

**2725-01 - Proposed HydroCAD**

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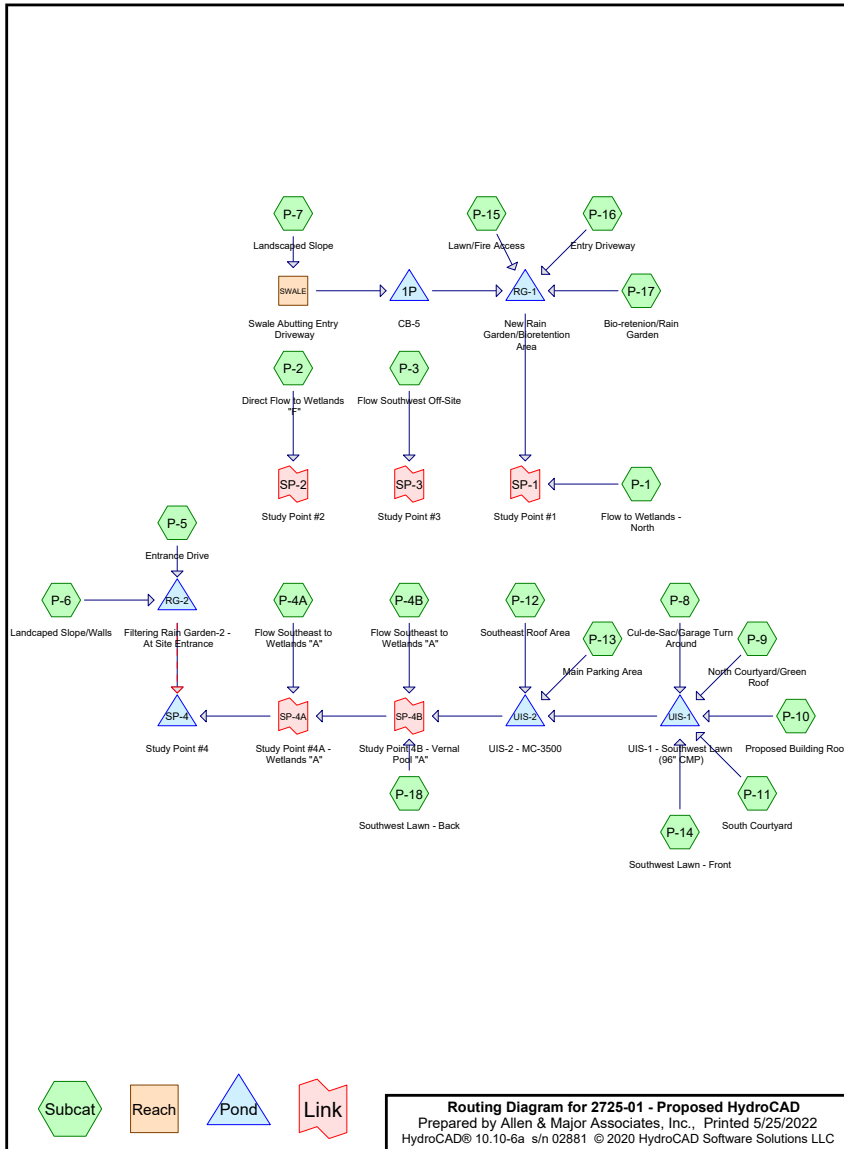
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**Rainfall Events Listing**

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	3.24	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.88	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.17	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.80	2



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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	Sub Nur
0	36,007	0	125,419	0	161,426	>75% Grass cover, Good	
0	5,253	0	19,672	0	24,925	Brush, Good	
0	0	0	3,854	0	3,854	GrassPave2, Good	
0	2,672	0	54,181	0	56,853	Paved parking	
0	0	0	34,699	0	34,699	Unconnected pavement	
0	368	0	62,664	0	63,032	Unconnected roofs	
0	503	0	37,885	0	38,388	Water Surface, 0% imp	
0	23,021	0	337,100	0	360,121	Woods, Good	
<b>0</b>	<b>67,824</b>	<b>0</b>	<b>675,474</b>	<b>0</b>	<b>743,298</b>	<b>TOTAL AREA</b>	

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**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)
1	1P	63.50	58.50	60.0	0.0833	0.012	0.0	12.0	0.0
2	RG-2	47.20	46.60	120.0	0.0050	0.013	0.0	18.0	0.0
3	SP-4	46.64	46.38	82.0	0.0032	0.012	0.0	18.0	0.0
4	UIS-1	105.29	104.85	22.0	0.0200	0.013	0.0	12.0	0.0
5	UIS-2	105.50	104.50	50.0	0.0200	0.012	0.0	15.0	0.0

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

<b>Subcatchment P-1: Flow to Wetlands - North</b>	Runoff Area=47,951 sf 0.00% Impervious Runoff Depth=1.01" Flow Length=148' Tc=9.7 min CN=73 Runoff=1.06 cfs 4,030 cf
<b>Subcatchment P-10: Proposed Building</b>	Runoff Area=30,352 sf 100.00% Impervious Runoff Depth=3.01" Tc=6.0 min CN=98 Runoff=2.14 cfs 7,607 cf
<b>Subcatchment P-11: South Courtyard</b>	Runoff Area=20,180 sf 100.00% Impervious Runoff Depth=3.01" Tc=6.0 min CN=98 Runoff=1.42 cfs 5,057 cf
<b>Subcatchment P-12: Southeast Roof Area</b>	Runoff Area=27,254 sf 100.00% Impervious Runoff Depth=3.01" Tc=6.0 min CN=98 Runoff=1.92 cfs 6,830 cf
<b>Subcatchment P-13: Main Parking Area</b>	Runoff Area=19,004 sf 71.58% Impervious Runoff Depth=2.48" Tc=6.0 min CN=93 Runoff=1.20 cfs 3,934 cf
<b>Subcatchment P-14: Southwest Lawn -</b>	Runoff Area=23,938 sf 43.16% Impervious Runoff Depth=1.57" Flow Length=132' Tc=9.2 min CN=82 Runoff=0.89 cfs 3,133 cf
<b>Subcatchment P-15: Lawn/Fire Access</b>	Runoff Area=43,953 sf 21.71% Impervious Runoff Depth=1.72" Tc=6.0 min CN=84 Runoff=1.99 cfs 6,285 cf
<b>Subcatchment P-16: Entry Driveway</b>	Runoff Area=10,714 sf 75.16% Impervious Runoff Depth=2.58" Tc=6.0 min CN=94 Runoff=0.70 cfs 2,306 cf
<b>Subcatchment P-17: Bio-retention/Rain</b>	Runoff Area=23,264 sf 0.00% Impervious Runoff Depth=0.80" Tc=6.0 min CN=69 Runoff=0.44 cfs 1,555 cf
<b>Subcatchment P-18: Southwest Lawn - Back</b>	Runoff Area=20,245 sf 3.38% Impervious Runoff Depth=0.71" Flow Length=212' Slope=0.0100 '/' Tc=14.8 min CN=67 Runoff=0.24 cfs 1,195 cf
<b>Subcatchment P-2: Direct Flow to Wetlands</b>	Runoff Area=27,475 sf 0.00% Impervious Runoff Depth=0.62" Flow Length=230' Tc=9.7 min CN=65 Runoff=0.31 cfs 1,419 cf
<b>Subcatchment P-3: Flow Southwest Off-Site</b>	Runoff Area=13,369 sf 0.00% Impervious Runoff Depth=1.01" Flow Length=62' Slope=0.3000 '/' Tc=7.4 min CN=73 Runoff=0.32 cfs 1,124 cf
<b>Subcatchment P-4A: Flow Southeast to</b>	Runoff Area=118,254 sf 0.35% Impervious Runoff Depth=1.24" Flow Length=346' Tc=8.9 min CN=77 Runoff=3.41 cfs 12,224 cf
<b>Subcatchment P-4B: Flow Southeast to</b>	Runoff Area=222,364 sf 0.17% Impervious Runoff Depth=1.43" Flow Length=878' Tc=17.5 min CN=80 Runoff=6.00 cfs 26,549 cf
<b>Subcatchment P-5: Entrance Drive</b>	Runoff Area=18,638 sf 53.72% Impervious Runoff Depth=2.30" Tc=6.0 min CN=91 Runoff=1.11 cfs 3,566 cf
<b>Subcatchment P-6: Landcaped Slope/Walls</b>	Runoff Area=13,824 sf 3.65% Impervious Runoff Depth=1.01" Tc=6.0 min UI Adjusted CN=73 Runoff=0.35 cfs 1,162 cf

<b>Subcatchment P-7: Landscaped Slope</b>	Runoff Area=24,883 sf 6.52% Impervious Runoff Depth=1.43" Tc=6.0 min CN=80 Runoff=0.93 cfs 2,971 cf
<b>Subcatchment P-8: Cul-de-Sac/Garage</b>	Runoff Area=22,308 sf 74.44% Impervious Runoff Depth=2.48" Tc=6.0 min CN=93 Runoff=1.41 cfs 4,618 cf
<b>Subcatchment P-9: North Courtyard/Green</b>	Runoff Area=15,328 sf 33.00% Impervious Runoff Depth=1.87" Tc=6.0 min CN=86 Runoff=0.76 cfs 2,389 cf
<b>Reach SWALE: Swale Abutting Entry</b>	Avg. Flow Depth=0.24' Max Vel=1.33 fps Inflow=0.93 cfs 2,971 cf n=0.100 L=427.0' S=0.0714 '/' Capacity=6.48 cfs Outflow=0.79 cfs 2,971 cf
<b>Pond 1P: CB-5</b>	Peak Elev=64.02' Storage=57 cf Inflow=0.79 cfs 2,971 cf 12.0" Round Culvert n=0.012 L=60.0' S=0.0833 '/' Outflow=0.79 cfs 2,921 cf
<b>Pond RG-1: New Rain Garden/Bioretenion</b>	Peak Elev=62.07' Storage=8,430 cf Inflow=3.82 cfs 13,067 cf Discarded=0.13 cfs 13,067 cf Primary=0.00 cfs 0 cf Outflow=0.13 cfs 13,067 cf
<b>Pond RG-2: Filtering Rain Garden-2 - At Site</b>	Peak Elev=51.29' Storage=1,595 cf Inflow=1.45 cfs 4,728 cf Primary=0.78 cfs 4,717 cf Secondary=0.00 cfs 0 cf Outflow=0.78 cfs 4,717 cf
<b>Pond SP-4: Study Point #4</b>	Peak Elev=48.65' Storage=2,144 cf Inflow=9.68 cfs 44,685 cf 18.0" Round Culvert n=0.012 L=82.0' S=0.0032 '/' Outflow=7.58 cfs 44,685 cf
<b>Pond UIS-1: UIS-1 - Southwest Lawn (96"</b>	Peak Elev=103.40' Storage=13,190 cf Inflow=6.55 cfs 22,803 cf Discarded=0.21 cfs 22,803 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 22,803 cf
<b>Pond UIS-2: UIS-2 - MC-3500</b>	Peak Elev=106.40' Storage=4,308 cf Inflow=3.12 cfs 10,764 cf Discarded=0.23 cfs 10,764 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 10,764 cf
<b>Link SP-1: Study Point #1</b>	Inflow=1.06 cfs 4,030 cf Primary=1.06 cfs 4,030 cf
<b>Link SP-2: Study Point #2</b>	Inflow=0.31 cfs 1,419 cf Primary=0.31 cfs 1,419 cf
<b>Link SP-3: Study Point #3</b>	Inflow=0.32 cfs 1,124 cf Primary=0.32 cfs 1,124 cf
<b>Link SP-4A: Study Point #4A - Wetlands "A"</b>	Inflow=8.88 cfs 39,968 cf Primary=8.88 cfs 39,968 cf
<b>Link SP-4B: Study Point 4B - Vernal Pool "A"</b>	Inflow=6.25 cfs 27,744 cf Primary=6.25 cfs 27,744 cf

**Total Runoff Area = 743,298 sf Runoff Volume = 97,953 cf Average Runoff Depth = 1.58"**  
**79.20% Pervious = 588,714 sf 20.80% Impervious = 154,584 sf**

**Summary for Subcatchment P-1: Flow to Wetlands - North**

Runoff = 1.06 cfs @ 12.15 hrs, Volume= 4,030 cf, Depth= 1.01"  
 Routed to Link SP-1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
5,253	48	Brush, Good, HSG B
6,353	73	Brush, Good, HSG D
1,517	55	Woods, Good, HSG B
34,828	77	Woods, Good, HSG D
47,951	73	Weighted Average
47,951		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.2120	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.3	98	0.2620	1.28		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	148				Total

**Summary for Subcatchment P-10: Proposed Building Roof**

Runoff = 2.14 cfs @ 12.09 hrs, Volume= 7,607 cf, Depth= 3.01"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
30,352	98	Unconnected roofs, HSG D
30,352		100.00% Impervious Area
30,352		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-11: South Courtyard**

Runoff = 1.42 cfs @ 12.09 hrs, Volume= 5,057 cf, Depth= 3.01"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
20,180	98	Unconnected pavement, HSG D
20,180		100.00% Impervious Area
20,180		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-12: Southeast Roof Area**

Runoff = 1.92 cfs @ 12.09 hrs, Volume= 6,830 cf, Depth= 3.01"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
27,254	98	Unconnected roofs, HSG D
27,254		100.00% Impervious Area
27,254		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-13: Main Parking Area**

Runoff = 1.20 cfs @ 12.09 hrs, Volume= 3,934 cf, Depth= 2.48"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
13,604	98	Unconnected pavement, HSG D
5,400	80	>75% Grass cover, Good, HSG D
19,004	93	Weighted Average
5,400		28.42% Pervious Area
13,604		71.58% Impervious Area
13,604		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. 6.0</b>

**Summary for Subcatchment P-14: Southwest Lawn - Front**

Runoff = 0.89 cfs @ 12.14 hrs, Volume= 3,133 cf, Depth= 1.57"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
10,332	98	Paved parking, HSG D
6,889	61	>75% Grass cover, Good, HSG B
6,717	80	>75% Grass cover, Good, HSG D
23,938	82	Weighted Average
13,606		56.84% Pervious Area
10,332		43.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		<b>Sheet Flow</b> , Grass: Dense n= 0.240 P2= 3.16"
1.0	82	0.0360	1.33		<b>Shallow Concentrated Flow</b> , Short Grass Pasture Kv= 7.0 fps
9.2	132	Total			

**Summary for Subcatchment P-15: Lawn/Fire Access**

Runoff = 1.99 cfs @ 12.09 hrs, Volume= 6,285 cf, Depth= 1.72"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
9,543	98	Paved parking, HSG D
* 3,854	80	GrassPave2, Good, HSG D
30,556	80	>75% Grass cover, Good, HSG D
43,953	84	Weighted Average
34,410		78.29% Pervious Area
9,543		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. 6.0</b>

**Summary for Subcatchment P-16: Entry Driveway**

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 2,306 cf, Depth= 2.58"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
2,672	98	Paved parking, HSG B
5,381	98	Paved parking, HSG D
2,661	80	>75% Grass cover, Good, HSG D
10,714	94	Weighted Average
2,661		24.84% Pervious Area
8,053		75.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-17: Bio-retention/Rain Garden**

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 1,555 cf, Depth= 0.80"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
12,971	61	>75% Grass cover, Good, HSG B
6,335	80	>75% Grass cover, Good, HSG D
503	98	Water Surface, 0% imp, HSG B
1,092	98	Water Surface, 0% imp, HSG D
1,518	55	Woods, Good, HSG B
845	77	Woods, Good, HSG D
23,264	69	Weighted Average
23,264		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-18: Southwest Lawn - Back**

Runoff = 0.24 cfs @ 12.24 hrs, Volume= 1,195 cf, Depth= 0.71"  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

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The Sanctuary - School Street, Manchester, MA  
Type III 24-hr 2-Year Rainfall=3.24"

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Area (sf)	CN	Description
684	98	Paved parking, HSG D
14,032	61	>75% Grass cover, Good, HSG B
5,529	80	>75% Grass cover, Good, HSG D
20,245	67	Weighted Average
19,561		96.62% Pervious Area
684		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0100	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.16"
3.9	162	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.8	212	Total			

**Summary for Subcatchment P-2: Direct Flow to Wetlands "F"**

Runoff = 0.31 cfs @ 12.17 hrs, Volume= 1,419 cf, Depth= 0.62"  
Routed to Link SP-2 : Study Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
1,025	61	>75% Grass cover, Good, HSG B
14,775	55	Woods, Good, HSG B
11,675	77	Woods, Good, HSG D
27,475	65	Weighted Average
27,475		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.2980	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
2.4	180	0.2580	1.27		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	230	Total			

