Olde Farm

Subdivision

City of Waukesha
Waukesha County, WI

Preliminary Storm Water Management Plan

Prepared By:

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Submittal Date:
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TABLE OF CONTENTS

APPENDICES

Introduction

Bielinski Homes is proposing to construct a new residential subdivision on an 12.3-acre parcel located north of Madison Street, in the City of Waukesha, Wisconsin. The proposed development includes the construction of 17 residential homes and associated roadways, drives, and sidewalks. The proposed plan also includes the construction of 2 ponds and 2 infiltration basins to treat and manage stormwater runoff from the site. The proposed development will result in a net increase in impervious area of approximately 3.3 acres.

The purpose of this report is to document design computations for existing and proposed stormwater management facilities for this area, and to present a plan for stormwater management that meets the requirements of the City of Waukesha and the Wisconsin Department of Natural Resources (WDNR).

Owner

The owner and responsible entity for installation and maintenance of the storm water management practices is:

Bielinksi Homes, Inc.
1830 Meadow Lane, Suite A
Pewaukee, WI 53072
Contact: John Donovan
(262) 548-5570

Design Requirements

The following design standards have been used to develop the storm water management plan for the *Swan View Farms* subdivision:

- City of Waukesha Stormwater Management Ordinance – Chapter 32
- Wisconsin Department of Natural Resources (WDNR) Technical Standards, NR 151 and NR 216.
- Summary of Chapter 32 City of Waukesha Stormwater Management Ordinance design requirements:
  - The Ordinance requires post-development peak discharge rates to be no greater than pre-development discharge rates for the 1, 2, 10 and 100-year, 24-hour design storms.
  - The Ordinance requires best management practices (BMPs) to be designed to control total suspended solids (TSS) carried by runoff from redevelopment sites by 40 percent and from new development sites by 80 percent, based on an average annual rainfall, as compared to no runoff management controls.
  - The Ordinance requires medium density residential developments to infiltrate sufficient runoff volume so that the post-development infiltration volume is at least 75 percent of pre-development infiltration volume, based on an average annual rainfall. However, no more than 2 percent of the post-construction site is required as an effective infiltration area.

Analysis Overview

Peak runoff rates and volumes were computed using NRCS's TR-55 and TR-20 methodologies, as implemented by HydroCAD Version 10.20 software by HydroCAD Software Solutions.

Soil types for the site were determined from soil boring logs and from the NRCS Soil Survey for Waukesha County. Soils at the site are predominantly hydrologic soil group D soils with group C located along the western portion of the site. Maximum pre-development runoff curve numbers (CN) were taken from Chapter 32 of Waukesha's City Ordinance.

Rainfall values were taken from Table 3 of Chapter 32 of Waukesha's City Ordinance. MSE3 rainfall distributions were used for peak flow calculations.

The rainfall depths for the 24-hour duration storm are:

1-year	2-year	10-year	100-year
2.40 inches	2.70 inches	3.81 inches	6.18 inches

Existing Site Description & Drainage Summary

Overall Description

The project site is approximately 12.3-acres in size and is occupied by a farmstead and a residential dwelling. The site is mostly utilized as open space with some areas of woodlands and wetlands. Surface drainage for the site generally slopes west toward the wetlands and Pebble Creek and south towards Madison Street and two existing 24" RCP storm pipes. Flow from this site eventually drains to Pebble Creek, which is located within the Fox River Watershed.

The location of the project site is shown in Appendix 2. Land cover types, drainage subareas and flow paths are shown on the Existing Drainage Area Map. The following table presents the results of the hydrological analysis for pre-development conditions. The detailed hydrological computations for pre-development conditions are included in Appendix 3.

The following is a summary description of the existing watersheds for this development.

Summary Data Elements	E-NW	E-SW	E-S
Watershed Area (acres) (See attached map)	**3.623**	**0.382**	**6.011**
Land Uses (acreage of each)			
Roof	0.129	0.000	0.088
Street/Road	0.169	0.000	0.000
Sidewalk/Patio	0.054	0.000	0.012
Driveway	0.087	0.000	0.024
Wet Pond	0.000	0.000	0.000
Infiltration Area	0.000	0.000	0.000
Open Space (Type C, CN=71)	0.214	0.325	1.486
Open Space (Type D, CN=78)	2.97	0.06	4.40
Composite Curve Numbers	80	72	77

Existing Drainage Summary

The following summarizes the peak flows associated with the existing drainage areas. Please refer to the attached calculations in Appendix 3 for detailed hydrograph information.

Pre-Development Site Conditions

Subarea or Junction	Description	Area (ac)	Impervious Area (ac)	Time of Cons. (min.)	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
E-NW	Northwest Subarea	3.623	0.439	13.7	3.85	4.89	9.15	18.99
E-SW	Southwest Subarea	0.382	0.00	5.0	0.29	0.41	0.90	2.15
E-S	South Subarea	6.011	0.124	20.1	4.22	5.55	11.06	24.11
E-TOTAL	**Total Flow**	**10.016**	**0.563**	**-**	**7.79**	**10.11**	**19.57**	**41.54**

Post-Development Site Description & Drainage Summary

Overall Description

The proposed development includes the construction of 17 residential homes and associated roadways, drives, and sidewalks. The proposed plan also includes the construction of 2 ponds and 2 infiltration basins to treat and manage stormwater runoff from the site. The proposed development will result in a net increase in impervious area of approximately 3.3 acres.

Appendix 2, Proposed Drainage Area Map, shows the proposed land cover, grading, drainage subarea boundaries, flow paths, and proposed site and stormwater management improvements. The hydrological analysis of post-development conditions was performed using the same methodology as used for pre-development conditions. The table below summarizes the results of the analysis of post-development conditions for the site. Appendix 3 contains the detailed hydrological computations for post-development conditions.

The following is a summary description of the proposed watersheds for this development.

Summary Data Elements	**P-1**	**P-2**	**P-3**	**P-4**	**UD-5**	**UD-6**	**OS-1**
Watershed Area (acres) (See attached map)	**4.344**	**0.749**	**1.418**	**0.612**	**1.069**	**1.026**	**0.798**
Land Uses (acreage of each)							
Roof	0.698	0.110	0.257	0.129	0.000	0.110	0.129
Street/Road	0.489	0.000	0.233	0.000	0.110	0.000	0.169
Sidewalk/Patio	0.350	0.034	0.143	0.040	0.028	0.034	0.054
Driveway	0.455	0.000	0.248	0.000	0.000	0.000	0.087
Wet Pond	0.121	0.000	0.073	0.000	0.000	0.000	0.000
Infiltration Area	0.000	0.044	0.000	0.079	0.000	0.000	0.000
Open Space (Type C, CN=71)	0.312	0.330	0.086	0.000	0.678	0.015	0.000
Open Space (Type D, CN=78)	1.919	0.230	0.377	0.364	0.253	0.866	0.359
Composite Curve Numbers	87	80	91	86	76	81	89

Proposed Drainage Area Summary

The following is a summary of the drainage areas in the post-development, proposed condition. Please refer to the attached calculations in Appendix 3 for detailed hydrograph information.

Post-Development Site Conditions

Subarea or Junction	Description	Area (ac)	Impervious Area (ac)	Time of Cons. (min.)	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
P-1 + OS-1	North Subarea + Offsite Subarea	5.142	2.431	10.8	9.38	11.29	18.54	34.25
1P	Wet Pond 1	-	-	-	0.14	0.18	0.61	11.46
P-2	West Subarea	0.749	0.145	6.9	1.06	1.34	2.47	5.06
2P	Infiltration Basin 2	-	-	-	0.14	0.17	0.29	9.94
P-3	South Subarea	1.418	0.881	6.4	3.75	4.39	6.76	11.78
3P	Wet Pond 3	-	-	-	0.10	0.15	0.22	0.85
P-4	East Subarea	0.612	0.169	6.5	1.26	1.52	2.52	4.70
4P	Infiltration Basin 4	-	-	-	0.08	0.12	0.20	0.31
UD-5	West / South Undetained area	1.069	0.138	6.2	1.16	1.53	3.05	6.69
UD-6	North Undetained Area	1.026	0.145	5.8	1.60	2.00	3.61	7.25
Site Discharge	**Total Flow**	**10.016**	**3.908**	**-**	**2.76**	**3.53**	**6.68**	**14.29**

Pond Descriptions

The stormwater management ponds and infiltration basins are designed in accordance with WDNR's Technical Standard 1001 (Wet Detention Basin) and 1003 (Infiltration Basin), respectively. Details of the outlet control structures for each system are identified below.

Wet Pond 1

The following describes **Wet Pond 1**:

- Top of Berm – 834.60
- 10' Wide Spillway – 833.60
- N.W.L. – 830.20
- Bottom – 825.20 (5' permanent pool depth)
- 48" Diameter Riser Structure Rim – 832.75
- 3" Orifice – 830.20
- 18" Outlet Pipe I.E. – 830.20
    - 34.8' @ S=0.50%
- 100-YR Water Surface Elev. – 833.56
    - Inflow = 34.25 cfs
    - Outflow = 11.46 cfs
    - Max. Storage Volume = 1.060 ac-ft
- 10-YR Water Surface Elev. – 832.79
    - Inflow = 18.54 cfs
    - Outflow = 0.61 cfs
    - Max. Storage Volume = 0.801 ac-ft
- 2-YR Water Surface Elev. – 831.66

    - Inflow = 11.29 cfs
    - Outflow = 0.18 cfs
    - Max. Storage Volume = 0.501 ac-ft
- 1-YR Water Surface Elev. – 831.27
    - Inflow = 9.38 cfs
    - Outflow = 0.14 cfs
    - Max. Storage Volume = 0.423 ac-ft

Infiltration Basin 2

The following describes **Infiltration Basin 2**:

- Top of Berm – 833.50
- 10' Wide Spillway – 832.50
- Bottom – 830.00
- Design Infiltration Rate = 0.25"/hr.
- 48" Diameter Riser Structure Rim – 832.10
- 3" Orifice – 830.50 (6" infiltration depth)
- 18" Outlet Pipe I.E. – 830.00
    - 28.2' @ S=0.50%
- 100-YR Water Surface Elev. – 832.48
    - Inflow = 13.61 cfs
    - Outflow = 9.94 cfs
    - Max. Storage Volume = 0.224 ac-ft
- 10-YR Water Surface Elev. – 832.11
    - Inflow = 2.54 cfs
    - Outflow = 0.29 cfs
    - Max. Storage Volume = 0.174 ac-ft
- 2-YR Water Surface Elev. – 831.18
    - Inflow = 1.34 cfs
    - Outflow = 0.17 cfs
    - Max. Storage Volume = 0.076 ac-ft
- 1-YR Water Surface Elev. – 830.98
    - Inflow = 1.06 cfs
    - Outflow = 0.14 cfs
    - Max. Storage Volume = 0.060 ac-ft

Wet Pond 3

The following describes **Wet Pond 3**:

- Top of Berm – 832.00
- 10' Wide Spillway – 831.00
- N.W.L. – 828.00
- Bottom – 823.00 (5' permanent pool depth)
- 48" Diameter Riser Structure Rim – 830.75
- 3" Orifice – 828.00
- 12" Outlet Pipe I.E. – 828.00
    - 105.8' @ S=0.50%
- 100-YR Water Surface Elev. – 830.81
    - Inflow = 11.78 cfs

  - Outflow = 0.85 cfs
  - Max. Storage Volume = 0.426 ac-ft
- 10-YR Water Surface Elev. – 829.40
  - Inflow = 6.76 cfs
  - Outflow = 0.22 cfs
  - Max. Storage Volume = 0.242 ac-ft
- 2-YR Water Surface Elev. – 828.51
  - Inflow = 4.39 cfs
  - Outflow = 0.15 cfs
  - Max. Storage Volume = 0.154 ac-ft
- 1-YR Water Surface Elev. – 828.30
  - Inflow = 3.75 cfs
  - Outflow = 0.10 cfs
  - Max. Storage Volume = 0.136 ac-ft

Infiltration Basin 4

The following describes **Infiltration Basin 4**:

- Top of Berm – 831.00
- 10’ Wide Spillway – 830.00
- Bottom – 827.40
- Design Infiltration Rate = 0.25”/hr.
- 48” Diameter Riser Structure Rim – 829.75
- 3” Orifice – 827.90 (6” infiltration depth)
- 12” Outlet Pipe I.E. – 827.40
  - 41.3’ @ S=0.50%
- 100-YR Water Surface Elev. – 829.72
  - Inflow = 4.98 cfs
  - Outflow = 0.31 cfs
  - Max. Storage Volume = 0.248 ac-ft
- 10-YR Water Surface Elev. – 828.71
  - Inflow = 2.64 cfs
  - Outflow = 0.20 cfs
  - Max. Storage Volume = 0.123 ac-ft
- 2-YR Water Surface Elev. – 828.27
  - Inflow = 1.52 cfs
  - Outflow = 0.12 cfs
  - Max. Storage Volume = 0.077 ac-ft
- 1-YR Water Surface Elev. – 828.15
  - Inflow = 1.26 cfs
  - Outflow = 0.08 cfs
  - Max. Storage Volume = 0.066 ac-ft

Infiltration

The City of Waukesha’s Ordinance requires medium density residential developments to infiltrate sufficient runoff volume so that the post-development infiltration volume is at least 75 percent of pre-development infiltration volume, based on an average annual

rainfall. However, no more than 2 percent of the post-construction site is required as an effective infiltration area.

The infiltration analysis was performed using WinSLAMM modeling software.

The following infiltration calculations are provided to show how the developed site infiltrates:
Pre-development Runoff Volume (based on the site being undeveloped as modeled in WinSLAMM):

Drainage Area: 10.016 acres
Existing undeveloped: 91,392 c.f.

Post-Development Runoff Volume after Infiltration/Outfall Controls:

Drainage area: 10.016 acres
Proposed: 182,537 c.f.

Infiltration Volume:

Pre-development = (29.96"/12 x 10.016 ac. x 43,560 s.f./ac) – 91,392 c.f. = 997,896 c.f.
Post-development = (29.96"/12 x 10.016 ac. x 43,560 s.f./ac) – 182,537 c.f. = 906,751 c.f.
(Note: 29.96" is the average (annual) amount of rain in a given year)

Developed infiltration volume as a percentage of the existing infiltration volume:
906,751/997,896 = 0.9087 = 90.87%

Total Site Release Rates

The table below summarizes the storm water release rates associated with the sub-watersheds in the development, verifying that the Storm Water Management Plan maintains or reduces the one-year 24-hour, two-year 24-hour, ten-year 24-hour and the 100-year 24-hour post-construction peak runoff discharge rates to the one-year 24-hour, two-year 24-hour, ten-year 24-hour and the 100-year 24-hour pre-development peak runoff discharge rates respectively.

1-yr Pre-Development		**1-yr Post-Development**
7.79 cfs	>	2.76 cfs
2-yr Pre-Development		**2-yr Post-Development**
10.11 cfs	>	3.53 cfs
10-yr Pre-Development		**10-yr Post-Development**
19.57 cfs	>	6.68 cfs
100-yr Pre-Development		**100-yr Post-Development**
41.54 cfs	>	14.29 cfs

Water Quality – TSS Reduction

The City of Waukesha's Ordinance requires BMPs to be designed to control TSS carried by runoff from redevelopment sites by 40 percent and from new development sites by 80 percent, based on an average annual rainfall, as compared to no runoff management controls.

Stormwater quality was analyzed using WinSLAMM Version 10.5.0 software, developed by Robert Pitt and John Voorhees. Detailed computations are provided in Appendix 4.

The following table provides a summary of the results of the WinSLAMM © analysis:

SLAMM Results			
Rain file: Milwaukee WI 1969.RAN Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69	Runoff Volume (cu ft)	Particulate Solids Concentration (mg/L)	Particulate Solids yield (lbs)
Total Without Controls:			
Total Site	**322,977**	**109.9**	**2,217**
Total After Outlet Controls:			
Total Site	**180,036**	**39.42**	**443**
Percent Reduction: **Total Development Site**	N/A	N/A	**80.02%**

Conclusion

The proposed Olde Farm subdivision meets the storm water management requirements of the City of Waukesha Stormwater Management Ordinance Chapter 32 requirements and WDNR NR 151 for peak flow, infiltration and water quality. A stormwater management maintenance agreement will ensure that the proposed plan provides the desired storm water management control in perpetuity.

APPENDIX 1

Soils Map & Geotechnical Logs

88° 17' 51" W
88° 17' 4" W
43° 1' 25" N
43° 0' 29" N
394300 394400 394500 394600 394700 394800 394900 395000 395100 395200 395300
4764200 4764100 4764000 4763900 4763800 4763700 4763600 4763500 4763400 4763300 4763200 4763100 4763000 4762900 4762800 4762700 4762600

Summit Ave
Us Hwy 18
Driveway
Koenig St
Tornorst Rd
Meadowbrook
Meadowbrook Rd
Merrill Hills
Merrill Hills Rd
Pebble Creek
Fiddlers Creek Dr
Kisdon Hill Dr
Madison St
Madison
Harrogate Dr
Private St
County Hwy Tt
Tt
Cone View Ln

HmC2 HoD3 ThB ScB LmB MmA Ph HmD2 HmB2 HmB MoB KwB ThA RlA PrA Wa HtE2 CrE HmE2

Soil Map may not be valid at this scale.

Map Scale: 1:2,180 if printed on D portrait (22" x 34") sheet.
Meters 0 30 60 120 180
Feet 0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N 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 1:15,800.

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: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 19, Sep 8, 2023

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

Date(s) aerial images were photographed: Jul 30, 2022—Sep 13, 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
CrE	Casco-Rodman complex, 20 to 30 percent slopes	B	0.1	0.1%
HmB	Hochheim loam, 2 to 6 percent slopes	D	33.4	16.0%
HmB2	Hochheim loam, 2 to 6 percent slopes, eroded	D	23.3	11.1%
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	D	36.9	17.6%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	D	10.2	4.9%
HmE2	Hochheim loam, 20 to 30 percent slopes	D	5.1	2.4%
HoD3	Hochheim soils, 12 to 20 percent slopes, severely eroded	B	0.2	0.1%
HtA	Houghton muck, 0 to 2 percent slopes	A/D	0.2	0.1%
KwB	Knowles silt loam, 2 to 6 percent slopes	C	8.4	4.0%
LmB	Lamartine silt loam, 0 to 3 percent slopes	B/D	16.7	8.0%
MmA	Matherton silt loam, 1 to 3 percent slopes	B/D	1.5	0.7%
MoB	Mayville silt loam, 2 to 6 percent slopes	C	7.5	3.6%
Ph	Pella silt loam, 0 to 2 percent slopes	B/D	38.6	18.4%
PrA	Pistakee silt loam, 1 to 3 percent slopes	C	4.3	2.0%
RlA	Ritchey silt loam, mottled subsoil variant, 1 to 3 percent	C	3.6	1.7%
ScB	St. Charles silt loam, 2 to 6 percent slopes	B	3.0	1.4%
ThA	Theresa silt loam, 0 to 2 percent slopes	C	2.7	1.3%
ThB	Theresa silt loam, 2 to 6 percent slopes	C	9.8	4.7%
Wa	Wallkill silt loam	B/D	3.9	1.9%
Totals for Area of Interest			**209.5**	**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.

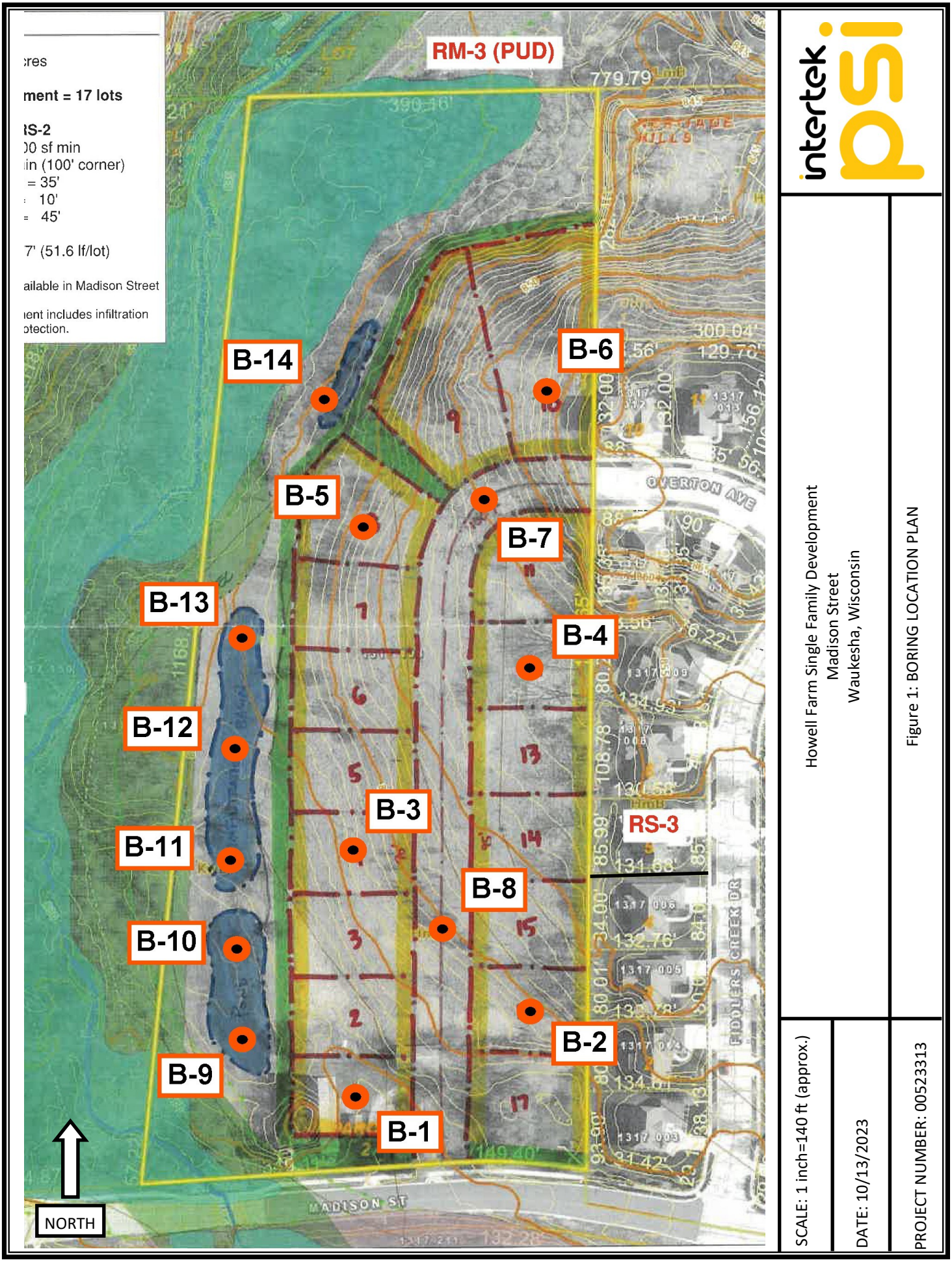
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



intertek psi

Howell Farm Single Family Development
Madison Street
Waukesha, Wisconsin

Figure 1: BORING LOCATION PLAN

SCALE: 1 inch=140 ft (approx.)

DATE: 10/13/2023

PROJECT NUMBER: 00523313

BORING B-1

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	829 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	9 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture × PL ◪ LL ✚ 0 25 50 STRENGTH, tsf Qu ▲ Qp ✳ 0 2.0 4.0	Additional Remarks
	0					Topsoil, Dark Brown Sandy Silt, Moist (8"± Thick)	TPSL				
				1	10	Brown Lean Clay, Trace Sand, Moist	CL	4-5-6 N=11			
825	5			2	3	Light Brown Silty Sand With Gravel, Possible Cobbles, Moist	SM	4-5-5 N=10			
				3	10			20-17-21 N=38			
820	10			4	6	Possible Weathered Bedrock, Light Brown Silty Gravel, Wet ▼		100/10"		>>◎	
815	15			5	6		GM	22-30-12 N=42			
810	20			6	14			23-37-30 N=67		>>◎	
						End of Boring at 20'					
						Cave-In at 11'					

intertek psi

Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125

PROJECT NO.: 00523312
PROJECT: Howell Farm Development
LOCATION: 3474 Madison Rd
Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-2

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	839 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	18.5 feet
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			Topsoil, Dark Brown Silty Clay, Moist (9"± Thick)	TPSL		
		1	8	Brown Silty Sand With Gravel, Moist	SM	12-13-19 N=32	
835	5	2	14			21-18-17 N=35	
		3	8	Brown Sand, Trace Gravel, Moist to Wet		6-10-7 N=17	
830	10	4	8		SP	10-8-11 N=19	
825	15	5	10			16-20-16 N=36	
820	20	6	14			5-5-9 N=14	
				End of Boring at 20'			
				Cave-In at 8'			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture ✕ PL ◪ LL ✚
0 25 50
STRENGTH, tsf
Qu ▲ Qp ✳
0 2.0 4.0

Additional Remarks

intertek psi
Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125

PROJECT NO.: 00523312
PROJECT: Howell Farm Development
LOCATION: 3474 Madison Rd
Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-3

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	5.5 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	836 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ / STRENGTH, tsf	Additional Remarks
835	0					Topsoil, Brown Lean Clay, Moist (7"± Thick)	TPSL				
						Reddish Brown Gravelly Silty Sand, Moist					
				1	6			5-7-18 N=25			
							SM				
	5			2	14			18-29-27 N=56		>>◎	
						End of Boring at 5.5' Due to Auger Refusal on Possible Cobbles, Boulders, or Bedrock					

Moisture: × Moisture; PL; LL — 0 / 25 / 50

Strength, tsf: ▲ Qu; ✳ Qp — 0 / 2.0 / 4.0

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PROJECT NO.: 00523312
PROJECT: Howell Farm Development
LOCATION: 3474 Madison Rd
Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-4

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	848 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil, Brown Silty Clay, Moist (5"± Thick)	TPSL				
				1	8	Brown Lean Clay, Moist	CL	9-11-10 N=21			
845						Light Brown Silty Sand With Gravel, Possible Cobbles or Boulders					
	5			2	5			50/6"		>>	
				3	0			86/12"		>>	
840											
				4	8			21-21-22 N=43			
	10						SM				
835											
				5	16			20-40-35 N=75		>>	
	15										
830											
				6	16			23-39-30 N=69		>>	
	20					End of Boring at 20'					
						Cave-In at 5.5'					

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PROJECT NO.:	00523312
PROJECT:	Howell Farm Development
LOCATION:	3474 Madison Rd
	Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-5

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	13.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	842 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water		
	While Drilling	8 feet
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil, Brown Lean Clay, Moist (4"± Thick)	TPSL				
840				1	6	Brown Gravelly Silty Sand, Moist		4-10-13 N=23			
				2	8		SM	16-12-14 N=26			
	5										
835				3	10			15-17-14 N=31			
						Light Brown Silt, Wet					
				4	14			5-7-4 N=11			
	10						ML				
830						Auger Refusal at 1'. Offset and End of Boring at 13' Due to Auger Refusal on Cobbles, Boulders, or Bedrock					

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PROJECT NO.: 00523312
PROJECT: Howell Farm Development
LOCATION: 3474 Madison Rd
Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-6

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	15.5 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	858 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture × PL ◪ LL ✚ (0, 25, 50) STRENGTH, tsf Qu ▲ Qp ✳ (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil, Dark Brown Lean Clay (4"± Thick)	TPSL				
						Brown Silty Sand With Gravel, Possible Cobbles and Boulders, Moist					
				1	5			7-13-13 N=26			
855											
				2	8			10-9-9 N=18			
	5										
				3	11			16-13-13 N=26			
850							SM				
				4	3			50/2"		>>◎	
	10										
845											
				5	2			50/3"		>>◎	
	15										
						End of Boring at 15.5' Due to Auger Refusal on Possible Cobbles, Boulders, or Bedrock					

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LOCATION: 3474 Madison Rd
Waukesha, WI

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BORING B-7

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	10.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	850 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ / STRENGTH, tsf	Additional Remarks
	0					Topsoil, Dark Brown Lean Clay, Moist (5"± Thick)	TPSL				
				1	14	Brown Lean Clay, Trace Sand and Gravel, Moist	CL	7-7-7 N=14			
				2	8			5-3-7 N=10			
845	5					Brown Silty Sand With Gravel, Moist					
				3	2		SM	12-11-31 N=42			
				4	6			5-7-13 N=20			
840	10					End of Boring at 10'					
						Cave-In at 6.5'					

Moisture ✕ PL ◪ LL — 0 25 50

STRENGTH, tsf ▲ Qu ✳ Qp — 0 2.0 4.0

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Waukesha, WI

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BORING B-8

DATE STARTED:	11/1/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/1/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	10.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	839 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎	Additional Remarks
	0					Topsoil, Brown Lean Clay, Moist (6"± Thick)	TPSL				
				1	8	Light Brown Silty Sand With Gravel, Possible Cobbles and/or Boulders, Moist		17-20-18 N=38			
835				2	6			13-14-12 N=26			
	5						SM				
				3	14			11-24-24 N=48			
830				4	4			50/6"		>>◎	
	10					End of Boring at 10'					
						Cave-In at 5.5'					

Moisture ✕ PL ◪ LL

0 25 50

STRENGTH, tsf ▲ Qu ✳ Qp

0 2.0 4.0

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Waukesha, WI

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BORING B-9

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	833 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL 0 25 50 STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					Topsoil, Black and Very Dark Grayish Brown (10YR 2/1 &3/2) Silty Loam, Moist					
				1	1	Pale Brown (10YR 6/3) Very Gravelly Fine Sand with Brown (10YR 4/3) Gravelly Loam Inclusions, Moist		50/4"		>>◎	
830				2	8			6-21-21-26 N=42		◎	
	5					Pale Brown (10YR 6/3) Gravelly Fine to Medium Sand, Moist					
				3	10			50/5"		>>◎	
825				4	10			5-12-24-26 N=36		◎	
	10					Pale Brown (10YR 6/3) Silty Clay Loam and Gravelly Silt Loam, Moist					
				5	14			11-20-19-41 N=39		◎	
				6	5			77/10"		>>◎	
820						Grayish Brown (10YR 5/2) Gravelly Fine Sand with Yellowish Brown (10YR 5/8) Silt Loam Inclusions, Moist					
				7	2	Light Gray (10YR 7/1) Very Gravelly Fine Sand, Moist		50/5"		>>◎	
	15					End of Boring at 15'					
						Cave-in at 4.5'					

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PROJECT:	Howell Farm Development
LOCATION:	3474 Madison Rd
	Waukesha, WI

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BORING B-10

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	833 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ / STRENGTH, tsf	Additional Remarks
	0					Topsoil, Very Dark Grayish Brown (10YR 3/2) Silty Loam, Moist					
						Pale Brown (10YR 6/3) Very Gravelly Fine Sand with Brown (10YR 4/3) Gravelly Loam Inclusions, Moist					
				1	5			3-7-17-20 N=24			
830				2	5			6-14-20-24 N=34			
	5			3	6			50/4"		>>	
825				4	8			16-21-24-39 N=45			
	10			5	6			50/2"		>>	
				6	14	Yellowish Brown (10YR 5/4) Gravelly Sandy Loam and Silt Loam, Moist		8-4-20-29 N=24			
820				7	14	Brown (10YR 4/3) Gravelly Fine to Medium Sand, Moist		11-15-18-28 N=33			
	15					End of Boring at 15'					
						Cave-in at 6'					

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Waukesha, WI

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BORING B-11

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	11.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	833 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

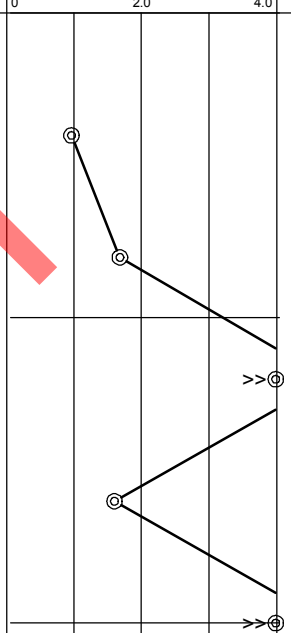
While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0					Topsoil, Very Dark Grayish Brown (10YR 3/2) Silty Loam, Moist			
				1	8	Brown (10YR 4/3) Silty Clay Loam, Moist		7-6-6-7 N=12	
830				2	8	Pale Brown (10YR 6/3) Very Gravelly Fine Sand with Brown (10YR 4/3) Gravelly Loam Inclusions, Moist		3-10-11-19 N=21	
	5			3	3	Light Gray (10YR 7/1) Very Gravelly Fine Sand, Moist		50/4"	
825				4	22	Dark Brown (10YR 3/3) Gravelly Silty Clay Loam, Moist		5-7-13-12 N=20	
	10			5	2			50/3"	
						End of Boring at 11' Due to Auger Refusal on Possible Cobbles, Boulders or Bedrock			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture × PL ◪ LL ✚
0 25 50
STRENGTH, tsf
Qu ▲ Qp ✳
0 2.0 4.0

Additional Remarks



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PROJECT: Howell Farm Development
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Waukesha, WI

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BORING B-12

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	5.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	834 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Black (10YR 2/1) Silty Clay Loam, Moist					
				1	12			5-5-5-6 N=10		◎	
						Very Pale Brown (10YR 8/2) Very Gravelly Fine Sand, Moist					
830				2	2			50/2"		>>◎	
	5					End of Boring at 5' Due to Auger Refusal on Possible Cobbles, Boulders or Bedrock					

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Waukesha, WI

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BORING B-13

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	3.1 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	835 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	

REMARKS:

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Black (10YR 2/1) Silty Clay Loam, Moist					
						Brown (10YR 5/3) Silty Clay Loam, Moist					
				1	6			55/8"		>>◎	
						Very Pale Brown (10YR 7/3) Gravelly Fine Sand, Moist					
				2	1			50/1"		>>◎	
						End of Boring at 3' Due to Auger Refusal on Possible Cobbles, Boulders or Bedrock					

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Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING B-14

DATE STARTED:	11/2/23	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	11/2/23	**DRILLER:** DT	**LOGGED BY:** AW
COMPLETION DEPTH	11.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	836 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	
REMARKS:			

Water

While Drilling	Not Obsvd
Upon Completion	Not Obsvd
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Black (10YR 2/1) Silty Clay Loam, Moist					
835				1	4			50/4"		>>	
						Gray (10YR 5/1) with Dark Yellowish Brown (10YR 4/6) Mottling, Silt Loam, Moist					
				2	16			11-9-8-8 N=17			
	5					Dark Gray (10YR 4/1) Silt Loam, Moist					
830				3	16			8-9-17-14 N=26			
						Grayish Brown (10YR 5/2) Gravelly Sandy Loam, Moist					
				4	8			11-12-17-20 N=29			
						Very Pale Brown (10YR 7/3) Gravelly Fine Sand, Moist					
	10			5	14			80/11"		>>	
825						End of Boring at 11' Due to Auger Refusal on Possible Cobbles, Boulders or Bedrock					

intertek psi

Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125

PROJECT NO.: 00523312
PROJECT: Howell Farm Development
LOCATION: 3474 Madison Rd
Waukesha, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

Wis. Dept. of Safety and Professional Services
Division of Industry Services

SOIL EVALUATION - STORM

In accordance with SPS 382.365 & 385, Wis. Adm. Code and WDNR Standard 1002

Attach complete site plan on paper not less that 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and BM referenced to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04 (1) (m)].

County: Waukesha

Parcel I.D.:

Reviewed by:

Date:

Property Owner	Property Location: 3474 Madison Road, Waukesha, WI Govt. Lot
Property Owner's Mailing Address	Lot # / Block # / Subd. Name or CSM#
City / State / Zip Code / Phone Number	☒ City ☐ Village ☐ Town — Nearest Road: Madison Road

Drainage area _____ ☐ sq. ft. ☐ acres

Optional:

Test Site Suitable for (check all that apply)

☐ Irrigation ☐ Bioretention trench ☐ Trench(es)

☐ Rain Garden ☐ Grassed swale ☐ Reuse

☐ Infiltration trench ☐ SDS (> 15' wide) ☐ Other _____

Hydraulic Application Test Method:

☒ Morphological Evaluation

☐ Double Ring Infiltrometer

☐ Other (specify)

Soil Moisture

Date of Test Pits: November 2, 2023

USDA-NRCS WETS Value: 14

☐ **Dry =1;**
☒ **Normal = 2;**
☐ **Wet = 3.**

1 Obs. # ☒ Boring ☐ Pit — B-9

Ground surface elevation 833'± — Elevation of limiting factor: >15'

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-7	10YR 2/1&3/2		sil	0 cxr	mfr		<15		0.13
2	7-60	10YR 6/3		vgrfs(1)	0 sg	ml		>35		0.5
3	60-108	10YR 6/3		grf-ms	0 sg	ml		>15		3.6
4	108-156	10YR 6/3		sicl/grsil	0 m	mfr		<15/>15		0.04/0.13
5	156-168	10YR 5/2		grfs(2)	0 sg	ml		>15		0.5
6	168-180	10YR 7/1		vgrfs	0 sg	ml		>35		0.5

Comment: 1. 10YR 4/3, gravelly loam inclusions; 2. 10YR 5/8 silt loam inclusions

2 Obs. # ☒ Boring ☐ Pit — B-10

Ground surface elevation 833'± — Elevation of limiting factor: >15'

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-8	10YR 3/2		sil	0 cxr	mfr		<15		0.13
2	8-132	10YR 6/3		vgrfs(1)	0 sg	ml		>35		0.5
3	132-156	10YR 5/4		grsl/sil	0 m	mfr		>15/<15		0.5/0.13
4	156-180	10YR 4/3		grf-ms	0 sg	ml		>15		3.6

Comment: 1. 10YR 4/3, gravelly loam inclusions;

CST/PSS Name (Please Print)	Signature	CST/PSS/Geologist Number
Patrick J. Patterson		G-229
Address	Date Evaluation Conducted	Telephone Number
821 Corporate Court, Waukesha, WI 53189	11/2/2023	262 521 2125

3 Obs. # ☒ Boring ☐ Pit B-11 Ground surface elevation 833± Elevation of limiting factor: 11'±

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-12	10YR 3/1		sil	0 cr	mfr		<15		0.13
2	12-36	10YR 4/3		sicl	2 thin pl	mfi		<15		0.04
3	36-60	10YR 6/3		vgrfs[(1)]	0 sg	ml		>35		0.5
4	60-84	10YR 7/1		vgrfs	0 sg	ml		>35		0.5
5	84-132	10YR 3/3		grsicl	2 thin pl	mfi		>15		0.04

Comment: 1. 10YR 4/3, gravelly loam inclusions; potential bedrock at 11 feet

4 Obs. # ☒ Boring ☐ Pit B-12 Ground surface elevation 834± Elevation of limiting factor: 5'±

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-36	10YR 2/1		sicl	2 thin pl	mfi		<15		0.04
2	36-60	10YR 8/2		vgrfs	0 sg	ml		>35		0.5

Comment: potential bedrock at 5 feet

5 Obs. # ☒ Boring ☐ Pit B-13 Ground surface elevation 835± Elevation of limiting factor: 3'±

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-6	10YR 2/1		sicl	2 thin pl	mfi		<15		0.04
2	6-18	10YR 5/3		sicl	1 thin pl	mfi		<15		0.04
3	18-36	10YR 7/3		grfs	0 sg	ml		>15		0.5

Comment: potential bedrock at 3 feet

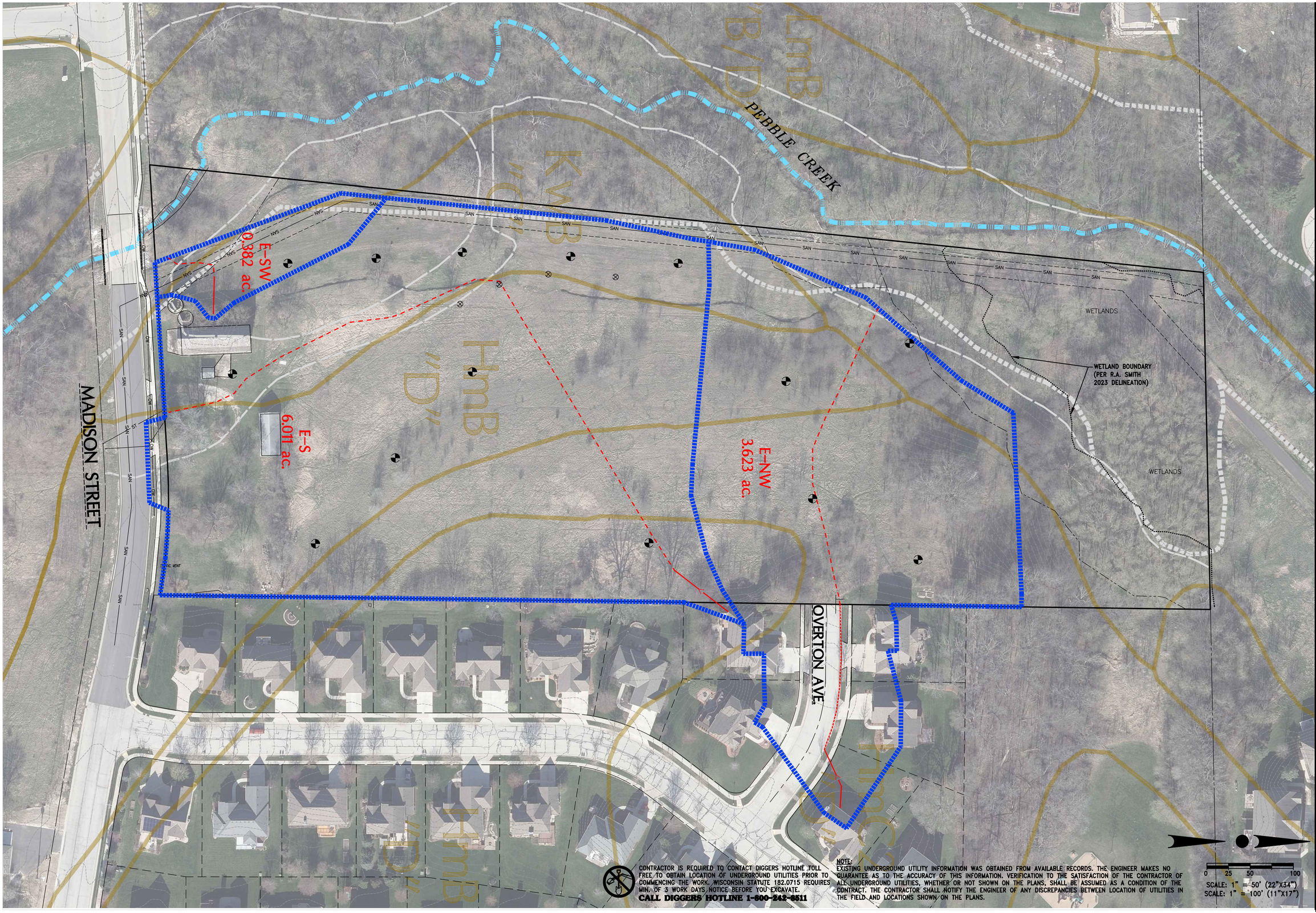
6 Obs. # ☒ Boring ☐ Pit B-14 Ground surface elevation 836± Elevation of limiting factor: 3'±

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr.
1	0-36	10YR 2/1		sicl	2 thin pl	mfi		<15		0.04
2	36-60	10YR 5/1	f 2 d 10YR 4/6	sil	2 thin pl	mfr		<15		0.13
3	60-84	10YR 4/1		sil	2 thin pl	mfr		<15		0.13
4	84-108	10YR 5/2		grsl	0 m	mfr		>15		0.5
5	108-132	10YR 7/3		grfs	0 sg	ml		>15		0.5

Comment: redoximorphic features and gray soils at 3 feet; potential bedrock at 11 feet

APPENDIX 2

Existing & Proposed Drainage Area Maps



CONTRACTOR IS REQUIRED TO CONTACT DIGGERS HOTLINE TOLL FREE TO OBTAIN LOCATION OF UNDERGROUND UTILITIES PRIOR TO COMMENCING THE WORK. WISCONSIN STATUTE 182.0715 REQUIRES MIN. OF 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE.
CALL DIGGERS HOTLINE 1-800-242-8511

NOTE:
EXISTING UNDERGROUND UTILITY INFORMATION WAS OBTAINED FROM AVAILABLE RECORDS. THE ENGINEER MAKES NO GUARANTEE AS TO THE ACCURACY OF THIS INFORMATION. VERIFICATION TO THE SATISFACTION OF THE CONTRACTOR OF ALL UNDERGROUND UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE ASSUMED AS A CONDITION OF THE CONTRACT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN LOCATION OF UTILITIES IN THE FIELD AND LOCATIONS SHOWN ON THE PLANS.

