

STORMWATER **CALCULATIONS & REPORT**

Project

**43 Mattakeesett Street,
Pembroke, MA 02359
Assessor's Parcel C9-17
Proposed Storage Building**

Owner

**Old Salt Realty Trust
387 Main Street
Plympton, MA 02367**

Applicant

**Jeffrey Perette
387 Main Street
Plympton, MA 02367**

Date: July 24, 2019

Prepared by:



*Registered Professional Engineers,
Project Managers & Environmental Consultants*

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TABLE OF CONTENTS

	Page
Project Narrative.....	1-2
Summary of Standards.....	3-4
Figure 1: USGS Map.....	5
Figure 2: FEMA Flood Map.....	6
Figure 3: NHESP Map.....	7
Figure 4: Soils Map.....	8

APPENDIX A

- Construction Phase Stormwater Management Plan
- Construction Phase Erosion Control Maintenance Schedule & Checklist
- Post-Development Operation & Maintenance Plan & Long-Term Operation & Maintenance
- Illicit Discharge Compliance Statement

APPENDIX B

- Pre-Development HydroCAD Analysis
- Post-Development HydroCAD Analysis

PLANS

- Watershed Delineation Plans

Project Narrative

43 Mattakeesett Street

Pembroke, Massachusetts

Project Summary

The project proponent proposes to construct a new storage building at 43 Mattakeesett Street, Pembroke, MA. The property is shown as Pembroke Assessor's Parcel C9-17 and is approximately 2.53 acres. The property has frontage on Mattakeesett Street and is abutted by developed residential properties and a cemetery in the rear. The property slopes to the northeast toward the abutting cemetery.

The proposed stormwater system is comprised of a two roof drywell systems. The systems will provide groundwater recharge and control the rates and volumes of runoff.

The work proposed by this project is described as constructing a new storage building and associated grading, landscaping, and stormwater mitigation. The disturbed areas will be restored and stabilized with the proposed building.

Pre-Development Condition

The site is currently comprised of an office building with an attached garage, barn, paved driveway, concrete walkways, woods, compacted gravel and landscaped areas. The property currently has a stormwater system consisting of four roof drywells and a subsurface infiltration system located in the rear of the property that will be relocated.

Soil information was obtained from the Web Soil Survey (WSS) of the United States Department of Agriculture's Natural Resources Conservation Services and on-site soil testing. Based on WSS Soils Mapping the soils are classified as "439B – Gloucester-Canton complex, 3 to 8 percent slopes" (Hydrologic Soil Group A).

Post-Development Condition

In the post-development condition stormwater analysis, the same watershed areas were analyzed for the purpose of analyzing the rates and volumes of runoff from the proposed new storage building. The proposed stormwater system is comprised of two roof drywell systems to capture runoff from the roofs of the proposed storage building. The system will provide groundwater recharge and control the rates and volumes of runoff. Refer to Watershed Delineation Plan for a delineation of post-development drainage subareas. The design points for the post-development design condition correspond to the design points for the pre-development design condition and are shown on the plans.

The stormwater management system was designed to be in compliance with the DEP Stormwater Management Policy to the extent practicable.

SUMMARY OF STORMWATER STANDARDS 1 – 10
(43 Mattakeesett Street, Pembroke, MA)

Standard #1: No new stormwater conveyances (i.e. outfalls)...

The project complies as it does not propose any new stormwater outfalls. Stormwater in the existing and proposed conditions flows overland in a northeasterly direction towards the abutting cemetery. It is the intent of the proposed design to follow the natural/existing conditions stormwater flow paths to the extent practicable. Proposed roof runoff will be directed to a roof drywell system.

Standard #2: Post-Development peak discharge rates do not exceed pre-development rates...

The project has been designed to mitigate peak rates and volumes of runoff. See below for calculations of the runoff discharges and volumes for the 2, 10 and 100-yr. storm events.

Peak Discharge Rates (cfs):

Design Point #1:

	<u>2-Yr.</u>	<u>10-Yr.</u>	<u>100-Yr.</u>
Pre-Development	0.75	1.52	3.46
Post-Development	0.00	1.32	3.40

Volume of Runoff (ac-ft.):

Design Point #1:

	<u>2-Yr.</u>	<u>10-Yr.</u>	<u>100-Yr.</u>
Pre-Development	0.048	0.096	0.224
Post-Development	0.000	0.019	0.088

Standard #3: Loss of annual recharge to groundwater shall be eliminated...

There is no loss of annual recharge to groundwater because the project proposes a system of roof drywell chambers designed to infiltrate runoff.

Recharge Volume = 0.6 inches of runoff X Increased Impervious Area** (Hydrologic Soil Group A)

The redevelopment results in 18,750 s.f. of impervious roof.

Therefore Minimum Recharge Volume = 0.6 in. x 18,750 s .f. X (1 ft./12 in.) = 938 c.f. (min.)

PROVIDED RECHARGE = 1,500 c.f.
(Provided within the roof drywell system)
– see HydroCAD results in Appendix C)

Standard #4: Stormwater management systems...shall remove 80% of the average... TSS....

Requirement: Provide 80% TSS Removal of the Water Quality Volume.

Water Quality Volume (WQV) = 0.5 inches of runoff X new driveway impervious areas*

**Total impervious area for Std. 4 Calculation is not required to include roof runoff, as roof runoff is considered clean and free of suspended solids (non-metal roof is proposed).*

Standard #5: Stormwater discharges from Land Uses with Higher Potential Pollutant Loads

Not applicable. An office building is not a land use with higher potential pollutant loads.

Standard #6: Stormwater discharges to critical areas...

Not applicable. The property is not an ACEC.

Standard #7: A redevelopment project is required to meet standards....only to the extent practicable

The project is considered to be a partial redevelopment. The project has been designed to comply with all standards.

Standard #8: Erosion & Sedimental Control Plan

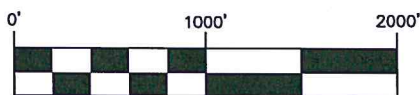
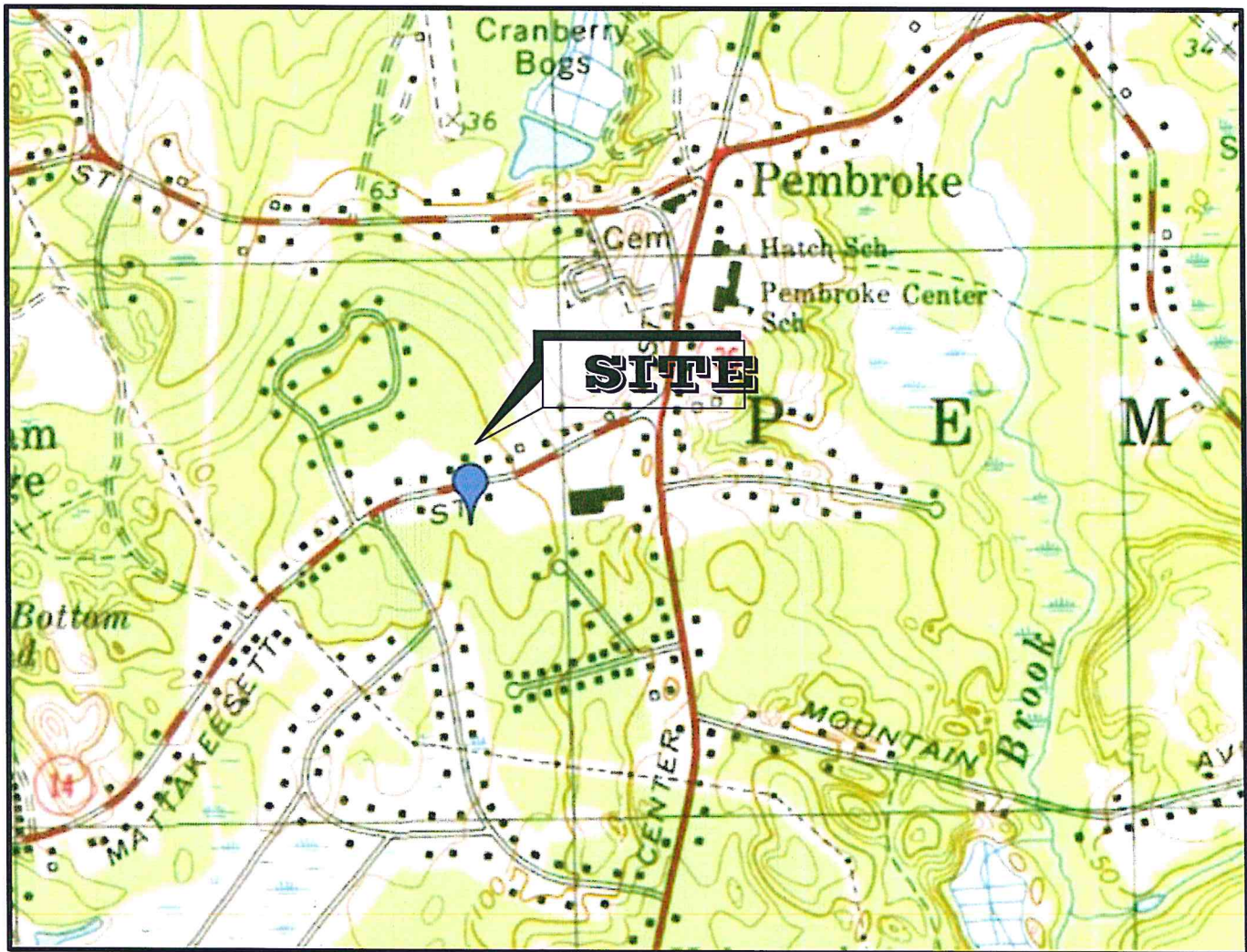
An Erosion & Sedimentation Control plan is submitted in Appendix A of this report.

Standard #9: A Long Term Operation & Maintenance Plan shall be developed...

A Post-Construction Operation & Maintenance Plan is submitted in Appendix A of this report.

Standard #10: All illicit discharges to the stormwater management system are prohibited.

An illicit discharge compliance statement is submitted in Appendix A of this report.



SCALE: 1" = 1000'

U.S. GEOLOGICAL SURVEY
7.5 X 15 MINUTE SERIES

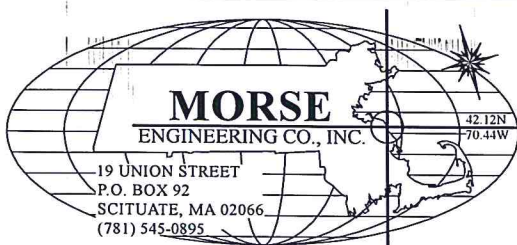
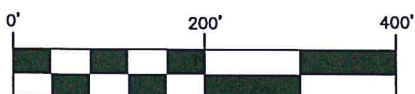


FIGURE — 1

USGS LOCUS MAP
43 MATTAKEESETT STREET
PEMBROKE, MASSACHUSETTS



SCALE: 1" = 200'

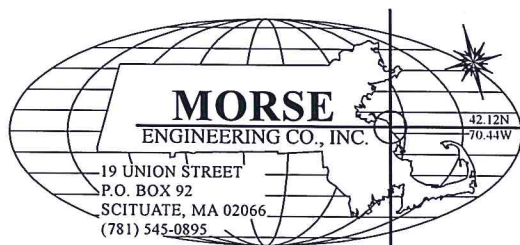
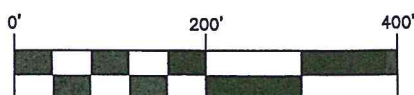
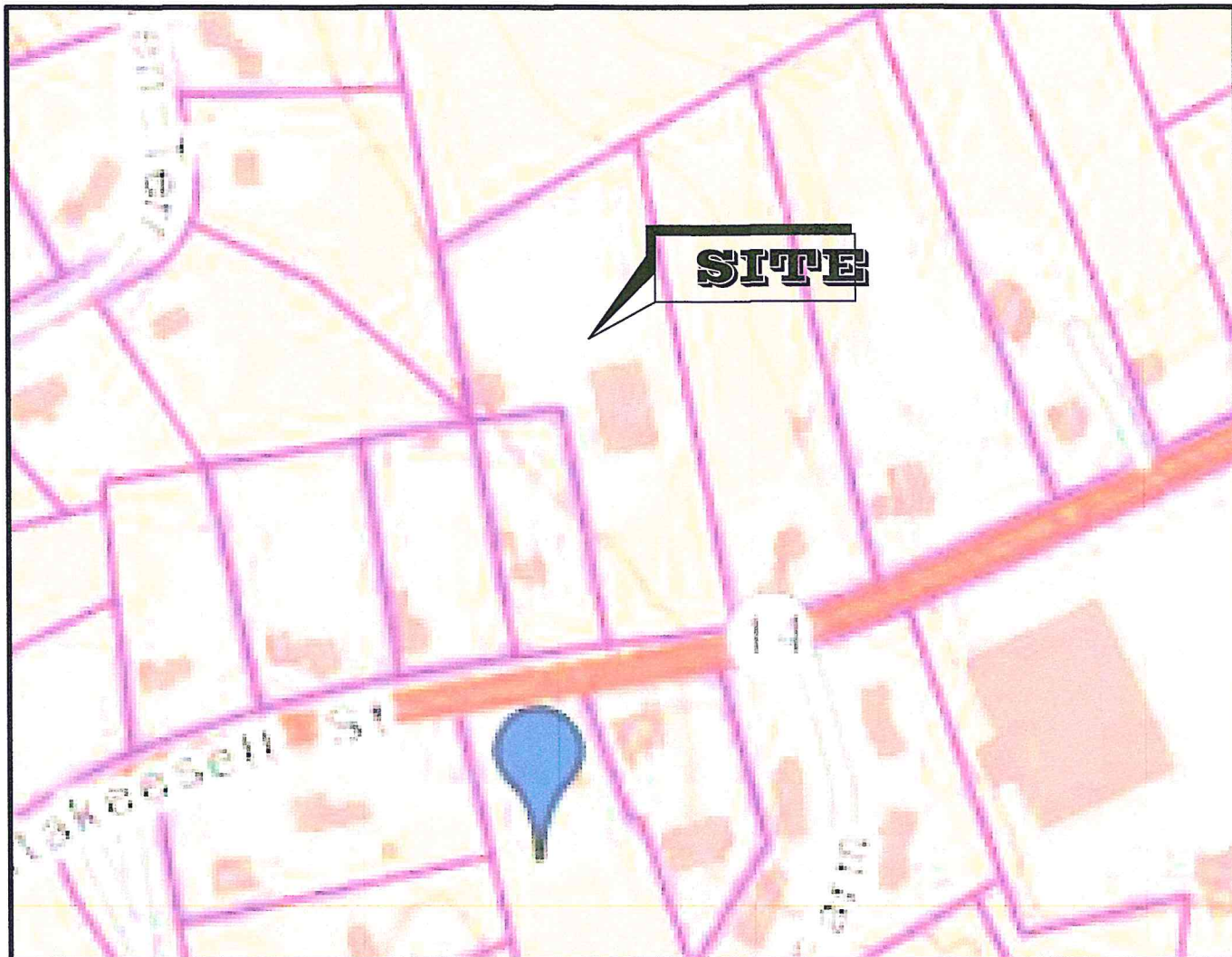


FIGURE - 2

FEMA FLOOD MAP
43 MATTAKEESETT STREET
PEMBROKE, MASSACHUSETTS



SCALE: 1" = 200'

NATURAL HERITAGE & ENDANGERED SPECIES ATLAS
MASS GIS

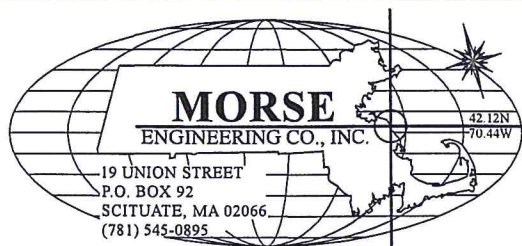
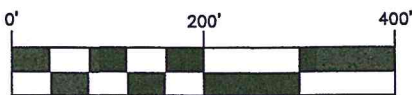


FIGURE — 3

NHESP MAP
43 MATTAKEESETT STREET
PEMBROKE, MASSACHUSETTS



SCALE: 1" = 200'

SCS SOILS MAP

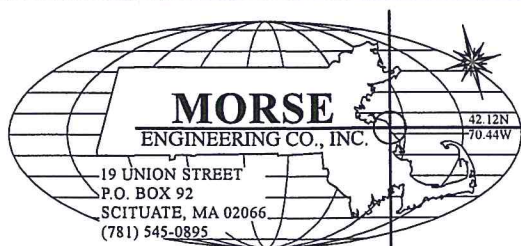


FIGURE — 4

SCS SOILS MAP
43 MATTAKEESETT STREET
PEMBROKE, MASSACHUSETTS

APPENDIX A

- Const. Phase Stormwater Management Plan
- Construction Phase Erosion Control
Maintenance Schedule & Checklist
- Post-Development Operation & Maintenance
Plan & Long-Term Operation & Maintenance
- Illicit Discharge Compliance Statement

Construction Phase Operation & Maintenance Plan
Best Management Practices
43 Mattakeesett Street
Pembroke, MA

Responsible Parties & Contact Information:

Owner:

Old Salt Realty Trust _____
387 Main Street _____
Plympton, MA 02367 _____
781-635-0242 _____

Contractor:

Inspection & Record Keeping:

The responsible party shall maintain an operation and maintenance log during construction to control construction-related impacts, including erosion, sedimentation and other pollutant sources and land disturbance activities.