**Summary for Subcatchment P-3: Flow Southwest Off-Site**

Runoff = 0.32 cfs @ 12.12 hrs, Volume= 1,124 cf, Depth= 1.01"  
Routed to Link SP-3 : Study Point #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

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Type III 24-hr 2-Year Rainfall=3.24"

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Area (sf)	CN	Description
6,978	80	>75% Grass cover, Good, HSG D
3,182	55	Woods, Good, HSG B
3,209	77	Woods, Good, HSG D
13,369	73	Weighted Average
13,369		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.3000	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
0.1	12	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
7.4	62	Total			

**Summary for Subcatchment P-4A: Flow Southeast to Wetlands "A"**

Runoff = 3.41 cfs @ 12.14 hrs, Volume= 12,224 cf, Depth= 1.24"  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
410	98	Unconnected pavement, HSG D
12,410	80	>75% Grass cover, Good, HSG D
105,434	77	Woods, Good, HSG D
118,254	77	Weighted Average
117,844		99.65% Pervious Area
410		0.35% Impervious Area
410		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.3700	0.12		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.7	136	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.5	160		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
8.9	346	Total			

**Summary for Subcatchment P-4B: Flow Southeast to Wetlands "A"**

Runoff = 6.00 cfs @ 12.25 hrs, Volume= 26,549 cf, Depth= 1.43"  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

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Type III 24-hr 2-Year Rainfall=3.24"

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Area (sf)	CN	Description
368	98	Unconnected roofs, HSG B
2,977	80	>75% Grass cover, Good, HSG D
2,029	55	Woods, Good, HSG B
181,109	77	Woods, Good, HSG D
35,881	98	Water Surface, 0% imp, HSG D
222,364	80	Weighted Average
221,996		99.83% Pervious Area
368		0.17% Impervious Area
368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.1030	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
4.4	190	0.0825	0.72		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
1.9	638		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
17.5	878	Total			

**Summary for Subcatchment P-5: Entrance Drive**

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 3,566 cf, Depth= 2.30"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
10,013	98	Paved parking, HSG D
7,713	80	>75% Grass cover, Good, HSG D
912	98	Water Surface, 0% imp, HSG D
18,638	91	Weighted Average
8,625		46.28% Pervious Area
10,013		53.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-6: Landcaped Slope/Walls**

Runoff = 0.35 cfs @ 12.10 hrs, Volume= 1,162 cf, Depth= 1.01"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

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The Sanctuary - School Street, Manchester, MA  
Type III 24-hr 2-Year Rainfall=3.24"

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Area (sf)	CN	Adj	Description
13,319	73		Brush, Good, HSG D
505	98		Unconnected pavement, HSG D
13,824	74	73	Weighted Average, UI Adjusted
13,319			96.35% Pervious Area
505			3.65% Impervious Area
505			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-7: Landscaped Slope**

Runoff = 0.93 cfs @ 12.10 hrs, Volume= 2,971 cf, Depth= 1.43"  
Routed to Reach SWALE : Swale Abutting Entry Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
1,622	98	Paved parking, HSG D
22,171	80	>75% Grass cover, Good, HSG D
1,090	61	>75% Grass cover, Good, HSG B
24,883	80	Weighted Average
23,261		93.48% Pervious Area
1,622		6.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-8: Cul-de-Sac/Garage Turn Around**

Runoff = 1.41 cfs @ 12.09 hrs, Volume= 4,618 cf, Depth= 2.48"  
Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
16,606	98	Paved parking, HSG D
5,702	80	>75% Grass cover, Good, HSG D
22,308	93	Weighted Average
5,702		25.56% Pervious Area
16,606		74.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-9: North Courtyard/Green Roof**

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 2,389 cf, Depth= 1.87"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-Year Rainfall=3.24"

Area (sf)	CN	Description
5,058	98	Unconnected roofs, HSG D
10,270	80	>75% Grass cover, Good, HSG D
15,328	86	Weighted Average
10,270		67.00% Pervious Area
5,058		33.00% Impervious Area
5,058		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Reach SWALE: Swale Abutting Entry Driveway**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 1.43" for 2-Year event  
 Inflow = 0.93 cfs @ 12.10 hrs, Volume= 2,971 cf  
 Outflow = 0.79 cfs @ 12.15 hrs, Volume= 2,971 cf, Atten= 15%, Lag= 3.4 min  
 Routed to Pond 1P : CB-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.33 fps, Min. Travel Time= 5.3 min  
 Avg. Velocity = 0.37 fps, Avg. Travel Time= 19.2 min

Peak Storage= 255 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.24' , Surface Width= 2.96'  
 Bank-Full Depth= 0.75' Flow Area= 2.6 sf, Capacity= 6.48 cfs

2.00' x 0.75' deep channel, n= 0.100 Earth, dense brush, high stage  
 Side Slope Z-value= 2.0 ' ' Top Width= 5.00'  
 Length= 427.0' Slope= 0.0714 ' '  
 Inlet Invert= 98.00', Outlet Invert= 67.50'



**Summary for Pond 1P: CB-5**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 1.43" for 2-Year event  
 Inflow = 0.79 cfs @ 12.15 hrs, Volume= 2,971 cf  
 Outflow = 0.79 cfs @ 12.15 hrs, Volume= 2,921 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 0.79 cfs @ 12.15 hrs, Volume= 2,921 cf  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 64.02' @ 12.15 hrs Surf.Area= 13 sf Storage= 57 cf

Plug-Flow detention time= 14.1 min calculated for 2,919 cf (98% of inflow)  
 Center-of-Mass det. time= 4.0 min ( 857.7 - 853.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	101 cf	<b>4.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	<b>12.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 58.50' S= 0.0833 ' ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.79 cfs @ 12.15 hrs HW=64.02' (Free Discharge)  
 1=Culvert (Inlet Controls 0.79 cfs @ 1.93 fps)

**Summary for Pond RG-1: New Rain Garden/Bioretenion Area**

Inflow Area = 102,814 sf, 18.69% Impervious, Inflow Depth = 1.53" for 2-Year event  
 Inflow = 3.82 cfs @ 12.10 hrs, Volume= 13,067 cf  
 Outflow = 0.13 cfs @ 16.77 hrs, Volume= 13,067 cf, Atten= 97%, Lag= 280.1 min  
 Discarded = 0.13 cfs @ 16.77 hrs, Volume= 13,067 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link SP-1 : Study Point #1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 62.07' @ 16.77 hrs Surf.Area= 5,576 sf Storage= 8,430 cf

Plug-Flow detention time= 862.7 min calculated for 13,067 cf (100% of inflow)  
 Center-of-Mass det. time= 862.6 min ( 1,696.4 - 833.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	57.00'	19,856 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)



Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	1,595	339.0	0.0	0	0	1,595
58.00	1,595	339.0	40.0	638	638	1,934
60.00	1,595	339.0	30.0	957	1,595	2,612
61.00	3,030	530.0	100.0	2,274	3,869	15,827
62.00	5,418	764.0	100.0	4,167	8,036	39,932
63.00	7,829	798.0	100.0	6,587	14,623	44,230
63.60	9,647	832.0	100.0	5,233	19,856	48,667

Device	Routing	Invert	Outlet Devices
#1	Primary	62.26'	<b>30.0' long x 15.0' breadth Emergency Overflow - RipRap</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 <b>1.020 in/hr Exfiltration - In-Situ Soil - Sandy Loam over Surface area</b> Phase-In= 0.01'
#2	Discarded	57.00'	

**Discarded OutFlow** Max=0.13 cfs @ 16.77 hrs HW=62.07' (Free Discharge)  
 ↳2=Exfiltration - In-Situ Soil - Sandy Loam (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)  
 ↳1=Emergency Overflow - RipRap ( Controls 0.00 cfs)

**Summary for Pond RG-2: Filtering Rain Garden-2 - At Site Entrance**

Inflow Area = 32,462 sf, 32.40% Impervious, Inflow Depth = 1.75" for 2-Year event  
 Inflow = 1.45 cfs @ 12.09 hrs, Volume= 4,728 cf  
 Outflow = 0.78 cfs @ 12.25 hrs, Volume= 4,717 cf, Atten= 46%, Lag= 9.2 min  
 Primary = 0.78 cfs @ 12.25 hrs, Volume= 4,717 cf  
 Routed to Pond SP-4 : Study Point #4  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond SP-4 : Study Point #4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 51.29' @ 12.25 hrs Surf.Area= 1,340 sf Storage= 1,595 cf  
 Flood Elev= 51.20' Surf.Area= 1,289 sf Storage= 1,474 cf

Plug-Flow detention time= 353.2 min calculated for 4,715 cf (100% of inflow)  
 Center-of-Mass det. time= 352.2 min ( 1,169.6 - 817.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.20'	3,701 cf	<b>Rain Garden (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.20	912	158.0	0.0	0	0	912
47.70	912	158.0	40.0	182	182	991
50.00	912	158.0	0.0	0	182	1,354
51.00	1,182	168.0	100.0	1,044	1,226	1,661
52.00	1,764	204.0	100.0	1,463	2,690	2,743
52.50	2,292	220.0	100.0	1,011	3,701	3,293

Device	Routing	Invert	Outlet Devices
#1	Primary	47.20'	<b>18.0" Round 18" HDPE</b> L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.20' / 46.60' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	51.20'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 8.00 columns</b> X 8 rows C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads
#3	Secondary	51.55'	<b>10.0' long x 18.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	47.20'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Primary OutFlow** Max=0.76 cfs @ 12.25 hrs HW=51.29' (Free Discharge)  
 ↳1=18" HDPE (Passes 0.76 cfs of 12.28 cfs potential flow)  
 ↳2=Orifice/Grate (Weir Controls 0.73 cfs @ 0.99 fps)  
 ↳4=Exfiltration (Exfiltration Controls 0.03 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=47.20' (Free Discharge)  
 ↳3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond SP-4: Study Point #4**

Inflow Area = 551,689 sf, 24.54% Impervious, Inflow Depth = 0.97" for 2-Year event  
 Inflow = 9.68 cfs @ 12.22 hrs, Volume= 44,685 cf  
 Outflow = 7.58 cfs @ 12.37 hrs, Volume= 44,685 cf, Atten= 22%, Lag= 9.3 min  
 Primary = 7.58 cfs @ 12.37 hrs, Volume= 44,685 cf  
 Routed to nonexistent node 3L

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 48.65' @ 12.37 hrs Surf.Area= 4,744 sf Storage= 2,144 cf  
 Flood Elev= 52.00' Surf.Area= 20,910 sf Storage= 50,821 cf

Plug-Flow detention time= 1.4 min calculated for 44,662 cf (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 889.2 - 887.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	292,924 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	74	35.0	0	0	74
48.00	970	145.0	437	437	1,652
49.00	7,933	434.0	3,892	4,330	14,971
50.00	11,795	605.0	9,800	14,130	29,119
51.00	20,540	853.0	15,967	30,097	57,902
52.00	20,910	855.0	20,725	50,821	58,799
55.00	162,840	2,123.0	242,102	292,924	359,325

Device	Routing	Invert	Outlet Devices
#1	Primary	46.64'	<b>18.0" Round Existing 18" RCP</b> L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 46.64' / 46.38' S= 0.0032 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

**Primary OutFlow** Max=7.45 cfs @ 12.37 hrs HW=48.65' (Free Discharge)  
**1=Existing 18" RCP** (Barrel Controls 7.45 cfs @ 4.22 fps)

**Summary for Pond UIS-1: UIS-1 - Southwest Lawn (96" CMP)**

Inflow Area = 112,106 sf, 73.62% Impervious, Inflow Depth = 2.44" for 2-Year event  
 Inflow = 6.55 cfs @ 12.09 hrs, Volume= 22,803 cf  
 Outflow = 0.21 cfs @ 10.05 hrs, Volume= 22,803 cf, Atten= 97%, Lag= 0.0 min  
 Discarded = 0.21 cfs @ 10.05 hrs, Volume= 22,803 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 103.40' @ 15.99 hrs Surf.Area= 8,946 sf Storage= 13,190 cf  
 Flood Elev= 107.00' Surf.Area= 8,946 sf Storage= 39,886 cf

Plug-Flow detention time= 573.0 min calculated for 22,803 cf (100% of inflow)  
 Center-of-Mass det. time= 572.9 min ( 1,354.6 - 781.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	101.00'	15,457 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 80,514 cf Overall - 41,871 cf Embedded = 38,643 cf x 40.0% Voids
#2	101.50'	41,871 cf	<b>CMP Round 96 @ 833.00' L</b> Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 833.00'L = 41,871.1 cf Overall Size= 96.0"W x 96.0"H x 20.00'L
		57,328 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
101.00	8,946	502.1	0	0	8,946
110.00	8,946	502.1	80,514	80,514	13,465

Device	Routing	Invert	Outlet Devices
#1	Primary	105.29'	<b>12.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.29' / 104.85' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	101.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#3	Device 1	107.00'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

**Discarded OutFlow** Max=0.21 cfs @ 10.05 hrs HW=101.09' (Free Discharge)  
**2=Exfiltration** (Exfiltration Controls 0.21 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.00' (Free Discharge)  
**1=Culvert** ( Controls 0.00 cfs)  
**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond UIS-2: UIS-2 - MC-3500**

Inflow Area = 158,364 sf, 77.91% Impervious, Inflow Depth = 0.82" for 2-Year event  
 Inflow = 3.12 cfs @ 12.09 hrs, Volume= 10,764 cf  
 Outflow = 0.23 cfs @ 11.25 hrs, Volume= 10,764 cf, Atten= 93%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 11.25 hrs, Volume= 10,764 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 106.40' @ 13.34 hrs Surf.Area= 4,059 sf Storage= 4,308 cf  
 Flood Elev= 109.85' Surf.Area= 4,059 sf Storage= 13,139 cf

Plug-Flow detention time= 150.9 min calculated for 10,759 cf (100% of inflow)  
 Center-of-Mass det. time= 150.9 min ( 920.2 - 769.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	104.75'	5,693 cf	<b>44.25'W x 91.74'L x 5.50'H Field A</b> 22,327 cf Overall - 8,095 cf Embedded = 14,232 cf x 40.0% Voids
#2A	105.50'	8,095 cf	<b>ADS StormTech MC-3500 d +Cap</b> x 72 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 72 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		13,788 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	105.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.50' / 104.50' S= 0.0200 '/ Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	109.85'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Discarded	104.75'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

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The Sanctuary - School Street, Manchester, MA  
 Type III 24-hr 2-Year Rainfall=3.24"

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**Discarded OutFlow** Max=0.23 cfs @ 11.25 hrs HW=104.81' (Free Discharge)  
 ↳3=Exfiltration (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=104.75' (Free Discharge)  
 ↳1=Culvert ( Controls 0.00 cfs)

↳2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Link SP-1: Study Point #1**

Inflow Area = 150,765 sf, 12.75% Impervious, Inflow Depth = 0.32" for 2-Year event  
 Inflow = 1.06 cfs @ 12.15 hrs, Volume= 4,030 cf  
 Primary = 1.06 cfs @ 12.15 hrs, Volume= 4,030 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-2: Study Point #2**

Inflow Area = 27,475 sf, 0.00% Impervious, Inflow Depth = 0.62" for 2-Year event  
 Inflow = 0.31 cfs @ 12.17 hrs, Volume= 1,419 cf  
 Primary = 0.31 cfs @ 12.17 hrs, Volume= 1,419 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-3: Study Point #3**

Inflow Area = 13,369 sf, 0.00% Impervious, Inflow Depth = 1.01" for 2-Year event  
 Inflow = 0.32 cfs @ 12.12 hrs, Volume= 1,124 cf  
 Primary = 0.32 cfs @ 12.12 hrs, Volume= 1,124 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4A: Study Point #4A - Wetlands "A"**

Inflow Area = 519,227 sf, 24.04% Impervious, Inflow Depth = 0.92" for 2-Year event  
 Inflow = 8.88 cfs @ 12.21 hrs, Volume= 39,968 cf  
 Primary = 8.88 cfs @ 12.21 hrs, Volume= 39,968 cf, Atten= 0%, Lag= 0.0 min  
 Routed to Pond SP-4 : Study Point #4

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4B: Study Point 4B - Vernal Pool "A"**