WISCONSIN
JOSHUA D. PUDELKO
E-39420
WAUWATOSA, WI
PROFESSIONAL ENGINEER

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4100 N. CALHOUN ROAD, SUITE 300
BROOKFIELD, WI 53005
PHONE: (262) 790-1480
FAX: (262) 790-1481
EMAIL: Info@trioeng.com

PROJECT:
OLDE FARM
SINGLE FAMILY RESIDENTIAL SUBDIVISION
CITY OF WAUKESHA, WISCONSIN
BY: BIELINSKI HOMES
1830 MEADOW LN., SUITE A
PEWAUKEE, WI 53072

REVISION HISTORY

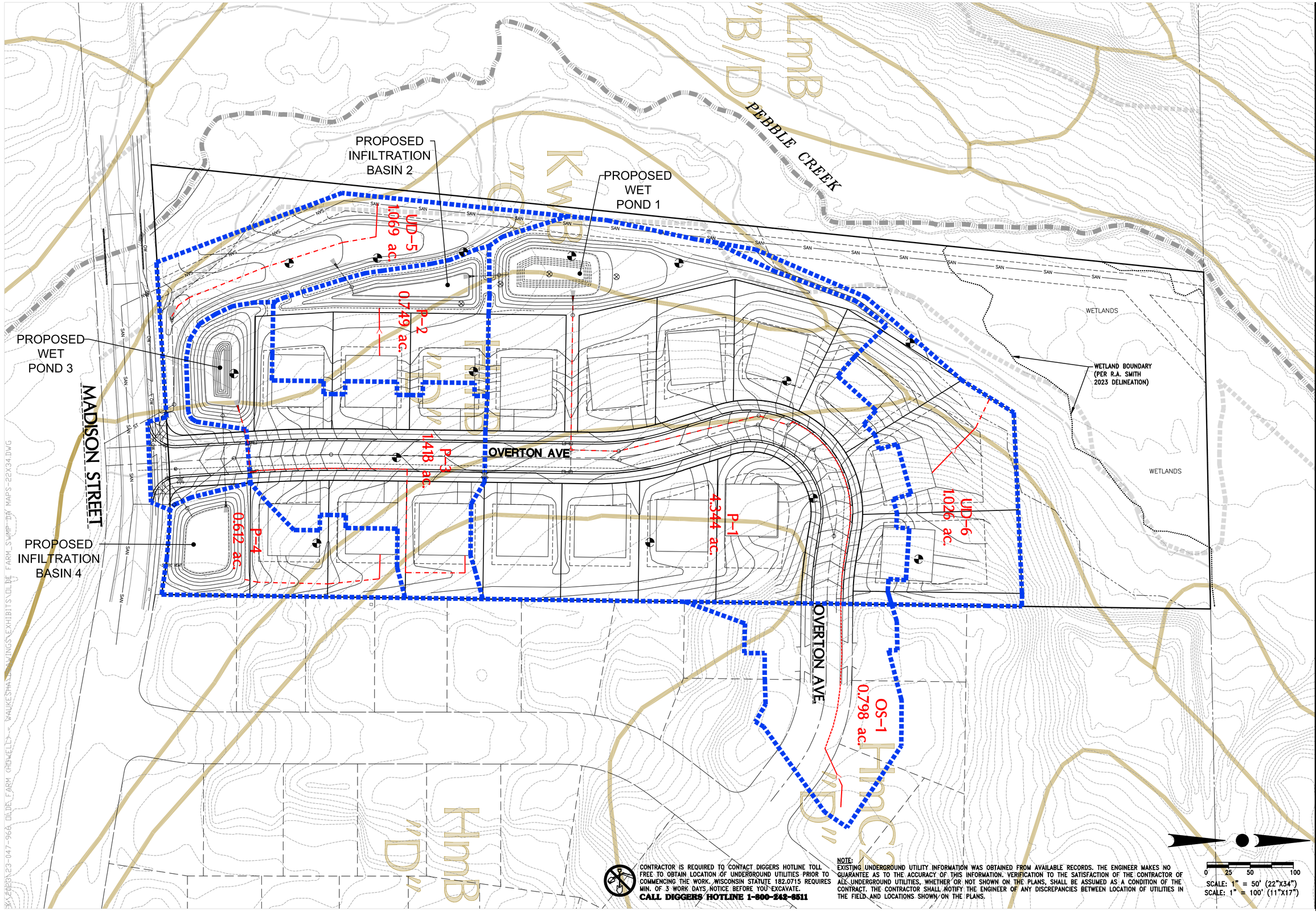
DATE	DESCRIPTION
12/13/2023	PRELIM. CIVIL SUBMITTAL

DATE:
DECEMBER 13, 2023

JOB NUMBER:
23047

DESCRIPTION:
EXISTING DRAINAGE AREA MAP

SHEET
E-DA



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0 25 50 100
SCALE: 1" = 50' (22"X34")
SCALE: 1" = 100' (11"X17")

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REVISION HISTORY

DATE	DESCRIPTION
12/13/2023	PRELIM. CIVIL SUBMITTAL

DATE:
DECEMBER 13, 2023

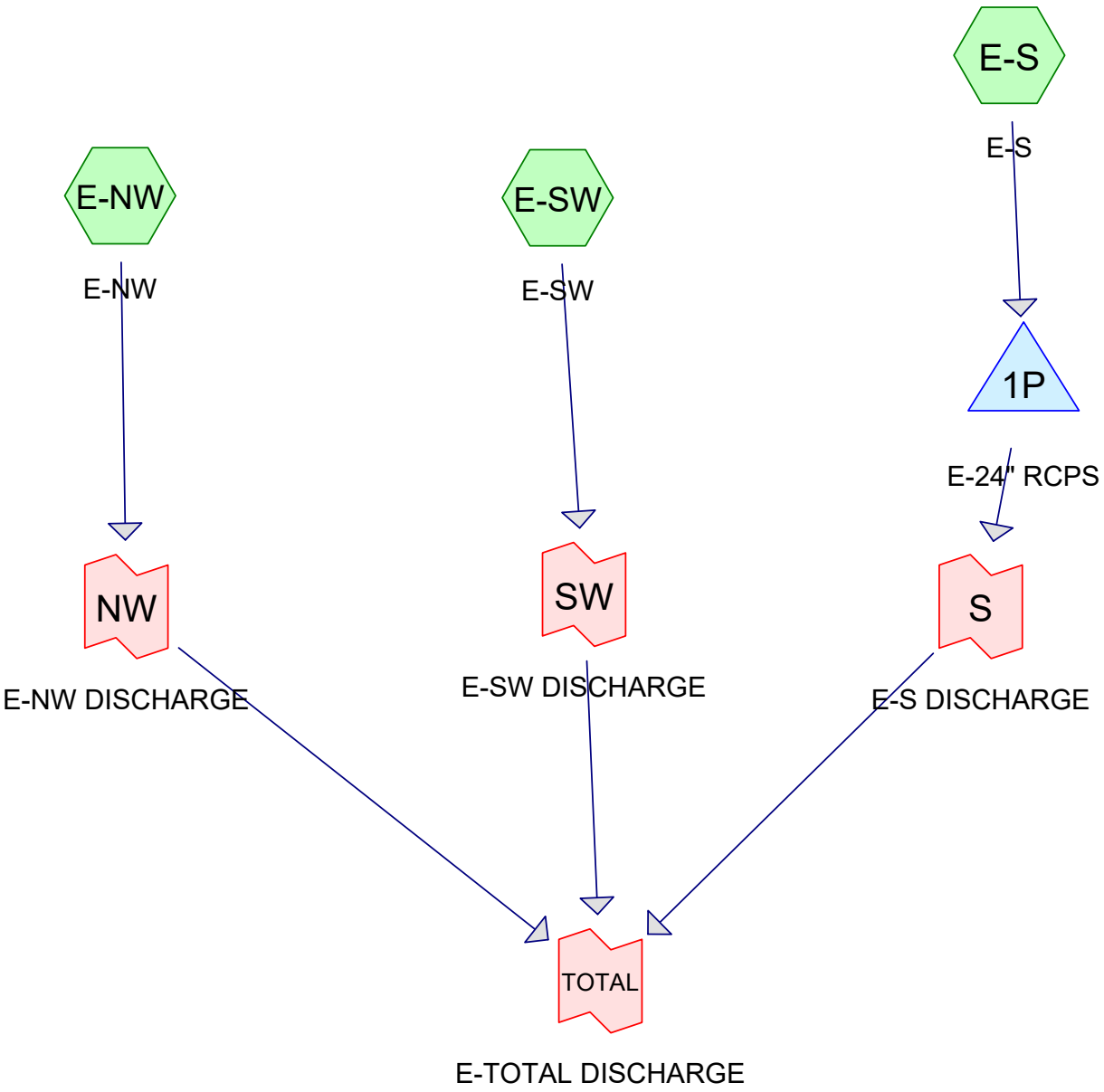
JOB NUMBER:
23047

DESCRIPTION:
PROPOSED DRAINAGE AREA MAP

SHEET
P-DA

APPENDIX 3

Hydraflow & Spillway Calculations



Subcat Reach Pond Link

Routing Diagram for Existing_Olde Farm_2023-11
Prepared by Trio Engineering, Printed 11/17/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr	MSE 24-hr	3	Default	24.00	1	2.40	2
2	2 yr	MSE 24-hr	3	Default	24.00	1	2.70	2
3	10 yr	MSE 24-hr	3	Default	24.00	1	3.81	2
4	100 yr	MSE 24-hr	3	Default	24.00	1	6.18	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.623	80	(E-NW)
6.011	77	(E-S)
0.382	72	(E-SW)
10.016	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
10.016	Other	E-NW, E-S, E-SW
10.016		**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
0.000	0.000	0.000	0.000	10.016	10.016		E-NW, E-S, E-SW
0.000	**0.000**	**0.000**	**0.000**	**10.016**	**10.016**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	826.48	825.46	84.2	0.0121	0.013	0.0	24.0	0.0	
2	1P	826.67	825.56	90.2	0.0123	0.013	0.0	24.0	0.0	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-NW: E-NW Runoff Area=3.623 ac 0.00% Impervious Runoff Depth>0.82"
Flow Length=610' Tc=13.7 min CN=80 Runoff=3.85 cfs 0.247 af

Subcatchment E-S: E-S Runoff Area=6.011 ac 0.00% Impervious Runoff Depth>0.68"
Flow Length=890' Tc=20.1 min CN=77 Runoff=4.22 cfs 0.339 af

Subcatchment E-SW: E-SW Runoff Area=0.382 ac 0.00% Impervious Runoff Depth>0.48"
Flow Length=112' Tc=6.0 min CN=72 Runoff=0.29 cfs 0.015 af

Pond 1P: E-24" RCPS Peak Elev=827.17' Storage=0.000 af Inflow=4.22 cfs 0.339 af
Outflow=4.22 cfs 0.339 af

Link NW: E-NW DISCHARGE Inflow=3.85 cfs 0.247 af
Primary=3.85 cfs 0.247 af

Link S: E-S DISCHARGE Inflow=4.22 cfs 0.339 af
Primary=4.22 cfs 0.339 af

Link SW: E-SW DISCHARGE Inflow=0.29 cfs 0.015 af
Primary=0.29 cfs 0.015 af

Link TOTAL: E-TOTAL DISCHARGE Inflow=7.79 cfs 0.602 af
Primary=7.79 cfs 0.602 af

Total Runoff Area = 10.016 ac Runoff Volume = 0.602 af Average Runoff Depth = 0.72"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-NW: E-NW

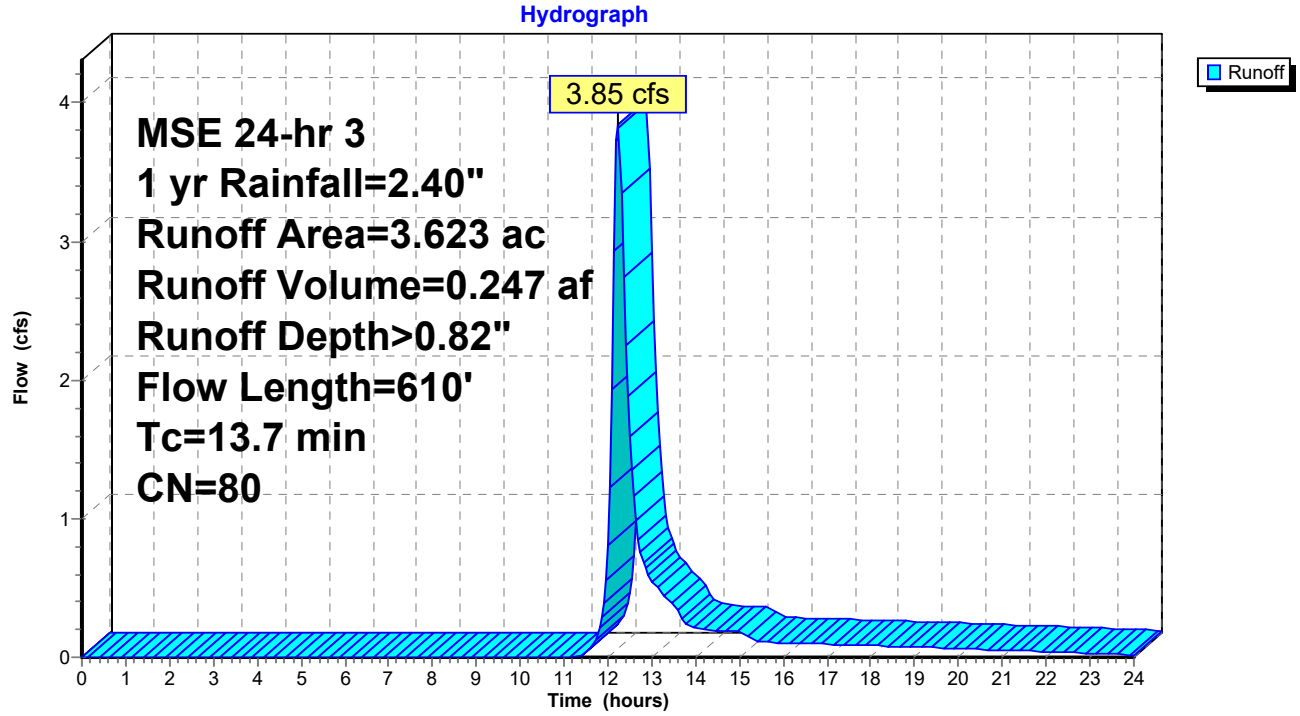
Runoff = 3.85 cfs @ 12.23 hrs, Volume= 0.247 af, Depth> 0.82"
Routed to Link NW : E-NW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	3.623	80	
	3.623		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
4.4	365	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	610	Total			

Subcatchment E-NW: E-NW



Summary for Subcatchment E-S: E-S

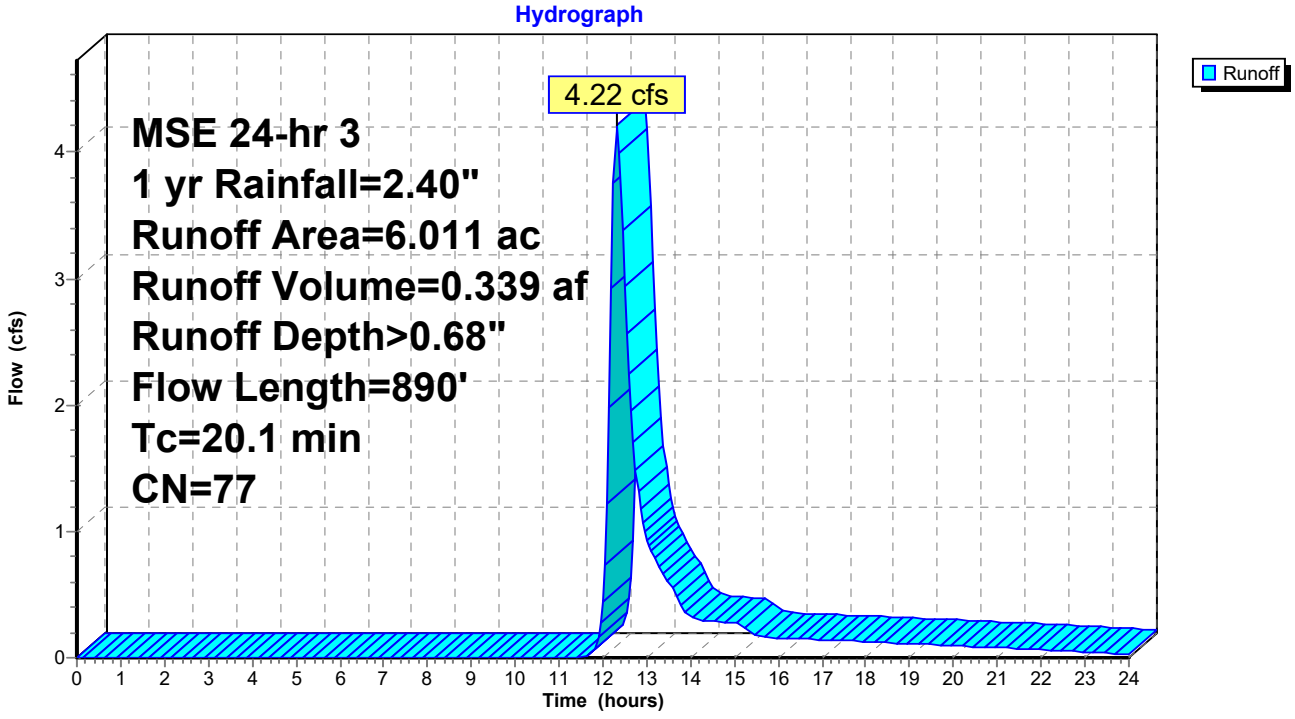
Runoff = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af, Depth> 0.68"
Routed to Pond 1P : E-24" RCPS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	6.011	77	
	6.011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	80	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
4.5	390	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	420	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	890	Total			

Subcatchment E-S: E-S



Summary for Subcatchment E-SW: E-SW

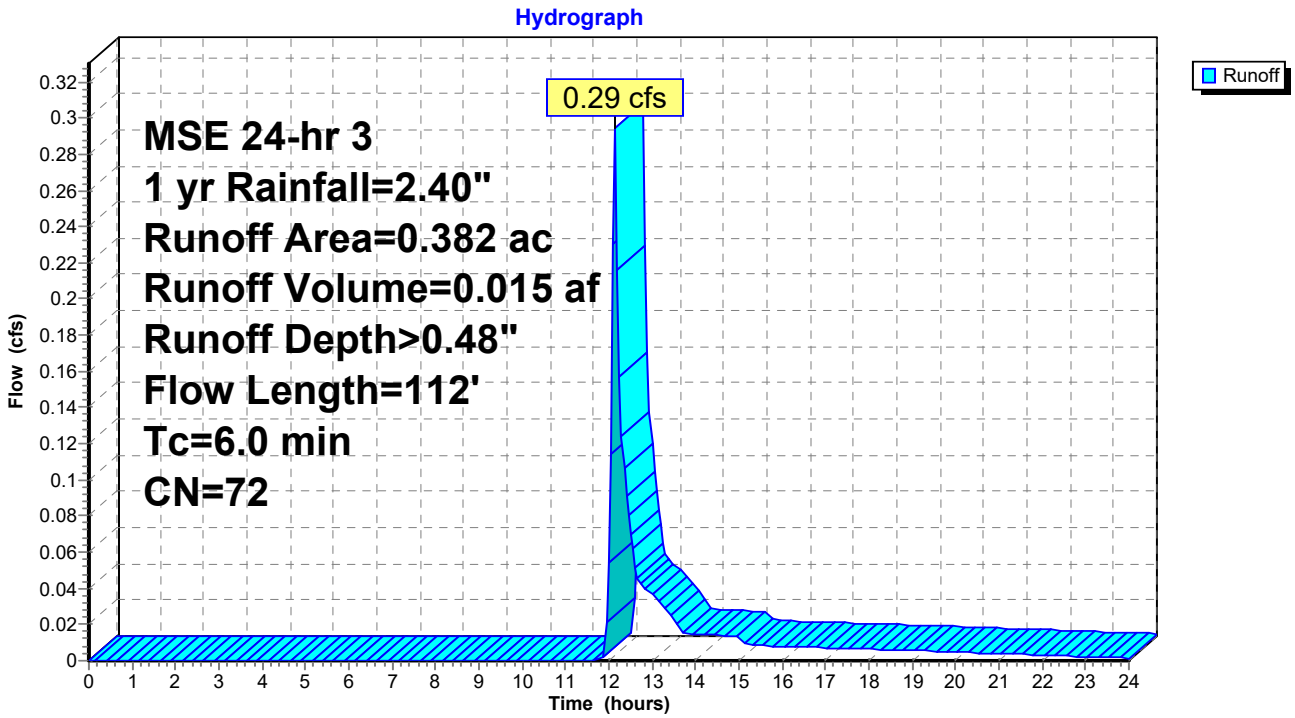
Runoff = 0.29 cfs @ 12.15 hrs, Volume= 0.015 af, Depth> 0.48"
Routed to Link SW : E-SW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.382	72	
	0.382		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	42	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.9	70	0.0325	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	112	Total, Increased to minimum Tc = 6.0 min			

Subcatchment E-SW: E-SW



Summary for Pond 1P: E-24" RCPS

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 0.68" for 1 yr event
Inflow = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af
Outflow = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.1 min
Primary = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af
Routed to Link S : E-S DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 827.17' @ 12.32 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.339 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (846.6 - 846.6)

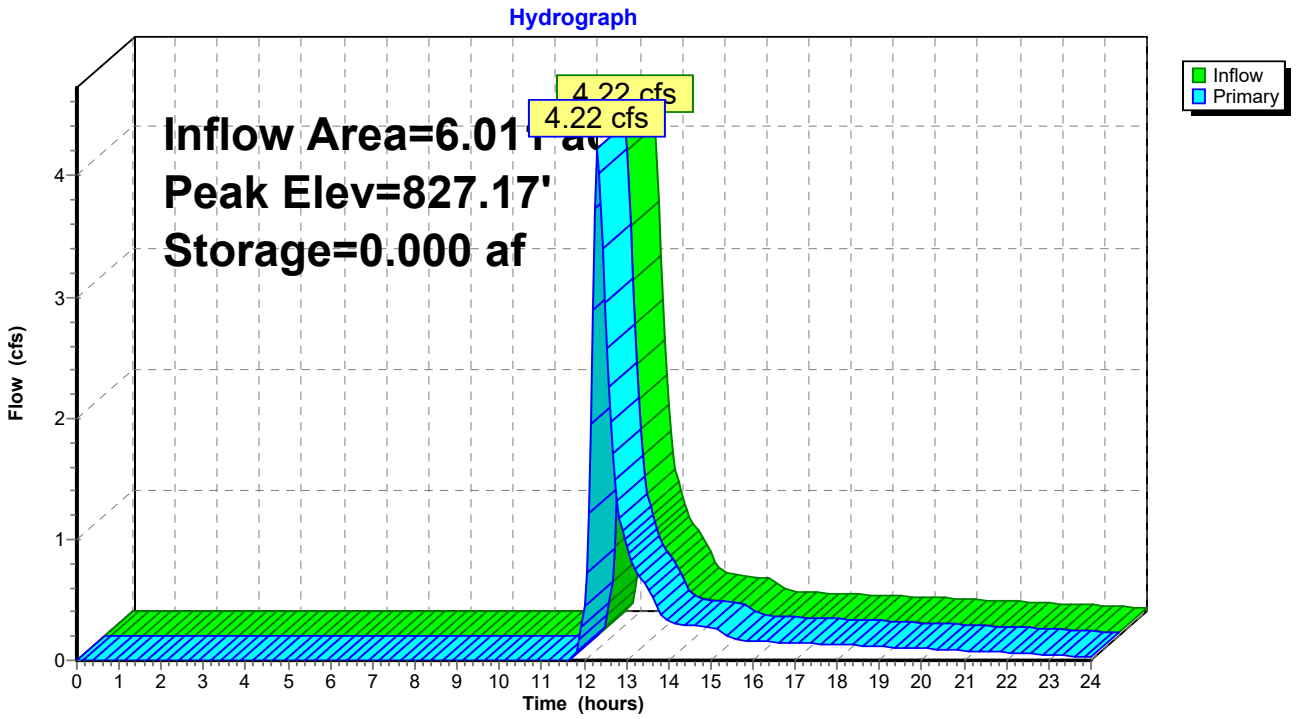
Volume	Invert	Avail.Storage	Storage Description
#1	826.48'	0.694 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
826.48	0.000	0.000	0.000	0.000
827.00	0.001	0.000	0.000	0.001
828.00	0.022	0.009	0.009	0.022
829.00	0.137	0.071	0.081	0.137
830.00	0.292	0.210	0.290	0.292
831.00	0.527	0.404	0.694	0.528

Device	Routing	Invert	Outlet Devices
#1	Primary	826.48'	**24.0" Round WEST - RCP_Round 24"** L= 84.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.48' / 825.46' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Primary	826.67'	**24.0" Round EAST-RCP_Round 24"** L= 90.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.67' / 825.56' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#3	Primary	830.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Primary	830.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.16 cfs @ 12.32 hrs HW=827.17' (Free Discharge)
- **1=WEST - RCP_Round 24"** (Inlet Controls 2.70 cfs @ 2.82 fps)
- **2=EAST-RCP_Round 24"** (Inlet Controls 1.46 cfs @ 2.40 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: E-24" RCPS

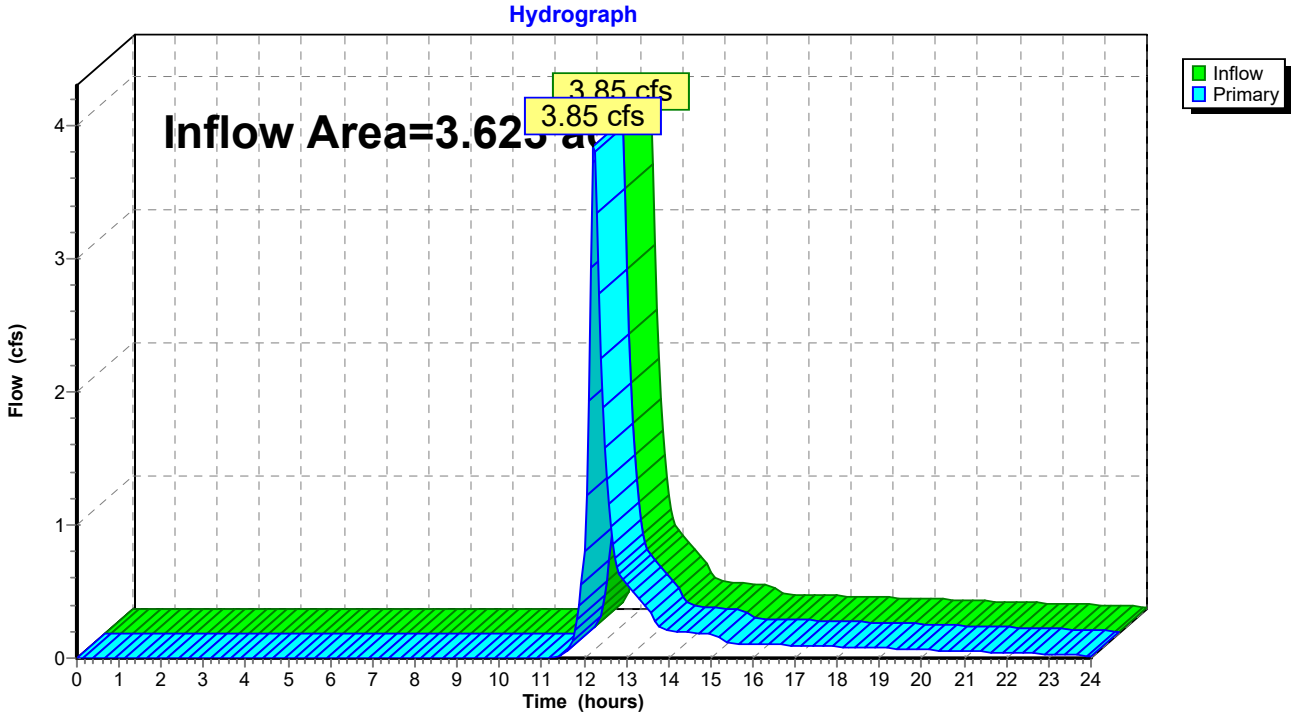


Summary for Link NW: E-NW DISCHARGE

Inflow Area = 3.623 ac, 0.00% Impervious, Inflow Depth > 0.82" for 1 yr event
Inflow = 3.85 cfs @ 12.23 hrs, Volume= 0.247 af
Primary = 3.85 cfs @ 12.23 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: E-NW DISCHARGE

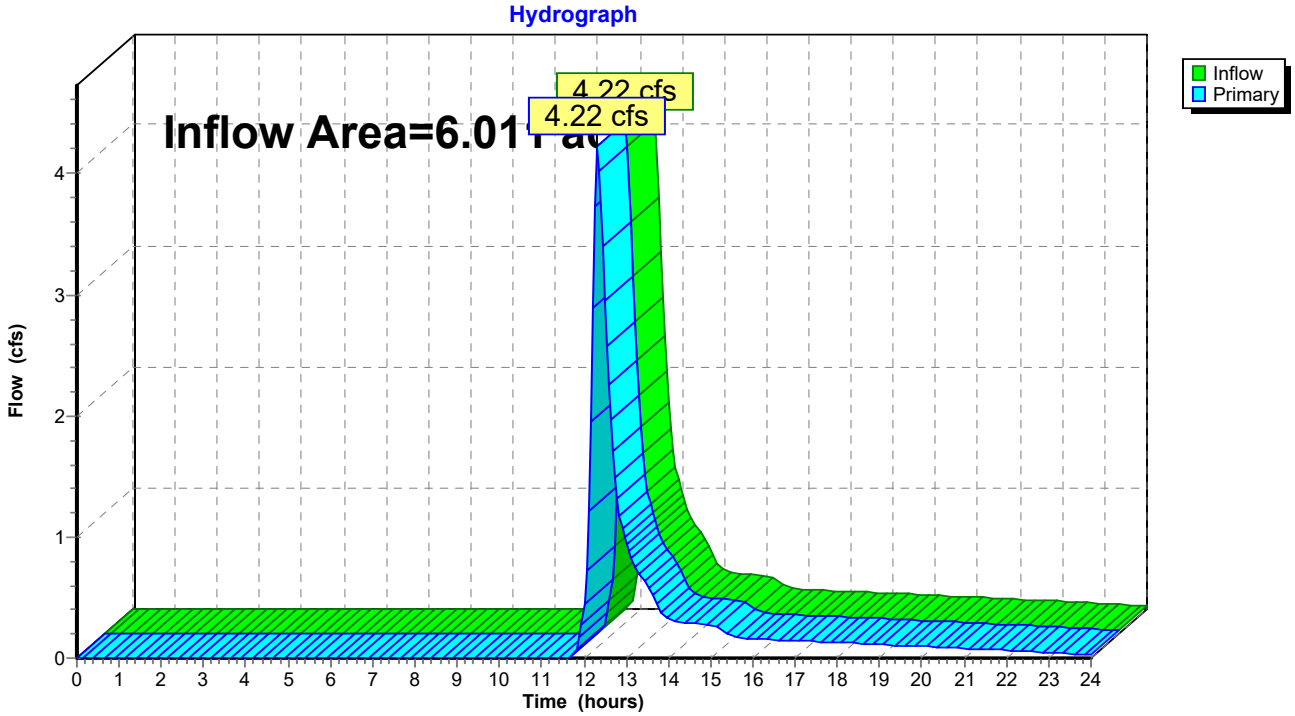


Summary for Link S: E-S DISCHARGE

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 0.68" for 1 yr event
Inflow = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af
Primary = 4.22 cfs @ 12.32 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: E-S DISCHARGE

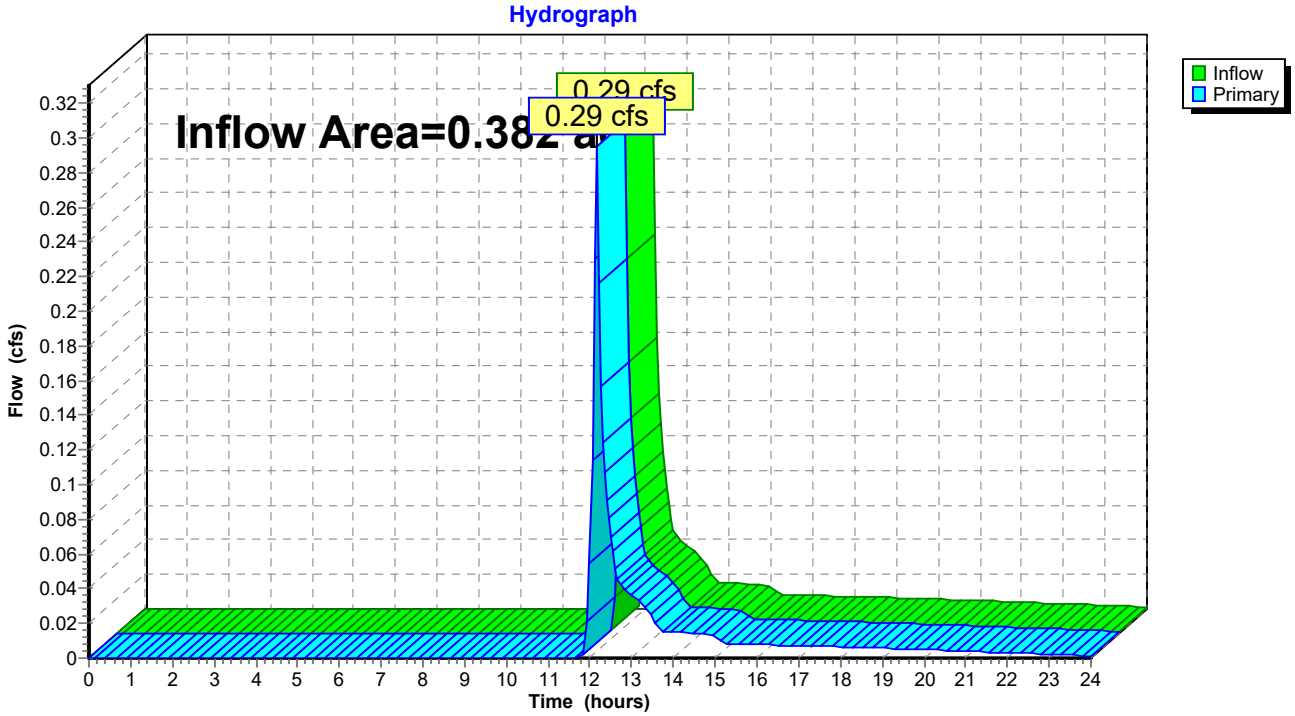


Summary for Link SW: E-SW DISCHARGE

Inflow Area = 0.382 ac, 0.00% Impervious, Inflow Depth > 0.48" for 1 yr event
Inflow = 0.29 cfs @ 12.15 hrs, Volume= 0.015 af
Primary = 0.29 cfs @ 12.15 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SW: E-SW DISCHARGE

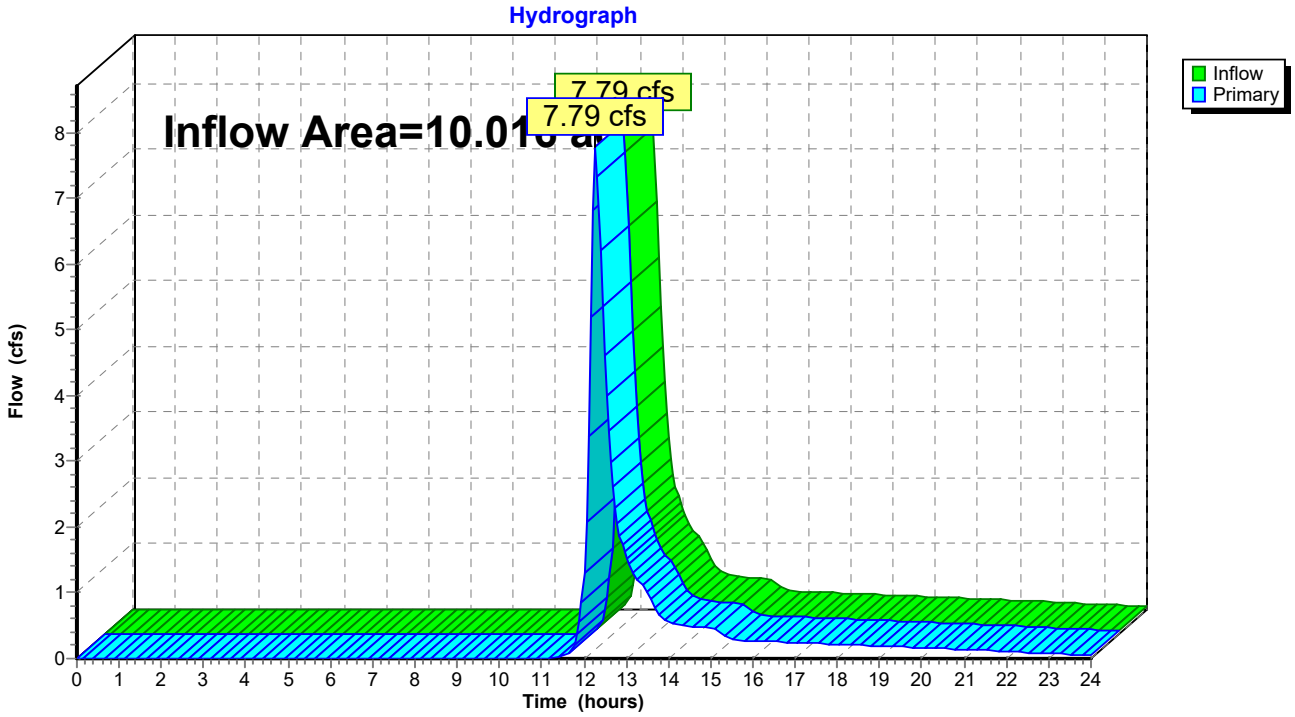


Summary for Link TOTAL: E-TOTAL DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 0.72" for 1 yr event
Inflow = 7.79 cfs @ 12.27 hrs, Volume= 0.602 af
Primary = 7.79 cfs @ 12.27 hrs, Volume= 0.602 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: E-TOTAL DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-NW: E-NW Runoff Area=3.623 ac 0.00% Impervious Runoff Depth>1.03"
Flow Length=610' Tc=13.7 min CN=80 Runoff=4.89 cfs 0.311 af

Subcatchment E-S: E-S Runoff Area=6.011 ac 0.00% Impervious Runoff Depth>0.87"
Flow Length=890' Tc=20.1 min CN=77 Runoff=5.55 cfs 0.434 af

Subcatchment E-SW: E-SW Runoff Area=0.382 ac 0.00% Impervious Runoff Depth>0.64"
Flow Length=112' Tc=6.0 min CN=72 Runoff=0.41 cfs 0.020 af

Pond 1P: E-24" RCPS Peak Elev=827.27' Storage=0.001 af Inflow=5.55 cfs 0.434 af
Outflow=5.55 cfs 0.434 af

Link NW: E-NW DISCHARGE Inflow=4.89 cfs 0.311 af
Primary=4.89 cfs 0.311 af

Link S: E-S DISCHARGE Inflow=5.55 cfs 0.434 af
Primary=5.55 cfs 0.434 af

Link SW: E-SW DISCHARGE Inflow=0.41 cfs 0.020 af
Primary=0.41 cfs 0.020 af

Link TOTAL: E-TOTAL DISCHARGE Inflow=10.11 cfs 0.765 af
Primary=10.11 cfs 0.765 af

Total Runoff Area = 10.016 ac Runoff Volume = 0.765 af Average Runoff Depth = 0.92"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-NW: E-NW

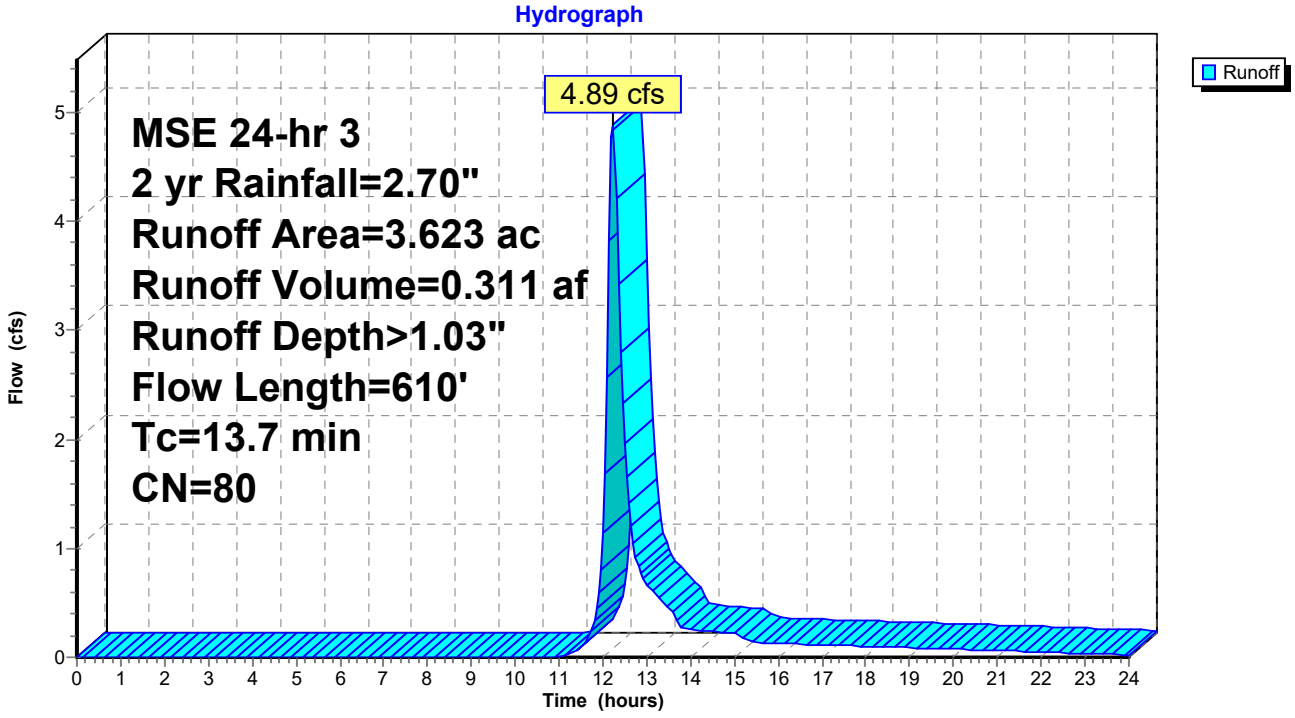
Runoff = 4.89 cfs @ 12.23 hrs, Volume= 0.311 af, Depth> 1.03"
Routed to Link NW : E-NW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	3.623	80	
	3.623		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
4.4	365	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	610	Total			

Subcatchment E-NW: E-NW



Summary for Subcatchment E-S: E-S

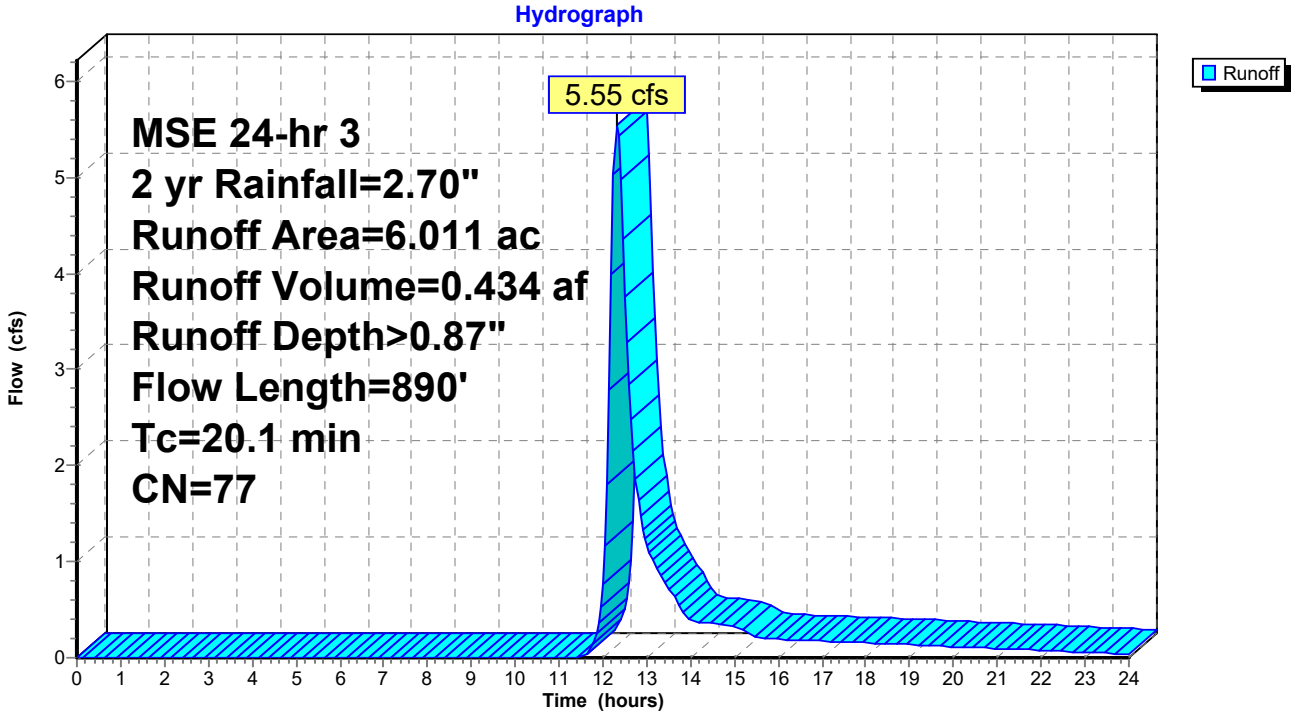
Runoff = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af, Depth> 0.87"
Routed to Pond 1P : E-24" RCPS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	6.011	77	
	6.011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	80	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
4.5	390	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	420	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	890	Total			

Subcatchment E-S: E-S



Summary for Subcatchment E-SW: E-SW

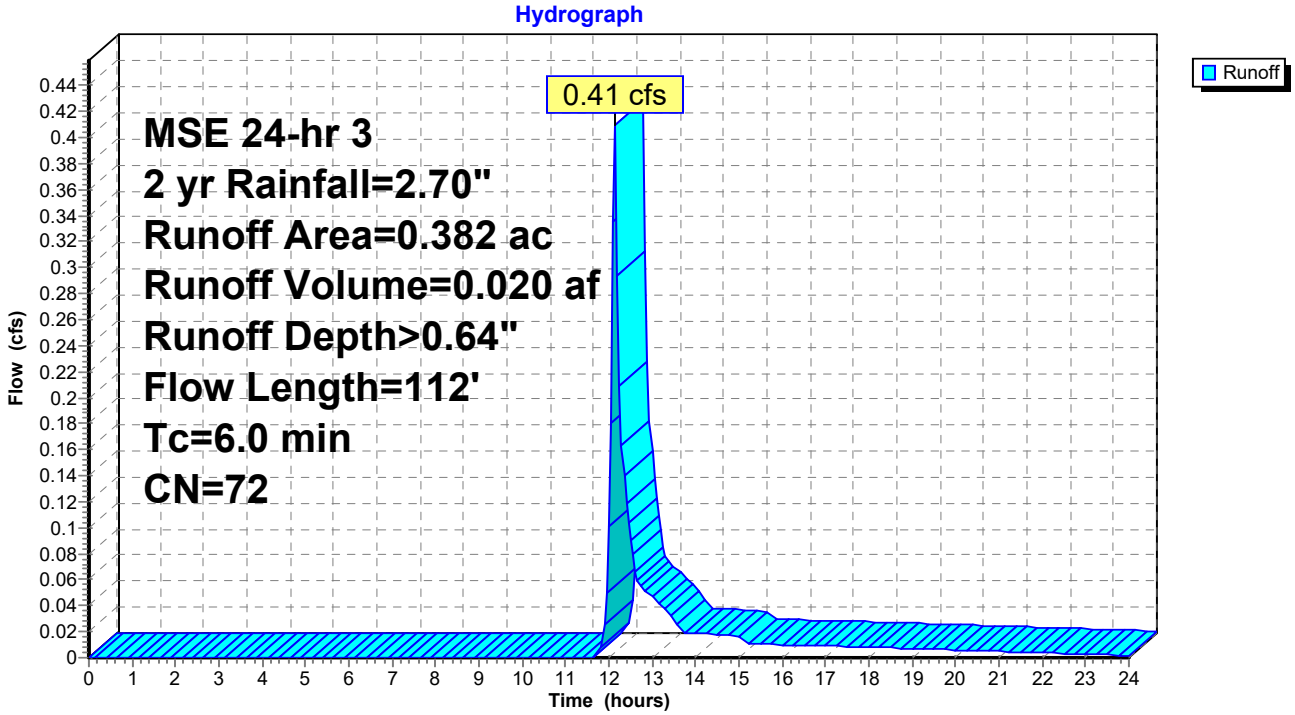
Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.020 af, Depth> 0.64"
Routed to Link SW : E-SW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.382	72	
	0.382		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	42	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.9	70	0.0325	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	112	Total, Increased to minimum Tc = 6.0 min			

Subcatchment E-SW: E-SW



Summary for Pond 1P: E-24" RCPS

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 0.87" for 2 yr event
Inflow = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af
Outflow = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af, Atten= 0%, Lag= 0.2 min
Primary = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af
Routed to Link S : E-S DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 827.27' @ 12.32 hrs Surf.Area= 0.004 ac Storage= 0.001 af

Plug-Flow detention time= 0.1 min calculated for 0.434 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (840.8 - 840.8)

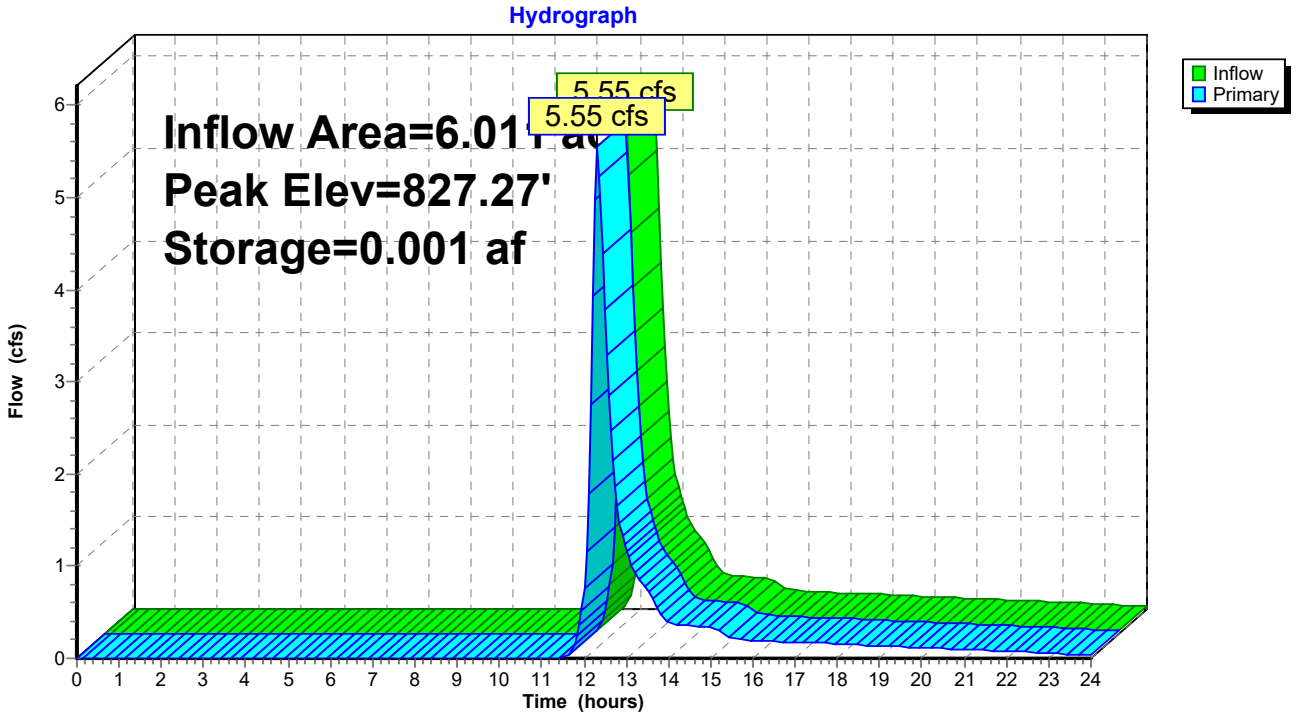
Volume	Invert	Avail.Storage	Storage Description
#1	826.48'	0.694 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
826.48	0.000	0.000	0.000	0.000
827.00	0.001	0.000	0.000	0.001
828.00	0.022	0.009	0.009	0.022
829.00	0.137	0.071	0.081	0.137
830.00	0.292	0.210	0.290	0.292
831.00	0.527	0.404	0.694	0.528

Device	Routing	Invert	Outlet Devices
#1	Primary	826.48'	**24.0" Round WEST - RCP_Round 24"** L= 84.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.48' / 825.46' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Primary	826.67'	**24.0" Round EAST-RCP_Round 24"** L= 90.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.67' / 825.56' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#3	Primary	830.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Primary	830.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5.48 cfs @ 12.32 hrs HW=827.26' (Free Discharge)
- **1=WEST - RCP_Round 24"** (Inlet Controls 3.43 cfs @ 3.01 fps)
- **2=EAST-RCP_Round 24"** (Inlet Controls 2.04 cfs @ 2.62 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: E-24" RCPS

