area 141	4552	368	4184	0.96	3.2	0.10	0.322		
Inlet Area 143	4582	367	4215	0.96	3.2	0.11	0.324		
Inlet Area 188	4631	329	4302	0.97	3.2	0.11	0.329		
Inlet Area 252	4613	267	4346	0.97	3.2	0.11	0.329		
Inlet Area 149	4800	627	4173	0.95	3.2	0.110	0.333		
Inlet Area 155	4846	221	4625	0.97	3.2	0.11	0.347	6'x10'	6'x12'
Inlet Area 186	4988	328	4660	0.97	3.2	0.11	0.355		
Inlet Area 140	5165	277	4888	0.97	3.2	0.12	0.369	7'x10'	7'x13'
Inlet Area 220	5363	367	4996	0.97	3.2	0.12	0.381		
Inlet Area 144	5449	391	5058	0.97	3.2	0.13	0.387		
Inlet Area 148	5454	341	5113	0.97	3.2	0.13	0.388		
Inlet Area 195	5802	533	5269	0.96	3.2	0.13	0.409		
Inlet Area 236	5962	156	5806	0.98	3.2	0.14	0.430		
Inlet Area 247	6239	470	5769	0.96	3.2	0.14	0.442		
Inlet Area 248	6376	419	5957	0.97	3.2	0.15	0.453		
Inlet Area 139	6346	87	6259	0.99	3.2	0.15	0.459		
Inlet Area 250	7418	932	6486	0.95	3.2	0.17	0.516	8'x10.5'	8'x14'
Inlet Area 150	7831	1323	6508	0.93	3.2	0.18	0.536		

CONDUIT OUTLET PROTECTION CALCULATIONS

DYNAMIC ENGINEERING

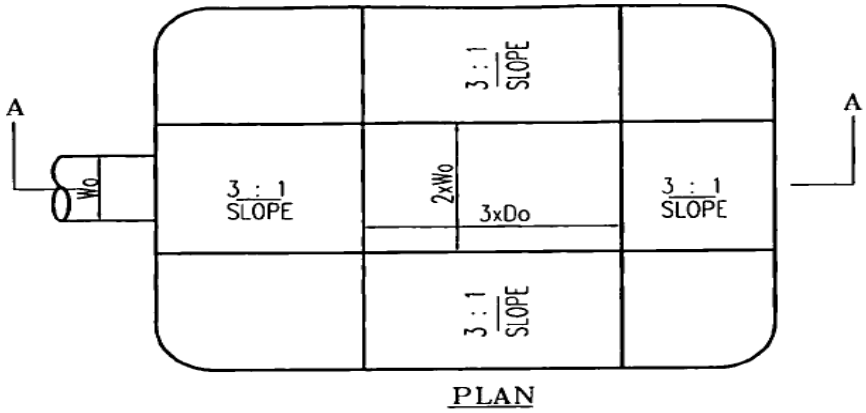
SCOUR HOLE DESIGN

Project:	Proposed Townhouse Development
Job #:	3184-99-001
Location:	South Amboy, NJ
Design Storm:	25 Yr
Computed By:	MDC
Checked By:	DMH
Date:	10/16/2025
Last Revised:	

Discharge not in Basin, Therefore Tailwater is less than 0.5 x Do

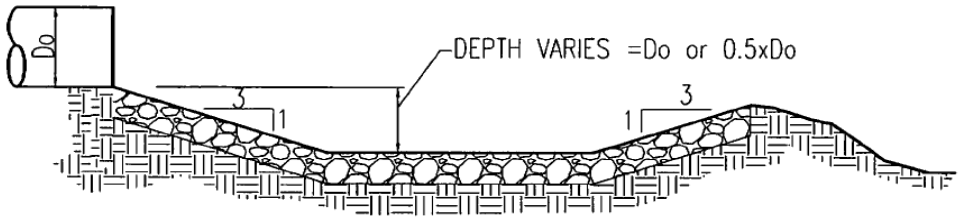
Discharge Point	33
Q (25-yr storm cfs)	**20.34**
Inside Height of Outlet Culvert, Do (in)	**24**
Inside Height of Outlet Culvert, Do (ft)	2.0
Tailwater (ft), Tw	0.40
Length of Apron, L (ft)	**6.00**
Width of Culvert, Wo(in)	**24**
Width of Culvert, Wo(ft)	**2.0**
Width of Apron, W(ft)	**4.00**
Where Y = 1/2 Do, Y(ft)	**1.000**
Median Stone Diameter, D50 (ft)	**0.68**
Where Y = Do, Y(ft)	**2.000**
Median Stone Diameter, D50 (ft)	**0.45**

Note: Use D50 of 6 inches minimum



PLAN

Equations used:
L=3*Do
W=2*Wo
Tw=0.2*Do (If Tw cannot be computed)
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)



SECTION A–A

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.