Inflow Area = 400,973 sf, 31.03% Impervious, Inflow Depth = 0.83" for 2-Year event  
 Inflow = 6.25 cfs @ 12.25 hrs, Volume= 27,744 cf  
 Primary = 6.25 cfs @ 12.25 hrs, Volume= 27,744 cf, Atten= 0%, Lag= 0.0 min  
 Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

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 Type III 24-hr 10-Year Rainfall=4.88"

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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

**Subcatchment P-1: Flow to Wetlands - North** Runoff Area=47,951 sf 0.00% Impervious Runoff Depth=2.19"  
 Flow Length=148' Tc=9.7 min CN=73 Runoff=2.43 cfs 8,738 cf

**Subcatchment P-10: Proposed Building** Runoff Area=30,352 sf 100.00% Impervious Runoff Depth=4.64"  
 Tc=6.0 min CN=98 Runoff=3.25 cfs 11,745 cf

**Subcatchment P-11: South Courtyard** Runoff Area=20,180 sf 100.00% Impervious Runoff Depth=4.64"  
 Tc=6.0 min CN=98 Runoff=2.16 cfs 7,809 cf

**Subcatchment P-12: Southeast Roof Area** Runoff Area=27,254 sf 100.00% Impervious Runoff Depth=4.64"  
 Tc=6.0 min CN=98 Runoff=2.92 cfs 10,546 cf

**Subcatchment P-13: Main Parking Area** Runoff Area=19,004 sf 71.58% Impervious Runoff Depth=4.08"  
 Tc=6.0 min CN=93 Runoff=1.92 cfs 6,462 cf

**Subcatchment P-14: Southwest Lawn -** Runoff Area=23,938 sf 43.16% Impervious Runoff Depth=2.97"  
 Flow Length=132' Tc=9.2 min CN=82 Runoff=1.68 cfs 5,929 cf

**Subcatchment P-15: Lawn/Fire Access** Runoff Area=43,953 sf 21.71% Impervious Runoff Depth=3.16"  
 Tc=6.0 min CN=84 Runoff=3.64 cfs 11,577 cf

**Subcatchment P-16: Entry Driveway** Runoff Area=10,714 sf 75.16% Impervious Runoff Depth=4.19"  
 Tc=6.0 min CN=94 Runoff=1.10 cfs 3,741 cf

**Subcatchment P-17: Bio-retention/Rain** Runoff Area=23,264 sf 0.00% Impervious Runoff Depth=1.87"  
 Tc=6.0 min CN=69 Runoff=1.12 cfs 3,626 cf

**Subcatchment P-18: Southwest Lawn - Back** Runoff Area=20,245 sf 3.38% Impervious Runoff Depth=1.72"  
 Flow Length=212' Slope=0.0100 ' Tc=14.8 min CN=67 Runoff=0.68 cfs 2,902 cf

**Subcatchment P-2: Direct Flow to Wetlands** Runoff Area=27,475 sf 0.00% Impervious Runoff Depth=1.57"  
 Flow Length=230' Tc=9.7 min CN=65 Runoff=0.96 cfs 3,604 cf

**Subcatchment P-3: Flow Southwest Off-Site** Runoff Area=13,369 sf 0.00% Impervious Runoff Depth=2.19"  
 Flow Length=62' Slope=0.3000 ' Tc=7.4 min CN=73 Runoff=0.73 cfs 2,436 cf

**Subcatchment P-4A: Flow Southeast to** Runoff Area=118,254 sf 0.35% Impervious Runoff Depth=2.52"  
 Flow Length=346' Tc=8.9 min CN=77 Runoff=7.12 cfs 24,862 cf

**Subcatchment P-4B: Flow Southeast to** Runoff Area=222,364 sf 0.17% Impervious Runoff Depth=2.79"  
 Flow Length=878' Tc=17.5 min CN=80 Runoff=11.84 cfs 51,671 cf

**Subcatchment P-5: Entrance Drive** Runoff Area=18,638 sf 53.72% Impervious Runoff Depth=3.87"  
 Tc=6.0 min CN=91 Runoff=1.82 cfs 6,004 cf

**Subcatchment P-6: Landcaped Slope/Walls** Runoff Area=13,824 sf 3.65% Impervious Runoff Depth=2.19"  
 Tc=6.0 min Ul Adjusted CN=73 Runoff=0.79 cfs 2,519 cf

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**Subcatchment P-7: Landscaped Slope** Runoff Area=24,883 sf 6.52% Impervious Runoff Depth=2.79"  
 Tc=6.0 min CN=80 Runoff=1.83 cfs 5,782 cf

**Subcatchment P-8: Cul-de-Sac/Garage** Runoff Area=22,308 sf 74.44% Impervious Runoff Depth=4.08"  
 Tc=6.0 min CN=93 Runoff=2.25 cfs 7,585 cf

**Subcatchment P-9: North Courtyard/Green** Runoff Area=15,328 sf 33.00% Impervious Runoff Depth=3.36"  
 Tc=6.0 min CN=86 Runoff=1.34 cfs 4,286 cf

**Reach SWALE: Swale Abutting Entry** Avg. Flow Depth=0.36' Max Vel=1.66 fps Inflow=1.83 cfs 5,782 cf  
 n=0.100 L=427.0' S=0.0714 '/' Capacity=6.48 cfs Outflow=1.61 cfs 5,782 cf

**Pond 1P: CB-5** Peak Elev=64.30' Storage=60 cf Inflow=1.61 cfs 5,782 cf  
 12.0" Round Culvert n=0.012 L=60.0' S=0.0833 '/' Outflow=1.62 cfs 5,732 cf

**Pond RG-1: New Rain Garden/Bioretenion** Peak Elev=62.37' Storage=10,207 cf Inflow=7.35 cfs 24,676 cf  
 Discarded=0.15 cfs 15,960 cf Primary=3.11 cfs 8,729 cf Outflow=3.25 cfs 24,689 cf

**Pond RG-2: Filtering Rain Garden-2 - At Site** Peak Elev=51.41' Storage=1,750 cf Inflow=2.61 cfs 8,523 cf  
 Primary=2.48 cfs 8,517 cf Secondary=0.00 cfs 0 cf Outflow=2.48 cfs 8,517 cf

**Pond SP-4: Study Point #4** Peak Elev=49.75' Storage=11,357 cf Inflow=20.13 cfs 87,951 cf  
 18.0" Round Culvert n=0.012 L=82.0' S=0.0032 '/' Outflow=11.65 cfs 87,951 cf

**Pond UIS-1: UIS-1 - Southwest Lawn (96")** Peak Elev=105.02' Storage=25,032 cf Inflow=10.57 cfs 37,352 cf  
 Discarded=0.21 cfs 37,352 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 37,352 cf

**Pond UIS-2: UIS-2 - MC-3500** Peak Elev=107.59' Storage=8,092 cf Inflow=4.84 cfs 17,007 cf  
 Discarded=0.23 cfs 17,007 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 17,007 cf

**Link SP-1: Study Point #1** Inflow=4.62 cfs 17,467 cf  
 Primary=4.62 cfs 17,467 cf

**Link SP-2: Study Point #2** Inflow=0.96 cfs 3,604 cf  
 Primary=0.96 cfs 3,604 cf

**Link SP-3: Study Point #3** Inflow=0.73 cfs 2,436 cf  
 Primary=0.73 cfs 2,436 cf

**Link SP-4A: Study Point #4A - Wetlands "A"** Inflow=18.05 cfs 79,434 cf  
 Primary=18.05 cfs 79,434 cf

**Link SP-4B: Study Point 4B - Vernal Pool "A"** Inflow=12.50 cfs 54,572 cf  
 Primary=12.50 cfs 54,572 cf

**Total Runoff Area = 743,298 sf Runoff Volume = 181,823 cf Average Runoff Depth = 2.94"**  
**79.20% Pervious = 588,714 sf 20.80% Impervious = 154,584 sf**

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**Summary for Subcatchment P-1: Flow to Wetlands - North**

Runoff = 2.43 cfs @ 12.14 hrs, Volume= 8,738 cf, Depth= 2.19"  
 Routed to Link SP-1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
5,253	48	Brush, Good, HSG B
6,353	73	Brush, Good, HSG D
1,517	55	Woods, Good, HSG B
34,828	77	Woods, Good, HSG D
47,951	73	Weighted Average
47,951		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.2120	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.3	98	0.2620	1.28		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	148				Total

**Summary for Subcatchment P-10: Proposed Building Roof**

Runoff = 3.25 cfs @ 12.09 hrs, Volume= 11,745 cf, Depth= 4.64"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
30,352	98	Unconnected roofs, HSG D
30,352		100.00% Impervious Area
30,352		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-11: South Courtyard**

Runoff = 2.16 cfs @ 12.09 hrs, Volume= 7,809 cf, Depth= 4.64"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

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Area (sf)	CN	Description
20,180	98	Unconnected pavement, HSG D
20,180		100.00% Impervious Area
20,180		100.00% Unconnected

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

**Summary for Subcatchment P-12: Southeast Roof Area**

Runoff = 2.92 cfs @ 12.09 hrs, Volume= 10,546 cf, Depth= 4.64"  
Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
27,254	98	Unconnected roofs, HSG D
27,254		100.00% Impervious Area
27,254		100.00% Unconnected

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

**Summary for Subcatchment P-13: Main Parking Area**

Runoff = 1.92 cfs @ 12.09 hrs, Volume= 6,462 cf, Depth= 4.08"  
Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
13,604	98	Unconnected pavement, HSG D
5,400	80	>75% Grass cover, Good, HSG D
19,004	93	Weighted Average
5,400		28.42% Pervious Area
13,604		71.58% Impervious Area
13,604		100.00% Unconnected

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

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**Summary for Subcatchment P-14: Southwest Lawn - Front**

Runoff = 1.68 cfs @ 12.13 hrs, Volume= 5,929 cf, Depth= 2.97"  
Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
10,332	98	Paved parking, HSG D
6,889	61	>75% Grass cover, Good, HSG B
6,717	80	>75% Grass cover, Good, HSG D
23,938	82	Weighted Average
13,606		56.84% Pervious Area
10,332		43.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.16"
1.0	82	0.0360	1.33		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.2	132				Total

**Summary for Subcatchment P-15: Lawn/Fire Access**

Runoff = 3.64 cfs @ 12.09 hrs, Volume= 11,577 cf, Depth= 3.16"  
Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
9,543	98	Paved parking, HSG D
3,854	80	GrassPave2, Good, HSG D
30,556	80	>75% Grass cover, Good, HSG D
43,953	84	Weighted Average
34,410		78.29% Pervious Area
9,543		21.71% Impervious Area

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

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**Summary for Subcatchment P-16: Entry Driveway**

Runoff = 1.10 cfs @ 12.09 hrs, Volume= 3,741 cf, Depth= 4.19"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
2,672	98	Paved parking, HSG B
5,381	98	Paved parking, HSG D
2,661	80	>75% Grass cover, Good, HSG D
10,714	94	Weighted Average
2,661		24.84% Pervious Area
8,053		75.16% Impervious Area

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

**Summary for Subcatchment P-17: Bio-retention/Rain Garden**

Runoff = 1.12 cfs @ 12.10 hrs, Volume= 3,626 cf, Depth= 1.87"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
12,971	61	>75% Grass cover, Good, HSG B
6,335	80	>75% Grass cover, Good, HSG D
503	98	Water Surface, 0% imp, HSG B
1,092	98	Water Surface, 0% imp, HSG D
1,518	55	Woods, Good, HSG B
845	77	Woods, Good, HSG D
23,264	69	Weighted Average
23,264		100.00% Pervious Area

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

**Summary for Subcatchment P-18: Southwest Lawn - Back**

Runoff = 0.68 cfs @ 12.22 hrs, Volume= 2,902 cf, Depth= 1.72"  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

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Area (sf)	CN	Description
684	98	Paved parking, HSG D
14,032	61	>75% Grass cover, Good, HSG B
5,529	80	>75% Grass cover, Good, HSG D
20,245	67	Weighted Average
19,561		96.62% Pervious Area
684		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.16"
3.9	162	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.8	212				Total

**Summary for Subcatchment P-2: Direct Flow to Wetlands "F"**

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 3,604 cf, Depth= 1.57"  
 Routed to Link SP-2 : Study Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
1,025	61	>75% Grass cover, Good, HSG B
14,775	55	Woods, Good, HSG B
11,675	77	Woods, Good, HSG D
27,475	65	Weighted Average
27,475		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.2980	0.11		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.16"
2.4	180	0.2580	1.27		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
9.7	230				Total

**Summary for Subcatchment P-3: Flow Southwest Off-Site**

Runoff = 0.73 cfs @ 12.11 hrs, Volume= 2,436 cf, Depth= 2.19"  
 Routed to Link SP-3 : Study Point #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

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Area (sf)	CN	Description
6,978	80	>75% Grass cover, Good, HSG D
3,182	55	Woods, Good, HSG B
3,209	77	Woods, Good, HSG D
13,369	73	Weighted Average
13,369		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.3000	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
0.1	12	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
7.4	62	Total			

**Summary for Subcatchment P-4A: Flow Southeast to Wetlands "A"**

Runoff = 7.12 cfs @ 12.13 hrs, Volume= 24,862 cf, Depth= 2.52"  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
410	98	Unconnected pavement, HSG D
12,410	80	>75% Grass cover, Good, HSG D
105,434	77	Woods, Good, HSG D
118,254	77	Weighted Average
117,844		99.65% Pervious Area
410		0.35% Impervious Area
410		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.3700	0.12		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.7	136	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.5	160		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
8.9	346	Total			

**Summary for Subcatchment P-4B: Flow Southeast to Wetlands "A"**

Runoff = 11.84 cfs @ 12.24 hrs, Volume= 51,671 cf, Depth= 2.79"  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

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Area (sf)	CN	Description
368	98	Unconnected roofs, HSG B
2,977	80	>75% Grass cover, Good, HSG D
2,029	55	Woods, Good, HSG B
181,109	77	Woods, Good, HSG D
35,881	98	Water Surface, 0% imp, HSG D
222,364	80	Weighted Average
221,996		99.83% Pervious Area
368		0.17% Impervious Area
368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.1030	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
4.4	190	0.0825	0.72		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
1.9	638		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
17.5	878	Total			

**Summary for Subcatchment P-5: Entrance Drive**

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 6,004 cf, Depth= 3.87"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
10,013	98	Paved parking, HSG D
7,713	80	>75% Grass cover, Good, HSG D
912	98	Water Surface, 0% imp, HSG D
18,638	91	Weighted Average
8,625		46.28% Pervious Area
10,013		53.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-6: Landcaped Slope/Walls**

Runoff = 0.79 cfs @ 12.10 hrs, Volume= 2,519 cf, Depth= 2.19"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Adj	Description
13,319	73		Brush, Good, HSG D
505	98		Unconnected pavement, HSG D
13,824	74	73	Weighted Average, UI Adjusted
13,319			96.35% Pervious Area
505			3.65% Impervious Area
505			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-7: Landscaped Slope**

Runoff = 1.83 cfs @ 12.09 hrs, Volume= 5,782 cf, Depth= 2.79"  
 Routed to Reach SWALE : Swale Abutting Entry Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
1,622	98	Paved parking, HSG D
22,171	80	>75% Grass cover, Good, HSG D
1,090	61	>75% Grass cover, Good, HSG B
24,883	80	Weighted Average
23,261		93.48% Pervious Area
1,622		6.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-8: Cul-de-Sac/Garage Turn Around**

Runoff = 2.25 cfs @ 12.09 hrs, Volume= 7,585 cf, Depth= 4.08"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
16,606	98	Paved parking, HSG D
5,702	80	>75% Grass cover, Good, HSG D
22,308	93	Weighted Average
5,702		25.56% Pervious Area
16,606		74.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-9: North Courtyard/Green Roof**

Runoff = 1.34 cfs @ 12.09 hrs, Volume= 4,286 cf, Depth= 3.36"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.88"

Area (sf)	CN	Description
5,058	98	Unconnected roofs, HSG D
10,270	80	>75% Grass cover, Good, HSG D
15,328	86	Weighted Average
10,270		67.00% Pervious Area
5,058		33.00% Impervious Area
5,058		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Reach SWALE: Swale Abutting Entry Driveway**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 2.79" for 10-Year event  
 Inflow = 1.83 cfs @ 12.09 hrs, Volume= 5,782 cf  
 Outflow = 1.61 cfs @ 12.14 hrs, Volume= 5,782 cf, Atten= 12%, Lag= 2.8 min  
 Routed to Pond 1P : CB-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.66 fps, Min. Travel Time= 4.3 min  
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 16.0 min