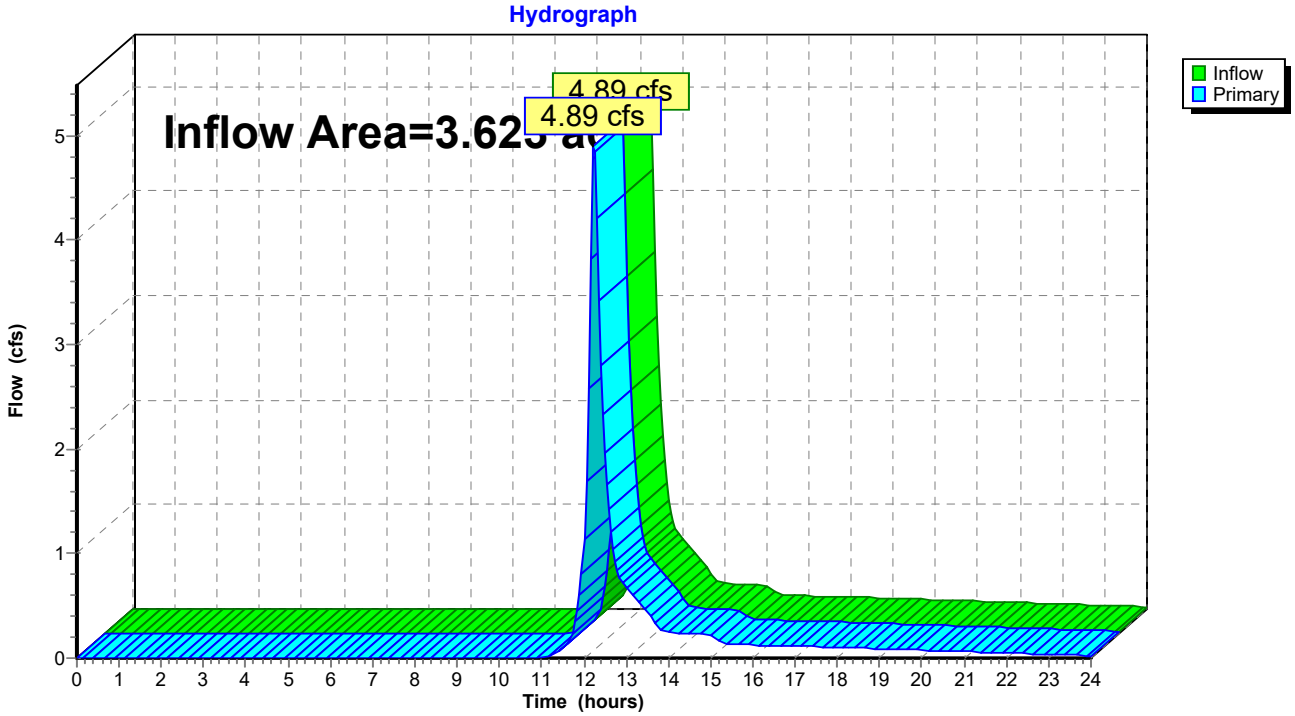


Summary for Link NW: E-NW DISCHARGE

Inflow Area = 3.623 ac, 0.00% Impervious, Inflow Depth > 1.03" for 2 yr event
Inflow = 4.89 cfs @ 12.23 hrs, Volume= 0.311 af
Primary = 4.89 cfs @ 12.23 hrs, Volume= 0.311 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: E-NW DISCHARGE

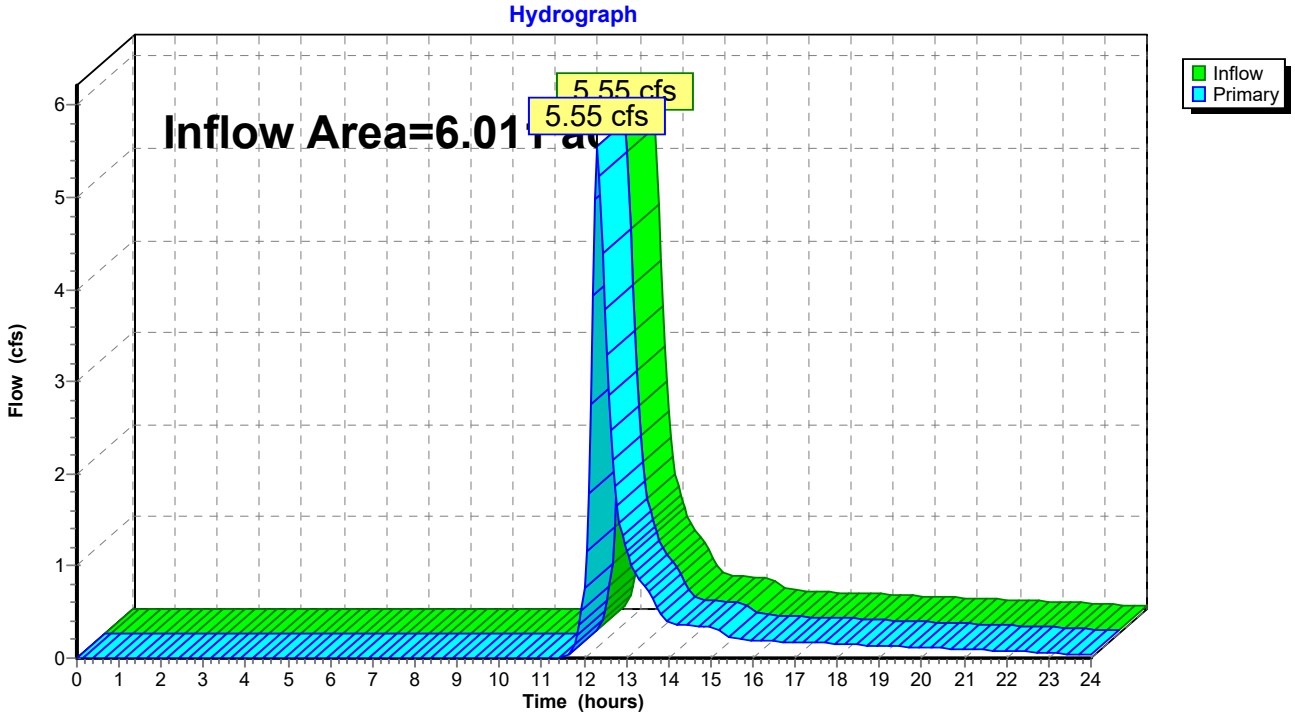


Summary for Link S: E-S DISCHARGE

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 0.87" for 2 yr event
Inflow = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af
Primary = 5.55 cfs @ 12.32 hrs, Volume= 0.434 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: E-S DISCHARGE

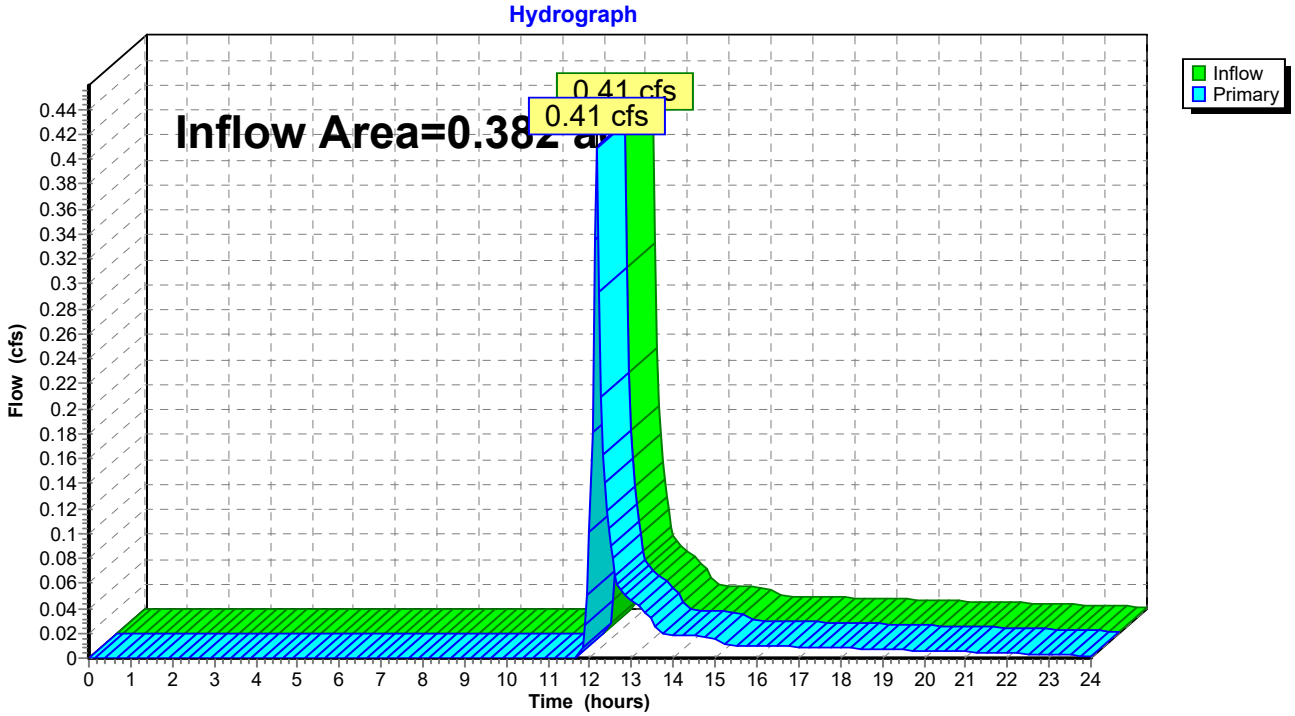


Summary for Link SW: E-SW DISCHARGE

Inflow Area = 0.382 ac, 0.00% Impervious, Inflow Depth > 0.64" for 2 yr event
Inflow = 0.41 cfs @ 12.14 hrs, Volume= 0.020 af
Primary = 0.41 cfs @ 12.14 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SW: E-SW DISCHARGE

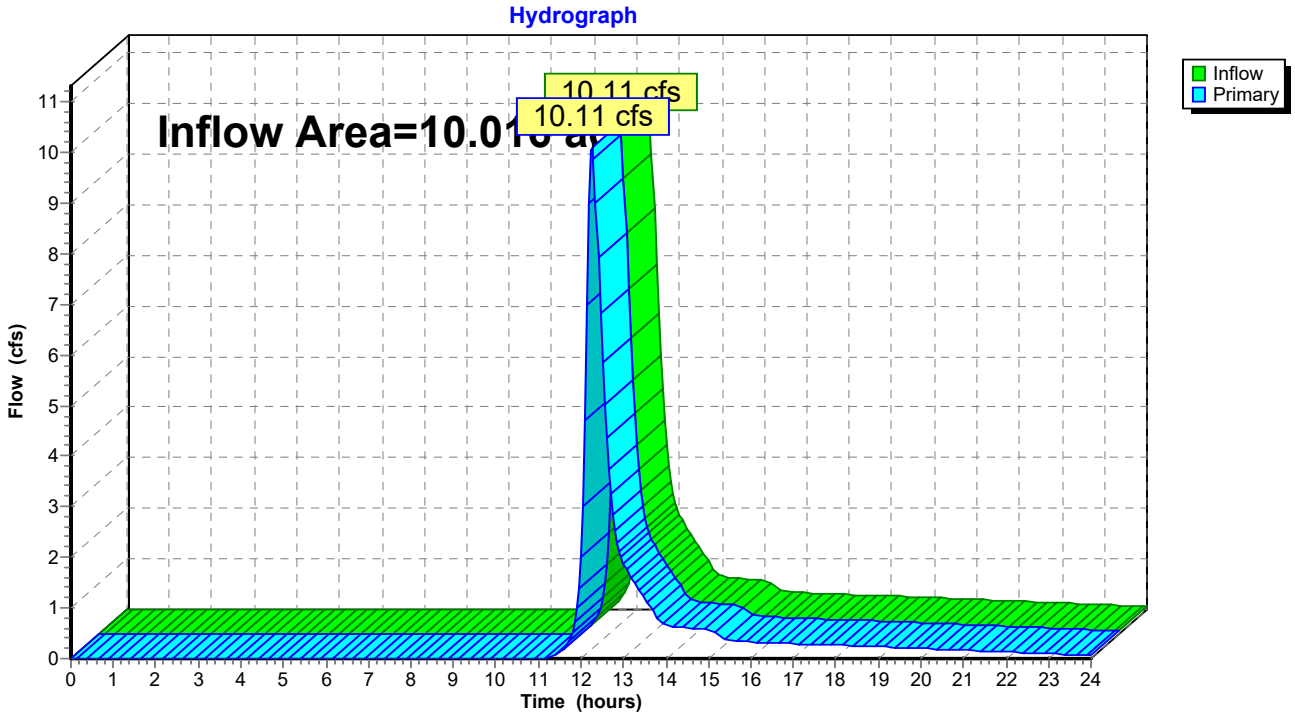


Summary for Link TOTAL: E-TOTAL DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 0.92" for 2 yr event
Inflow = 10.11 cfs @ 12.27 hrs, Volume= 0.765 af
Primary = 10.11 cfs @ 12.27 hrs, Volume= 0.765 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: E-TOTAL DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-NW: E-NW Runoff Area=3.623 ac 0.00% Impervious Runoff Depth>1.88"
Flow Length=610' Tc=13.7 min CN=80 Runoff=9.15 cfs 0.569 af

Subcatchment E-S: E-S Runoff Area=6.011 ac 0.00% Impervious Runoff Depth>1.66"
Flow Length=890' Tc=20.1 min CN=77 Runoff=11.06 cfs 0.833 af

Subcatchment E-SW: E-SW Runoff Area=0.382 ac 0.00% Impervious Runoff Depth>1.33"
Flow Length=112' Tc=6.0 min CN=72 Runoff=0.90 cfs 0.042 af

Pond 1P: E-24" RCPS Peak Elev=827.59' Storage=0.003 af Inflow=11.06 cfs 0.833 af
Outflow=11.06 cfs 0.833 af

Link NW: E-NW DISCHARGE Inflow=9.15 cfs 0.569 af
Primary=9.15 cfs 0.569 af

Link S: E-S DISCHARGE Inflow=11.06 cfs 0.833 af
Primary=11.06 cfs 0.833 af

Link SW: E-SW DISCHARGE Inflow=0.90 cfs 0.042 af
Primary=0.90 cfs 0.042 af

Link TOTAL: E-TOTAL DISCHARGE Inflow=19.57 cfs 1.444 af
Primary=19.57 cfs 1.444 af

Total Runoff Area = 10.016 ac Runoff Volume = 1.444 af Average Runoff Depth = 1.73"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-NW: E-NW

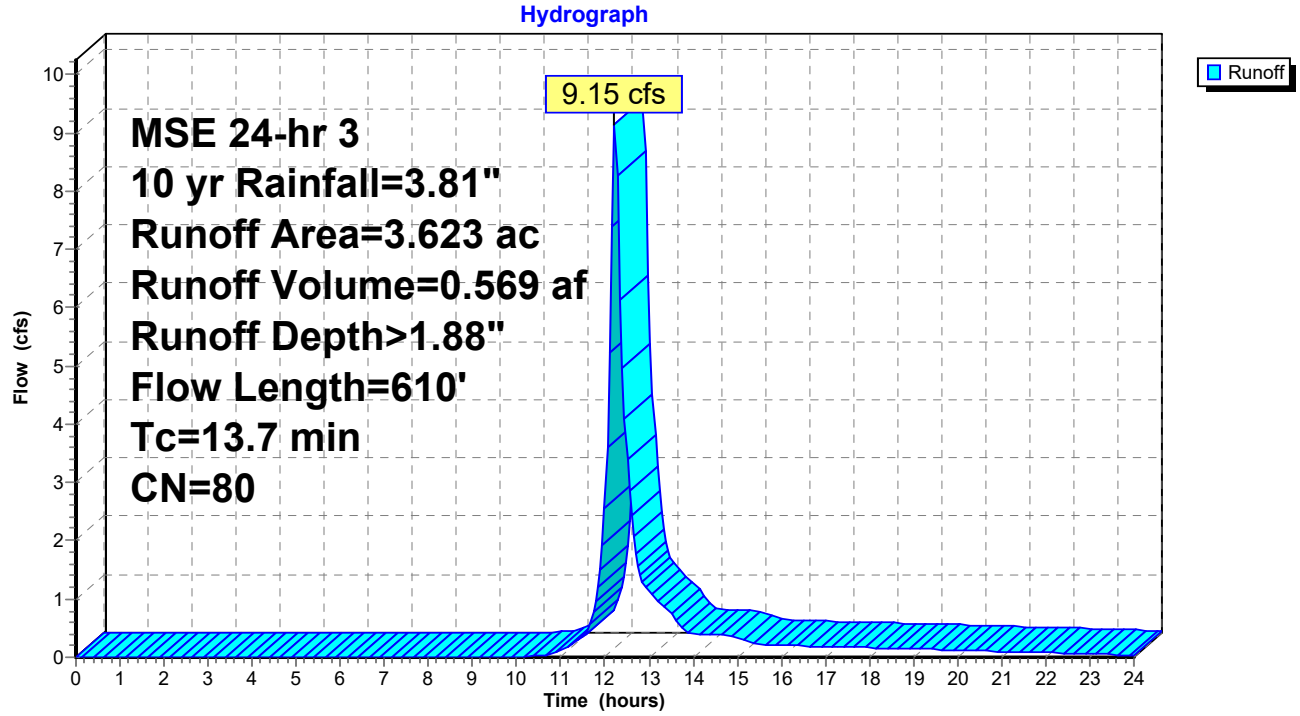
Runoff = 9.15 cfs @ 12.22 hrs, Volume= 0.569 af, Depth> 1.88"
Routed to Link NW : E-NW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	3.623	80	
	3.623		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
4.4	365	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	610	Total			

Subcatchment E-NW: E-NW



Summary for Subcatchment E-S: E-S

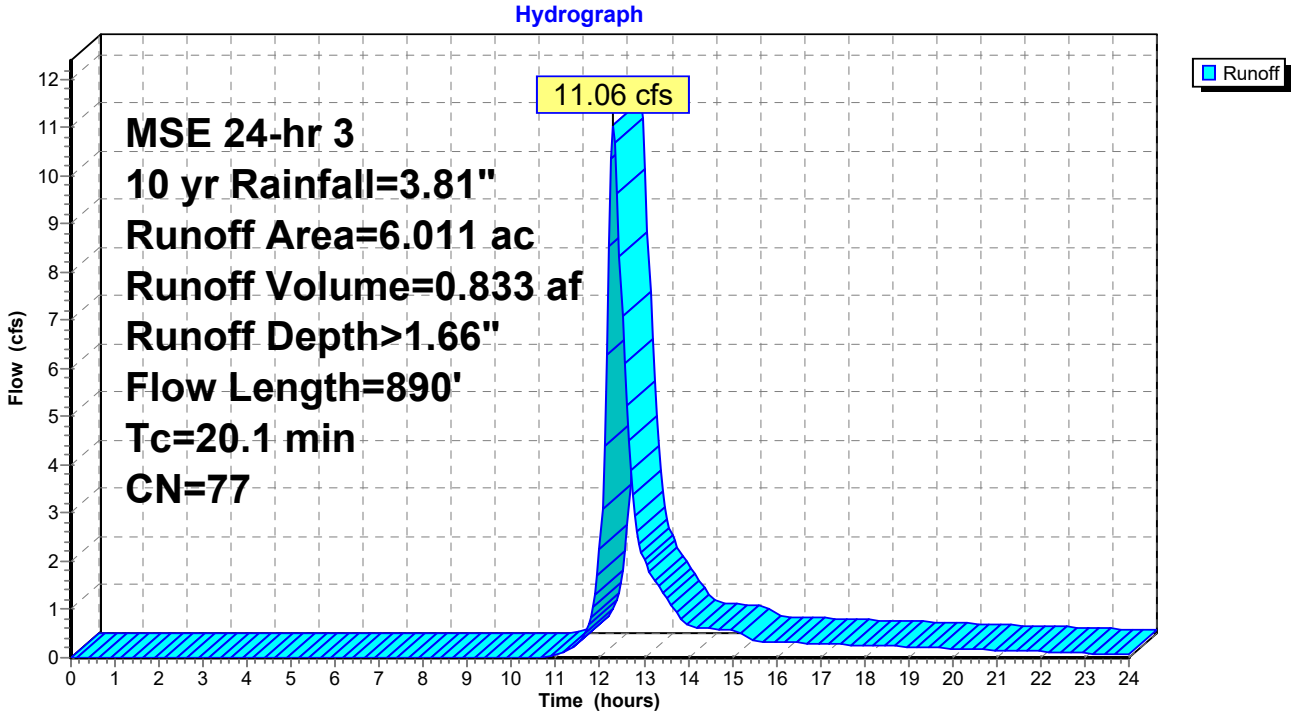
Runoff = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af, Depth> 1.66"
Routed to Pond 1P : E-24" RCPS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	6.011	77	
	6.011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	80	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
4.5	390	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	420	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	890	Total			

Subcatchment E-S: E-S



Summary for Subcatchment E-SW: E-SW

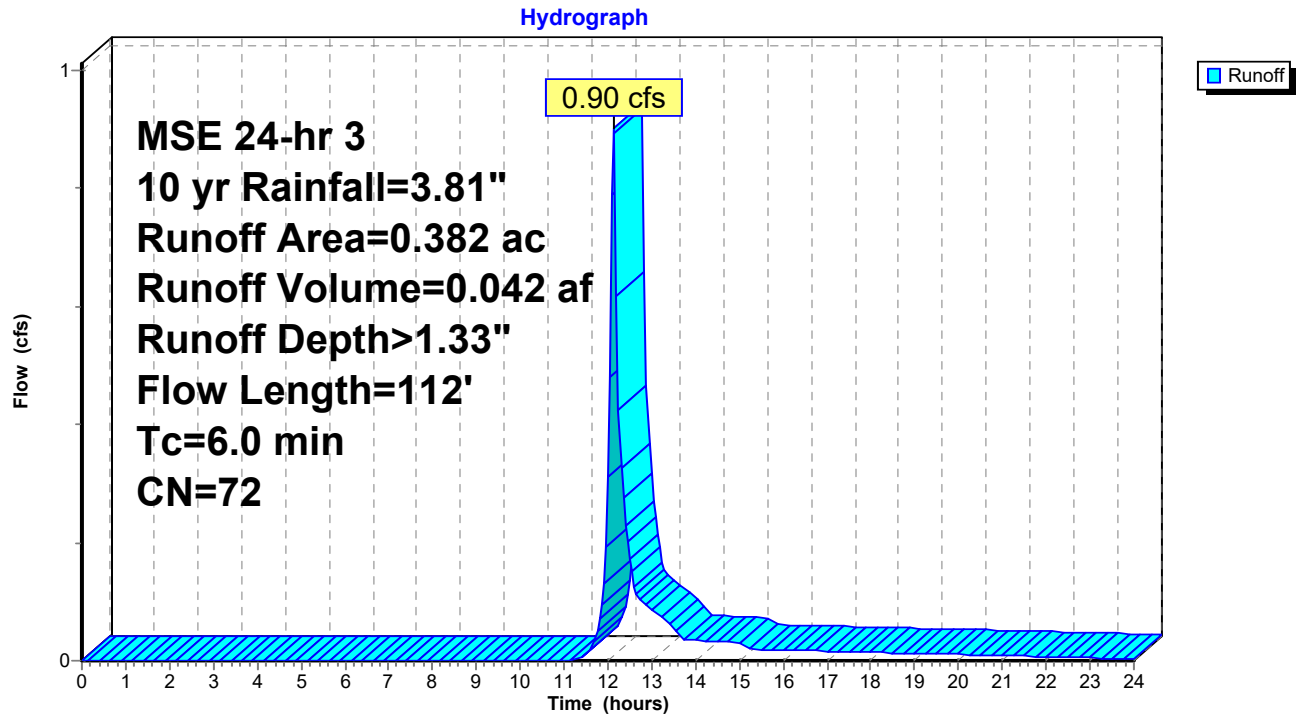
Runoff = 0.90 cfs @ 12.14 hrs, Volume= 0.042 af, Depth> 1.33"
Routed to Link SW : E-SW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.382	72	
	0.382		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	42	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.9	70	0.0325	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	112	Total, Increased to minimum Tc = 6.0 min			

Subcatchment E-SW: E-SW



Summary for Pond 1P: E-24" RCPS

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 1.66" for 10 yr event
Inflow = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af
Outflow = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.4 min
Primary = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af
Routed to Link S : E-S DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 827.59' @ 12.31 hrs Surf.Area= 0.010 ac Storage= 0.003 af

Plug-Flow detention time= 0.1 min calculated for 0.833 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (826.7 - 826.6)

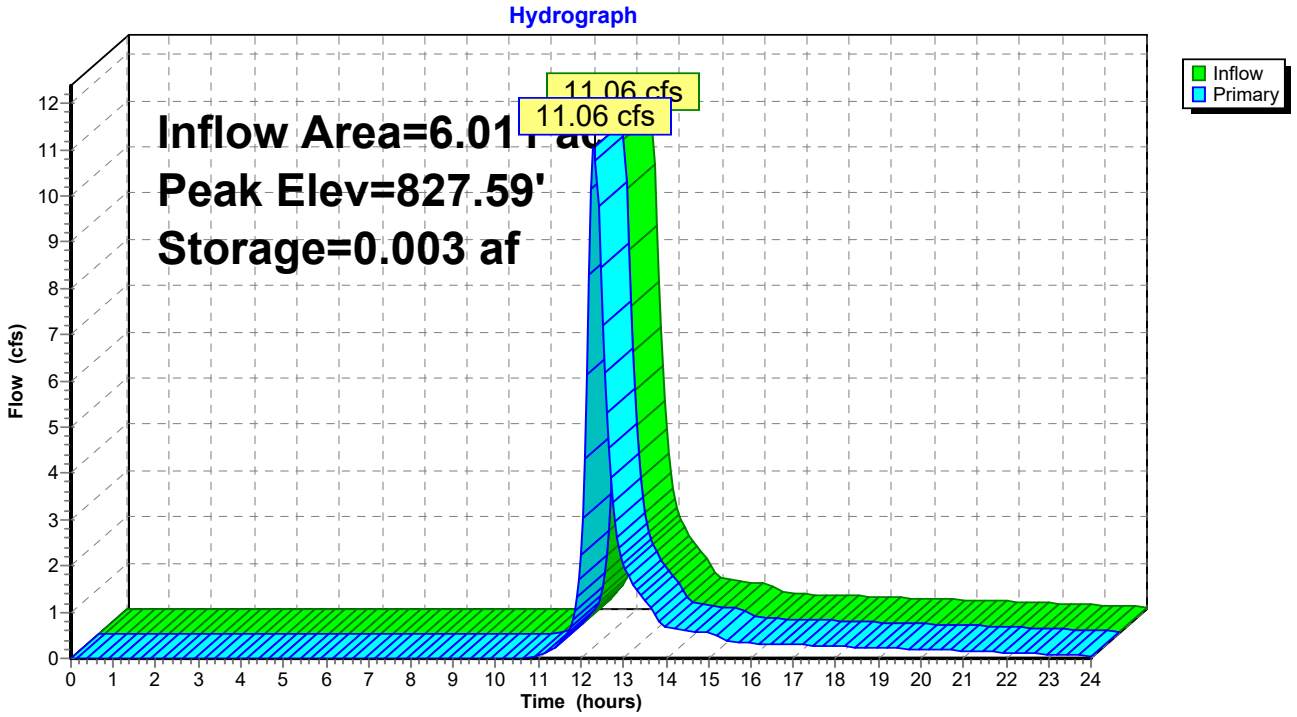
Volume	Invert	Avail.Storage	Storage Description
#1	826.48'	0.694 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
826.48	0.000	0.000	0.000	0.000
827.00	0.001	0.000	0.000	0.001
828.00	0.022	0.009	0.009	0.022
829.00	0.137	0.071	0.081	0.137
830.00	0.292	0.210	0.290	0.292
831.00	0.527	0.404	0.694	0.528

Device	Routing	Invert	Outlet Devices
#1	Primary	826.48'	**24.0" Round WEST - RCP_Round 24"** L= 84.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.48' / 825.46' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Primary	826.67'	**24.0" Round EAST-RCP_Round 24"** L= 90.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.67' / 825.56' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#3	Primary	830.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Primary	830.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=10.95 cfs @ 12.31 hrs HW=827.59' (Free Discharge)
- **1=WEST - RCP_Round 24"** (Inlet Controls 6.38 cfs @ 3.58 fps)
- **2=EAST-RCP_Round 24"** (Inlet Controls 4.57 cfs @ 3.26 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: E-24" RCPS

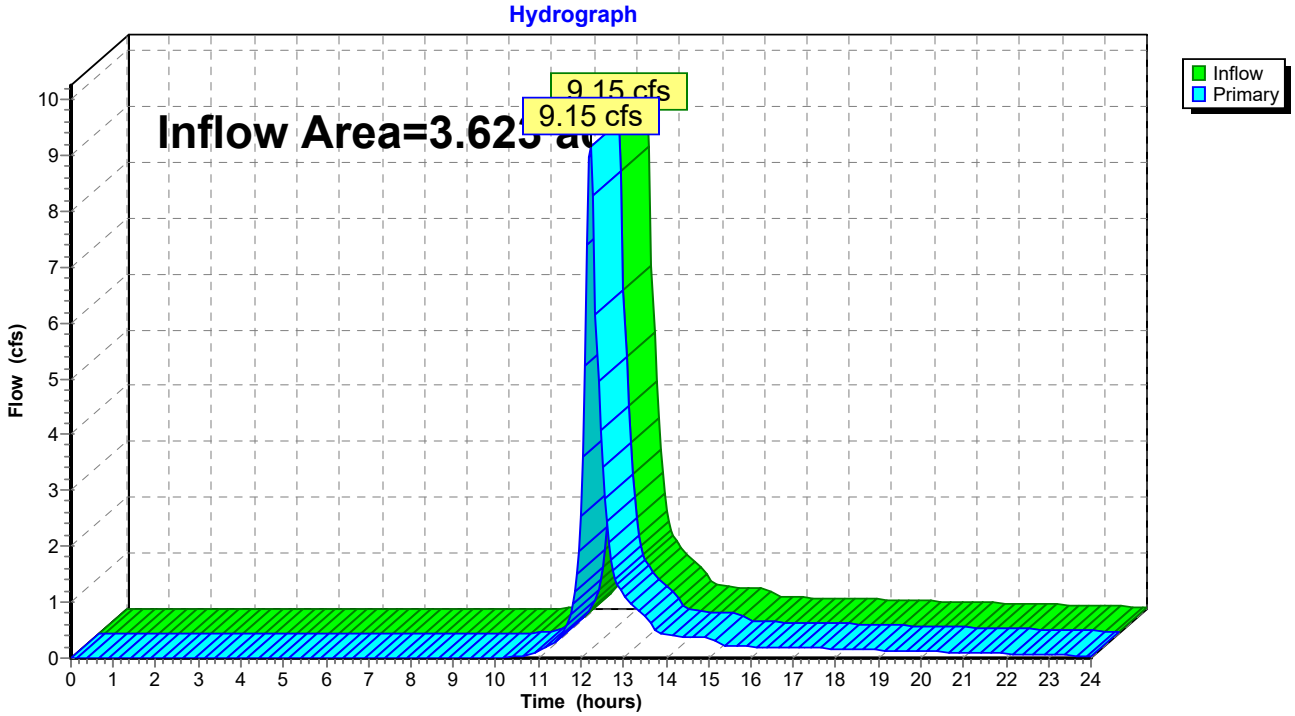


Summary for Link NW: E-NW DISCHARGE

Inflow Area = 3.623 ac, 0.00% Impervious, Inflow Depth > 1.88" for 10 yr event
Inflow = 9.15 cfs @ 12.22 hrs, Volume= 0.569 af
Primary = 9.15 cfs @ 12.22 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: E-NW DISCHARGE

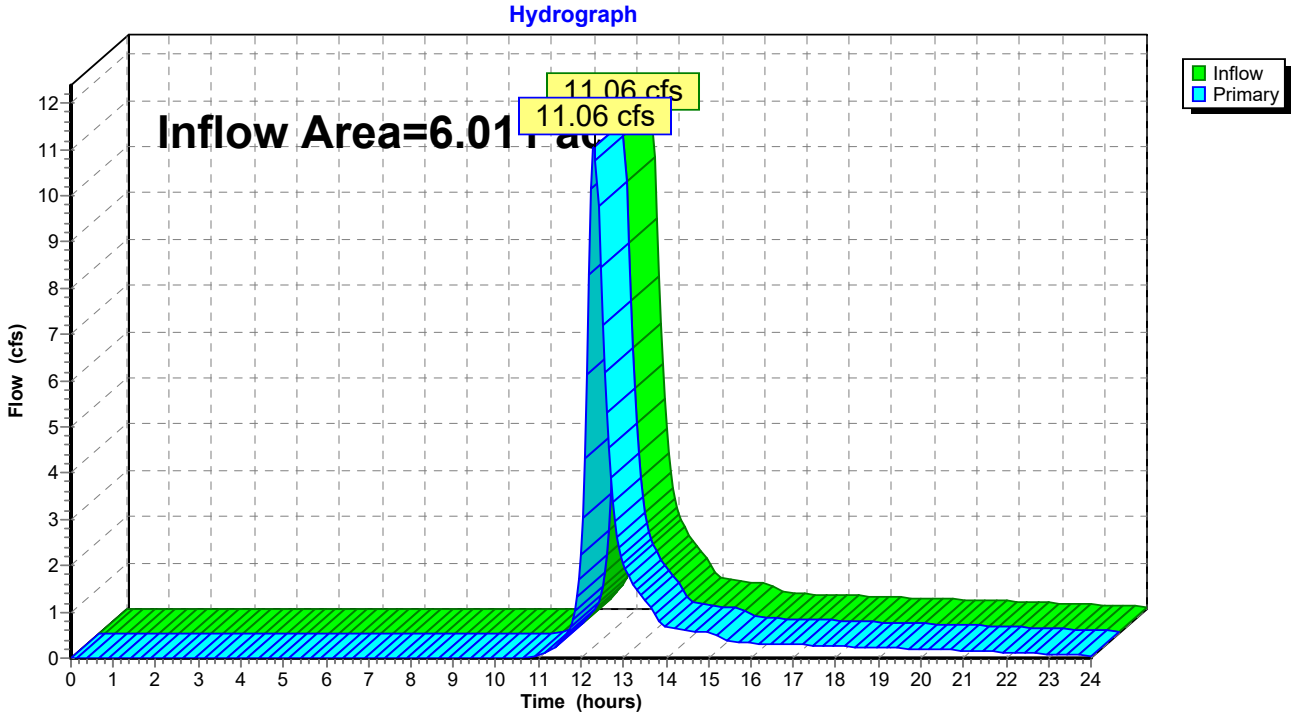


Summary for Link S: E-S DISCHARGE

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 1.66" for 10 yr event
Inflow = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af
Primary = 11.06 cfs @ 12.31 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: E-S DISCHARGE

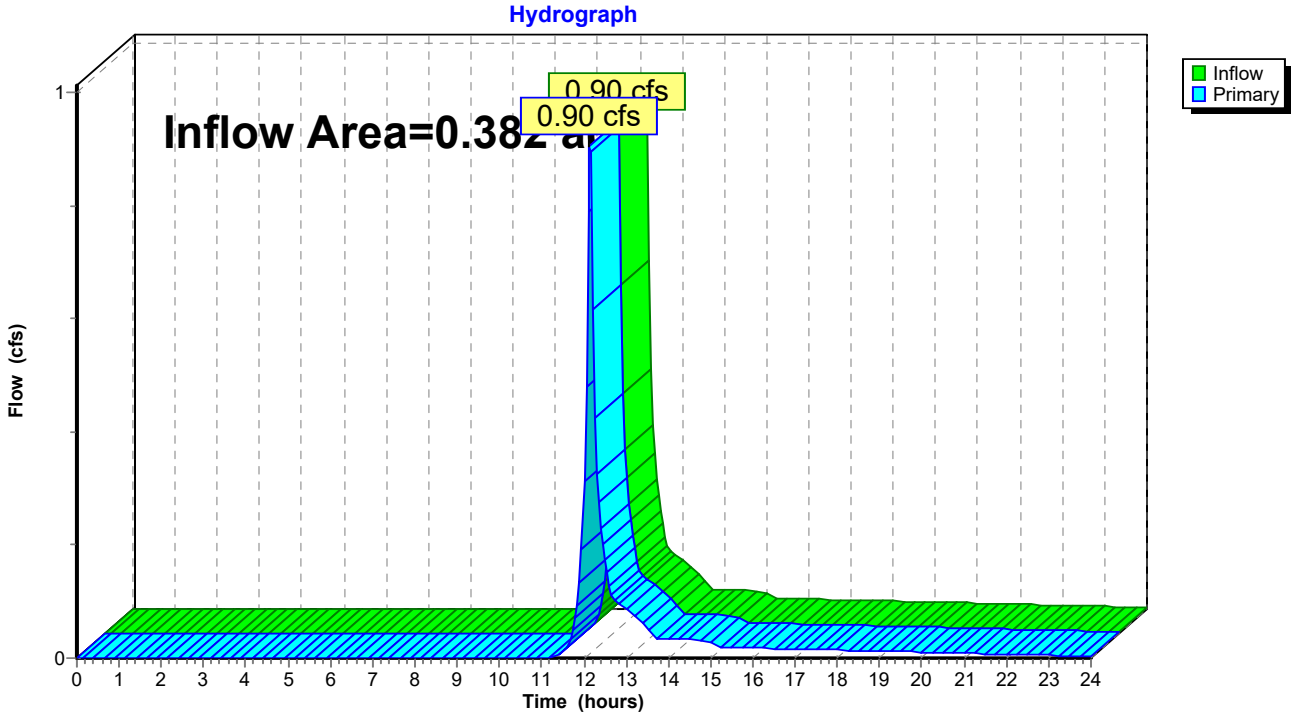


Summary for Link SW: E-SW DISCHARGE

Inflow Area = 0.382 ac, 0.00% Impervious, Inflow Depth > 1.33" for 10 yr event
Inflow = 0.90 cfs @ 12.14 hrs, Volume= 0.042 af
Primary = 0.90 cfs @ 12.14 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SW: E-SW DISCHARGE

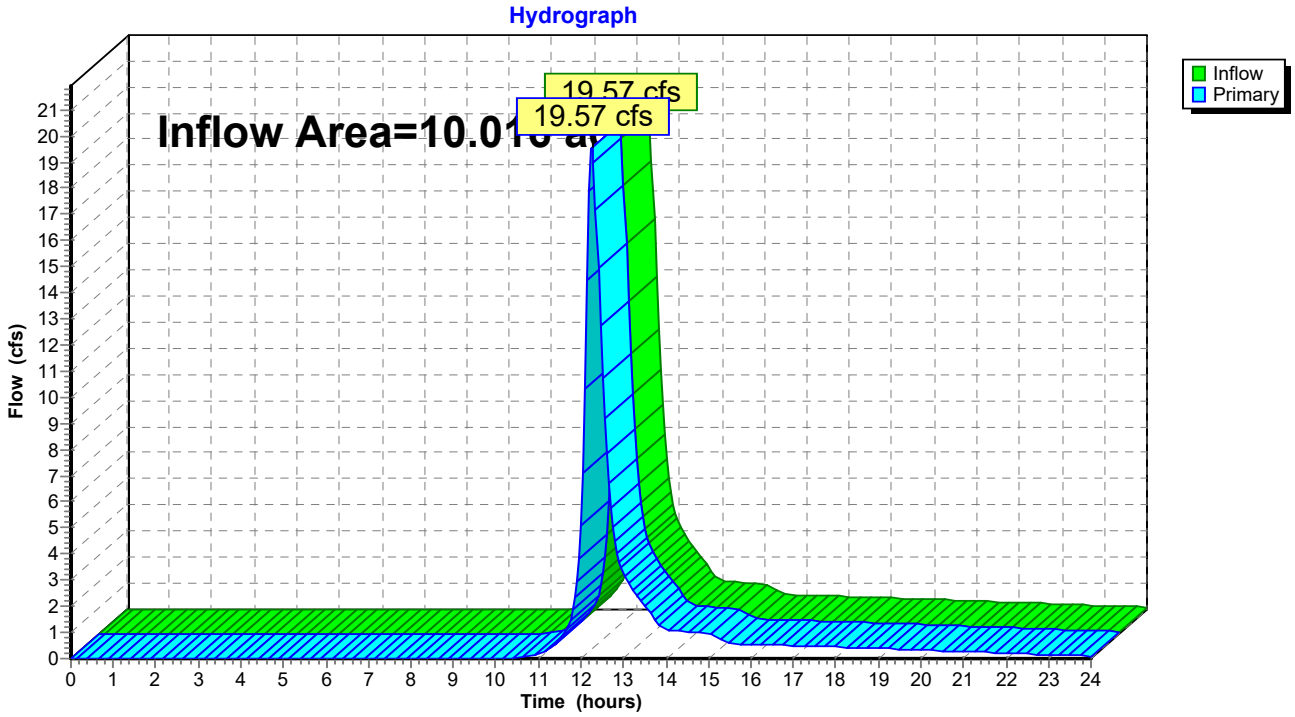


Summary for Link TOTAL: E-TOTAL DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 1.73" for 10 yr event
Inflow = 19.57 cfs @ 12.26 hrs, Volume= 1.444 af
Primary = 19.57 cfs @ 12.26 hrs, Volume= 1.444 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: E-TOTAL DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E-NW: E-NW Runoff Area=3.623 ac 0.00% Impervious Runoff Depth>3.94"
Flow Length=610' Tc=13.7 min CN=80 Runoff=18.99 cfs 1.190 af

Subcatchment E-S: E-S Runoff Area=6.011 ac 0.00% Impervious Runoff Depth>3.63"
Flow Length=890' Tc=20.1 min CN=77 Runoff=24.34 cfs 1.819 af

Subcatchment E-SW: E-SW Runoff Area=0.382 ac 0.00% Impervious Runoff Depth>3.14"
Flow Length=112' Tc=6.0 min CN=72 Runoff=2.15 cfs 0.100 af

Pond 1P: E-24" RCPS Peak Elev=828.22' Storage=0.016 af Inflow=24.34 cfs 1.819 af
Outflow=24.11 cfs 1.819 af

Link NW: E-NW DISCHARGE Inflow=18.99 cfs 1.190 af
Primary=18.99 cfs 1.190 af

Link S: E-S DISCHARGE Inflow=24.11 cfs 1.819 af
Primary=24.11 cfs 1.819 af

Link SW: E-SW DISCHARGE Inflow=2.15 cfs 0.100 af
Primary=2.15 cfs 0.100 af

Link TOTAL: E-TOTAL DISCHARGE Inflow=41.54 cfs 3.109 af
Primary=41.54 cfs 3.109 af

Total Runoff Area = 10.016 ac Runoff Volume = 3.109 af Average Runoff Depth = 3.73"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment E-NW: E-NW

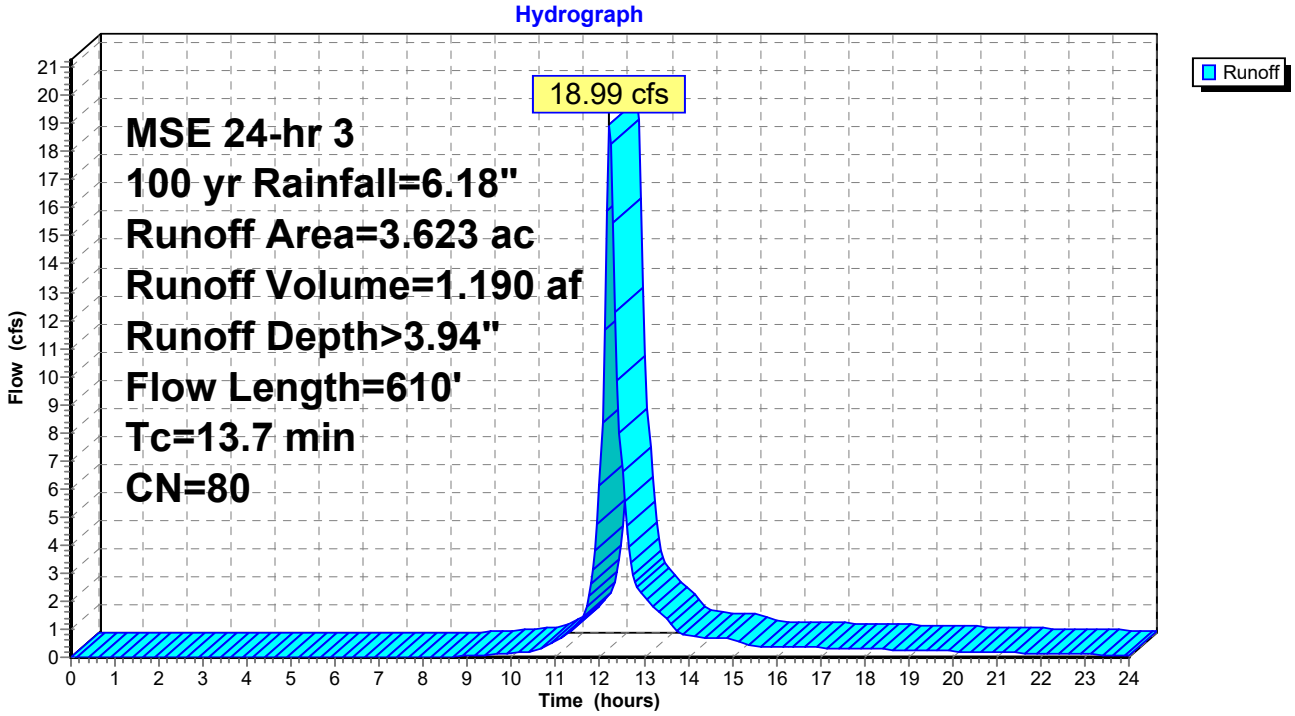
Runoff = 18.99 cfs @ 12.22 hrs, Volume= 1.190 af, Depth> 3.94"
Routed to Link NW : E-NW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	3.623	80	
	3.623		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
4.4	365	0.0750	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	610	Total			

Subcatchment E-NW: E-NW



Summary for Subcatchment E-S: E-S

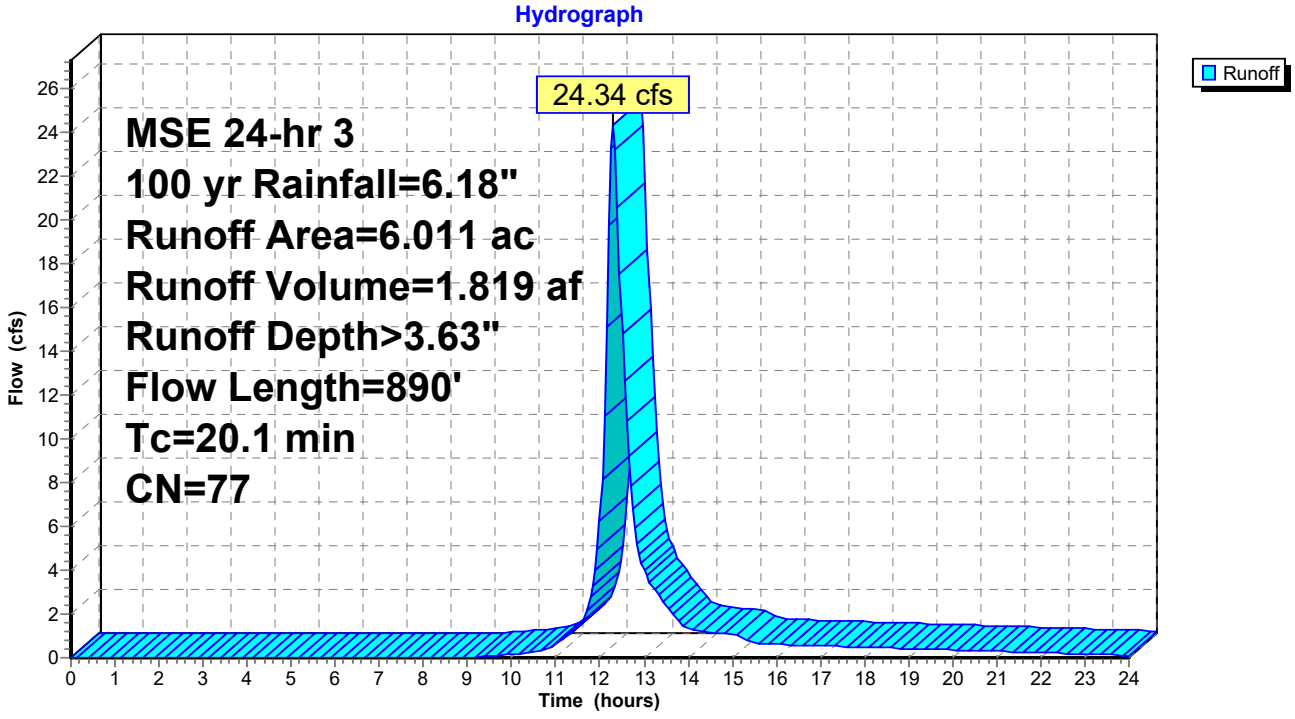
Runoff = 24.34 cfs @ 12.30 hrs, Volume= 1.819 af, Depth> 3.63"
Routed to Pond 1P : E-24" RCPS

