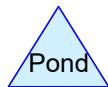
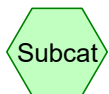


SEEPAGE BED #3A
(BMP #11)

bio-retention basin
#3b(BMP #12)



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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.230	40	>75% Grass cover, Good, HSG A (19S, 24S)
3.499	61	>75% Grass cover, Good, HSG B (24S)
1.374	74	>75% Grass cover, Good, HSG C (19S, 24S)
0.069	40	Meadow, non-grazed, HSG A (19S)
1.017	58	Meadow, non-grazed, HSG B (24S)
0.633	71	Meadow, non-grazed, HSG C (19S, 24S)
4.710	98	Paved parking & roofs (19S, 24S)
1.502	40	Woods, Good, HSG A (19S, 24S)
0.153	70	Woods, Good, HSG C (19S)
14.187	71	TOTAL AREA

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Post BMPs 11-12

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

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Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Runoff = 10.39 cfs @ 11.98 hrs, Volume= 0.497 af, Depth= 1.46"
 Routed to Pond 16P : seepage pit with chambers #3A

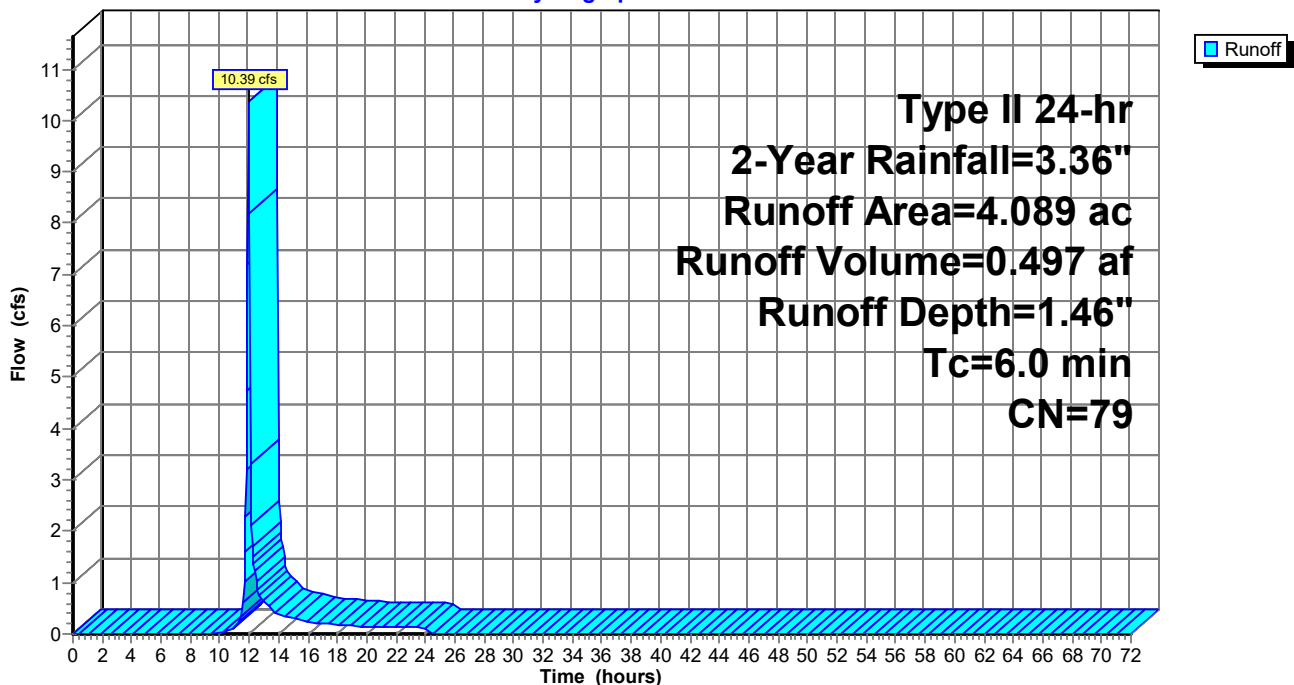
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
2.361	98	Paved parking & roofs
* 0.069	40	Meadow, non-grazed, HSG A
0.059	71	Meadow, non-grazed, HSG C
* 0.485	40	>75% Grass cover, Good, HSG A
0.485	74	>75% Grass cover, Good, HSG C
* 0.477	40	Woods, Good, HSG A
0.153	70	Woods, Good, HSG C
4.089	79	Weighted Average
1.728		42.26% Pervious Area
2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Hydrograph



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Post BMPs 11-12
Type II 24-hr 2-Year Rainfall=3.36"

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Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

Runoff = 5.51 cfs @ 12.30 hrs, Volume= 0.650 af, Depth= 0.77"
Routed to Pond 26P : bio-retention basin #3b

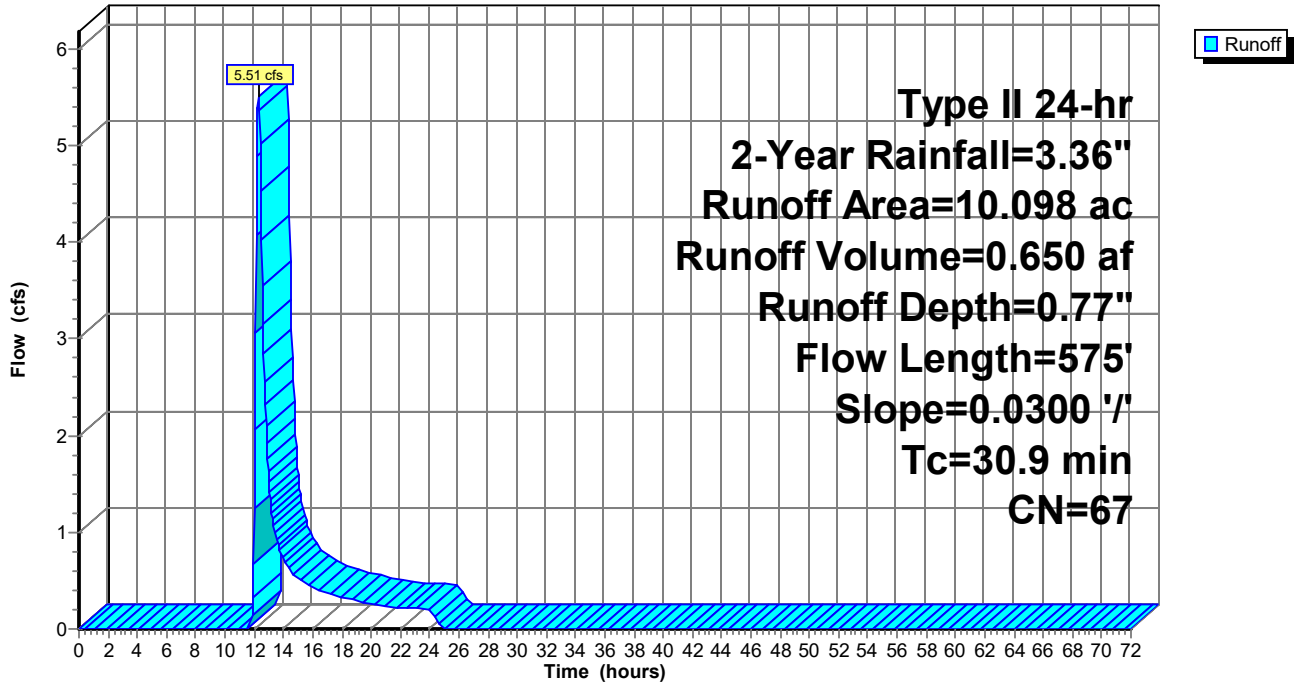
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
2.349	98	Paved parking & roofs
1.017	58	Meadow, non-grazed, HSG B
0.574	71	Meadow, non-grazed, HSG C
3.499	61	>75% Grass cover, Good, HSG B
0.126	74	>75% Grass cover, Good, HSG C
* 1.025	40	Woods, Good, HSG A
* 0.745	40	>75% Grass cover, Good, HSG A
0.763	74	>75% Grass cover, Good, HSG C
10.098	67	Weighted Average
7.749		76.74% Pervious Area
2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)