Peak Storage= 415 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.36' , Surface Width= 3.43'  
 Bank-Full Depth= 0.75' Flow Area= 2.6 sf, Capacity= 6.48 cfs

2.00' x 0.75' deep channel, n= 0.100 Earth, dense brush, high stage  
 Side Slope Z-value= 2.0 ' / ' Top Width= 5.00'  
 Length= 427.0' Slope= 0.0714 ' / '  
 Inlet Invert= 98.00', Outlet Invert= 67.50'





**Summary for Pond 1P: CB-5**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 2.79" for 10-Year event  
 Inflow = 1.61 cfs @ 12.14 hrs, Volume= 5,782 cf  
 Outflow = 1.62 cfs @ 12.14 hrs, Volume= 5,732 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 1.62 cfs @ 12.14 hrs, Volume= 5,732 cf  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 64.30' @ 12.14 hrs Surf.Area= 13 sf Storage= 60 cf

Plug-Flow detention time= 8.1 min calculated for 5,729 cf (99% of inflow)  
 Center-of-Mass det. time= 2.8 min ( 834.9 - 832.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	101 cf	4.00'D x 8.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	<b>12.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 58.50' S= 0.0833 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.59 cfs @ 12.14 hrs HW=64.29' (Free Discharge)  
 1=Culvert (Inlet Controls 1.59 cfs @ 2.39 fps)

**Summary for Pond RG-1: New Rain Garden/Bioretenion Area**

Inflow Area = 102,814 sf, 18.69% Impervious, Inflow Depth = 2.88" for 10-Year event  
 Inflow = 7.35 cfs @ 12.10 hrs, Volume= 24,676 cf  
 Outflow = 3.25 cfs @ 12.34 hrs, Volume= 24,689 cf, Atten= 56%, Lag= 14.5 min  
 Discarded = 0.15 cfs @ 12.34 hrs, Volume= 15,960 cf  
 Primary = 3.11 cfs @ 12.34 hrs, Volume= 8,729 cf  
 Routed to Link SP-1 : Study Point #1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 62.37' @ 12.34 hrs Surf.Area= 6,263 sf Storage= 10,207 cf

Plug-Flow detention time= 592.3 min calculated for 24,676 cf (100% of inflow)  
 Center-of-Mass det. time= 593.6 min ( 1,410.7 - 817.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	57.00'	19,856 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	1,595	339.0	0.0	0	0	1,595
58.00	1,595	339.0	40.0	638	638	1,934
60.00	1,595	339.0	30.0	957	1,595	2,612
61.00	3,030	530.0	100.0	2,274	3,869	15,827
62.00	5,418	764.0	100.0	4,167	8,036	39,932
63.00	7,829	798.0	100.0	6,587	14,623	44,230
63.60	9,647	832.0	100.0	5,233	19,856	48,667

Device	Routing	Invert	Outlet Devices
#1	Primary	62.26'	<b>30.0' long x 15.0' breadth Emergency Overflow - RipRap</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 1.020 in/hr Exfiltration - In-Situ Soil - Sandy Loam over Surface area Phase-In= 0.01'
#2	Discarded	57.00'	

**Discarded OutFlow** Max=0.15 cfs @ 12.34 hrs HW=62.37' (Free Discharge)  
 2=Exfiltration - In-Situ Soil - Sandy Loam (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=2.99 cfs @ 12.34 hrs HW=62.37' (Free Discharge)  
 1=Emergency Overflow - RipRap (Weir Controls 2.99 cfs @ 0.89 fps)

**Summary for Pond RG-2: Filtering Rain Garden-2 - At Site Entrance**

Inflow Area = 32,462 sf, 32.40% Impervious, Inflow Depth = 3.15" for 10-Year event  
 Inflow = 2.61 cfs @ 12.09 hrs, Volume= 8,523 cf  
 Outflow = 2.48 cfs @ 12.11 hrs, Volume= 8,517 cf, Atten= 5%, Lag= 1.2 min  
 Primary = 2.48 cfs @ 12.11 hrs, Volume= 8,517 cf  
 Routed to Pond SP-4 : Study Point #4  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond SP-4 : Study Point #4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 51.41' @ 12.11 hrs Surf.Area= 1,404 sf Storage= 1,750 cf  
 Flood Elev= 51.20' Surf.Area= 1,289 sf Storage= 1,474 cf

Plug-Flow detention time= 217.8 min calculated for 8,512 cf (100% of inflow)  
 Center-of-Mass det. time= 217.7 min ( 1,021.2 - 803.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.20'	3,701 cf	Rain Garden (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.20	912	158.0	0.0	0	0	912
47.70	912	158.0	40.0	182	182	991
50.00	912	158.0	0.0	0	182	1,354
51.00	1,182	168.0	100.0	1,044	1,226	1,661
52.00	1,764	204.0	100.0	1,463	2,690	2,743
52.50	2,292	220.0	100.0	1,011	3,701	3,293

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Device	Routing	Invert	Outlet Devices
#1	Primary	47.20'	<b>18.0" Round 18" HDPE</b> L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.20' / 46.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	51.20'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 8.00 columns</b> X 8 rows C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads
#3	Secondary	51.55'	<b>10.0' long x 18.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	47.20'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Primary OutFlow** Max=2.42 cfs @ 12.11 hrs HW=51.40' (Free Discharge)  
 ↳1=18" HDPE (Passes 2.42 cfs of 12.48 cfs potential flow)  
 ↳2=Orifice/Grate (Weir Controls 2.38 cfs @ 1.47 fps)  
 ↳4=Exfiltration (Exfiltration Controls 0.03 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=47.20' (Free Discharge)  
 ↳3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

**Summary for Pond SP-4: Study Point #4**

Inflow Area = 551,689 sf, 24.54% Impervious, Inflow Depth = 1.91" for 10-Year event  
 Inflow = 20.13 cfs @ 12.17 hrs, Volume= 87,951 cf  
 Outflow = 11.65 cfs @ 12.46 hrs, Volume= 87,951 cf, Atten= 42%, Lag= 17.3 min  
 Primary = 11.65 cfs @ 12.46 hrs, Volume= 87,951 cf  
 Routed to nonexistent node 3L

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 49.75' @ 12.46 hrs Surf.Area= 10,775 sf Storage= 11,357 cf  
 Flood Elev= 52.00' Surf.Area= 20,910 sf Storage= 50,821 cf

Plug-Flow detention time= 5.6 min calculated for 87,905 cf (100% of inflow)  
 Center-of-Mass det. time= 5.6 min ( 858.3 - 852.7 )

Volume	Invert	Avail.Storage	Storage Description		
#1	47.00'	292,924 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	74	35.0	0	0	74
48.00	970	145.0	437	437	1,652
49.00	7,933	434.0	3,892	4,330	14,971
50.00	11,795	605.0	9,800	14,130	29,119
51.00	20,540	853.0	15,967	30,097	57,902
52.00	20,910	855.0	20,725	50,821	58,799
55.00	162,840	2,123.0	242,102	292,924	359,325

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Device	Routing	Invert	Outlet Devices
#1	Primary	46.64'	<b>18.0" Round Existing 18" RCP</b> L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 46.64' / 46.38' S= 0.0032 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

**Primary OutFlow** Max=11.64 cfs @ 12.46 hrs HW=49.75' (Free Discharge)  
 ↳1=Existing 18" RCP (Barrel Controls 11.64 cfs @ 6.59 fps)

**Summary for Pond UIS-1: UIS-1 - Southwest Lawn (96" CMP)**

Inflow Area = 112,106 sf, 73.62% Impervious, Inflow Depth = 4.00" for 10-Year event  
 Inflow = 10.57 cfs @ 12.09 hrs, Volume= 37,352 cf  
 Outflow = 0.21 cfs @ 8.65 hrs, Volume= 37,352 cf, Atten= 98%, Lag= 0.0 min  
 Discarded = 0.21 cfs @ 8.65 hrs, Volume= 37,352 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 105.02' @ 17.82 hrs Surf.Area= 8,946 sf Storage= 25,032 cf  
 Flood Elev= 107.00' Surf.Area= 8,946 sf Storage= 39,886 cf

Plug-Flow detention time= 1,059.8 min calculated for 37,333 cf (100% of inflow)  
 Center-of-Mass det. time= 1,060.3 min ( 1,832.9 - 772.6 )

Volume	Invert	Avail.Storage	Storage Description		
#1	101.00'	15,457 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 80,514 cf Overall - 41,871 cf Embedded = 38,643 cf x 40.0% Voids		
#2	101.50'	41,871 cf	<b>CMP Round 96 @ 833.00' L</b> Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 833.00'L = 41,871.1 cf Overall Size= 96.0"W x 96.0"H x 20.00'L		
		57,328 cf	Total Available Storage		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
101.00	8,946	502.1	0	0	8,946
110.00	8,946	502.1	80,514	80,514	13,465

Device	Routing	Invert	Outlet Devices
#1	Primary	105.29'	<b>12.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.29' / 104.85' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	101.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#3	Device 1	107.00'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

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**Discarded OutFlow** Max=0.21 cfs @ 8.65 hrs HW=101.09' (Free Discharge)  
↳ **2=Exfiltration** (Exfiltration Controls 0.21 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.00' (Free Discharge)  
↳ **1=Culvert** ( Controls 0.00 cfs)  
↳ **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond UIS-2: UIS-2 - MC-3500**

Inflow Area = 158,364 sf, 77.91% Impervious, Inflow Depth = 1.29" for 10-Year event  
Inflow = 4.84 cfs @ 12.09 hrs, Volume= 17,007 cf  
Outflow = 0.23 cfs @ 10.20 hrs, Volume= 17,007 cf, Atten= 95%, Lag= 0.0 min  
Discarded = 0.23 cfs @ 10.20 hrs, Volume= 17,007 cf  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Peak Elev= 107.59' @ 14.54 hrs Surf.Area= 4,059 sf Storage= 8,092 cf  
Flood Elev= 109.85' Surf.Area= 4,059 sf Storage= 13,139 cf

Plug-Flow detention time= 304.1 min calculated for 16,999 cf (100% of inflow)  
Center-of-Mass det. time= 304.1 min ( 1,064.1 - 760.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	104.75'	5,693 cf	<b>44.25"W x 91.74"L x 5.50"H Field A</b> 22,327 cf Overall - 8,095 cf Embedded = 14,232 cf x 40.0% Voids
#2A	105.50'	8,095 cf	<b>ADS_StormTech MC-3500 d +Cap</b> x 72 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17"L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50"L with 0.33' Overlap 72 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		13,788 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	105.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.50' / 104.50' S= 0.0200 '/ Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	109.85'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Discarded	104.75'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

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**Discarded OutFlow** Max=0.23 cfs @ 10.20 hrs HW=104.81' (Free Discharge)  
↳ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=104.75' (Free Discharge)  
↳ **1=Culvert** ( Controls 0.00 cfs)  
↳ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link SP-1: Study Point #1**

Inflow Area = 150,765 sf, 12.75% Impervious, Inflow Depth = 1.39" for 10-Year event  
Inflow = 4.62 cfs @ 12.32 hrs, Volume= 17,467 cf  
Primary = 4.62 cfs @ 12.32 hrs, Volume= 17,467 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-2: Study Point #2**

Inflow Area = 27,475 sf, 0.00% Impervious, Inflow Depth = 1.57" for 10-Year event  
Inflow = 0.96 cfs @ 12.15 hrs, Volume= 3,604 cf  
Primary = 0.96 cfs @ 12.15 hrs, Volume= 3,604 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-3: Study Point #3**

Inflow Area = 13,369 sf, 0.00% Impervious, Inflow Depth = 2.19" for 10-Year event  
Inflow = 0.73 cfs @ 12.11 hrs, Volume= 2,436 cf  
Primary = 0.73 cfs @ 12.11 hrs, Volume= 2,436 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4A: Study Point #4A - Wetlands "A"**

Inflow Area = 519,227 sf, 24.04% Impervious, Inflow Depth = 1.84" for 10-Year event  
Inflow = 18.05 cfs @ 12.19 hrs, Volume= 79,434 cf  
Primary = 18.05 cfs @ 12.19 hrs, Volume= 79,434 cf, Atten= 0%, Lag= 0.0 min  
Routed to Pond SP-4 : Study Point #4

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4B: Study Point 4B - Vernal Pool "A"**

Inflow Area = 400,973 sf, 31.03% Impervious, Inflow Depth = 1.63" for 10-Year event  
Inflow = 12.50 cfs @ 12.24 hrs, Volume= 54,572 cf  
Primary = 12.50 cfs @ 12.24 hrs, Volume= 54,572 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

- Subcatchment P-1: Flow to Wetlands - North** Runoff Area=47,951 sf 0.00% Impervious Runoff Depth=3.23"  
Flow Length=148' Tc=9.7 min CN=73 Runoff=3.62 cfs 12,907 cf
- Subcatchment P-10: Proposed Building** Runoff Area=30,352 sf 100.00% Impervious Runoff Depth=5.93"  
Tc=6.0 min CN=98 Runoff=4.11 cfs 15,003 cf
- Subcatchment P-11: South Courtyard** Runoff Area=20,180 sf 100.00% Impervious Runoff Depth=5.93"  
Tc=6.0 min CN=98 Runoff=2.74 cfs 9,975 cf
- Subcatchment P-12: Southeast Roof Area** Runoff Area=27,254 sf 100.00% Impervious Runoff Depth=5.93"  
Tc=6.0 min CN=98 Runoff=3.69 cfs 13,472 cf
- Subcatchment P-13: Main Parking Area** Runoff Area=19,004 sf 71.58% Impervious Runoff Depth=5.35"  
Tc=6.0 min CN=93 Runoff=2.48 cfs 8,473 cf
- Subcatchment P-14: Southwest Lawn -** Runoff Area=23,938 sf 43.16% Impervious Runoff Depth=4.14"  
Flow Length=132' Tc=9.2 min CN=82 Runoff=2.33 cfs 8,266 cf
- Subcatchment P-15: Lawn/Fire Access** Runoff Area=43,953 sf 21.71% Impervious Runoff Depth=4.36"  
Tc=6.0 min CN=84 Runoff=4.96 cfs 15,954 cf
- Subcatchment P-16: Entry Driveway** Runoff Area=10,714 sf 75.16% Impervious Runoff Depth=5.47"  
Tc=6.0 min CN=94 Runoff=1.41 cfs 4,879 cf
- Subcatchment P-17: Bio-retention/Rain** Runoff Area=23,264 sf 0.00% Impervious Runoff Depth=2.85"  
Tc=6.0 min CN=69 Runoff=1.74 cfs 5,517 cf
- Subcatchment P-18: Southwest Lawn - Back** Runoff Area=20,245 sf 3.38% Impervious Runoff Depth=2.66"  
Flow Length=212' Slope=0.0100 '/' Tc=14.8 min CN=67 Runoff=1.08 cfs 4,486 cf
- Subcatchment P-2: Direct Flow to Wetlands** Runoff Area=27,475 sf 0.00% Impervious Runoff Depth=2.48"  
Flow Length=230' Tc=9.7 min CN=65 Runoff=1.56 cfs 5,668 cf
- Subcatchment P-3: Flow Southwest Off-Site** Runoff Area=13,369 sf 0.00% Impervious Runoff Depth=3.23"  
Flow Length=62' Slope=0.3000 '/' Tc=7.4 min CN=73 Runoff=1.09 cfs 3,599 cf
- Subcatchment P-4A: Flow Southeast to** Runoff Area=118,254 sf 0.35% Impervious Runoff Depth=3.63"  
Flow Length=346' Tc=8.9 min CN=77 Runoff=10.23 cfs 35,752 cf
- Subcatchment P-4B: Flow Southeast to** Runoff Area=222,364 sf 0.17% Impervious Runoff Depth=3.93"  
Flow Length=878' Tc=17.5 min CN=80 Runoff=16.65 cfs 72,917 cf
- Subcatchment P-5: Entrance Drive** Runoff Area=18,638 sf 53.72% Impervious Runoff Depth=5.12"  
Tc=6.0 min CN=91 Runoff=2.37 cfs 7,958 cf
- Subcatchment P-6: Landcaped Slope/Walls** Runoff Area=13,824 sf 3.65% Impervious Runoff Depth=3.23"  
Tc=6.0 min UI Adjusted CN=73 Runoff=1.18 cfs 3,721 cf