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	6.011	77	
	6.011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	80	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
4.5	390	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	420	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.1	890	Total			

Subcatchment E-S: E-S



Summary for Subcatchment E-SW: E-SW

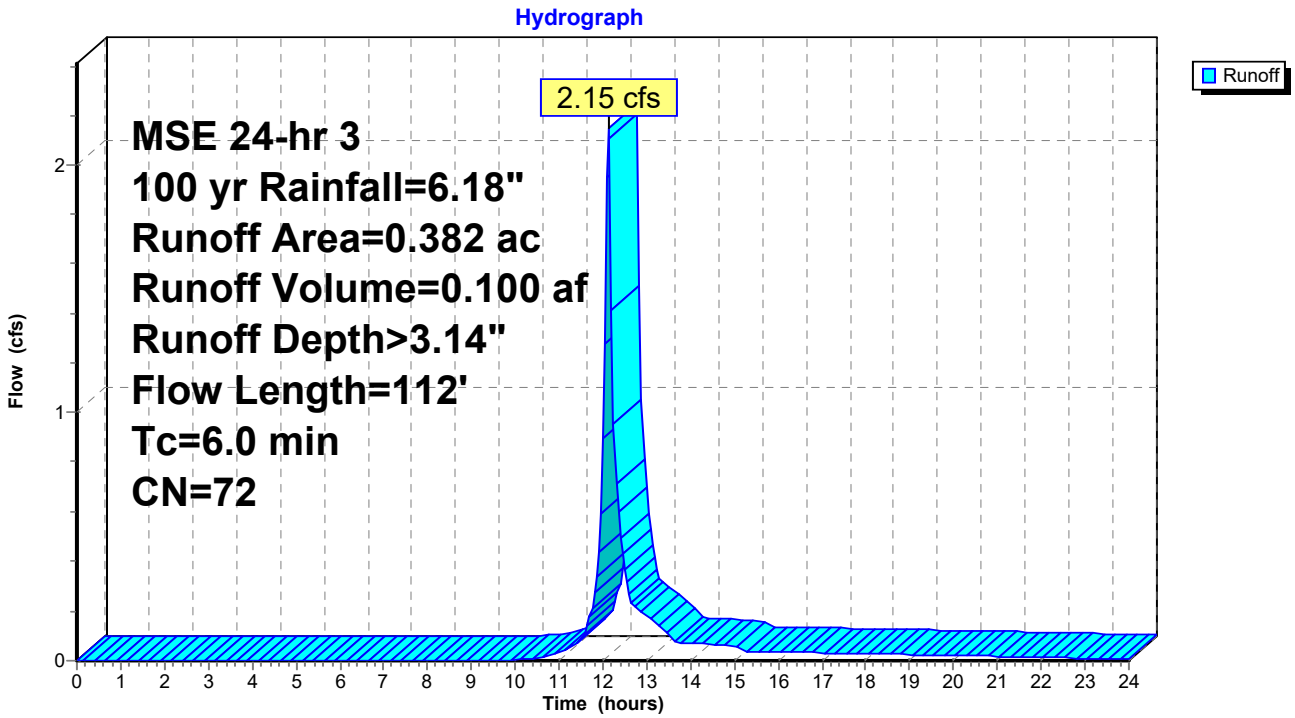
Runoff = 2.15 cfs @ 12.13 hrs, Volume= 0.100 af, Depth> 3.14"
Routed to Link SW : E-SW DISCHARGE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.382	72	
	0.382		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	42	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.9	70	0.0325	1.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.0	112	Total, Increased to minimum Tc = 6.0 min			

Subcatchment E-SW: E-SW



Summary for Pond 1P: E-24" RCPS

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 3.63" for 100 yr event
Inflow = 24.34 cfs @ 12.30 hrs, Volume= 1.819 af
Outflow = 24.11 cfs @ 12.32 hrs, Volume= 1.819 af, Atten= 1%, Lag= 1.2 min
Primary = 24.11 cfs @ 12.32 hrs, Volume= 1.819 af
Routed to Link S : E-S DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.22' @ 12.32 hrs Surf.Area= 0.039 ac Storage= 0.016 af

Plug-Flow detention time= 0.2 min calculated for 1.816 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (810.9 - 810.7)

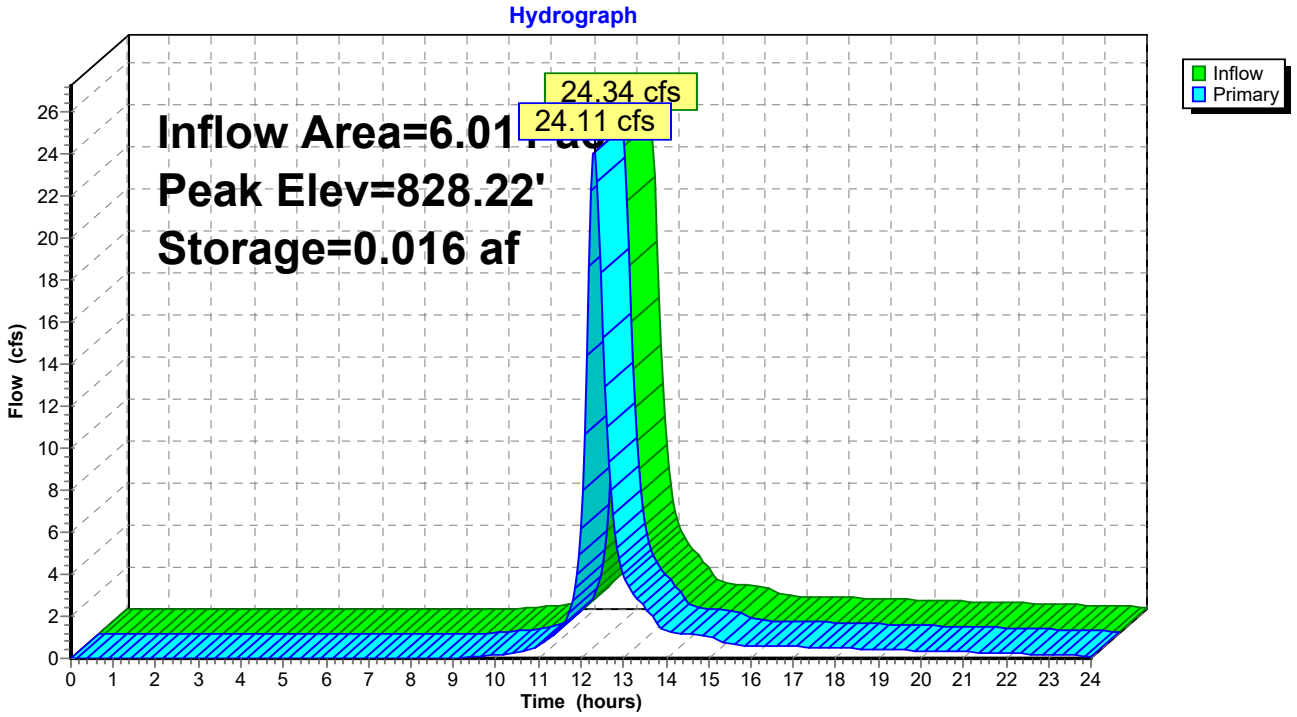
Volume	Invert	Avail.Storage	Storage Description
#1	826.48'	0.694 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
826.48	0.000	0.000	0.000	0.000
827.00	0.001	0.000	0.000	0.001
828.00	0.022	0.009	0.009	0.022
829.00	0.137	0.071	0.081	0.137
830.00	0.292	0.210	0.290	0.292
831.00	0.527	0.404	0.694	0.528

Device	Routing	Invert	Outlet Devices
#1	Primary	826.48'	**24.0" Round WEST - RCP_Round 24"** L= 84.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.48' / 825.46' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Primary	826.67'	**24.0" Round EAST-RCP_Round 24"** L= 90.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 826.67' / 825.56' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#3	Primary	830.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Primary	830.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=23.88 cfs @ 12.32 hrs HW=828.21' (Free Discharge)
- **1=WEST - RCP_Round 24"** (Inlet Controls 12.93 cfs @ 4.48 fps)
- **2=EAST-RCP_Round 24"** (Inlet Controls 10.96 cfs @ 4.22 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: E-24" RCPS

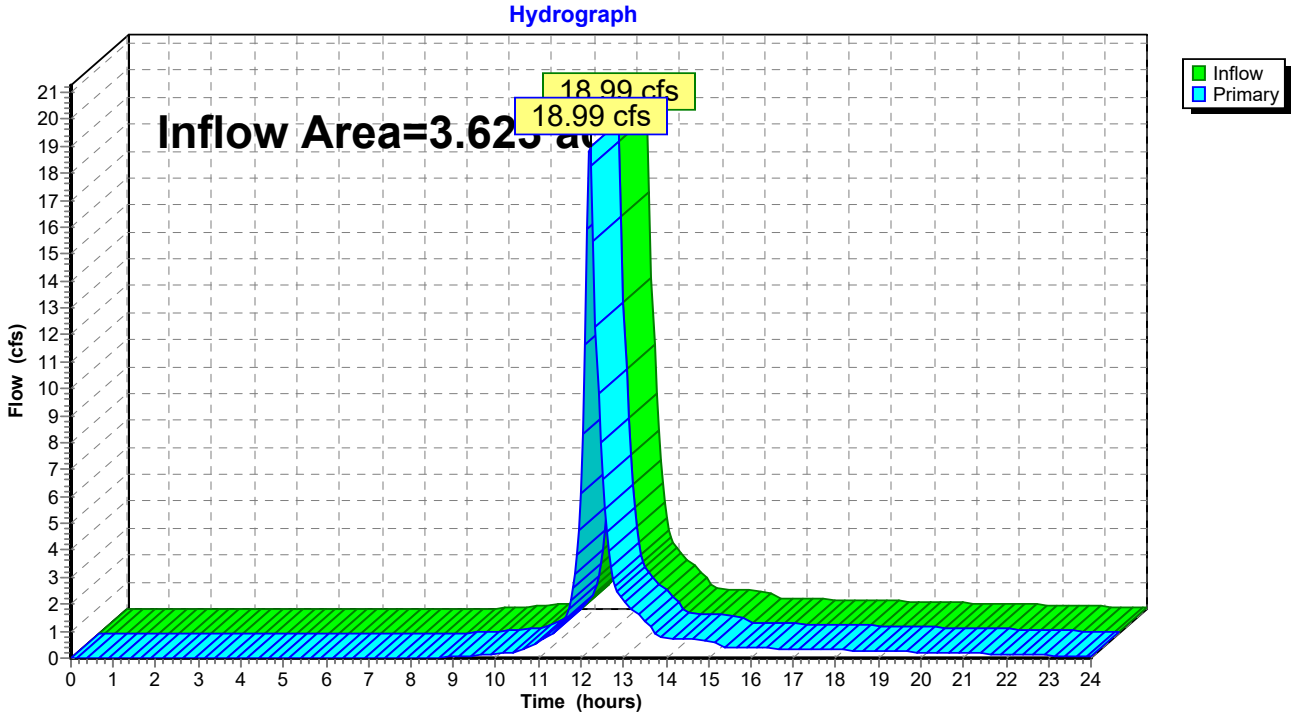


Summary for Link NW: E-NW DISCHARGE

Inflow Area = 3.623 ac, 0.00% Impervious, Inflow Depth > 3.94" for 100 yr event
Inflow = 18.99 cfs @ 12.22 hrs, Volume= 1.190 af
Primary = 18.99 cfs @ 12.22 hrs, Volume= 1.190 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: E-NW DISCHARGE

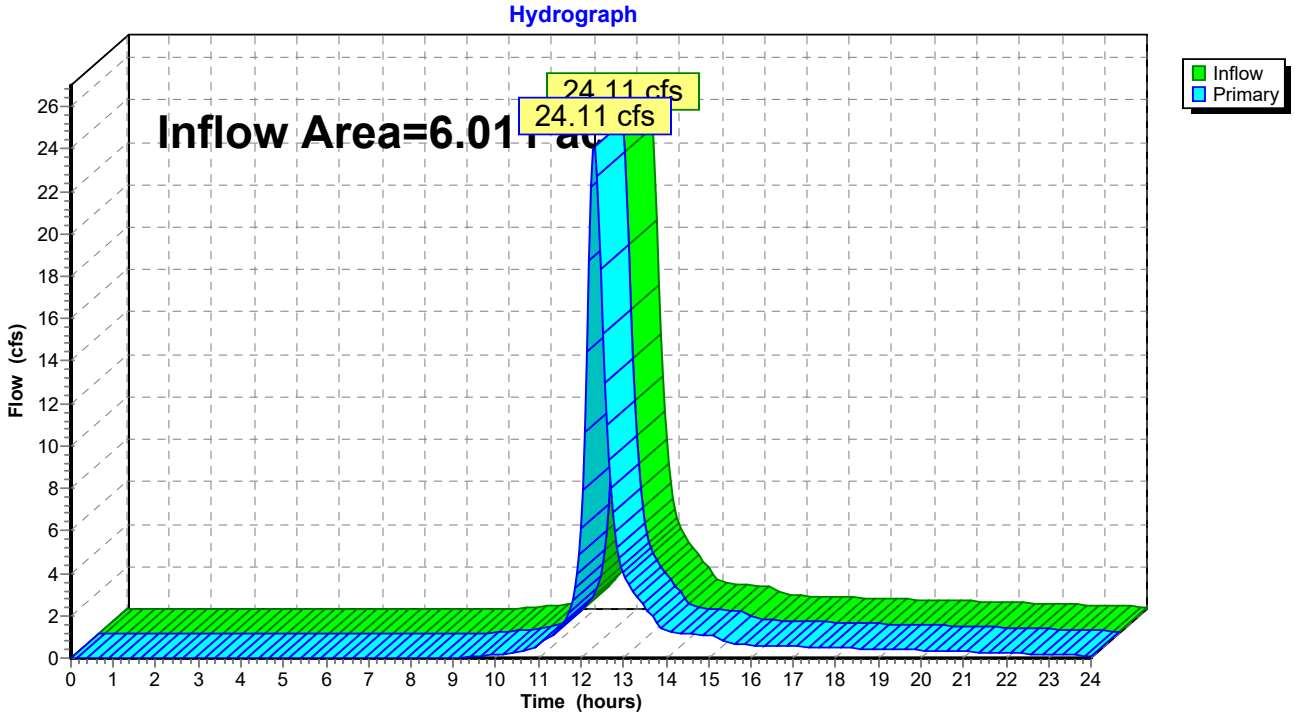


Summary for Link S: E-S DISCHARGE

Inflow Area = 6.011 ac, 0.00% Impervious, Inflow Depth > 3.63" for 100 yr event
Inflow = 24.11 cfs @ 12.32 hrs, Volume= 1.819 af
Primary = 24.11 cfs @ 12.32 hrs, Volume= 1.819 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: E-S DISCHARGE

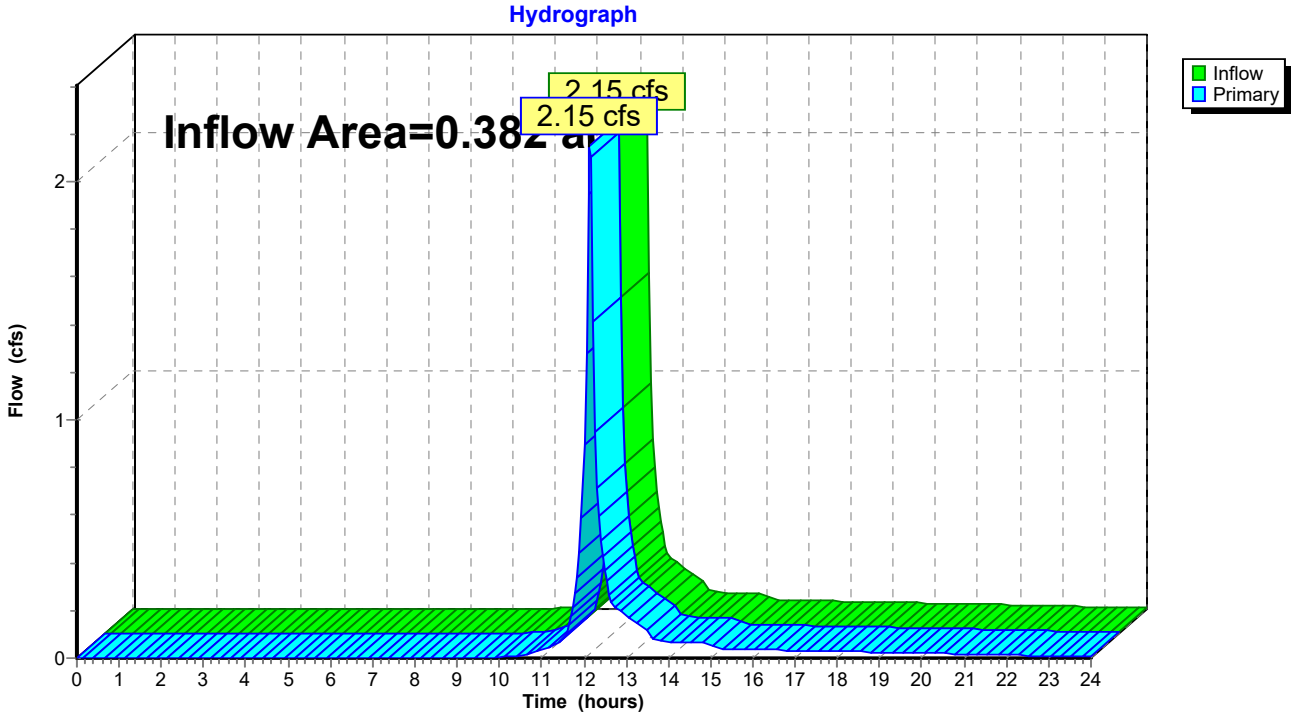


Summary for Link SW: E-SW DISCHARGE

Inflow Area = 0.382 ac, 0.00% Impervious, Inflow Depth > 3.14" for 100 yr event
Inflow = 2.15 cfs @ 12.13 hrs, Volume= 0.100 af
Primary = 2.15 cfs @ 12.13 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : E-TOTAL DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SW: E-SW DISCHARGE

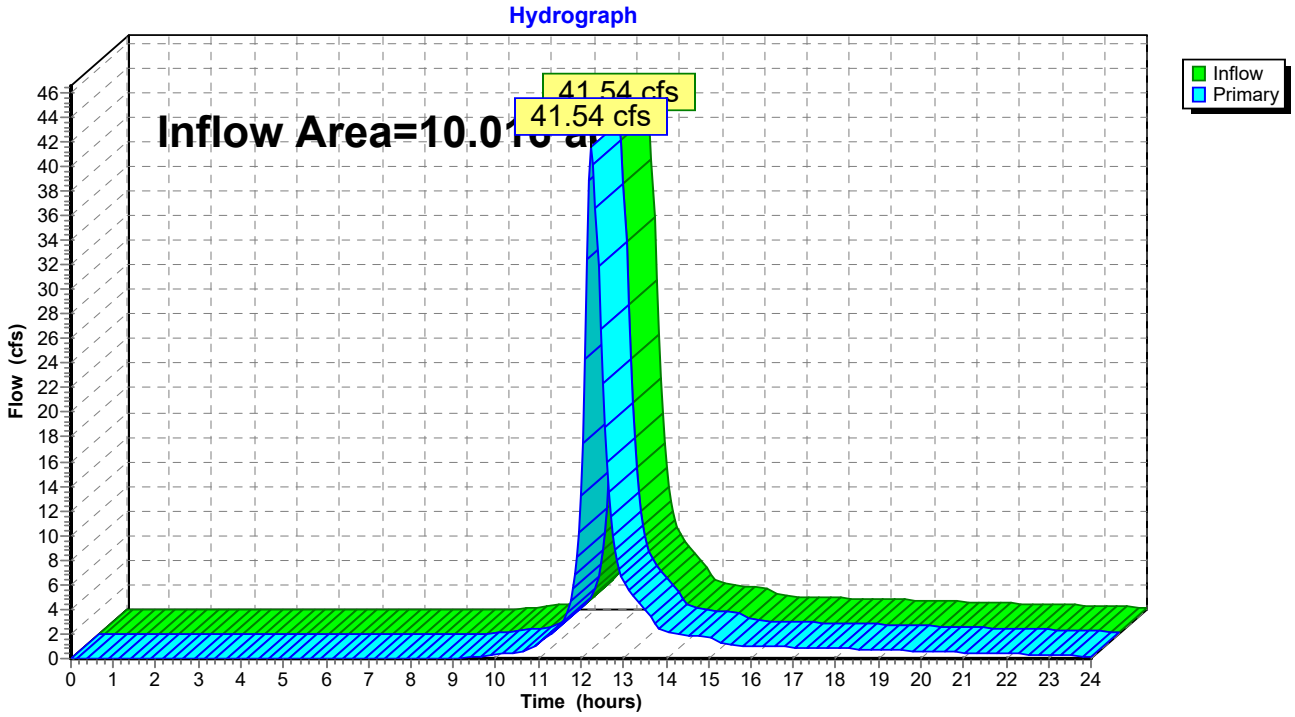


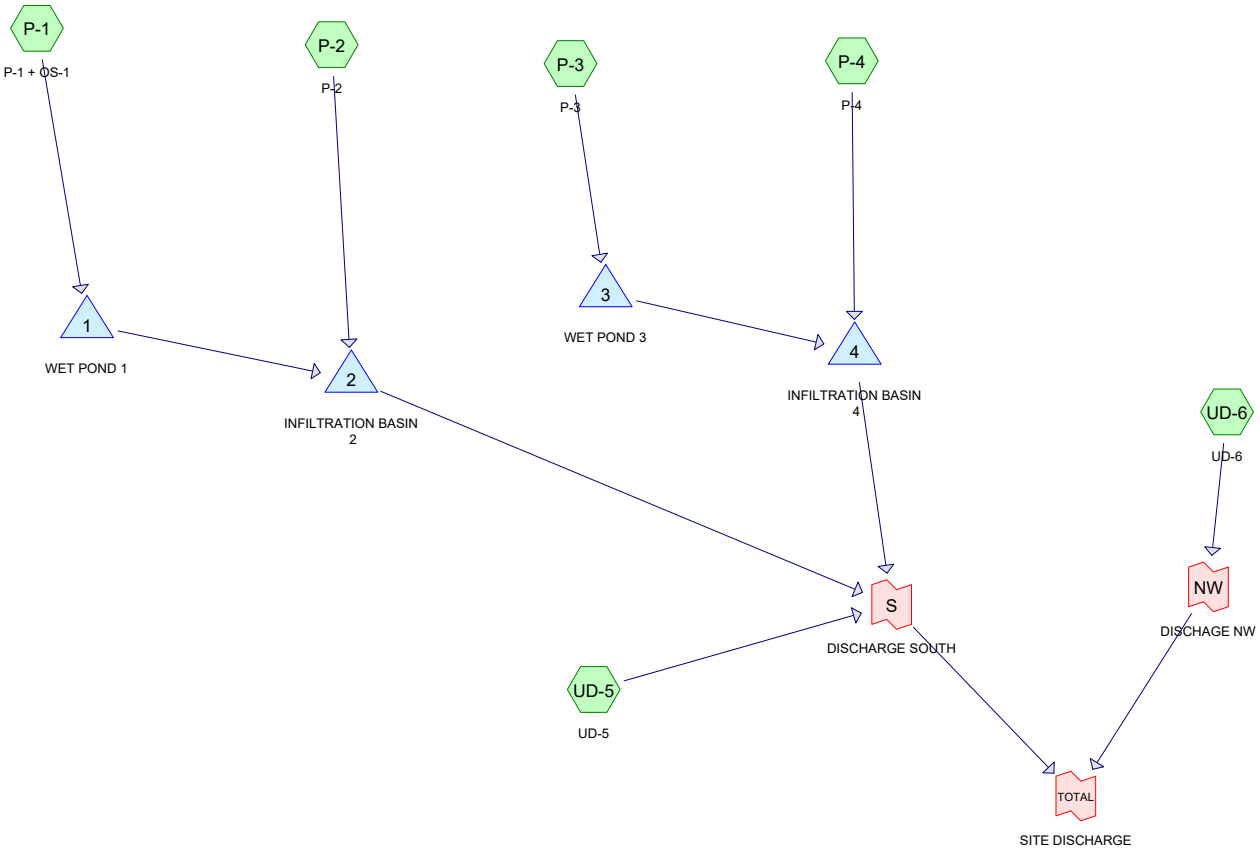
Summary for Link TOTAL: E-TOTAL DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 3.73" for 100 yr event
Inflow = 41.54 cfs @ 12.26 hrs, Volume= 3.109 af
Primary = 41.54 cfs @ 12.26 hrs, Volume= 3.109 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: E-TOTAL DISCHARGE





Subcat Reach Pond Link

Routing Diagram for Proposed_Olde Farm_2023-12-11
Prepared by Trio Engineering, Printed 12/11/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr	MSE 24-hr	3	Default	24.00	1	2.40	2
2	2 yr	MSE 24-hr	3	Default	24.00	1	2.70	2
3	10 yr	MSE 24-hr	3	Default	24.00	1	3.81	2
4	100 yr	MSE 24-hr	3	Default	24.00	1	6.18	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.749	80	(P-2)
1.418	91	(P-3)
0.612	86	(P-4)
1.069	76	(UD-5)
1.026	81	(UD-6)
0.798	89	OS-1 (P-1)
4.344	87	P-1 (P-1)
10.016	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
10.016	Other	P-1, P-2, P-3, P-4, UD-5, UD-6
10.016		**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
0.000	0.000	0.000	0.000	4.874	4.874		P-2, P-3, P-4, UD-5, UD-6
0.000	0.000	0.000	0.000	0.798	0.798	OS-1	P-1
0.000	0.000	0.000	0.000	4.344	4.344	P-1	P-1
0.000	**0.000**	**0.000**	**0.000**	**10.016**	**10.016**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P-1	0.00	0.00	265.0	0.0300	0.013	0.0	12.0	0.0	
2	P-1	0.00	0.00	185.0	0.0520	0.013	0.0	18.0	0.0	
3	P-3	0.00	0.00	90.0	0.0050	0.013	0.0	12.0	0.0	
4	1	830.20	830.00	46.0	0.0043	0.013	0.0	18.0	0.0	
5	2	830.00	829.86	28.2	0.0050	0.013	0.0	18.0	0.0	
6	3	828.00	827.40	117.0	0.0051	0.013	0.0	12.0	0.0	
7	4	827.40	827.13	53.0	0.0051	0.013	0.0	12.0	0.0	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: P-1 + OS-1 Runoff Area=5.142 ac 0.00% Impervious Runoff Depth>1.23"
Flow Length=935' Tc=10.8 min CN=87 Runoff=9.38 cfs 0.526 af

Subcatchment P-2: P-2 Runoff Area=0.749 ac 0.00% Impervious Runoff Depth>0.82"
Flow Length=55' Slope=0.0455 '/' Tc=6.9 min CN=80 Runoff=1.06 cfs 0.051 af

Subcatchment P-3: P-3 Runoff Area=1.418 ac 0.00% Impervious Runoff Depth>1.52"
Flow Length=475' Tc=6.4 min CN=91 Runoff=3.75 cfs 0.180 af

Subcatchment P-4: P-4 Runoff Area=0.612 ac 0.00% Impervious Runoff Depth>1.16"
Flow Length=190' Tc=6.5 min CN=86 Runoff=1.26 cfs 0.059 af

Subcatchment UD-5: UD-5 Runoff Area=1.069 ac 0.00% Impervious Runoff Depth>0.63"
Flow Length=295' Tc=6.2 min CN=76 Runoff=1.16 cfs 0.057 af

Subcatchment UD-6: UD-6 Runoff Area=1.026 ac 0.00% Impervious Runoff Depth>0.87"
Flow Length=115' Tc=6.0 min CN=81 Runoff=1.60 cfs 0.075 af

Pond 1: WET POND 1 Peak Elev=831.27' Storage=0.423 af Inflow=9.38 cfs 0.526 af
Outflow=0.14 cfs 0.121 af

Pond 2: INFILTRATION BASIN 2 Peak Elev=830.97' Storage=0.060 af Inflow=1.06 cfs 0.172 af
Outflow=0.14 cfs 0.115 af

Pond 3: WET POND 3 Peak Elev=828.30' Storage=0.136 af Inflow=3.75 cfs 0.180 af
Outflow=0.10 cfs 0.056 af

Pond 4: INFILTRATION BASIN 4 Peak Elev=828.15' Storage=0.066 af Inflow=1.26 cfs 0.115 af
Outflow=0.08 cfs 0.058 af

Link NW: DISCHAGE NW Inflow=1.60 cfs 0.075 af
Primary=1.60 cfs 0.075 af

Link S: DISCHARGE SOUTH Inflow=1.16 cfs 0.229 af
Primary=1.16 cfs 0.229 af

Link TOTAL: SITE DISCHARGE Inflow=2.76 cfs 0.304 af
Primary=2.76 cfs 0.304 af

Total Runoff Area = 10.016 ac Runoff Volume = 0.947 af Average Runoff Depth = 1.13"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment P-1: P-1 + OS-1

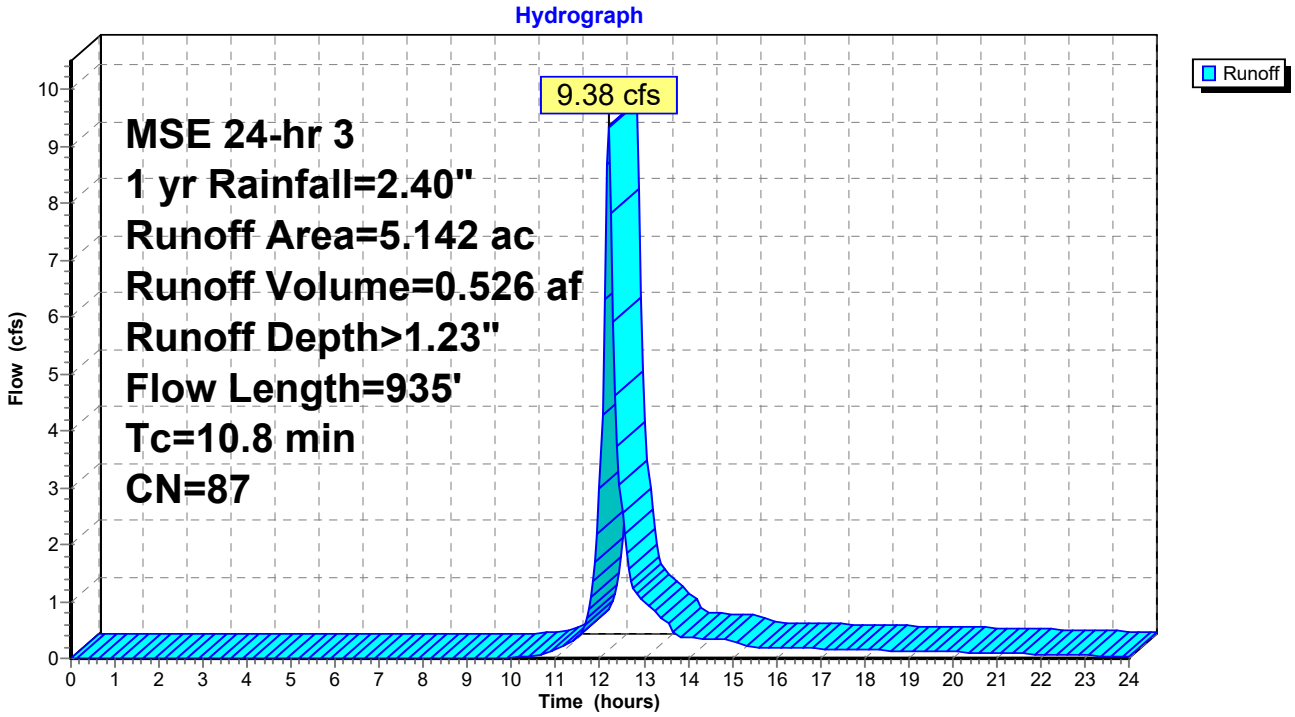
Runoff = 9.38 cfs @ 12.19 hrs, Volume= 0.526 af, Depth> 1.23"
Routed to Pond 1 : WET POND 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	4.344	87	P-1
*	0.798	89	OS-1
	5.142	87	Weighted Average
	5.142		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.7	240	0.0600	5.45	0.37	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.6	265	0.0300	7.86	6.17	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.2	185	0.0520	13.55	23.95	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
10.8	935	Total			

Subcatchment P-1: P-1 + OS-1



Summary for Subcatchment P-2: P-2

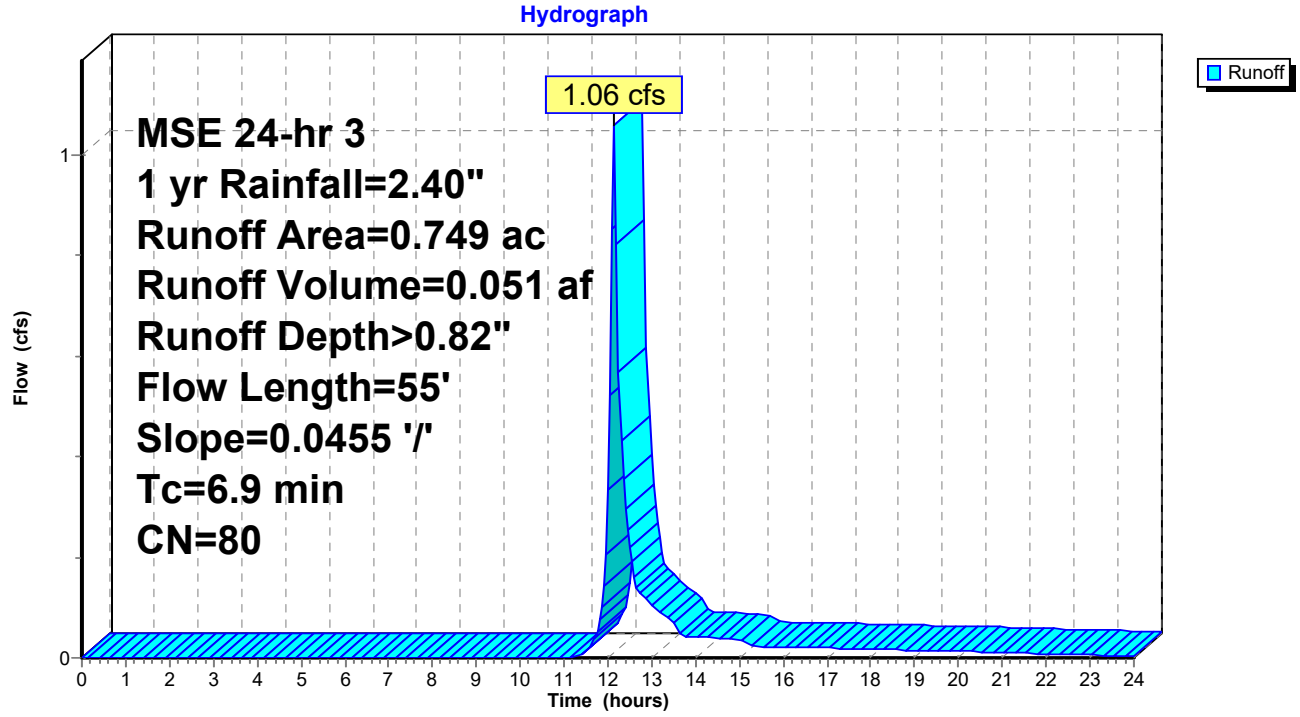
Runoff = 1.06 cfs @ 12.15 hrs, Volume= 0.051 af, Depth> 0.82"
Routed to Pond 2 : INFILTRATION BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.749	80	
	0.749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0455	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"

Subcatchment P-2: P-2



Summary for Subcatchment P-3: P-3

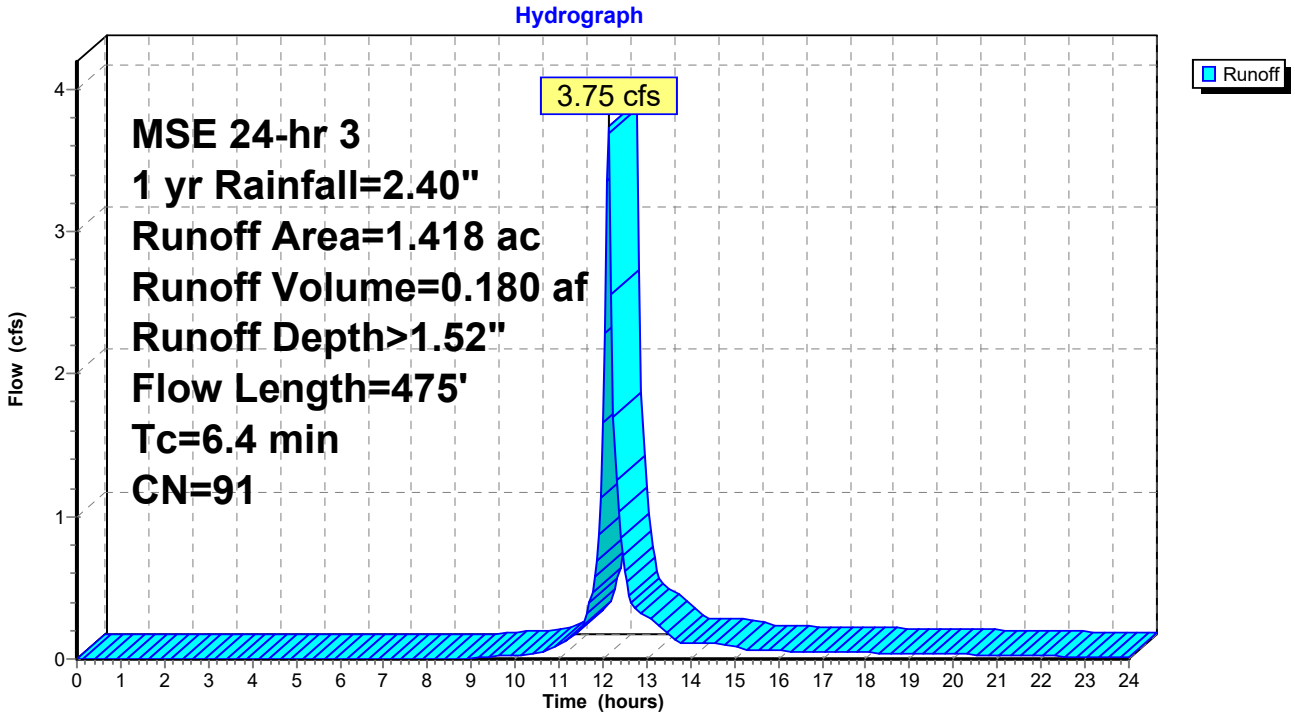
Runoff = 3.75 cfs @ 12.14 hrs, Volume= 0.180 af, Depth> 1.52"
Routed to Pond 3 : WET POND 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	1.418	91	
	1.418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0350	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.9	190	0.0125	1.68		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	175	0.0550	5.22	0.35	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.5	90	0.0050	3.21	2.52	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.4	475	Total			

Subcatchment P-3: P-3



Summary for Subcatchment P-4: P-4

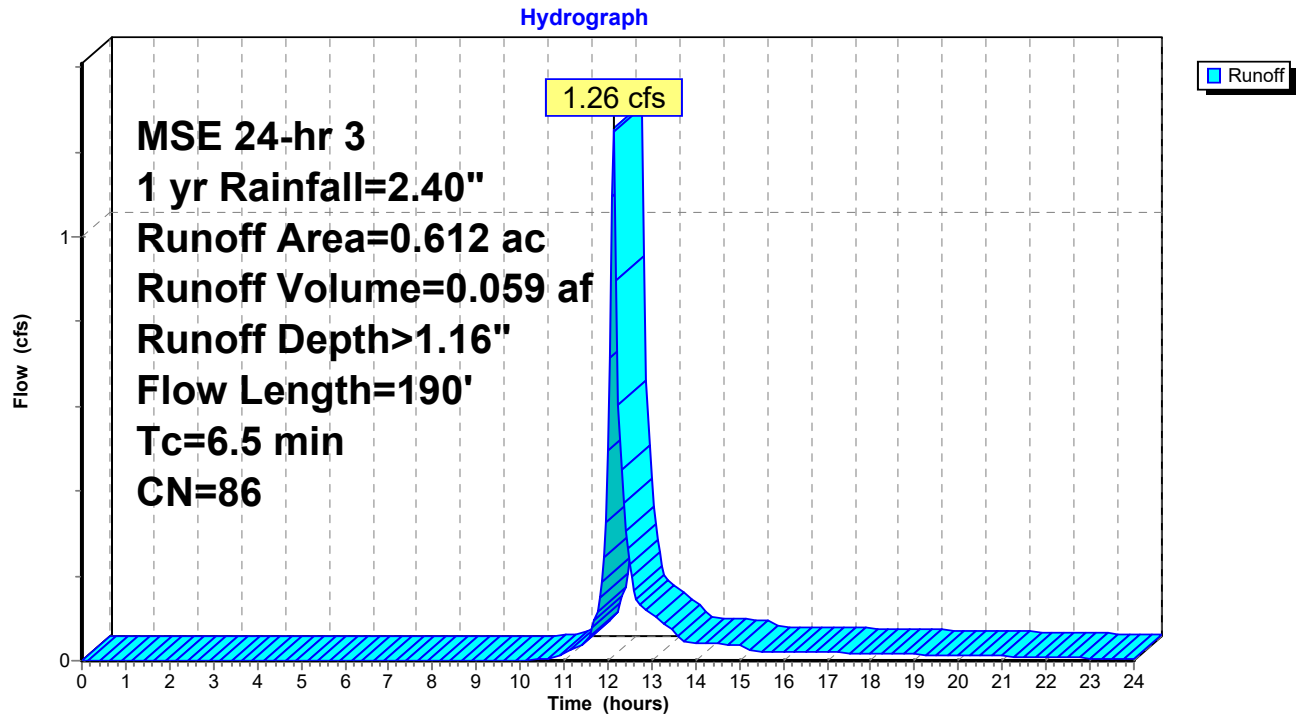
Runoff = 1.26 cfs @ 12.14 hrs, Volume= 0.059 af, Depth> 1.16"
Routed to Pond 4 : INFILTRATION BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.612	86	
	0.612		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	30	0.0300	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.5	160	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	190	Total			

Subcatchment P-4: P-4



Summary for Subcatchment UD-5: UD-5

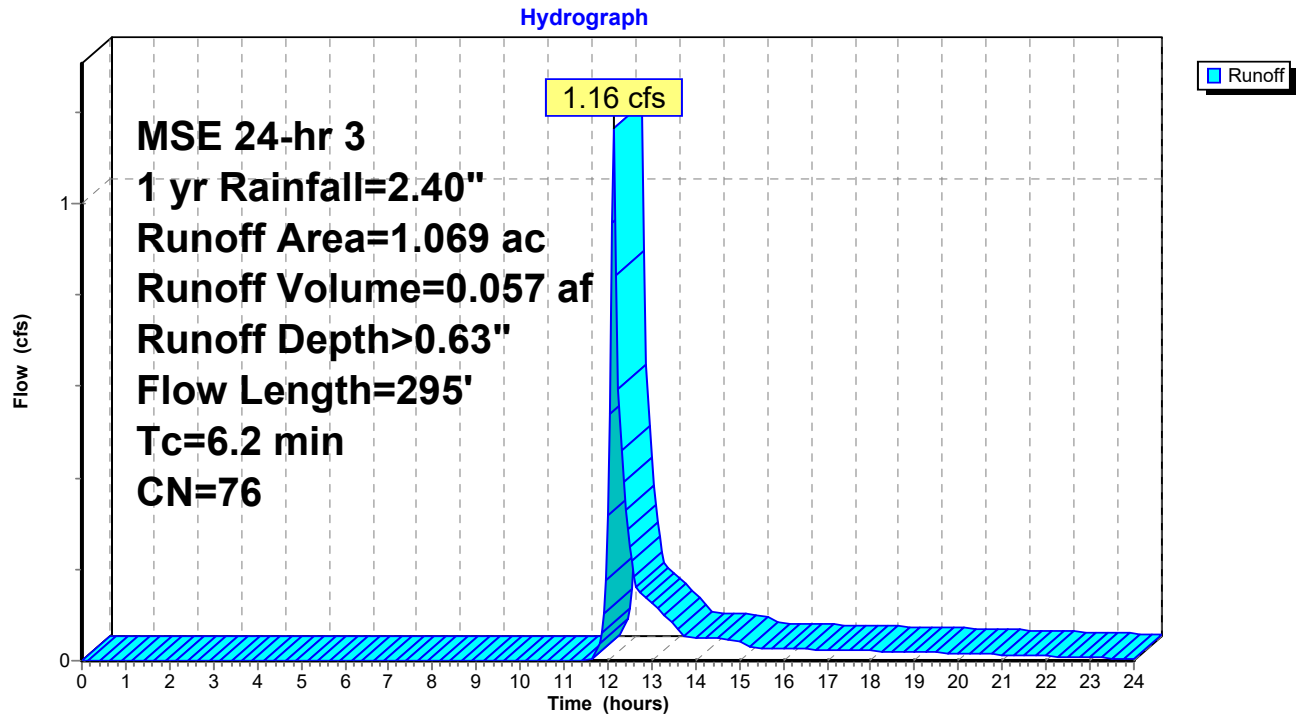
Runoff = 1.16 cfs @ 12.14 hrs, Volume= 0.057 af, Depth> 0.63"
Routed to Link S : DISCHARGE SOUTH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	1.069	76	
	1.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	35	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.7	260	0.0115	1.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.2	295	Total			

Subcatchment UD-5: UD-5



Summary for Subcatchment UD-6: UD-6

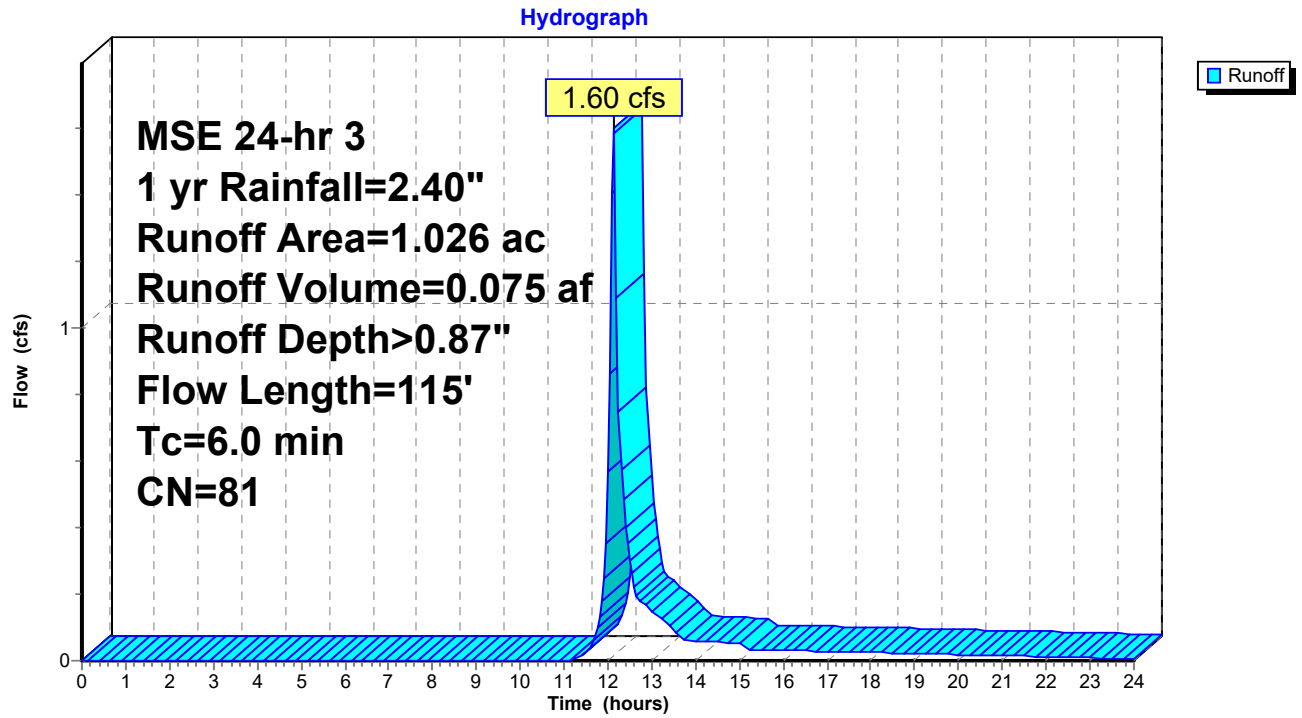
Runoff = 1.60 cfs @ 12.14 hrs, Volume= 0.075 af, Depth> 0.87"
Routed to Link NW : DISCHAGE NW