Hydrograph



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Post BMPs 11-12
Type II 24-hr 2-Year Rainfall=3.36"

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Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 1.46" for 2-Year event
 Inflow = 10.39 cfs @ 11.98 hrs, Volume= 0.497 af
 Outflow = 0.55 cfs @ 11.70 hrs, Volume= 0.497 af, Atten= 95%, Lag= 0.0 min
 Discarded = 0.55 cfs @ 11.70 hrs, Volume= 0.497 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,901.71' @ 13.19 hrs Surf.Area= 26,640 sf Storage= 9,810 cf

Plug-Flow detention time= 166.6 min calculated for 0.496 af (100% of inflow)
 Center-of-Mass det. time= 166.5 min (1,006.6 - 840.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	Cultec R-360HD x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

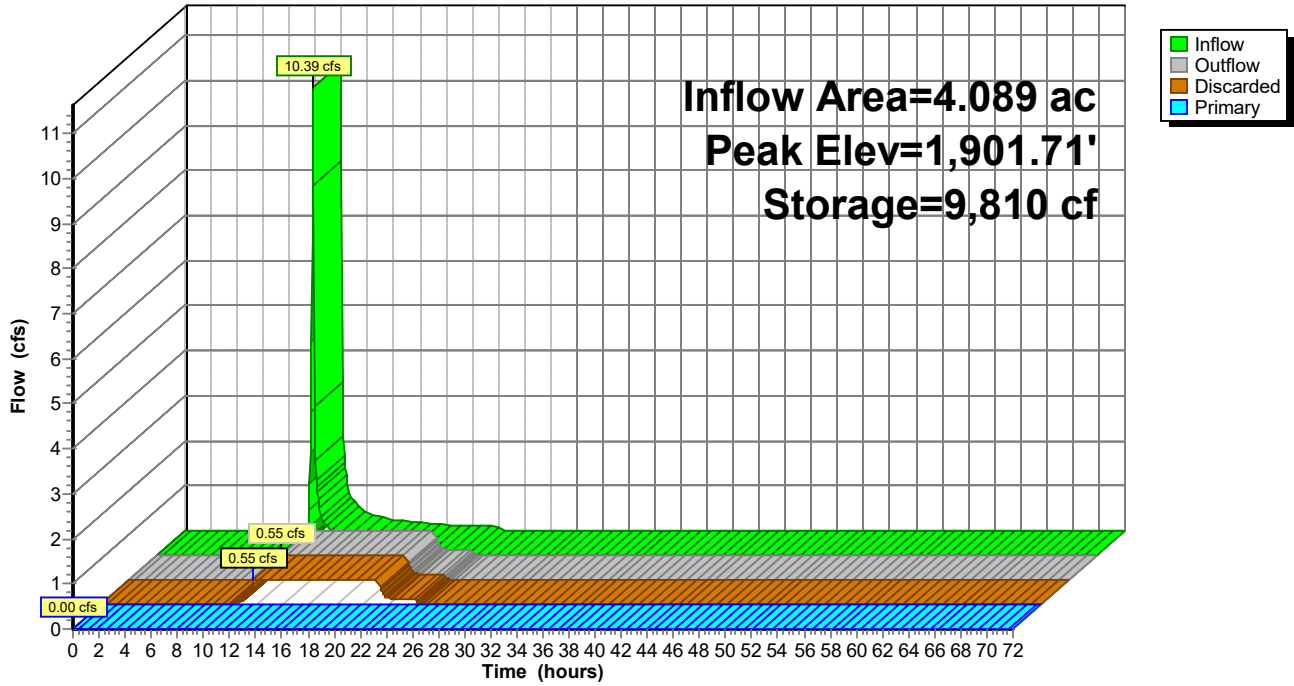
Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 ' S= 0.0250 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	0.900 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.55 cfs @ 11.70 hrs HW=1,901.05' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,901.00' (Free Discharge)
 ↑ **1=Culvert** (Controls 0.00 cfs)
 ↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Pond 16P: seepage pit with chambers #3A

Hydrograph



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

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Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 0.55" for 2-Year event
 Inflow = 5.51 cfs @ 12.30 hrs, Volume= 0.650 af
 Outflow = 0.66 cfs @ 14.22 hrs, Volume= 0.650 af, Atten= 88%, Lag= 115.2 min
 Discarded = 0.66 cfs @ 14.22 hrs, Volume= 0.650 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,891.50' @ 14.22 hrs Surf.Area= 23,671 sf Storage= 11,493 cf

Plug-Flow detention time= 185.9 min calculated for 0.650 af (100% of inflow)
 Center-of-Mass det. time= 185.9 min (1,088.9 - 903.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

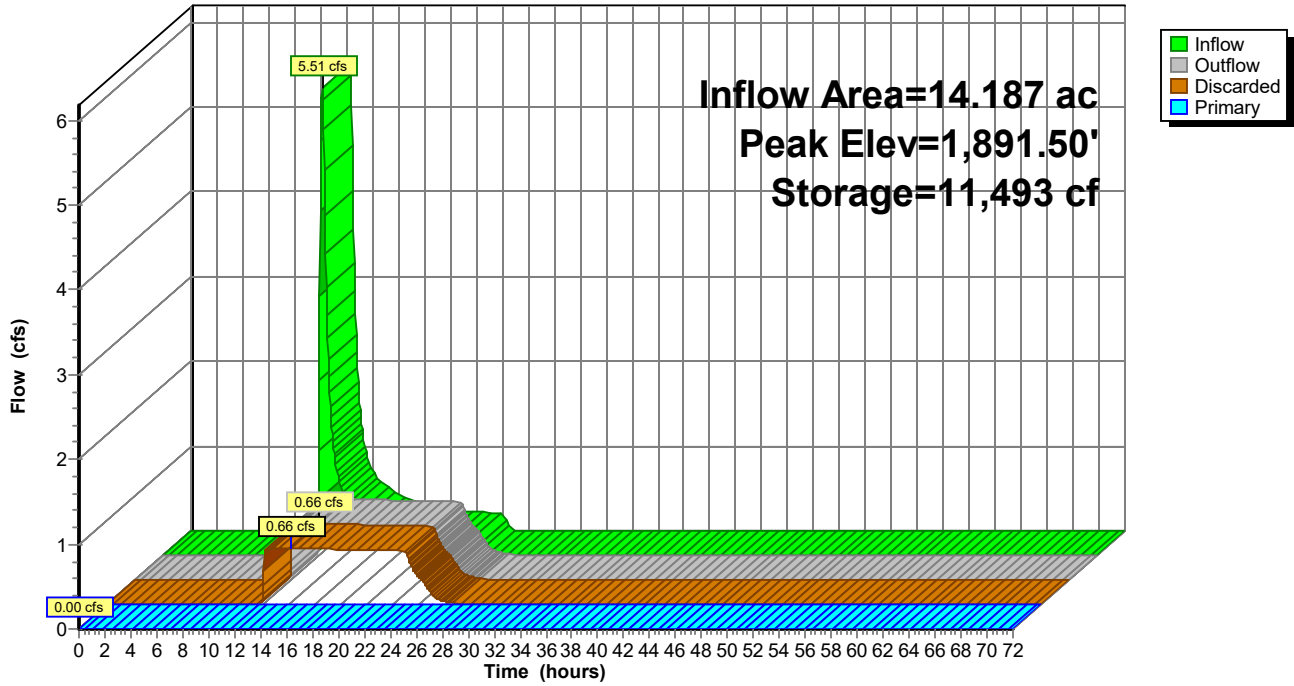
Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	3.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	1.200 in/hr Exfiltration over Surface area
#4	Device 1	1,896.60'	45.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.66 cfs @ 14.22 hrs HW=1,891.50' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.66 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,891.00' (Free Discharge)
 ↑ **1=Culvert** (Controls 0.00 cfs)
 ↑ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b