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- Subcatchment P-7: Landscaped Slope** Runoff Area=24,883 sf 6.52% Impervious Runoff Depth=3.93"  
Tc=6.0 min CN=80 Runoff=2.57 cfs 8,160 cf
- Subcatchment P-8: Cul-de-Sac/Garage** Runoff Area=22,308 sf 74.44% Impervious Runoff Depth=5.35"  
Tc=6.0 min CN=93 Runoff=2.91 cfs 9,946 cf
- Subcatchment P-9: North Courtyard/Green** Runoff Area=15,328 sf 33.00% Impervious Runoff Depth=4.57"  
Tc=6.0 min CN=86 Runoff=1.80 cfs 5,839 cf
- Reach SWALE: Swale Abutting Entry** Avg. Flow Depth=0.43' Max Vel=1.84 fps Inflow=2.57 cfs 8,160 cf  
n=0.100 L=427.0' S=0.0714 '/' Capacity=6.48 cfs Outflow=2.30 cfs 8,160 cf
- Pond 1P: CB-5** Peak Elev=64.59' Storage=64 cf Inflow=2.30 cfs 8,160 cf  
12.0" Round Culvert n=0.012 L=60.0' S=0.0833 '/' Outflow=2.30 cfs 8,109 cf
- Pond RG-1: New Rain Garden/Bioretenion** Peak Elev=62.48' Storage=10,920 cf Inflow=10.25 cfs 34,460 cf  
Discarded=0.15 cfs 16,633 cf Primary=8.49 cfs 17,855 cf Outflow=8.64 cfs 34,488 cf
- Pond RG-2: Filtering Rain Garden-2 - At Site** Peak Elev=51.45' Storage=1,819 cf Inflow=3.55 cfs 11,679 cf  
Primary=3.40 cfs 11,681 cf Secondary=0.00 cfs 0 cf Outflow=3.40 cfs 11,681 cf
- Pond SP-4: Study Point #4** Peak Elev=50.53' Storage=21,445 cf Inflow=28.59 cfs 124,835 cf  
18.0" Round Culvert n=0.012 L=82.0' S=0.0032 '/' Outflow=13.84 cfs 124,835 cf
- Pond UIS-1: UIS-1 - Southwest Lawn (96")** Peak Elev=106.36' Storage=35,159 cf Inflow=13.75 cfs 49,030 cf  
Discarded=0.21 cfs 49,030 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 49,030 cf
- Pond UIS-2: UIS-2 - MC-3500** Peak Elev=108.90' Storage=11,542 cf Inflow=6.17 cfs 21,945 cf  
Discarded=0.23 cfs 21,945 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 21,945 cf
- Link SP-1: Study Point #1** Inflow=12.05 cfs 30,763 cf  
Primary=12.05 cfs 30,763 cf
- Link SP-2: Study Point #2** Inflow=1.56 cfs 5,668 cf  
Primary=1.56 cfs 5,668 cf
- Link SP-3: Study Point #3** Inflow=1.09 cfs 3,599 cf  
Primary=1.09 cfs 3,599 cf
- Link SP-4A: Study Point #4A - Wetlands "A"** Inflow=25.72 cfs 113,154 cf  
Primary=25.72 cfs 113,154 cf
- Link SP-4B: Study Point 4B - Vernal Pool "A"** Inflow=17.71 cfs 77,403 cf  
Primary=17.71 cfs 77,403 cf

**Total Runoff Area = 743,298 sf Runoff Volume = 252,493 cf Average Runoff Depth = 4.08"**  
**79.20% Pervious = 588,714 sf 20.80% Impervious = 154,584 sf**

**Summary for Subcatchment P-1: Flow to Wetlands - North**

Runoff = 3.62 cfs @ 12.14 hrs, Volume= 12,907 cf, Depth= 3.23"  
 Routed to Link SP-1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,253	48	Brush, Good, HSG B
6,353	73	Brush, Good, HSG D
1,517	55	Woods, Good, HSG B
34,828	77	Woods, Good, HSG D
47,951	73	Weighted Average
47,951		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.2120	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.3	98	0.2620	1.28		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	148	Total			

**Summary for Subcatchment P-10: Proposed Building Roof**

Runoff = 4.11 cfs @ 12.09 hrs, Volume= 15,003 cf, Depth= 5.93"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
30,352	98	Unconnected roofs, HSG D
30,352		100.00% Impervious Area
30,352		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-11: South Courtyard**

Runoff = 2.74 cfs @ 12.09 hrs, Volume= 9,975 cf, Depth= 5.93"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
20,180	98	Unconnected pavement, HSG D
20,180		100.00% Impervious Area
20,180		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-12: Southeast Roof Area**

Runoff = 3.69 cfs @ 12.09 hrs, Volume= 13,472 cf, Depth= 5.93"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
27,254	98	Unconnected roofs, HSG D
27,254		100.00% Impervious Area
27,254		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-13: Main Parking Area**

Runoff = 2.48 cfs @ 12.09 hrs, Volume= 8,473 cf, Depth= 5.35"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
13,604	98	Unconnected pavement, HSG D
5,400	80	>75% Grass cover, Good, HSG D
19,004	93	Weighted Average
5,400		28.42% Pervious Area
13,604		71.58% Impervious Area
13,604		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. 6.0</b>

**Summary for Subcatchment P-14: Southwest Lawn - Front**

Runoff = 2.33 cfs @ 12.13 hrs, Volume= 8,266 cf, Depth= 4.14"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
10,332	98	Paved parking, HSG D
6,889	61	>75% Grass cover, Good, HSG B
6,717	80	>75% Grass cover, Good, HSG D
23,938	82	Weighted Average
13,606		56.84% Pervious Area
10,332		43.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		<b>Sheet Flow</b> , Grass: Dense n= 0.240 P2= 3.16"
1.0	82	0.0360	1.33		<b>Shallow Concentrated Flow</b> , Short Grass Pasture Kv= 7.0 fps
9.2	132	Total			

**Summary for Subcatchment P-15: Lawn/Fire Access**

Runoff = 4.96 cfs @ 12.09 hrs, Volume= 15,954 cf, Depth= 4.36"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
9,543	98	Paved parking, HSG D
* 3,854	80	GrassPave2, Good, HSG D
30,556	80	>75% Grass cover, Good, HSG D
43,953	84	Weighted Average
34,410		78.29% Pervious Area
9,543		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. 6.0</b>

**Summary for Subcatchment P-16: Entry Driveway**

Runoff = 1.41 cfs @ 12.09 hrs, Volume= 4,879 cf, Depth= 5.47"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,672	98	Paved parking, HSG B
5,381	98	Paved parking, HSG D
2,661	80	>75% Grass cover, Good, HSG D
10,714	94	Weighted Average
2,661		24.84% Pervious Area
8,053		75.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-17: Bio-retention/Rain Garden**

Runoff = 1.74 cfs @ 12.10 hrs, Volume= 5,517 cf, Depth= 2.85"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
12,971	61	>75% Grass cover, Good, HSG B
6,335	80	>75% Grass cover, Good, HSG D
503	98	Water Surface, 0% imp, HSG B
1,092	98	Water Surface, 0% imp, HSG D
1,518	55	Woods, Good, HSG B
845	77	Woods, Good, HSG D
23,264	69	Weighted Average
23,264		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-18: Southwest Lawn - Back**

Runoff = 1.08 cfs @ 12.21 hrs, Volume= 4,486 cf, Depth= 2.66"  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

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Area (sf)	CN	Description
684	98	Paved parking, HSG D
14,032	61	>75% Grass cover, Good, HSG B
5,529	80	>75% Grass cover, Good, HSG D
20,245	67	Weighted Average
19,561		96.62% Pervious Area
684		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0100	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.16"
3.9	162	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.8	212	Total			

**Summary for Subcatchment P-2: Direct Flow to Wetlands "F"**

Runoff = 1.56 cfs @ 12.15 hrs, Volume= 5,668 cf, Depth= 2.48"  
Routed to Link SP-2 : Study Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,025	61	>75% Grass cover, Good, HSG B
14,775	55	Woods, Good, HSG B
11,675	77	Woods, Good, HSG D
27,475	65	Weighted Average
27,475		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.2980	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
2.4	180	0.2580	1.27		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	230	Total			

**Summary for Subcatchment P-3: Flow Southwest Off-Site**

Runoff = 1.09 cfs @ 12.11 hrs, Volume= 3,599 cf, Depth= 3.23"  
Routed to Link SP-3 : Study Point #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

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Area (sf)	CN	Description
6,978	80	>75% Grass cover, Good, HSG D
3,182	55	Woods, Good, HSG B
3,209	77	Woods, Good, HSG D
13,369	73	Weighted Average
13,369		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.3000	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
0.1	12	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
7.4	62	Total			

**Summary for Subcatchment P-4A: Flow Southeast to Wetlands "A"**

Runoff = 10.23 cfs @ 12.13 hrs, Volume= 35,752 cf, Depth= 3.63"  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
410	98	Unconnected pavement, HSG D
12,410	80	>75% Grass cover, Good, HSG D
105,434	77	Woods, Good, HSG D
118,254	77	Weighted Average
117,844		99.65% Pervious Area
410		0.35% Impervious Area
410		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.3700	0.12		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.7	136	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.5	160		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
8.9	346	Total			

**Summary for Subcatchment P-4B: Flow Southeast to Wetlands "A"**

Runoff = 16.65 cfs @ 12.24 hrs, Volume= 72,917 cf, Depth= 3.93"  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

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Area (sf)	CN	Description
368	98	Unconnected roofs, HSG B
2,977	80	>75% Grass cover, Good, HSG D
2,029	55	Woods, Good, HSG B
181,109	77	Woods, Good, HSG D
35,881	98	Water Surface, 0% imp, HSG D
222,364	80	Weighted Average
221,996		99.83% Pervious Area
368		0.17% Impervious Area
368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.1030	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
4.4	190	0.0825	0.72		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
1.9	638		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
17.5	878	Total			

**Summary for Subcatchment P-5: Entrance Drive**

Runoff = 2.37 cfs @ 12.09 hrs, Volume= 7,958 cf, Depth= 5.12"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
10,013	98	Paved parking, HSG D
7,713	80	>75% Grass cover, Good, HSG D
912	98	Water Surface, 0% imp, HSG D
18,638	91	Weighted Average
8,625		46.28% Pervious Area
10,013		53.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-6: Landcaped Slope/Walls**

Runoff = 1.18 cfs @ 12.09 hrs, Volume= 3,721 cf, Depth= 3.23"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

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Area (sf)	CN	Adj	Description
13,319	73		Brush, Good, HSG D
505	98		Unconnected pavement, HSG D
13,824	74	73	Weighted Average, UI Adjusted
13,319			96.35% Pervious Area
505			3.65% Impervious Area
505			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-7: Landscaped Slope**

Runoff = 2.57 cfs @ 12.09 hrs, Volume= 8,160 cf, Depth= 3.93"  
Routed to Reach SWALE : Swale Abutting Entry Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,622	98	Paved parking, HSG D
22,171	80	>75% Grass cover, Good, HSG D
1,090	61	>75% Grass cover, Good, HSG B
24,883	80	Weighted Average
23,261		93.48% Pervious Area
1,622		6.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-8: Cul-de-Sac/Garage Turn Around**

Runoff = 2.91 cfs @ 12.09 hrs, Volume= 9,946 cf, Depth= 5.35"  
Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
16,606	98	Paved parking, HSG D
5,702	80	>75% Grass cover, Good, HSG D
22,308	93	Weighted Average
5,702		25.56% Pervious Area
16,606		74.44% Impervious Area



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 Type III 24-hr 25-Year Rainfall=6.17"

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-9: North Courtyard/Green Roof**

Runoff = 1.80 cfs @ 12.09 hrs, Volume= 5,839 cf, Depth= 4.57"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,058	98	Unconnected roofs, HSG D
10,270	80	>75% Grass cover, Good, HSG D
15,328	86	Weighted Average
10,270		67.00% Pervious Area
5,058		33.00% Impervious Area
5,058		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Reach SWALE: Swale Abutting Entry Driveway**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 3.93" for 25-Year event  
 Inflow = 2.57 cfs @ 12.09 hrs, Volume= 8,160 cf  
 Outflow = 2.30 cfs @ 12.13 hrs, Volume= 8,160 cf, Atten= 11%, Lag= 2.6 min  
 Routed to Pond 1P : CB-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.84 fps, Min. Travel Time= 3.9 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 14.5 min

Peak Storage= 532 cf @ 12.13 hrs  
 Average Depth at Peak Storage= 0.43' , Surface Width= 3.74'  
 Bank-Full Depth= 0.75' Flow Area= 2.6 sf, Capacity= 6.48 cfs

2.00' x 0.75' deep channel, n= 0.100 Earth, dense brush, high stage  
 Side Slope Z-value= 2.0 ' Top Width= 5.00'  
 Length= 427.0' Slope= 0.0714 ' / '  
 Inlet Invert= 98.00', Outlet Invert= 67.50'



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 Type III 24-hr 25-Year Rainfall=6.17"

**Summary for Pond 1P: CB-5**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 3.93" for 25-Year event  
 Inflow = 2.30 cfs @ 12.13 hrs, Volume= 8,160 cf  
 Outflow = 2.30 cfs @ 12.14 hrs, Volume= 8,109 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 2.30 cfs @ 12.14 hrs, Volume= 8,109 cf  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 64.59' @ 12.14 hrs Surf.Area= 13 sf Storage= 64 cf

Plug-Flow detention time= 6.2 min calculated for 8,105 cf (99% of inflow)  
 Center-of-Mass det. time= 2.3 min ( 823.6 - 821.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	101 cf	<b>4.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	<b>12.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 58.50' S= 0.0833 ' / ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.26 cfs @ 12.14 hrs HW=64.57' (Free Discharge)  
 1=Culvert (Inlet Controls 2.26 cfs @ 2.88 fps)

**Summary for Pond RG-1: New Rain Garden/Bioretenion Area**

Inflow Area = 102,814 sf, 18.69% Impervious, Inflow Depth = 4.02" for 25-Year event  
 Inflow = 10.25 cfs @ 12.10 hrs, Volume= 34,460 cf  
 Outflow = 8.64 cfs @ 12.17 hrs, Volume= 34,488 cf, Atten= 16%, Lag= 4.1 min  
 Discarded = 0.15 cfs @ 12.17 hrs, Volume= 16,633 cf  
 Primary = 8.49 cfs @ 12.17 hrs, Volume= 17,855 cf  
 Routed to Link SP-1 : Study Point #1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 62.48' @ 12.17 hrs Surf.Area= 6,529 sf Storage= 10,920 cf

Plug-Flow detention time= 443.1 min calculated for 34,452 cf (100% of inflow)  
 Center-of-Mass det. time= 445.5 min ( 1,253.9 - 808.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	57.00'	19,856 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	1,595	339.0	0.0	0	0	1,595
58.00	1,595	339.0	40.0	638	638	1,934
60.00	1,595	339.0	30.0	957	1,595	2,612
61.00	3,030	530.0	100.0	2,274	3,869	15,827
62.00	5,418	764.0	100.0	4,167	8,036	39,932
63.00	7,829	798.0	100.0	6,587	14,623	44,230
63.60	9,647	832.0	100.0	5,233	19,856	48,667

Device	Routing	Invert	Outlet Devices
#1	Primary	62.26'	<b>30.0' long x 15.0' breadth Emergency Overflow - RipRap</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 <b>1.020 in/hr Exfiltration - In-Situ Soil - Sandy Loam over Surface area</b> Phase-In= 0.01'
#2	Discarded	57.00'	

**Discarded OutFlow** Max=0.15 cfs @ 12.17 hrs HW=62.48' (Free Discharge)  
 ↳2=Exfiltration - In-Situ Soil - Sandy Loam (Exfiltration Controls 0.15 cfs)

**Primary OutFlow** Max=8.06 cfs @ 12.17 hrs HW=62.48' (Free Discharge)  
 ↳1=Emergency Overflow - RipRap (Weir Controls 8.06 cfs @ 1.25 fps)

**Summary for Pond RG-2: Filtering Rain Garden-2 - At Site Entrance**

Inflow Area = 32,462 sf, 32.40% Impervious, Inflow Depth = 4.32" for 25-Year event  
 Inflow = 3.55 cfs @ 12.09 hrs, Volume= 11,679 cf  
 Outflow = 3.40 cfs @ 12.11 hrs, Volume= 11,681 cf, Atten= 4%, Lag= 1.1 min  
 Primary = 3.40 cfs @ 12.11 hrs, Volume= 11,681 cf  
 Routed to Pond SP-4 : Study Point #4  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond SP-4 : Study Point #4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 51.45' @ 12.11 hrs Surf.Area= 1,432 sf Storage= 1,819 cf  
 Flood Elev= 51.20' Surf.Area= 1,289 sf Storage= 1,474 cf

