

February 2, 2026

Hingham Planning Board  
c/o Emily Wentworth  
Senior Planner  
210 Central Street  
Hingham, MA 02043

**A&M Project #:** 1179-20A  
**Re:** Response to Comments  
55 Industrial Park Road  
Site Plan Review

Dear Ms. Wentworth and members of the Planning Board,

On behalf of our client, Fifty-Five Hingham Saxon LLC, Allen & Major Associates, Inc. (A&M) is providing the following responses to comment received via e-mail on January 14, 2026 from the Town's peer review consultant, PGB Engineering, LLC. Revisions to the site development plans may be found in the plans dated February 2, 2026 noted as Revision 7.

The response to comments is shown below in **bold** preceded by the original comment shown in *italics*.

*Comment 1: The subsurface infiltration system is modeled with 36 chambers (6 rows of 6), but it is shown with only 29 chambers on the plans.*

**Response 1: This has been corrected. Also note that the chambers have been remodeled as 42 Cultec 300 HD chambers to provide slightly more volumetric storage than the prior**

*Comment 2: The outlet invert from PDMH-1 to POCS-2 is listed as 147.21 but the outlet from the subsurface system is modeled as a 6" orifice at El. 146.65 (the 147.21 elevation would control). I do not think you need the OCS and the outlet from the subsurface system should be modeled as a 12" culvert at El. 147.21 - this provides 1,516 c.f. of storage below the outlet, which would be your WQV and recharge volumes.*

**Response 2: A&M concurs with the recommendations. The orifice and weir have been eliminated in favor of the single culvert while still performing the same function of maximization of onsite storage. The updated values provide 1,721 cubic feet of recharge storage and WQV.**

*Comment 3: I do not believe that you need PDMH-2 inside the subsurface system - the discharge from PDMH-1 and RD 2 could be to a header pipe that feeds each of the rows of chambers.*

**Response 3: A&M concurs with this recommendation. The extra structure has been removed and the pipe network corrected accordingly. Entry into the Cultec systems will be through a side entry HVLV FC-24 connection.**

*Comment 4: The subsurface infiltration system is within fifty feet of the wetlands - the required setback is fifty feet.*

**Response 4: The system position has been adjusted to ensure a minimum of 50' is provided.**

*Comment 5: The sidewalk adjacent to the parking spaces in front of the building should be six feet wide to accommodate the 2' overhang and still provide a four foot wide path.*

**Response 5: The sidewalk has been adjusted to 6 feet as noted and required by the bylaw.**

*Comment 6: The lighting plan - C-107 is missing from the plan set.*

**Response 6: The omitted lighting plan is provided in the revised plan set.**

A&M believes these responses will provide sufficient information for the continued review of this application. If you require additional information, please feel free to contact me.

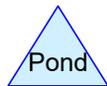
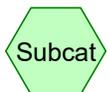
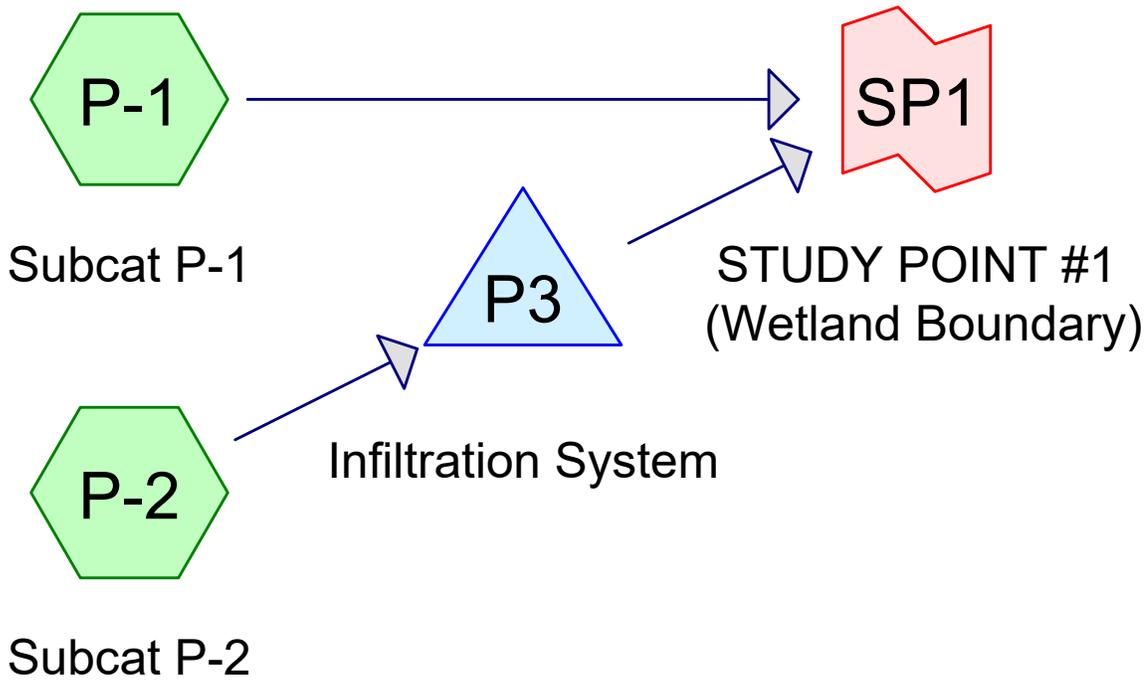
Very Truly Yours,

**ALLEN & MAJOR ASSOCIATES, INC.**

Phil Cordeiro, P.E.  
Principal

Copy: Fifty-Five Saxon LLC. (by email)

Enclosure      Site Development Drawings, Revision 7 dated February 2, 2026  
Post-Development HydroCAD worksheets



**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 2

---

**Project Notes**

Rainfall events imported from "1179-20A - Existing HydroCAD.hcp"

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 3

**Rainfall Events Listing**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.36	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.12	2
3	100-Year	Type III 24-hr		Default	24.00	1	7.93	2

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 4

**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
40,746	61	>75% Grass cover, Good, HSG B (P-1, P-2)
17,734	98	Paved parking, HSG B (P-1, P-2)
11,815	98	Roofs, HSG B (P-1, P-2)
48,091	55	Woods, Good, HSG B (P-1, P-2)
<b>118,386</b>	<b>68</b>	<b>TOTAL AREA</b>

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 5

**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
118,386	HSG B	P-1, P-2
0	HSG C	
0	HSG D	
0	Other	
<b>118,386</b>		<b>TOTAL AREA</b>

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 6

**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
0	40,746	0	0	0	40,746	>75% Grass cover, Good
0	17,734	0	0	0	17,734	Paved parking
0	11,815	0	0	0	11,815	Roofs
0	48,091	0	0	0	48,091	Woods, Good
<b>0</b>	<b>118,386</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>118,386</b>	<b>TOTAL AREA</b>

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 7

**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	24.0	0.5100	0.013	0.0	12.0	0.0	
2	P3	147.11	146.91	19.1	0.0105	0.012	0.0	12.0	0.0	

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Post-Development - Revision 7  
Type III 24-hr 2-Year Rainfall=3.36"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 8

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Subcat P-1**

Runoff Area=90,985 sf 8.00% Impervious Runoff Depth=0.51"  
Flow Length=385' Tc=11.1 min CN=61 Runoff=0.70 cfs 3,876 cf

