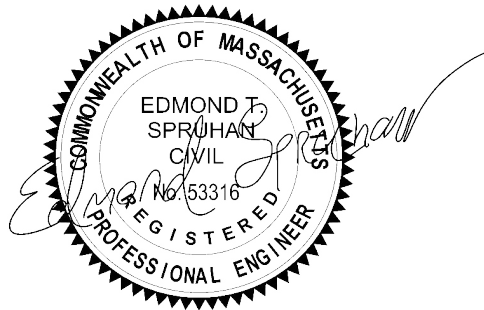


SPRUHAN ENGINEERING, P.C.

# STORMWATER REPORT

157 LANGLEY ROAD, NEWTON, MA



**Prepared By: Spruhan Engineering, P.C.**

**REVISED AS PER CLIENT: May 13, 2022**

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## **1.0 Introduction**

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Spruhan Engineering, P.C. has prepared this Storm Water Report for the proposed development located at 157 Langley Road, Newton, Massachusetts.

The proposed development consists of a 3 units building, with paved driveways, walkways, patios and landscaped area. The purpose of this report is to demonstrate that the proposed conditions do not create any increased flowrate or runoff from the site. This is achieved by installing a crushed stone drainage system.

## **2.0 Existing Conditions**

---

The existing property is located at 157 Langley Road, Newton, Massachusetts. The site is bounded by residential dwellings on the rear and one side. The property is located in 157 Langley Road and Knowles St. between Glen Ave. and Chase St. The existing roof area on the lot is 1,515.25 S.F., the existing paved area is 1834.92 S.F., the others existing impervious areas are 989.76 S.F., and the existing landscaped area on the lot is 10,546.07 S.F.

### **2.1 Existing Topography and Drainage Infrastructure.**

In general, the property slopes from the Rear (West) to the Front (East) of the lot ranging between approximately 5%. As there is no drainage system currently installed, all storm water scours across the surface at grade.

### 3.1 Project Description

The development consists of a 3 units building, with paved driveways, walkways, patios and landscaped area. The proposed roof will have an area of 3,629.56 S.F, the proposed paved driveway will have an area of 2,704.21 S.F., the others proposed impervious areas are 1,816.83 S.F., and the remaining landscaped portion will have a footprint of 6,735.40 S.F.

### 3.2 Storm Water Runoff

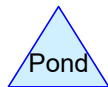
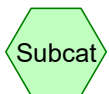
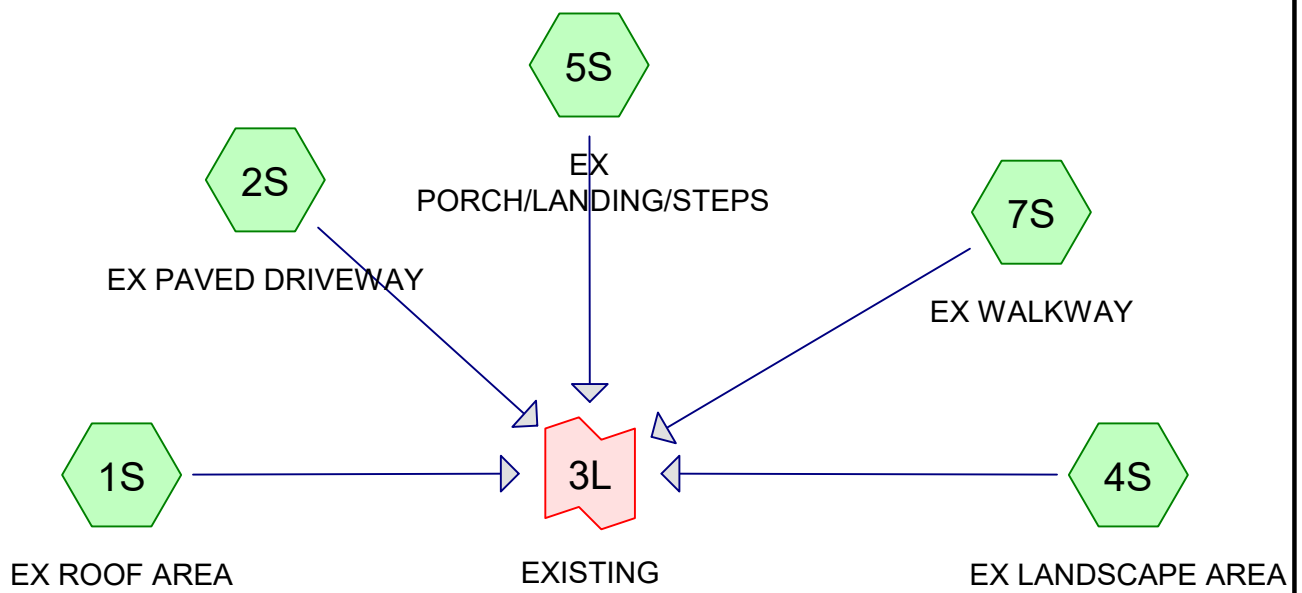
HydroCAD was used to model the site for the existing and proposed conditions for the 2-year, 10-year, 25-year, and 100-year type III storm events based on Atlas-14 Rain information for Middlesex County Central Area. HydroCAD calculations can be seen in Appendix A. The following table shows a summary of the existing and proposed conditions on the site as they relate to flowrate and volume of storm water runoff for each of the storm events.

### 3.3 Infiltration system

Two infiltration systems were proposed to control the runoff rate from the post construction site. The systems consists of 3/4" – 1 1/2" drain gravel, 20 ft x 15 ft x 1.5 ft, to collect half of the roof and the driveway at Knowles St. and 28 ft x 14 ft x 2 ft, to collect the other half of the roof and the driveway at Langley Road.

	<b>Summary Table</b>			
	Runoff Flow Rate		Volume of Runoff	
	EXISTING	PROPOSED	EXISTING	PROPOSED
2 Year Storm	0.32 cfs	0.14 cfs	1,195 cf	523 cf
10 Year Storm	0.53 cfs	0.26 cfs	2,077 cf	1,035 cf
25 Year Storm	0.71 cfs	0.48 cfs	2,646 cf	1,413 cf
100 Year Storm	1.59 cfs	1.26 cfs	5,394 cf	3,341 cf

## **Appendix A – HydroCAD Calculations**



**Routing Diagram for EXISTING**

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
10,546	49	50-75% Grass cover, Fair, HSG A (4S)
1,835	98	Paved parking, HSG A (2S)
1,515	98	Roofs, HSG A (1S)
990	98	Unconnected pavement, HSG A (5S, 7S)
<b>14,886</b>	<b>63</b>	<b>TOTAL AREA</b>

**EXISTING**

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**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
14,886	HSG A	1S, 2S, 4S, 5S, 7S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
<b>14,886</b>		<b>TOTAL AREA</b>



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**Ground Covers (all nodes)**

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
10,546	0	0	0	0	10,546	50-75% Grass cover, Fair
1,835	0	0	0	0	1,835	Paved parking
1,515	0	0	0	0	1,515	Roofs
990	0	0	0	0	990	Unconnected pavement
<b>14,886</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14,886</b>	<b>TOTAL AREA</b>

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Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 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 1S: EX ROOF AREA** Runoff Area=1,515 sf 100.00% Impervious Runoff Depth=8.54"  
 Tc=5.0 min CN=98 Runoff=0.31 cfs 1,078 cf

**Subcatchment 2S: EX PAVED DRIVEWAY** Runoff Area=1,835 sf 100.00% Impervious Runoff Depth=8.54"  
 Tc=5.0 min CN=98 Runoff=0.37 cfs 1,306 cf

**Subcatchment 4S: EX LANDSCAPE AREA** Runoff Area=10,546 sf 0.00% Impervious Runoff Depth=2.62"  
 Tc=5.0 min CN=49 Runoff=0.71 cfs 2,305 cf

**Subcatchment 5S: EX** Runoff Area=590 sf 100.00% Impervious Runoff Depth=8.54"  
 Tc=5.0 min CN=98 Runoff=0.12 cfs 420 cf

**Subcatchment 7S: EX WALKWAY** Runoff Area=400 sf 100.00% Impervious Runoff Depth=8.54"  
 Tc=5.0 min CN=98 Runoff=0.08 cfs 285 cf

**Link 3L: EXISTING**

Inflow=1.59 cfs 5,394 cf  
 Primary=1.59 cfs 5,394 cf

**Total Runoff Area = 14,886 sf Runoff Volume = 5,394 cf Average Runoff Depth = 4.35"**  
**70.85% Pervious = 10,546 sf 29.15% Impervious = 4,340 sf**

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**Summary for Subcatchment 1S: EX ROOF AREA**

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 1,078 cf, Depth= 8.54"