Hydrograph



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Type II 24-hr 10-Year Rainfall=5.28"

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Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Runoff = 21.24 cfs @ 11.97 hrs, Volume= 1.037 af, Depth= 3.04"
 Routed to Pond 16P : seepage pit with chambers #3A

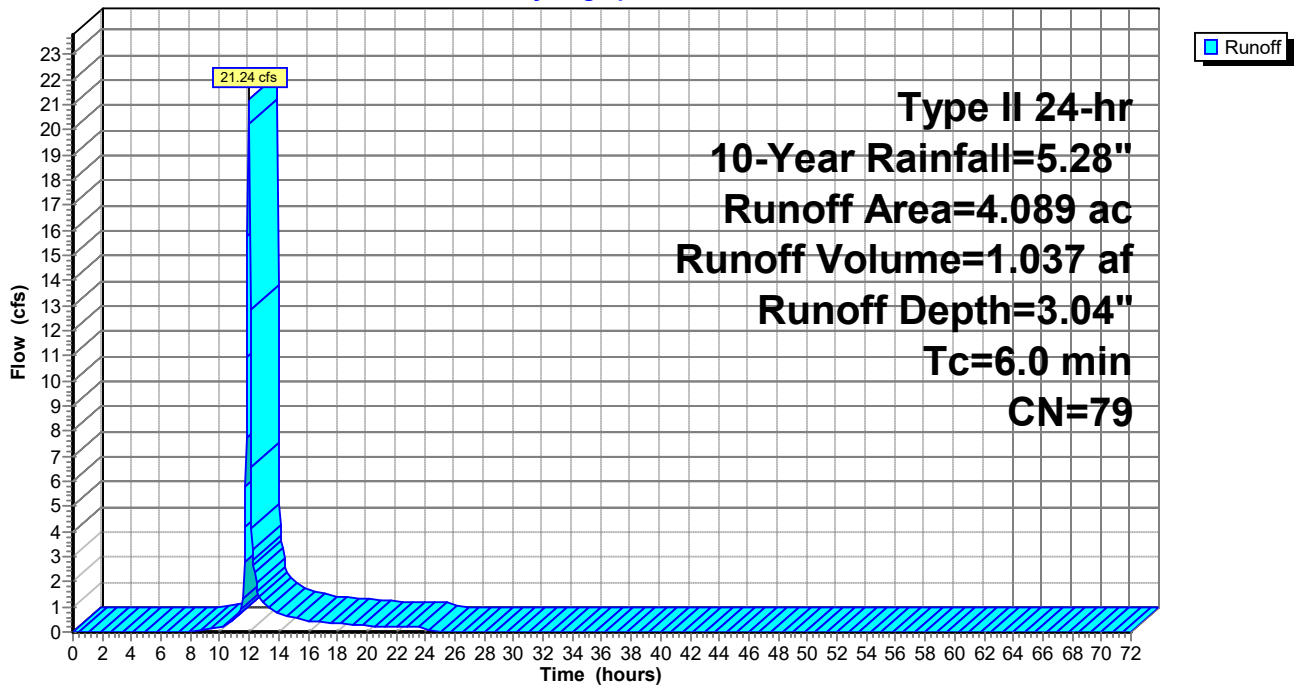
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
2.361	98	Paved parking & roofs
* 0.069	40	Meadow, non-grazed, HSG A
0.059	71	Meadow, non-grazed, HSG C
* 0.485	40	>75% Grass cover, Good, HSG A
0.485	74	>75% Grass cover, Good, HSG C
* 0.477	40	Woods, Good, HSG A
0.153	70	Woods, Good, HSG C
4.089	79	Weighted Average
1.728		42.26% Pervious Area
2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Hydrograph



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Post BMPs 11-12
 Type II 24-hr 10-Year Rainfall=5.28"

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Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

Runoff = 16.47 cfs @ 12.27 hrs, Volume= 1.684 af, Depth= 2.00"
 Routed to Pond 26P : bio-retention basin #3b

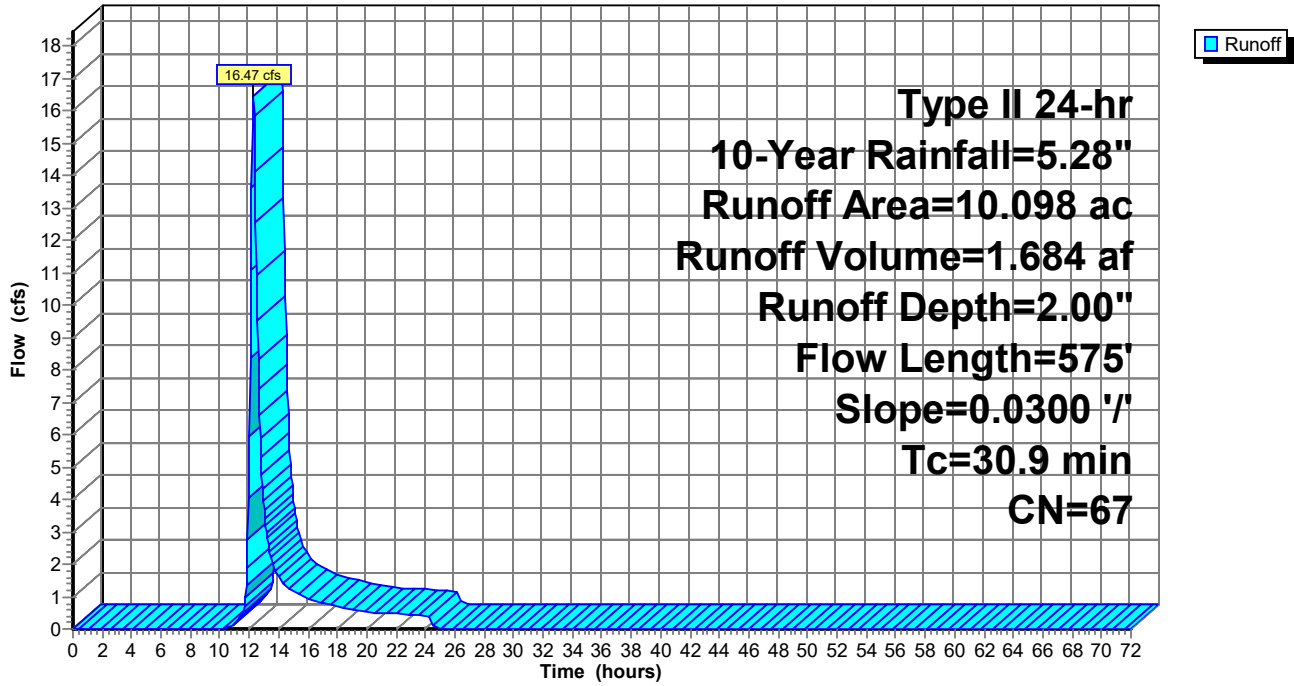
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
2.349	98	Paved parking & roofs
1.017	58	Meadow, non-grazed, HSG B
0.574	71	Meadow, non-grazed, HSG C
3.499	61	>75% Grass cover, Good, HSG B
0.126	74	>75% Grass cover, Good, HSG C
* 1.025	40	Woods, Good, HSG A
* 0.745	40	>75% Grass cover, Good, HSG A
0.763	74	>75% Grass cover, Good, HSG C
10.098	67	Weighted Average
7.749		76.74% Pervious Area
2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)