**SubcatchmentP-2: Subcat P-2**

Runoff Area=27,401 sf 81.27% Impervious Runoff Depth=2.41"  
Tc=6.0 min CN=91 Runoff=1.70 cfs 5,500 cf

**Pond P3: Infiltration System**

Peak Elev=147.52' Storage=2,210 cf Inflow=1.70 cfs 5,500 cf  
Discarded=0.04 cfs 3,631 cf Primary=0.53 cfs 1,870 cf Outflow=0.56 cfs 5,500 cf

**Link SP1: STUDY POINT #1 (Wetland Boundary)**

Inflow=1.11 cfs 5,745 cf  
Primary=1.11 cfs 5,745 cf

**Total Runoff Area = 118,386 sf Runoff Volume = 9,376 cf Average Runoff Depth = 0.95"**  
**75.04% Pervious = 88,837 sf 24.96% Impervious = 29,549 sf**

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 9

**Summary for Subcatchment P-1: Subcat P-1**

Runoff = 0.70 cfs @ 12.21 hrs, Volume= 3,876 cf, Depth= 0.51"  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		<b>Shallow Concentrated Flow, C-D</b> Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		<b>Shallow Concentrated Flow, D-E</b> Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	<b>Pipe Channel, E-F</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Post-Development - Revision 7

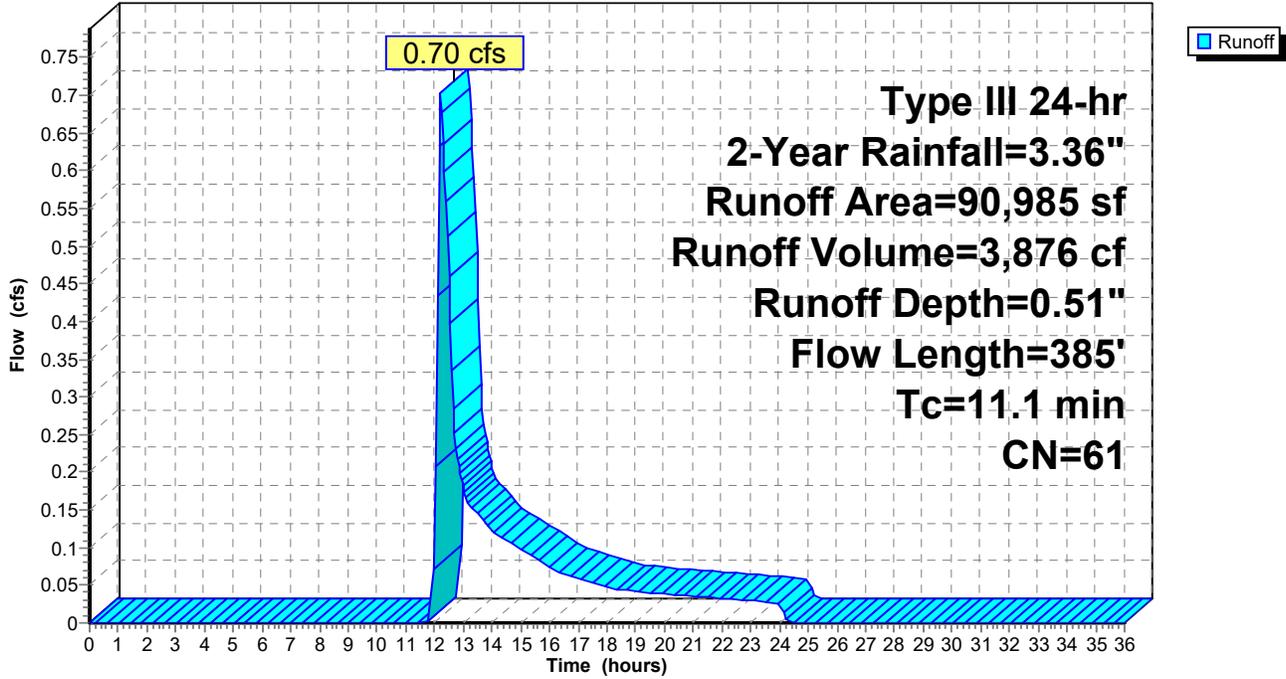
Type III 24-hr 2-Year Rainfall=3.36"

Printed 2/1/2026

Page 10

**Subcatchment P-1: Subcat P-1**

Hydrograph



# 1179-20A - Proposed HydroCAD - SITE REDESIGN

Prepared by Allen & Major Associates, Inc

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Post-Development - Revision 7

Type III 24-hr 2-Year Rainfall=3.36"

Printed 2/1/2026

Page 11

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 5,500 cf, Depth= 2.41"  
 Routed to Pond P3 : Infiltration System

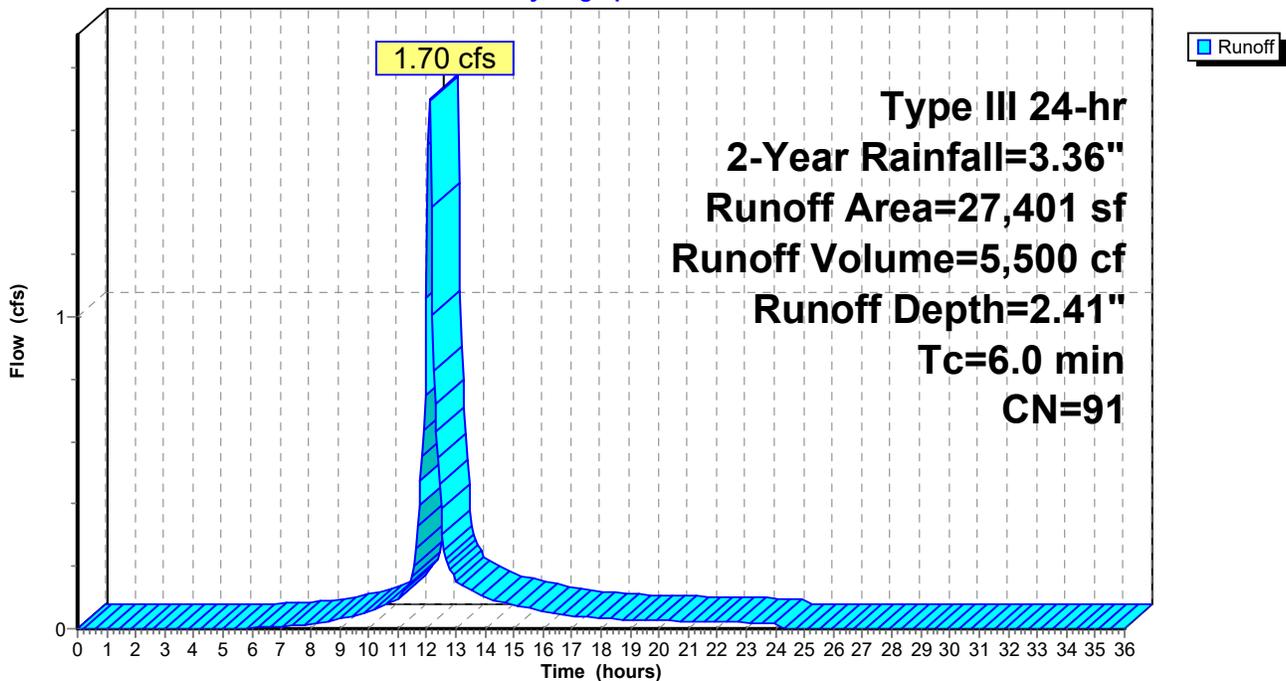
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