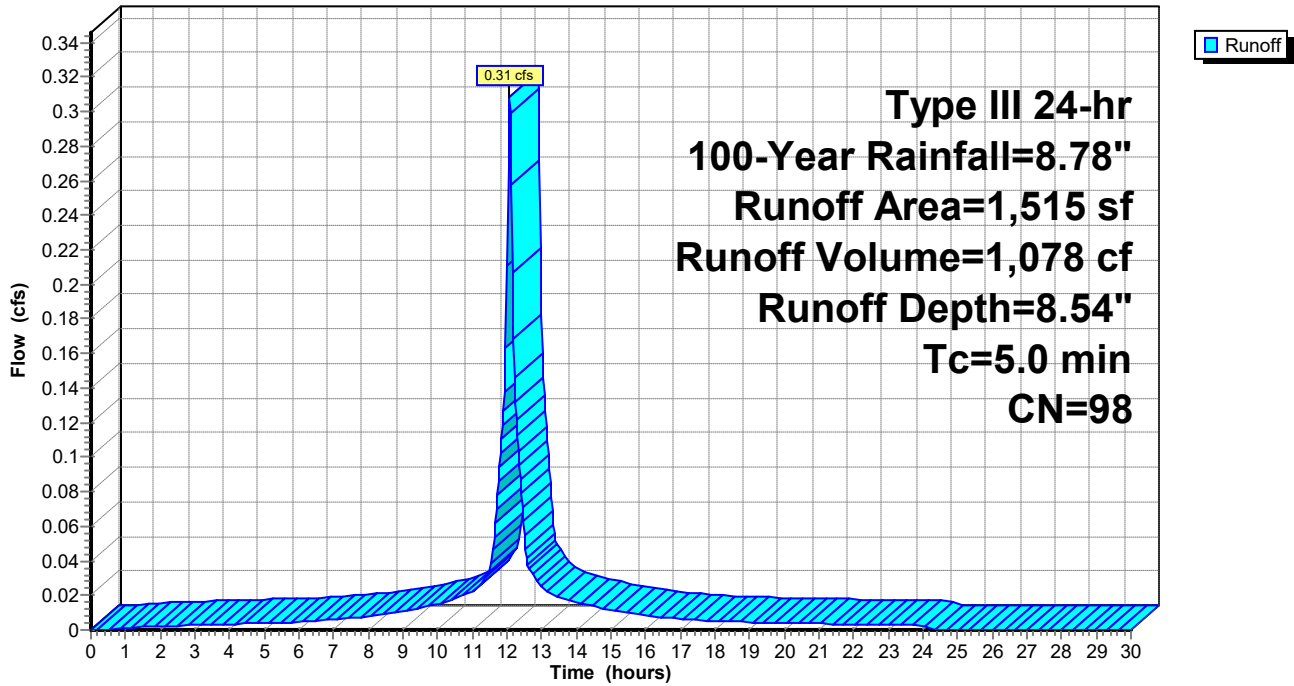
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,515	98	Roofs, HSG A
1,515		100.00% Impervious Area

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

**Subcatchment 1S: EX ROOF AREA**

Hydrograph



**EXISTING**

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**Summary for Subcatchment 2S: EX PAVED DRIVEWAY**

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,306 cf, Depth= 8.54"

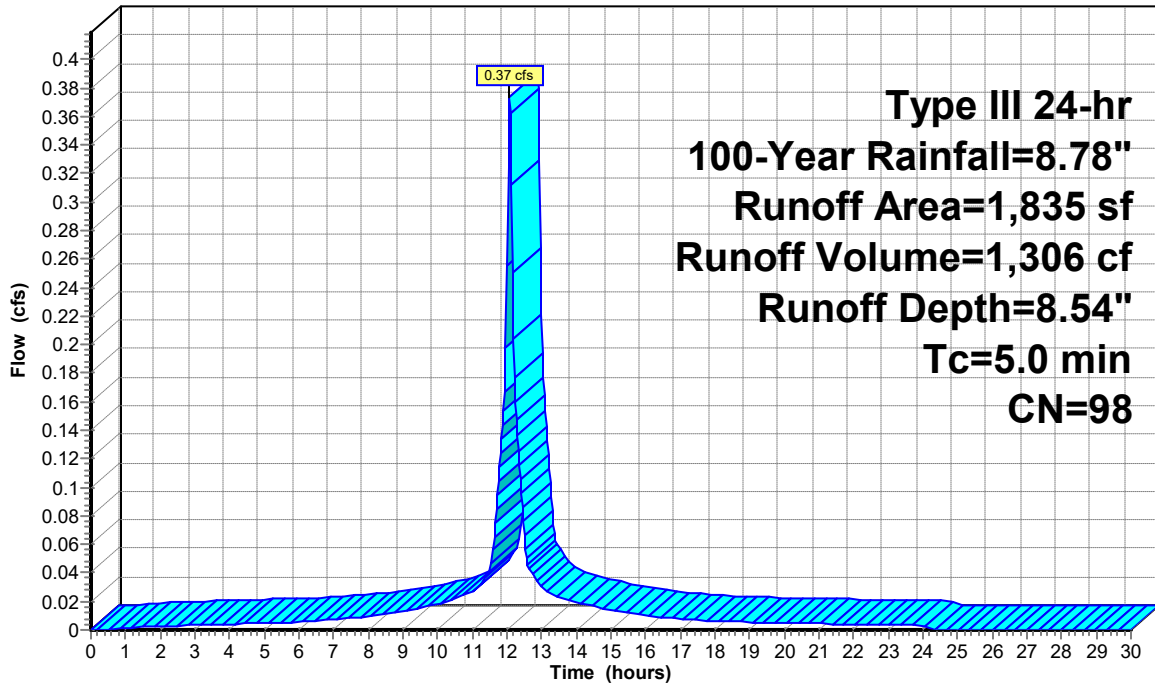
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,835	98	Paved parking, HSG A
1,835		100.00% Impervious Area

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

**Subcatchment 2S: EX PAVED DRIVEWAY**

Hydrograph



**EXISTING**

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**Summary for Subcatchment 4S: EX LANDSCAPE AREA**

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 2,305 cf, Depth= 2.62"

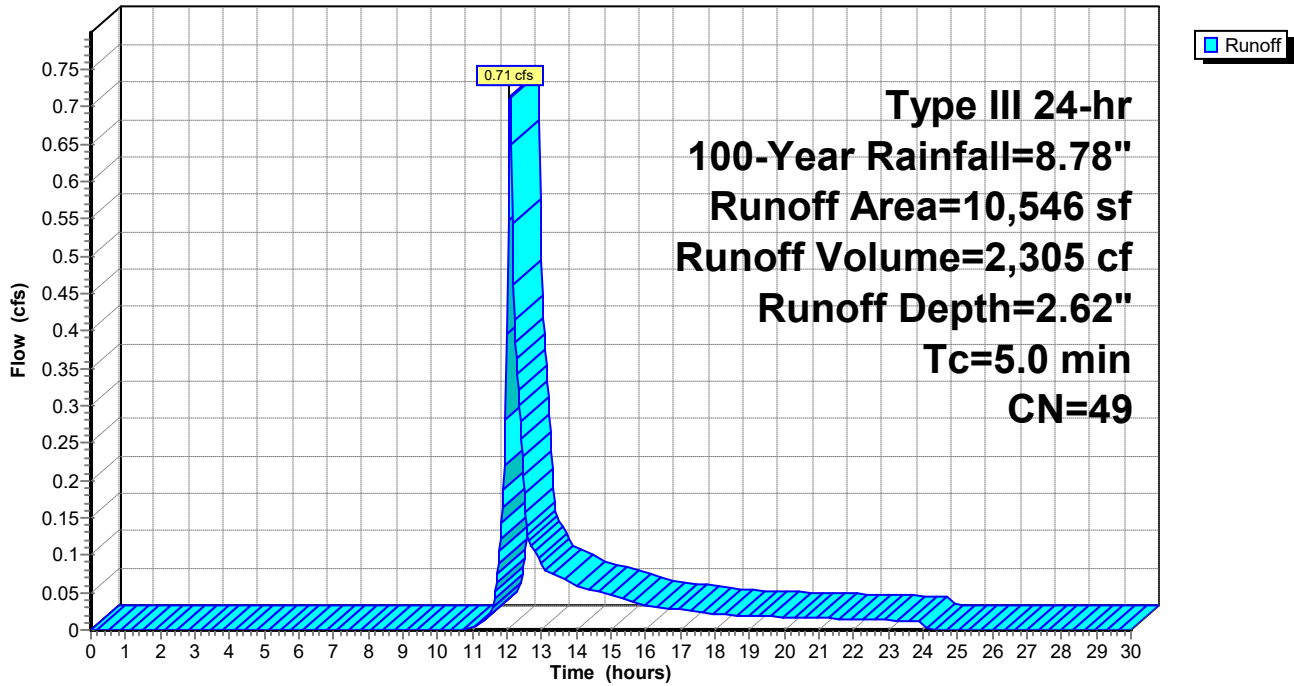
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
10,546	49	50-75% Grass cover, Fair, HSG A
10,546		100.00% Pervious Area

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

**Subcatchment 4S: EX LANDSCAPE AREA**

Hydrograph



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**Summary for Subcatchment 5S: EX PORCH/LANDING/STEPS**

Runoff = 0.12 cfs @ 12.07 hrs, Volume= 420 cf, Depth= 8.54"