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1 yr Rainfall=2.40"

	Area (ac)	CN	Description
*	1.026	81	
	1.026		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	75	0.1500	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	115	Total, Increased to minimum Tc = 6.0 min			

Subcatchment UD-6: UD-6



Summary for Pond 1: WET POND 1

Inflow Area = 5.142 ac, 0.00% Impervious, Inflow Depth > 1.23" for 1 yr event
Inflow = 9.38 cfs @ 12.19 hrs, Volume= 0.526 af
Outflow = 0.14 cfs @ 15.15 hrs, Volume= 0.121 af, Atten= 99%, Lag= 177.5 min
Primary = 0.14 cfs @ 15.15 hrs, Volume= 0.121 af
Routed to Pond 2 : INFILTRATION BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 831.27' @ 18.96 hrs Surf.Area= 0.181 ac Storage= 0.423 af

Plug-Flow detention time= 381.3 min calculated for 0.121 af (23% of inflow)
Center-of-Mass det. time= 283.0 min (1,093.5 - 810.5)

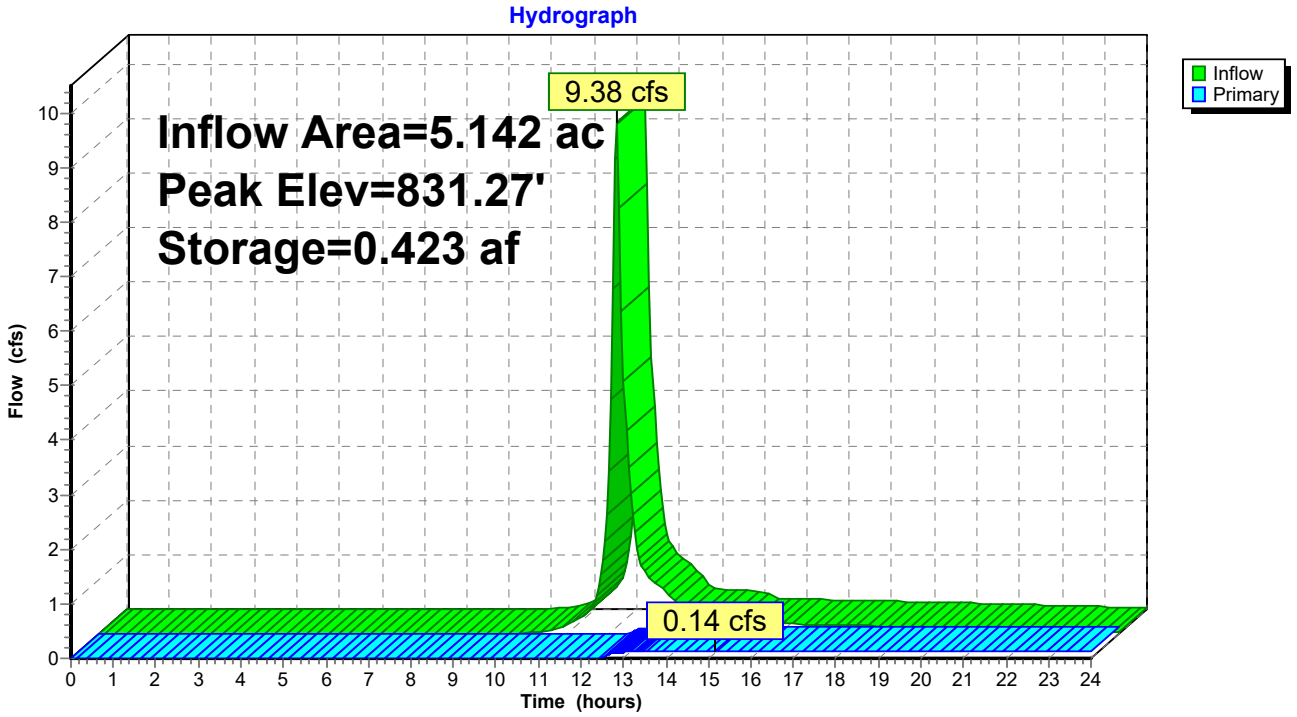
Volume	Invert	Avail.Storage	Storage Description
#1	825.20'	1.478 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
825.20	0.027	0.000	0.000	0.027
826.20	0.035	0.031	0.031	0.036
827.20	0.043	0.039	0.070	0.044
828.20	0.053	0.048	0.118	0.055
829.20	0.063	0.058	0.176	0.066
830.20	0.121	0.090	0.266	0.124
831.00	0.157	0.111	0.377	0.160
832.00	0.252	0.203	0.580	0.256
833.00	0.324	0.287	0.867	0.328
834.00	0.399	0.361	1.228	0.404
834.60	0.436	0.250	1.478	0.441

Device	Routing	Invert	Outlet Devices
#1	Primary	830.20'	**18.0" Round RCP_Round 18"** L= 46.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.20' / 830.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.20'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	833.60'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.14 cfs @ 15.15 hrs HW=831.21' TW=830.87' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.14 cfs of 2.76 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.14 cfs @ 2.83 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1: WET POND 1



Summary for Pond 2: INFILTRATION BASIN 2

Inflow Area = 5.891 ac, 0.00% Impervious, Inflow Depth > 0.35" for 1 yr event
Inflow = 1.06 cfs @ 12.15 hrs, Volume= 0.172 af
Outflow = 0.14 cfs @ 20.47 hrs, Volume= 0.115 af, Atten= 87%, Lag= 499.3 min
Primary = 0.14 cfs @ 20.47 hrs, Volume= 0.115 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 830.97' @ 20.47 hrs Surf.Area= 0.078 ac Storage= 0.060 af

Plug-Flow detention time= 252.9 min calculated for 0.115 af (67% of inflow)
Center-of-Mass det. time= 119.9 min (1,134.0 - 1,014.1)

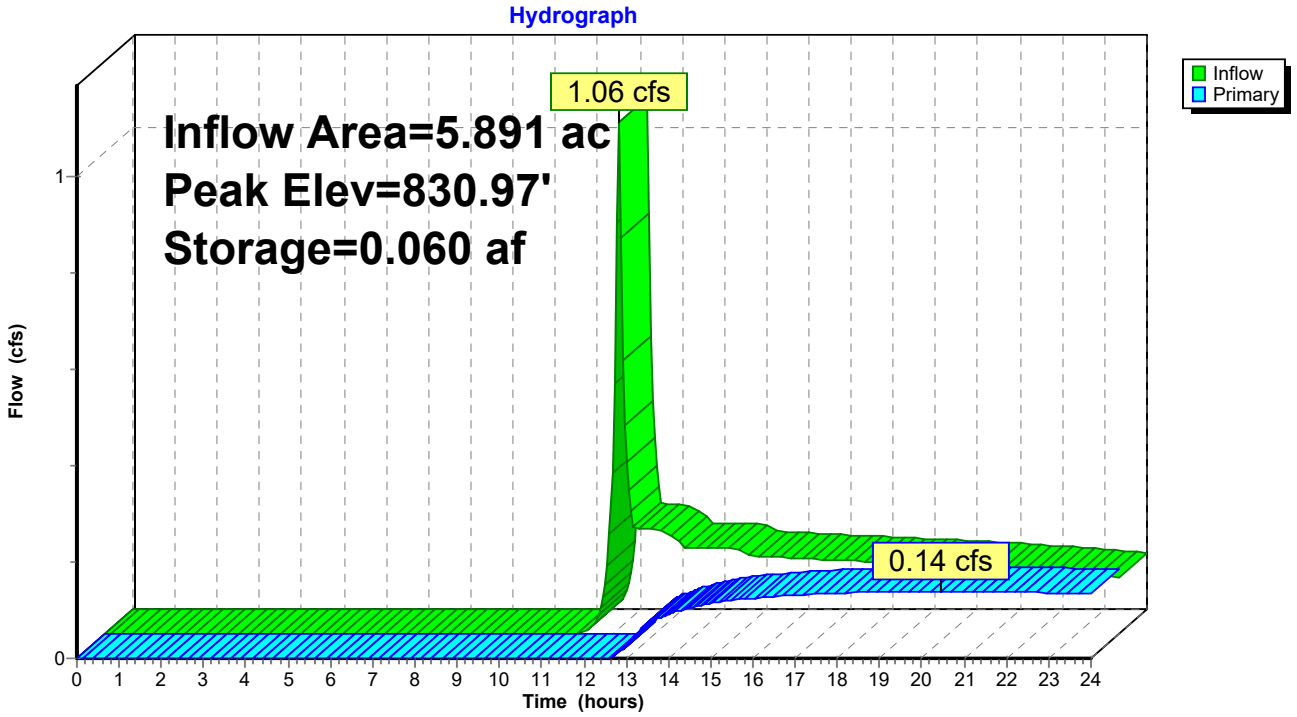
Volume	Invert	Avail.Storage	Storage Description
#1	830.00'	0.392 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
830.00	0.047	0.000	0.000	0.047
831.00	0.079	0.062	0.062	0.079
832.00	0.120	0.099	0.161	0.121
833.00	0.166	0.142	0.303	0.167
833.50	0.190	0.089	0.392	0.191

Device	Routing	Invert	Outlet Devices
#1	Primary	830.00'	**18.0" Round RCP_Round 18"** L= 28.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.00' / 829.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.50'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.10'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	832.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.14 cfs @ 20.47 hrs HW=830.97' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.14 cfs of 2.97 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.14 cfs @ 2.84 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2: INFILTRATION BASIN 2



Summary for Pond 3: WET POND 3

Inflow Area = 1.418 ac, 0.00% Impervious, Inflow Depth > 1.52" for 1 yr event
Inflow = 3.75 cfs @ 12.14 hrs, Volume= 0.180 af
Outflow = 0.10 cfs @ 14.98 hrs, Volume= 0.056 af, Atten= 97%, Lag= 170.5 min
Primary = 0.10 cfs @ 14.98 hrs, Volume= 0.056 af
Routed to Pond 4 : INFILTRATION BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.30' @ 14.98 hrs Surf.Area= 0.081 ac Storage= 0.136 af

Plug-Flow detention time= 326.5 min calculated for 0.056 af (31% of inflow)
Center-of-Mass det. time= 235.2 min (1,029.2 - 794.0)

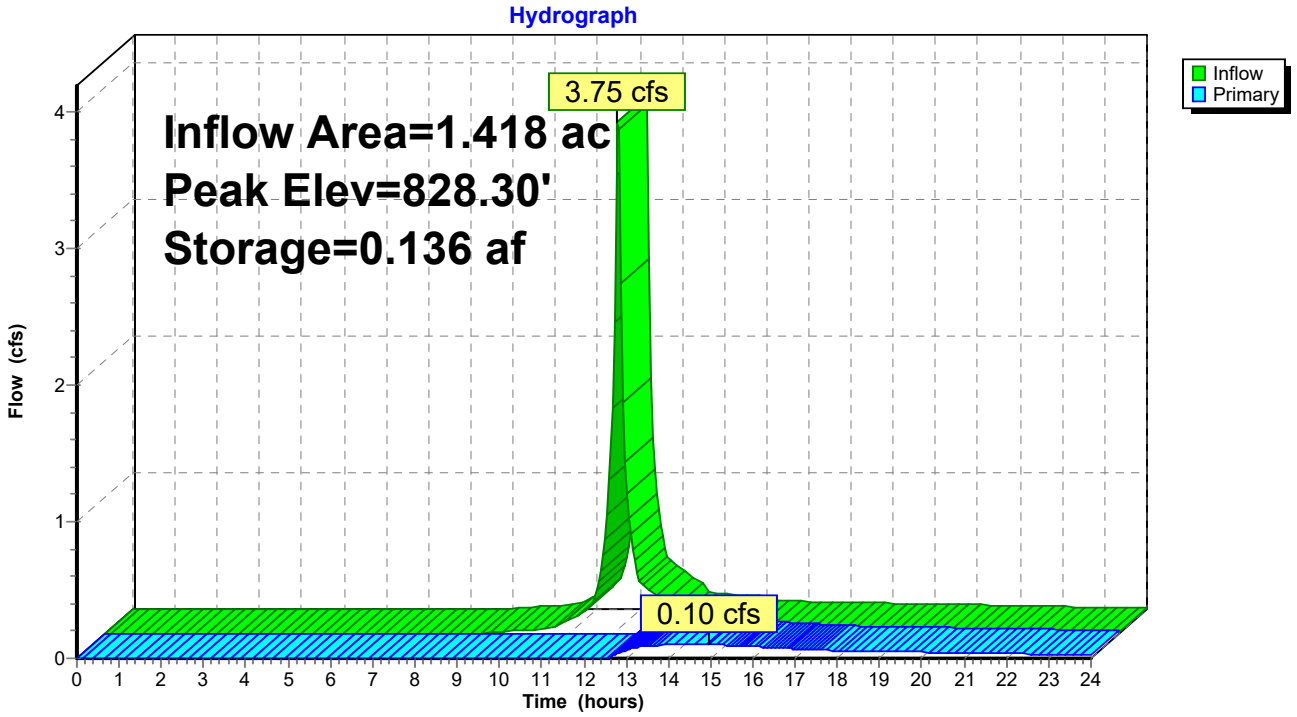
Volume	Invert	Avail.Storage	Storage Description
#1	823.00'	0.633 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
823.00	0.005	0.000	0.000	0.005
824.00	0.010	0.007	0.007	0.010
825.00	0.015	0.012	0.020	0.016
826.00	0.022	0.018	0.038	0.023
827.00	0.029	0.025	0.064	0.030
828.00	0.073	0.049	0.113	0.075
829.00	0.100	0.086	0.199	0.102
830.00	0.128	0.114	0.313	0.131
831.00	0.159	0.143	0.456	0.162
832.00	0.195	0.177	0.633	0.199

Device	Routing	Invert	Outlet Devices
#1	Primary	828.00'	**12.0" Round RCP_Round 12"** L= 117.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 828.00' / 827.40' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	828.00'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	830.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	831.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.10 cfs @ 14.98 hrs HW=828.30' TW=828.10' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.10 cfs of 0.15 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.10 cfs @ 2.02 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3: WET POND 3



Summary for Pond 4: INFILTRATION BASIN 4

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 0.68" for 1 yr event
Inflow = 1.26 cfs @ 12.14 hrs, Volume= 0.115 af
Outflow = 0.08 cfs @ 17.19 hrs, Volume= 0.058 af, Atten= 93%, Lag= 302.9 min
Primary = 0.08 cfs @ 17.19 hrs, Volume= 0.058 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.15' @ 17.19 hrs Surf.Area= 0.096 ac Storage= 0.066 af

Plug-Flow detention time= 368.2 min calculated for 0.058 af (50% of inflow)
Center-of-Mass det. time= 209.8 min (1,125.7 - 915.9)

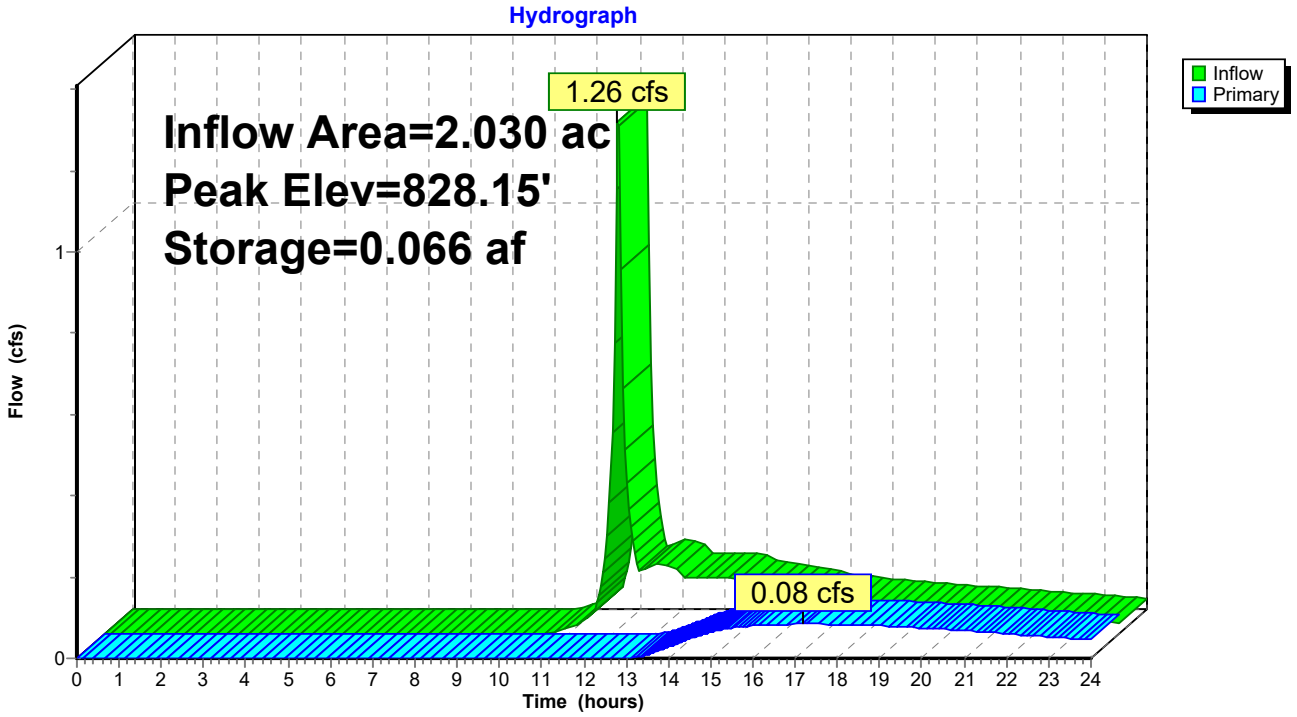
Volume	Invert	Avail.Storage	Storage Description
#1	827.40'	0.447 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
827.40	0.079	0.000	0.000	0.079
828.00	0.092	0.051	0.051	0.092
829.00	0.118	0.105	0.156	0.119
830.00	0.145	0.131	0.287	0.147
831.00	0.176	0.160	0.447	0.178

Device	Routing	Invert	Outlet Devices
#1	Primary	827.40'	**12.0" Round RCP_Round 12"** L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 827.40' / 827.13' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	827.90'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	829.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	830.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 17.19 hrs HW=828.15' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.08 cfs of 1.43 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.72 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4: INFILTRATION BASIN 4

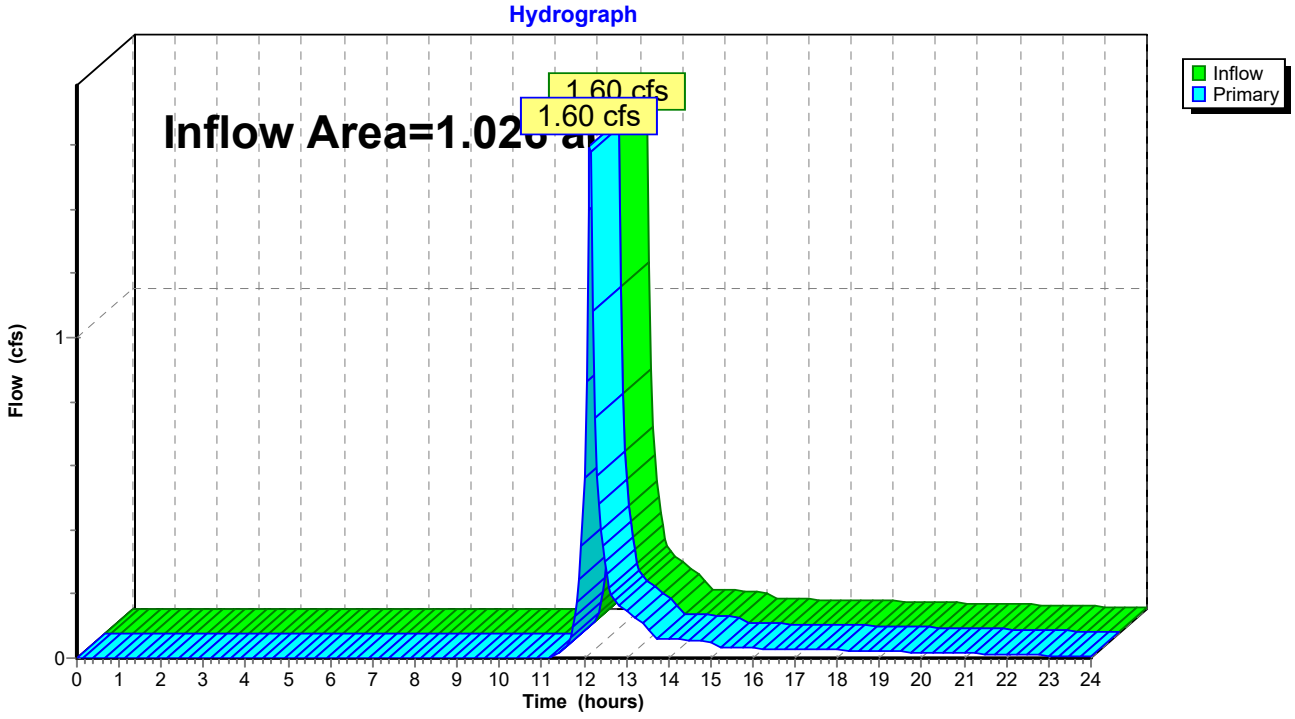


Summary for Link NW: DISCHAGE NW

Inflow Area = 1.026 ac, 0.00% Impervious, Inflow Depth > 0.87" for 1 yr event
Inflow = 1.60 cfs @ 12.14 hrs, Volume= 0.075 af
Primary = 1.60 cfs @ 12.14 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: DISCHAGE NW

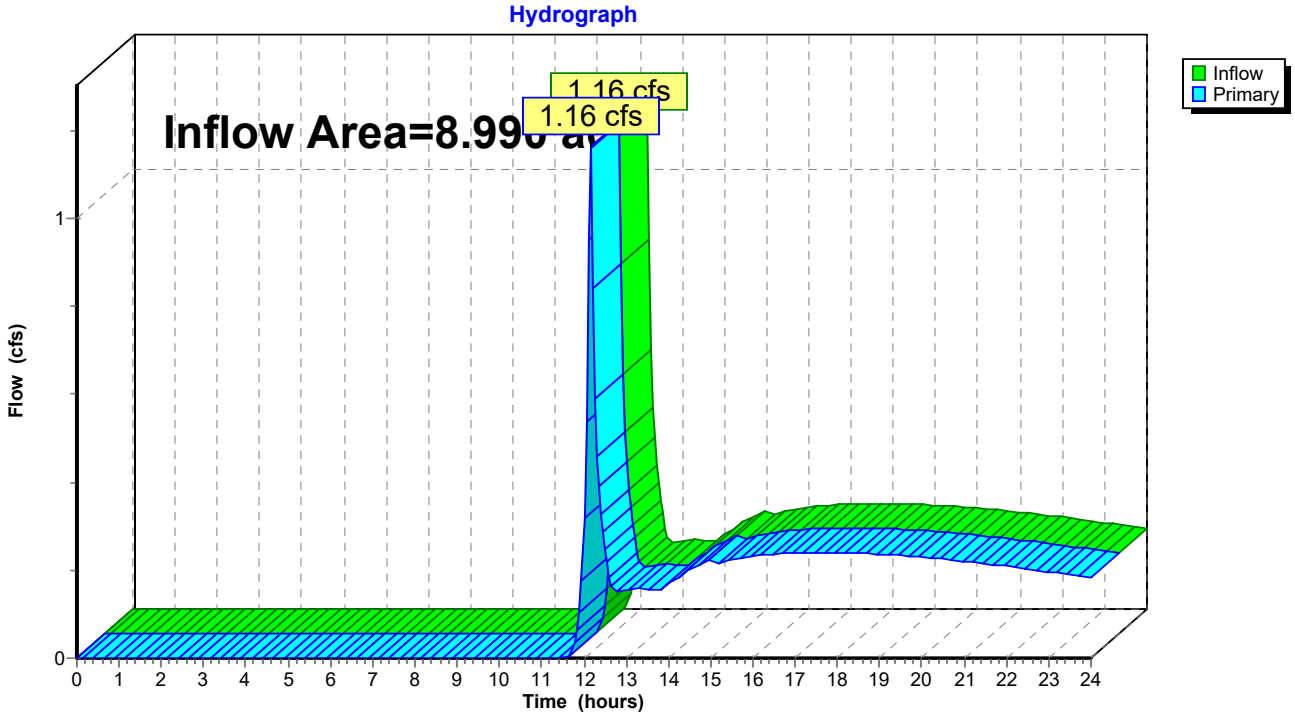


Summary for Link S: DISCHARGE SOUTH

Inflow Area = 8.990 ac, 0.00% Impervious, Inflow Depth > 0.31" for 1 yr event
Inflow = 1.16 cfs @ 12.14 hrs, Volume= 0.229 af
Primary = 1.16 cfs @ 12.14 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: DISCHARGE SOUTH

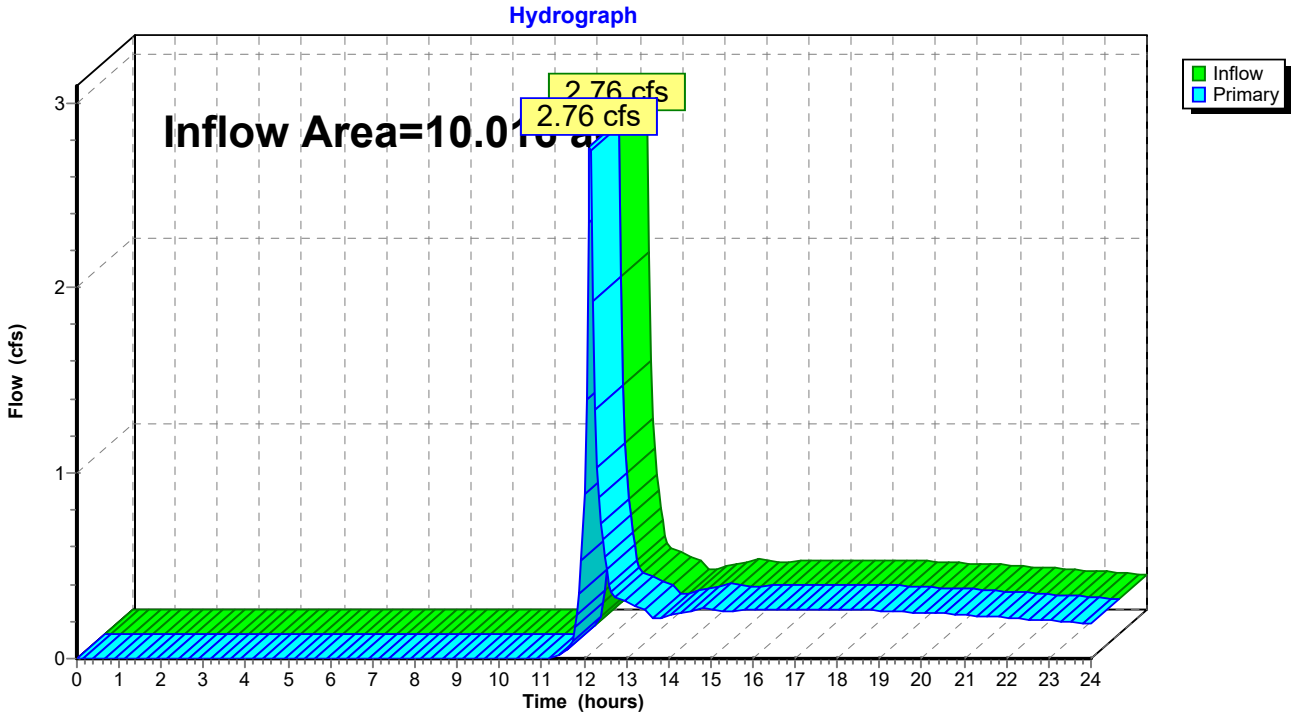


Summary for Link TOTAL: SITE DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 0.36" for 1 yr event
Inflow = 2.76 cfs @ 12.14 hrs, Volume= 0.304 af
Primary = 2.76 cfs @ 12.14 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: SITE DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: P-1 + OS-1 Runoff Area=5.142 ac 0.00% Impervious Runoff Depth>1.48"
Flow Length=935' Tc=10.8 min CN=87 Runoff=11.29 cfs 0.634 af

Subcatchment P-2: P-2 Runoff Area=0.749 ac 0.00% Impervious Runoff Depth>1.03"
Flow Length=55' Slope=0.0455 '/' Tc=6.9 min CN=80 Runoff=1.34 cfs 0.064 af

Subcatchment P-3: P-3 Runoff Area=1.418 ac 0.00% Impervious Runoff Depth>1.79"
Flow Length=475' Tc=6.4 min CN=91 Runoff=4.39 cfs 0.212 af

Subcatchment P-4: P-4 Runoff Area=0.612 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=190' Tc=6.5 min CN=86 Runoff=1.52 cfs 0.072 af

Subcatchment UD-5: UD-5 Runoff Area=1.069 ac 0.00% Impervious Runoff Depth>0.82"
Flow Length=295' Tc=6.2 min CN=76 Runoff=1.53 cfs 0.073 af

Subcatchment UD-6: UD-6 Runoff Area=1.026 ac 0.00% Impervious Runoff Depth>1.09"
Flow Length=115' Tc=6.0 min CN=81 Runoff=2.00 cfs 0.093 af

Pond 1: WET POND 1 Peak Elev=831.66' Storage=0.501 af Inflow=11.29 cfs 0.634 af
Outflow=0.18 cfs 0.161 af

Pond 2: INFILTRATION BASIN 2 Peak Elev=831.17' Storage=0.076 af Inflow=1.34 cfs 0.225 af
Outflow=0.17 cfs 0.151 af

Pond 3: WET POND 3 Peak Elev=828.51' Storage=0.154 af Inflow=4.39 cfs 0.212 af
Outflow=0.15 cfs 0.084 af

Pond 4: INFILTRATION BASIN 4 Peak Elev=828.27' Storage=0.077 af Inflow=1.52 cfs 0.156 af
Outflow=0.12 cfs 0.093 af

Link NW: DISCHAGE NW Inflow=2.00 cfs 0.093 af
Primary=2.00 cfs 0.093 af

Link S: DISCHARGE SOUTH Inflow=1.53 cfs 0.317 af
Primary=1.53 cfs 0.317 af

Link TOTAL: SITE DISCHARGE Inflow=3.53 cfs 0.410 af
Primary=3.53 cfs 0.410 af

Total Runoff Area = 10.016 ac Runoff Volume = 1.148 af Average Runoff Depth = 1.37"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment P-1: P-1 + OS-1

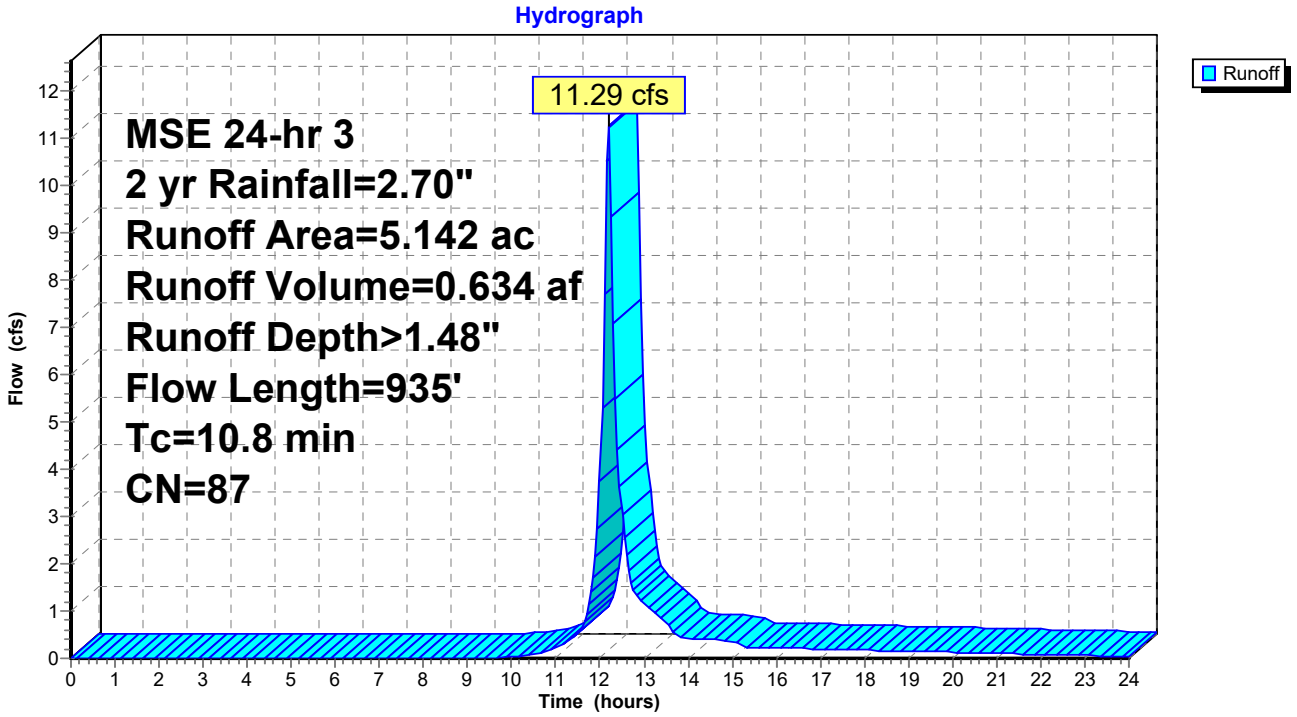
Runoff = 11.29 cfs @ 12.19 hrs, Volume= 0.634 af, Depth> 1.48"
Routed to Pond 1 : WET POND 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	4.344	87	P-1
*	0.798	89	OS-1
	5.142	87	Weighted Average
	5.142		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.7	240	0.0600	5.45	0.37	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.6	265	0.0300	7.86	6.17	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.2	185	0.0520	13.55	23.95	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
10.8	935	Total			

Subcatchment P-1: P-1 + OS-1



Summary for Subcatchment P-2: P-2

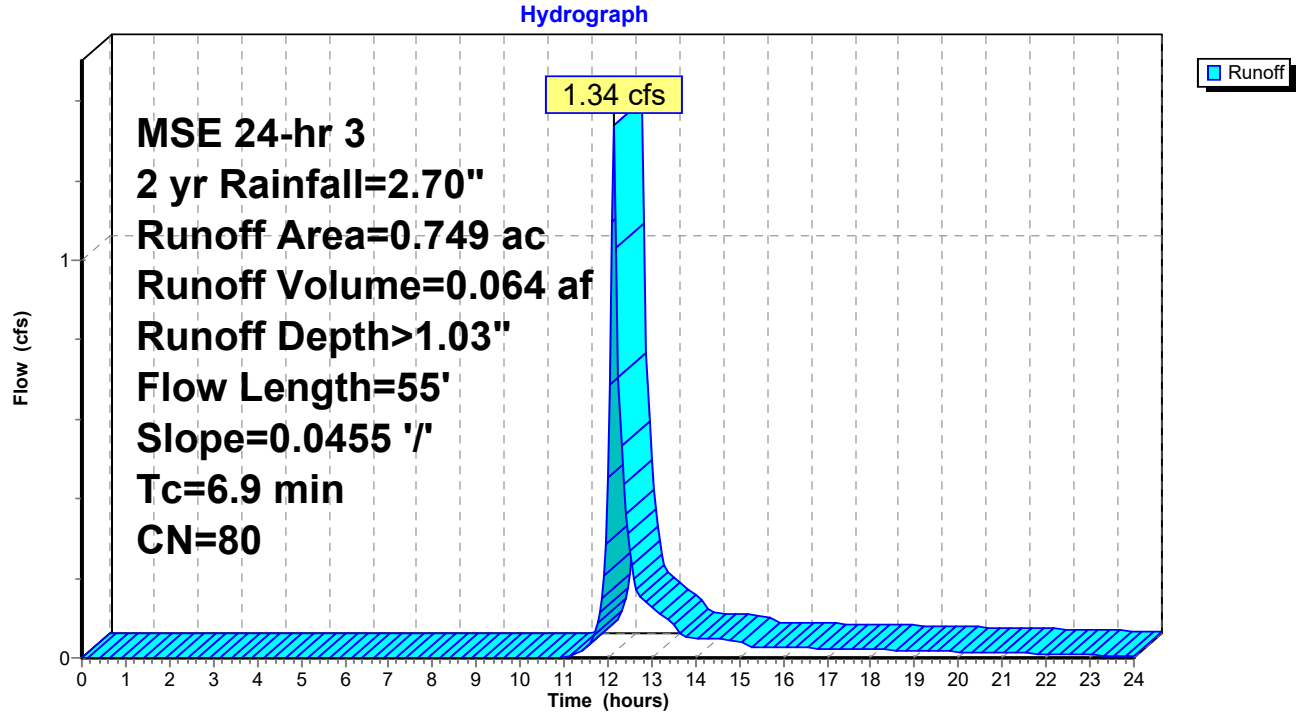
Runoff = 1.34 cfs @ 12.15 hrs, Volume= 0.064 af, Depth> 1.03"
Routed to Pond 2 : INFILTRATION BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.749	80	
	0.749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0455	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"

Subcatchment P-2: P-2



Summary for Subcatchment P-3: P-3

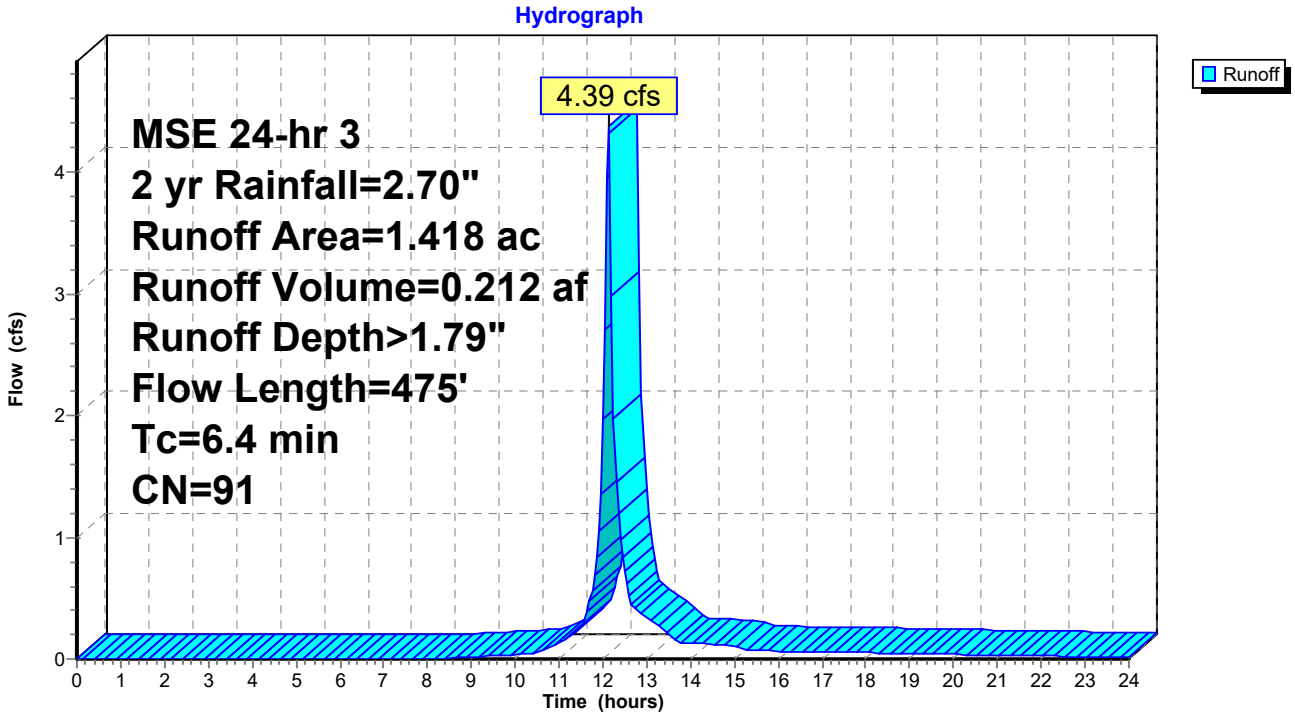
Runoff = 4.39 cfs @ 12.14 hrs, Volume= 0.212 af, Depth> 1.79"
Routed to Pond 3 : WET POND 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	1.418	91	
	1.418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0350	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.9	190	0.0125	1.68		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	175	0.0550	5.22	0.35	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.5	90	0.0050	3.21	2.52	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.4	475	Total			

Subcatchment P-3: P-3



Summary for Subcatchment P-4: P-4

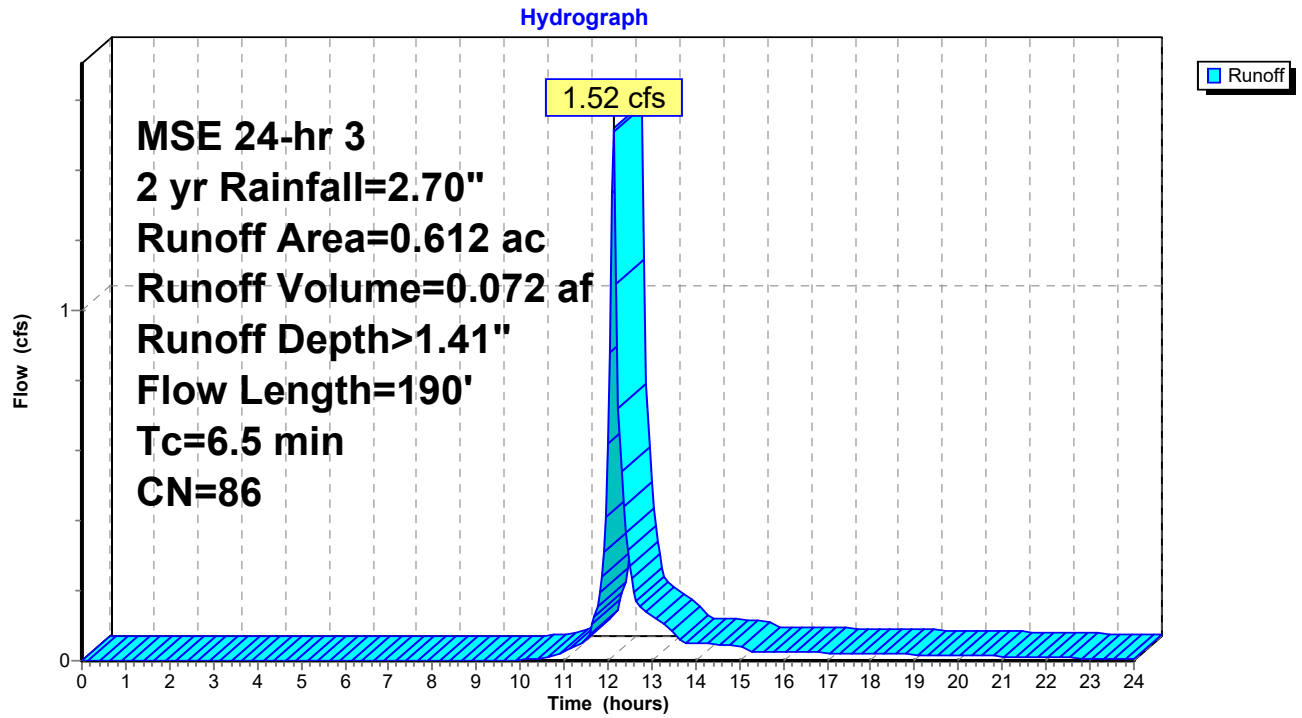
Runoff = 1.52 cfs @ 12.14 hrs, Volume= 0.072 af, Depth> 1.41"
Routed to Pond 4 : INFILTRATION BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.612	86	
	0.612		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	30	0.0300	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.5	160	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	190	Total			

Subcatchment P-4: P-4



Summary for Subcatchment UD-5: UD-5

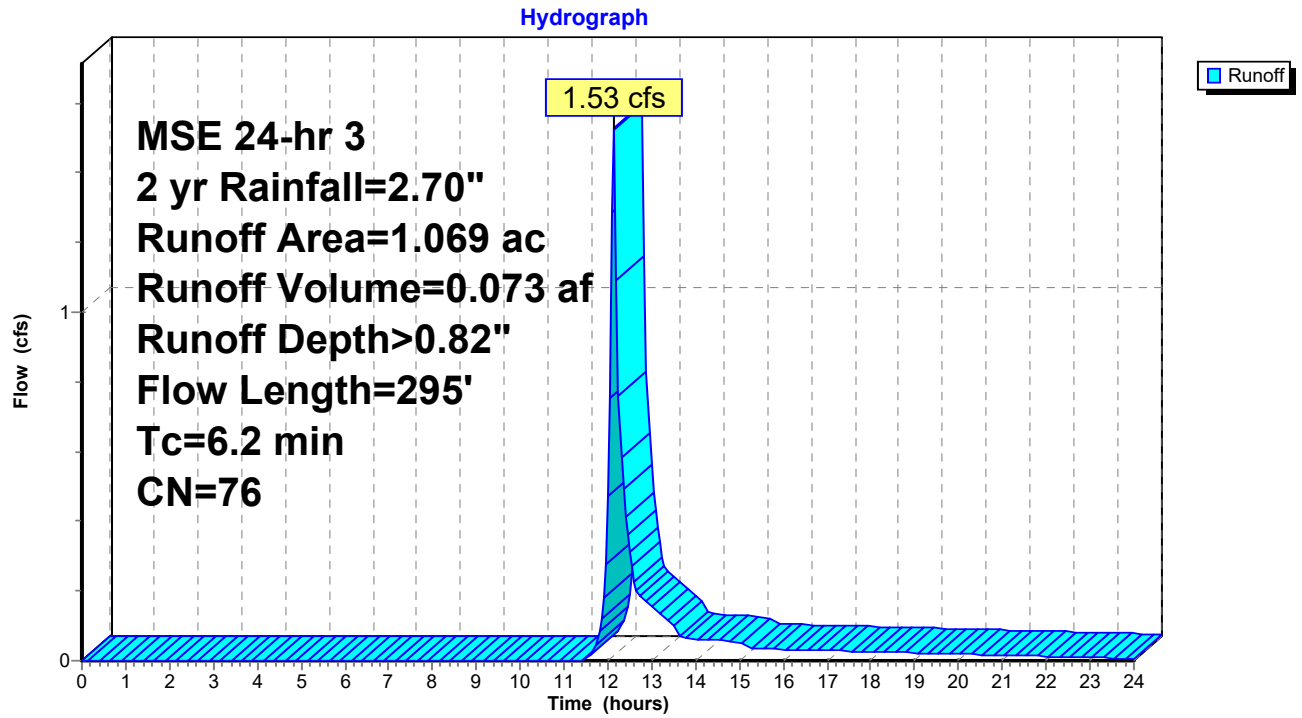
Runoff = 1.53 cfs @ 12.14 hrs, Volume= 0.073 af, Depth> 0.82"
Routed to Link S : DISCHARGE SOUTH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	1.069	76	
	1.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	35	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.7	260	0.0115	1.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.2	295	Total			

Subcatchment UD-5: UD-5



Summary for Subcatchment UD-6: UD-6

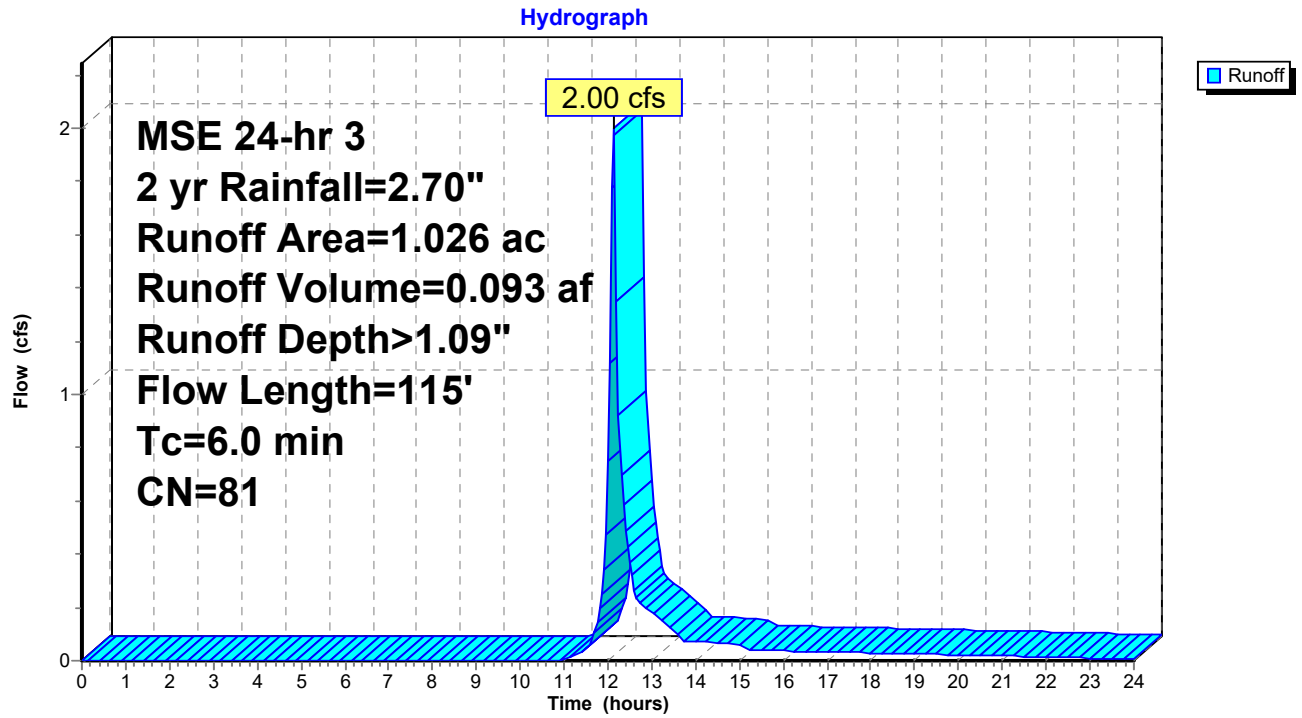
Runoff = 2.00 cfs @ 12.14 hrs, Volume= 0.093 af, Depth> 1.09"
Routed to Link NW : DISCHAGE NW