Hydrograph



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Post BMPs 11-12
Type II 24-hr 10-Year Rainfall=5.28"

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Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 3.04" for 10-Year event
 Inflow = 21.24 cfs @ 11.97 hrs, Volume= 1.037 af
 Outflow = 1.10 cfs @ 13.09 hrs, Volume= 1.037 af, Atten= 95%, Lag= 67.0 min
 Discarded = 0.55 cfs @ 11.25 hrs, Volume= 0.883 af
 Primary = 0.54 cfs @ 13.09 hrs, Volume= 0.154 af
 Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,902.31' @ 13.09 hrs Surf.Area= 26,640 sf Storage= 22,614 cf

Plug-Flow detention time= 319.2 min calculated for 1.037 af (100% of inflow)
 Center-of-Mass det. time= 319.2 min (1,138.2 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	Cultec R-360HD x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

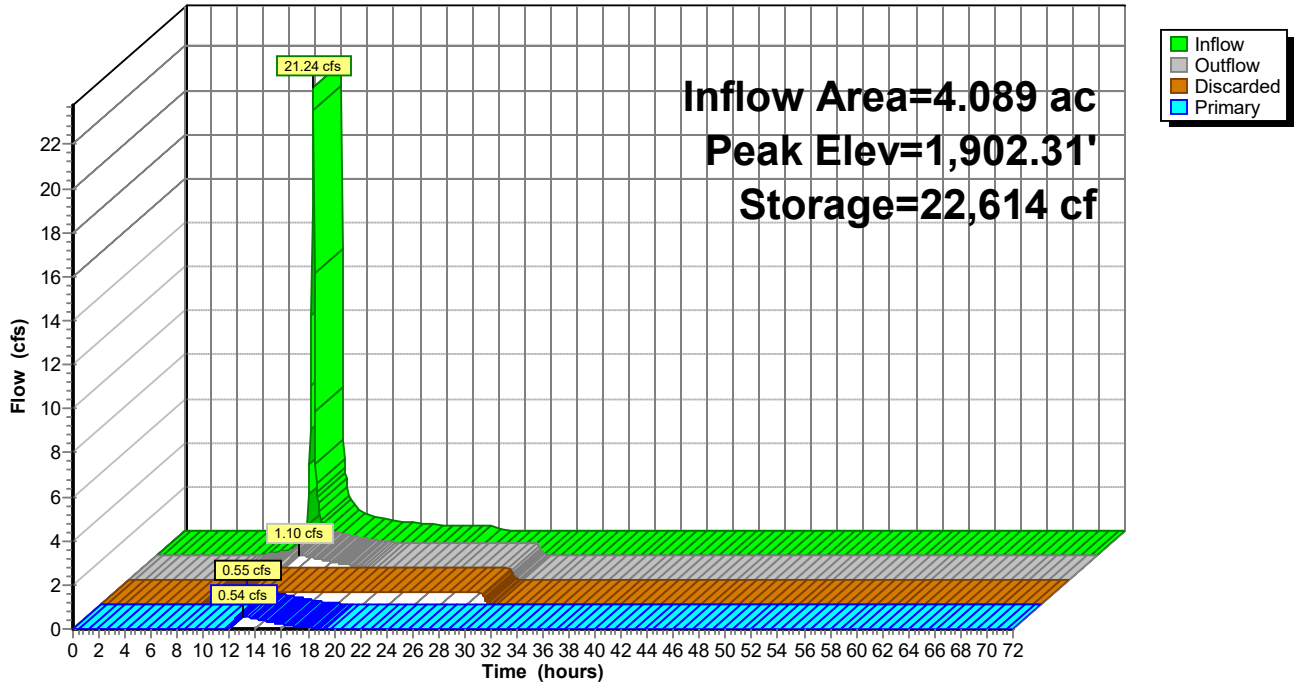
Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	0.900 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.55 cfs @ 11.25 hrs HW=1,901.04' (Free Discharge)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.54 cfs @ 13.09 hrs HW=1,902.31' (Free Discharge)
 ↳ **1=Culvert** (Passes 0.54 cfs of 7.46 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 1.77 fps)

Pond 16P: seepage pit with chambers #3A

Hydrograph



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Type II 24-hr 10-Year Rainfall=5.28"

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Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 1.55" for 10-Year event
Inflow = 16.81 cfs @ 12.27 hrs, Volume= 1.838 af
Outflow = 0.98 cfs @ 16.60 hrs, Volume= 1.838 af, Atten= 94%, Lag= 259.6 min
Discarded = 0.75 cfs @ 16.60 hrs, Volume= 1.594 af
Primary = 0.23 cfs @ 16.60 hrs, Volume= 0.244 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,892.92' @ 16.60 hrs Surf.Area= 27,142 sf Storage= 47,684 cf

Plug-Flow detention time= 585.7 min calculated for 1.836 af (100% of inflow)
Center-of-Mass det. time= 586.0 min (1,457.0 - 871.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

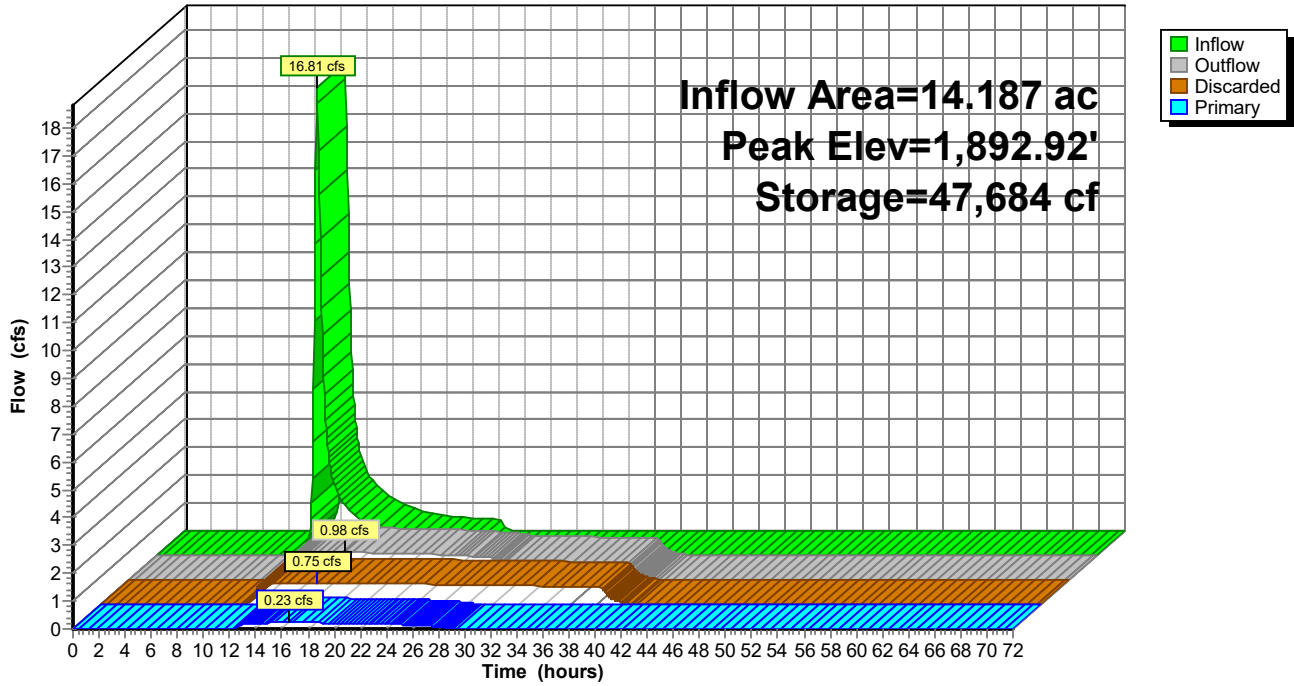
Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	3.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	1.200 in/hr Exfiltration over Surface area
#4	Device 1	1,896.60'	45.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.75 cfs @ 16.60 hrs HW=1,892.92' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.75 cfs)