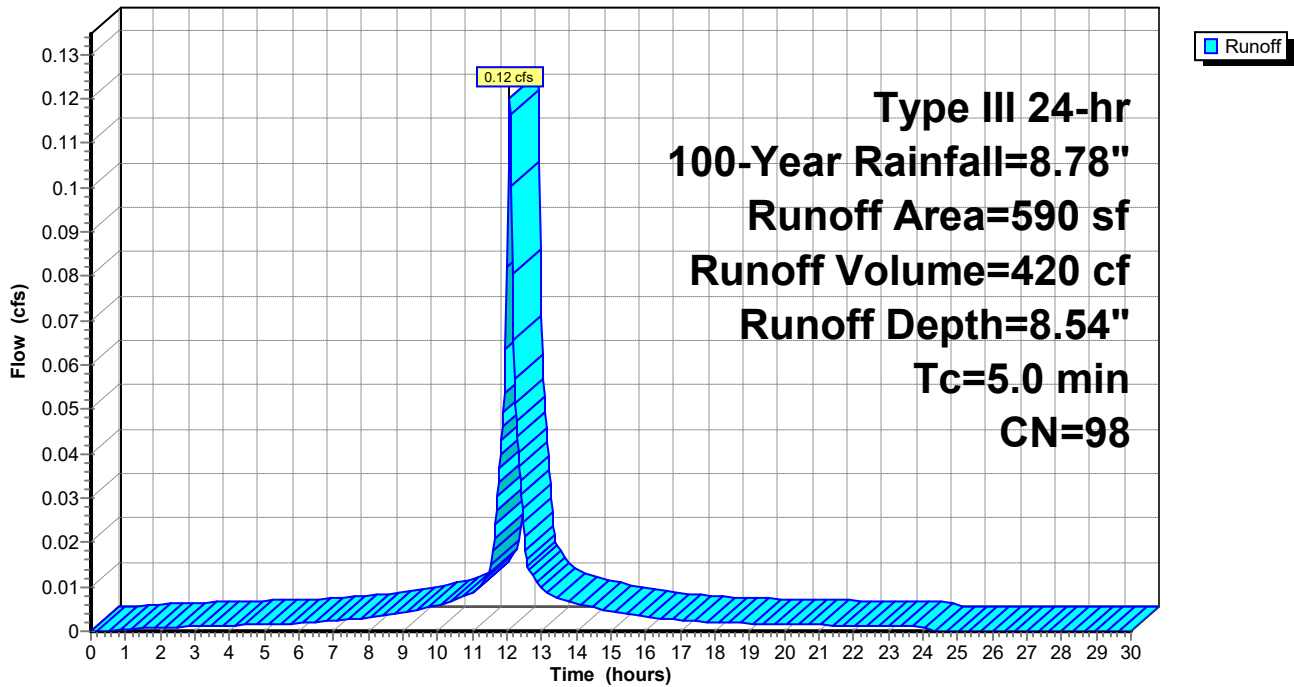
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
590	98	Unconnected pavement, HSG A
590		100.00% Impervious Area
590		100.00% Unconnected

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

**Subcatchment 5S: EX PORCH/LANDING/STEPS**

Hydrograph



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**Summary for Subcatchment 7S: EX WALKWAY**

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 285 cf, Depth= 8.54"

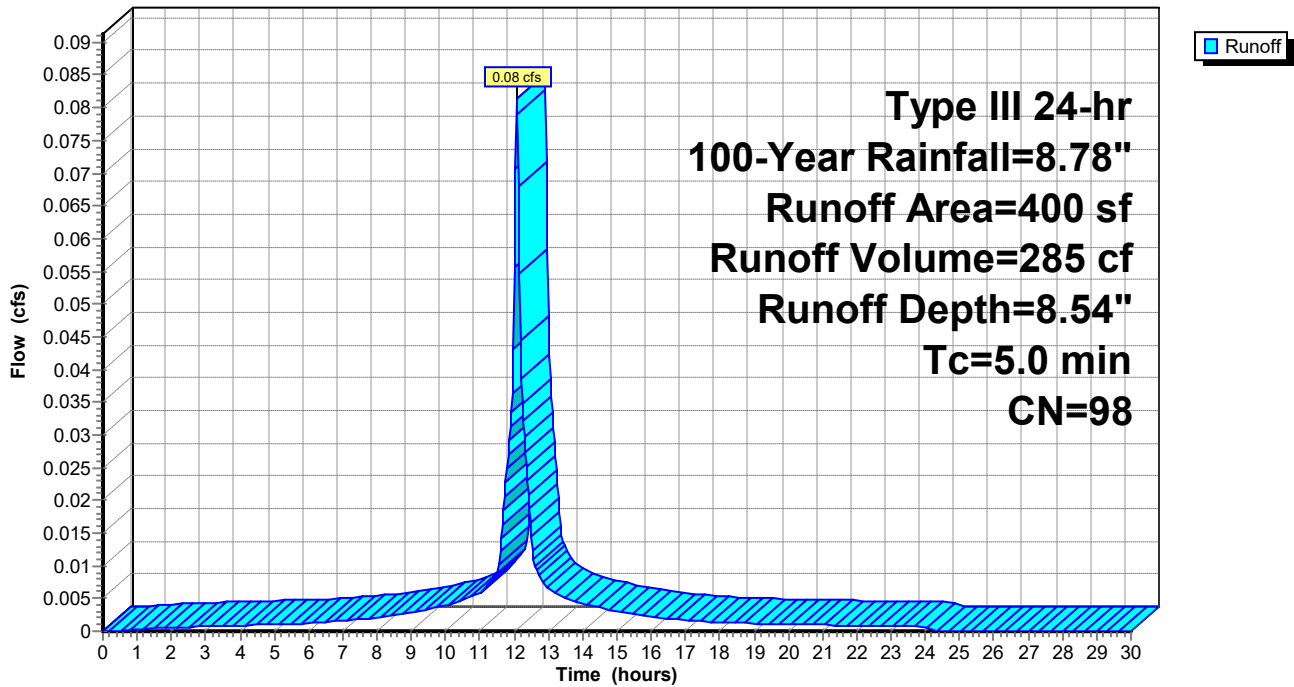
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
400	98	Unconnected pavement, HSG A
400		100.00% Impervious Area
400		100.00% Unconnected

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

**Subcatchment 7S: EX WALKWAY**

Hydrograph



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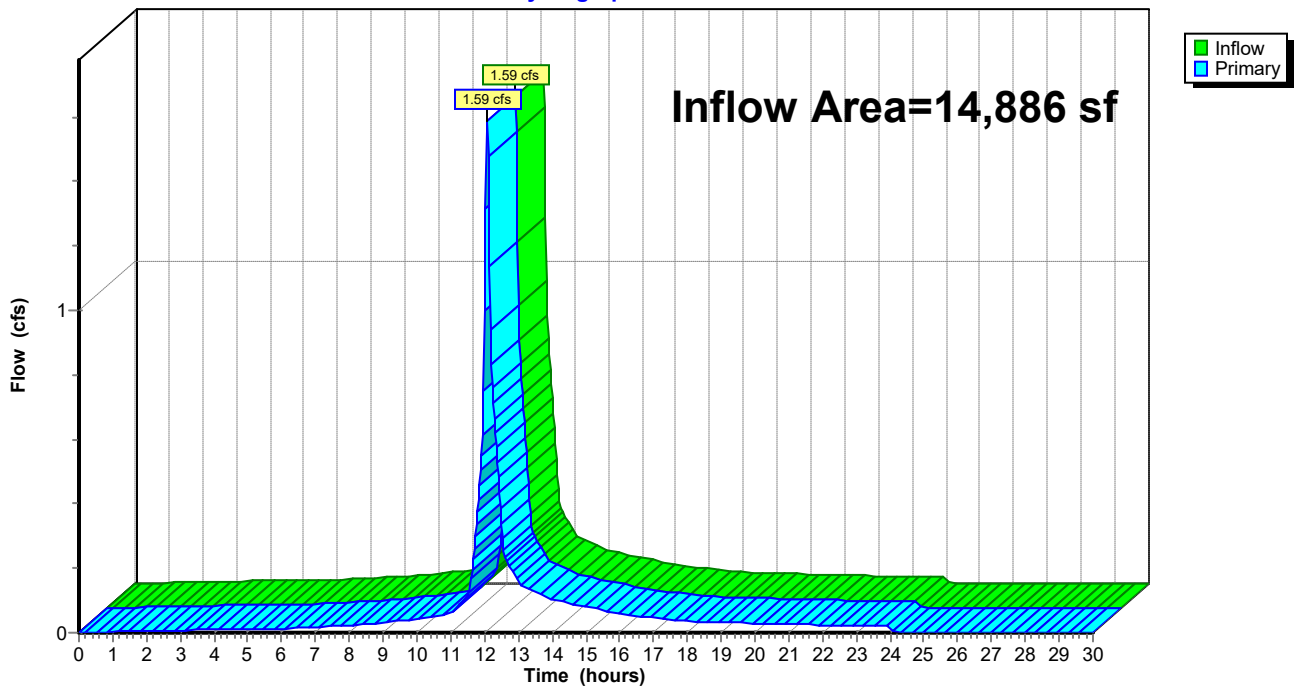
**Summary for Link 3L: EXISTING**

Inflow Area = 14,886 sf, 29.15% Impervious, Inflow Depth = 4.35" for 100-Year event  
Inflow = 1.59 cfs @ 12.08 hrs, Volume= 5,394 cf  
Primary = 1.59 cfs @ 12.08 hrs, Volume= 5,394 cf, Atten= 0%, Lag= 0.0 min