The anticipated time to complete this project is twelve months. The responsible party shall inspect the construction site at least once every 14 calendar days and within 24 hours of a storm event of ½ inch or greater. Inspections shall be performed until the site is fully stabilized and the temporary sedimentation controls have been removed. The inspector shall inspect each measure to determine if it was installed/performed correctly. The inspector shall also determine if the measures have been damaged and if so the corrective action.

The log shall kept on-site at all times and shall be made available to the Planning Board upon request. Member and agents of the Town shall be allowed to enter and inspect the premises to evaluate and ensure that the responsible party complies with the Operation and Maintenance Plan requirements for each BMP.

Operation & Maintenance:

Land disturbance activities for this project include constructing the proposed storage building and associated grading, landscaping, and stormwater systems. During land disturbance and construction activities, project proponents must implement controls that prevent erosion, control sediment movement, and stabilize exposed soils to prevent pollutants from moving offsite. Construction activities increase the potential for erosion and sedimentation at a site. To prevent this impact, the following conditions shall be imposed to control erosion and sedimentation:

Stabilization Practices: Disturbed areas shall be stabilized and protected as soon as practicable. Disturbed areas shall be stabilized when construction activity in the area has ceased for more than 14 days unless not feasible due to snow cover or if construction activities will resume within 21 days after construction temporarily ceased. Stabilization measures include the following:

- Temporary seeding
- Geotextiles
- Mulching and Netting
- Permanent seeding

Construction Phase: Erosion Control Maintenance Schedule & Checklist

Construction Practices

Best Management Practice	Inspection Frequency (1)	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check (1)	Cleaning/Repair Needed: <input type="checkbox"/> yes <input type="checkbox"/> no (List items)	Date of Cleaning/Repair	Performed by
Construction Site Stabilization	Weekly			1. Construction Site Stabilization Inspection/ Maintenance, temporary seeding, mulching etc. Disturbed areas shall be stabilized when construction activity in the area has ceased for more than 14 days			
Erosion Barrier	Bi-Weekly			1 Remove accumulated silt. 2 Repair rips / bulges.			
Mulching & Netting	Bi-Weekly			1. Mulch Maintenance			
Land Grading	Weekly			1. Check for washouts and/or gullies. 2. Check for accumulated silt.			
Permanent Seeding	Bi-Weekly			1. Permanent Seeding Inspection/ Maintenance			

Stormwater Control Manager _____

Long-Term Operation & Maintenance Plan
Best Management Practices
53 Mattakeesett Street
Pembroke, MA

Responsible Parties & Contact Information:

Owner:

Old Salt Realty Trust
387 Main Street
Plympton, MA 02367
781-635-0242

Record Keeping:

The responsible party shall maintain an operation and maintenance log for a minimum of three years prior including inspections, repairs, replacement and disposal. The log shall be kept on-site at all times.

The log shall be made available to the Planning Board upon request. Members and agents of the Town shall be allowed to enter and inspect the premises to evaluate and ensure that the responsible party complies with the Operation and Maintenance Plan requirements for each BMP.

Operation & Maintenance:

In order to maintain the integrity of the stormwater management system, frequent inspections and maintenance shall be performed by the owner. The BMPs require continuous inspections and maintenance in order to function properly. The BMPs should be inspected and maintained as specified and after all major storm events.

Gutter & Downspout Systems shall be inspected quarterly. Material observed within any gutter or downspout shall be removed and disposed of in accordance with all applicable local, state and federal regulations. Inspect for signs of overflow to the surcharge pipe. It is recommended that “gutter guards” be installed on the roof gutter system to prevent leaves and tree debris from entering the subsurface system.

Roof Drywells shall be checked for infiltrative capacity on a quarterly basis and after any significant rainfall event. Additional inspections should be scheduled during the first few months to make sure that the chambers are exfiltrating within 72 hours of all storms. It is recommended that “gutter guards” be installed on the roof gutter system to prevent leaves and tree debris from entering the subsurface system. Material observed within any roof drywell shall be removed and disposed of in accordance with all applicable local, states and federal regulations.

Anticipated Operation and Maintenance Cost:

The annual anticipated operation and maintenance cost is approximately \$1,000.00.

Project Location: 43 Mattakeesett Street, Pembroke, MA
Stormwater Management – Post Construction Phase
Best Management Practices – Inspection Schedule and Evaluation Checklist

Long Term Practices

Best Management Practice	Inspection Frequency (1)	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check (1)	Cleaning/Repair Needed: <input type="checkbox"/> yes <input type="checkbox"/> no (List Items)	Date of Cleaning/Repair	Performed by
Driveway Sweeping	Monthly			Sweep & Remove any accumulated sediment			
Gutter and Downspout System	Quarterly			Remove material in gutters and downspouts. Install gutter guards. Inspect for signs of overflow to surcharge.			
Roof Drywell System	Quarterly			Inspect for infiltrative capacity Repair erosion or scour			

July 24, 2019

TO: Town of Pembroke
Planning Board
100 Center Street, Town Hall
Pembroke, MA 02359

RE: 43 Mattakeesett Street, Pembroke, MA

To Members of the Board:

This letter is a statement that to the best of my knowledge, no illicit discharges currently exist or are being considered by me to the stormwater management system. An illicit discharge is any discharge that is not composed entirely of stormwater.

A handwritten signature in black ink, appearing to read "Gary J. Moran". The signature is fluid and cursive, with a large initial "G" and "M".

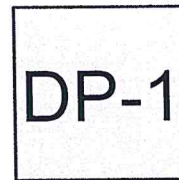
Applicant's Representative

APPENDIX B

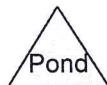
- Pre-Development HydroCAD Analysis
- Post-Development HydroCAD Analysis



(new Subcat)



Design Point 1



Drainage Diagram for PRECONST

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.420	76	Gravel roads, HSG A (SUB-1)
0.010	98	Concrete, HSG A (SUB-1)
0.430		TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.430	HSG A	SUB-1
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.430		TOTAL AREA

PRECONST

Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 4

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1: (new Subcat)

Runoff Area=18,750 sf 2.44% Impervious Runoff Depth>1.35"

Flow Length=265' Tc=2.9 min CN=77 Runoff=0.75 cfs 0.048 af

Reach DP-1: Design Point 1

Inflow=0.75 cfs 0.048 af

Outflow=0.75 cfs 0.048 af

Total Runoff Area = 0.430 ac Runoff Volume = 0.048 af Average Runoff Depth = 1.35"
97.56% Pervious = 0.420 ac 2.44% Impervious = 0.010 ac

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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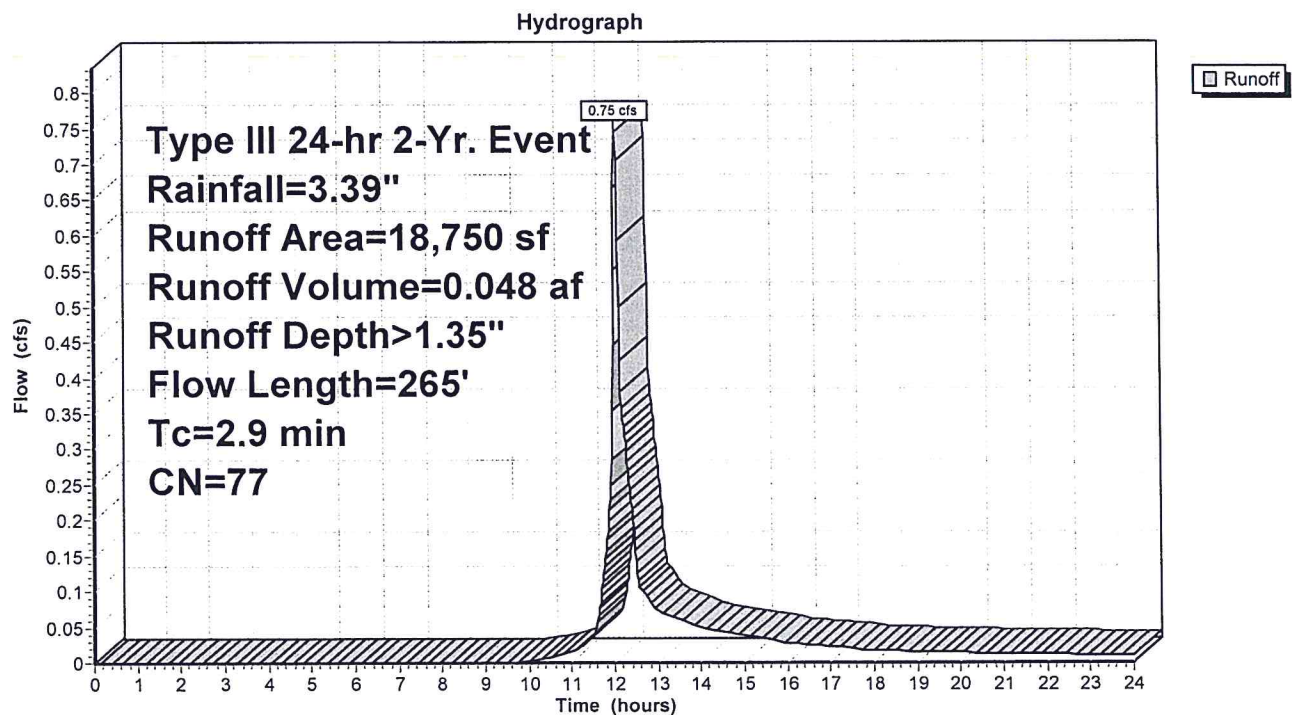
Summary for Subcatchment SUB-1: (new Subcat)

Runoff = 0.75 cfs @ 12.05 hrs, Volume= 0.048 af, Depth> 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr. Event Rainfall=3.39"

Area (sf)	CN	Description
* 457	98	Concrete, HSG A
18,293	76	Gravel roads, HSG A
18,750	77	Weighted Average
18,293		97.56% Pervious Area
457		2.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0160	1.10		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
2.1	215	0.0290	1.70		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.9	265	Total			

Subcatchment SUB-1: (new Subcat)

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 6

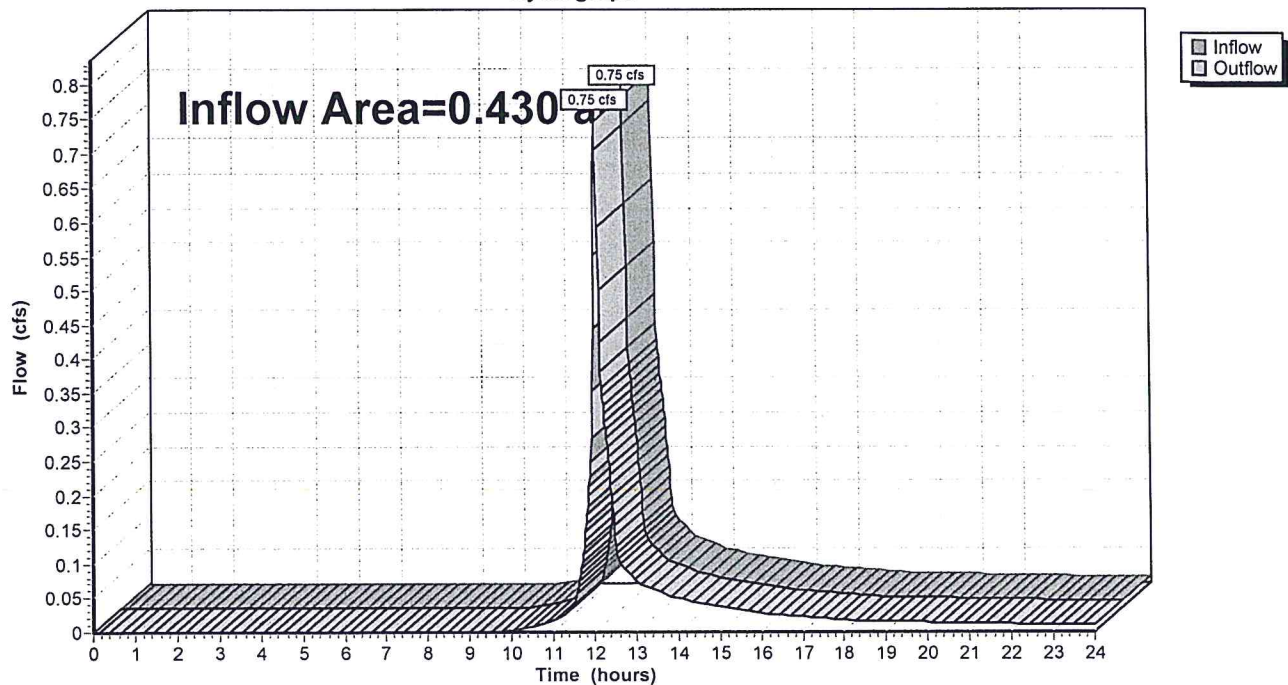
Summary for Reach DP-1: Design Point 1

Inflow Area = 0.430 ac, 2.44% Impervious, Inflow Depth > 1.35" for 2-Yr. Event event
Inflow = 0.75 cfs @ 12.05 hrs, Volume= 0.048 af
Outflow = 0.75 cfs @ 12.05 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: Design Point 1