Primary OutFlow Max=0.23 cfs @ 16.60 hrs HW=1,892.92' (Free Discharge)
↑**1=Culvert** (Passes 0.23 cfs of 12.92 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 4.63 fps)
↑**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b

Hydrograph



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Type II 24-hr 50-Year Rainfall=7.20"

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Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Runoff = 32.68 cfs @ 11.97 hrs, Volume= 1.625 af, Depth= 4.77"
 Routed to Pond 16P : seepage pit with chambers #3A

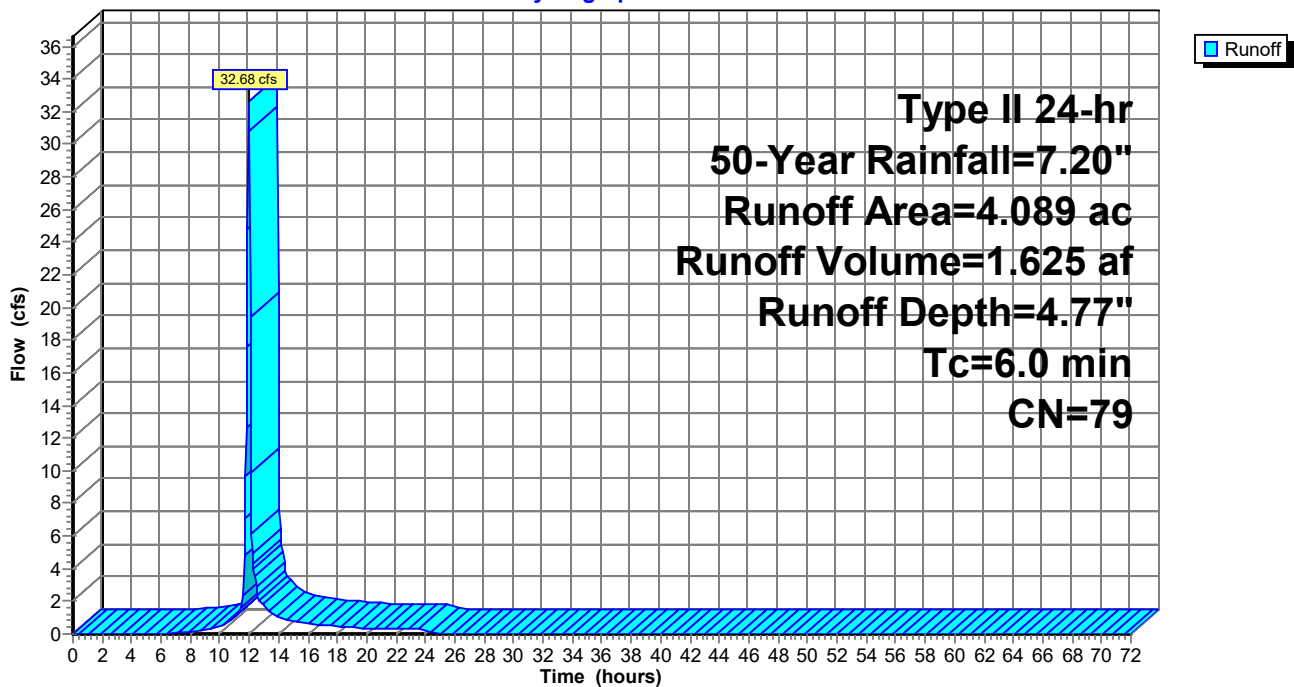
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
2.361	98	Paved parking & roofs
* 0.069	40	Meadow, non-grazed, HSG A
0.059	71	Meadow, non-grazed, HSG C
* 0.485	40	>75% Grass cover, Good, HSG A
0.485	74	>75% Grass cover, Good, HSG C
* 0.477	40	Woods, Good, HSG A
0.153	70	Woods, Good, HSG C
4.089	79	Weighted Average
1.728		42.26% Pervious Area
2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Hydrograph



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Type II 24-hr 50-Year Rainfall=7.20"

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Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

Runoff = 29.45 cfs @ 12.26 hrs, Volume= 2.918 af, Depth= 3.47"
Routed to Pond 26P : bio-retention basin #3b

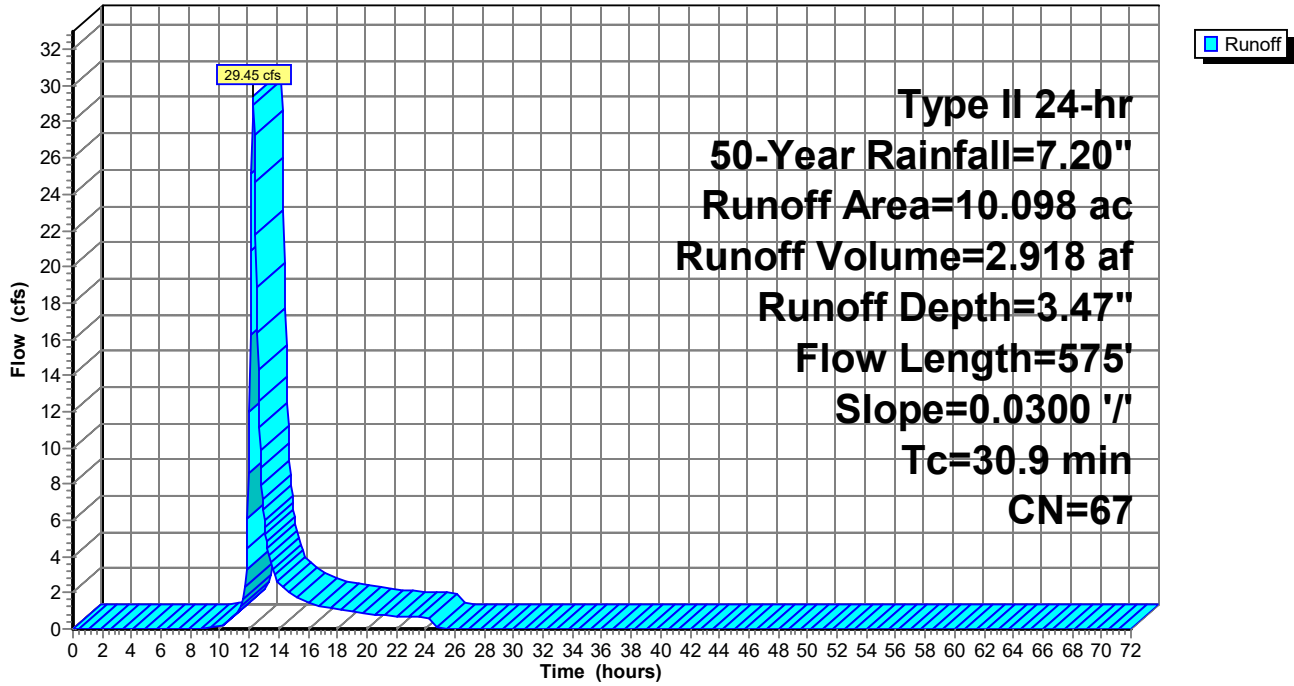
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
2.349	98	Paved parking & roofs
1.017	58	Meadow, non-grazed, HSG B
0.574	71	Meadow, non-grazed, HSG C
3.499	61	>75% Grass cover, Good, HSG B
0.126	74	>75% Grass cover, Good, HSG C
* 1.025	40	Woods, Good, HSG A
* 0.745	40	>75% Grass cover, Good, HSG A
0.763	74	>75% Grass cover, Good, HSG C
10.098	67	Weighted Average
7.749		76.74% Pervious Area
2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)