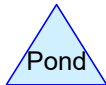
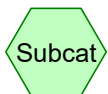
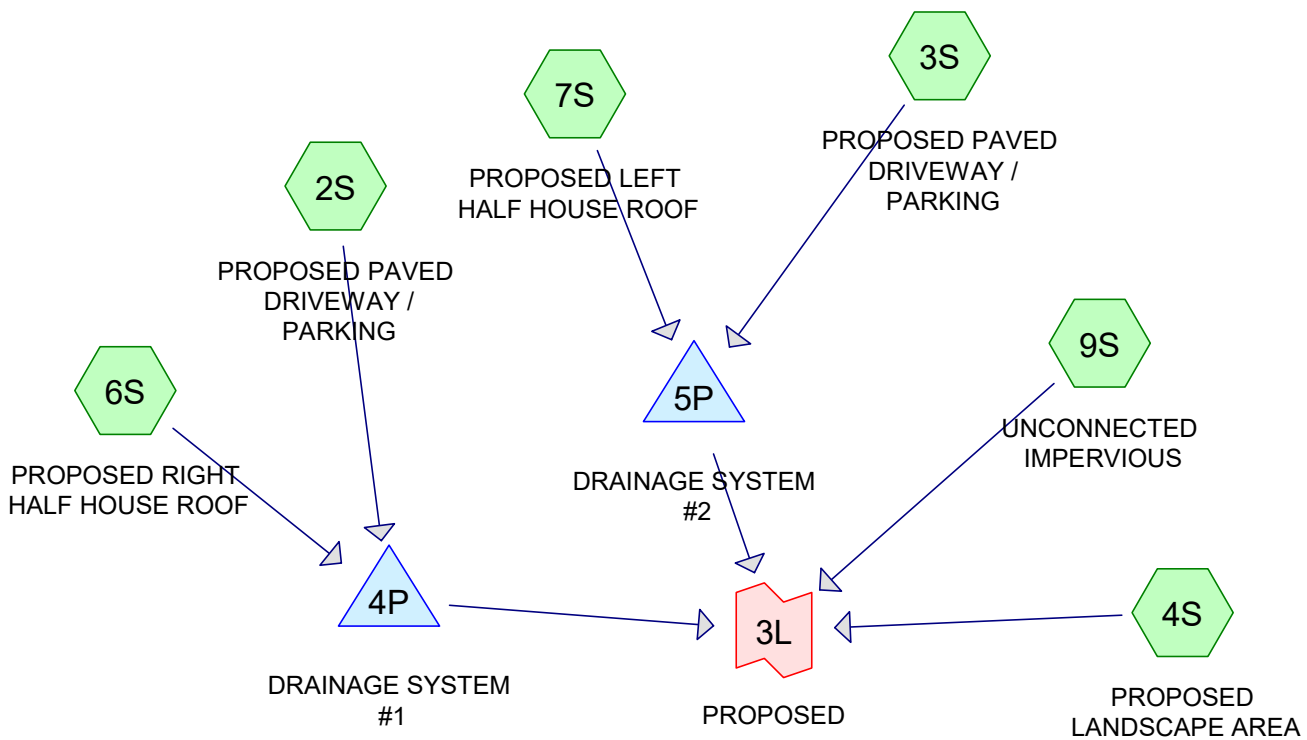
Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

**Link 3L: EXISTING**

Hydrograph







**Routing Diagram for PROPOSED**

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Page 2

**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,735	49	50-75% Grass cover, Fair, HSG A (4S)
2,705	98	Paved parking, HSG A (2S, 3S)
3,630	98	Roofs, HSG A (6S, 7S)
1,817	98	Unconnected pavement, HSG A (9S)
<b>14,887</b>	<b>76</b>	<b>TOTAL AREA</b>

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**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
14,887	HSG A	2S, 3S, 4S, 6S, 7S, 9S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
<b>14,887</b>		<b>TOTAL AREA</b>

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**Ground Covers (all nodes)**

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
6,735	0	0	0	0	6,735	50-75% Grass cover, Fair
2,705	0	0	0	0	2,705	Paved parking
3,630	0	0	0	0	3,630	Roofs
1,817	0	0	0	0	1,817	Unconnected pavement
<b>14,887</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14,887</b>	<b>TOTAL AREA</b>

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Type III 24-hr 100-Year Rainfall=8.78"

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Page 5

Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 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 2S: PROPOSED PAVED** Runoff Area=1,748 sf 100.00% Impervious Runoff Depth=8.54"  
Tc=15.0 min CN=98 Runoff=0.26 cfs 1,244 cf

**Subcatchment 3S: PROPOSED PAVED** Runoff Area=957 sf 100.00% Impervious Runoff Depth=8.54"  
Tc=15.0 min CN=98 Runoff=0.14 cfs 681 cf

**Subcatchment 4S: PROPOSED LANDSCAPE** Runoff Area=6,735 sf 0.00% Impervious Runoff Depth=2.62"  
Tc=5.0 min CN=49 Runoff=0.46 cfs 1,472 cf

**Subcatchment 6S: PROPOSED RIGHT** Runoff Area=1,815 sf 100.00% Impervious Runoff Depth=8.54"  
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,292 cf

**Subcatchment 7S: PROPOSED LEFT** Runoff Area=1,815 sf 100.00% Impervious Runoff Depth=8.54"  
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,292 cf

**Subcatchment 9S: UNCONNECTED** Runoff Area=1,817 sf 100.00% Impervious Runoff Depth=8.54"  
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,293 cf

**Pond 4P: DRAINAGE SYSTEM #1** Peak Elev=172.16' Storage=161 cf Inflow=0.56 cfs 2,536 cf  
Discarded=0.11 cfs 2,029 cf Primary=0.44 cfs 502 cf Outflow=0.55 cfs 2,531 cf

**Pond 5P: DRAINAGE SYSTEM #2** Peak Elev=177.16' Storage=275 cf Inflow=0.47 cfs 1,973 cf  
Discarded=0.16 cfs 1,896 cf Primary=0.12 cfs 73 cf Outflow=0.28 cfs 1,970 cf

**Link 3L: PROPOSED** Inflow=1.26 cfs 3,341 cf  
Primary=1.26 cfs 3,341 cf

**Total Runoff Area = 14,887 sf Runoff Volume = 7,273 cf Average Runoff Depth = 5.86"**  
**45.24% Pervious = 6,735 sf 54.76% Impervious = 8,152 sf**

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Page 6

**Summary for Subcatchment 2S: PROPOSED PAVED DRIVEWAY / PARKING**

Runoff = 0.26 cfs @ 12.20 hrs, Volume= 1,244 cf, Depth= 8.54"

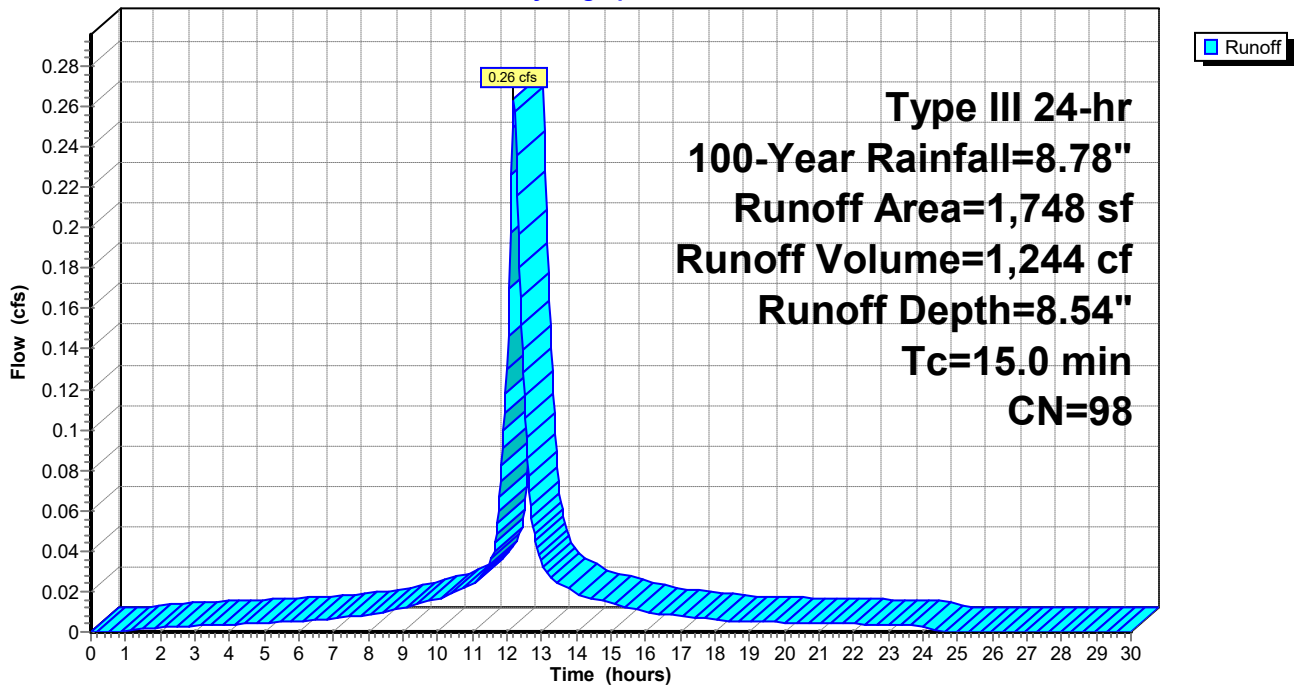
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,748	98	Paved parking, HSG A
1,748		100.00% Impervious Area

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

**Subcatchment 2S: PROPOSED PAVED DRIVEWAY / PARKING**

Hydrograph



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**Summary for Subcatchment 3S: PROPOSED PAVED DRIVEWAY / PARKING**

Runoff = 0.14 cfs @ 12.20 hrs, Volume= 681 cf, Depth= 8.54"