Hydrograph



PRECONST*Type III 24-hr 10-Yr. Event Rainfall=5.08"*

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Page 7

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1: (new Subcat)

Runoff Area=18,750 sf 2.44% Impervious Runoff Depth>2.69"

Flow Length=265' Tc=2.9 min CN=77 Runoff=1.52 cfs 0.096 af

Reach DP-1: Design Point 1

Inflow=1.52 cfs 0.096 af

Outflow=1.52 cfs 0.096 af

Total Runoff Area = 0.430 ac Runoff Volume = 0.096 af Average Runoff Depth = 2.69"**97.56% Pervious = 0.420 ac 2.44% Impervious = 0.010 ac**

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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 8

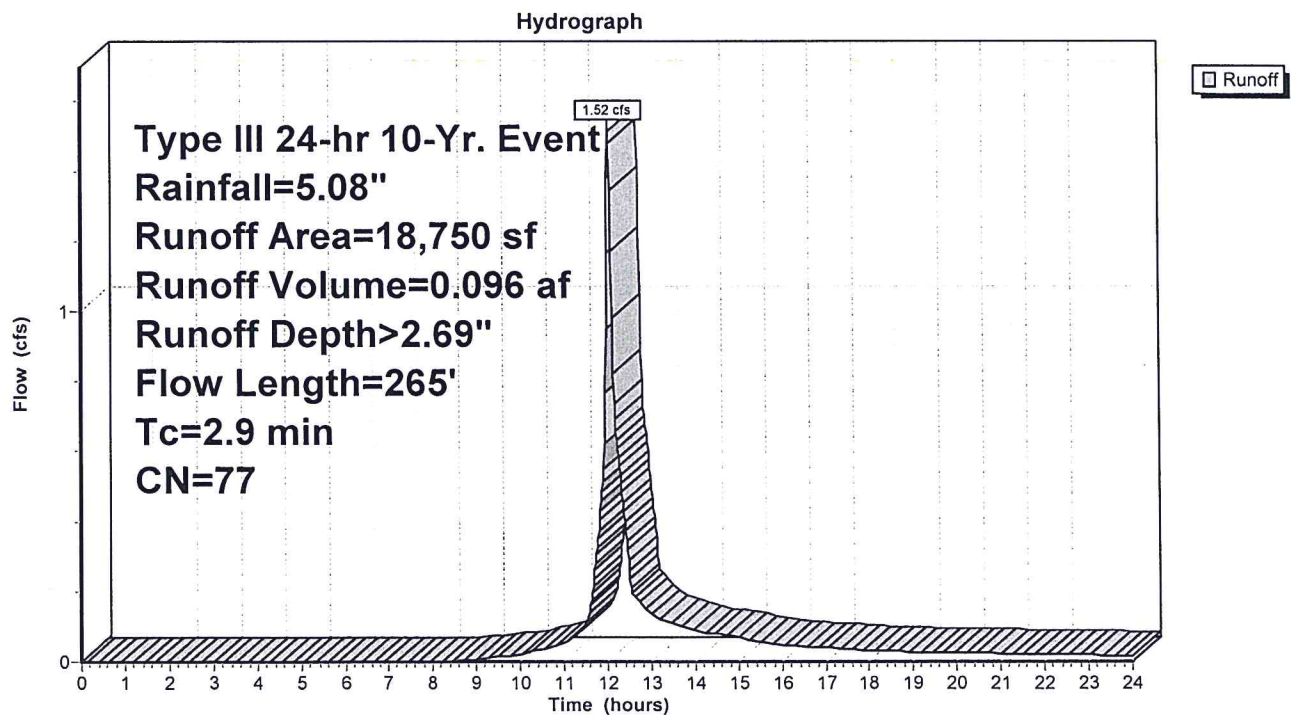
Summary for Subcatchment SUB-1: (new Subcat)

Runoff = 1.52 cfs @ 12.05 hrs, Volume= 0.096 af, Depth> 2.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr. Event Rainfall=5.08"

Area (sf)	CN	Description
* 457	98	Concrete, HSG A
18,293	76	Gravel roads, HSG A
18,750	77	Weighted Average
18,293		97.56% Pervious Area
457		2.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0160	1.10		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
2.1	215	0.0290	1.70		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.9	265	Total			

Subcatchment SUB-1: (new Subcat)

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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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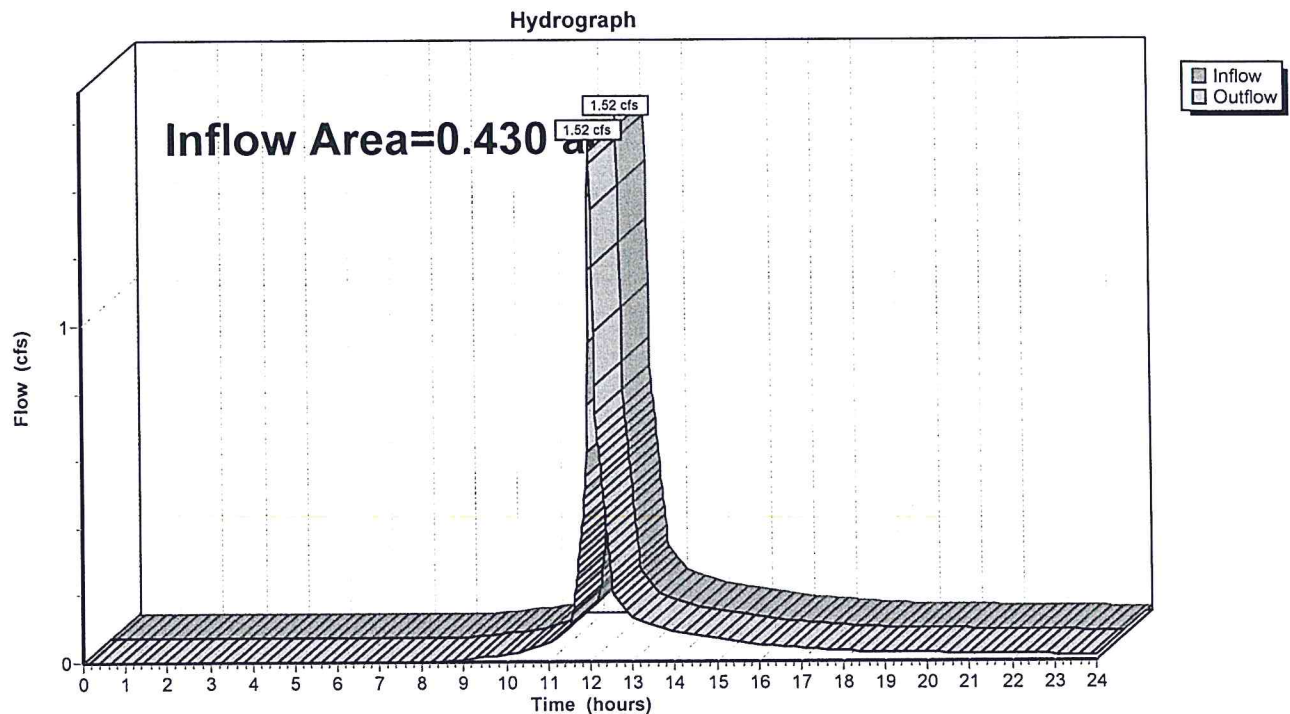
Page 9

Summary for Reach DP-1: Design Point 1

Inflow Area = 0.430 ac, 2.44% Impervious, Inflow Depth > 2.69" for 10-Yr. Event event
Inflow = 1.52 cfs @ 12.05 hrs, Volume= 0.096 af
Outflow = 1.52 cfs @ 12.05 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: Design Point 1



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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1: (new Subcat)

Runoff Area=18,750 sf 2.44% Impervious Runoff Depth=6.23"

Flow Length=265' Tc=2.9 min CN=77 Runoff=3.46 cfs 0.224 af

Reach DP-1: Design Point 1

Inflow=3.46 cfs 0.224 af

Outflow=3.46 cfs 0.224 af

Total Runoff Area = 0.430 ac Runoff Volume = 0.224 af Average Runoff Depth = 6.23"

97.56% Pervious = 0.420 ac 2.44% Impervious = 0.010 ac

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 11

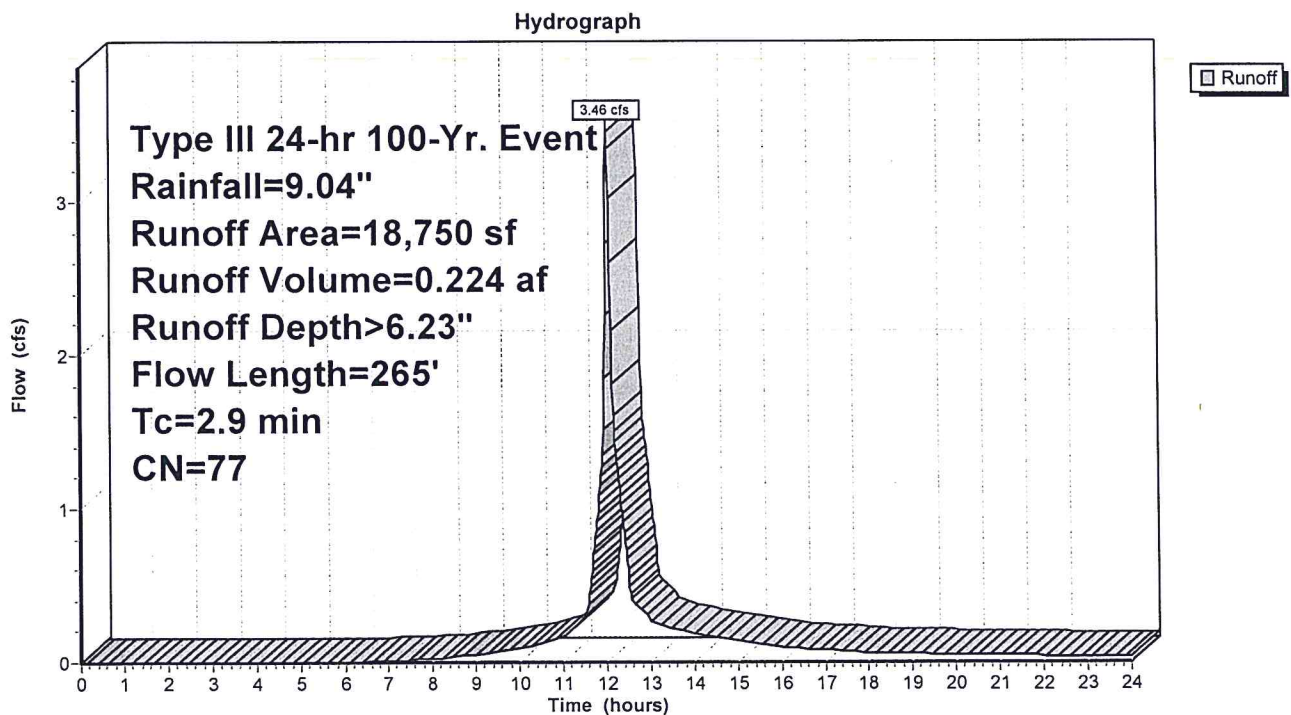
Summary for Subcatchment SUB-1: (new Subcat)

Runoff = 3.46 cfs @ 12.04 hrs, Volume= 0.224 af, Depth> 6.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr. Event Rainfall=9.04"

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2.9	265	Total			

Subcatchment SUB-1: (new Subcat)