## Subcatchment P-2: Subcat P-2

Hydrograph



**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Type III 24-hr 2-Year Rainfall=3.36"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 12

**Summary for Pond P3: Infiltration System**

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 2.41" for 2-Year event  
 Inflow = 1.70 cfs @ 12.09 hrs, Volume= 5,500 cf  
 Outflow = 0.56 cfs @ 12.39 hrs, Volume= 5,500 cf, Atten= 67%, Lag= 18.3 min  
 Discarded = 0.04 cfs @ 9.55 hrs, Volume= 3,631 cf  
 Primary = 0.53 cfs @ 12.39 hrs, Volume= 1,870 cf  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 147.52' @ 12.39 hrs Surf.Area= 1,596 sf Storage= 2,210 cf  
 Flood Elev= 148.95' Surf.Area= 1,596 sf Storage= 3,386 cf

Plug-Flow detention time= 324.9 min calculated for 5,500 cf (100% of inflow)  
 Center-of-Mass det. time= 324.9 min ( 1,125.5 - 800.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	1,444 cf	<b>30.00'W x 53.18'L x 3.50'H Field A</b> 5,584 cf Overall - 1,974 cf Embedded = 3,610 cf x 40.0% Voids
#2A	146.00'	1,974 cf	<b>Cultec R-300HD x 42 Inside #1</b> Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 42 Chambers in 6 Rows Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf
		3,418 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	147.11'	<b>12.0" Round Culvert</b> L= 19.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 147.11' / 146.91' S= 0.0105 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.04 cfs @ 9.55 hrs HW=145.54' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.04 cfs)

**Primary OutFlow** Max=0.53 cfs @ 12.39 hrs HW=147.52' (Free Discharge)  
 ↑2=Culvert (Inlet Controls 0.53 cfs @ 1.72 fps)

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 13

**Pond P3: Infiltration System - Chamber Wizard Field A**

**Chamber Model = Cultec R-300HD (Cultec Recharger® 300HD)**

Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf

Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap

Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

7 Chambers/Row x 7.08' Long +0.80' Cap Length x 2 = 51.18' Row Length +12.0" End Stone x 2 = 53.18' Base Length

6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 46.2 cf + 2.7 cf Cap Volume x 2 x 6 Rows = 1,974.0 cf Chamber Storage

5,584.3 cf Field - 1,974.0 cf Chambers = 3,610.2 cf Stone x 40.0% Voids = 1,444.1 cf Stone Storage

Chamber Storage + Stone Storage = 3,418.1 cf = 0.078 af

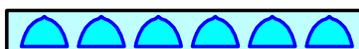
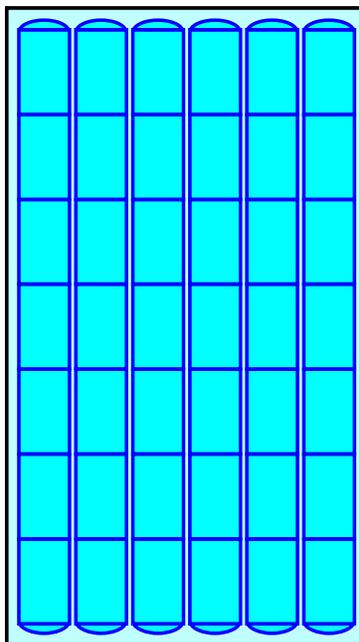
Overall Storage Efficiency = 61.2%

Overall System Size = 53.18' x 30.00' x 3.50'