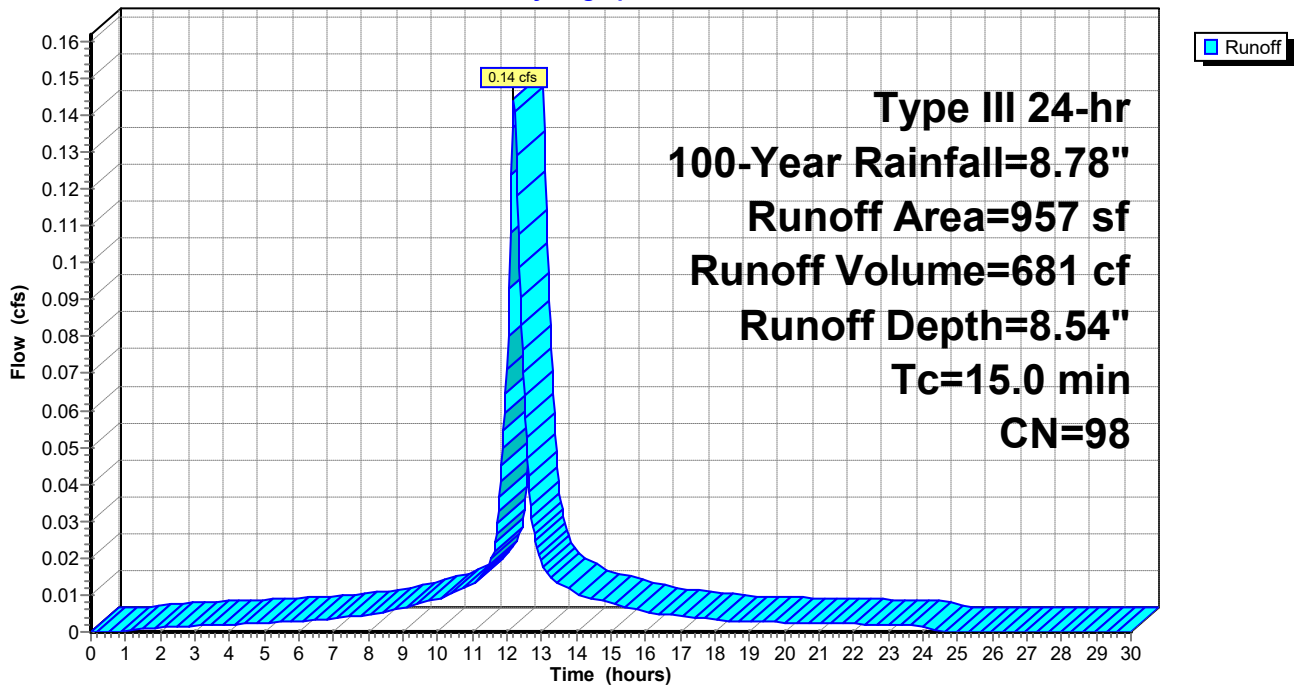
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
957	98	Paved parking, HSG A
957		100.00% Impervious Area

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

**Subcatchment 3S: PROPOSED PAVED DRIVEWAY / PARKING**

Hydrograph



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**Summary for Subcatchment 4S: PROPOSED LANDSCAPE AREA**

Runoff = 0.46 cfs @ 12.08 hrs, Volume= 1,472 cf, Depth= 2.62"

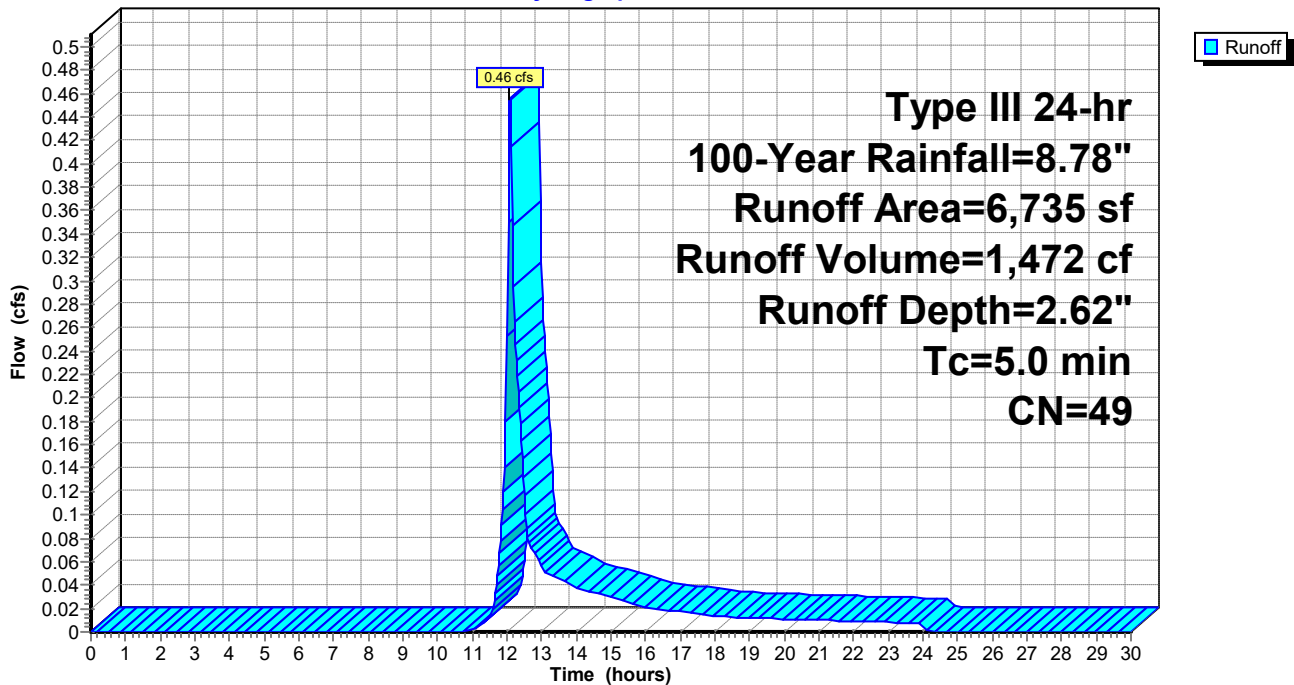
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
6,735	49	50-75% Grass cover, Fair, HSG A
6,735		100.00% Pervious Area

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

**Subcatchment 4S: PROPOSED LANDSCAPE AREA**

Hydrograph





**PROPOSED**

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**Summary for Subcatchment 6S: PROPOSED RIGHT HALF HOUSE ROOF**

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,292 cf, Depth= 8.54"

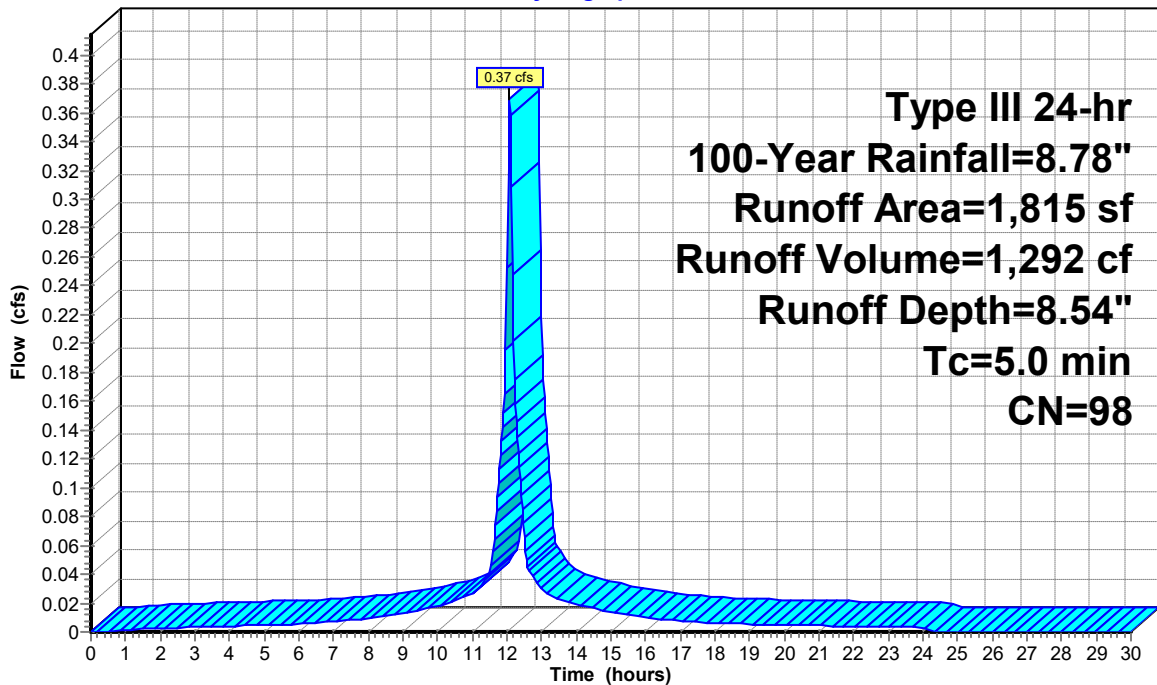
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,815	98	Roofs, HSG A
1,815		100.00% Impervious Area

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

**Subcatchment 6S: PROPOSED RIGHT HALF HOUSE ROOF**

Hydrograph



**PROPOSED**

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**Summary for Subcatchment 7S: PROPOSED LEFT HALF HOUSE ROOF**

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,292 cf, Depth= 8.54"