PRECONST

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

Printed 3/4/2020

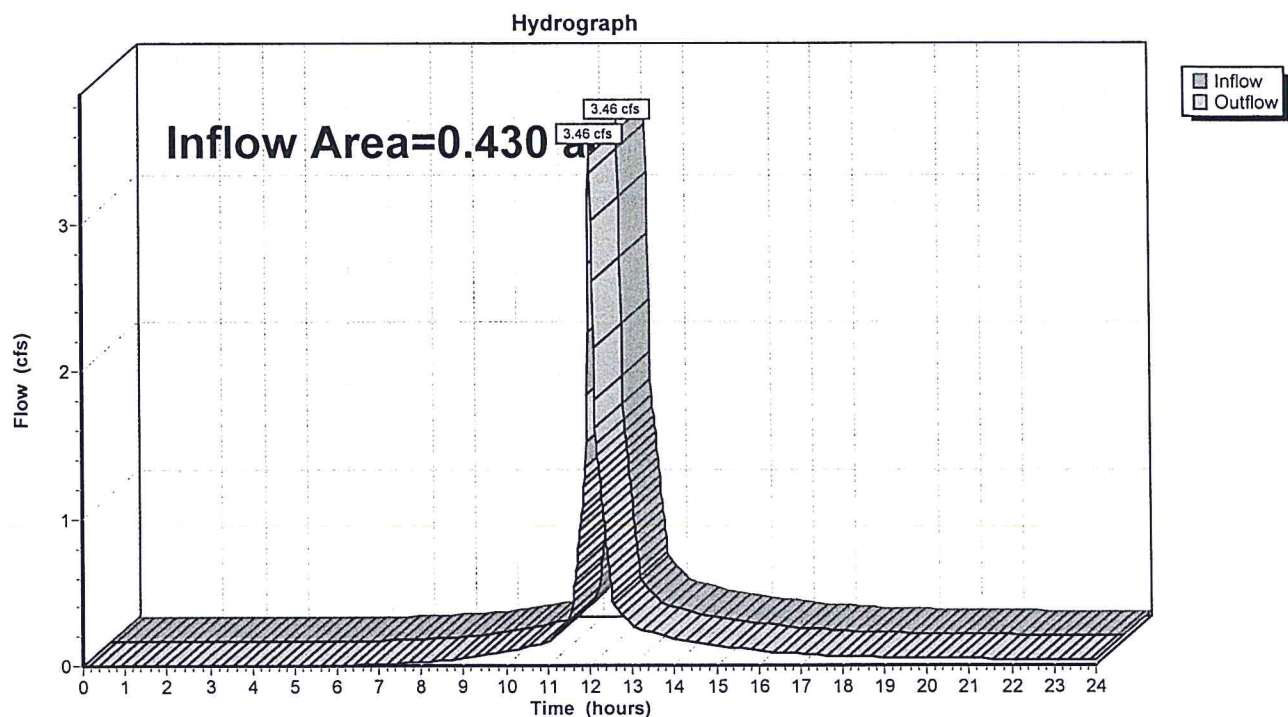
Page 12

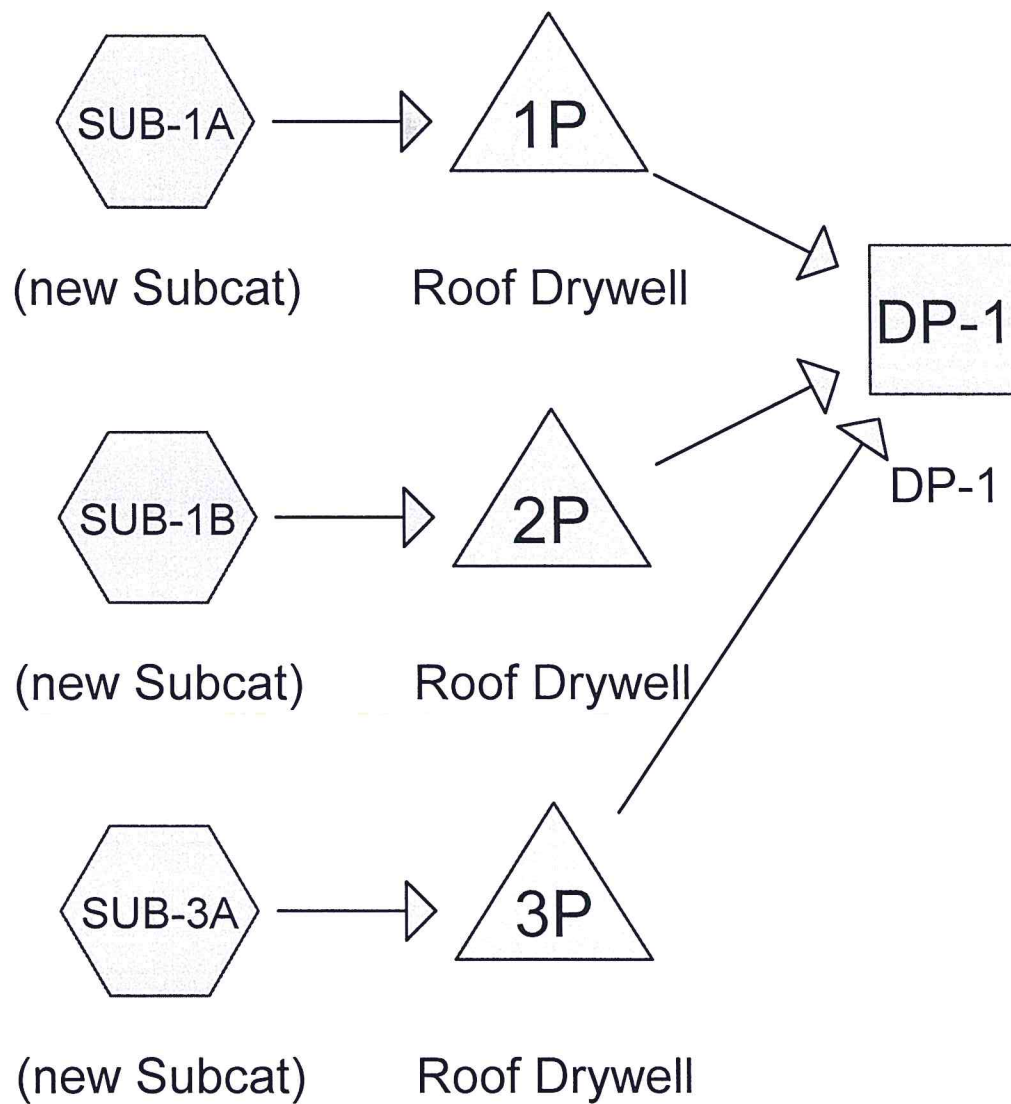
Summary for Reach DP-1: Design Point 1

Inflow Area = 0.430 ac, 2.44% Impervious, Inflow Depth > 6.23" for 100-Yr. Event event
Inflow = 3.46 cfs @ 12.04 hrs, Volume= 0.224 af
Outflow = 3.46 cfs @ 12.04 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: Design Point 1





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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.430	98	Roofs, HSG A (SUB-1A, SUB-1B, SUB-3A)
0.430		TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.430	HSG A	SUB-1A, SUB-1B, SUB-3A
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.430		TOTAL AREA

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 4

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1A: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.038 af

Subcatchment SUB-1B: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.038 af

Subcatchment SUB-3A: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.038 af

Reach DP-1: DP-1 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1P: Roof Drywell Peak Elev=98.25' Storage=406 cf Inflow=0.47 cfs 0.038 af
Discarded=0.08 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.038 af

Pond 2P: Roof Drywell Peak Elev=95.75' Storage=406 cf Inflow=0.47 cfs 0.038 af
Discarded=0.08 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.038 af

Pond 3P: Roof Drywell Peak Elev=95.75' Storage=406 cf Inflow=0.47 cfs 0.038 af
Discarded=0.08 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.038 af

Total Runoff Area = 0.430 ac Runoff Volume = 0.113 af Average Runoff Depth = 3.15"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.430 ac

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 5

Summary for Subcatchment SUB-1A: (new Subcat)

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af, Depth> 3.15"

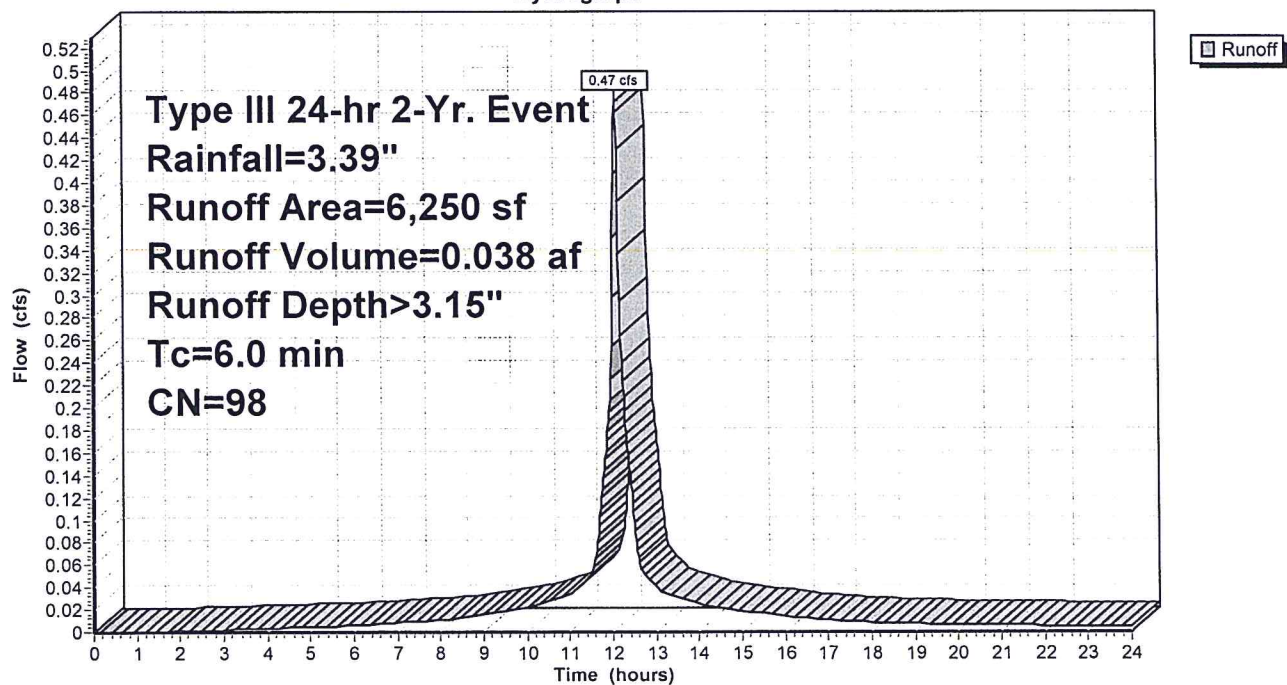
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr. Event Rainfall=3.39"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1A: (new Subcat)

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 6

Summary for Subcatchment SUB-1B: (new Subcat)

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af, Depth> 3.15"

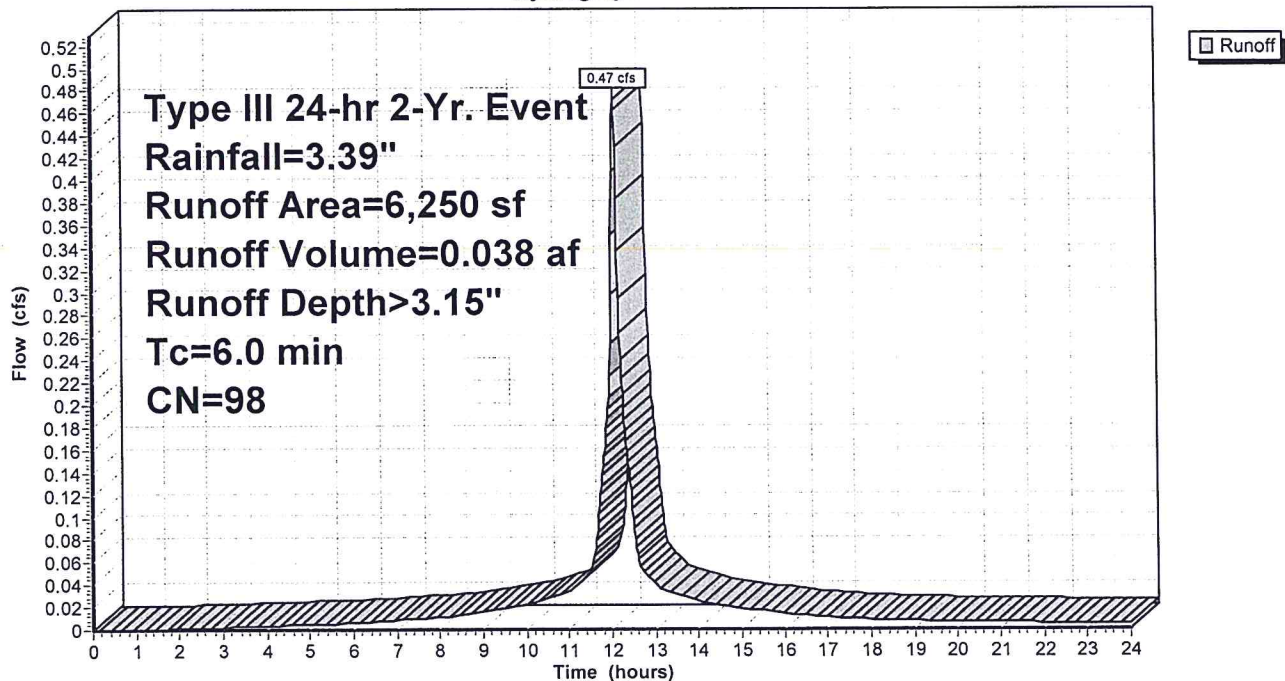
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr. Event Rainfall=3.39"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1B: (new Subcat)

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Page 7

Summary for Subcatchment SUB-3A: (new Subcat)

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af, Depth> 3.15"

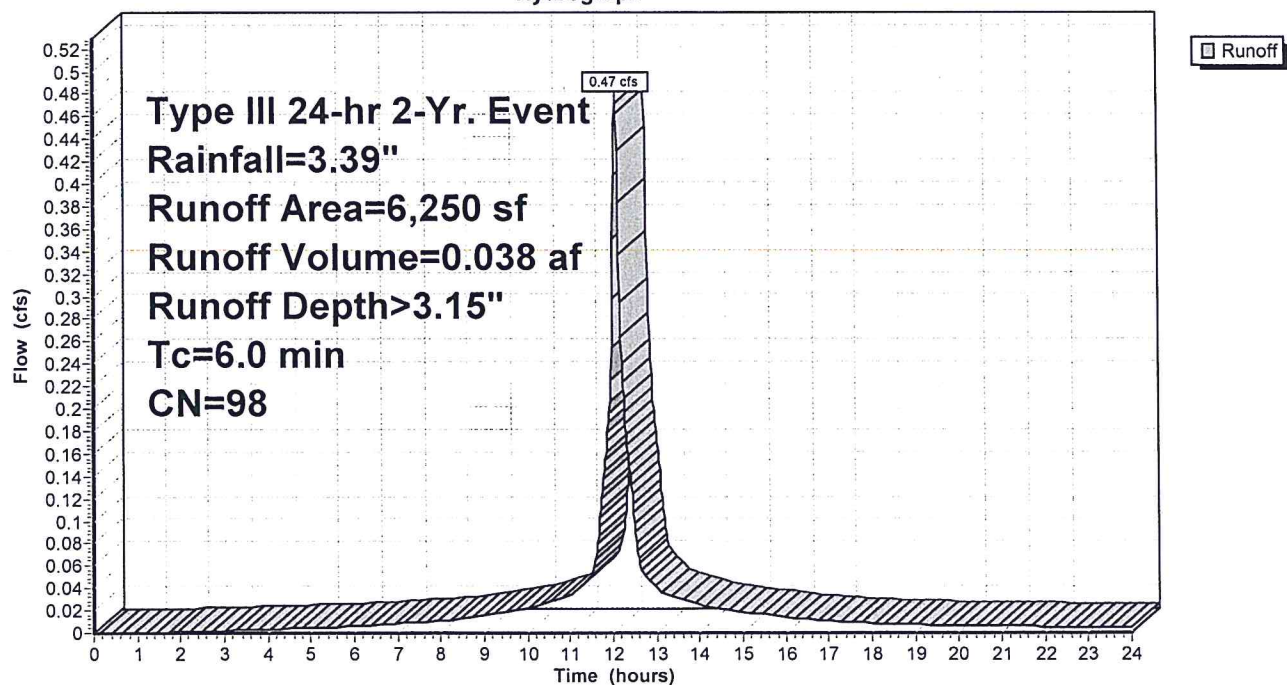
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr. Event Rainfall=3.39"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-3A: (new Subcat)

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 8

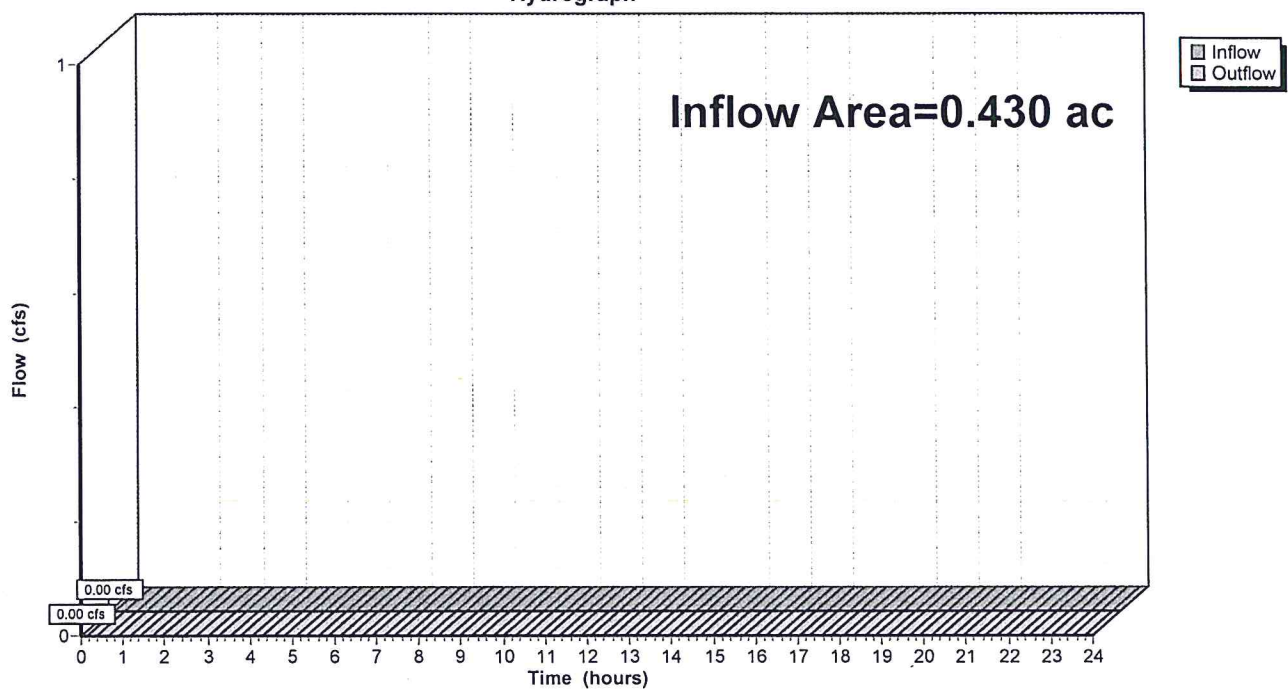
Summary for Reach DP-1: DP-1

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth = 0.00" for 2-Yr. Event event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: DP-1