Plug-Flow detention time= 164.2 min calculated for 11,674 cf (100% of inflow)  
 Center-of-Mass det. time= 164.7 min ( 960.7 - 796.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.20'	3,701 cf	<b>Rain Garden (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.20	912	158.0	0.0	0	0	912
47.70	912	158.0	40.0	182	182	991
50.00	912	158.0	0.0	0	182	1,354
51.00	1,182	168.0	100.0	1,044	1,226	1,661
52.00	1,764	204.0	100.0	1,463	2,690	2,743
52.50	2,292	220.0	100.0	1,011	3,701	3,293

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Device	Routing	Invert	Outlet Devices
#1	Primary	47.20'	<b>18.0" Round 18" HDPE</b> L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.20' / 46.60' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	51.20'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 8.00 columns</b> X 8 rows C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads
#3	Secondary	51.55'	<b>10.0' long x 18.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	47.20'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Primary OutFlow** Max=3.33 cfs @ 12.11 hrs HW=51.45' (Free Discharge)  
 ↳1=18" HDPE (Passes 3.33 cfs of 12.57 cfs potential flow)  
 ↳2=Orifice/Grate (Weir Controls 3.29 cfs @ 1.64 fps)  
 ↳4=Exfiltration (Exfiltration Controls 0.03 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=47.20' (Free Discharge)  
 ↳3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond SP-4: Study Point #4**

Inflow Area = 551,689 sf, 24.54% Impervious, Inflow Depth = 2.72" for 25-Year event  
 Inflow = 28.59 cfs @ 12.17 hrs, Volume= 124,835 cf  
 Outflow = 13.84 cfs @ 12.52 hrs, Volume= 124,835 cf, Atten= 52%, Lag= 20.6 min  
 Primary = 13.84 cfs @ 12.52 hrs, Volume= 124,835 cf  
 Routed to nonexistent node 3L

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 50.53' @ 12.52 hrs Surf.Area= 16,099 sf Storage= 21,445 cf  
 Flood Elev= 52.00' Surf.Area= 20,910 sf Storage= 50,821 cf

Plug-Flow detention time= 9.4 min calculated for 124,770 cf (100% of inflow)  
 Center-of-Mass det. time= 9.4 min ( 846.7 - 837.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	292,924 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	74	35.0	0	0	74
48.00	970	145.0	437	437	1,652
49.00	7,933	434.0	3,892	4,330	14,971
50.00	11,795	605.0	9,800	14,130	29,119
51.00	20,540	853.0	15,967	30,097	57,902
52.00	20,910	855.0	20,725	50,821	58,799
55.00	162,840	2,123.0	242,102	292,924	359,325

Device	Routing	Invert	Outlet Devices
#1	Primary	46.64'	<b>18.0" Round Existing 18" RCP</b> L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 46.64' / 46.38' S= 0.0032 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

**Primary OutFlow** Max=13.84 cfs @ 12.52 hrs HW=50.52' (Free Discharge)  
 ↳1=Existing 18" RCP (Barrel Controls 13.84 cfs @ 7.83 fps)

**Summary for Pond UIS-1: UIS-1 - Southwest Lawn (96" CMP)**

Inflow Area = 112,106 sf, 73.62% Impervious, Inflow Depth = 5.25" for 25-Year event  
 Inflow = 13.75 cfs @ 12.09 hrs, Volume= 49,030 cf  
 Outflow = 0.21 cfs @ 7.75 hrs, Volume= 49,030 cf, Atten= 98%, Lag= 0.0 min  
 Discarded = 0.21 cfs @ 7.75 hrs, Volume= 49,030 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 106.36' @ 19.72 hrs Surf.Area= 8,946 sf Storage= 35,159 cf  
 Flood Elev= 107.00' Surf.Area= 8,946 sf Storage= 39,886 cf

Plug-Flow detention time= 1,465.6 min calculated for 49,004 cf (100% of inflow)  
 Center-of-Mass det. time= 1,466.3 min ( 2,234.0 - 767.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	101.00'	15,457 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 80,514 cf Overall - 41,871 cf Embedded = 38,643 cf x 40.0% Voids
#2	101.50'	41,871 cf	<b>CMP Round 96 @ 833.00' L</b> Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 833.00'L = 41,871.1 cf Overall Size= 96.0"W x 96.0"H x 20.00'L
		57,328 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
101.00	8,946	502.1	0	0	8,946
110.00	8,946	502.1	80,514	80,514	13,465

Device	Routing	Invert	Outlet Devices
#1	Primary	105.29'	<b>12.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.29' / 104.85' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	101.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#3	Device 1	107.00'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

**Discarded OutFlow** Max=0.21 cfs @ 7.75 hrs HW=101.09' (Free Discharge)  
 ↳2=Exfiltration (Exfiltration Controls 0.21 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.00' (Free Discharge)  
 ↳1=Culvert ( Controls 0.00 cfs)  
 ↳3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond UIS-2: UIS-2 - MC-3500**

Inflow Area = 158,364 sf, 77.91% Impervious, Inflow Depth = 1.66" for 25-Year event  
 Inflow = 6.17 cfs @ 12.09 hrs, Volume= 21,945 cf  
 Outflow = 0.23 cfs @ 9.35 hrs, Volume= 21,945 cf, Atten= 96%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 9.35 hrs, Volume= 21,945 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 108.90' @ 15.35 hrs Surf.Area= 4,059 sf Storage= 11,542 cf  
 Flood Elev= 109.85' Surf.Area= 4,059 sf Storage= 13,139 cf

Plug-Flow detention time= 438.2 min calculated for 21,945 cf (100% of inflow)  
 Center-of-Mass det. time= 438.2 min ( 1,193.5 - 755.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	104.75'	5,693 cf	<b>44.25'W x 91.74'L x 5.50'H Field A</b> 22,327 cf Overall - 8,095 cf Embedded = 14,232 cf x 40.0% Voids
#2A	105.50'	8,095 cf	<b>ADS StormTech MC-3500 d +Cap</b> x 72 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 72 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		13,788 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	105.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.50' / 104.50' S= 0.0200 '/ Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	109.85'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Discarded	104.75'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 9.35 hrs HW=104.81' (Free Discharge)  
 ←3=Exfiltration (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=104.75' (Free Discharge)  
 ←1=Culvert ( Controls 0.00 cfs)  
 ←2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Link SP-1: Study Point #1**

Inflow Area = 150,765 sf, 12.75% Impervious, Inflow Depth = 2.45" for 25-Year event  
 Inflow = 12.05 cfs @ 12.16 hrs, Volume= 30,763 cf  
 Primary = 12.05 cfs @ 12.16 hrs, Volume= 30,763 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-2: Study Point #2**

Inflow Area = 27,475 sf, 0.00% Impervious, Inflow Depth = 2.48" for 25-Year event  
 Inflow = 1.56 cfs @ 12.15 hrs, Volume= 5,668 cf  
 Primary = 1.56 cfs @ 12.15 hrs, Volume= 5,668 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-3: Study Point #3**

Inflow Area = 13,369 sf, 0.00% Impervious, Inflow Depth = 3.23" for 25-Year event  
 Inflow = 1.09 cfs @ 12.11 hrs, Volume= 3,599 cf  
 Primary = 1.09 cfs @ 12.11 hrs, Volume= 3,599 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4A: Study Point #4A - Wetlands "A"**

Inflow Area = 519,227 sf, 24.04% Impervious, Inflow Depth = 2.62" for 25-Year event  
 Inflow = 25.72 cfs @ 12.19 hrs, Volume= 113,154 cf  
 Primary = 25.72 cfs @ 12.19 hrs, Volume= 113,154 cf, Atten= 0%, Lag= 0.0 min  
 Routed to Pond SP-4 : Study Point #4

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4B: Study Point 4B - Vernal Pool "A"**

Inflow Area = 400,973 sf, 31.03% Impervious, Inflow Depth = 2.32" for 25-Year event  
 Inflow = 17.71 cfs @ 12.24 hrs, Volume= 77,403 cf  
 Primary = 17.71 cfs @ 12.24 hrs, Volume= 77,403 cf, Atten= 0%, Lag= 0.0 min  
 Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

**Subcatchment P-1: Flow to Wetlands - North** Runoff Area=47,951 sf 0.00% Impervious Runoff Depth=5.53"  
 Flow Length=148' Tc=9.7 min CN=73 Runoff=6.18 cfs 22,077 cf

**Subcatchment P-10: Proposed Building** Runoff Area=30,352 sf 100.00% Impervious Runoff Depth=8.56"  
 Tc=6.0 min CN=98 Runoff=5.88 cfs 21,650 cf

**Subcatchment P-11: South Courtyard** Runoff Area=20,180 sf 100.00% Impervious Runoff Depth=8.56"  
 Tc=6.0 min CN=98 Runoff=3.91 cfs 14,395 cf

**Subcatchment P-12: Southeast Roof Area** Runoff Area=27,254 sf 100.00% Impervious Runoff Depth=8.56"  
 Tc=6.0 min CN=98 Runoff=5.28 cfs 19,441 cf

**Subcatchment P-13: Main Parking Area** Runoff Area=19,004 sf 71.58% Impervious Runoff Depth=7.96"  
 Tc=6.0 min CN=93 Runoff=3.60 cfs 12,601 cf

**Subcatchment P-14: Southwest Lawn -** Runoff Area=23,938 sf 43.16% Impervious Runoff Depth=6.62"  
 Flow Length=132' Tc=9.2 min CN=82 Runoff=3.65 cfs 13,210 cf

**Subcatchment P-15: Lawn/Fire Access** Runoff Area=43,953 sf 21.71% Impervious Runoff Depth=6.87"  
 Tc=6.0 min CN=84 Runoff=7.65 cfs 25,147 cf

**Subcatchment P-16: Entry Driveway** Runoff Area=10,714 sf 75.16% Impervious Runoff Depth=8.08"  
 Tc=6.0 min CN=94 Runoff=2.04 cfs 7,212 cf

**Subcatchment P-17: Bio-retention/Rain** Runoff Area=23,264 sf 0.00% Impervious Runoff Depth=5.04"  
 Tc=6.0 min CN=69 Runoff=3.09 cfs 9,766 cf

**Subcatchment P-18: Southwest Lawn - Back** Runoff Area=20,245 sf 3.38% Impervious Runoff Depth=4.79"  
 Flow Length=212' Slope=0.0100 '/' Tc=14.8 min CN=67 Runoff=1.98 cfs 8,087 cf

**Subcatchment P-2: Direct Flow to Wetlands** Runoff Area=27,475 sf 0.00% Impervious Runoff Depth=4.55"  
 Flow Length=230' Tc=9.7 min CN=65 Runoff=2.92 cfs 10,419 cf

**Subcatchment P-3: Flow Southwest Off-Site** Runoff Area=13,369 sf 0.00% Impervious Runoff Depth=5.53"  
 Flow Length=62' Slope=0.3000 '/' Tc=7.4 min CN=73 Runoff=1.86 cfs 6,155 cf

**Subcatchment P-4A: Flow Southeast to** Runoff Area=118,254 sf 0.35% Impervious Runoff Depth=6.01"  
 Flow Length=346' Tc=8.9 min CN=77 Runoff=16.89 cfs 59,255 cf

**Subcatchment P-4B: Flow Southeast to** Runoff Area=222,364 sf 0.17% Impervious Runoff Depth=6.38"  
 Flow Length=878' Tc=17.5 min CN=80 Runoff=26.62 cfs 118,200 cf

**Subcatchment P-5: Entrance Drive** Runoff Area=18,638 sf 53.72% Impervious Runoff Depth=7.72"  
 Tc=6.0 min CN=91 Runoff=3.49 cfs 11,983 cf

**Subcatchment P-6: Landcaped Slope/Walls** Runoff Area=13,824 sf 3.65% Impervious Runoff Depth=5.53"  
 Tc=6.0 min Ul Adjusted CN=73 Runoff=2.01 cfs 6,365 cf

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**Subcatchment P-7: Landscaped Slope** Runoff Area=24,883 sf 6.52% Impervious Runoff Depth=6.38"  
 Tc=6.0 min CN=80 Runoff=4.09 cfs 13,227 cf

**Subcatchment P-8: Cul-de-Sac/Garage** Runoff Area=22,308 sf 74.44% Impervious Runoff Depth=7.96"  
 Tc=6.0 min CN=93 Runoff=4.23 cfs 14,792 cf

**Subcatchment P-9: North Courtyard/Green** Runoff Area=15,328 sf 33.00% Impervious Runoff Depth=7.11"  
 Tc=6.0 min CN=86 Runoff=2.73 cfs 9,080 cf

**Reach SWALE: Swale Abutting Entry** Avg. Flow Depth=0.56' Max Vel=2.11 fps Inflow=4.09 cfs 13,227 cf  
 n=0.100 L=427.0' S=0.0714 '/' Capacity=6.48 cfs Outflow=3.72 cfs 13,227 cf

**Pond 1P: CB-5** Peak Elev=65.55' Storage=76 cf Inflow=3.72 cfs 13,227 cf  
 12.0" Round Culvert n=0.012 L=60.0' S=0.0833 '/' Outflow=3.73 cfs 13,177 cf

**Pond RG-1: New Rain Garden/Bioretention** Peak Elev=62.59' Storage=11,611 cf Inflow=16.30 cfs 55,302 cf  
 Discarded=0.16 cfs 17,308 cf Primary=15.18 cfs 38,011 cf Outflow=15.34 cfs 55,319 cf

**Pond RG-2: Filtering Rain Garden-2 - At Site** Peak Elev=51.56' Storage=1,967 cf Inflow=5.49 cfs 18,348 cf  
 Primary=5.15 cfs 18,336 cf Secondary=0.02 cfs 4 cf Outflow=5.17 cfs 18,341 cf

**Pond SP-4: Study Point #4** Peak Elev=51.94' Storage=49,605 cf Inflow=46.39 cfs 225,938 cf  
 18.0" Round Culvert n=0.012 L=82.0' S=0.0032 '/' Outflow=17.15 cfs 225,938 cf

**Pond UIS-1: UIS-1 - Southwest Lawn (96")** Peak Elev=107.31' Storage=42,099 cf Inflow=20.21 cfs 73,128 cf  
 Discarded=0.21 cfs 55,598 cf Primary=1.95 cfs 17,525 cf Outflow=2.16 cfs 73,123 cf

**Pond UIS-2: UIS-2 - MC-3500** Peak Elev=110.22' Storage=13,747 cf Inflow=8.89 cfs 49,567 cf  
 Discarded=0.23 cfs 27,512 cf Primary=2.67 cfs 22,055 cf Outflow=2.90 cfs 49,567 cf

**Link SP-1: Study Point #1** Inflow=21.17 cfs 60,089 cf  
 Primary=21.17 cfs 60,089 cf

**Link SP-2: Study Point #2** Inflow=2.92 cfs 10,419 cf  
 Primary=2.92 cfs 10,419 cf

**Link SP-3: Study Point #3** Inflow=1.86 cfs 6,155 cf  
 Primary=1.86 cfs 6,155 cf

**Link SP-4A: Study Point #4A - Wetlands "A"** Inflow=41.78 cfs 207,597 cf  
 Primary=41.78 cfs 207,597 cf

**Link SP-4B: Study Point 4B - Vernal Pool "A"** Inflow=28.43 cfs 148,342 cf  
 Primary=28.43 cfs 148,342 cf

**Total Runoff Area = 743,298 sf Runoff Volume = 403,062 cf Average Runoff Depth = 6.51"**  
**79.20% Pervious = 588,714 sf 20.80% Impervious = 154,584 sf**

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**Summary for Subcatchment P-1: Flow to Wetlands - North**

Runoff = 6.18 cfs @ 12.14 hrs, Volume= 22,077 cf, Depth= 5.53"  
 Routed to Link SP-1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
5,253	48	Brush, Good, HSG B
6,353	73	Brush, Good, HSG D
1,517	55	Woods, Good, HSG B
34,828	77	Woods, Good, HSG D
47,951	73	Weighted Average
47,951		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.2120	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.3	98	0.2620	1.28		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
9.7	148				Total

**Summary for Subcatchment P-10: Proposed Building Roof**

Runoff = 5.88 cfs @ 12.09 hrs, Volume= 21,650 cf, Depth= 8.56"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
30,352	98	Unconnected roofs, HSG D
30,352		100.00% Impervious Area
30,352		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-11: South Courtyard**