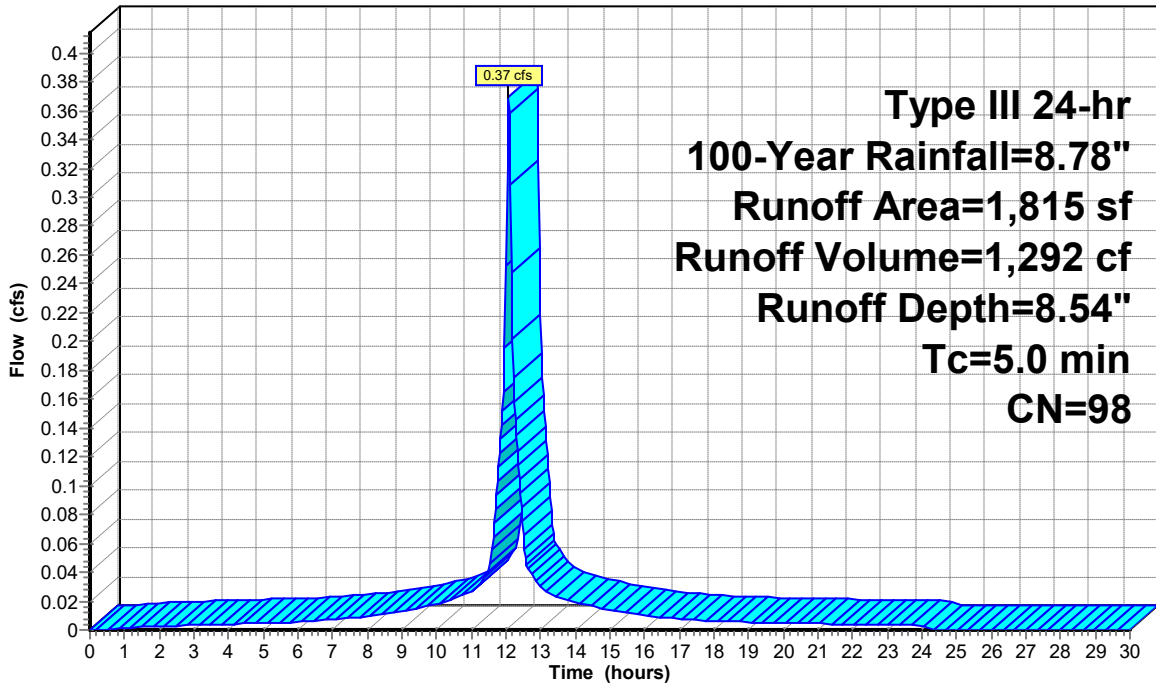
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,815	98	Roofs, HSG A
1,815		100.00% Impervious Area

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

**Subcatchment 7S: PROPOSED LEFT HALF HOUSE ROOF**

Hydrograph



**PROPOSED**

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**Summary for Subcatchment 9S: UNCONNECTED IMPERVIOUS**

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,293 cf, Depth= 8.54"

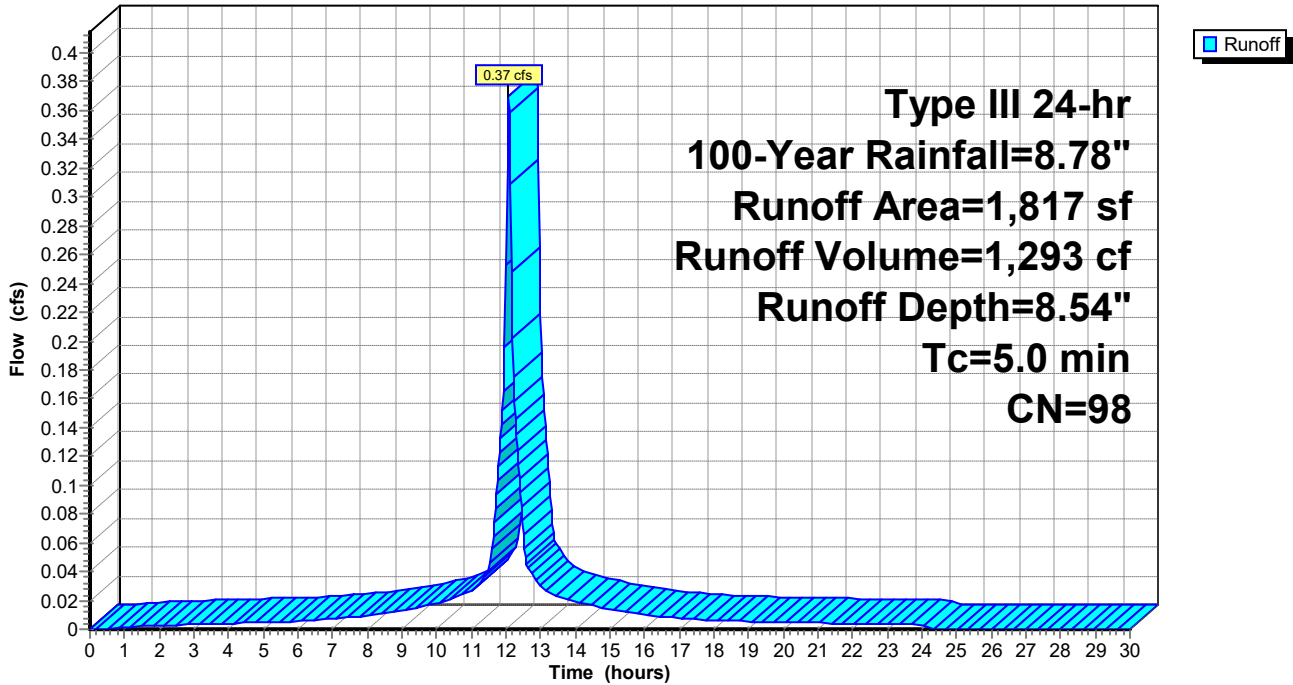
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs  
 Type III 24-hr 100-Year Rainfall=8.78"

Area (sf)	CN	Description
1,817	98	Unconnected pavement, HSG A
1,817		100.00% Impervious Area
1,817		100.00% Unconnected

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

**Subcatchment 9S: UNCONNECTED IMPERVIOUS**

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**Summary for Pond 4P: DRAINAGE SYSTEM #1**

Inflow Area = 3,563 sf, 100.00% Impervious, Inflow Depth = 8.54" for 100-Year event  
 Inflow = 0.56 cfs @ 12.09 hrs, Volume= 2,536 cf  
 Outflow = 0.55 cfs @ 12.09 hrs, Volume= 2,531 cf, Atten= 1%, Lag= 0.2 min  
 Discarded = 0.11 cfs @ 12.03 hrs, Volume= 2,029 cf  
 Primary = 0.44 cfs @ 12.09 hrs, Volume= 502 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2  
 Peak Elev= 172.16' @ 12.09 hrs Surf.Area= 300 sf Storage= 161 cf

Plug-Flow detention time= 6.7 min calculated for 2,529 cf (100% of inflow)  
 Center-of-Mass det. time= 5.5 min ( 749.2 - 743.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	169.50'	158 cf	<b>15.00'W x 20.00'L x 1.50'H Prismatic</b> 450 cf Overall x 35.0% Voids
#2	171.00'	15 cf	<b>Ponding</b> Listed below -Impervious
		173 cf	Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
171.00	0
172.60	5
172.80	15

Device	Routing	Invert	Outlet Devices
#1	Discarded	169.50'	<b>12.000 in/hr Exfiltration over Wetted area</b>
#2	Primary	170.90'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600

**Discarded OutFlow** Max=0.11 cfs @ 12.03 hrs HW=171.81' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.11 cfs)

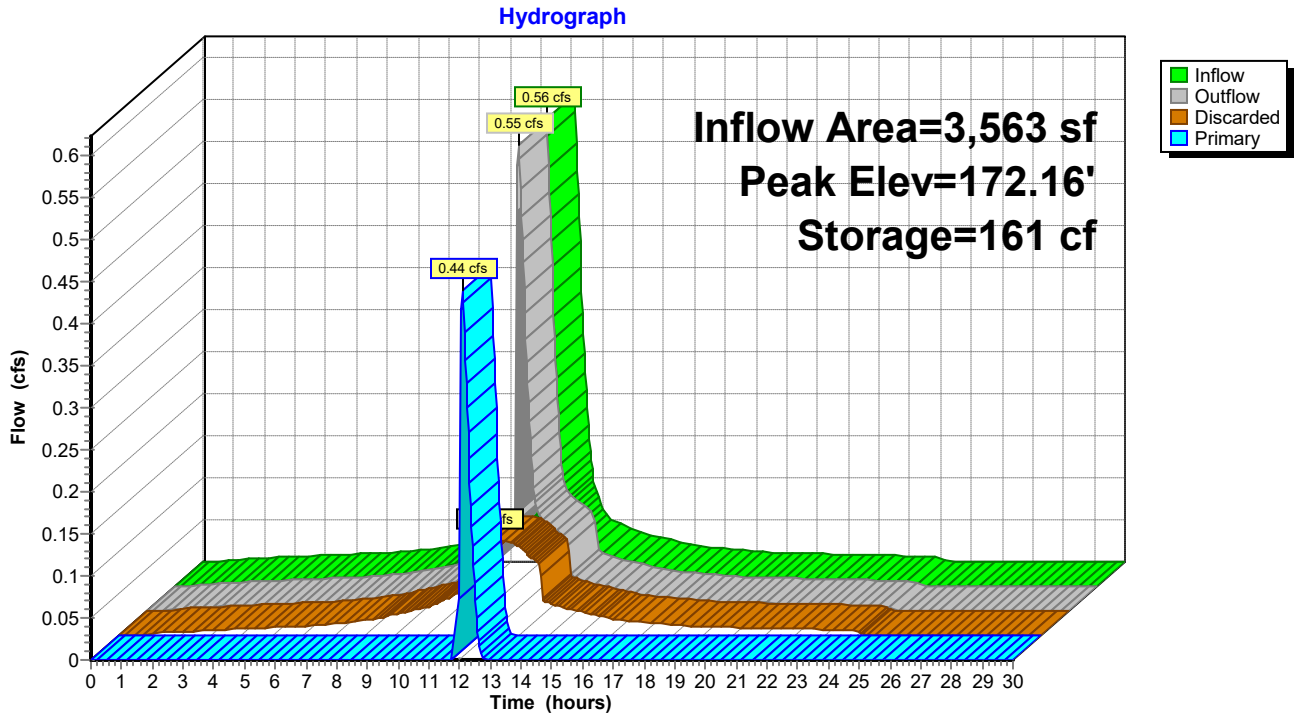
**Primary OutFlow** Max=0.44 cfs @ 12.09 hrs HW=172.16' (Free Discharge)  
 ↑2=Orifice/Grate (Orifice Controls 0.44 cfs @ 5.02 fps)