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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 9

Summary for Pond 1P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 3.15" for 2-Yr. Event event
 Inflow = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af, Atten= 82%, Lag= 0.0 min
 Discarded = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 98.25' @ 12.53 hrs Surf.Area= 436 sf Storage= 406 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 25.0 min (779.7 - 754.7)

Volume	Invert	Avail.Storage	Storage Description
#1	97.17'	268 cf	Chambers Listed below Inside #2
#2	96.67'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
97.17	0
98.50	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.67	436	0	0
99.00	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.67'	8.270 in/hr Exfiltration over Surface area
#2	Primary	98.50'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.74 hrs HW=96.70' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=96.67' TW=0.00' (Dynamic Tailwater)
 ↑2=Orifice/Grate (Controls 0.00 cfs)

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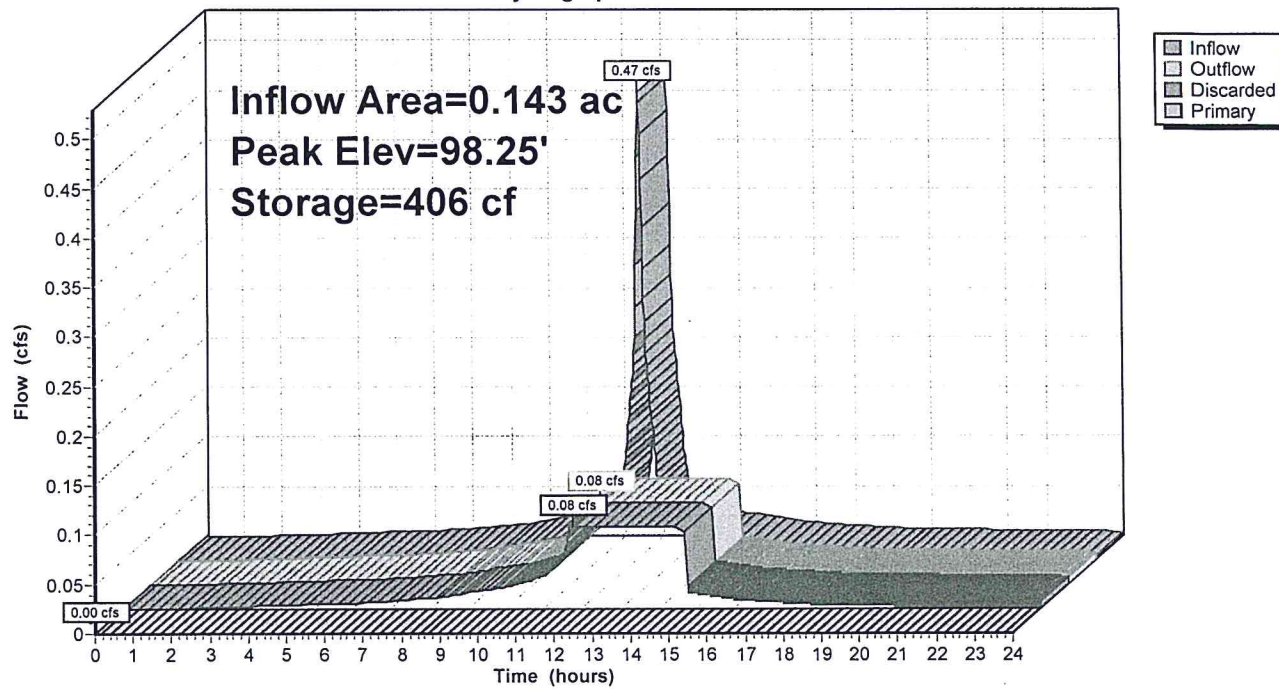
Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 10

Pond 1P: Roof Drywell

Hydrograph



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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 11

Summary for Pond 2P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 3.15" for 2-Yr. Event event
 Inflow = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af, Atten= 82%, Lag= 0.0 min
 Discarded = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 95.75' @ 12.53 hrs Surf.Area= 436 sf Storage= 406 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 25.0 min (779.7 - 754.7)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.74 hrs HW=94.20' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.17' TW=0.00' (Dynamic Tailwater)
 ↑2=Orifice/Grate (Controls 0.00 cfs)

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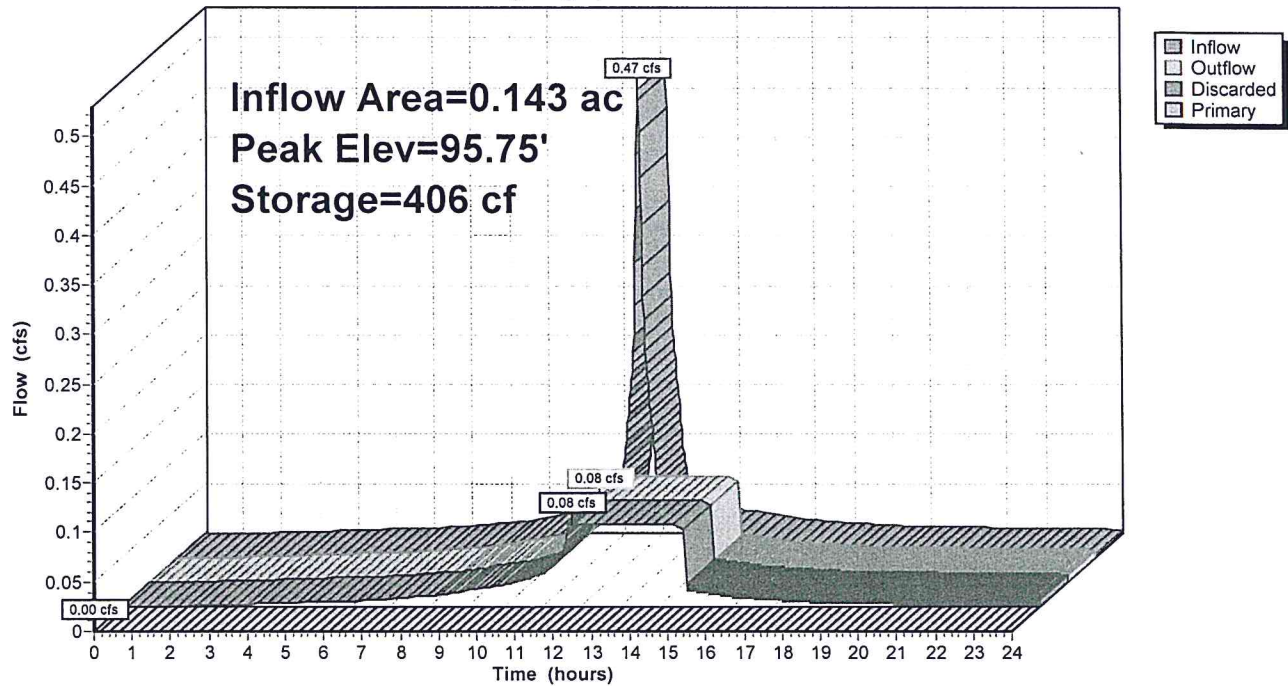
Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 12

Pond 2P: Roof Drywell

Hydrograph



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Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 13

Summary for Pond 3P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 3.15" for 2-Yr. Event event
 Inflow = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af, Atten= 82%, Lag= 0.0 min
 Discarded = 0.08 cfs @ 11.74 hrs, Volume= 0.038 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 95.75' @ 12.53 hrs Surf.Area= 436 sf Storage= 406 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 25.0 min (779.7 - 754.7)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.74 hrs HW=94.20' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=94.17' TW=0.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)

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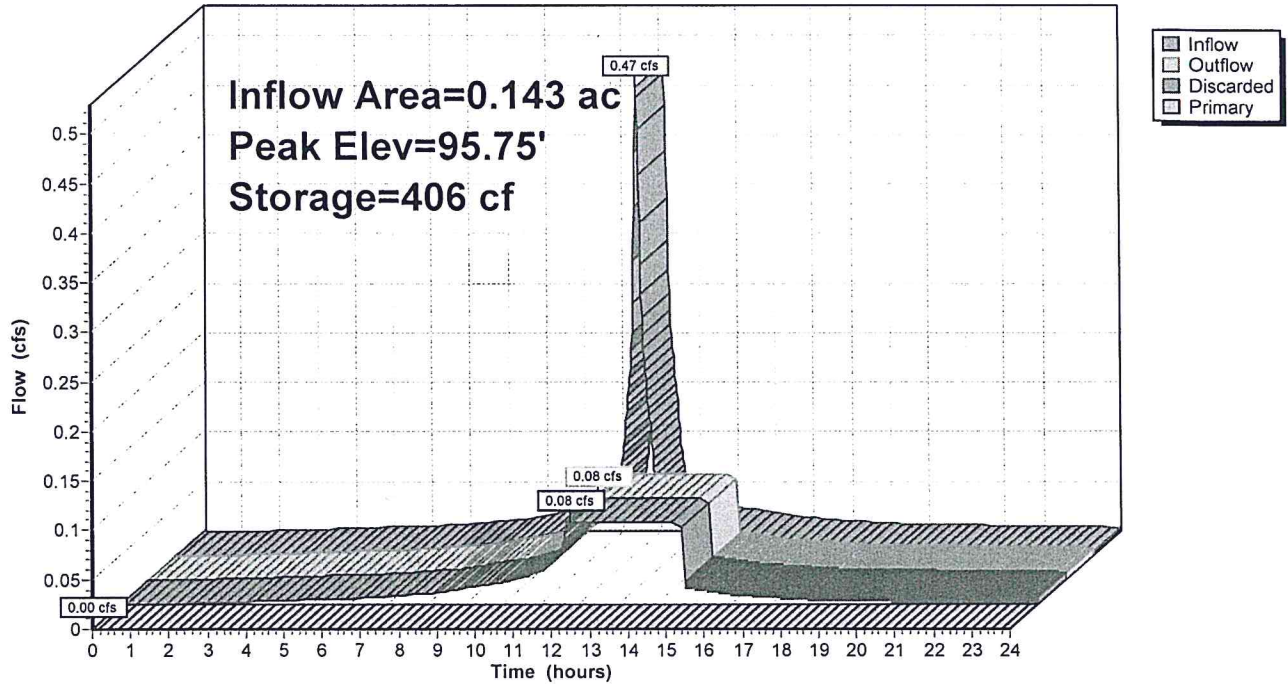
Type III 24-hr 2-Yr. Event Rainfall=3.39"

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Page 14

Pond 3P: Roof Drywell

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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 15

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1A: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>4.84"
Tc=6.0 min CN=98 Runoff=0.71 cfs 0.058 af

Subcatchment SUB-1B: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>4.84"
Tc=6.0 min CN=98 Runoff=0.71 cfs 0.058 af

Subcatchment SUB-3A: (new Subcat) Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>4.84"
Tc=6.0 min CN=98 Runoff=0.71 cfs 0.058 af

Reach DP-1: DP-1 Inflow=1.32 cfs 0.019 af
Outflow=1.32 cfs 0.019 af

Pond 1P: Roof Drywell Peak Elev=98.61' Storage=500 cf Inflow=0.71 cfs 0.058 af
Discarded=0.08 cfs 0.051 af Primary=0.44 cfs 0.006 af Outflow=0.52 cfs 0.058 af

Pond 2P: Roof Drywell Peak Elev=96.11' Storage=500 cf Inflow=0.71 cfs 0.058 af
Discarded=0.08 cfs 0.051 af Primary=0.44 cfs 0.006 af Outflow=0.52 cfs 0.058 af

Pond 3P: Roof Drywell Peak Elev=96.11' Storage=500 cf Inflow=0.71 cfs 0.058 af
Discarded=0.08 cfs 0.051 af Primary=0.44 cfs 0.006 af Outflow=0.52 cfs 0.058 af

Total Runoff Area = 0.430 ac Runoff Volume = 0.174 af Average Runoff Depth = 4.84"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.430 ac

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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 16

Summary for Subcatchment SUB-1A: (new Subcat)

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af, Depth> 4.84"

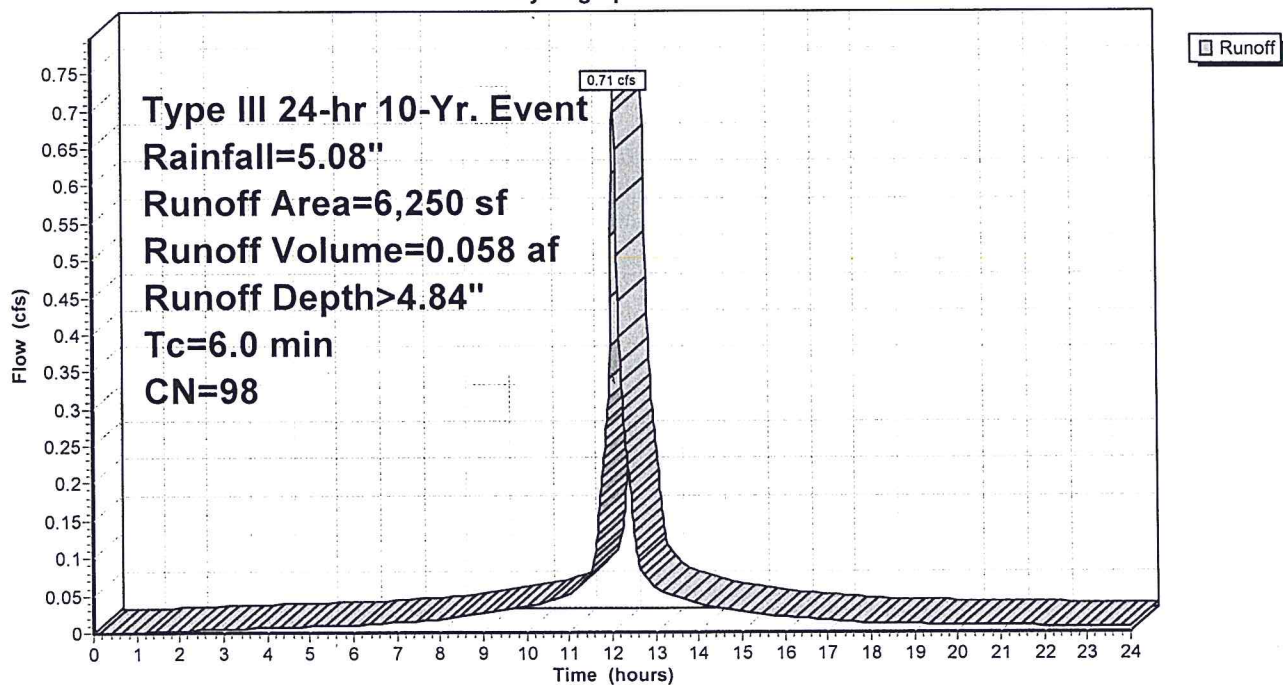
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr. Event Rainfall=5.08"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1A: (new Subcat)

Hydrograph



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Page 17

Summary for Subcatchment SUB-1B: (new Subcat)

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af, Depth> 4.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