Hydrograph



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Post BMPs 11-12

Type II 24-hr 50-Year Rainfall=7.20"

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Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 4.77" for 50-Year event
 Inflow = 32.68 cfs @ 11.97 hrs, Volume= 1.625 af
 Outflow = 2.45 cfs @ 12.57 hrs, Volume= 1.625 af, Atten= 93%, Lag= 36.0 min
 Discarded = 0.55 cfs @ 10.50 hrs, Volume= 1.026 af
 Primary = 1.89 cfs @ 12.57 hrs, Volume= 0.599 af
 Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,902.88' @ 12.57 hrs Surf.Area= 26,640 sf Storage= 34,342 cf

Plug-Flow detention time= 277.9 min calculated for 1.623 af (100% of inflow)
 Center-of-Mass det. time= 278.1 min (1,084.3 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	Cultec R-360HD x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

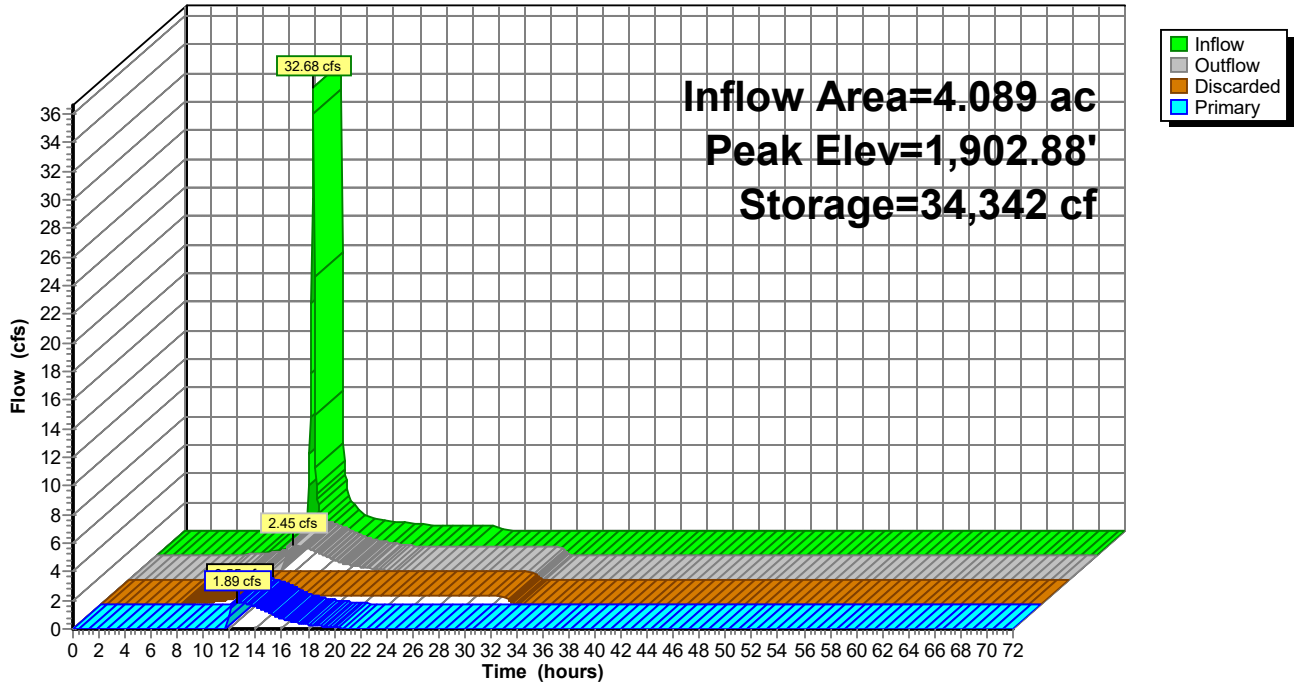
Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 ' S= 0.0250 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	0.900 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.55 cfs @ 10.50 hrs HW=1,901.04' (Free Discharge)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=1.89 cfs @ 12.57 hrs HW=1,902.88' (Free Discharge)
 ↳ **1=Culvert** (Passes 1.89 cfs of 12.60 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 1.89 cfs @ 3.79 fps)

Pond 16P: seepage pit with chambers #3A

Hydrograph



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Post BMPs 11-12

Type II 24-hr 50-Year Rainfall=7.20"

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Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 2.97" for 50-Year event
 Inflow = 31.26 cfs @ 12.26 hrs, Volume= 3.517 af
 Outflow = 1.29 cfs @ 18.43 hrs, Volume= 3.517 af, Atten= 96%, Lag= 370.3 min
 Discarded = 0.89 cfs @ 18.43 hrs, Volume= 2.745 af
 Primary = 0.40 cfs @ 18.43 hrs, Volume= 0.772 af
 Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,894.85' @ 18.43 hrs Surf.Area= 31,977 sf Storage= 104,463 cf

Plug-Flow detention time= 937.6 min calculated for 3.514 af (100% of inflow)
 Center-of-Mass det. time= 938.2 min (1,796.5 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