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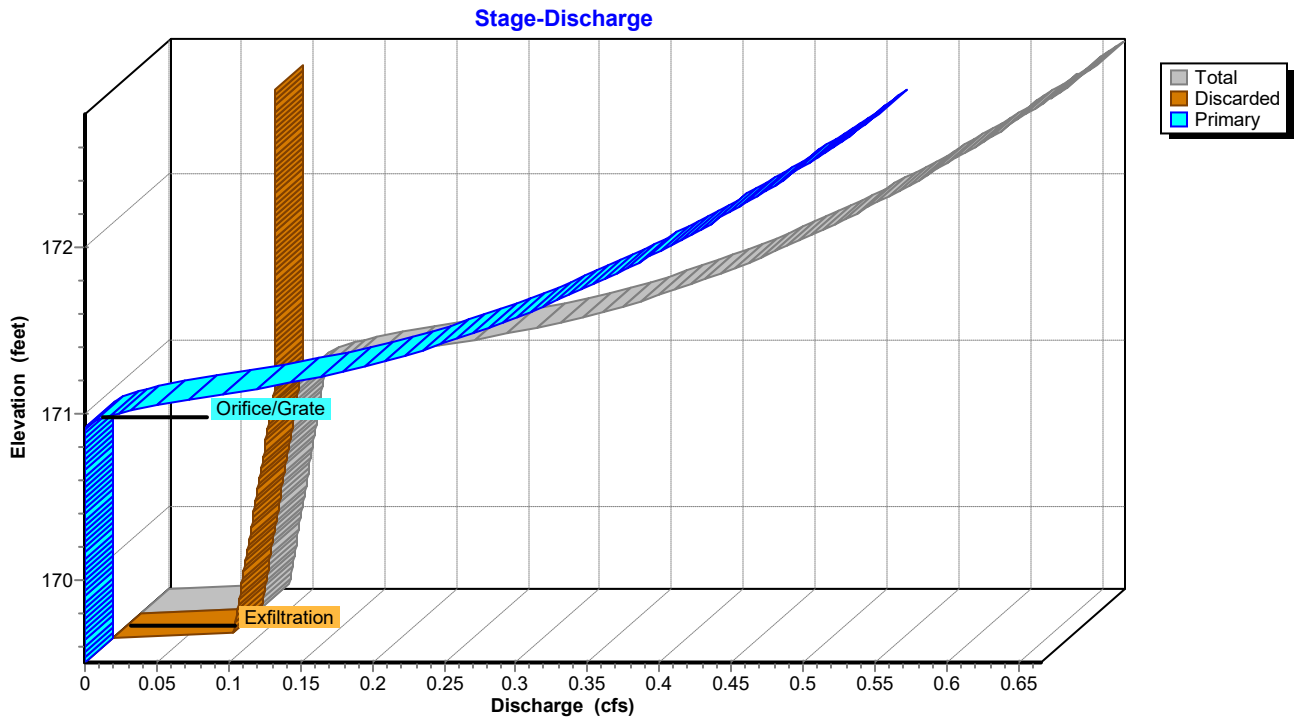
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**Pond 4P: DRAINAGE SYSTEM #1**



**Pond 4P: DRAINAGE SYSTEM #1**



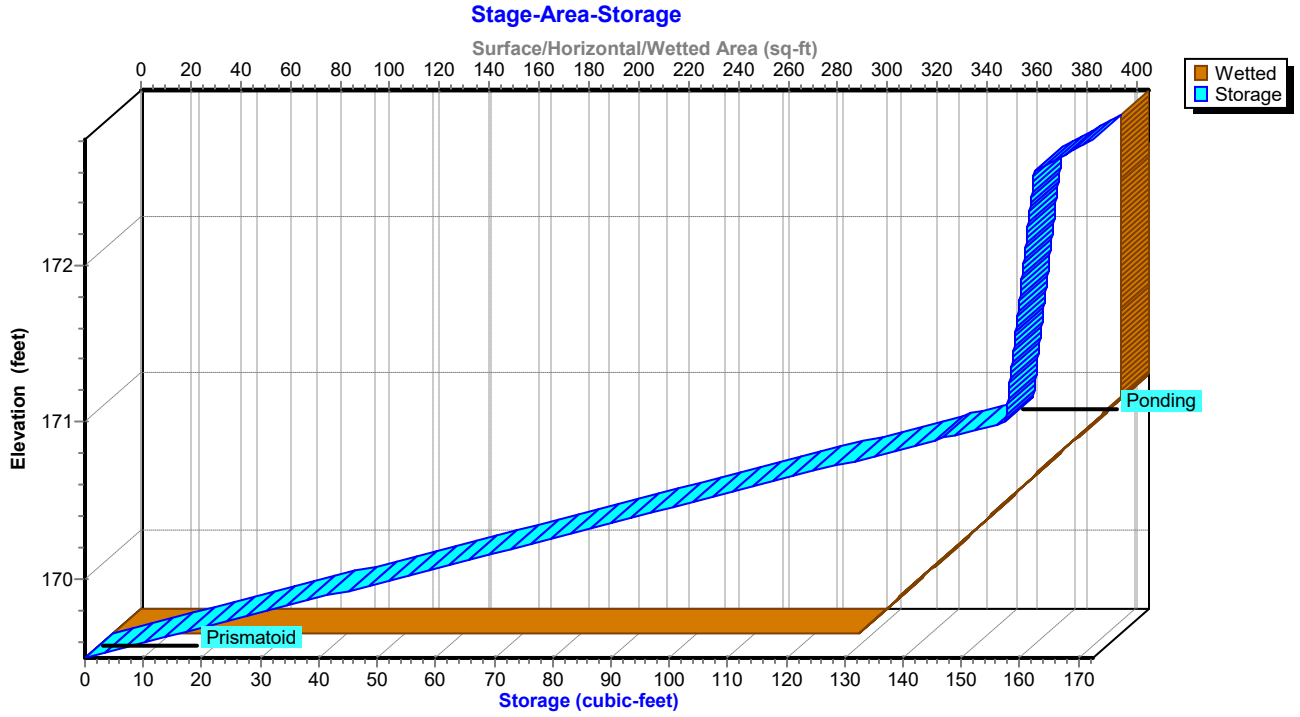
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Type III 24-hr 100-Year Rainfall=8.78"

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**Pond 4P: DRAINAGE SYSTEM #1**



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**Summary for Pond 5P: DRAINAGE SYSTEM #2**

Inflow Area = 2,772 sf, 100.00% Impervious, Inflow Depth = 8.54" for 100-Year event  
 Inflow = 0.47 cfs @ 12.08 hrs, Volume= 1,973 cf  
 Outflow = 0.28 cfs @ 12.25 hrs, Volume= 1,970 cf, Atten= 40%, Lag= 10.0 min  
 Discarded = 0.16 cfs @ 12.21 hrs, Volume= 1,896 cf  
 Primary = 0.12 cfs @ 12.25 hrs, Volume= 73 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2  
 Peak Elev= 177.16' @ 12.25 hrs Surf.Area= 392 sf Storage= 275 cf

Plug-Flow detention time= 9.6 min calculated for 1,970 cf (100% of inflow)  
 Center-of-Mass det. time= 8.5 min ( 750.9 - 742.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	274 cf	<b>14.00'W x 28.00'L x 2.00'H Prismaoid</b> 784 cf Overall x 35.0% Voids
#2	177.00'	15 cf	<b>Ponding</b> Listed below -Impervious
		289 cf	Total Available Storage

Elevation (feet)	Cum.Store (cubic-feet)
177.00	0
178.00	5
178.20	15

Device	Routing	Invert	Outlet Devices
#1	Discarded	175.00'	<b>12.000 in/hr Exfiltration over Wetted area</b>
#2	Primary	176.90'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600