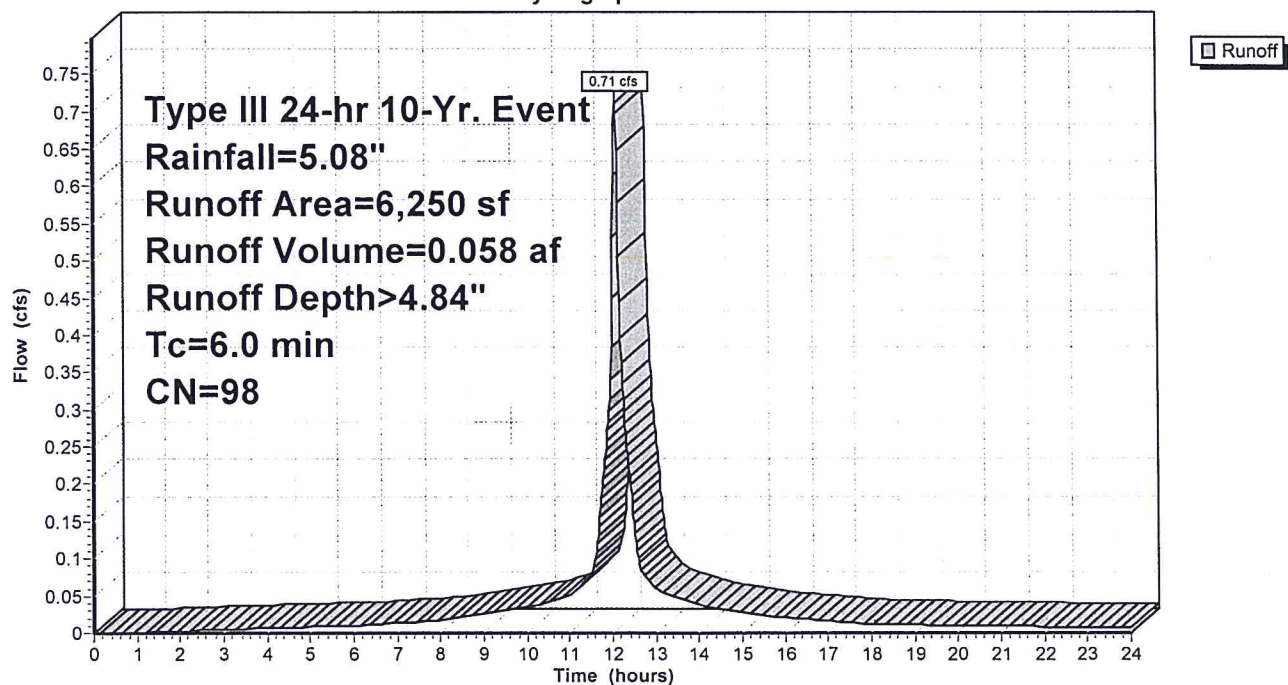
Type III 24-hr 10-Yr. Event Rainfall=5.08"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1B: (new Subcat)

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Page 18

Summary for Subcatchment SUB-3A: (new Subcat)

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af, Depth> 4.84"

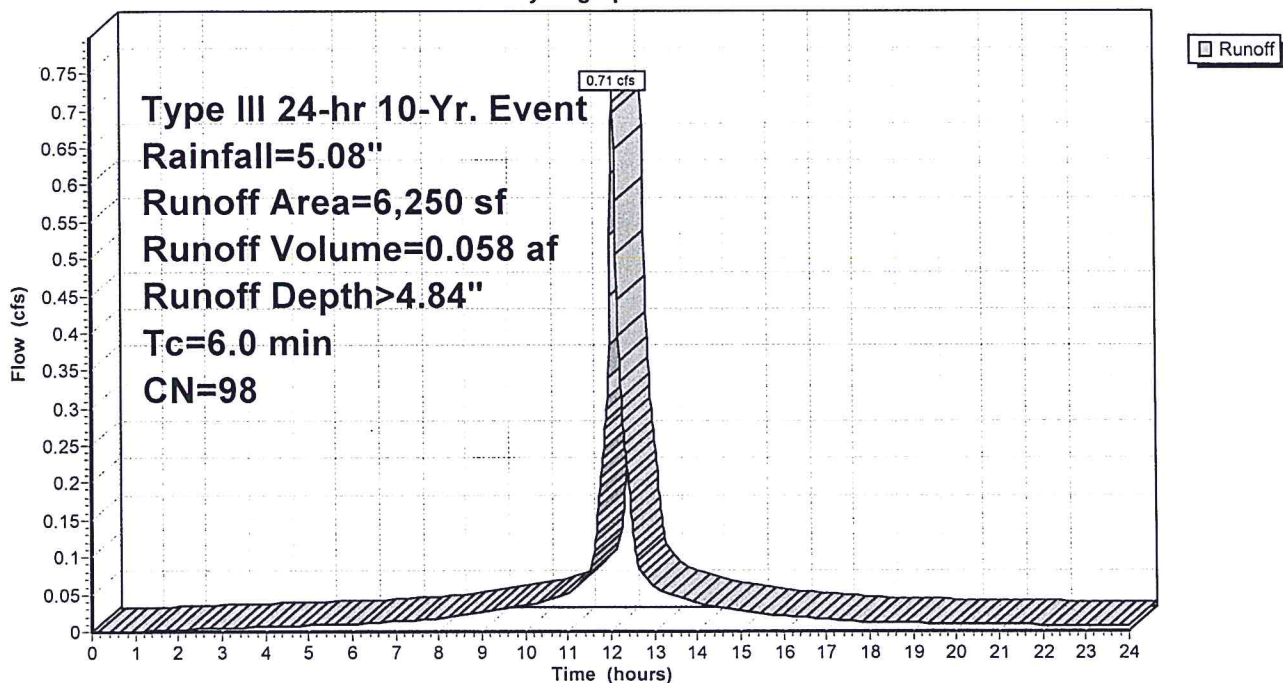
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr. Event Rainfall=5.08"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-3A: (new Subcat)

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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 19

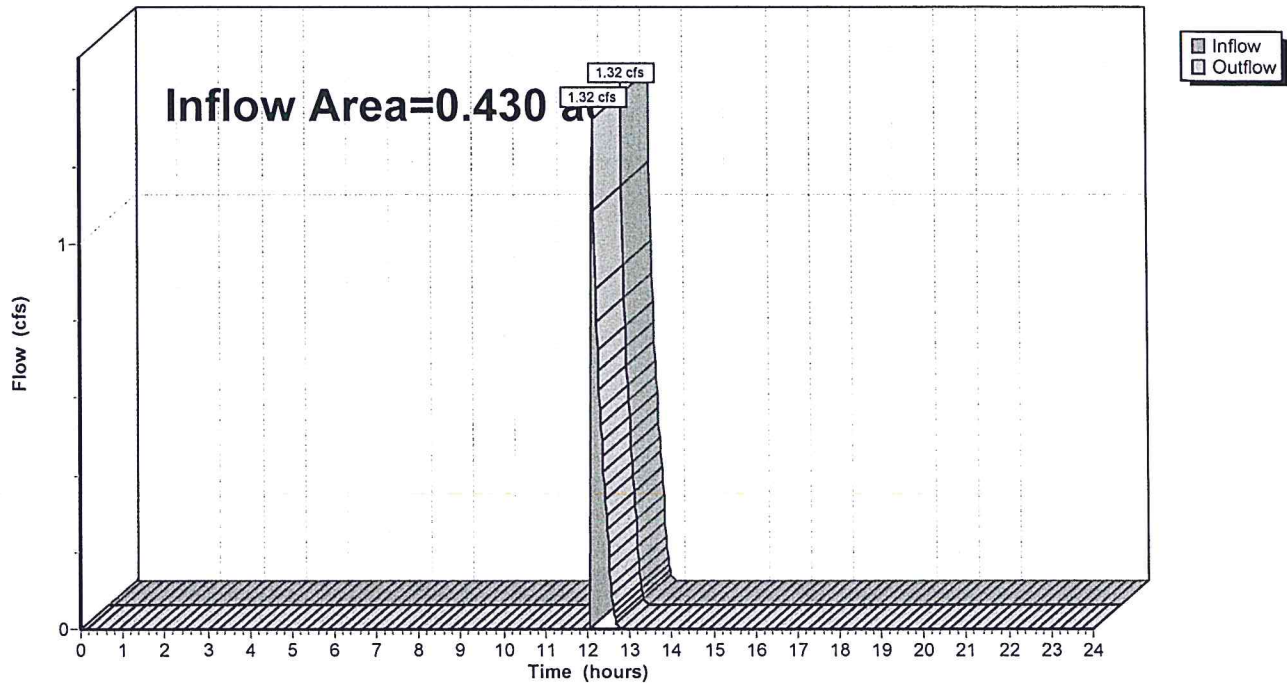
Summary for Reach DP-1: DP-1

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth = 0.54" for 10-Yr. Event event
Inflow = 1.32 cfs @ 12.17 hrs, Volume= 0.019 af
Outflow = 1.32 cfs @ 12.17 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: DP-1

Hydrograph



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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 20

Summary for Pond 1P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 4.84" for 10-Yr. Event event
 Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af
 Outflow = 0.52 cfs @ 12.17 hrs, Volume= 0.058 af, Atten= 26%, Lag= 5.2 min
 Discarded = 0.08 cfs @ 11.64 hrs, Volume= 0.051 af
 Primary = 0.44 cfs @ 12.17 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 98.61' @ 12.16 hrs Surf.Area= 436 sf Storage= 500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 28.6 min (775.8 - 747.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.17'	268 cf	Chambers Listed below Inside #2
#2	96.67'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
97.17	0
98.50	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.67	436	0	0
99.00	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.67'	8.270 in/hr Exfiltration over Surface area
#2	Primary	98.50'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.64 hrs HW=96.70' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.39 cfs @ 12.17 hrs HW=98.61' TW=0.00' (Dynamic Tailwater)
 ↳2=Orifice/Grate (Weir Controls 0.39 cfs @ 1.10 fps)

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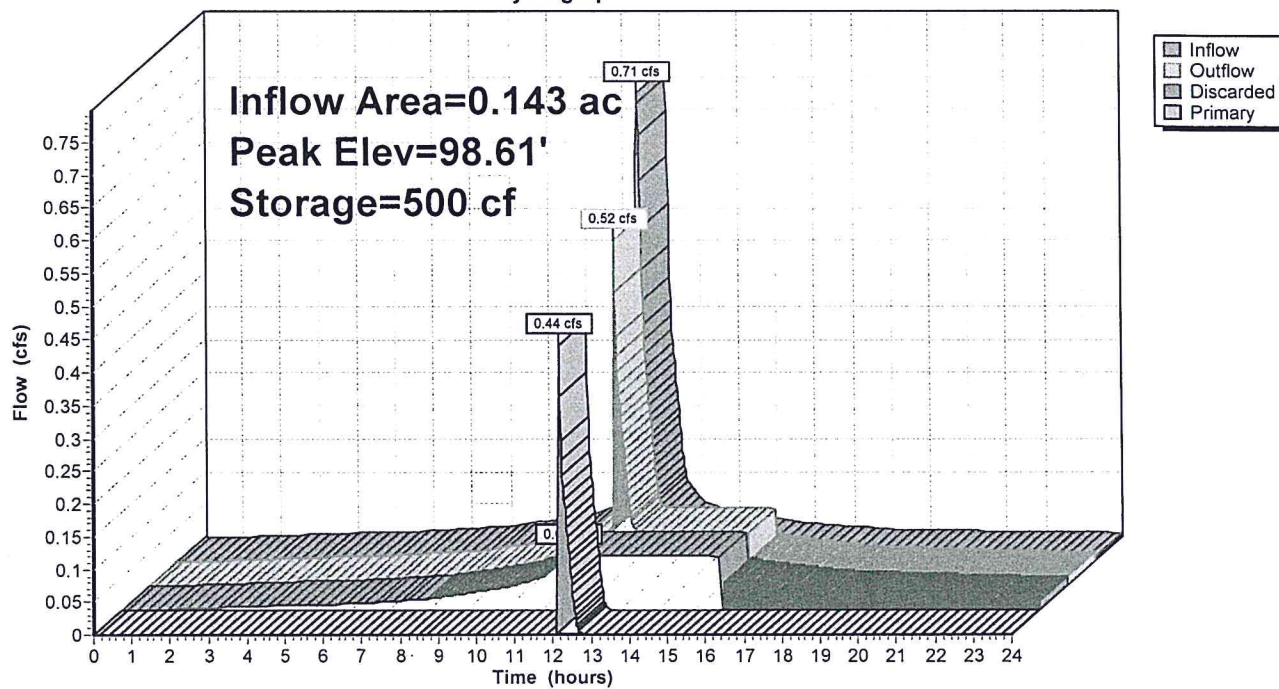
Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 21

Pond 1P: Roof Drywell

Hydrograph



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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 22

Summary for Pond 2P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 4.84" for 10-Yr. Event event
 Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af
 Outflow = 0.52 cfs @ 12.17 hrs, Volume= 0.058 af, Atten= 26%, Lag= 5.2 min
 Discarded = 0.08 cfs @ 11.64 hrs, Volume= 0.051 af
 Primary = 0.44 cfs @ 12.17 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 96.11' @ 12.16 hrs Surf.Area= 436 sf Storage= 500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 28.6 min (775.8 - 747.2)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.64 hrs HW=94.20' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.39 cfs @ 12.17 hrs HW=96.11' TW=0.00' (Dynamic Tailwater)

↑**2=Orifice/Grate** (Weir Controls 0.39 cfs @ 1.10 fps)

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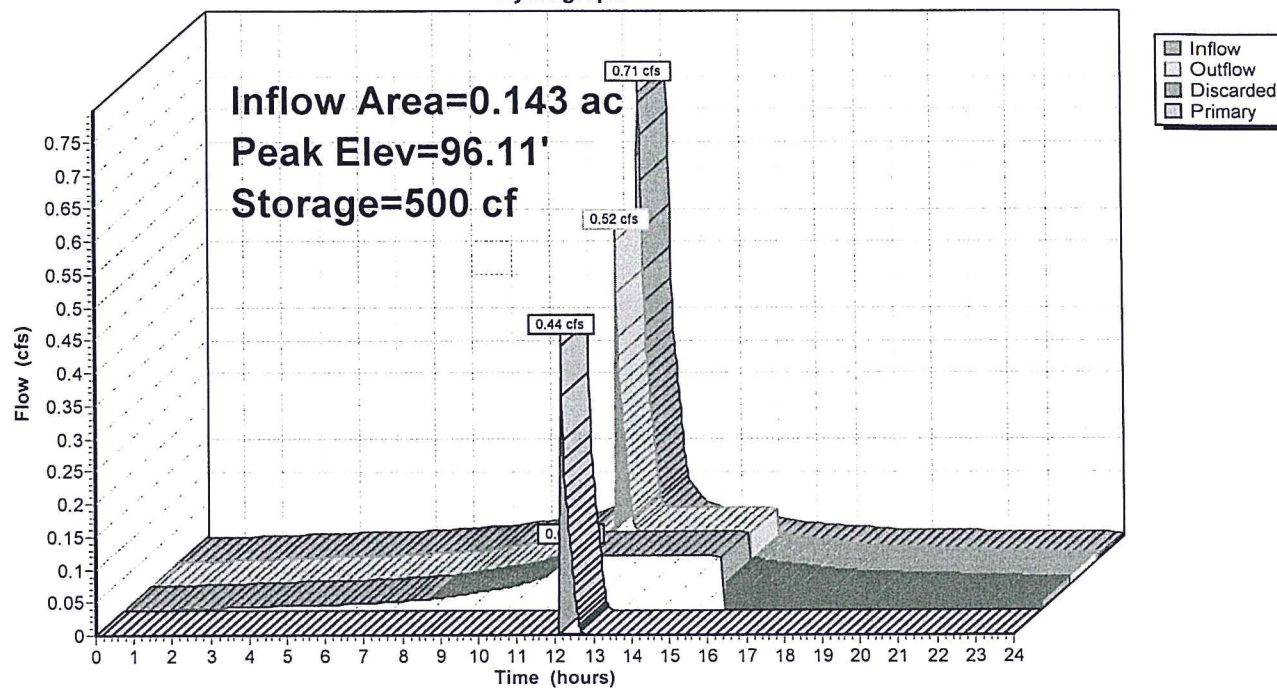
Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 23