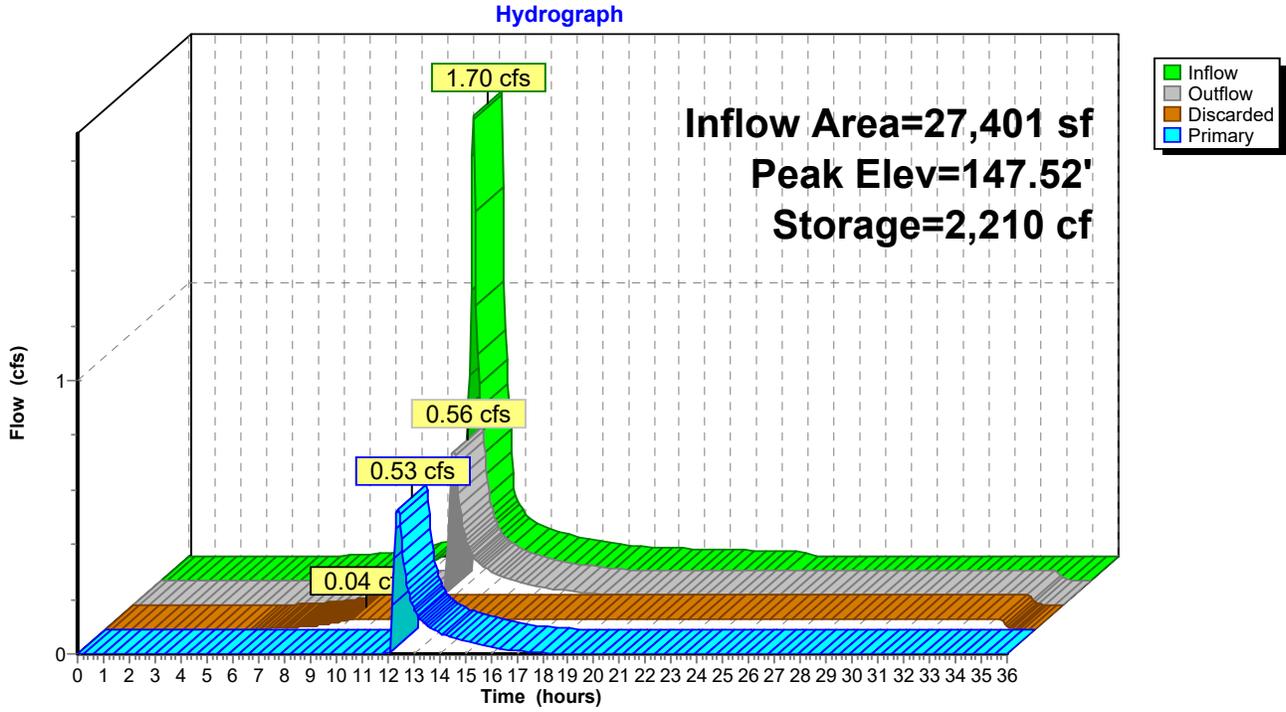
42 Chambers

206.8 cy Field

133.7 cy Stone



### Pond P3: Infiltration System

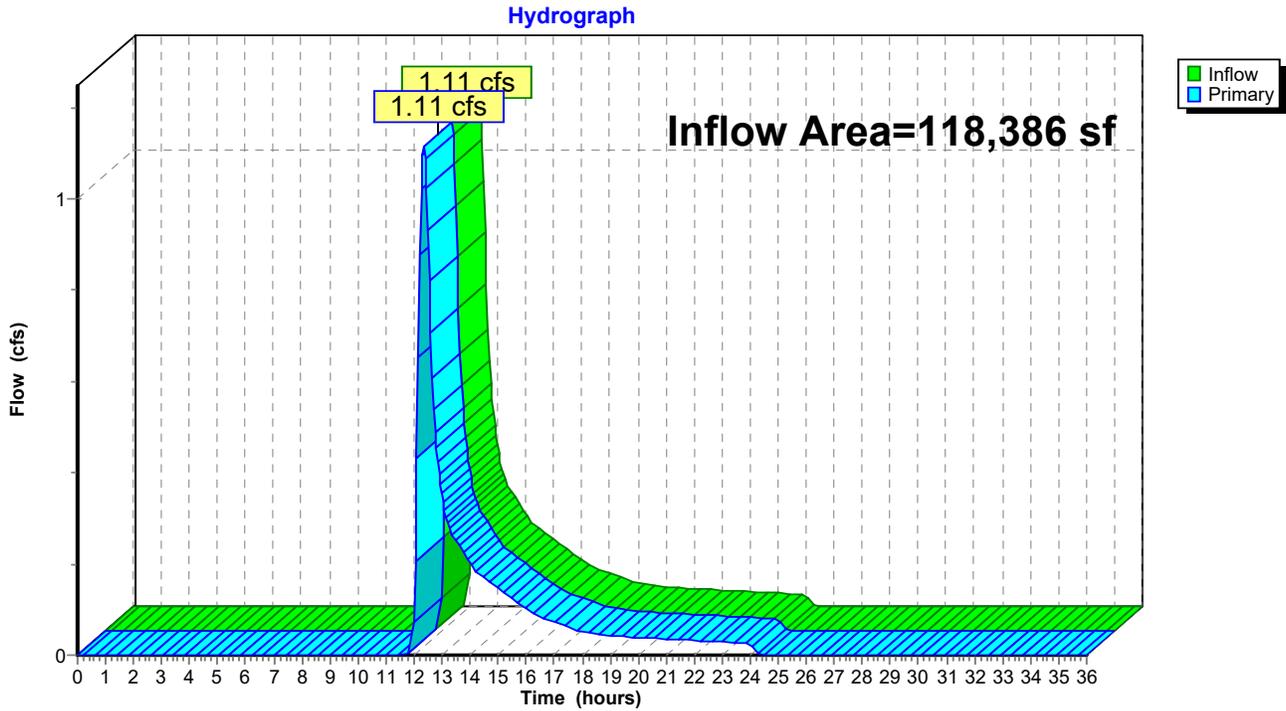


**Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)**

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 0.58" for 2-Year event  
Inflow = 1.11 cfs @ 12.35 hrs, Volume= 5,745 cf  
Primary = 1.11 cfs @ 12.35 hrs, Volume= 5,745 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

**Link SP1: STUDY POINT #1 (Wetland Boundary)**



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Subcat P-1**    Runoff Area=90,985 sf    8.00% Impervious    Runoff Depth=1.44"  
Flow Length=385'    Tc=11.1 min    CN=61    Runoff=2.69 cfs    10,931 cf

**SubcatchmentP-2: Subcat P-2**    Runoff Area=27,401 sf    81.27% Impervious    Runoff Depth=4.10"  
Tc=6.0 min    CN=91    Runoff=2.82 cfs    9,359 cf

**Pond P3: Infiltration System**    Peak Elev=148.07'    Storage=2,773 cf    Inflow=2.82 cfs    9,359 cf  
Discarded=0.04 cfs    4,013 cf    Primary=2.05 cfs    5,267 cf    Outflow=2.09 cfs    9,280 cf

**Link SP1: STUDY POINT #1 (Wetland Boundary)**    Inflow=4.74 cfs    16,198 cf  
Primary=4.74 cfs    16,198 cf

**Total Runoff Area = 118,386 sf    Runoff Volume = 20,290 cf    Average Runoff Depth = 2.06"**  
**75.04% Pervious = 88,837 sf    24.96% Impervious = 29,549 sf**

**1179-20A - Proposed HydroCAD - SITE REDESIGN**

Prepared by Allen & Major Associates, Inc

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Post-Development - Revision 7

Type III 24-hr 10-Year Rainfall=5.12"

Printed 2/1/2026

Page 17

**Summary for Subcatchment P-1: Subcat P-1**

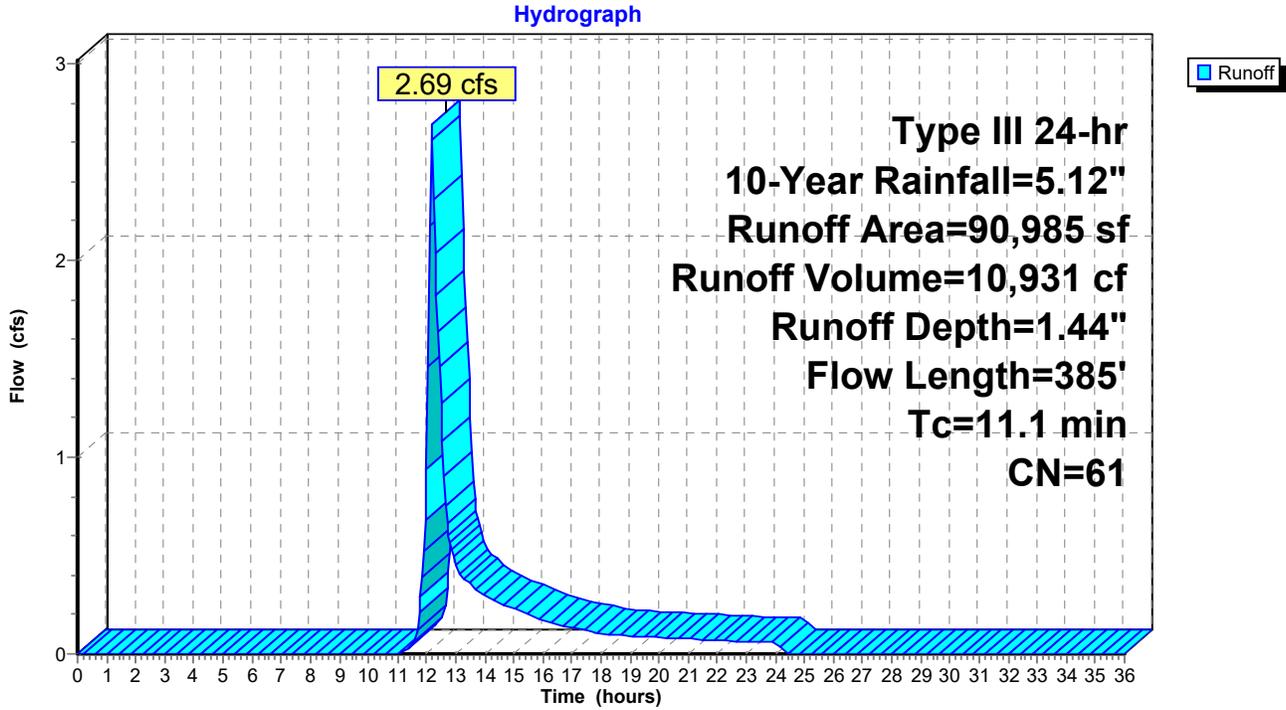
Runoff = 2.69 cfs @ 12.17 hrs, Volume= 10,931 cf, Depth= 1.44"  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		<b>Shallow Concentrated Flow, C-D</b> Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		<b>Shallow Concentrated Flow, D-E</b> Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	<b>Pipe Channel, E-F</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

Subcatchment P-1: Subcat P-1



# 1179-20A - Proposed HydroCAD - SITE REDESIGN

Prepared by Allen & Major Associates, Inc

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Post-Development - Revision 7