DYNAMIC ENGINEERING

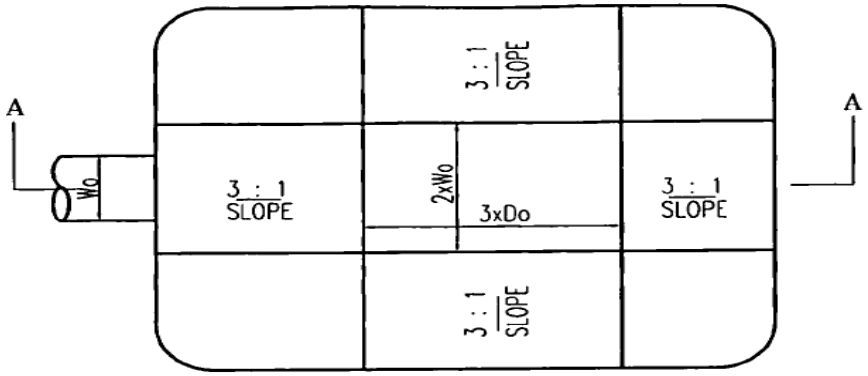
SCOUR HOLE DESIGN

Project:	Proposed Townhouse Development
Job #:	3184-99-001
Location:	South Amboy, NJ
Design Storm:	25 Yr
Computed By:	MDC
Checked By:	DMH
Date:	10/16/2025
Last Revised:	

Discharge not in Basin, Therefore Tailwater is less than 0.5 x Do

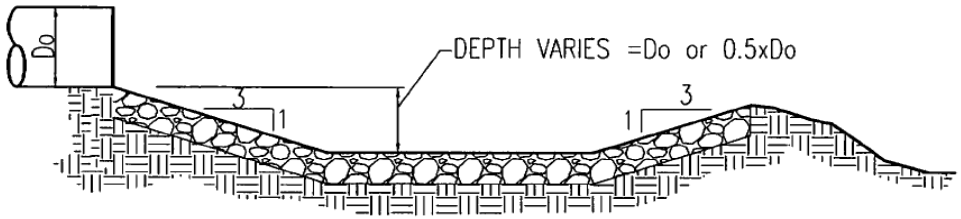
Discharge Point	265
Q (25-yr storm cfs)	**3.48**
Inside Height of Outlet Culvert, Do (in)	**15**
Inside Height of Outlet Culvert, Do (ft)	1.3
Tailwater (ft), Tw	0.25
Length of Apron, L (ft)	**3.75**
Width of Culvert, Wo(in)	**15**
Width of Culvert, Wo(ft)	**1.25**
Width of Apron, W(ft)	**2.50**
Where Y = 1/2 Do, Y(ft)	**0.625**
Median Stone Diameter, D50 (ft)	**0.20**
Where Y = Do, Y(ft)	**1.250**
Median Stone Diameter, D50 (ft)	**0.13**