Pond 2P: Roof Drywell

Hydrograph



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Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 24

Summary for Pond 3P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 4.84" for 10-Yr. Event event
 Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.058 af
 Outflow = 0.52 cfs @ 12.17 hrs, Volume= 0.058 af, Atten= 26%, Lag= 5.2 min
 Discarded = 0.08 cfs @ 11.64 hrs, Volume= 0.051 af
 Primary = 0.44 cfs @ 12.17 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 96.11' @ 12.16 hrs Surf.Area= 436 sf Storage= 500 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 28.6 min (775.8 - 747.2)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.64 hrs HW=94.20' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.39 cfs @ 12.17 hrs HW=96.11' TW=0.00' (Dynamic Tailwater)

└─2=Orifice/Grate (Weir Controls 0.39 cfs @ 1.10 fps)

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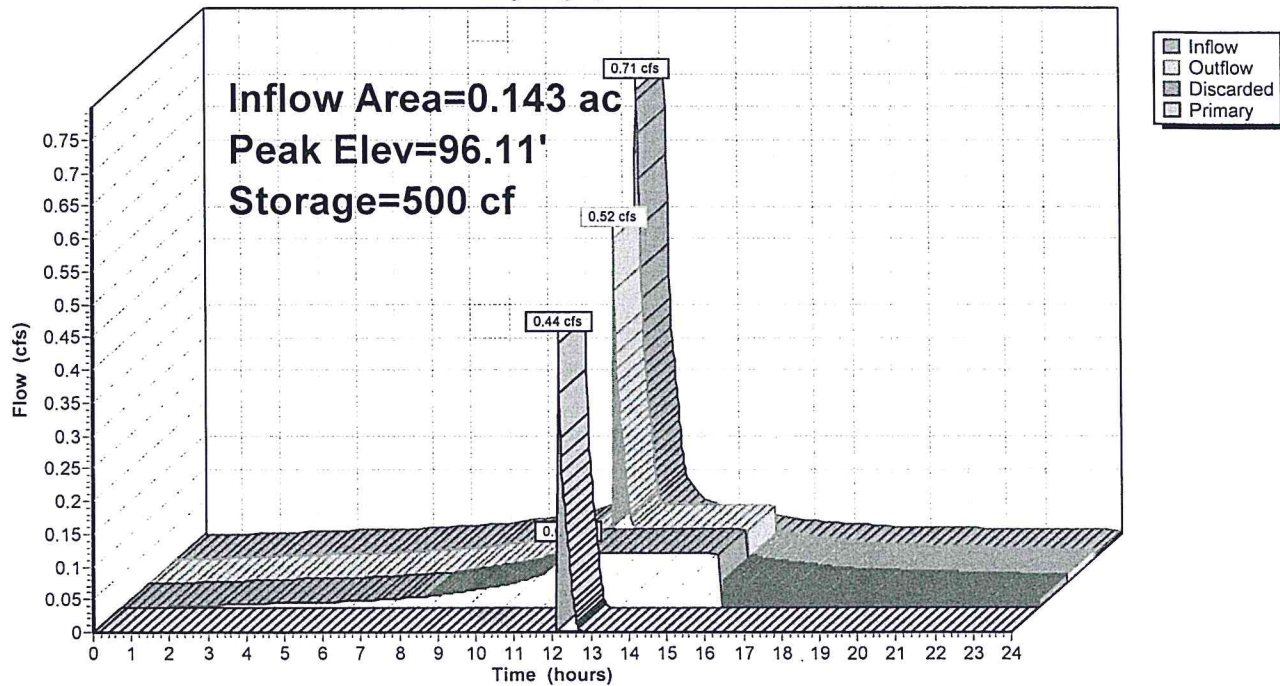
Type III 24-hr 10-Yr. Event Rainfall=5.08"

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Page 25

Pond 3P: Roof Drywell

Hydrograph



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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 26

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SUB-1A: (new Subcat)	Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>8.79" Tc=6.0 min CN=98 Runoff=1.27 cfs 0.105 af
Subcatchment SUB-1B: (new Subcat)	Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>8.79" Tc=6.0 min CN=98 Runoff=1.27 cfs 0.105 af
Subcatchment SUB-3A: (new Subcat)	Runoff Area=6,250 sf 100.00% Impervious Runoff Depth>8.79" Tc=6.0 min CN=98 Runoff=1.27 cfs 0.105 af
Reach DP-1: DP-1	Inflow=3.40 cfs 0.088 af Outflow=3.40 cfs 0.088 af
Pond 1P: Roof Drywell	Peak Elev=98.86' Storage=543 cf Inflow=1.27 cfs 0.105 af Discarded=0.08 cfs 0.076 af Primary=1.13 cfs 0.029 af Outflow=1.22 cfs 0.105 af
Pond 2P: Roof Drywell	Peak Elev=96.36' Storage=543 cf Inflow=1.27 cfs 0.105 af Discarded=0.08 cfs 0.076 af Primary=1.13 cfs 0.029 af Outflow=1.22 cfs 0.105 af
Pond 3P: Roof Drywell	Peak Elev=96.36' Storage=543 cf Inflow=1.27 cfs 0.105 af Discarded=0.08 cfs 0.076 af Primary=1.13 cfs 0.029 af Outflow=1.22 cfs 0.105 af
Total Runoff Area = 0.430 ac Runoff Volume = 0.315 af Average Runoff Depth = 8.79" 0.00% Pervious = 0.000 ac 100.00% Impervious = 0.430 ac	

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 27

Summary for Subcatchment SUB-1A: (new Subcat)

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af, Depth> 8.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

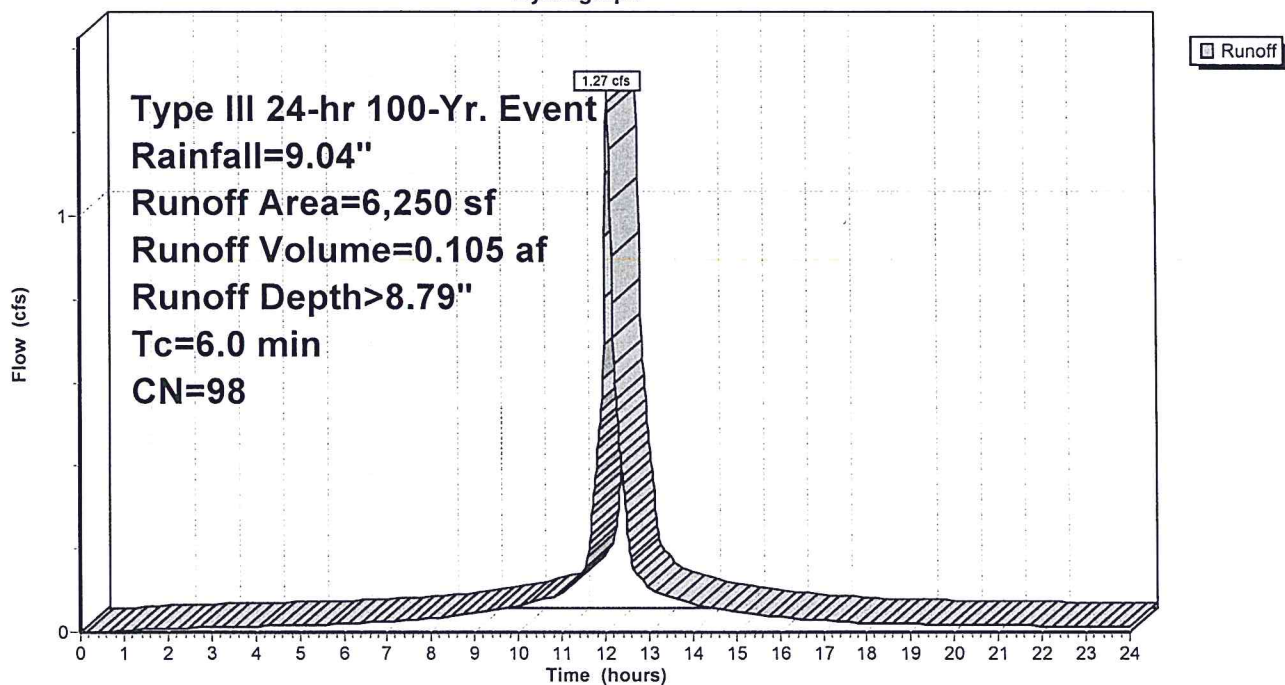
Type III 24-hr 100-Yr. Event Rainfall=9.04"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1A: (new Subcat)

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 28

Summary for Subcatchment SUB-1B: (new Subcat)

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af, Depth> 8.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

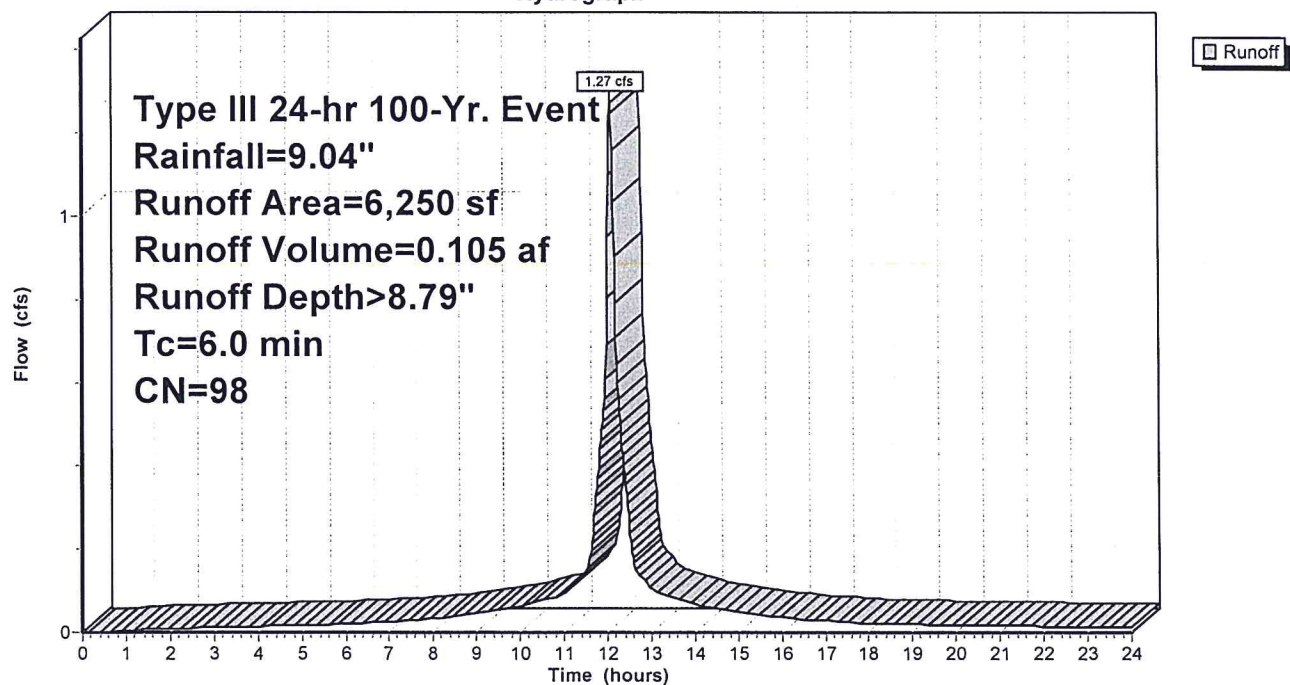
Type III 24-hr 100-Yr. Event Rainfall=9.04"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-1B: (new Subcat)

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 29

Summary for Subcatchment SUB-3A: (new Subcat)

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af, Depth> 8.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

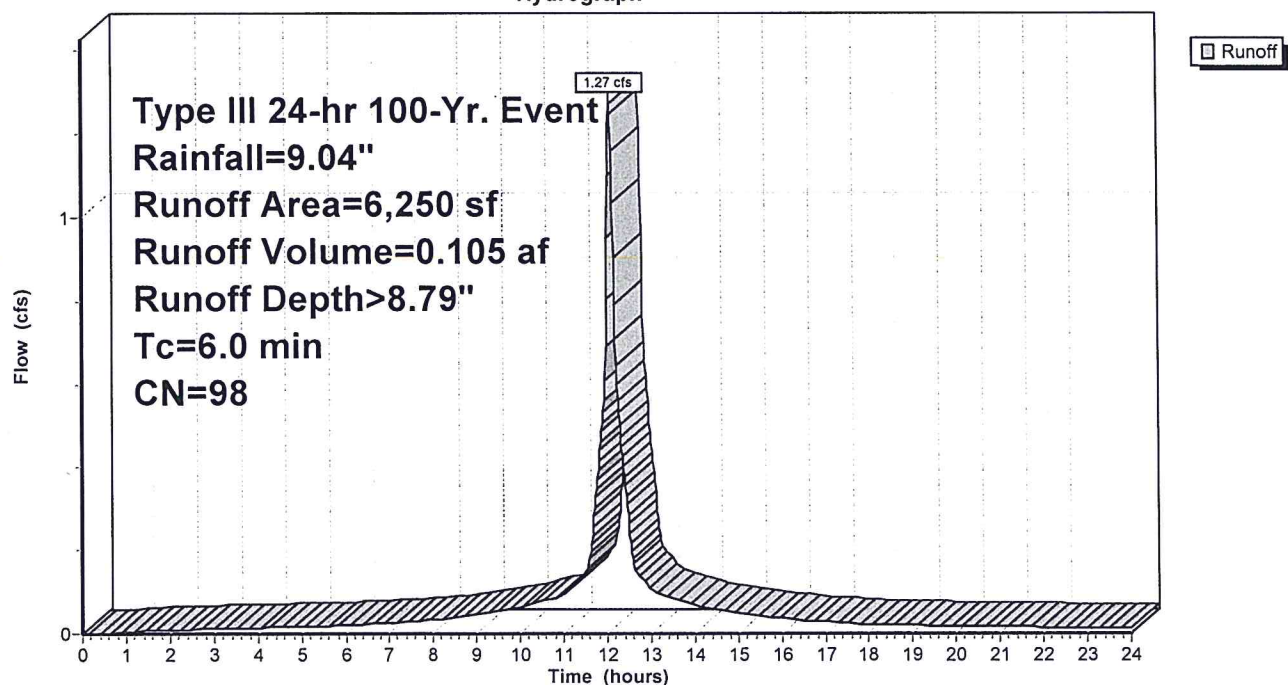
Type III 24-hr 100-Yr. Event Rainfall=9.04"