Type III 24-hr 10-Year Rainfall=5.12"

Printed 2/1/2026

Page 19

## Summary for Subcatchment P-2: Subcat P-2

Runoff = 2.82 cfs @ 12.09 hrs, Volume= 9,359 cf, Depth= 4.10"  
 Routed to Pond P3 : Infiltration System

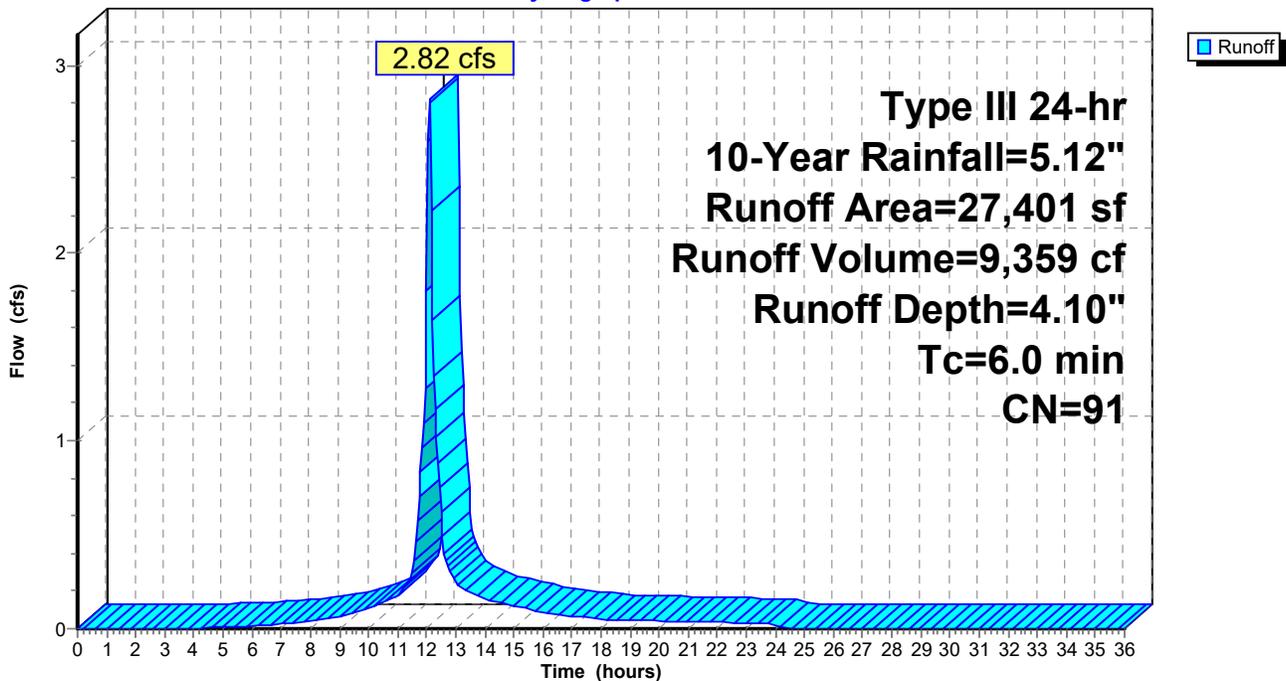
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=5.12"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

## Subcatchment P-2: Subcat P-2

Hydrograph



**1179-20A - Proposed HydroCAD - SITE REDESIGN** Type III 24-hr 10-Year Rainfall=5.12"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 20

**Summary for Pond P3: Infiltration System**

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 4.10" for 10-Year event  
 Inflow = 2.82 cfs @ 12.09 hrs, Volume= 9,359 cf  
 Outflow = 2.09 cfs @ 12.17 hrs, Volume= 9,280 cf, Atten= 26%, Lag= 4.8 min  
 Discarded = 0.04 cfs @ 8.10 hrs, Volume= 4,013 cf  
 Primary = 2.05 cfs @ 12.17 hrs, Volume= 5,267 cf  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 148.07' @ 12.17 hrs Surf.Area= 1,596 sf Storage= 2,773 cf  
 Flood Elev= 148.95' Surf.Area= 1,596 sf Storage= 3,386 cf

Plug-Flow detention time= 220.2 min calculated for 9,280 cf (99% of inflow)  
 Center-of-Mass det. time= 214.8 min ( 1,000.9 - 786.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	1,444 cf	<b>30.00'W x 53.18'L x 3.50'H Field A</b> 5,584 cf Overall - 1,974 cf Embedded = 3,610 cf x 40.0% Voids
#2A	146.00'	1,974 cf	<b>Cultec R-300HD x 42 Inside #1</b> Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 42 Chambers in 6 Rows Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf
		3,418 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	147.11'	<b>12.0" Round Culvert</b> L= 19.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 147.11' / 146.91' S= 0.0105 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.04 cfs @ 8.10 hrs HW=145.54' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.04 cfs)

**Primary OutFlow** Max=2.01 cfs @ 12.17 hrs HW=148.06' (Free Discharge)  
 ↑2=Culvert (Inlet Controls 2.01 cfs @ 2.62 fps)

### Pond P3: Infiltration System - Chamber Wizard Field A

**Chamber Model = Cultec R-300HD (Cultec Recharger®300HD)**

Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf

Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap

Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

7 Chambers/Row x 7.08' Long +0.80' Cap Length x 2 = 51.18' Row Length +12.0" End Stone x 2 = 53.18' Base Length

6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 46.2 cf + 2.7 cf Cap Volume x 2 x 6 Rows = 1,974.0 cf Chamber Storage

5,584.3 cf Field - 1,974.0 cf Chambers = 3,610.2 cf Stone x 40.0% Voids = 1,444.1 cf Stone Storage

Chamber Storage + Stone Storage = 3,418.1 cf = 0.078 af

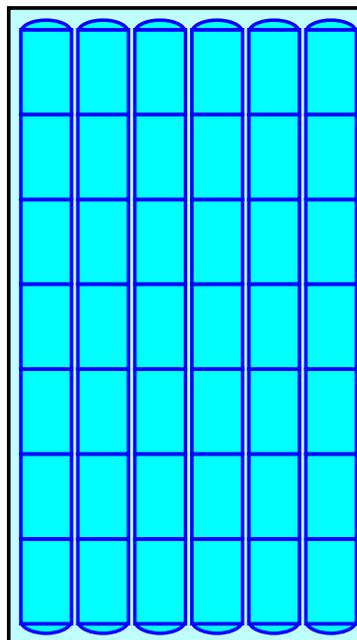
Overall Storage Efficiency = 61.2%

Overall System Size = 53.18' x 30.00' x 3.50'