Note: Use D50 of 6 inches minimum



PLAN

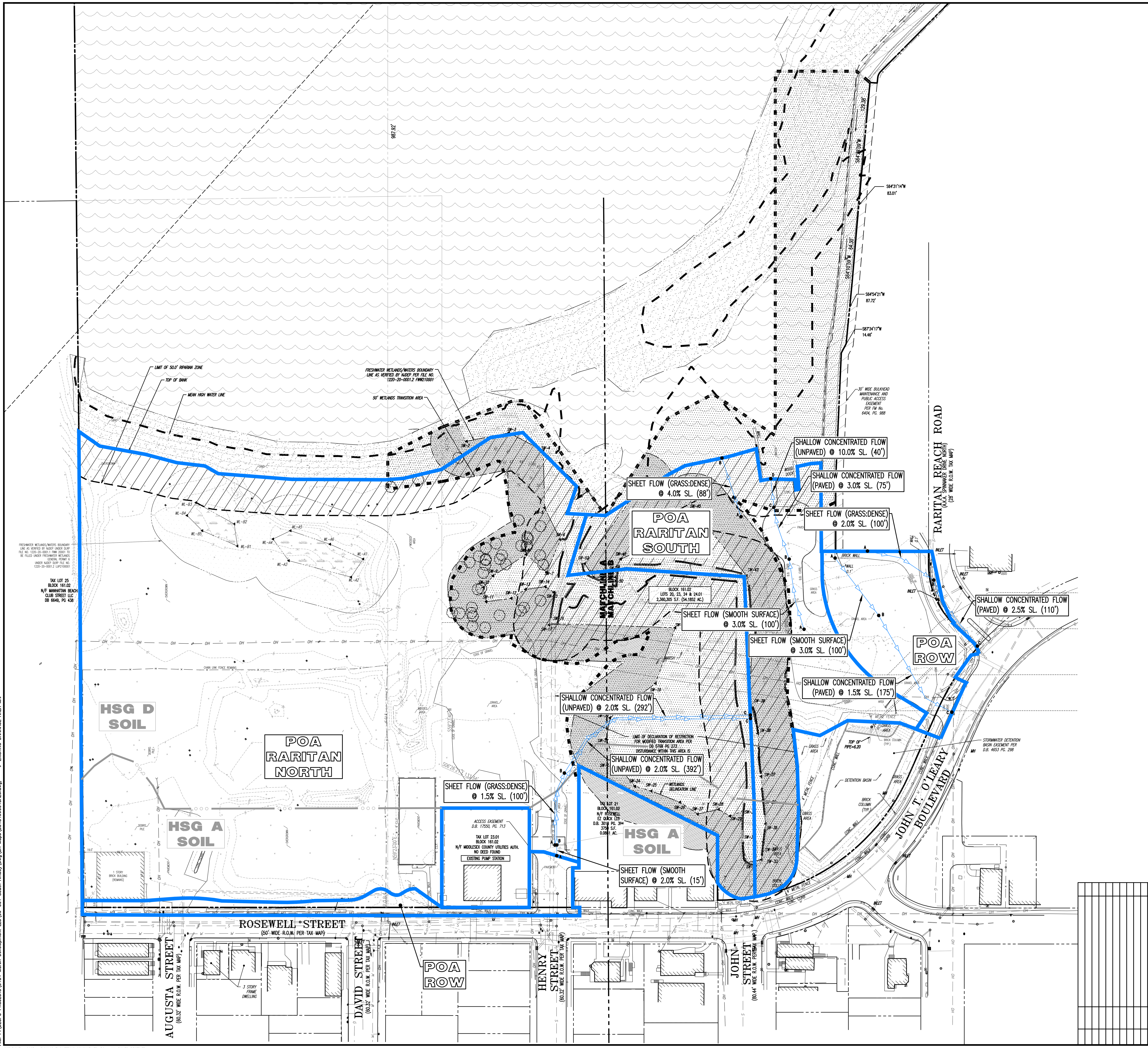
Equations used:
L=3*Do
W=2*Wo
Tw=0.2*Do (If Tw cannot be computed)
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)



SECTION A–A

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.

DRAINAGE AREA & INLET AREA MAPS



GRAPHIC SCALE

-50 0 25 50 100 200

(IN FEET)
1 INCH = 50 FT.

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

Rev.	Date	Comments	By

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Allen, Texas T: 972.534.2100 | Austin, Texas T:512.646.2646 | Houston, Texas T: 281.789.6400
Newtown, Pennsylvania T: 267.685.0276 | Philadelphia, Pennsylvania T: 215.253.4888 | Delray Beach, Florida T: 561.921.8570

TITLE:

EXISTING DRAINAGE AREA MAP

PROJECT: **MANHATTAN BEACH PHASE 1 URBAN RENEWAL, LLC**
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 161.02, LOTS 20, 23, 24 & 24.01
ROSEWELL STREET
CITY OF SOUTH AMBOY, MIDDLESEX COUNTY, NEW JERSEY

JOB No: 3184-99-001
DATE: 10/21/2025
DRAWN BY: AMN
DESIGNED BY: MC
CHECKED BY: TJM
CHECKED BY: _
SCALE: (H) 1"=50' (V) .
SHEET No: 1 OF 3
Rev. # 0

JOHN A. PALUS
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 41975

THOMAS J. MULLER
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52179

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TITLE:

PROPOSED DRAINAGE AREA MAP

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PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 161.02, LOTS 20, 23, 24 & 24.01
ROSEWELL STREET
CITY OF SOUTH AMBOY, MIDDLESEX COUNTY, NEW JERSEY

JOB No: 3184-99-001	DATE: 10/21/2025
DRAWN BY: GMZ	SCALE: (H) 1"=30' (V) .
DESIGNED BY: MC	SHEET No: 2 OF 3
CHECKED BY: TJM	
CHECKED BY: _	Rev. # 0

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Newtown, Pennsylvania T: 267.685.0276 | Philadelphia, Pennsylvania T: 215.253.4888 | Delray Beach, Florida T: 561.921.8570

TITLE:

INLET AREA MAP

PROJECT: **MANHATTAN BEACH PHASE 1 URBAN RENEWAL, LLC**
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 161.02, LOTS 20, 23, 24 & 24.01
ROSEWELL STREET
CITY OF SOUTH AMBOY, MIDDLESEX COUNTY, NEW JERSEY

JOB No:	3184-99-001
DATE:	10/21/2025
DRAWN BY:	GMZ
DESIGNED BY:	MC
CHECKED BY:	TJM
CHECKED BY:	_
SCALE:	(H) 1"=30' (V) .
SHEET No:	3 OF 3
Rev. #	0

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