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	1.026	81	
	1.026		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	75	0.1500	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	115	Total, Increased to minimum Tc = 6.0 min			

Subcatchment UD-6: UD-6



Summary for Pond 1: WET POND 1

Inflow Area = 5.142 ac, 0.00% Impervious, Inflow Depth > 1.48" for 2 yr event
Inflow = 11.29 cfs @ 12.19 hrs, Volume= 0.634 af
Outflow = 0.18 cfs @ 13.75 hrs, Volume= 0.161 af, Atten= 98%, Lag= 93.6 min
Primary = 0.18 cfs @ 13.75 hrs, Volume= 0.161 af
Routed to Pond 2 : INFILTRATION BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 831.66' @ 18.18 hrs Surf.Area= 0.218 ac Storage= 0.501 af

Plug-Flow detention time= 372.6 min calculated for 0.161 af (25% of inflow)
Center-of-Mass det. time= 276.2 min (1,082.9 - 806.7)

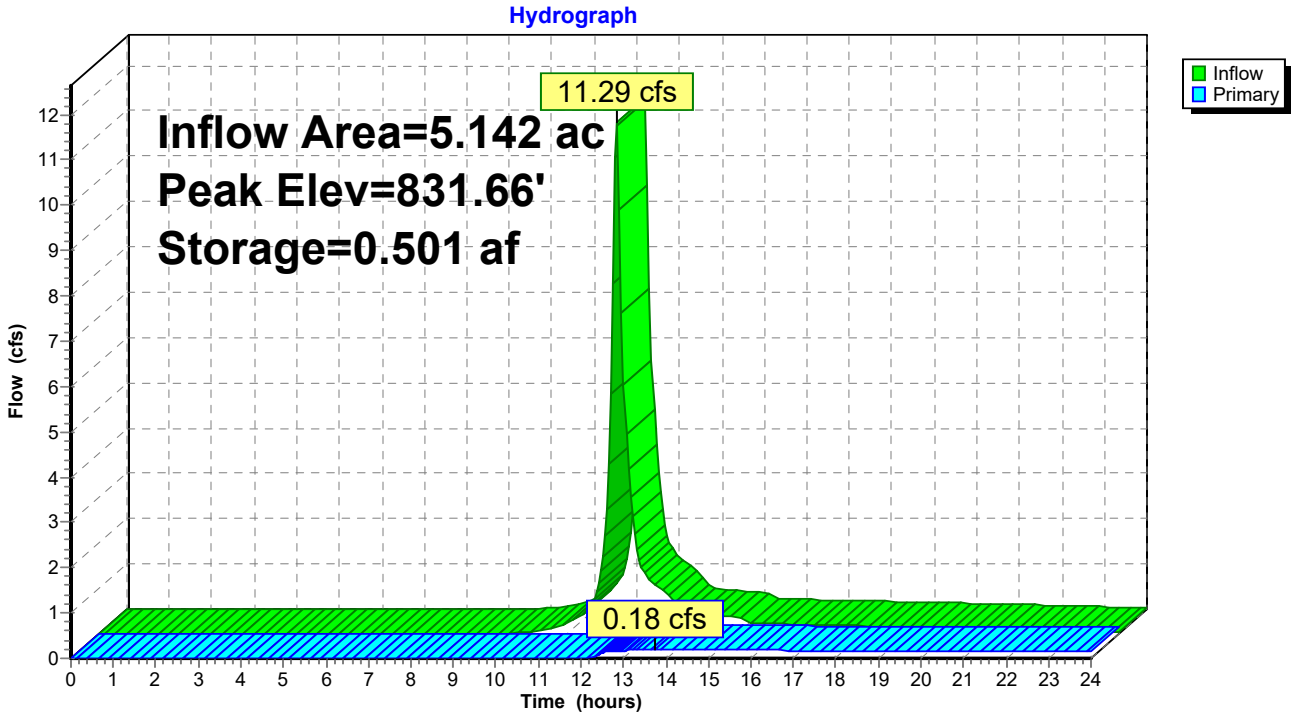
Volume	Invert	Avail.Storage	Storage Description
#1	825.20'	1.478 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
825.20	0.027	0.000	0.000	0.027
826.20	0.035	0.031	0.031	0.036
827.20	0.043	0.039	0.070	0.044
828.20	0.053	0.048	0.118	0.055
829.20	0.063	0.058	0.176	0.066
830.20	0.121	0.090	0.266	0.124
831.00	0.157	0.111	0.377	0.160
832.00	0.252	0.203	0.580	0.256
833.00	0.324	0.287	0.867	0.328
834.00	0.399	0.361	1.228	0.404
834.60	0.436	0.250	1.478	0.441

Device	Routing	Invert	Outlet Devices
#1	Primary	830.20'	**18.0" Round RCP_Round 18"** L= 46.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.20' / 830.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.20'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	833.60'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.18 cfs @ 13.75 hrs HW=831.50' TW=830.91' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.18 cfs of 4.79 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.18 cfs @ 3.70 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1: WET POND 1



Summary for Pond 2: INFILTRATION BASIN 2

Inflow Area = 5.891 ac, 0.00% Impervious, Inflow Depth > 0.46" for 2 yr event
Inflow = 1.34 cfs @ 12.15 hrs, Volume= 0.225 af
Outflow = 0.17 cfs @ 20.74 hrs, Volume= 0.151 af, Atten= 87%, Lag= 515.7 min
Primary = 0.17 cfs @ 20.74 hrs, Volume= 0.151 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 831.17' @ 20.74 hrs Surf.Area= 0.085 ac Storage= 0.076 af

Plug-Flow detention time= 243.4 min calculated for 0.151 af (67% of inflow)
Center-of-Mass det. time= 111.5 min (1,119.7 - 1,008.2)

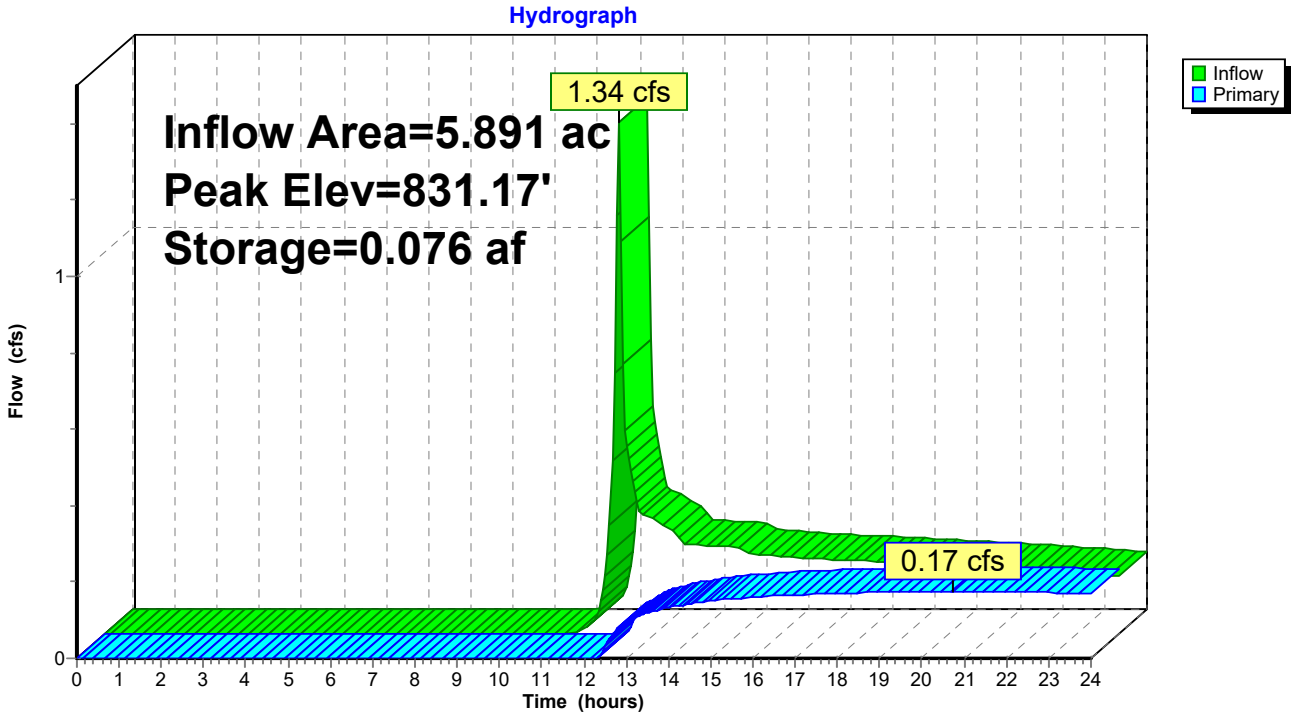
Volume	Invert	Avail.Storage	Storage Description
#1	830.00'	0.392 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
830.00	0.047	0.000	0.000	0.047
831.00	0.079	0.062	0.062	0.079
832.00	0.120	0.099	0.161	0.121
833.00	0.166	0.142	0.303	0.167
833.50	0.190	0.089	0.392	0.191

Device	Routing	Invert	Outlet Devices
#1	Primary	830.00'	**18.0" Round RCP_Round 18"** L= 28.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.00' / 829.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.50'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.10'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	832.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.17 cfs @ 20.74 hrs HW=831.17' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.17 cfs of 4.06 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.17 cfs @ 3.56 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2: INFILTRATION BASIN 2



Summary for Pond 3: WET POND 3

Inflow Area = 1.418 ac, 0.00% Impervious, Inflow Depth > 1.79" for 2 yr event
Inflow = 4.39 cfs @ 12.14 hrs, Volume= 0.212 af
Outflow = 0.15 cfs @ 13.58 hrs, Volume= 0.084 af, Atten= 97%, Lag= 86.5 min
Primary = 0.15 cfs @ 13.58 hrs, Volume= 0.084 af
Routed to Pond 4 : INFILTRATION BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.51' @ 13.65 hrs Surf.Area= 0.086 ac Storage= 0.154 af

Plug-Flow detention time= 318.1 min calculated for 0.084 af (40% of inflow)
Center-of-Mass det. time= 232.8 min (1,023.5 - 790.7)

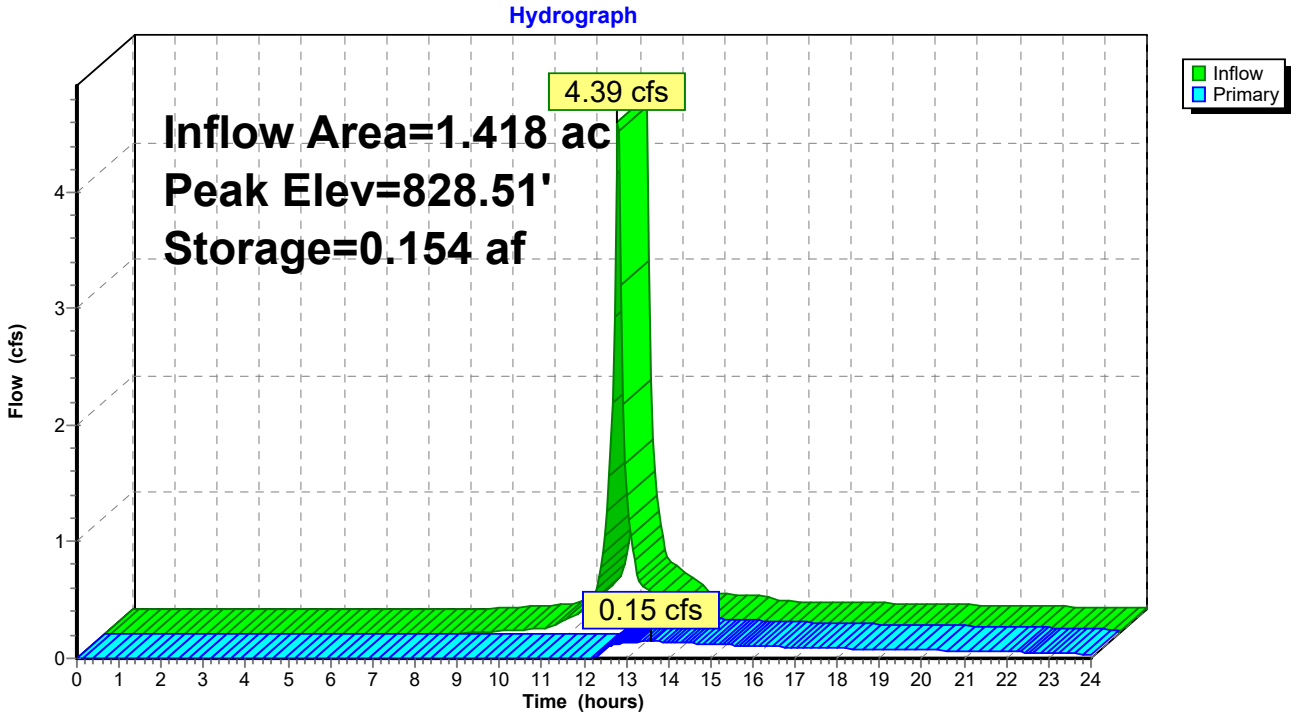
Volume	Invert	Avail.Storage	Storage Description
#1	823.00'	0.633 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
823.00	0.005	0.000	0.000	0.005
824.00	0.010	0.007	0.007	0.010
825.00	0.015	0.012	0.020	0.016
826.00	0.022	0.018	0.038	0.023
827.00	0.029	0.025	0.064	0.030
828.00	0.073	0.049	0.113	0.075
829.00	0.100	0.086	0.199	0.102
830.00	0.128	0.114	0.313	0.131
831.00	0.159	0.143	0.456	0.162
832.00	0.195	0.177	0.633	0.199

Device	Routing	Invert	Outlet Devices
#1	Primary	828.00'	**12.0" Round RCP_Round 12"** L= 117.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 828.00' / 827.40' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	828.00'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	830.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	831.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.15 cfs @ 13.58 hrs HW=828.51' TW=828.13' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.15 cfs of 0.55 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.15 cfs @ 2.97 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3: WET POND 3



Summary for Pond 4: INFILTRATION BASIN 4

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 0.92" for 2 yr event
Inflow = 1.52 cfs @ 12.14 hrs, Volume= 0.156 af
Outflow = 0.12 cfs @ 17.00 hrs, Volume= 0.093 af, Atten= 92%, Lag= 291.6 min
Primary = 0.12 cfs @ 17.00 hrs, Volume= 0.093 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.27' @ 17.00 hrs Surf.Area= 0.099 ac Storage= 0.077 af

Plug-Flow detention time= 328.6 min calculated for 0.093 af (59% of inflow)
Center-of-Mass det. time= 183.6 min (1,107.0 - 923.3)

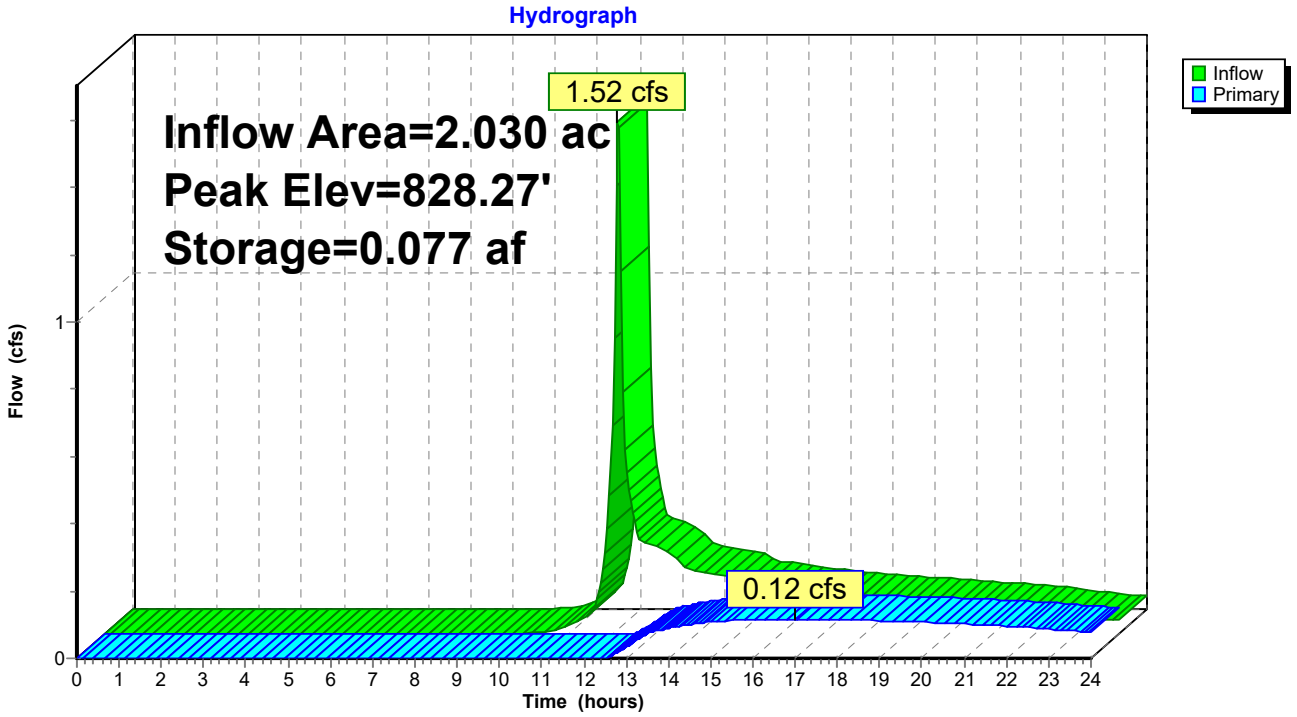
Volume	Invert	Avail.Storage	Storage Description
#1	827.40'	0.447 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
827.40	0.079	0.000	0.000	0.079
828.00	0.092	0.051	0.051	0.092
829.00	0.118	0.105	0.156	0.119
830.00	0.145	0.131	0.287	0.147
831.00	0.176	0.160	0.447	0.178

Device	Routing	Invert	Outlet Devices
#1	Primary	827.40'	**12.0" Round RCP_Round 12"** L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 827.40' / 827.13' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	827.90'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	829.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	830.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.12 cfs @ 17.00 hrs HW=828.27' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.12 cfs of 1.78 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 2.37 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4: INFILTRATION BASIN 4

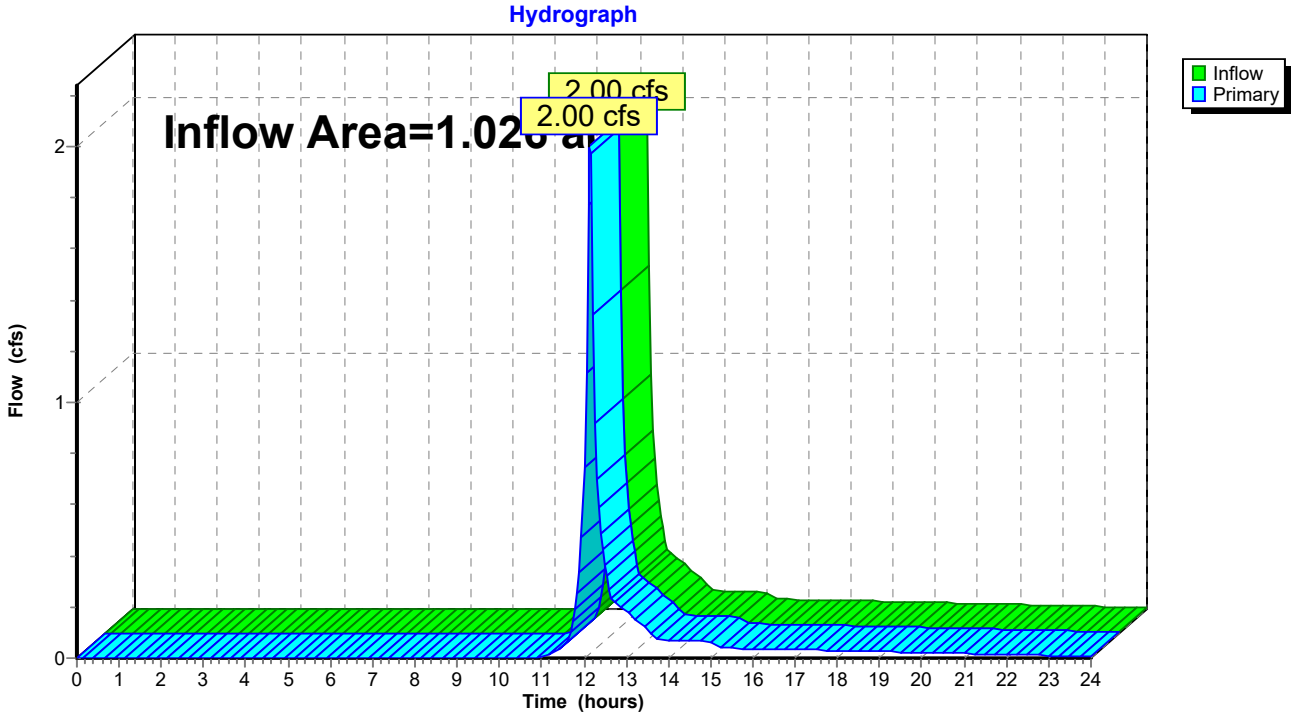


Summary for Link NW: DISCHAGE NW

Inflow Area = 1.026 ac, 0.00% Impervious, Inflow Depth > 1.09" for 2 yr event
Inflow = 2.00 cfs @ 12.14 hrs, Volume= 0.093 af
Primary = 2.00 cfs @ 12.14 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: DISCHAGE NW

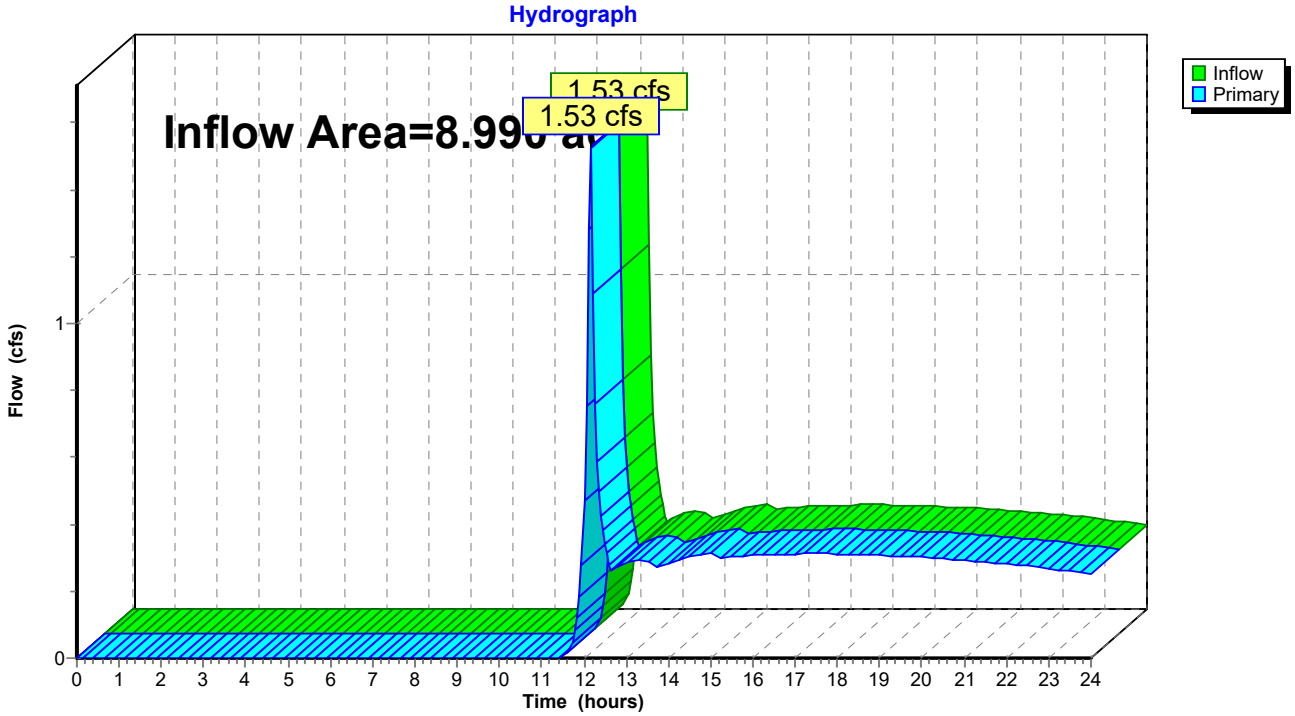


Summary for Link S: DISCHARGE SOUTH

Inflow Area = 8.990 ac, 0.00% Impervious, Inflow Depth > 0.42" for 2 yr event
Inflow = 1.53 cfs @ 12.14 hrs, Volume= 0.317 af
Primary = 1.53 cfs @ 12.14 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: DISCHARGE SOUTH

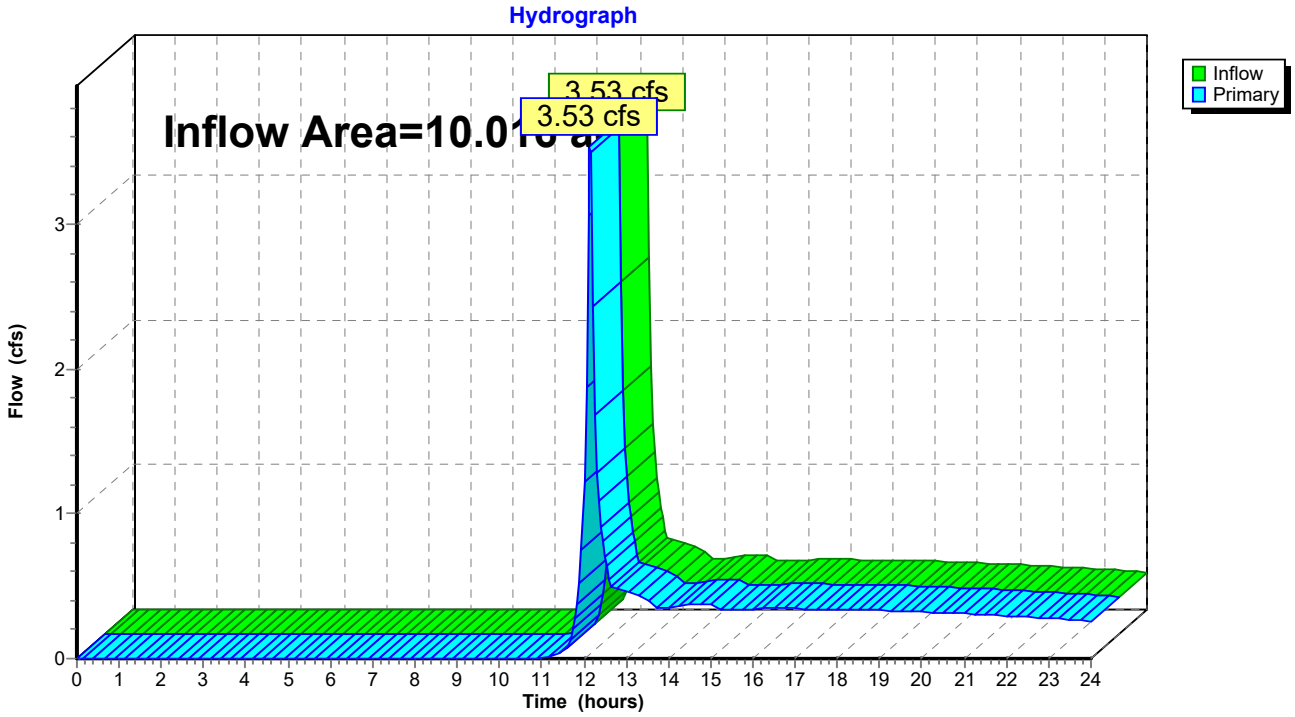


Summary for Link TOTAL: SITE DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 0.49" for 2 yr event
Inflow = 3.53 cfs @ 12.14 hrs, Volume= 0.410 af
Primary = 3.53 cfs @ 12.14 hrs, Volume= 0.410 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: SITE DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: P-1 + OS-1 Runoff Area=5.142 ac 0.00% Impervious Runoff Depth>2.46"
Flow Length=935' Tc=10.8 min CN=87 Runoff=18.54 cfs 1.055 af

Subcatchment P-2: P-2 Runoff Area=0.749 ac 0.00% Impervious Runoff Depth>1.89"
Flow Length=55' Slope=0.0455 '/' Tc=6.9 min CN=80 Runoff=2.47 cfs 0.118 af

Subcatchment P-3: P-3 Runoff Area=1.418 ac 0.00% Impervious Runoff Depth>2.84"
Flow Length=475' Tc=6.4 min CN=91 Runoff=6.76 cfs 0.335 af

Subcatchment P-4: P-4 Runoff Area=0.612 ac 0.00% Impervious Runoff Depth>2.37"
Flow Length=190' Tc=6.5 min CN=86 Runoff=2.52 cfs 0.121 af

Subcatchment UD-5: UD-5 Runoff Area=1.069 ac 0.00% Impervious Runoff Depth>1.59"
Flow Length=295' Tc=6.2 min CN=76 Runoff=3.05 cfs 0.142 af

Subcatchment UD-6: UD-6 Runoff Area=1.026 ac 0.00% Impervious Runoff Depth>1.96"
Flow Length=115' Tc=6.0 min CN=81 Runoff=3.61 cfs 0.168 af

Pond 1: WET POND 1 Peak Elev=832.79' Storage=0.801 af Inflow=18.54 cfs 1.055 af
Outflow=0.61 cfs 0.291 af

Pond 2: INFILTRATION BASIN 2 Peak Elev=832.10' Storage=0.174 af Inflow=2.54 cfs 0.409 af
Outflow=0.29 cfs 0.257 af

Pond 3: WET POND 3 Peak Elev=829.40' Storage=0.242 af Inflow=6.76 cfs 0.335 af
Outflow=0.22 cfs 0.161 af

Pond 4: INFILTRATION BASIN 4 Peak Elev=828.71' Storage=0.123 af Inflow=2.64 cfs 0.282 af
Outflow=0.20 cfs 0.178 af

Link NW: DISCHAGE NW Inflow=3.61 cfs 0.168 af
Primary=3.61 cfs 0.168 af

Link S: DISCHARGE SOUTH Inflow=3.09 cfs 0.577 af
Primary=3.09 cfs 0.577 af

Link TOTAL: SITE DISCHARGE Inflow=6.68 cfs 0.745 af
Primary=6.68 cfs 0.745 af

Total Runoff Area = 10.016 ac Runoff Volume = 1.938 af Average Runoff Depth = 2.32"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment P-1: P-1 + OS-1

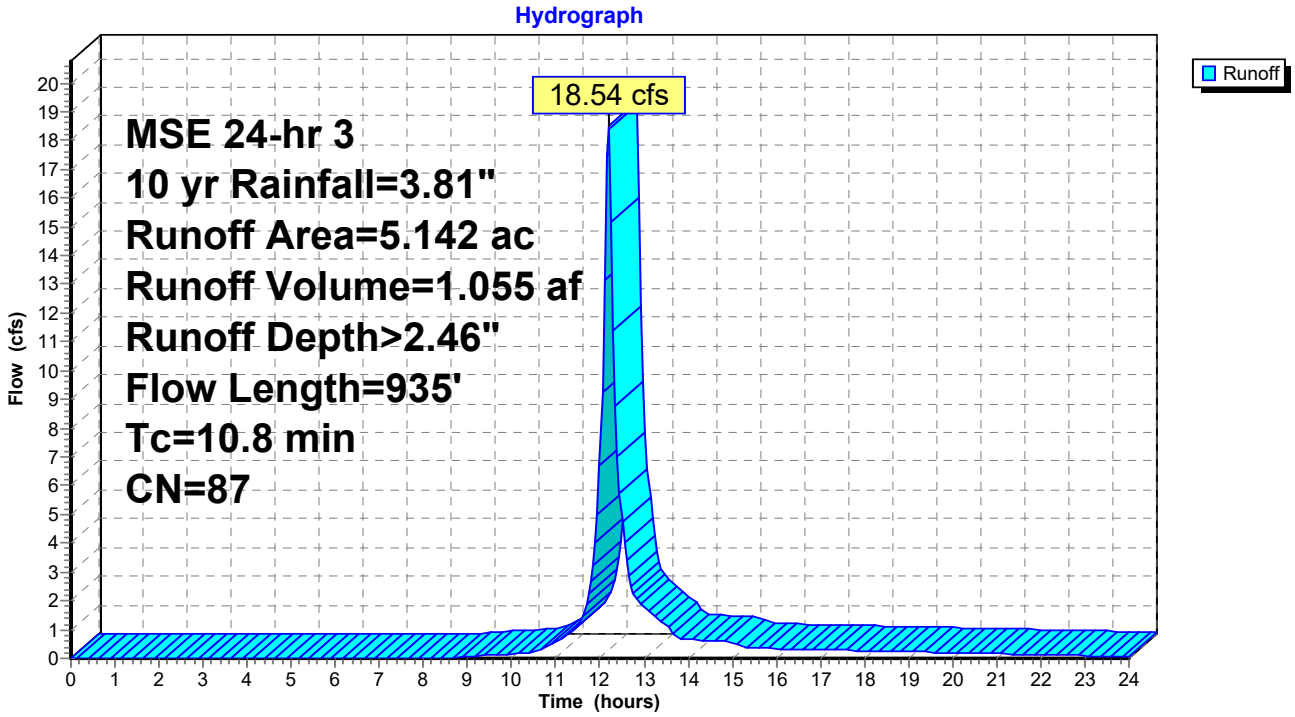
Runoff = 18.54 cfs @ 12.19 hrs, Volume= 1.055 af, Depth> 2.46"
Routed to Pond 1 : WET POND 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	4.344	87	P-1
*	0.798	89	OS-1
	5.142	87	Weighted Average
	5.142		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.7	240	0.0600	5.45	0.37	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.6	265	0.0300	7.86	6.17	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.2	185	0.0520	13.55	23.95	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
10.8	935	Total			

Subcatchment P-1: P-1 + OS-1



Summary for Subcatchment P-2: P-2

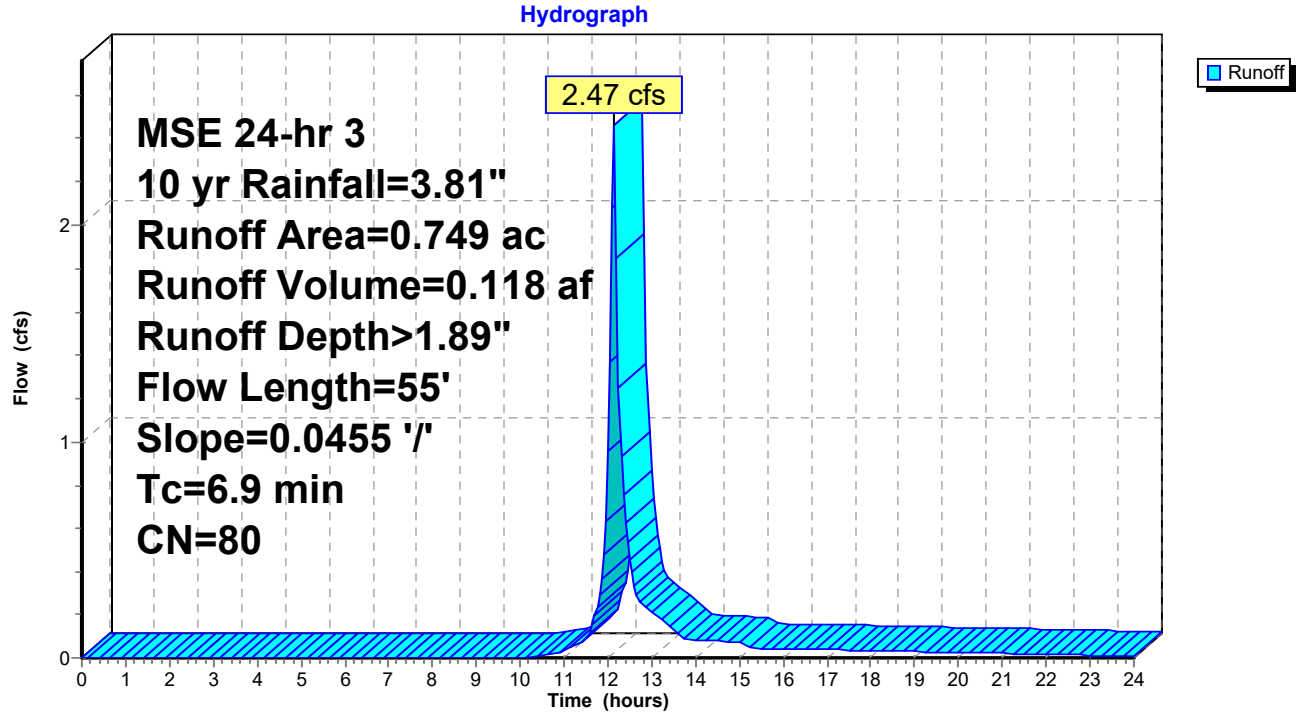
Runoff = 2.47 cfs @ 12.14 hrs, Volume= 0.118 af, Depth> 1.89"
Routed to Pond 2 : INFILTRATION BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.749	80	
	0.749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0455	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"

Subcatchment P-2: P-2



Summary for Subcatchment P-3: P-3

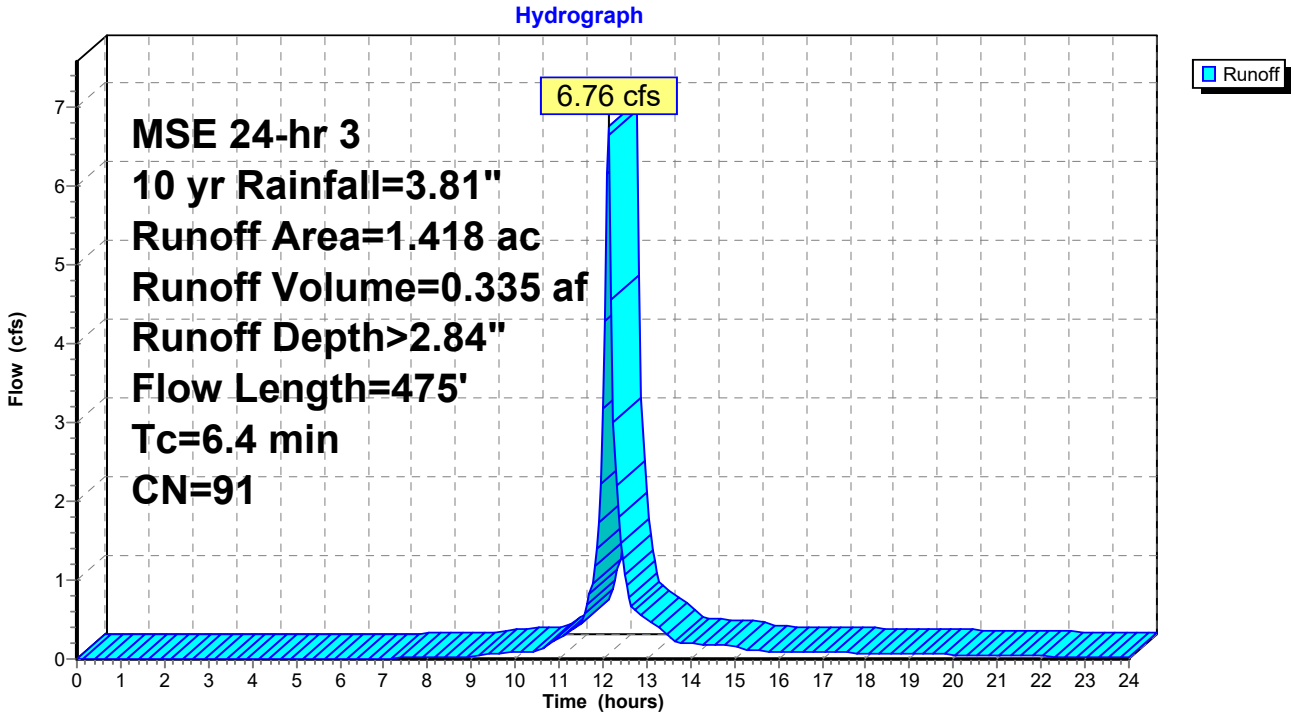
Runoff = 6.76 cfs @ 12.13 hrs, Volume= 0.335 af, Depth> 2.84"
Routed to Pond 3 : WET POND 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	1.418	91	
	1.418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0350	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.9	190	0.0125	1.68		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	175	0.0550	5.22	0.35	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.5	90	0.0050	3.21	2.52	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.4	475	Total			

Subcatchment P-3: P-3



Summary for Subcatchment P-4: P-4

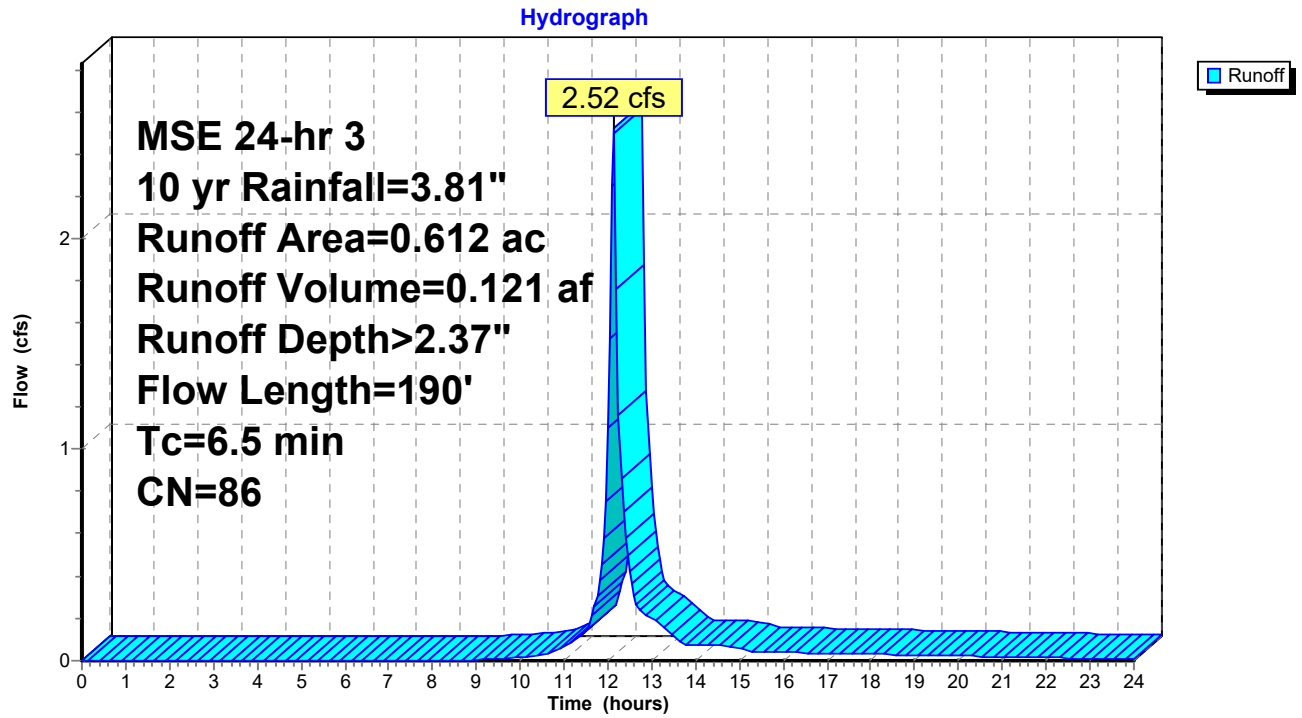
Runoff = 2.52 cfs @ 12.14 hrs, Volume= 0.121 af, Depth> 2.37"
Routed to Pond 4 : INFILTRATION BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.612	86	
	0.612		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	30	0.0300	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.5	160	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	190	Total			

Subcatchment P-4: P-4



Summary for Subcatchment UD-5: UD-5

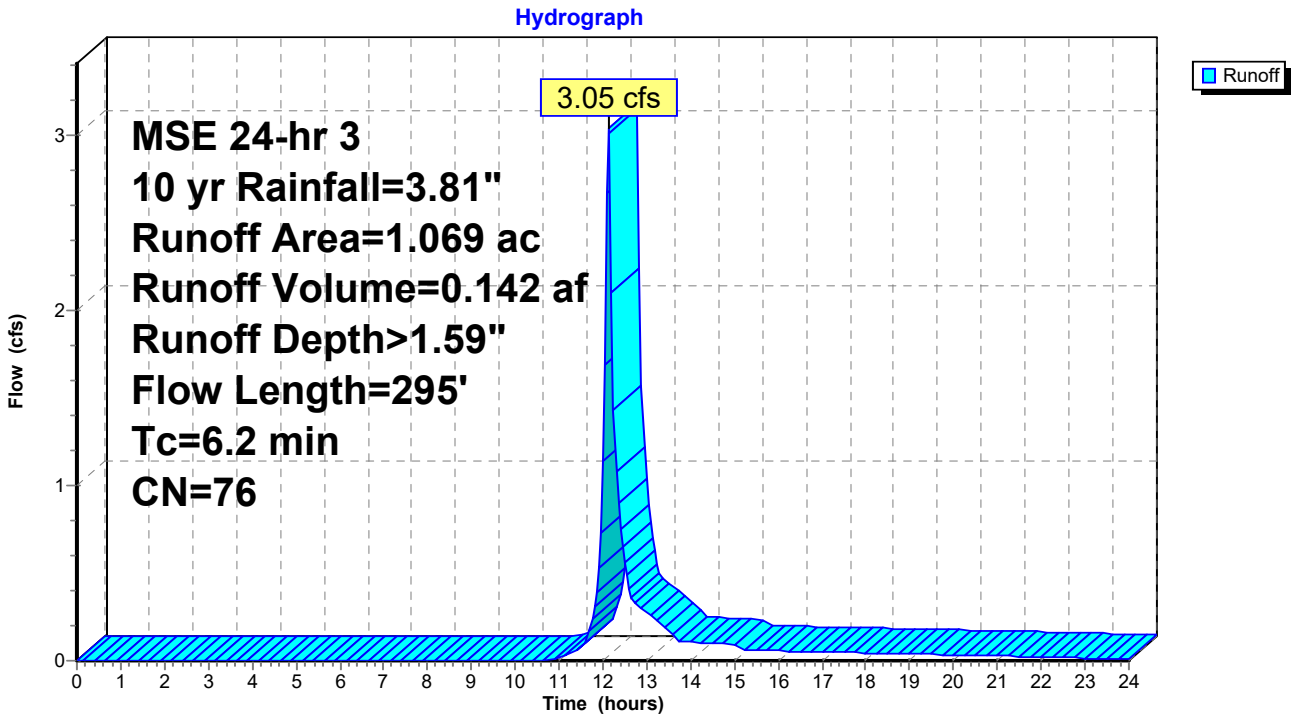
Runoff = 3.05 cfs @ 12.14 hrs, Volume= 0.142 af, Depth> 1.59"
Routed to Link S : DISCHARGE SOUTH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	1.069	76	
	1.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	35	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.7	260	0.0115	1.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.2	295	Total			