Area (sf)	CN	Description
6,250	98	Roofs, HSG A
6,250		100.00% Impervious Area

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

Subcatchment SUB-3A: (new Subcat)

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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 30

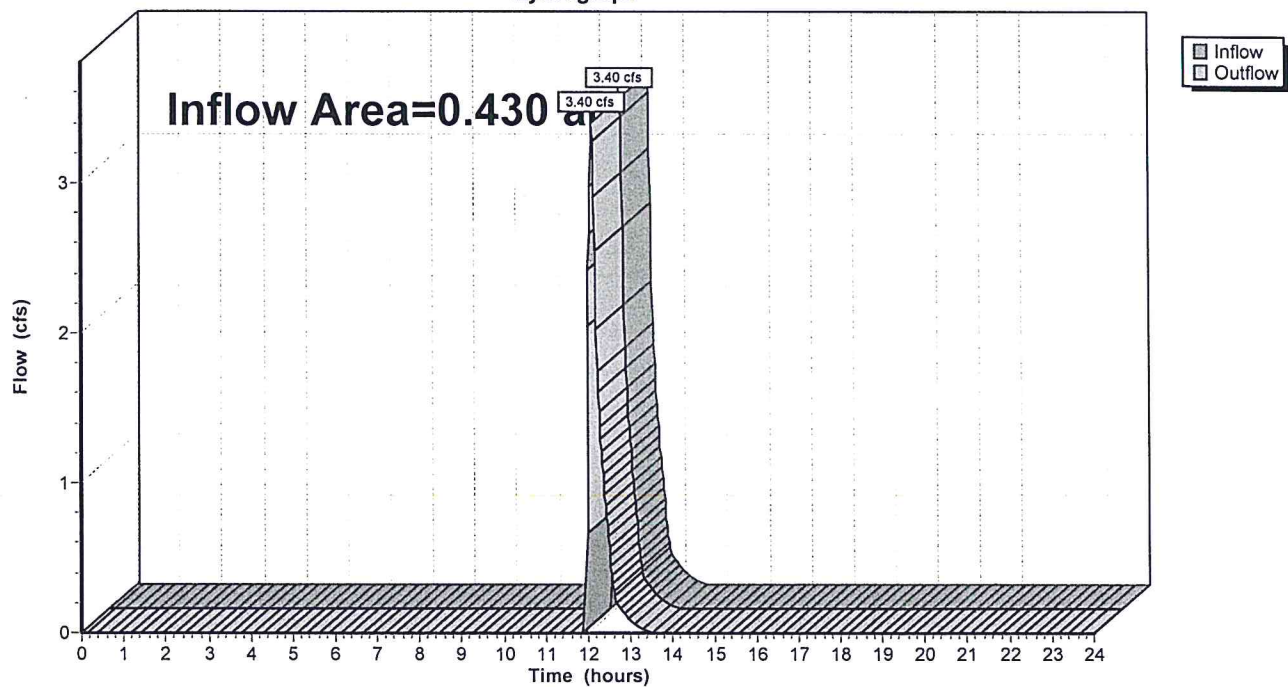
Summary for Reach DP-1: DP-1

Inflow Area = 0.430 ac, 100.00% Impervious, Inflow Depth = 2.46" for 100-Yr. Event event
Inflow = 3.40 cfs @ 12.11 hrs, Volume= 0.088 af
Outflow = 3.40 cfs @ 12.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Reach DP-1: DP-1

Hydrograph



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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 31

Summary for Pond 1P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 8.79" for 100-Yr. Event event
 Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af
 Outflow = 1.22 cfs @ 12.11 hrs, Volume= 0.105 af, Atten= 4%, Lag= 1.5 min
 Discarded = 0.08 cfs @ 11.00 hrs, Volume= 0.076 af
 Primary = 1.13 cfs @ 12.11 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 98.86' @ 12.11 hrs Surf.Area= 436 sf Storage= 543 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 25.9 min (765.1 - 739.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.17'	268 cf	Chambers Listed below Inside #2
#2	96.67'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
97.17	0
98.50	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.67	436	0	0
99.00	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.67'	8.270 in/hr Exfiltration over Surface area
#2	Primary	98.50'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.00 hrs HW=96.69' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)**Primary OutFlow** Max=1.13 cfs @ 12.11 hrs HW=98.85' TW=0.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 1.13 cfs @ 2.87 fps)

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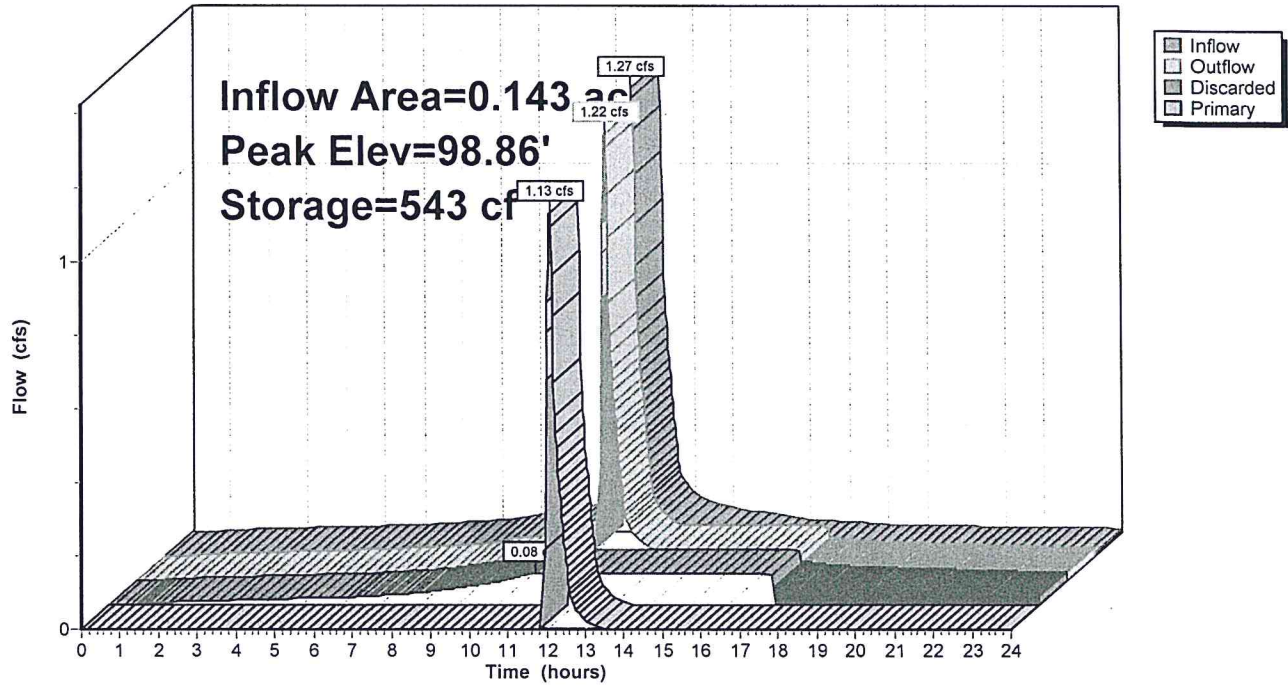
Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 32

Pond 1P: Roof Drywell

Hydrograph



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Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 33

Summary for Pond 2P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 8.79" for 100-Yr. Event event
 Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af
 Outflow = 1.22 cfs @ 12.11 hrs, Volume= 0.105 af, Atten= 4%, Lag= 1.5 min
 Discarded = 0.08 cfs @ 11.00 hrs, Volume= 0.076 af
 Primary = 1.13 cfs @ 12.11 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 96.36' @ 12.11 hrs Surf.Area= 436 sf Storage= 543 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 25.9 min (765.1 - 739.2)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.00 hrs HW=94.19' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.13 cfs @ 12.11 hrs HW=96.35' TW=0.00' (Dynamic Tailwater)
 ↑2=Orifice/Grate (Orifice Controls 1.13 cfs @ 2.87 fps)

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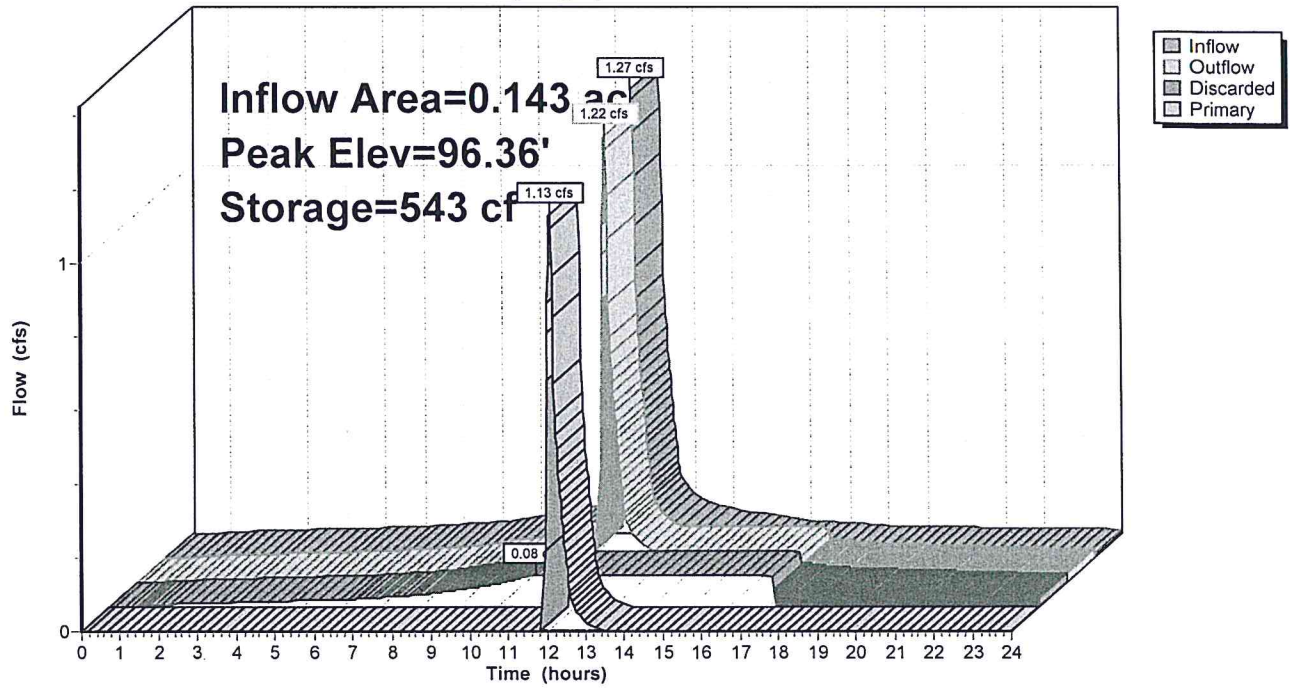
Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 34

Pond 2P: Roof Drywell

Hydrograph



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Page 35

Summary for Pond 3P: Roof Drywell

Inflow Area = 0.143 ac, 100.00% Impervious, Inflow Depth > 8.79" for 100-Yr. Event event
 Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.105 af
 Outflow = 1.22 cfs @ 12.11 hrs, Volume= 0.105 af, Atten= 4%, Lag= 1.5 min
 Discarded = 0.08 cfs @ 11.00 hrs, Volume= 0.076 af
 Primary = 1.13 cfs @ 12.11 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
 Peak Elev= 96.36' @ 12.11 hrs Surf.Area= 436 sf Storage= 543 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 25.9 min (765.1 - 739.2)

Volume	Invert	Avail.Storage	Storage Description
#1	94.67'	268 cf	Chambers Listed below Inside #2
#2	94.17'	299 cf	Stone Bed (Prismatic) Listed below (Recalc)
			1,016 cf Overall - 268 cf Embedded = 748 cf x 40.0% Voids
			567 cf Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
94.67	0
96.00	268

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.17	436	0	0
96.50	436	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.17'	8.270 in/hr Exfiltration over Surface area
#2	Primary	96.00'	6.0" Horiz. Orifice/Grate X 2.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 11.00 hrs HW=94.19' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.13 cfs @ 12.11 hrs HW=96.35' TW=0.00' (Dynamic Tailwater)
 ↳ **2=Orifice/Grate** (Orifice Controls 1.13 cfs @ 2.87 fps)

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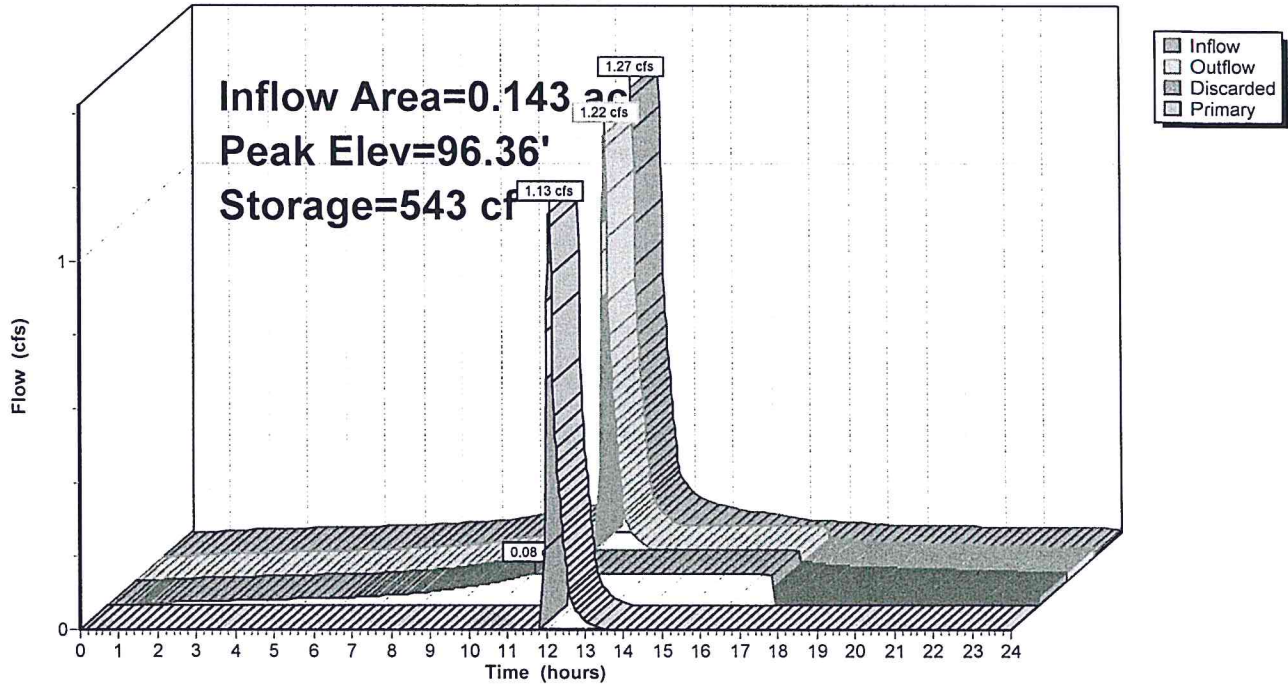
Type III 24-hr 100-Yr. Event Rainfall=9.04"

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Page 36

Pond 3P: Roof Drywell

Hydrograph



PLANS

- Watershed Delineation Plan