Runoff = 3.91 cfs @ 12.09 hrs, Volume= 14,395 cf, Depth= 8.56"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

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Area (sf)	CN	Description
20,180	98	Unconnected pavement, HSG D
20,180		100.00% Impervious Area
20,180		100.00% Unconnected

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

**Summary for Subcatchment P-12: Southeast Roof Area**

Runoff = 5.28 cfs @ 12.09 hrs, Volume= 19,441 cf, Depth= 8.56"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
27,254	98	Unconnected roofs, HSG D
27,254		100.00% Impervious Area
27,254		100.00% Unconnected

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

**Summary for Subcatchment P-13: Main Parking Area**

Runoff = 3.60 cfs @ 12.09 hrs, Volume= 12,601 cf, Depth= 7.96"  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
13,604	98	Unconnected pavement, HSG D
5,400	80	>75% Grass cover, Good, HSG D
19,004	93	Weighted Average
5,400		28.42% Pervious Area
13,604		71.58% Impervious Area
13,604		100.00% Unconnected

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

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**Summary for Subcatchment P-14: Southwest Lawn - Front**

Runoff = 3.65 cfs @ 12.13 hrs, Volume= 13,210 cf, Depth= 6.62"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
10,332	98	Paved parking, HSG D
6,889	61	>75% Grass cover, Good, HSG B
6,717	80	>75% Grass cover, Good, HSG D
23,938	82	Weighted Average
13,606		56.84% Pervious Area
10,332		43.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.16"
1.0	82	0.0360	1.33		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.2	132				Total

**Summary for Subcatchment P-15: Lawn/Fire Access**

Runoff = 7.65 cfs @ 12.09 hrs, Volume= 25,147 cf, Depth= 6.87"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
9,543	98	Paved parking, HSG D
3,854	80	GrassPave2, Good, HSG D
30,556	80	>75% Grass cover, Good, HSG D
43,953	84	Weighted Average
34,410		78.29% Pervious Area
9,543		21.71% Impervious Area

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

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**Summary for Subcatchment P-16: Entry Driveway**

Runoff = 2.04 cfs @ 12.09 hrs, Volume= 7,212 cf, Depth= 8.08"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
2,672	98	Paved parking, HSG B
5,381	98	Paved parking, HSG D
2,661	80	>75% Grass cover, Good, HSG D
10,714	94	Weighted Average
2,661		24.84% Pervious Area
8,053		75.16% Impervious Area

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

**Summary for Subcatchment P-17: Bio-retention/Rain Garden**

Runoff = 3.09 cfs @ 12.09 hrs, Volume= 9,766 cf, Depth= 5.04"  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
12,971	61	>75% Grass cover, Good, HSG B
6,335	80	>75% Grass cover, Good, HSG D
503	98	Water Surface, 0% imp, HSG B
1,092	98	Water Surface, 0% imp, HSG D
1,518	55	Woods, Good, HSG B
845	77	Woods, Good, HSG D
23,264	69	Weighted Average
23,264		100.00% Pervious Area

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

**Summary for Subcatchment P-18: Southwest Lawn - Back**

Runoff = 1.98 cfs @ 12.21 hrs, Volume= 8,087 cf, Depth= 4.79"  
 Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

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Area (sf)	CN	Description
684	98	Paved parking, HSG D
14,032	61	>75% Grass cover, Good, HSG B
5,529	80	>75% Grass cover, Good, HSG D
20,245	67	Weighted Average
19,561		96.62% Pervious Area
684		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.16"
3.9	162	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
14.8	212				Total

**Summary for Subcatchment P-2: Direct Flow to Wetlands "F"**

Runoff = 2.92 cfs @ 12.14 hrs, Volume= 10,419 cf, Depth= 4.55"  
 Routed to Link SP-2 : Study Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
1,025	61	>75% Grass cover, Good, HSG B
14,775	55	Woods, Good, HSG B
11,675	77	Woods, Good, HSG D
27,475	65	Weighted Average
27,475		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.2980	0.11		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.16"
2.4	180	0.2580	1.27		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
9.7	230				Total

**Summary for Subcatchment P-3: Flow Southwest Off-Site**

Runoff = 1.86 cfs @ 12.11 hrs, Volume= 6,155 cf, Depth= 5.53"  
 Routed to Link SP-3 : Study Point #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

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Area (sf)	CN	Description
6,978	80	>75% Grass cover, Good, HSG D
3,182	55	Woods, Good, HSG B
3,209	77	Woods, Good, HSG D
13,369	73	Weighted Average
13,369		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.3000	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
0.1	12	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
7.4	62	Total			

**Summary for Subcatchment P-4A: Flow Southeast to Wetlands "A"**

Runoff = 16.89 cfs @ 12.12 hrs, Volume= 59,255 cf, Depth= 6.01"  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
410	98	Unconnected pavement, HSG D
12,410	80	>75% Grass cover, Good, HSG D
105,434	77	Woods, Good, HSG D
118,254	77	Weighted Average
117,844		99.65% Pervious Area
410		0.35% Impervious Area
410		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.3700	0.12		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
1.7	136	0.3000	1.37		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.5	160		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
8.9	346	Total			

**Summary for Subcatchment P-4B: Flow Southeast to Wetlands "A"**

Runoff = 26.62 cfs @ 12.24 hrs, Volume= 118,200 cf, Depth= 6.38"  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-Year Rainfall=8.80"

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Area (sf)	CN	Description
368	98	Unconnected roofs, HSG B
2,977	80	>75% Grass cover, Good, HSG D
2,029	55	Woods, Good, HSG B
181,109	77	Woods, Good, HSG D
35,881	98	Water Surface, 0% imp, HSG D
222,364	80	Weighted Average
221,996		99.83% Pervious Area
368		0.17% Impervious Area
368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	50	0.1030	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.16"
4.4	190	0.0825	0.72		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
1.9	638		5.67		<b>Lake or Reservoir,</b> Mean Depth= 1.00'
17.5	878	Total			

**Summary for Subcatchment P-5: Entrance Drive**

Runoff = 3.49 cfs @ 12.09 hrs, Volume= 11,983 cf, Depth= 7.72"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
10,013	98	Paved parking, HSG D
7,713	80	>75% Grass cover, Good, HSG D
912	98	Water Surface, 0% imp, HSG D
18,638	91	Weighted Average
8,625		46.28% Pervious Area
10,013		53.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-6: Landcaped Slope/Walls**

Runoff = 2.01 cfs @ 12.09 hrs, Volume= 6,365 cf, Depth= 5.53"  
Routed to Pond RG-2 : Filtering Rain Garden-2 - At Site Entrance

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-Year Rainfall=8.80"



Area (sf)	CN	Adj	Description
13,319	73		Brush, Good, HSG D
505	98		Unconnected pavement, HSG D
13,824	74	73	Weighted Average, UI Adjusted
13,319			96.35% Pervious Area
505			3.65% Impervious Area
505			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc</b>

**Summary for Subcatchment P-7: Landscaped Slope**

Runoff = 4.09 cfs @ 12.09 hrs, Volume= 13,227 cf, Depth= 6.38"  
 Routed to Reach SWALE : Swale Abutting Entry Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
1,622	98	Paved parking, HSG D
22,171	80	>75% Grass cover, Good, HSG D
1,090	61	>75% Grass cover, Good, HSG B
24,883	80	Weighted Average
23,261		93.48% Pervious Area
1,622		6.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-8: Cul-de-Sac/Garage Turn Around**

Runoff = 4.23 cfs @ 12.09 hrs, Volume= 14,792 cf, Depth= 7.96"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
16,606	98	Paved parking, HSG D
5,702	80	>75% Grass cover, Good, HSG D
22,308	93	Weighted Average
5,702		25.56% Pervious Area
16,606		74.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Subcatchment P-9: North Courtyard/Green Roof**

Runoff = 2.73 cfs @ 12.09 hrs, Volume= 9,080 cf, Depth= 7.11"  
 Routed to Pond UIS-1 : UIS-1 - Southwest Lawn (96" CMP)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=8.80"

Area (sf)	CN	Description
5,058	98	Unconnected roofs, HSG D
10,270	80	>75% Grass cover, Good, HSG D
15,328	86	Weighted Average
10,270		67.00% Pervious Area
5,058		33.00% Impervious Area
5,058		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Min. Tc.</b>

**Summary for Reach SWALE: Swale Abutting Entry Driveway**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 6.38" for 100-Year event  
 Inflow = 4.09 cfs @ 12.09 hrs, Volume= 13,227 cf  
 Outflow = 3.72 cfs @ 12.13 hrs, Volume= 13,227 cf, Atten= 9%, Lag= 2.2 min  
 Routed to Pond 1P : CB-5

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.11 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 12.7 min

Peak Storage= 750 cf @ 12.13 hrs  
 Average Depth at Peak Storage= 0.56' , Surface Width= 4.25'  
 Bank-Full Depth= 0.75' Flow Area= 2.6 sf, Capacity= 6.48 cfs

2.00' x 0.75' deep channel, n= 0.100 Earth, dense brush, high stage  
 Side Slope Z-value= 2.0 ' / ' Top Width= 5.00'  
 Length= 427.0' Slope= 0.0714 ' / '  
 Inlet Invert= 98.00', Outlet Invert= 67.50'



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 Type III 24-hr 100-Year Rainfall=8.80"

**Summary for Pond 1P: CB-5**

Inflow Area = 24,883 sf, 6.52% Impervious, Inflow Depth = 6.38" for 100-Year event  
 Inflow = 3.72 cfs @ 12.13 hrs, Volume= 13,227 cf  
 Outflow = 3.73 cfs @ 12.13 hrs, Volume= 13,177 cf, Atten= 0%, Lag= 0.3 min  
 Primary = 3.73 cfs @ 12.13 hrs, Volume= 13,177 cf  
 Routed to Pond RG-1 : New Rain Garden/Bioretenion Area

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 65.55' @ 12.13 hrs Surf.Area= 13 sf Storage= 76 cf

Plug-Flow detention time= 4.5 min calculated for 13,177 cf (100% of inflow)  
 Center-of-Mass det. time= 1.8 min ( 808.3 - 806.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	101 cf	4.00'D x 8.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	<b>12.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 58.50' S= 0.0833 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.64 cfs @ 12.13 hrs HW=65.49' (Free Discharge)  
 1=Culvert (Inlet Controls 3.64 cfs @ 4.64 fps)

**Summary for Pond RG-1: New Rain Garden/Bioretenion Area**

Inflow Area = 102,814 sf, 18.69% Impervious, Inflow Depth = 6.45" for 100-Year event  
 Inflow = 16.30 cfs @ 12.10 hrs, Volume= 55,302 cf  
 Outflow = 15.34 cfs @ 12.12 hrs, Volume= 55,319 cf, Atten= 6%, Lag= 1.5 min  
 Discarded = 0.16 cfs @ 12.12 hrs, Volume= 17,308 cf  
 Primary = 15.18 cfs @ 12.12 hrs, Volume= 38,011 cf  
 Routed to Link SP-1 : Study Point #1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 62.59' @ 12.12 hrs Surf.Area= 6,781 sf Storage= 11,611 cf

Plug-Flow detention time= 289.3 min calculated for 55,291 cf (100% of inflow)  
 Center-of-Mass det. time= 290.6 min ( 1,086.6 - 796.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	57.00'	19,856 cf	Custom Stage Data (Irregular) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	1,595	339.0	0.0	0	0	1,595
58.00	1,595	339.0	40.0	638	638	1,934
60.00	1,595	339.0	30.0	957	1,595	2,612
61.00	3,030	530.0	100.0	2,274	3,869	15,827
62.00	5,418	764.0	100.0	4,167	8,036	39,932
63.00	7,829	798.0	100.0	6,587	14,623	44,230
63.60	9,647	832.0	100.0	5,233	19,856	48,667

Device	Routing	Invert	Outlet Devices
#1	Primary	62.26'	<b>30.0' long x 15.0' breadth Emergency Overflow - RipRap</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 <b>1.020 in/hr Exfiltration - In-Situ Soil - Sandy Loam over Surface area</b> Phase-In= 0.01'
#2	Discarded	57.00'	

**Discarded OutFlow** Max=0.16 cfs @ 12.12 hrs HW=62.58' (Free Discharge)  
 2=Exfiltration - In-Situ Soil - Sandy Loam (Exfiltration Controls 0.16 cfs)

**Primary OutFlow** Max=14.71 cfs @ 12.12 hrs HW=62.58' (Free Discharge)  
 1=Emergency Overflow - RipRap (Weir Controls 14.71 cfs @ 1.53 fps)

**Summary for Pond RG-2: Filtering Rain Garden-2 - At Site Entrance**

Inflow Area = 32,462 sf, 32.40% Impervious, Inflow Depth = 6.78" for 100-Year event  
 Inflow = 5.49 cfs @ 12.09 hrs, Volume= 18,348 cf  
 Outflow = 5.17 cfs @ 12.11 hrs, Volume= 18,341 cf, Atten= 6%, Lag= 1.2 min  
 Primary = 5.15 cfs @ 12.11 hrs, Volume= 18,336 cf  
 Routed to Pond SP-4 : Study Point #4  
 Secondary = 0.02 cfs @ 12.10 hrs, Volume= 4 cf  
 Routed to Pond SP-4 : Study Point #4

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 51.56' @ 12.11 hrs Surf.Area= 1,491 sf Storage= 1,967 cf  
 Flood Elev= 51.20' Surf.Area= 1,289 sf Storage= 1,474 cf

Plug-Flow detention time= 112.0 min calculated for 18,331 cf (100% of inflow)  
 Center-of-Mass det. time= 112.2 min ( 897.6 - 785.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.20'	3,701 cf	Rain Garden (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.20	912	158.0	0.0	0	0	912
47.70	912	158.0	40.0	182	182	991
50.00	912	158.0	0.0	0	182	1,354
51.00	1,182	168.0	100.0	1,044	1,226	1,661
52.00	1,764	204.0	100.0	1,463	2,690	2,743
52.50	2,292	220.0	100.0	1,011	3,701	3,293

Device	Routing	Invert	Outlet Devices
#1	Primary	47.20'	<b>18.0" Round 18" HDPE</b> L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.20' / 46.60' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	51.20'	<b>2.0" x 2.0" Horiz. Orifice/Grate X 8.00 columns</b> X 8 rows C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads
#3	Secondary	51.55'	<b>10.0' long x 18.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	47.20'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Primary OutFlow** Max=5.10 cfs @ 12.11 hrs HW=51.55' (Free Discharge)  
 ↳1=18" HDPE (Passes 5.10 cfs of 12.74 cfs potential flow)  
 ↳2=Orifice/Grate (Orifice Controls 5.06 cfs @ 2.85 fps)  
 ↳4=Exfiltration (Exfiltration Controls 0.04 cfs)

**Secondary OutFlow** Max=0.01 cfs @ 12.10 hrs HW=51.55' (Free Discharge)  
 ↳3=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.17 fps)

**Summary for Pond SP-4: Study Point #4**

Inflow Area = 551,689 sf, 24.54% Impervious, Inflow Depth = 4.91" for 100-Year event  
 Inflow = 46.39 cfs @ 12.17 hrs, Volume= 225,938 cf  
 Outflow = 17.15 cfs @ 12.63 hrs, Volume= 225,938 cf, Atten= 63%, Lag= 27.8 min  
 Primary = 17.15 cfs @ 12.63 hrs, Volume= 225,938 cf  
 Routed to nonexistent node 3L

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 51.94' @ 12.63 hrs Surf.Area= 20,888 sf Storage= 49,605 cf  
 Flood Elev= 52.00' Surf.Area= 20,910 sf Storage= 50,821 cf

Plug-Flow detention time= 19.9 min calculated for 225,820 cf (100% of inflow)  
 Center-of-Mass det. time= 19.9 min ( 841.1 - 821.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	47.00'	292,924 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	74	35.0	0	0	74
48.00	970	145.0	437	437	1,652
49.00	7,933	434.0	3,892	4,330	14,971
50.00	11,795	605.0	9,800	14,130	29,119
51.00	20,540	853.0	15,967	30,097	57,902
52.00	20,910	855.0	20,725	50,821	58,799
55.00	162,840	2,123.0	242,102	292,924	359,325

Device	Routing	Invert	Outlet Devices
#1	Primary	46.64'	<b>18.0" Round Existing 18" RCP</b> L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 46.64' / 46.38' S= 0.0032 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