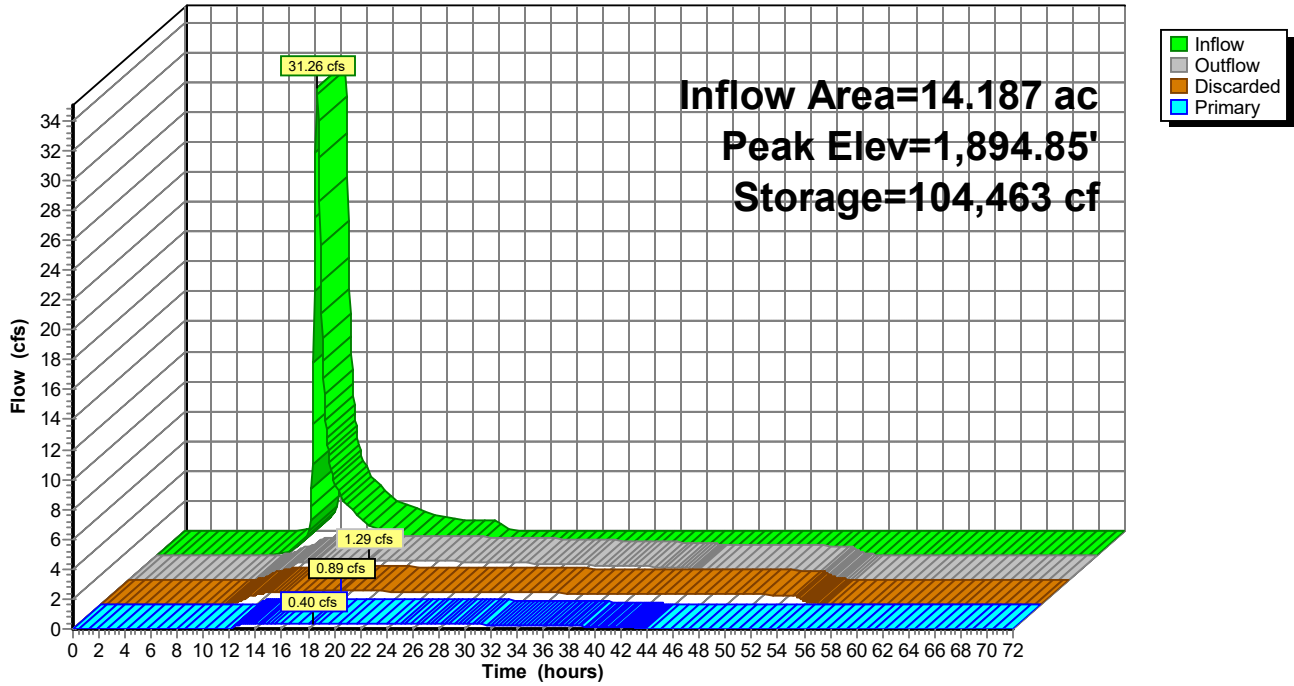
Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	3.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	1.200 in/hr Exfiltration over Surface area
#4	Device 1	1,896.60'	45.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.89 cfs @ 18.43 hrs HW=1,894.85' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.89 cfs)

Primary OutFlow Max=0.40 cfs @ 18.43 hrs HW=1,894.85' (Free Discharge)
 ↑ **1=Culvert** (Passes 0.40 cfs of 22.52 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.12 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b

Hydrograph



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Post BMPs 11-12
Type II 24-hr 100-Year Rainfall=8.40"

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Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Runoff = 39.88 cfs @ 11.97 hrs, Volume= 2.004 af, Depth= 5.88"
Routed to Pond 16P : seepage pit with chambers #3A

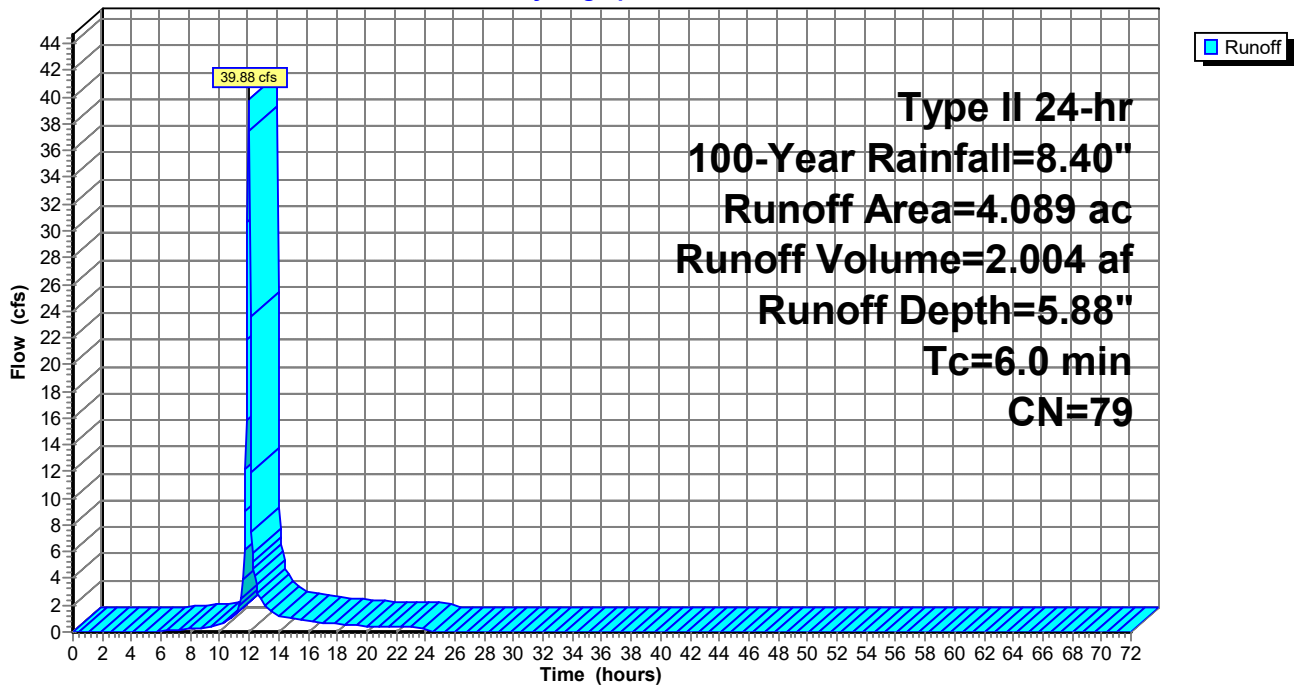
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
2.361	98	Paved parking & roofs
* 0.069	40	Meadow, non-grazed, HSG A
0.059	71	Meadow, non-grazed, HSG C
* 0.485	40	>75% Grass cover, Good, HSG A
0.485	74	>75% Grass cover, Good, HSG C
* 0.477	40	Woods, Good, HSG A
0.153	70	Woods, Good, HSG C
4.089	79	Weighted Average
1.728		42.26% Pervious Area
2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

Hydrograph



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Type II 24-hr 100-Year Rainfall=8.40"

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Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

Runoff = 38.09 cfs @ 12.26 hrs, Volume= 3.749 af, Depth= 4.46"
Routed to Pond 26P : bio-retention basin #3b