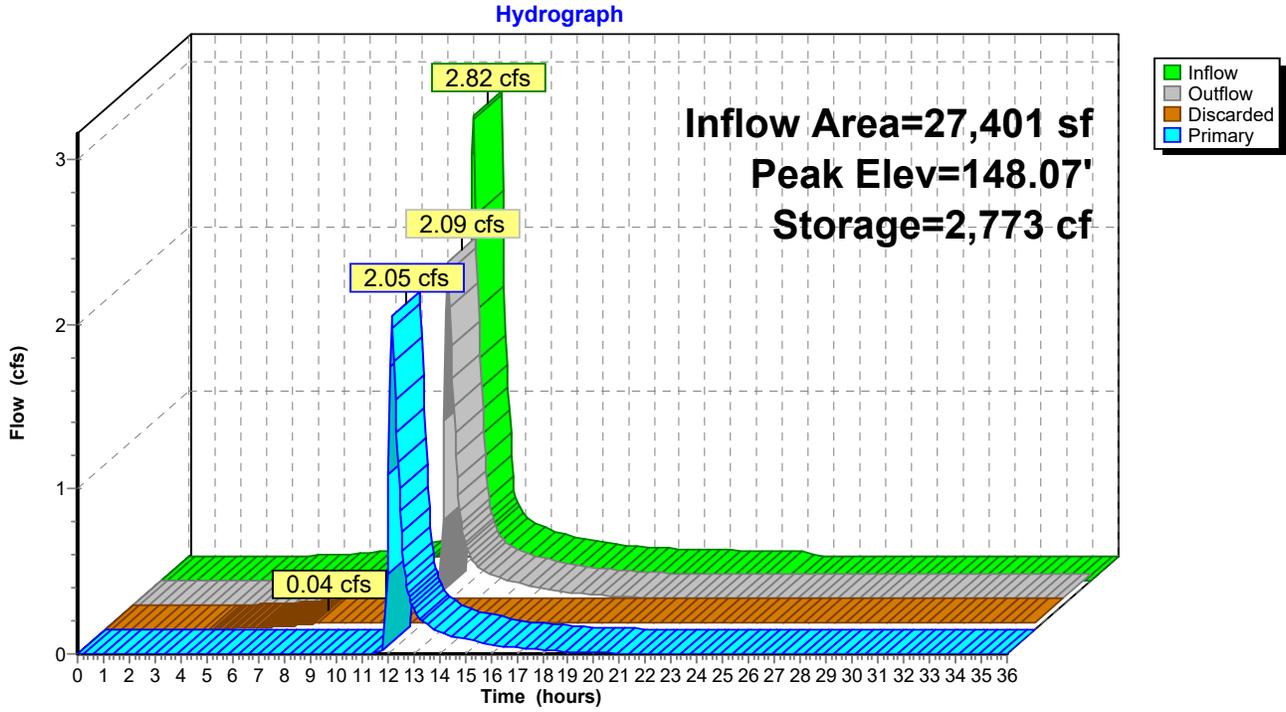
42 Chambers

206.8 cy Field

133.7 cy Stone



### Pond P3: Infiltration System

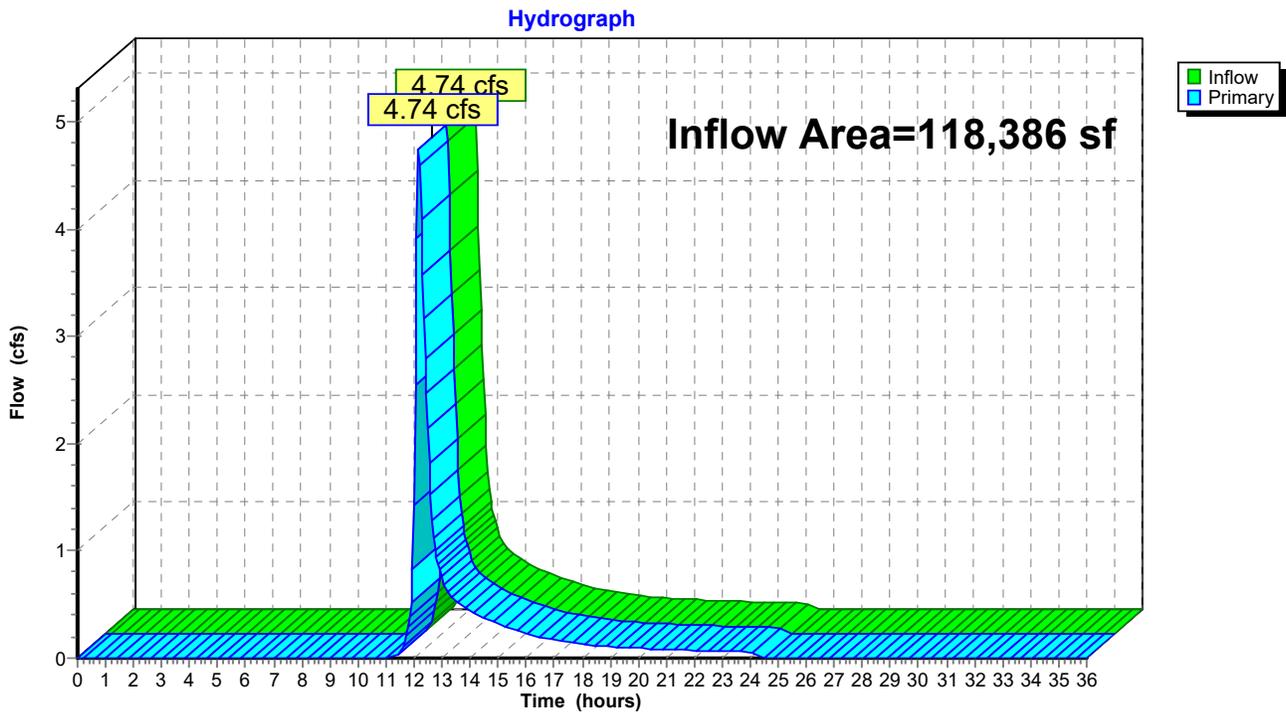


### Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 1.64" for 10-Year event  
Inflow = 4.74 cfs @ 12.17 hrs, Volume= 16,198 cf  
Primary = 4.74 cfs @ 12.17 hrs, Volume= 16,198 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link SP1: STUDY POINT #1 (Wetland Boundary)



**1179-20A - Proposed HydroCAD - SITE REDESIGN** Type III 24-hr 100-Year Rainfall=7.93"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 24

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Subcat P-1**

Runoff Area=90,985 sf 8.00% Impervious Runoff Depth=3.39"  
Flow Length=385' Tc=11.1 min CN=61 Runoff=6.86 cfs 25,714 cf

**SubcatchmentP-2: Subcat P-2**

Runoff Area=27,401 sf 81.27% Impervious Runoff Depth=6.86"  
Tc=6.0 min CN=91 Runoff=4.58 cfs 15,654 cf

**Pond P3: Infiltration System**

Peak Elev=148.95' Storage=3,384 cf Inflow=4.58 cfs 15,654 cf  
Discarded=0.04 cfs 4,271 cf Primary=3.45 cfs 11,213 cf Outflow=3.49 cfs 15,484 cf

**Link SP1: STUDY POINT #1 (Wetland Boundary)**

Inflow=10.31 cfs 36,927 cf  
Primary=10.31 cfs 36,927 cf

**Total Runoff Area = 118,386 sf Runoff Volume = 41,368 cf Average Runoff Depth = 4.19"**  
**75.04% Pervious = 88,837 sf 24.96% Impervious = 29,549 sf**

**1179-20A - Proposed HydroCAD - SITE REDESIGN** Type III 24-hr 100-Year Rainfall=7.93"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 25