**Primary OutFlow** Max=17.14 cfs @ 12.63 hrs HW=51.94' (Free Discharge)  
 ↳1=Existing 18" RCP (Barrel Controls 17.14 cfs @ 9.70 fps)

**Summary for Pond UIS-1: UIS-1 - Southwest Lawn (96" CMP)**

Inflow Area = 112,106 sf, 73.62% Impervious, Inflow Depth = 7.83" for 100-Year event  
 Inflow = 20.21 cfs @ 12.09 hrs, Volume= 73,128 cf  
 Outflow = 2.16 cfs @ 12.85 hrs, Volume= 73,123 cf, Atten= 89%, Lag= 45.3 min  
 Discarded = 0.21 cfs @ 6.20 hrs, Volume= 55,598 cf  
 Primary = 1.95 cfs @ 12.85 hrs, Volume= 17,525 cf  
 Routed to Pond UIS-2 : UIS-2 - MC-3500

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 107.31' @ 12.85 hrs Surf.Area= 8,946 sf Storage= 42,099 cf  
 Flood Elev= 107.00' Surf.Area= 8,946 sf Storage= 39,886 cf

Plug-Flow detention time= 1,278.4 min calculated for 73,085 cf (100% of inflow)  
 Center-of-Mass det. time= 1,279.4 min ( 2,040.0 - 760.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	101.00'	15,457 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 80,514 cf Overall - 41,871 cf Embedded = 38,643 cf x 40.0% Voids
#2	101.50'	41,871 cf	<b>CMP Round 96 @ 833.00' L</b> Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 833.00'L = 41,871.1 cf Overall Size= 96.0"W x 96.0"H x 20.00'L
		57,328 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
101.00	8,946	502.1	0	0	8,946
110.00	8,946	502.1	80,514	80,514	13,465

Device	Routing	Invert	Outlet Devices
#1	Primary	105.29'	<b>12.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.29' / 104.85' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Discarded	101.00'	<b>1.020 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'
#3	Device 1	107.00'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

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**Discarded OutFlow** Max=0.21 cfs @ 6.20 hrs HW=101.09' (Free Discharge)  
↳ **2=Exfiltration** (Exfiltration Controls 0.21 cfs)

**Primary OutFlow** Max=1.95 cfs @ 12.85 hrs HW=107.31' (Free Discharge)  
↳ **1=Culvert** (Passes 1.95 cfs of 3.68 cfs potential flow)  
↳ **3=Broad-Crested Rectangular Weir** (Weir Controls 1.95 cfs @ 1.59 fps)

**Summary for Pond UIS-2: UIS-2 - MC-3500**

Inflow Area = 158,364 sf, 77.91% Impervious, Inflow Depth = 3.76" for 100-Year event  
Inflow = 8.89 cfs @ 12.09 hrs, Volume= 49,567 cf  
Outflow = 2.90 cfs @ 12.39 hrs, Volume= 49,567 cf, Atten= 67%, Lag= 18.1 min  
Discarded = 0.23 cfs @ 8.30 hrs, Volume= 27,512 cf  
Primary = 2.67 cfs @ 12.39 hrs, Volume= 22,055 cf  
Routed to Link SP-4B : Study Point 4B - Vernal Pool "A"

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Peak Elev= 110.22' @ 12.39 hrs Surf.Area= 4,059 sf Storage= 13,747 cf  
Flood Elev= 109.85' Surf.Area= 4,059 sf Storage= 13,139 cf

Plug-Flow detention time= 305.5 min calculated for 49,541 cf (100% of inflow)  
Center-of-Mass det. time= 305.8 min ( 1,105.9 - 800.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	104.75'	5,693 cf	<b>44.25"W x 91.74"L x 5.50"H Field A</b> 22,327 cf Overall - 8,095 cf Embedded = 14,232 cf x 40.0% Voids
#2A	105.50'	8,095 cf	<b>ADS_StormTech MC-3500 d +Cap</b> x 72 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 72 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		13,788 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	105.50'	<b>15.0" Round Culvert</b> L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 105.50' / 104.50' S= 0.0200 ' /' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	109.85'	<b>4.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Discarded	104.75'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

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**Discarded OutFlow** Max=0.23 cfs @ 8.30 hrs HW=104.81' (Free Discharge)  
↳ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

**Primary OutFlow** Max=2.63 cfs @ 12.39 hrs HW=110.22' (Free Discharge)  
↳ **1=Culvert** (Passes 2.63 cfs of 9.44 cfs potential flow)  
↳ **2=Broad-Crested Rectangular Weir** (Weir Controls 2.63 cfs @ 1.77 fps)

**Summary for Link SP-1: Study Point #1**

Inflow Area = 150,765 sf, 12.75% Impervious, Inflow Depth = 4.78" for 100-Year event  
Inflow = 21.17 cfs @ 12.13 hrs, Volume= 60,089 cf  
Primary = 21.17 cfs @ 12.13 hrs, Volume= 60,089 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-2: Study Point #2**

Inflow Area = 27,475 sf, 0.00% Impervious, Inflow Depth = 4.55" for 100-Year event  
Inflow = 2.92 cfs @ 12.14 hrs, Volume= 10,419 cf  
Primary = 2.92 cfs @ 12.14 hrs, Volume= 10,419 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-3: Study Point #3**

Inflow Area = 13,369 sf, 0.00% Impervious, Inflow Depth = 5.53" for 100-Year event  
Inflow = 1.86 cfs @ 12.11 hrs, Volume= 6,155 cf  
Primary = 1.86 cfs @ 12.11 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4A: Study Point #4A - Wetlands "A"**

Inflow Area = 519,227 sf, 24.04% Impervious, Inflow Depth = 4.80" for 100-Year event  
Inflow = 41.78 cfs @ 12.18 hrs, Volume= 207,597 cf  
Primary = 41.78 cfs @ 12.18 hrs, Volume= 207,597 cf, Atten= 0%, Lag= 0.0 min  
Routed to Pond SP-4 : Study Point #4

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP-4B: Study Point 4B - Vernal Pool "A"**

Inflow Area = 400,973 sf, 31.03% Impervious, Inflow Depth = 4.44" for 100-Year event  
Inflow = 28.43 cfs @ 12.24 hrs, Volume= 148,342 cf  
Primary = 28.43 cfs @ 12.24 hrs, Volume= 148,342 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link SP-4A : Study Point #4A - Wetlands "A"

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

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**Events for Subcatchment P-1: Flow to Wetlands - North**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.06	4,030	1.01
10-Year	4.88	2.43	8,738	2.19
25-Year	6.17	3.62	12,907	3.23
100-Year	<b>8.80</b>	<b>6.18</b>	<b>22,077</b>	<b>5.53</b>

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**Events for Subcatchment P-10: Proposed Building Roof**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	2.14	7,607	3.01
10-Year	4.88	3.25	11,745	4.64
25-Year	6.17	4.11	15,003	5.93
100-Year	<b>8.80</b>	<b>5.88</b>	<b>21,650</b>	<b>8.56</b>

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**Events for Subcatchment P-11: South Courtyard**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.42	5,057	3.01
10-Year	4.88	2.16	7,809	4.64
25-Year	6.17	2.74	9,975	5.93
100-Year	<b>8.80</b>	<b>3.91</b>	<b>14,395</b>	<b>8.56</b>

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**Events for Subcatchment P-12: Southeast Roof Area**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.92	6,830	3.01
10-Year	4.88	2.92	10,546	4.64
25-Year	6.17	3.69	13,472	5.93
100-Year	<b>8.80</b>	<b>5.28</b>	<b>19,441</b>	<b>8.56</b>

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**Events for Subcatchment P-13: Main Parking Area**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.20	3,934	2.48
10-Year	4.88	1.92	6,462	4.08
25-Year	6.17	2.48	8,473	5.35
100-Year	<b>8.80</b>	<b>3.60</b>	<b>12,601</b>	<b>7.96</b>

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**Events for Subcatchment P-14: Southwest Lawn - Front**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.89	3,133	1.57
10-Year	4.88	1.68	5,929	2.97
25-Year	6.17	2.33	8,266	4.14
100-Year	<b>8.80</b>	<b>3.65</b>	<b>13,210</b>	<b>6.62</b>

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**Events for Subcatchment P-15: Lawn/Fire Access**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.99	6,285	1.72
10-Year	4.88	3.64	11,577	3.16
25-Year	6.17	4.96	15,954	4.36
100-Year	<b>8.80</b>	<b>7.65</b>	<b>25,147</b>	<b>6.87</b>

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**Events for Subcatchment P-16: Entry Driveway**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.70	2,306	2.58
10-Year	4.88	1.10	3,741	4.19
25-Year	6.17	1.41	4,879	5.47
100-Year	<b>8.80</b>	<b>2.04</b>	<b>7,212</b>	<b>8.08</b>



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**Events for Subcatchment P-17: Bio-retention/Rain Garden**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.44	1,555	0.80
10-Year	4.88	1.12	3,626	1.87
25-Year	6.17	1.74	5,517	2.85
100-Year	<b>8.80</b>	<b>3.09</b>	<b>9,766</b>	<b>5.04</b>

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**Events for Subcatchment P-18: Southwest Lawn - Back**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.24	1,195	0.71
10-Year	4.88	0.68	2,902	1.72
25-Year	6.17	1.08	4,486	2.66
100-Year	<b>8.80</b>	<b>1.98</b>	<b>8,087</b>	<b>4.79</b>

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**Events for Subcatchment P-2: Direct Flow to Wetlands "F"**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.31	1,419	0.62
10-Year	4.88	0.96	3,604	1.57
25-Year	6.17	1.56	5,668	2.48
100-Year	<b>8.80</b>	<b>2.92</b>	<b>10,419</b>	<b>4.55</b>

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**Events for Subcatchment P-3: Flow Southwest Off-Site**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.32	1,124	1.01
10-Year	4.88	0.73	2,436	2.19
25-Year	6.17	1.09	3,599	3.23
100-Year	<b>8.80</b>	<b>1.86</b>	<b>6,155</b>	<b>5.53</b>

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**Events for Subcatchment P-4A: Flow Southeast to Wetlands "A"**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	3.41	12,224	1.24
10-Year	4.88	7.12	24,862	2.52
25-Year	6.17	10.23	35,752	3.63
100-Year	<b>8.80</b>	<b>16.89</b>	<b>59,255</b>	<b>6.01</b>

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**Events for Subcatchment P-4B: Flow Southeast to Wetlands "A"**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	6.00	26,549	1.43
10-Year	4.88	11.84	51,671	2.79
25-Year	6.17	16.65	72,917	3.93
100-Year	<b>8.80</b>	<b>26.62</b>	<b>118,200</b>	<b>6.38</b>

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**Events for Subcatchment P-5: Entrance Drive**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.11	3,566	2.30
10-Year	4.88	1.82	6,004	3.87
25-Year	6.17	2.37	7,958	5.12
100-Year	<b>8.80</b>	<b>3.49</b>	<b>11,983</b>	<b>7.72</b>

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**Events for Subcatchment P-6: Landcaped Slope/Walls**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.35	1,162	1.01
10-Year	4.88	0.79	2,519	2.19
25-Year	6.17	1.18	3,721	3.23
100-Year	<b>8.80</b>	<b>2.01</b>	<b>6,365</b>	<b>5.53</b>

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**Events for Subcatchment P-7: Landscaped Slope**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.93	2,971	1.43
10-Year	4.88	1.83	5,782	2.79
25-Year	6.17	2.57	8,160	3.93
100-Year	<b>8.80</b>	<b>4.09</b>	<b>13,227</b>	<b>6.38</b>

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**Events for Subcatchment P-8: Cul-de-Sac/Garage Turn Around**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	1.41	4,618	2.48
10-Year	4.88	2.25	7,585	4.08
25-Year	6.17	2.91	9,946	5.35
100-Year	<b>8.80</b>	<b>4.23</b>	<b>14,792</b>	<b>7.96</b>

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**Events for Subcatchment P-9: North Courtyard/Green Roof**

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2-Year	3.24	0.76	2,389	1.87
10-Year	4.88	1.34	4,286	3.36
25-Year	6.17	1.80	5,839	4.57
100-Year	<b>8.80</b>	<b>2.73</b>	<b>9,080</b>	<b>7.11</b>

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**Events for Reach SWALE: Swale Abutting Entry Driveway**

Event	Inflow (cfs)	Outflow (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	0.93	0.79	2,971	98.24
10-Year	1.83	1.61	5,782	98.36
25-Year	2.57	2.30	8,160	98.43
100-Year	<b>4.09</b>	<b>3.72</b>	<b>13,227</b>	<b>98.56</b>

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**Events for Pond 1P: CB-5**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	0.79	0.79	2,921	64.02
10-Year	1.61	1.62	5,732	64.30
25-Year	2.30	2.30	8,109	64.59
100-Year	<b>3.72</b>	<b>3.73</b>	<b>13,177</b>	<b>65.55</b>

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**Events for Pond RG-1: New Rain Garden/Bioretenention Area**

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	3.82	0.13	0.13	0.00	0	62.07
10-Year	7.35	3.25	0.15	3.11	8,729	62.37
25-Year	10.25	8.64	0.15	8.49	17,855	62.48
100-Year	<b>16.30</b>	<b>15.34</b>	<b>0.16</b>	<b>15.18</b>	<b>38,011</b>	<b>62.59</b>

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**Events for Pond RG-2: Filtering Rain Garden-2 - At Site Entrance**

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	1.45	0.78	0.78	0.00	4,717	51.29
10-Year	2.61	2.48	2.48	0.00	8,517	51.41
25-Year	3.55	3.40	3.40	0.00	11,681	51.45
100-Year	<b>5.49</b>	<b>5.17</b>	<b>5.15</b>	<b>0.02</b>	<b>18,336</b>	<b>51.56</b>

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**Events for Pond SP-4: Study Point #4**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	9.68	7.58	44,685	48.65
10-Year	20.13	11.65	87,951	49.75
25-Year	28.59	13.84	124,835	50.53
100-Year	<b>46.39</b>	<b>17.15</b>	<b>225,938</b>	<b>51.94</b>



**Events for Pond UIS-1: UIS-1 - Southwest Lawn (96" CMP)**

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	6.55	0.21	<b>0.21</b>	0.00	0	103.40
10-Year	10.57	0.21	0.21	0.00	0	105.02
25-Year	13.75	0.21	0.21	0.00	0	106.36
100-Year	<b>20.21</b>	<b>2.16</b>	0.21	<b>1.95</b>	<b>17,525</b>	<b>107.31</b>

**Events for Pond UIS-2: UIS-2 - MC-3500**

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	3.12	0.23	<b>0.23</b>	0.00	0	106.40
10-Year	4.84	0.23	0.23	0.00	0	107.59
25-Year	6.17	0.23	0.23	0.00	0	108.90
100-Year	<b>8.89</b>	<b>2.90</b>	0.23	<b>2.67</b>	<b>22,055</b>	<b>110.22</b>

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**Events for Link SP-1: Study Point #1**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	1.06	1.06	4,030	<b>0.00</b>
10-Year	4.62	4.62	17,467	0.00
25-Year	12.05	12.05	30,763	0.00
100-Year	<b>21.17</b>	<b>21.17</b>	<b>60,089</b>	0.00

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**Events for Link SP-2: Study Point #2**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	0.31	0.31	1,419	<b>0.00</b>
10-Year	0.96	0.96	3,604	0.00
25-Year	1.56	1.56	5,668	0.00
100-Year	<b>2.92</b>	<b>2.92</b>	<b>10,419</b>	0.00

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**Events for Link SP-3: Study Point #3**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	0.32	0.32	1,124	<b>0.00</b>
10-Year	0.73	0.73	2,436	0.00
25-Year	1.09	1.09	3,599	0.00
100-Year	<b>1.86</b>	<b>1.86</b>	<b>6,155</b>	0.00

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**Events for Link SP-4A: Study Point #4A - Wetlands "A"**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	8.88	8.88	39,968	<b>0.00</b>
10-Year	18.05	18.05	79,434	0.00
25-Year	25.72	25.72	113,154	0.00
100-Year	<b>41.78</b>	<b>41.78</b>	<b>207,597</b>	0.00

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**Events for Link SP-4B: Study Point 4B - Vernal Pool "A"**

Event	Inflow (cfs)	Primary (cfs)	Volume (cubic-feet)	Elevation (feet)
2-Year	6.25	6.25	27,744	<b>0.00</b>
10-Year	12.50	12.50	54,572	0.00
25-Year	17.71	17.71	77,403	0.00
100-Year	<b>28.43</b>	<b>28.43</b>	<b>148,342</b>	0.00