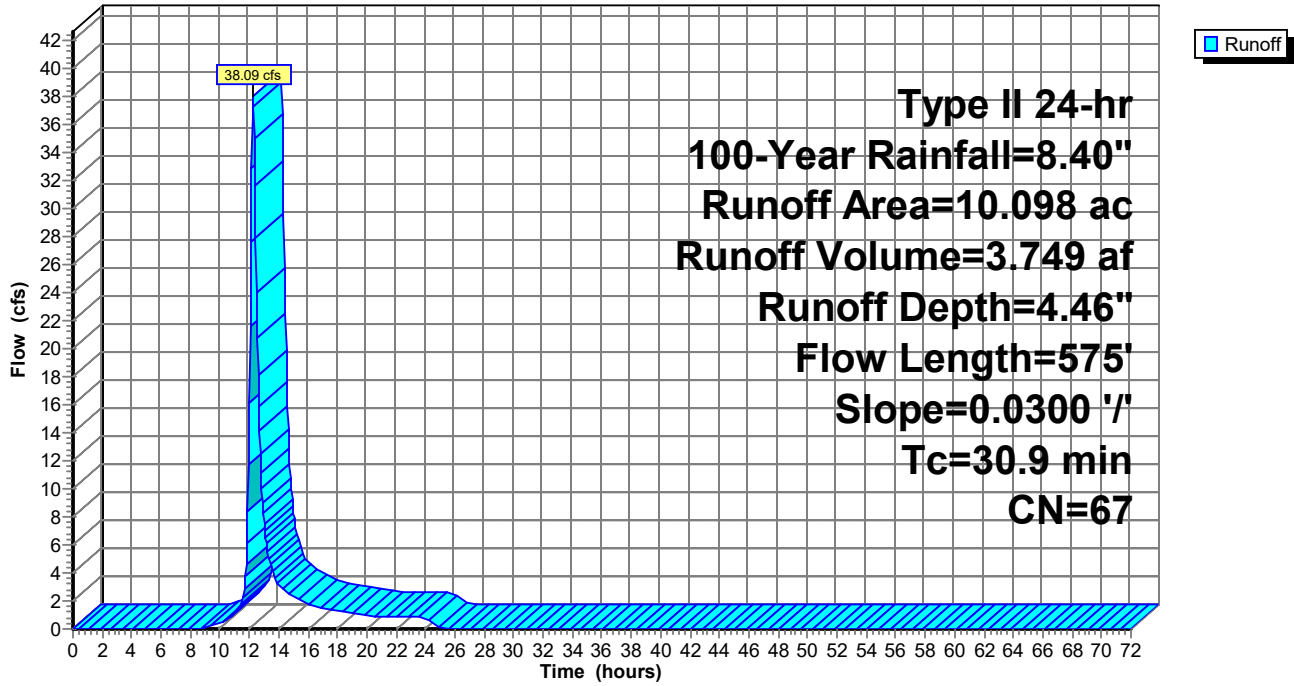
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
2.349	98	Paved parking & roofs
1.017	58	Meadow, non-grazed, HSG B
0.574	71	Meadow, non-grazed, HSG C
3.499	61	>75% Grass cover, Good, HSG B
0.126	74	>75% Grass cover, Good, HSG C
* 1.025	40	Woods, Good, HSG A
* 0.745	40	>75% Grass cover, Good, HSG A
0.763	74	>75% Grass cover, Good, HSG C
10.098	67	Weighted Average
7.749		76.74% Pervious Area
2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)

Hydrograph



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Post BMPs 11-12
Type II 24-hr 100-Year Rainfall=8.40"

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Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 5.88" for 100-Year event
 Inflow = 39.88 cfs @ 11.97 hrs, Volume= 2.004 af
 Outflow = 3.04 cfs @ 12.55 hrs, Volume= 2.004 af, Atten= 92%, Lag= 35.0 min
 Discarded = 0.55 cfs @ 10.05 hrs, Volume= 1.093 af
 Primary = 2.49 cfs @ 12.55 hrs, Volume= 0.911 af
 Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,903.32' @ 12.55 hrs Surf.Area= 26,640 sf Storage= 43,007 cf

Plug-Flow detention time= 264.4 min calculated for 2.003 af (100% of inflow)
 Center-of-Mass det. time= 264.6 min (1,064.8 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	Cultec R-360HD x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

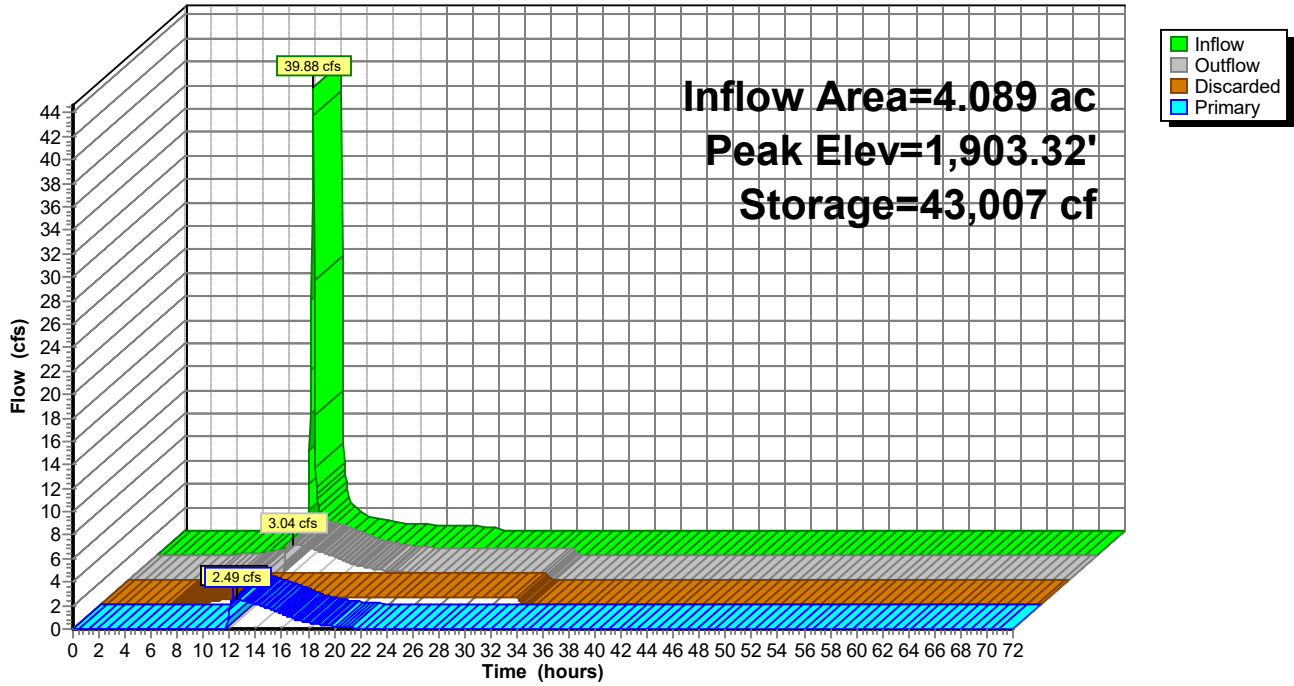
Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	12.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	0.900 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.55 cfs @ 10.05 hrs HW=1,901.04' (Free Discharge)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=2.49 cfs @ 12.55 hrs HW=1,903.32' (Free Discharge)
 ↳ **1=Culvert** (Passes 2.49 cfs of 15.34 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 2.49 cfs @ 4.97 fps)

Pond 16P: seepage pit with chambers #3A

Hydrograph



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Post BMPs 11-12

Type II 24-hr 100-Year Rainfall=8.40"

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Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 3.94" for 100-Year event
 Inflow = 40.51 cfs @ 12.26 hrs, Volume= 4.660 af
 Outflow = 1.45 cfs @ 19.24 hrs, Volume= 4.660 af, Atten= 96%, Lag= 418.8 min
 Discarded = 0.97 cfs @ 19.24 hrs, Volume= 3.511 af
 Primary = 0.48 cfs @ 19.24 hrs, Volume= 1.150 af
 Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,896.05' @ 19.24 hrs Surf.Area= 35,078 sf Storage= 144,709 cf

Plug-Flow detention time= 1,136.0 min calculated for 4.657 af (100% of inflow)
 Center-of-Mass det. time= 1,136.9 min (1,993.4 - 856.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	24.0" Round Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	3.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	1.200 in/hr Exfiltration over Surface area
#4	Device 1	1,896.60'	45.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.97 cfs @ 19.24 hrs HW=1,896.05' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.97 cfs)

Primary OutFlow Max=0.48 cfs @ 19.24 hrs HW=1,896.05' (Free Discharge)
 ↑ **1=Culvert** (Passes 0.48 cfs of 26.85 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.48 cfs @ 9.69 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b

Hydrograph