Subcatchment UD-5: UD-5



Summary for Subcatchment UD-6: UD-6

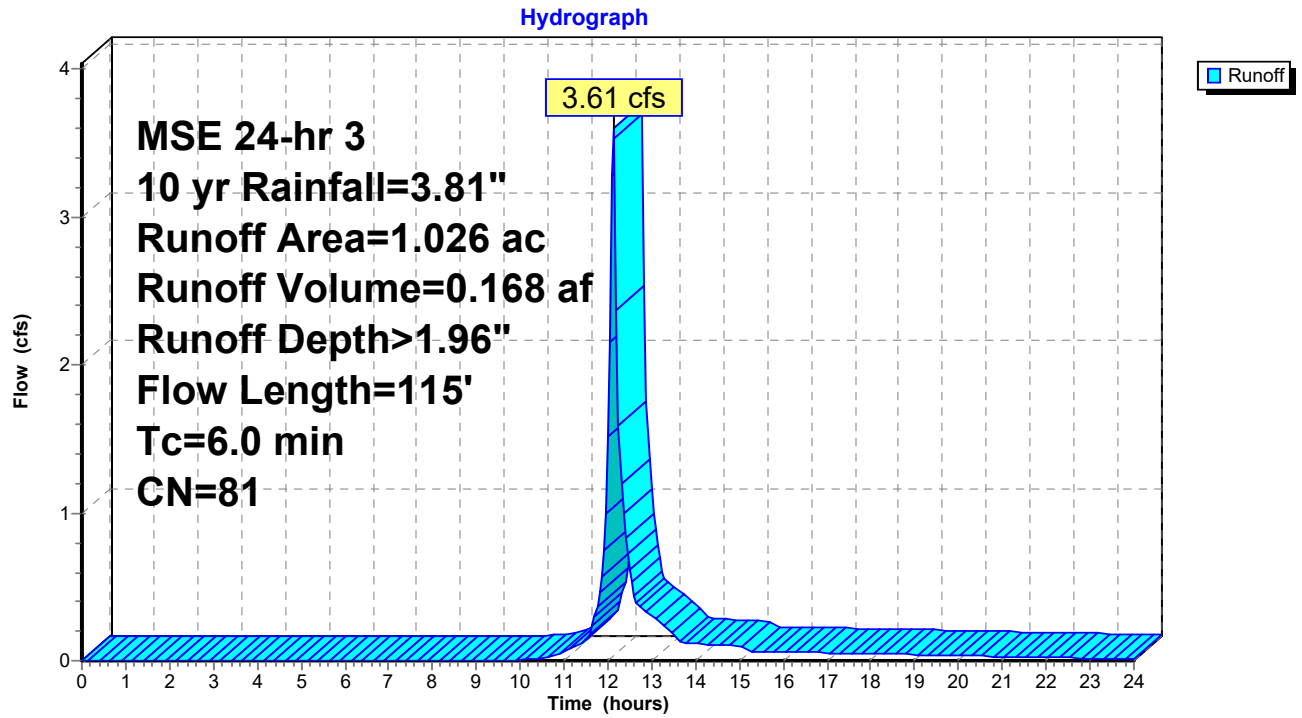
Runoff = 3.61 cfs @ 12.13 hrs, Volume= 0.168 af, Depth> 1.96"
Routed to Link NW : DISCHAGE NW

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10 yr Rainfall=3.81"

	Area (ac)	CN	Description
*	1.026	81	
	1.026		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	75	0.1500	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	115	Total, Increased to minimum Tc = 6.0 min			

Subcatchment UD-6: UD-6



Summary for Pond 1: WET POND 1

Inflow Area = 5.142 ac, 0.00% Impervious, Inflow Depth > 2.46" for 10 yr event
Inflow = 18.54 cfs @ 12.19 hrs, Volume= 1.055 af
Outflow = 0.61 cfs @ 14.51 hrs, Volume= 0.291 af, Atten= 97%, Lag= 139.2 min
Primary = 0.61 cfs @ 14.51 hrs, Volume= 0.291 af
Routed to Pond 2 : INFILTRATION BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 832.79' @ 14.70 hrs Surf.Area= 0.308 ac Storage= 0.801 af

Plug-Flow detention time= 331.6 min calculated for 0.291 af (28% of inflow)
Center-of-Mass det. time= 236.7 min (1,033.2 - 796.5)

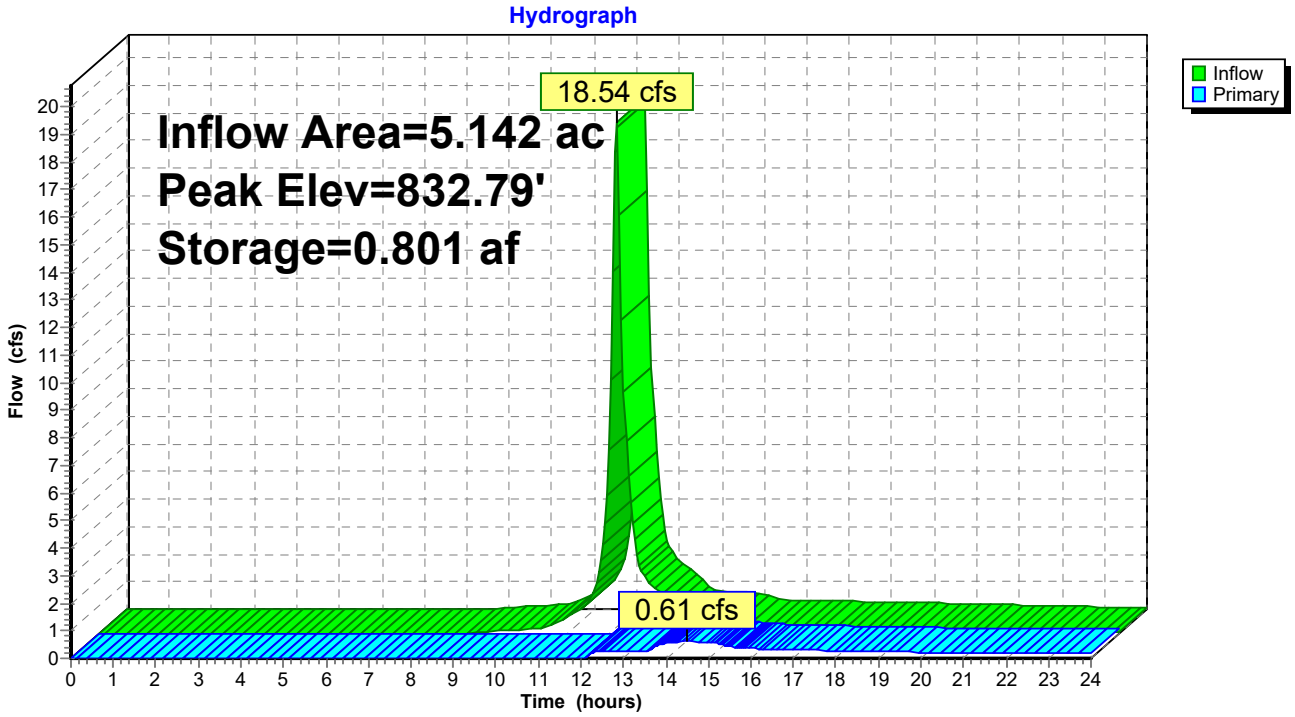
Volume	Invert	Avail.Storage	Storage Description
#1	825.20'	1.478 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
825.20	0.027	0.000	0.000	0.027
826.20	0.035	0.031	0.031	0.036
827.20	0.043	0.039	0.070	0.044
828.20	0.053	0.048	0.118	0.055
829.20	0.063	0.058	0.176	0.066
830.20	0.121	0.090	0.266	0.124
831.00	0.157	0.111	0.377	0.160
832.00	0.252	0.203	0.580	0.256
833.00	0.324	0.287	0.867	0.328
834.00	0.399	0.361	1.228	0.404
834.60	0.436	0.250	1.478	0.441

Device	Routing	Invert	Outlet Devices
#1	Primary	830.20'	**18.0" Round RCP_Round 18"** L= 46.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.20' / 830.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.20'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	833.60'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.61 cfs @ 14.51 hrs HW=832.79' TW=831.69' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.61 cfs of 8.93 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.25 cfs @ 5.06 fps)
  - **3=Grate** (Weir Controls 0.36 cfs @ 0.67 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1: WET POND 1



Summary for Pond 2: INFILTRATION BASIN 2

Inflow Area = 5.891 ac, 0.00% Impervious, Inflow Depth > 0.83" for 10 yr event
Inflow = 2.54 cfs @ 12.15 hrs, Volume= 0.409 af
Outflow = 0.29 cfs @ 18.53 hrs, Volume= 0.257 af, Atten= 89%, Lag= 382.7 min
Primary = 0.29 cfs @ 18.53 hrs, Volume= 0.257 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 832.10' @ 18.53 hrs Surf.Area= 0.124 ac Storage= 0.174 af

Plug-Flow detention time= 274.3 min calculated for 0.257 af (63% of inflow)
Center-of-Mass det. time= 136.0 min (1,104.7 - 968.6)

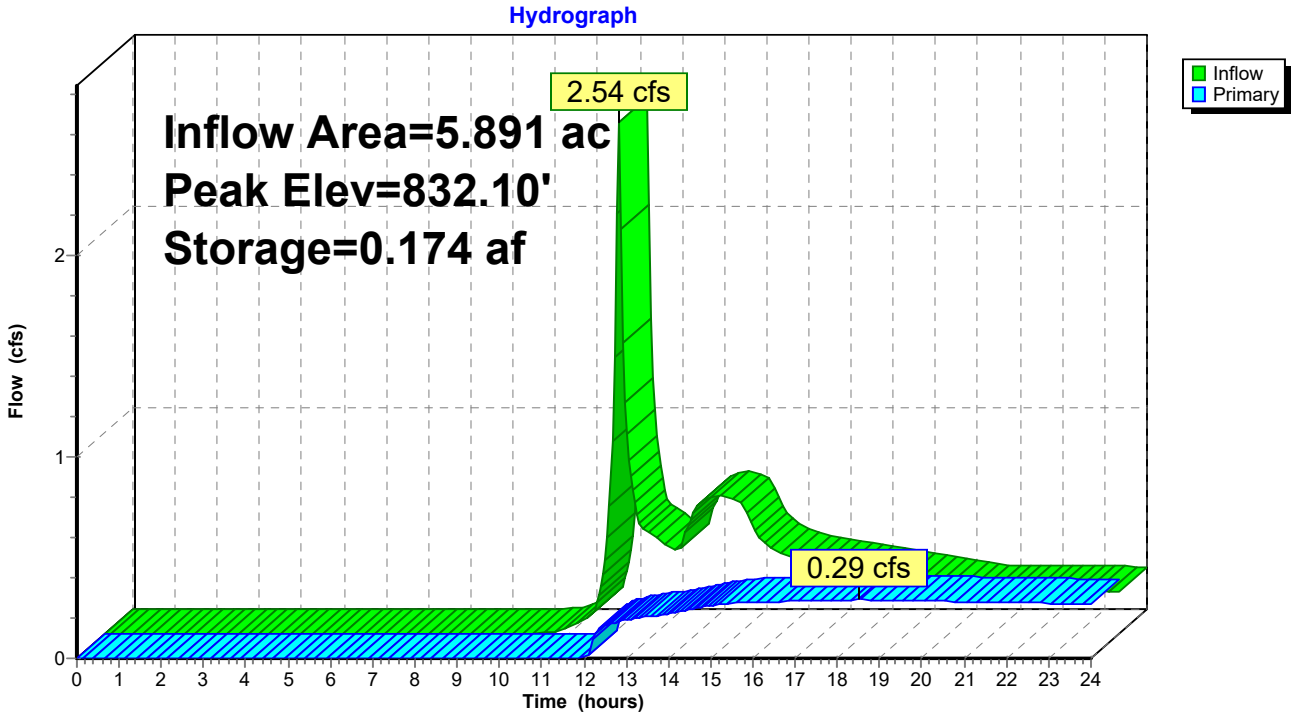
Volume	Invert	Avail.Storage	Storage Description
#1	830.00'	0.392 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
830.00	0.047	0.000	0.000	0.047
831.00	0.079	0.062	0.062	0.079
832.00	0.120	0.099	0.161	0.121
833.00	0.166	0.142	0.303	0.167
833.50	0.190	0.089	0.392	0.191

Device	Routing	Invert	Outlet Devices
#1	Primary	830.00'	**18.0" Round RCP_Round 18"** L= 28.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.00' / 829.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.50'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.10'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	832.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.29 cfs @ 18.53 hrs HW=832.10' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 0.29 cfs of 8.61 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.29 cfs @ 5.85 fps)
  - **3=Grate** (Weir Controls 0.00 cfs @ 0.15 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2: INFILTRATION BASIN 2



Summary for Pond 3: WET POND 3

Inflow Area = 1.418 ac, 0.00% Impervious, Inflow Depth > 2.84" for 10 yr event
Inflow = 6.76 cfs @ 12.13 hrs, Volume= 0.335 af
Outflow = 0.22 cfs @ 12.88 hrs, Volume= 0.161 af, Atten= 97%, Lag= 44.5 min
Primary = 0.22 cfs @ 12.88 hrs, Volume= 0.161 af
Routed to Pond 4 : INFILTRATION BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 829.40' @ 13.64 hrs Surf.Area= 0.111 ac Storage= 0.242 af

Plug-Flow detention time= 336.7 min calculated for 0.161 af (48% of inflow)
Center-of-Mass det. time= 256.3 min (1,037.9 - 781.6)

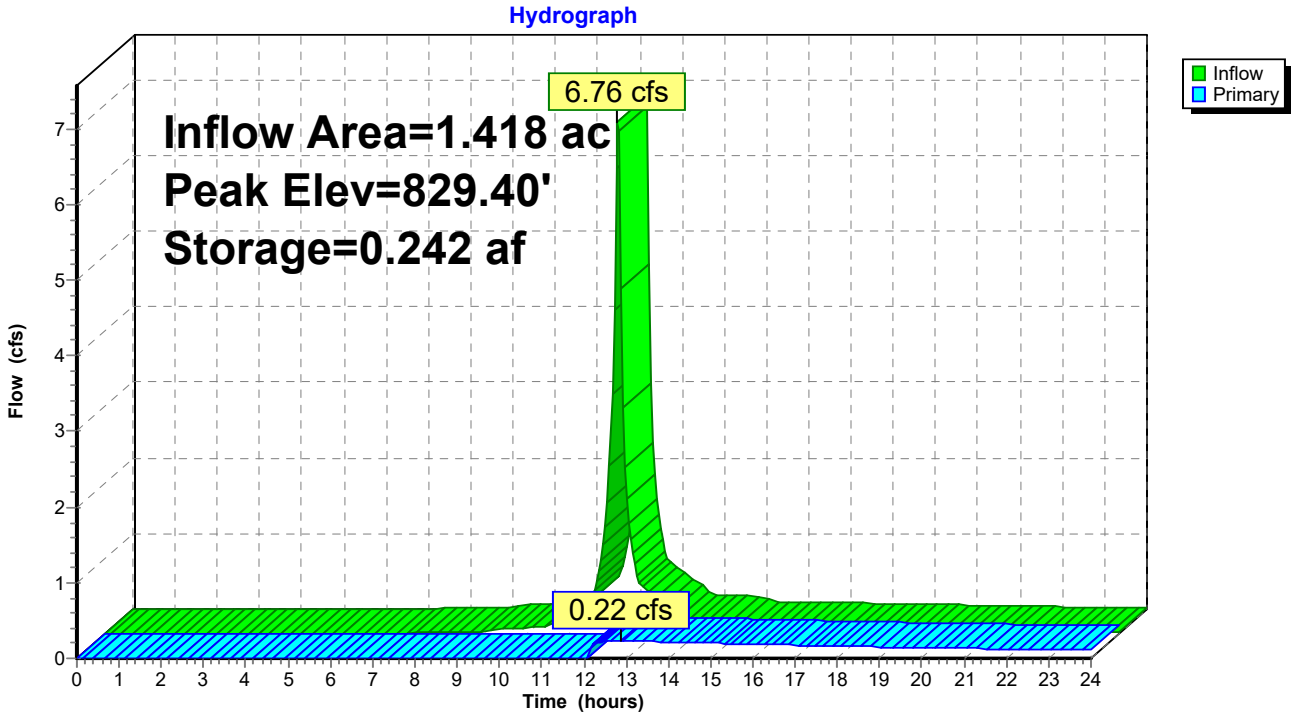
Volume	Invert	Avail.Storage	Storage Description
#1	823.00'	0.633 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
823.00	0.005	0.000	0.000	0.005
824.00	0.010	0.007	0.007	0.010
825.00	0.015	0.012	0.020	0.016
826.00	0.022	0.018	0.038	0.023
827.00	0.029	0.025	0.064	0.030
828.00	0.073	0.049	0.113	0.075
829.00	0.100	0.086	0.199	0.102
830.00	0.128	0.114	0.313	0.131
831.00	0.159	0.143	0.456	0.162
832.00	0.195	0.177	0.633	0.199

Device	Routing	Invert	Outlet Devices
#1	Primary	828.00'	**12.0" Round RCP_Round 12"** L= 117.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 828.00' / 827.40' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	828.00'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	830.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	831.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.22 cfs @ 12.88 hrs HW=829.30' TW=828.41' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.22 cfs of 2.72 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.22 cfs @ 4.55 fps)
  - **3=Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3: WET POND 3



Summary for Pond 4: INFILTRATION BASIN 4

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 1.67" for 10 yr event
Inflow = 2.64 cfs @ 12.14 hrs, Volume= 0.282 af
Outflow = 0.20 cfs @ 17.77 hrs, Volume= 0.178 af, Atten= 93%, Lag= 337.4 min
Primary = 0.20 cfs @ 17.77 hrs, Volume= 0.178 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 828.71' @ 17.77 hrs Surf.Area= 0.110 ac Storage= 0.123 af

Plug-Flow detention time= 306.2 min calculated for 0.177 af (63% of inflow)
Center-of-Mass det. time= 160.7 min (1,094.5 - 933.8)

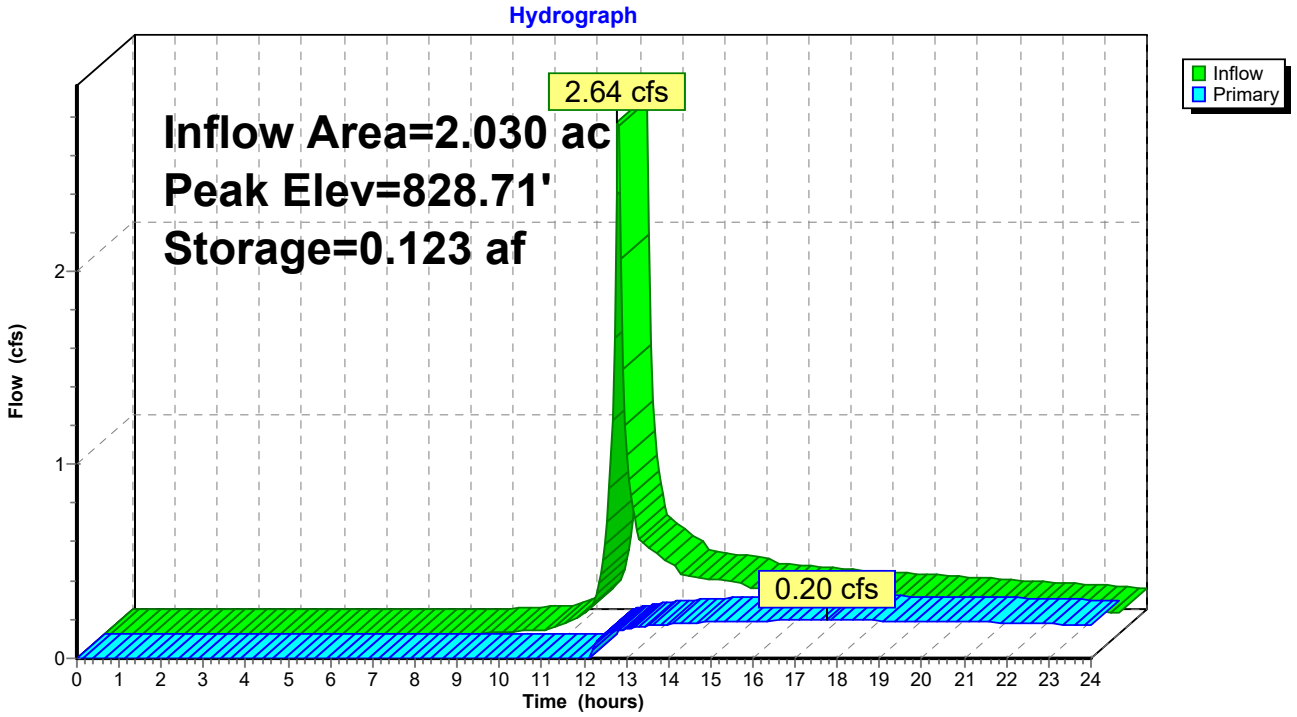
Volume	Invert	Avail.Storage	Storage Description
#1	827.40'	0.447 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
827.40	0.079	0.000	0.000	0.079
828.00	0.092	0.051	0.051	0.092
829.00	0.118	0.105	0.156	0.119
830.00	0.145	0.131	0.287	0.147
831.00	0.176	0.160	0.447	0.178

Device	Routing	Invert	Outlet Devices
#1	Primary	827.40'	**12.0" Round RCP_Round 12"** L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 827.40' / 827.13' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	827.90'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	829.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	830.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.20 cfs @ 17.77 hrs HW=828.71' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.20 cfs of 2.81 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 3.98 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4: INFILTRATION BASIN 4

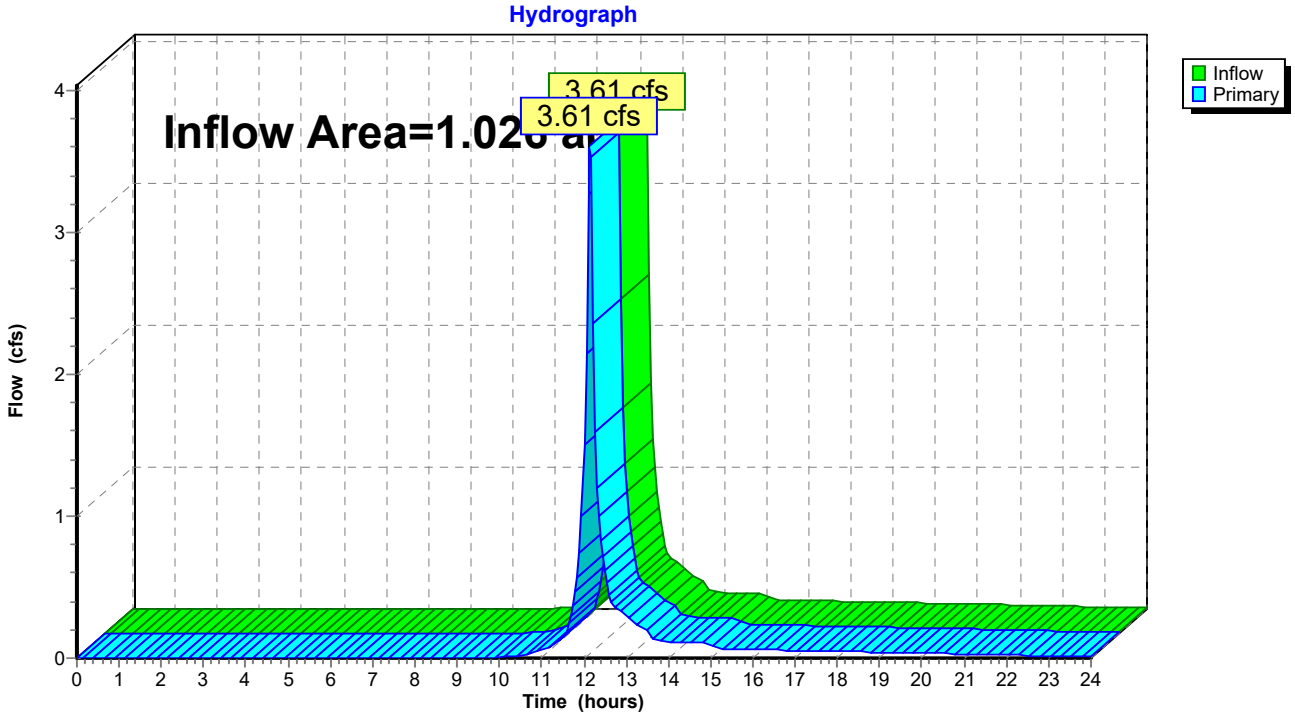


Summary for Link NW: DISCHAGE NW

Inflow Area = 1.026 ac, 0.00% Impervious, Inflow Depth > 1.96" for 10 yr event
Inflow = 3.61 cfs @ 12.13 hrs, Volume= 0.168 af
Primary = 3.61 cfs @ 12.13 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: DISCHAGE NW

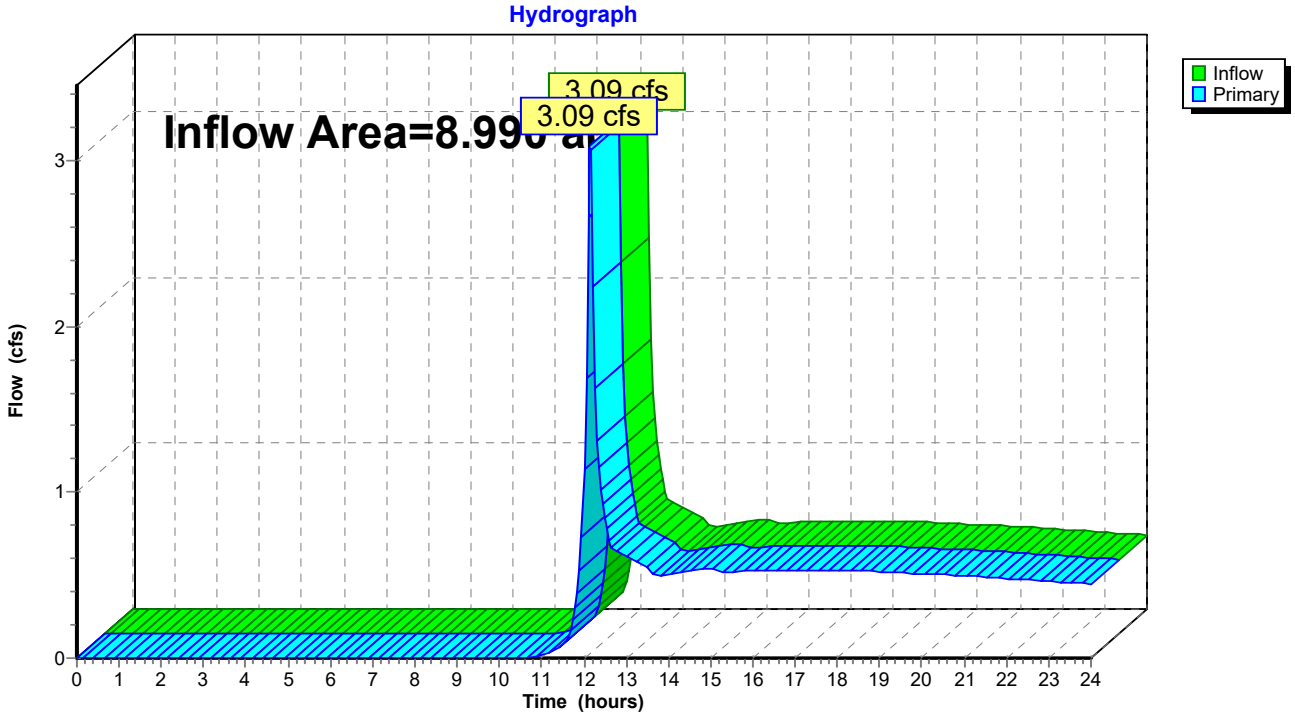


Summary for Link S: DISCHARGE SOUTH

Inflow Area = 8.990 ac, 0.00% Impervious, Inflow Depth > 0.77" for 10 yr event
Inflow = 3.09 cfs @ 12.14 hrs, Volume= 0.577 af
Primary = 3.09 cfs @ 12.14 hrs, Volume= 0.577 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: DISCHARGE SOUTH

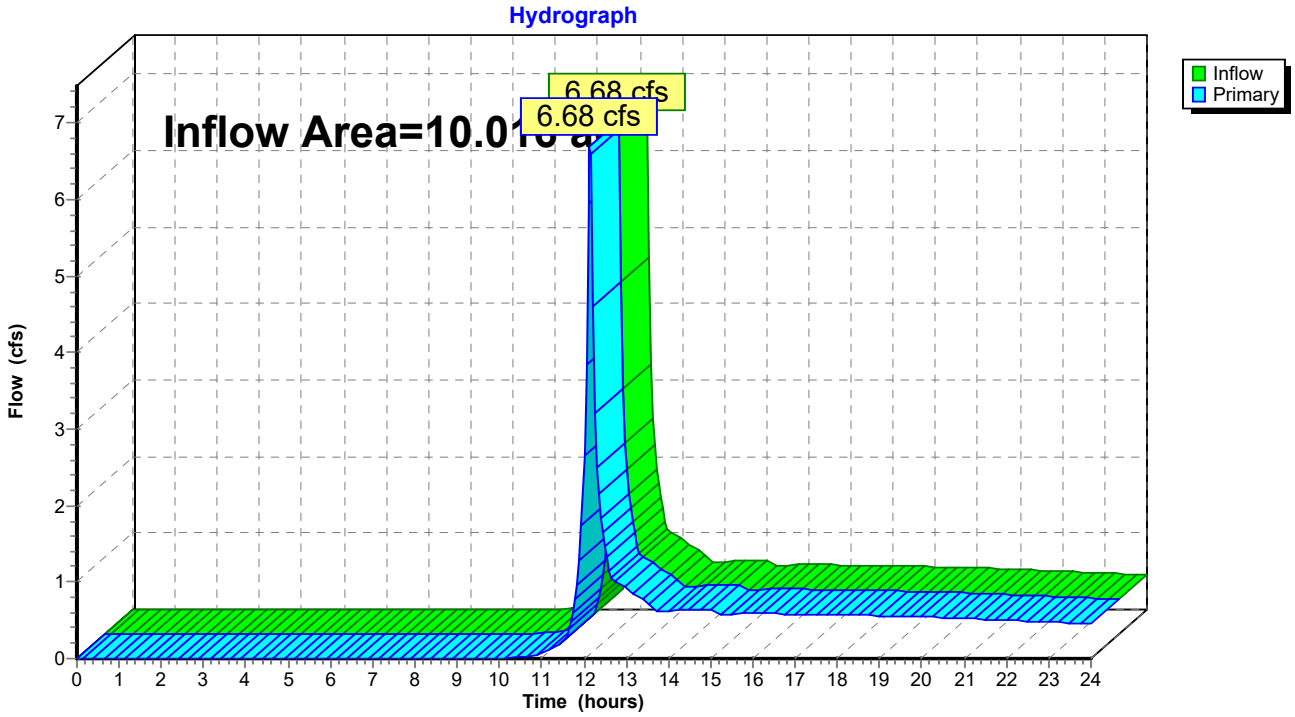


Summary for Link TOTAL: SITE DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 0.89" for 10 yr event
Inflow = 6.68 cfs @ 12.14 hrs, Volume= 0.745 af
Primary = 6.68 cfs @ 12.14 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: SITE DISCHARGE



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P-1: P-1 + OS-1 Runoff Area=5.142 ac 0.00% Impervious Runoff Depth>4.69"
Flow Length=935' Tc=10.8 min CN=87 Runoff=34.25 cfs 2.009 af

Subcatchment P-2: P-2 Runoff Area=0.749 ac 0.00% Impervious Runoff Depth>3.94"
Flow Length=55' Slope=0.0455 '/' Tc=6.9 min CN=80 Runoff=5.06 cfs 0.246 af

Subcatchment P-3: P-3 Runoff Area=1.418 ac 0.00% Impervious Runoff Depth>5.13"
Flow Length=475' Tc=6.4 min CN=91 Runoff=11.78 cfs 0.606 af

Subcatchment P-4: P-4 Runoff Area=0.612 ac 0.00% Impervious Runoff Depth>4.58"
Flow Length=190' Tc=6.5 min CN=86 Runoff=4.70 cfs 0.234 af

Subcatchment UD-5: UD-5 Runoff Area=1.069 ac 0.00% Impervious Runoff Depth>3.53"
Flow Length=295' Tc=6.2 min CN=76 Runoff=6.69 cfs 0.315 af

Subcatchment UD-6: UD-6 Runoff Area=1.026 ac 0.00% Impervious Runoff Depth>4.05"
Flow Length=115' Tc=6.0 min CN=81 Runoff=7.25 cfs 0.346 af

Pond 1: WET POND 1 Peak Elev=833.56' Storage=1.060 af Inflow=34.25 cfs 2.009 af
Outflow=11.46 cfs 1.226 af

Pond 2: INFILTRATION BASIN 2 Peak Elev=832.48' Storage=0.224 af Inflow=13.61 cfs 1.473 af
Outflow=9.94 cfs 1.309 af

Pond 3: WET POND 3 Peak Elev=830.81' Storage=0.426 af Inflow=11.78 cfs 0.606 af
Outflow=0.85 cfs 0.275 af

Pond 4: INFILTRATION BASIN 4 Peak Elev=829.72' Storage=0.248 af Inflow=4.98 cfs 0.509 af
Outflow=0.31 cfs 0.292 af

Link NW: DISCHAGE NW Inflow=7.25 cfs 0.346 af
Primary=7.25 cfs 0.346 af

Link S: DISCHARGE SOUTH Inflow=11.69 cfs 1.915 af
Primary=11.69 cfs 1.915 af

Link TOTAL: SITE DISCHARGE Inflow=14.29 cfs 2.261 af
Primary=14.29 cfs 2.261 af

Total Runoff Area = 10.016 ac Runoff Volume = 3.756 af Average Runoff Depth = 4.50"
100.00% Pervious = 10.016 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment P-1: P-1 + OS-1

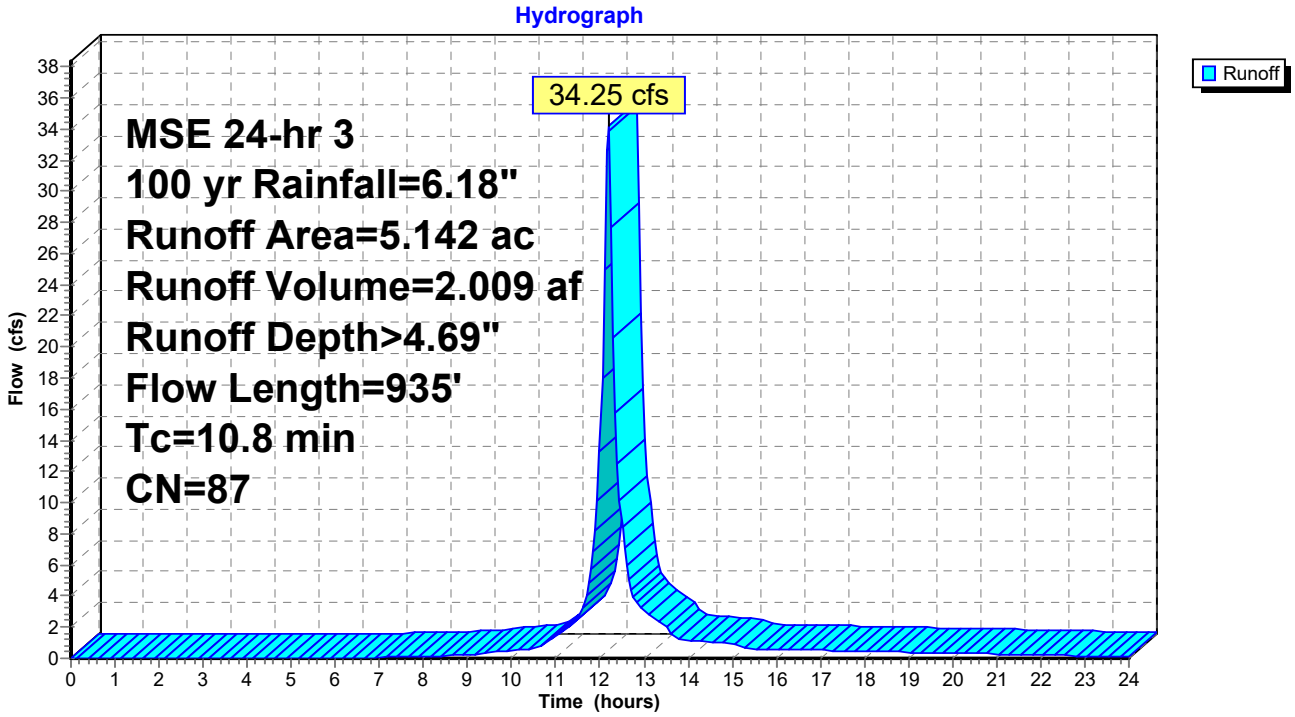
Runoff = 34.25 cfs @ 12.18 hrs, Volume= 2.009 af, Depth> 4.69"
Routed to Pond 1 : WET POND 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	4.344	87	P-1
*	0.798	89	OS-1
	5.142	87	Weighted Average
	5.142		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	75	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.7	170	0.0300	3.86	0.26	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.7	240	0.0600	5.45	0.37	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.6	265	0.0300	7.86	6.17	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.2	185	0.0520	13.55	23.95	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
10.8	935	Total			

Subcatchment P-1: P-1 + OS-1



Summary for Subcatchment P-2: P-2

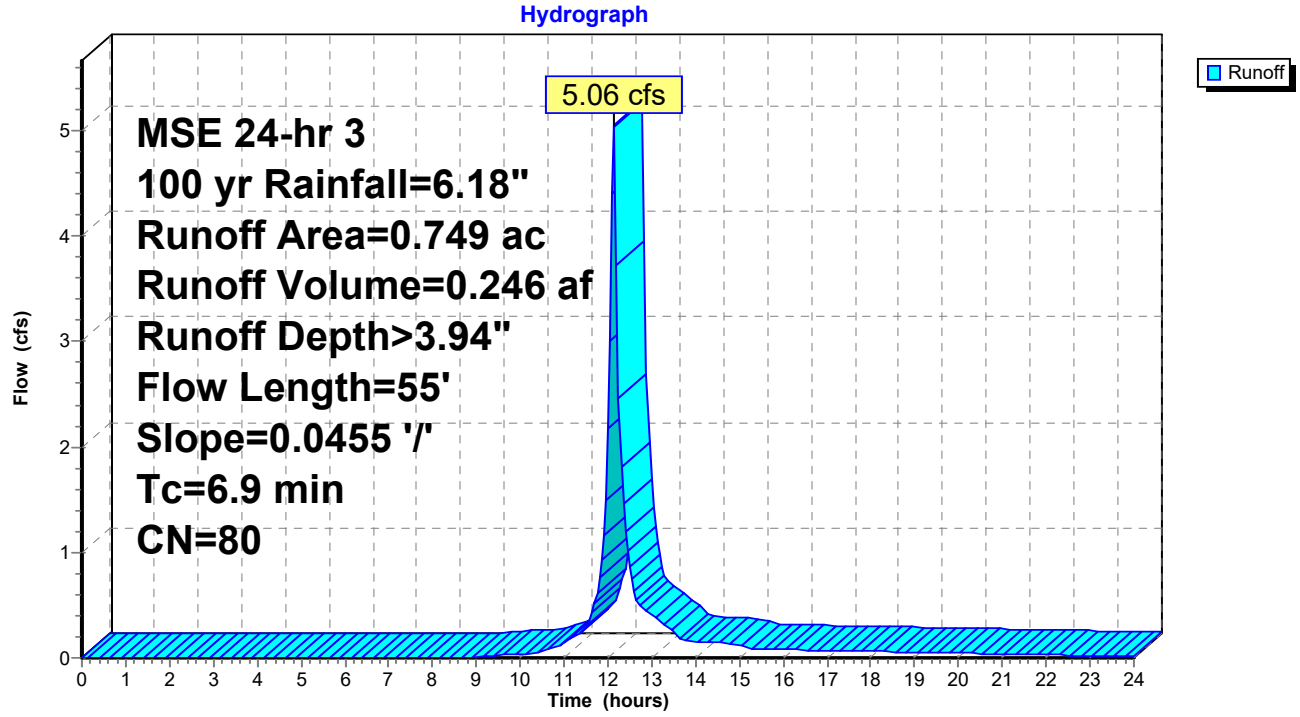
Runoff = 5.06 cfs @ 12.14 hrs, Volume= 0.246 af, Depth> 3.94"
Routed to Pond 2 : INFILTRATION BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.749	80	
	0.749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0455	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"

Subcatchment P-2: P-2



Summary for Subcatchment P-3: P-3

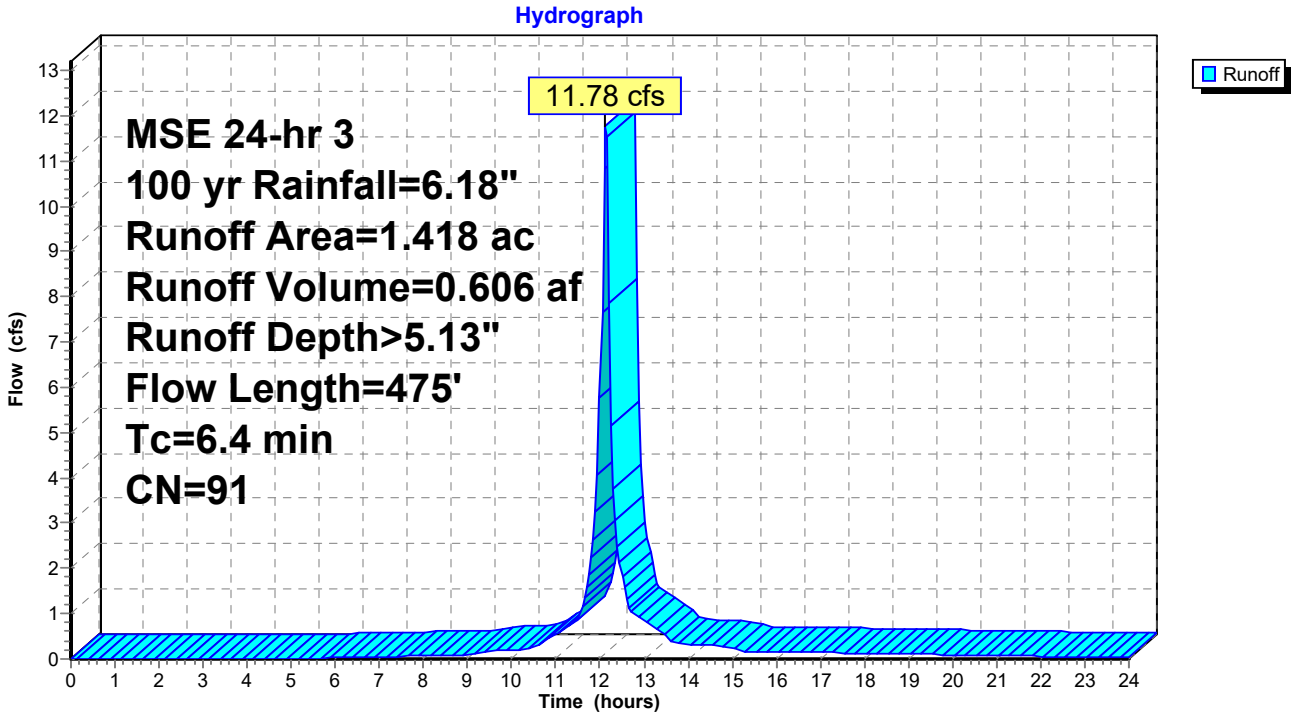
Runoff = 11.78 cfs @ 12.13 hrs, Volume= 0.606 af, Depth> 5.13"
Routed to Pond 3 : WET POND 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.418	91	
	1.418		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0350	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.9	190	0.0125	1.68		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	175	0.0550	5.22	0.35	**Trap/Vee/Rect Channel Flow,** Bot.W=0.50' D=0.12' Z= 0.1 & 1.0 '/' Top.W=0.63' n= 0.013
0.5	90	0.0050	3.21	2.52	**Pipe Channel, RCP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.4	475	Total			

Subcatchment P-3: P-3



Summary for Subcatchment P-4: P-4

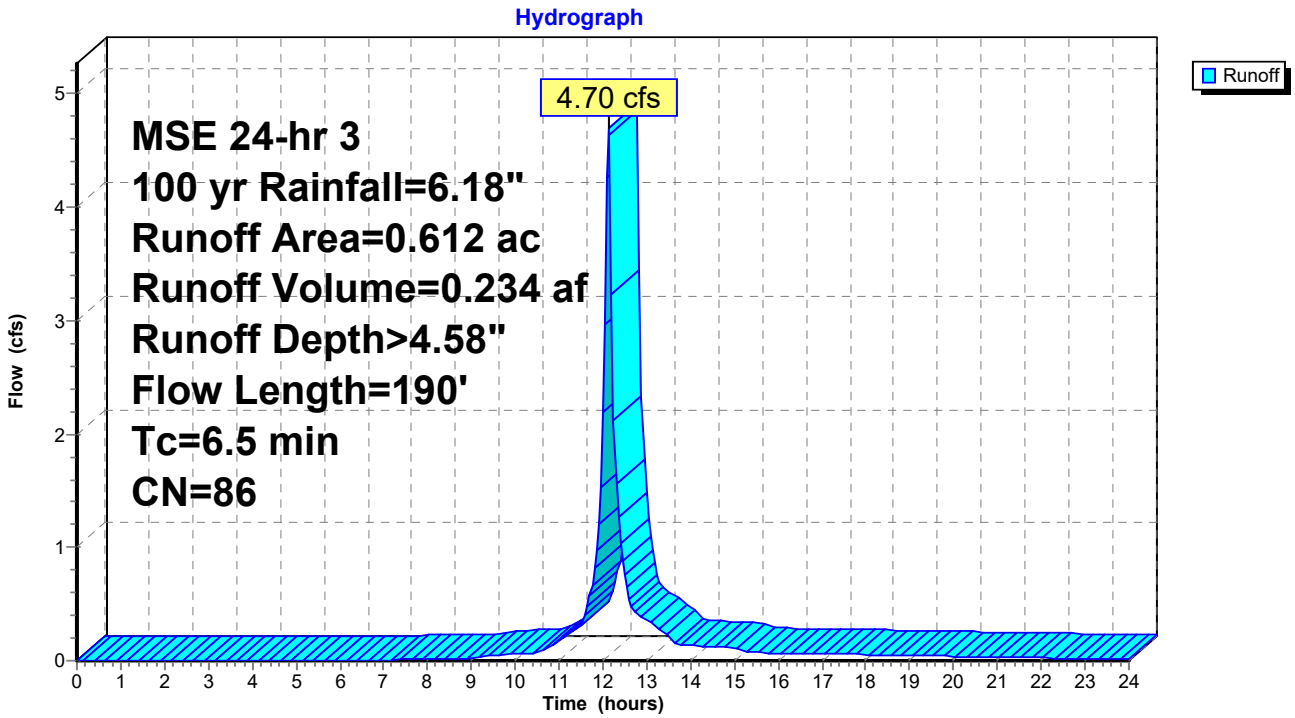
Runoff = 4.70 cfs @ 12.14 hrs, Volume= 0.234 af, Depth> 4.58"
Routed to Pond 4 : INFILTRATION BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.612	86	
	0.612		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	30	0.0300	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.5	160	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	190	Total			

Subcatchment P-4: P-4



Summary for Subcatchment UD-5: UD-5

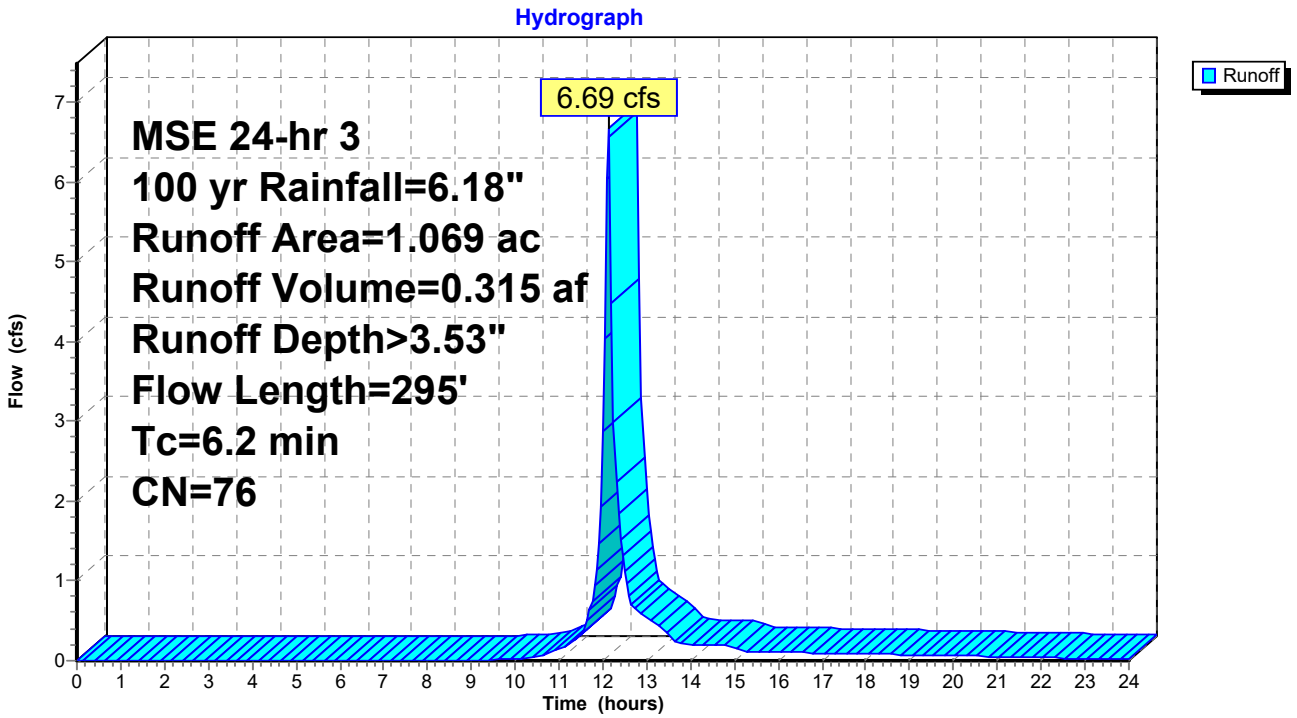
Runoff = 6.69 cfs @ 12.14 hrs, Volume= 0.315 af, Depth> 3.53"
Routed to Link S : DISCHARGE SOUTH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.069	76	
	1.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	35	0.1000	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.7	260	0.0115	1.61		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.2	295	Total			