**Summary for Subcatchment P-1: Subcat P-1**

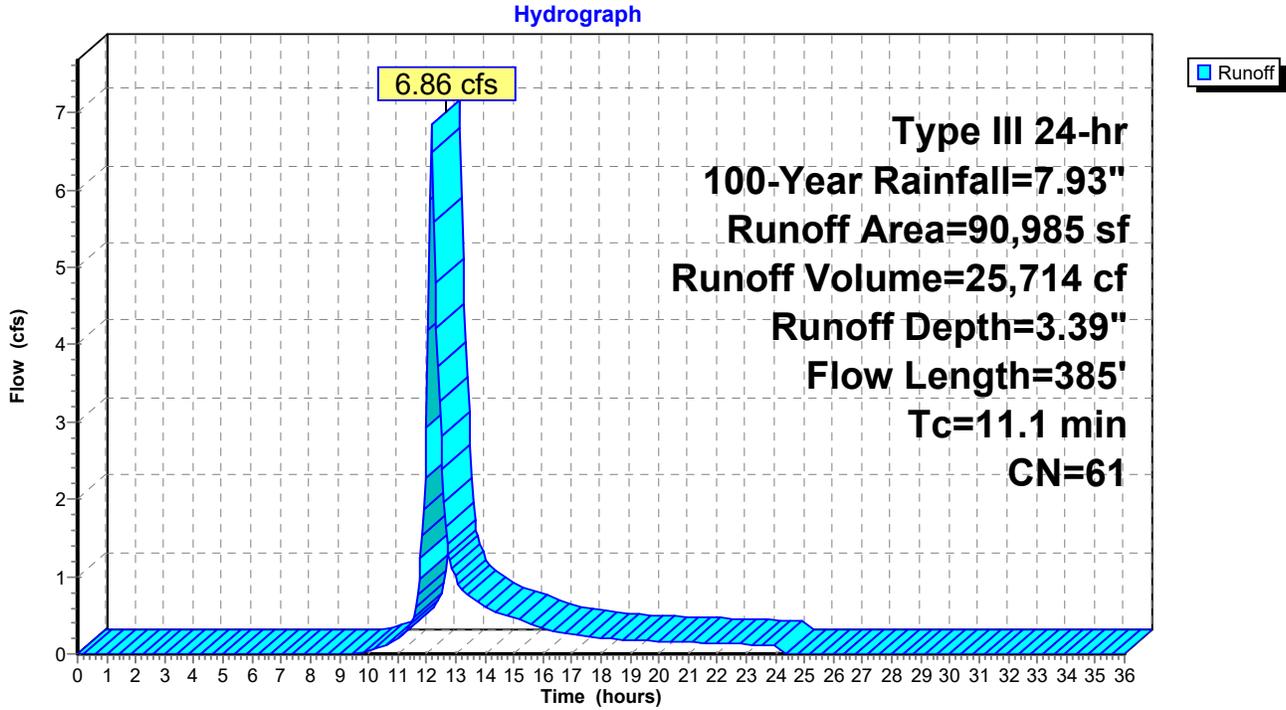
Runoff = 6.86 cfs @ 12.16 hrs, Volume= 25,714 cf, Depth= 3.39"  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
37,074	61	>75% Grass cover, Good, HSG B
7,267	98	Paved parking, HSG B
12	98	Roofs, HSG B
46,632	55	Woods, Good, HSG B
90,985	61	Weighted Average
83,706		92.00% Pervious Area
7,279		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0800	0.12		<b>Sheet Flow, A-B</b> Woods: Light underbrush n= 0.400 P2= 3.28"
0.6	45	0.0666	1.29		<b>Shallow Concentrated Flow, B-C</b> Woodland Kv= 5.0 fps
2.9	145	0.0138	0.82		<b>Shallow Concentrated Flow, C-D</b> Short Grass Pasture Kv= 7.0 fps
0.6	121	0.0270	3.34		<b>Shallow Concentrated Flow, D-E</b> Paved Kv= 20.3 fps
0.0	24	0.5100	32.40	25.44	<b>Pipe Channel, E-F</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
11.1	385	Total			

**Subcatchment P-1: Subcat P-1**



**1179-20A - Proposed HydroCAD - SITE REDESIGN** Type III 24-hr 100-Year Rainfall=7.93"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 27

**Summary for Subcatchment P-2: Subcat P-2**

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 15,654 cf, Depth= 6.86"  
 Routed to Pond P3 : Infiltration System

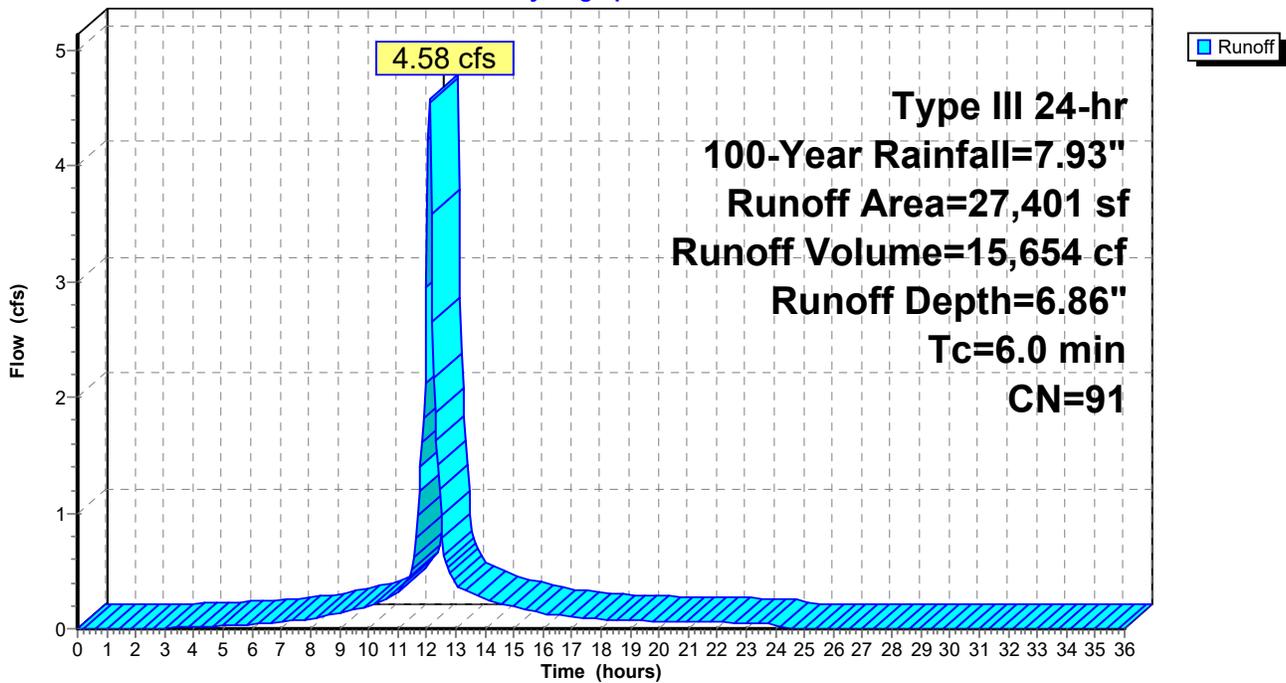
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=7.93"

Area (sf)	CN	Description
3,672	61	>75% Grass cover, Good, HSG B
10,467	98	Paved parking, HSG B
11,803	98	Roofs, HSG B
1,459	55	Woods, Good, HSG B
27,401	91	Weighted Average
5,131		18.73% Pervious Area
22,270		81.27% Impervious Area