**Discarded OutFlow** Max=0.16 cfs @ 12.21 hrs HW=177.12' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.16 cfs)

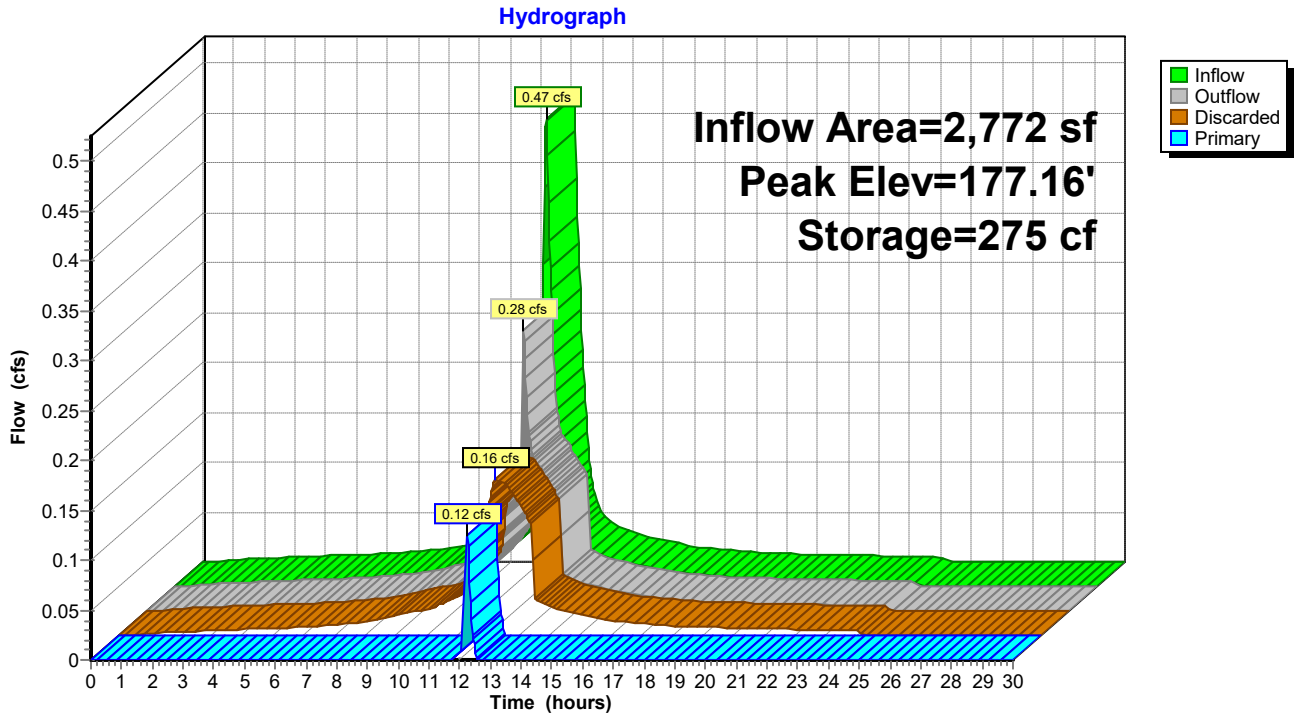
**Primary OutFlow** Max=0.12 cfs @ 12.25 hrs HW=177.15' (Free Discharge)  
 ↳ **2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.71 fps)

**PROPOSED**

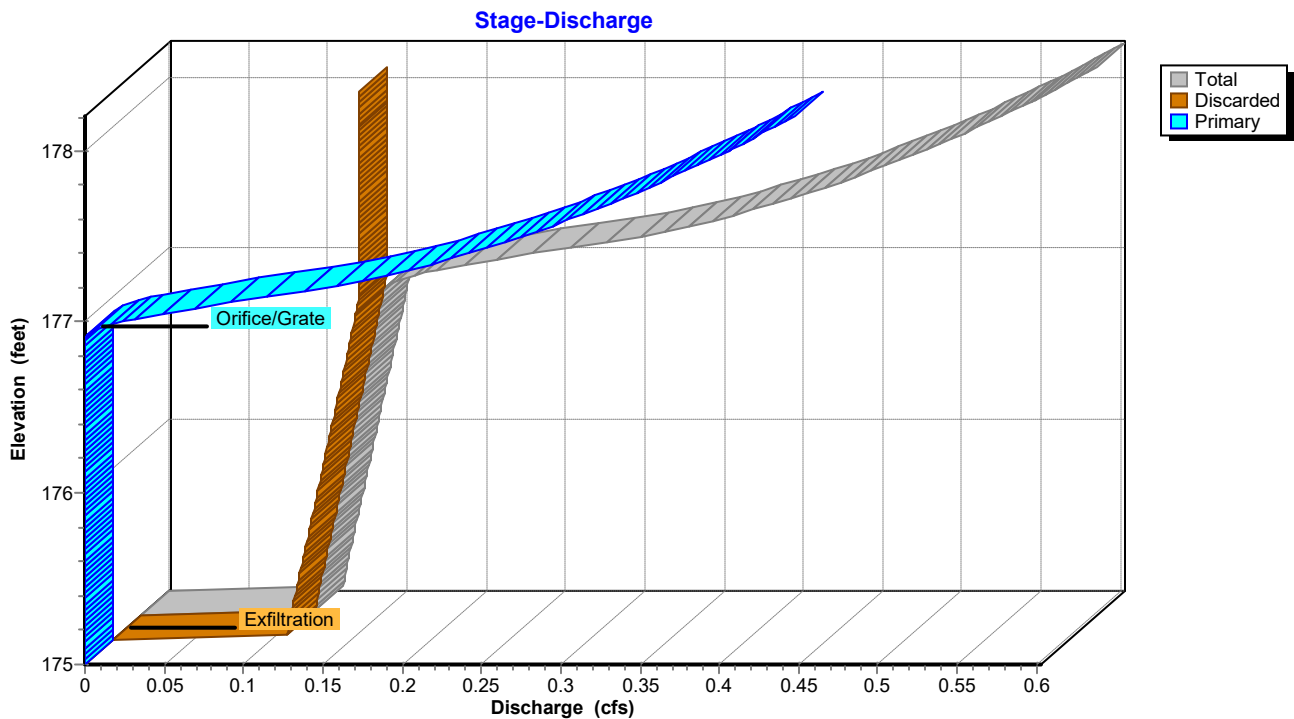
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**Pond 5P: DRAINAGE SYSTEM #2**



**Pond 5P: DRAINAGE SYSTEM #2**





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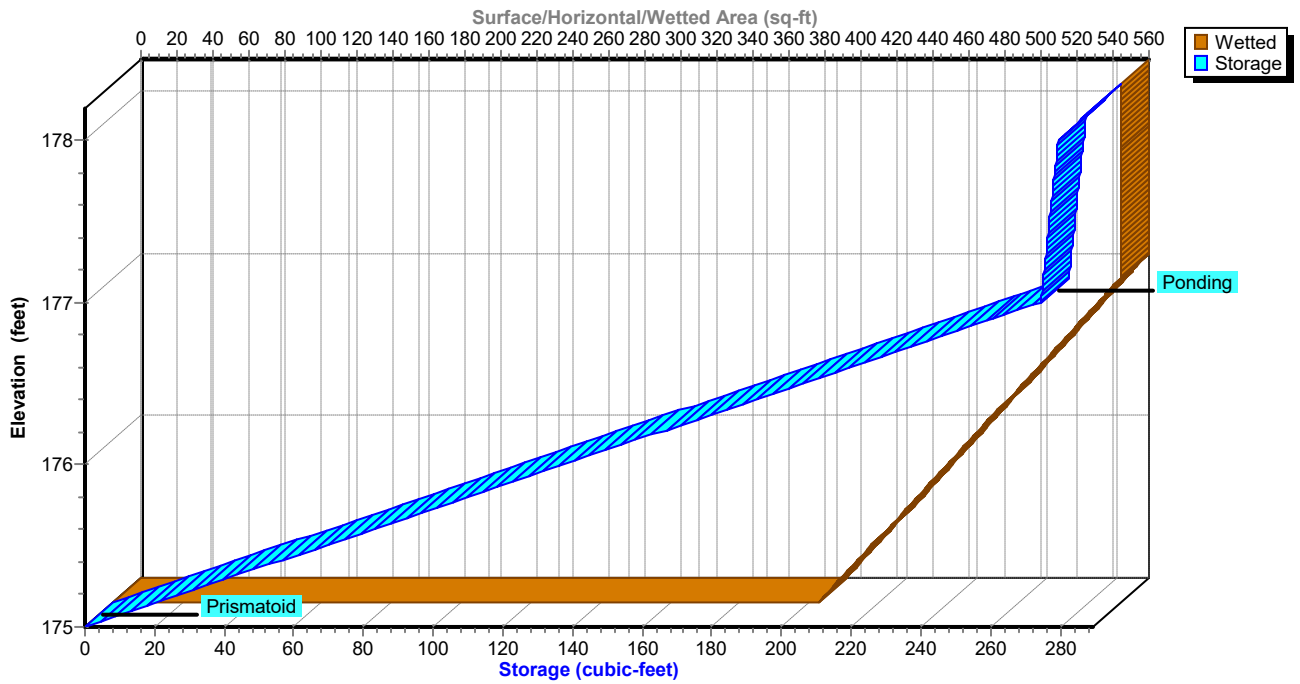
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**Pond 5P: DRAINAGE SYSTEM #2**

**Stage-Area-Storage**



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**Summary for Link 3L: PROPOSED**

Inflow Area = 14,887 sf, 54.76% Impervious, Inflow Depth = 2.69" for 100-Year event  
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 3,341 cf  
Primary = 1.26 cfs @ 12.08 hrs, Volume= 3,341 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

**Link 3L: PROPOSED**

Hydrograph