Subcatchment UD-5: UD-5



Summary for Subcatchment UD-6: UD-6

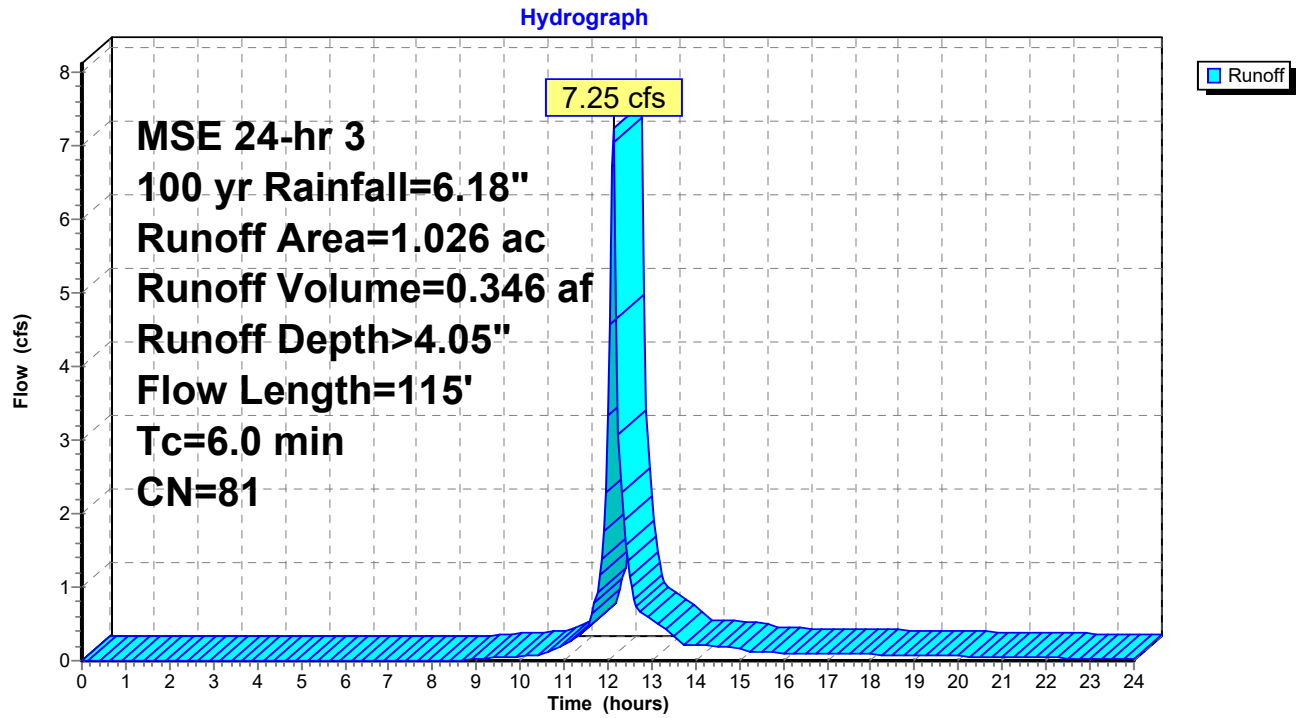
Runoff = 7.25 cfs @ 12.13 hrs, Volume= 0.346 af, Depth> 4.05"
Routed to Link NW : DISCHAGE NW

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.026	81	
	1.026		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	75	0.1500	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.3	40	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	115	Total, Increased to minimum Tc = 6.0 min			

Subcatchment UD-6: UD-6



Summary for Pond 1: WET POND 1

Inflow Area = 5.142 ac, 0.00% Impervious, Inflow Depth > 4.69" for 100 yr event
Inflow = 34.25 cfs @ 12.18 hrs, Volume= 2.009 af
Outflow = 11.46 cfs @ 12.27 hrs, Volume= 1.226 af, Atten= 67%, Lag= 5.3 min
Primary = 11.46 cfs @ 12.27 hrs, Volume= 1.226 af
Routed to Pond 2 : INFILTRATION BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 833.56' @ 12.49 hrs Surf.Area= 0.365 ac Storage= 1.060 af

Plug-Flow detention time= 148.5 min calculated for 1.224 af (61% of inflow)
Center-of-Mass det. time= 76.1 min (859.8 - 783.7)

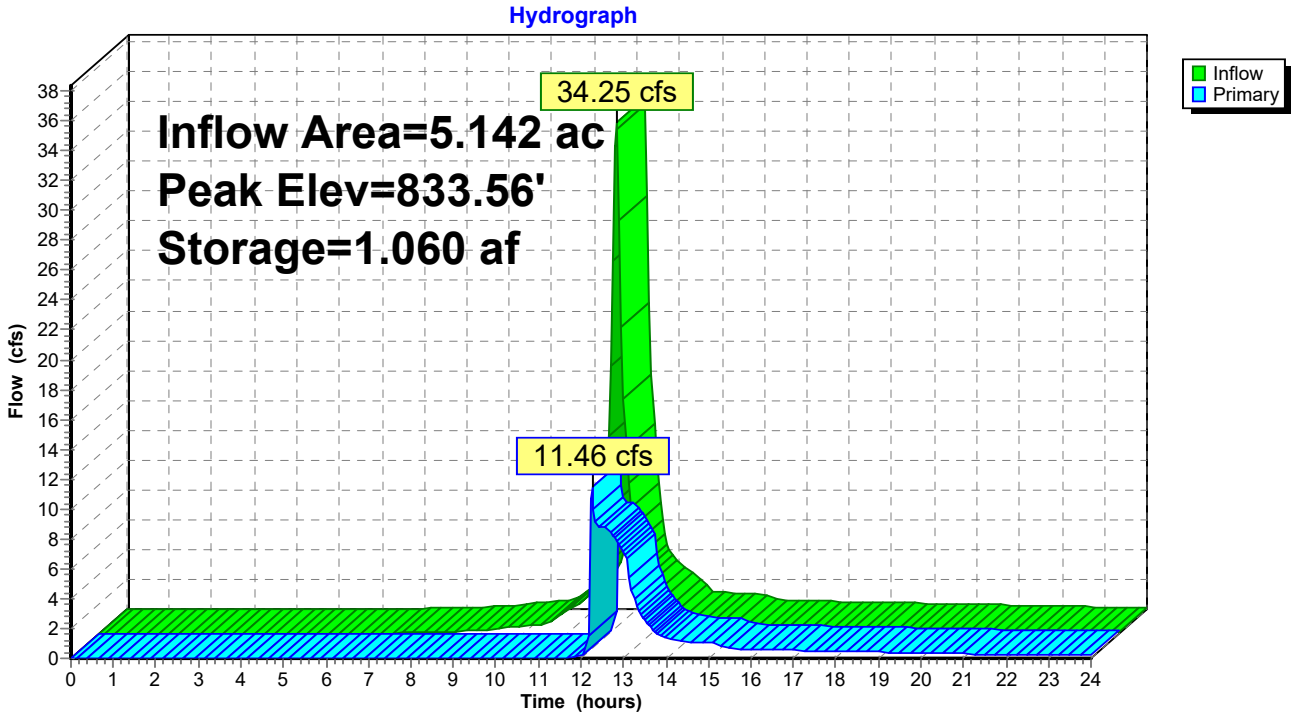
Volume	Invert	Avail.Storage	Storage Description
#1	825.20'	1.478 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
825.20	0.027	0.000	0.000	0.027
826.20	0.035	0.031	0.031	0.036
827.20	0.043	0.039	0.070	0.044
828.20	0.053	0.048	0.118	0.055
829.20	0.063	0.058	0.176	0.066
830.20	0.121	0.090	0.266	0.124
831.00	0.157	0.111	0.377	0.160
832.00	0.252	0.203	0.580	0.256
833.00	0.324	0.287	0.867	0.328
834.00	0.399	0.361	1.228	0.404
834.60	0.436	0.250	1.478	0.441

Device	Routing	Invert	Outlet Devices
#1	Primary	830.20'	**18.0" Round RCP_Round 18"** L= 46.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.20' / 830.00' S= 0.0043 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.20'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	833.60'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.14 cfs @ 12.27 hrs HW=833.28' TW=832.12' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Inlet Controls 9.14 cfs @ 5.17 fps)
  - **2=Orifice** (Passes < 0.25 cfs potential flow)
  - **3=Grate** (Passes < 15.65 cfs potential flow)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1: WET POND 1



Summary for Pond 2: INFILTRATION BASIN 2

Inflow Area = 5.891 ac, 0.00% Impervious, Inflow Depth > 3.00" for 100 yr event
Inflow = 13.61 cfs @ 12.27 hrs, Volume= 1.473 af
Outflow = 9.94 cfs @ 12.43 hrs, Volume= 1.309 af, Atten= 27%, Lag= 10.0 min
Primary = 9.94 cfs @ 12.43 hrs, Volume= 1.309 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 832.48' @ 12.43 hrs Surf.Area= 0.141 ac Storage= 0.224 af

Plug-Flow detention time= 73.7 min calculated for 1.309 af (89% of inflow)
Center-of-Mass det. time= 25.5 min (874.3 - 848.8)

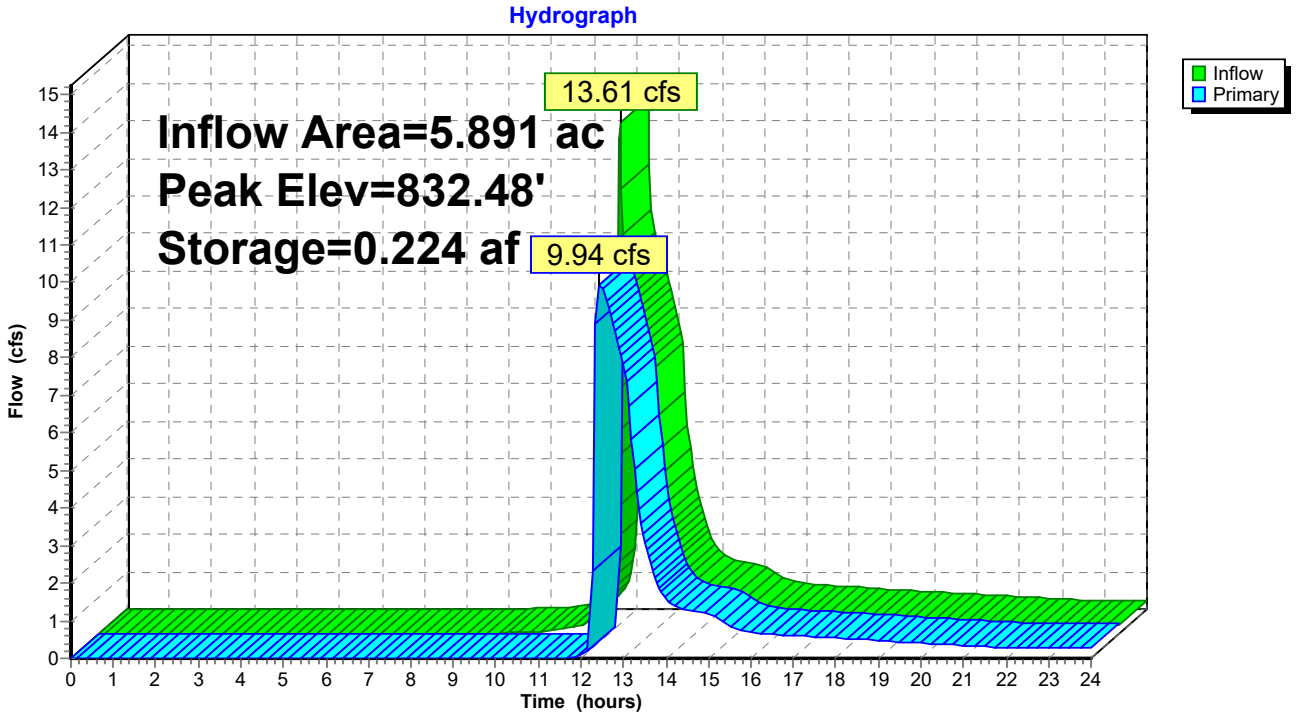
Volume	Invert	Avail.Storage	Storage Description
#1	830.00'	0.392 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
830.00	0.047	0.000	0.000	0.047
831.00	0.079	0.062	0.062	0.079
832.00	0.120	0.099	0.161	0.121
833.00	0.166	0.142	0.303	0.167
833.50	0.190	0.089	0.392	0.191

Device	Routing	Invert	Outlet Devices
#1	Primary	830.00'	**18.0" Round RCP_Round 18"** L= 28.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 830.00' / 829.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	830.50'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	832.10'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	832.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.92 cfs @ 12.43 hrs HW=832.48' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 18"** (Passes 9.92 cfs of 10.57 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.32 cfs @ 6.56 fps)
  - **3=Grate** (Weir Controls 9.60 cfs @ 2.01 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2: INFILTRATION BASIN 2



Summary for Pond 3: WET POND 3

Inflow Area = 1.418 ac, 0.00% Impervious, Inflow Depth > 5.13" for 100 yr event
Inflow = 11.78 cfs @ 12.13 hrs, Volume= 0.606 af
Outflow = 0.85 cfs @ 12.99 hrs, Volume= 0.275 af, Atten= 93%, Lag= 51.5 min
Primary = 0.85 cfs @ 12.99 hrs, Volume= 0.275 af
Routed to Pond 4 : INFILTRATION BASIN 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 830.81' @ 13.00 hrs Surf.Area= 0.153 ac Storage= 0.426 af

Plug-Flow detention time= 329.7 min calculated for 0.275 af (45% of inflow)
Center-of-Mass det. time= 244.7 min (1,014.8 - 770.0)

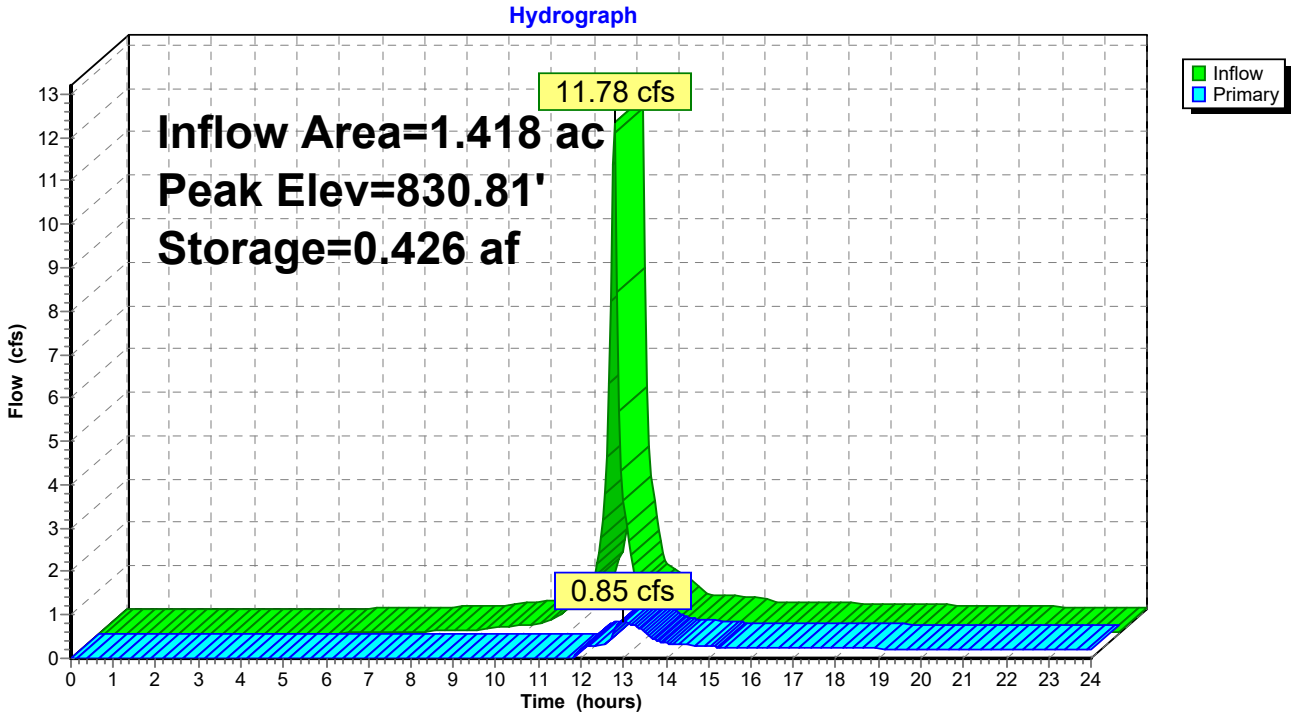
Volume	Invert	Avail.Storage	Storage Description
#1	823.00'	0.633 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
823.00	0.005	0.000	0.000	0.005
824.00	0.010	0.007	0.007	0.010
825.00	0.015	0.012	0.020	0.016
826.00	0.022	0.018	0.038	0.023
827.00	0.029	0.025	0.064	0.030
828.00	0.073	0.049	0.113	0.075
829.00	0.100	0.086	0.199	0.102
830.00	0.128	0.114	0.313	0.131
831.00	0.159	0.143	0.456	0.162
832.00	0.195	0.177	0.633	0.199

Device	Routing	Invert	Outlet Devices
#1	Primary	828.00'	**12.0" Round RCP_Round 12"** L= 117.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 828.00' / 827.40' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	828.00'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	830.75'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	831.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.85 cfs @ 12.99 hrs HW=830.81' TW=829.29' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.85 cfs of 3.41 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.29 cfs @ 5.93 fps)
  - **3=Grate** (Weir Controls 0.56 cfs @ 0.78 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3: WET POND 3



Summary for Pond 4: INFILTRATION BASIN 4

Inflow Area = 2.030 ac, 0.00% Impervious, Inflow Depth > 3.01" for 100 yr event
Inflow = 4.98 cfs @ 12.14 hrs, Volume= 0.509 af
Outflow = 0.31 cfs @ 15.65 hrs, Volume= 0.292 af, Atten= 94%, Lag= 211.1 min
Primary = 0.31 cfs @ 15.65 hrs, Volume= 0.292 af
Routed to Link S : DISCHARGE SOUTH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 829.72' @ 15.65 hrs Surf.Area= 0.137 ac Storage= 0.248 af

Plug-Flow detention time= 337.7 min calculated for 0.291 af (57% of inflow)
Center-of-Mass det. time= 179.0 min (1,086.9 - 907.9)

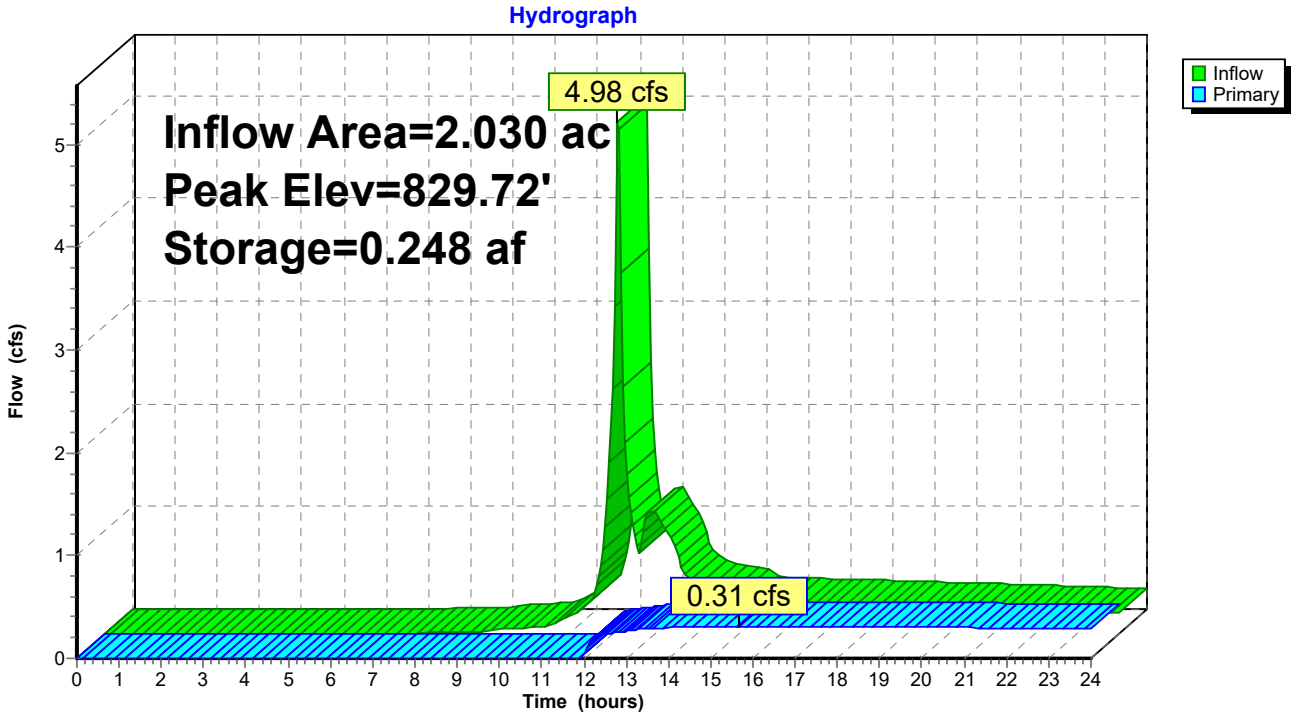
Volume	Invert	Avail.Storage	Storage Description
#1	827.40'	0.447 af	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
827.40	0.079	0.000	0.000	0.079
828.00	0.092	0.051	0.051	0.092
829.00	0.118	0.105	0.156	0.119
830.00	0.145	0.131	0.287	0.147
831.00	0.176	0.160	0.447	0.178

Device	Routing	Invert	Outlet Devices
#1	Primary	827.40'	**12.0" Round RCP_Round 12"** L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 827.40' / 827.13' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	827.90'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	829.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	830.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.31 cfs @ 15.65 hrs HW=829.72' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 12"** (Passes 0.31 cfs of 4.47 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.27 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4: INFILTRATION BASIN 4

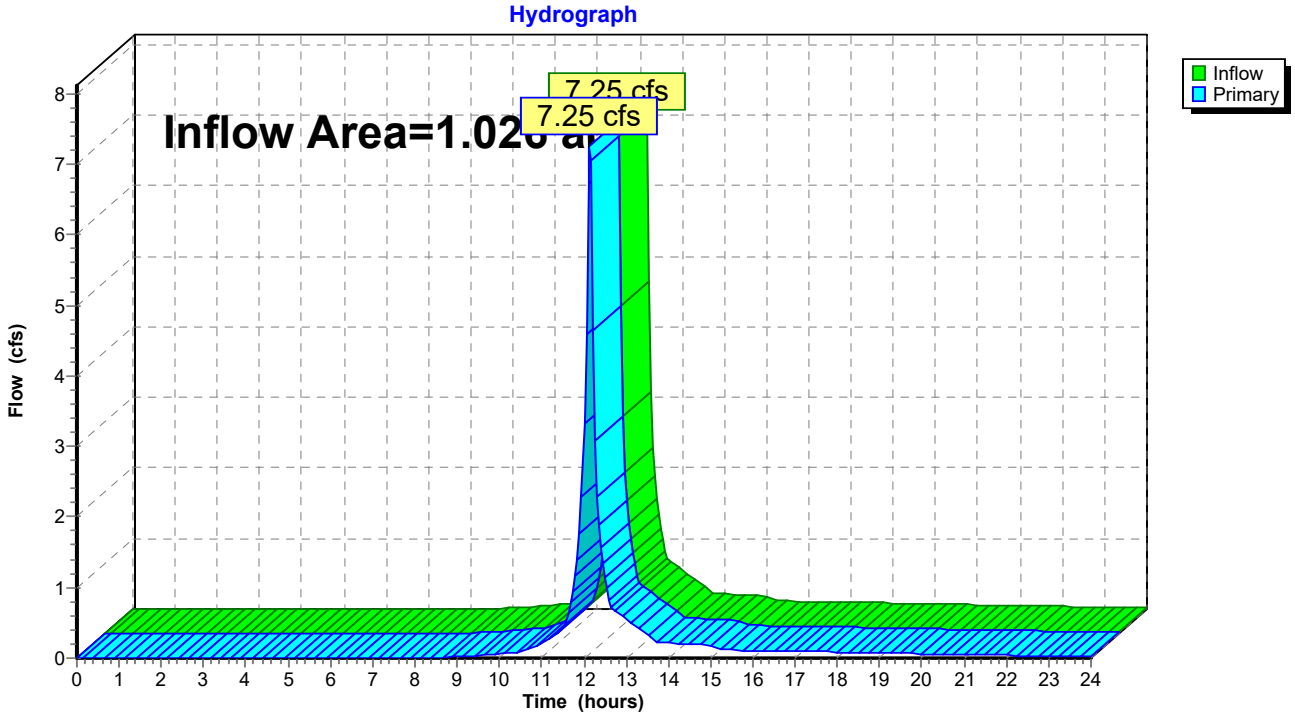


Summary for Link NW: DISCHAGE NW

Inflow Area = 1.026 ac, 0.00% Impervious, Inflow Depth > 4.05" for 100 yr event
Inflow = 7.25 cfs @ 12.13 hrs, Volume= 0.346 af
Primary = 7.25 cfs @ 12.13 hrs, Volume= 0.346 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link NW: DISCHAGE NW

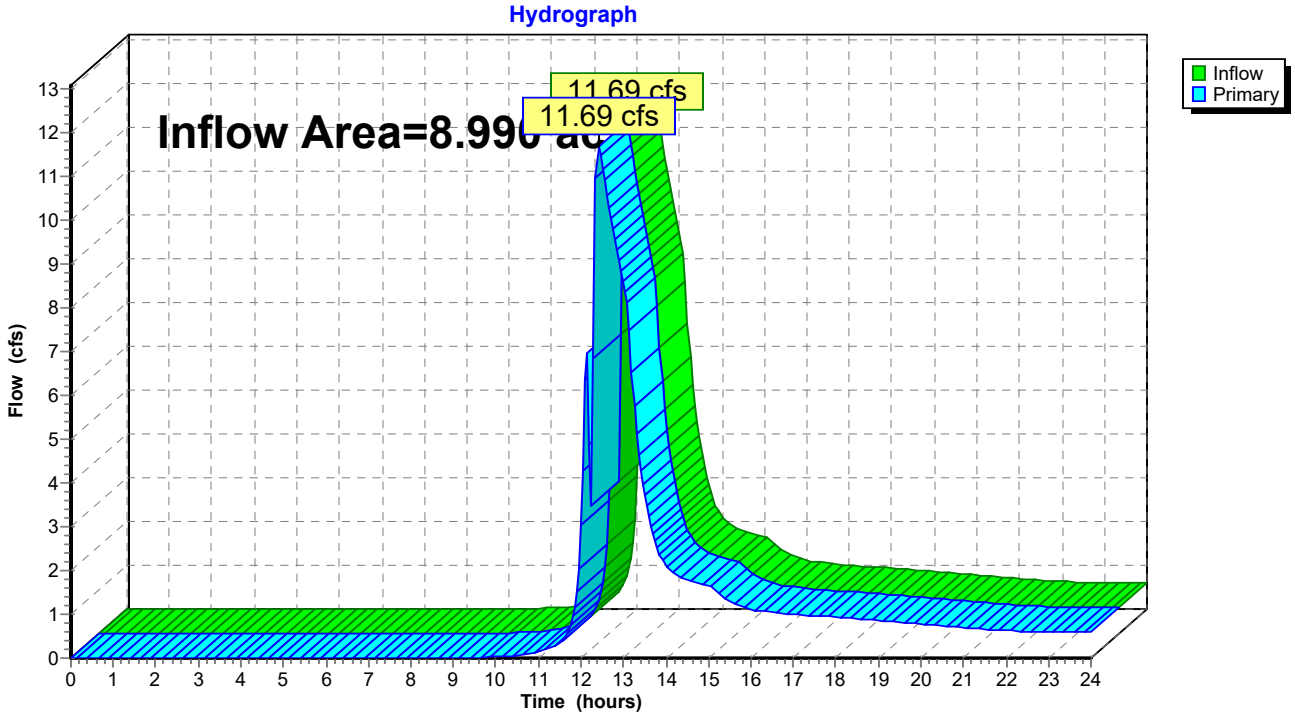


Summary for Link S: DISCHARGE SOUTH

Inflow Area = 8.990 ac, 0.00% Impervious, Inflow Depth > 2.56" for 100 yr event
Inflow = 11.69 cfs @ 12.41 hrs, Volume= 1.915 af
Primary = 11.69 cfs @ 12.41 hrs, Volume= 1.915 af, Atten= 0%, Lag= 0.0 min
Routed to Link TOTAL : SITE DISCHARGE

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: DISCHARGE SOUTH

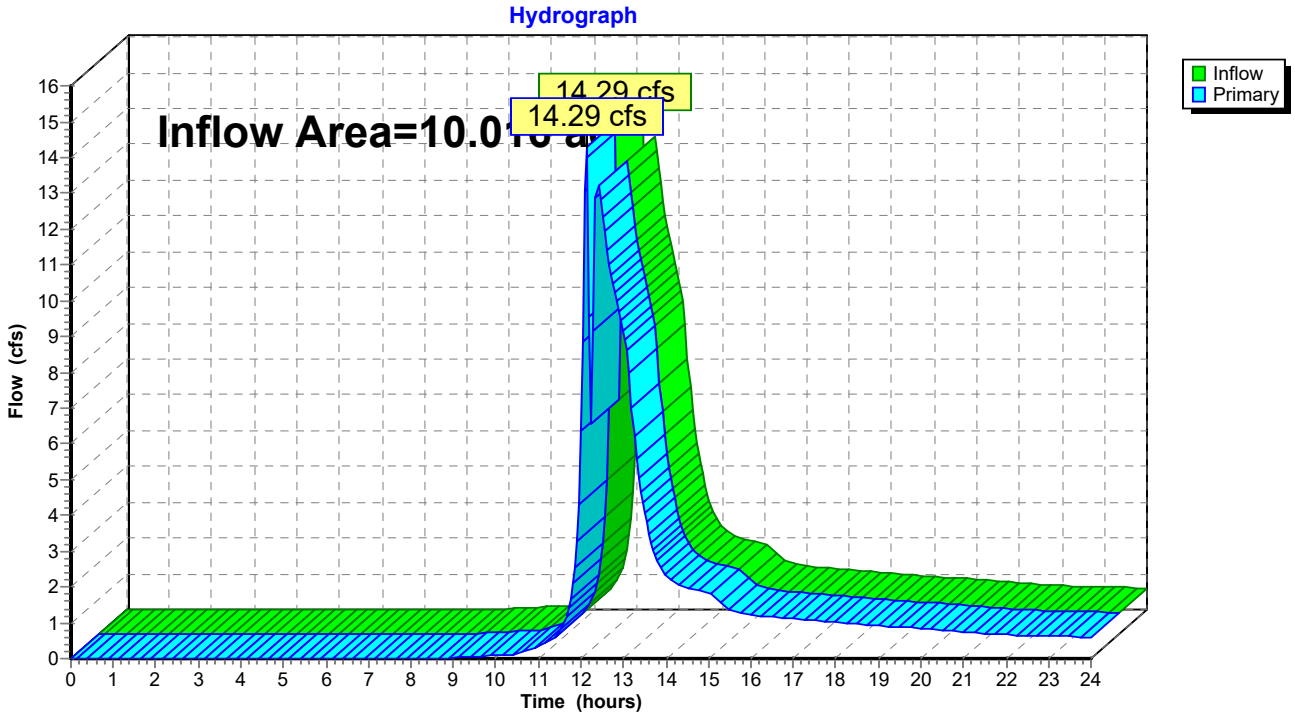


Summary for Link TOTAL: SITE DISCHARGE

Inflow Area = 10.016 ac, 0.00% Impervious, Inflow Depth > 2.71" for 100 yr event
Inflow = 14.29 cfs @ 12.13 hrs, Volume= 2.261 af
Primary = 14.29 cfs @ 12.13 hrs, Volume= 2.261 af, Atten= 0%, Lag= 0.0 min

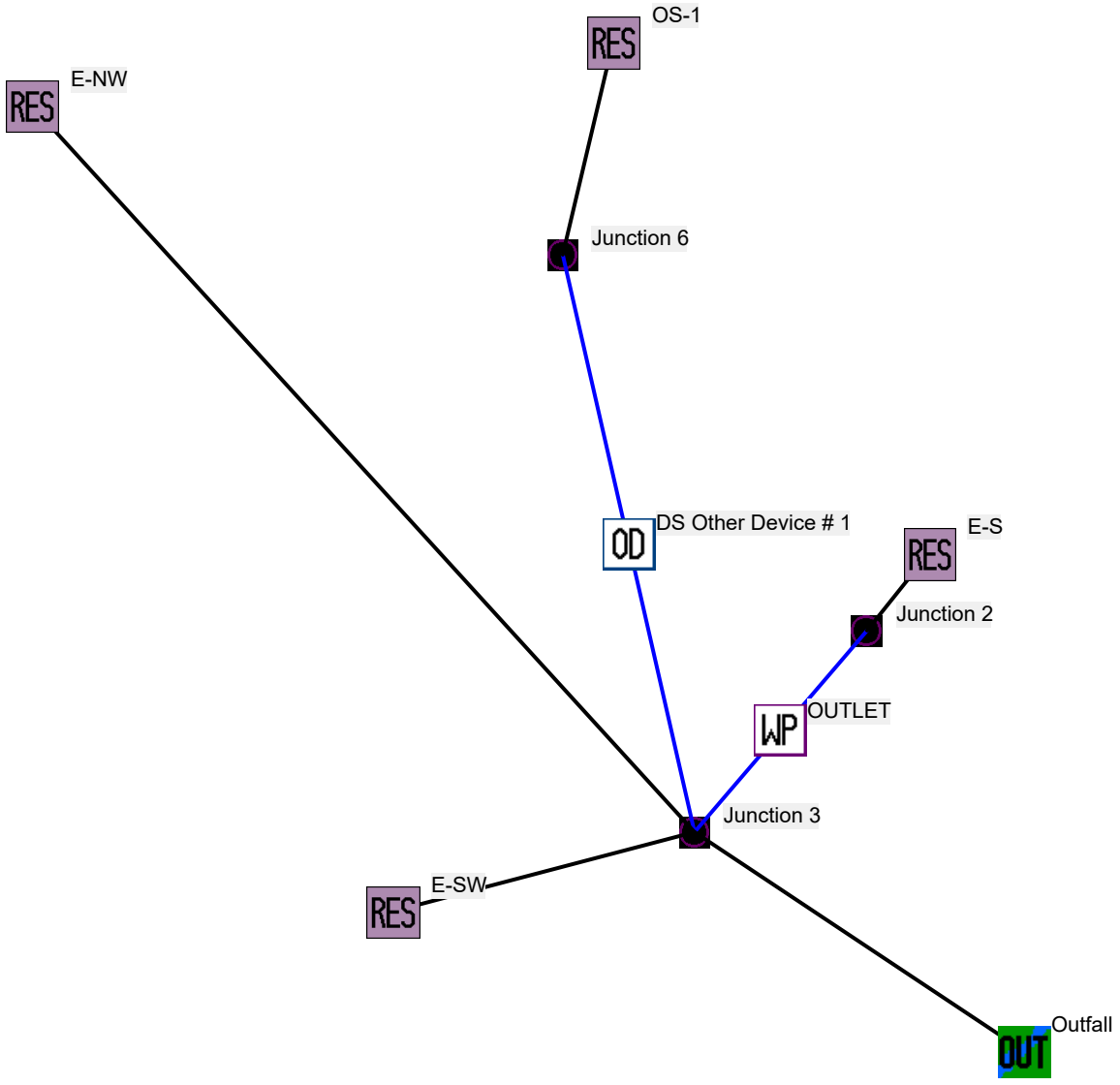
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link TOTAL: SITE DISCHARGE



APPENDIX 4

WinSLAMM Input & Output


OS-1
RES
E-NW
RES
Junction 6
DS Other Device # 1
OD
E-S
RES
Junction 2
OUTLET
WP
Junction 3
E-SW
RES
Outfall
OUT

Data file name: X:\2023\23-047-966 Olde Farm (Howell) - Waukesha\Documents\284-Storm Water Management Plan\OLDE FARM_EX WINSLAMM_2023-11-07.mdb
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 11-15-2023 Time: 13:55:32
Site information:

LU# 1 - Residential: E-NW Total area (ac): 2.825
57 - Undeveloped Areas 1: 2.825 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: E-SW Total area (ac): 0.382
57 - Undeveloped Areas 1: 0.382 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: E-S Total area (ac): 6.011
1 - Roofs 1: 0.088 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.024 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.012 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 5.887 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: OS-1 Total area (ac): 0.798
1 - Roofs 1: 0.129 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.087 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.054 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.169 ac. Intermediate Street Length = 0.0377 mi Street Width = 36.98276 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.359 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

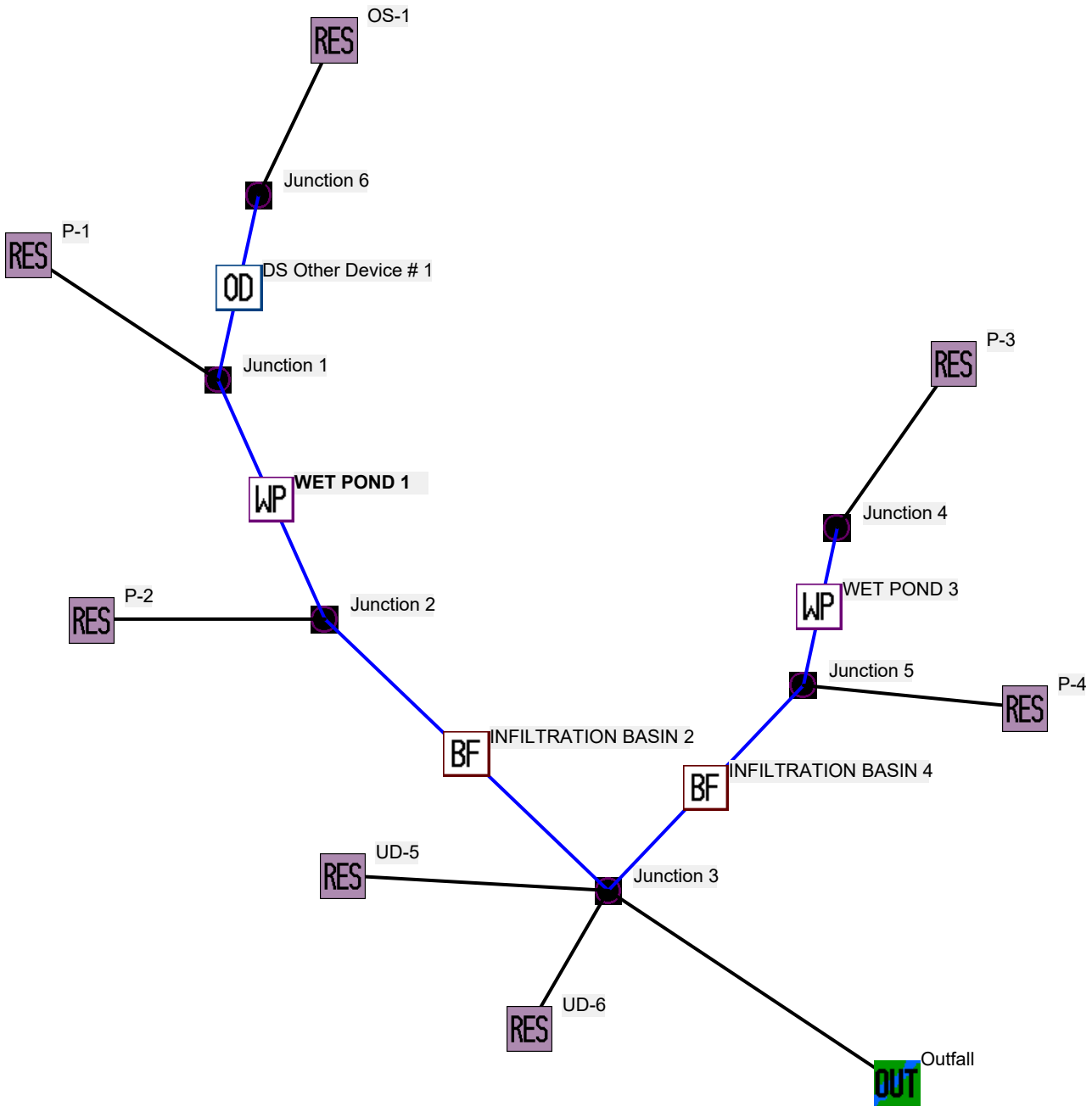
Control Practice 1: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0
Control Practice 2: Wet Detention Pond CP# 1 (DS) - OUTLET
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 0.01
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 2
2. Number of orifices: 1
3. Invert elevation above datum (ft): 0.01
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 40
2. Weir crest width (ft): 5
3. Height from datum to bottom of weir opening: 3.52
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0001	0.00	0.00
2	0.52	0.0010	0.00	0.00
3	1.52	0.0220	0.00	0.00
4	2.52	0.1370	0.00	0.00
5	3.52	0.2920	0.00	0.00
6	4.52	0.5270	0.00	0.00

SLAMM for Windows Version 10.5.0

Data file name: X:\2023\23-047-966 Olde Farm (Howell) - Waukesha\Documents\284-Storm Water Management Plan\OLDE FARM_EX WINSLAMM_2023-11-07.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 11-15-2023 Time of run: 13:55:06
Total Area Modeled (acres): 10.016
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	90119	-	62.39	351.0	-
Outfall Total with Controls:	90140	-0.02%	11.85	66.70	81.00%
Annualized Total After Outfall Controls:	91392			67.62	


RES
OS-1
Junction 6
RES
P-1
OD
DS Other Device # 1
Junction 1
RES
P-3
WP
WET POND 1
Junction 4
RES
P-2
Junction 2
WP
WET POND 3
Junction 5
RES
P-4
BF
INFILTRATION BASIN 2
BF
INFILTRATION BASIN 4
RES
UD-5
Junction 3
RES
UD-6
OUT
Outfall

Data file name: X:\2023\23-047-966 Olde Farm (Howell) - Waukesha\Documents\284-Storm Water Management Plan\PRELIM_2023-11-27\OLDE FARM_WINSLAMM_2
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 12-11-2023 Time: 17:34:22
Site information:

LU# 1 - Residential: P-1 Total area (ac): 4.344
1 - Roofs 1: 0.404 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.294 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.455 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.132 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.126 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.092 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.489 ac. Intermediate Street Length = 0.109 mi Street Width = 37.01147 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.231 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.121 ac. PSD File: Source Area PSD File:

LU# 2 - Residential: P-2 Total area (ac): 0.749
1 - Roofs 1: 0.110 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.034 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.561 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.044 ac. PSD File: Source Area PSD File:

LU# 3 - Residential: UD-5 Total area (ac): 1.069
31 - Sidewalks 1: 0.028 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.110 ac. Intermediate Street Length = 0.0245 mi Street Width = 37.04082 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.931 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: UD-6 Total area (ac): 1.026
1 - Roofs 1: 0.110 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.034 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.882 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: P-3 Total area (ac): 1.418
1 - Roofs 1: 0.184 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.073 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.248 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.063 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.069 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.011 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.233 ac. Intermediate Street Length = 0.052 mi Street Width = 36.96634 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.464 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.073 ac. PSD File: Source Area PSD File:

LU# 6 - Residential: OS-1 Total area (ac): 0.798
1 - Roofs 1: 0.129 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.087 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.054 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.169 ac. Intermediate Street Length = 0.0377 mi Street Width = 36.98276 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.359 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 7 - Residential: P-4 Total area (ac): 0.612
1 - Roofs 1: 0.129 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.040 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.364 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.079 ac. PSD File: Source Area PSD File:

Control Practice 1: Wet Detention Pond CP# 1 (DS) - WET POND 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.4
Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.55
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0267	0.00	0.00
2	1.00	0.0347	0.00	0.00
3	2.00	0.0433	0.00	0.00
4	3.00	0.0526	0.00	0.00
5	4.00	0.0626	0.00	0.00
6	5.00	0.1215	0.00	0.00
7	5.80	0.1573	0.00	0.00
8	6.80	0.2517	0.00	0.00
9	7.80	0.3241	0.00	0.00
10	8.80	0.3989	0.00	0.00
11	9.40	0.4360	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - WET POND 3
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8
Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.75
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0048	0.00	0.00
2	1.00	0.0098	0.00	0.00
3	2.00	0.0155	0.00	0.00
4	3.00	0.0219	0.00	0.00
5	4.00	0.0289	0.00	0.00
6	5.00	0.0733	0.00	0.00
7	6.00	0.1004	0.00	0.00
8	7.00	0.1278	0.00	0.00
9	8.00	0.1590	0.00	0.00
10	9.00	0.1954	0.00	0.00

Control Practice 3: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Data file name: X:\2023\23-047-966 Olde Farm (Howell) - Waukesha\Documents\284-Storm Water Management Plan\PRELIM_2023-11-27\OLDE FARM_WINSLAMM_2
WinSLAMM Version 10.5.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx

Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 12-11-2023 Time: 17:34:37
Site information:

LU# 1 - Residential: P-1 Total area (ac): 4.344
1 - Roofs 1: 0.404 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.294 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.455 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.132 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.126 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.092 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.489 ac. Intermediate Street Length = 0.109 mi Street Width = 37.01147 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.231 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.121 ac. PSD File: Source Area PSD File:

LU# 2 - Residential: P-2 Total area (ac): 0.749
1 - Roofs 1: 0.110 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.034 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.561 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.044 ac. PSD File: Source Area PSD File:

LU# 3 - Residential: UD-5 Total area (ac): 1.069
31 - Sidewalks 1: 0.028 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.110 ac. Intermediate Street Length = 0.0245 mi Street Width = 37.04082 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.931 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: UD-6 Total area (ac): 1.026
1 - Roofs 1: 0.110 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.034 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.882 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: P-3 Total area (ac): 1.418
1 - Roofs 1: 0.184 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.073 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.248 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.063 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.069 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.011 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.233 ac. Intermediate Street Length = 0.052 mi Street Width = 36.96634 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.464 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.073 ac. PSD File: Source Area PSD File:

LU# 6 - Residential: OS-1 Total area (ac): 0.798
1 - Roofs 1: 0.129 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.087 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.054 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.169 ac. Intermediate Street Length = 0.0377 mi Street Width = 36.98276 ft Street Edges = 2
Default St. Dirt Accum. Annual Winter Load = 2500 lbs PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.359 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 7 - Residential: P-4 Total area (ac): 0.612
1 - Roofs 1: 0.129 ac. Pitched Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.040 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.364 ac. Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 0.079 ac. PSD File: Source Area PSD File:

Control Practice 1: Wet Detention Pond CP# 1 (DS) - WET POND 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10

2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.4

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.55

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0267	0.00	0.00
2	1.00	0.0347	0.00	0.00
3	2.00	0.0433	0.00	0.00
4	3.00	0.0526	0.00	0.00
5	4.00	0.0626	0.00	0.00
6	5.00	0.1215	0.00	0.00
7	5.80	0.1573	0.00	0.00
8	6.80	0.2517	0.00	0.00
9	7.80	0.3241	0.00	0.00
10	8.80	0.3989	0.00	0.00
11	9.40	0.4360	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - WET POND 3

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.75

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0048	0.00	0.00
2	1.00	0.0098	0.00	0.00
3	2.00	0.0155	0.00	0.00
4	3.00	0.0219	0.00	0.00
5	4.00	0.0289	0.00	0.00
6	5.00	0.0733	0.00	0.00
7	6.00	0.1004	0.00	0.00
8	7.00	0.1278	0.00	0.00
9	8.00	0.1590	0.00	0.00
10	9.00	0.1954	0.00	0.00

Control Practice 3: Other Device CP# 1 (DS) - DS Other Device # 1

Fraction of drainage area served by device (ac) = 1.00

Particulate Concentration reduction fraction = 1.00

Filterable Concentration reduction fraction = 1.00

Runoff volume reduction fraction = 0

SLAMM for Windows Version 10.5.0

Data file name: X:\2023\23-047-966 Olde Farm (Howell) - Waukesha\Documents\284-Storm Water Management Plan\PRELIM_2023-11-27\OLDE FARM_WINSLAMM_2023-12-11.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 12-11-2023 Time of run: 16:54:14
Total Area Modeled (acres): 10.016
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	322977	-	109.9	2217	-
Outfall Total with Controls:	180036	44.26%	39.42	443.0	80.02%
Annualized Total After Outfall Controls:	182537			449.2	

. Percent Solids Reduction due to Engineered Media Not Used
. Percent Solids Reduction due to Engineered Media Not Used