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

**Subcatchment P-2: Subcat P-2**

Hydrograph



**1179-20A - Proposed HydroCAD - SITE REDESIGN** Type III 24-hr 100-Year Rainfall=7.93"

Prepared by Allen & Major Associates, Inc

Printed 2/1/2026

HydroCAD® 10.20-7a s/n 02881 © 2025 HydroCAD Software Solutions LLC

Page 28

**Summary for Pond P3: Infiltration System**

Inflow Area = 27,401 sf, 81.27% Impervious, Inflow Depth = 6.86" for 100-Year event  
 Inflow = 4.58 cfs @ 12.09 hrs, Volume= 15,654 cf  
 Outflow = 3.49 cfs @ 12.16 hrs, Volume= 15,484 cf, Atten= 24%, Lag= 4.4 min  
 Discarded = 0.04 cfs @ 6.20 hrs, Volume= 4,271 cf  
 Primary = 3.45 cfs @ 12.16 hrs, Volume= 11,213 cf  
 Routed to Link SP1 : STUDY POINT #1 (Wetland Boundary)

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 148.95' @ 12.16 hrs Surf.Area= 1,596 sf Storage= 3,384 cf  
 Flood Elev= 148.95' Surf.Area= 1,596 sf Storage= 3,386 cf

Plug-Flow detention time= 146.1 min calculated for 15,484 cf (99% of inflow)  
 Center-of-Mass det. time= 139.1 min ( 911.9 - 772.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	145.50'	1,444 cf	<b>30.00'W x 53.18'L x 3.50'H Field A</b> 5,584 cf Overall - 1,974 cf Embedded = 3,610 cf x 40.0% Voids
#2A	146.00'	1,974 cf	<b>Cultec R-300HD x 42 Inside #1</b> Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 42 Chambers in 6 Rows Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf
		3,418 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.50'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	147.11'	<b>12.0" Round Culvert</b> L= 19.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 147.11' / 146.91' S= 0.0105 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.04 cfs @ 6.20 hrs HW=145.54' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.04 cfs)

**Primary OutFlow** Max=3.42 cfs @ 12.16 hrs HW=148.92' (Free Discharge)  
 ↑2=Culvert (Inlet Controls 3.42 cfs @ 4.35 fps)

### Pond P3: Infiltration System - Chamber Wizard Field A

**Chamber Model = Cultec R-300HD (Cultec Recharger® 300HD)**

Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf

Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap

Cap Storage= 2.7 cf x 2 x 6 rows = 31.9 cf

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

7 Chambers/Row x 7.08' Long +0.80' Cap Length x 2 = 51.18' Row Length +12.0" End Stone x 2 = 53.18' Base Length

6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 46.2 cf + 2.7 cf Cap Volume x 2 x 6 Rows = 1,974.0 cf Chamber Storage

5,584.3 cf Field - 1,974.0 cf Chambers = 3,610.2 cf Stone x 40.0% Voids = 1,444.1 cf Stone Storage

Chamber Storage + Stone Storage = 3,418.1 cf = 0.078 af

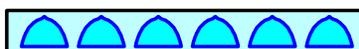
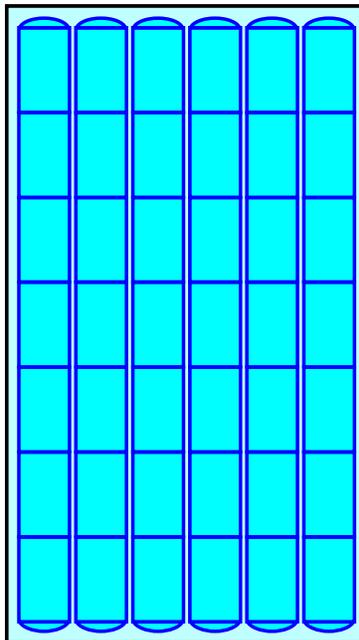
Overall Storage Efficiency = 61.2%

Overall System Size = 53.18' x 30.00' x 3.50'

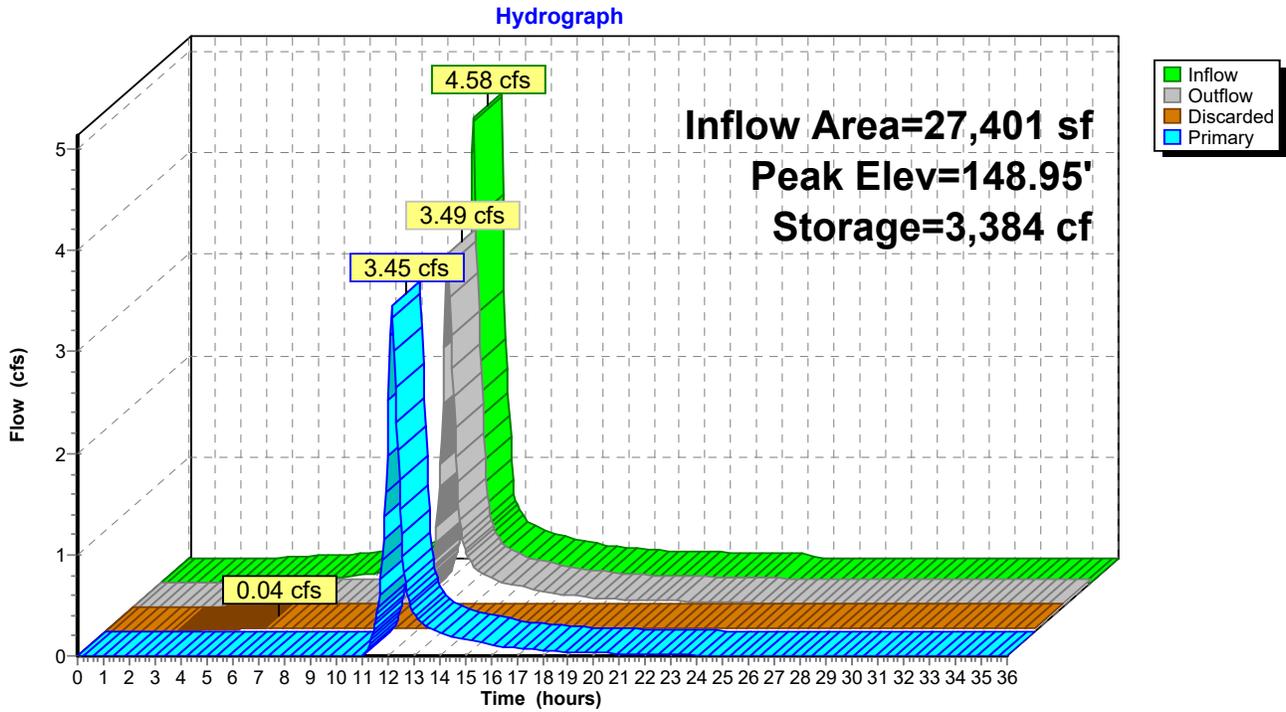
42 Chambers

206.8 cy Field

133.7 cy Stone



### Pond P3: Infiltration System



### Summary for Link SP1: STUDY POINT #1 (Wetland Boundary)

Inflow Area = 118,386 sf, 24.96% Impervious, Inflow Depth = 3.74" for 100-Year event  
Inflow = 10.31 cfs @ 12.16 hrs, Volume= 36,927 cf  
Primary = 10.31 cfs @ 12.16 hrs, Volume= 36,927 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link SP1: STUDY POINT #1 (Wetland Boundary)

