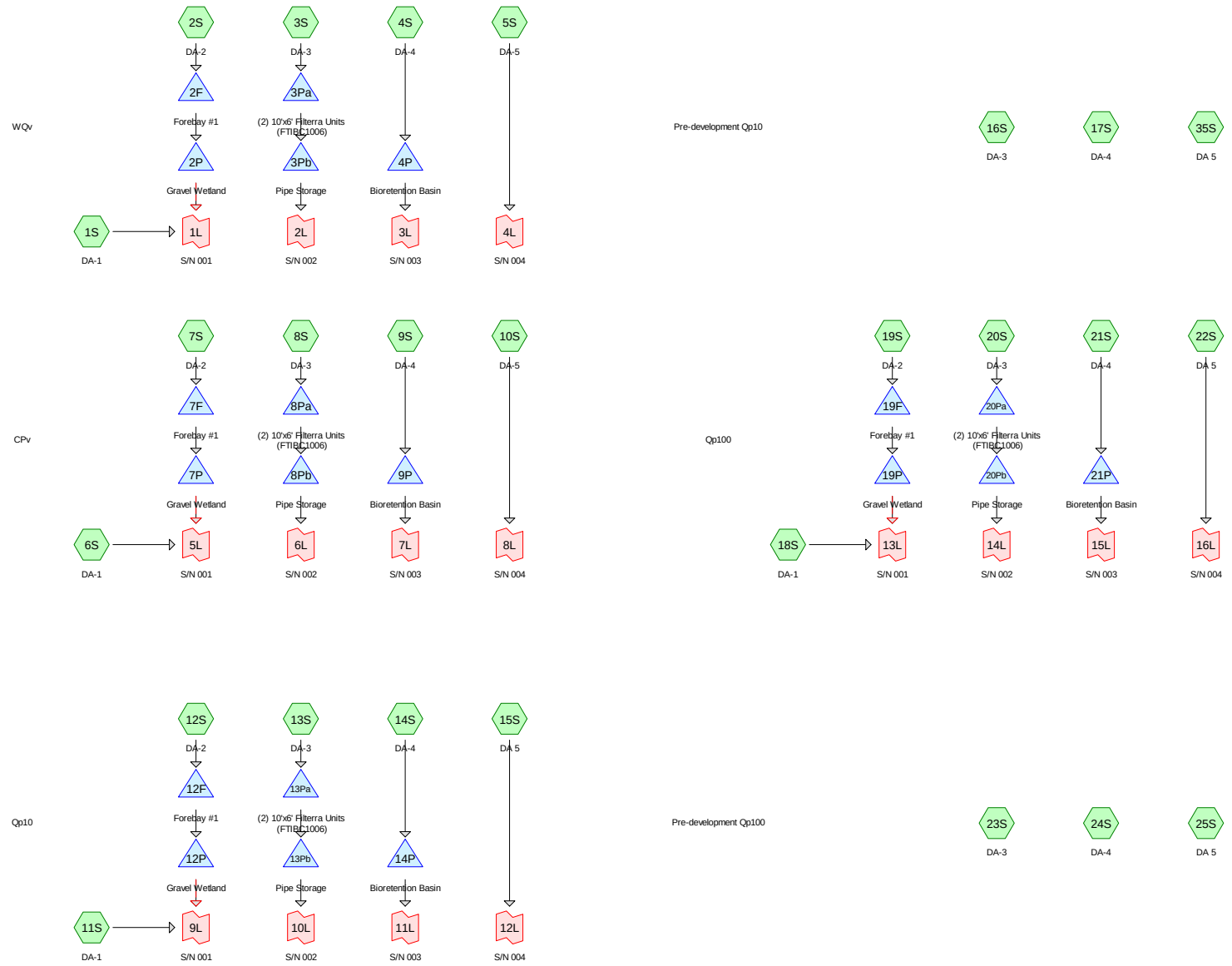


Routing Diagram for 19054-HCII

Prepared by Trudell Consulting Engineers Inc, Printed 11/22/2022

Summary for Subcatchment 1S: DA-1

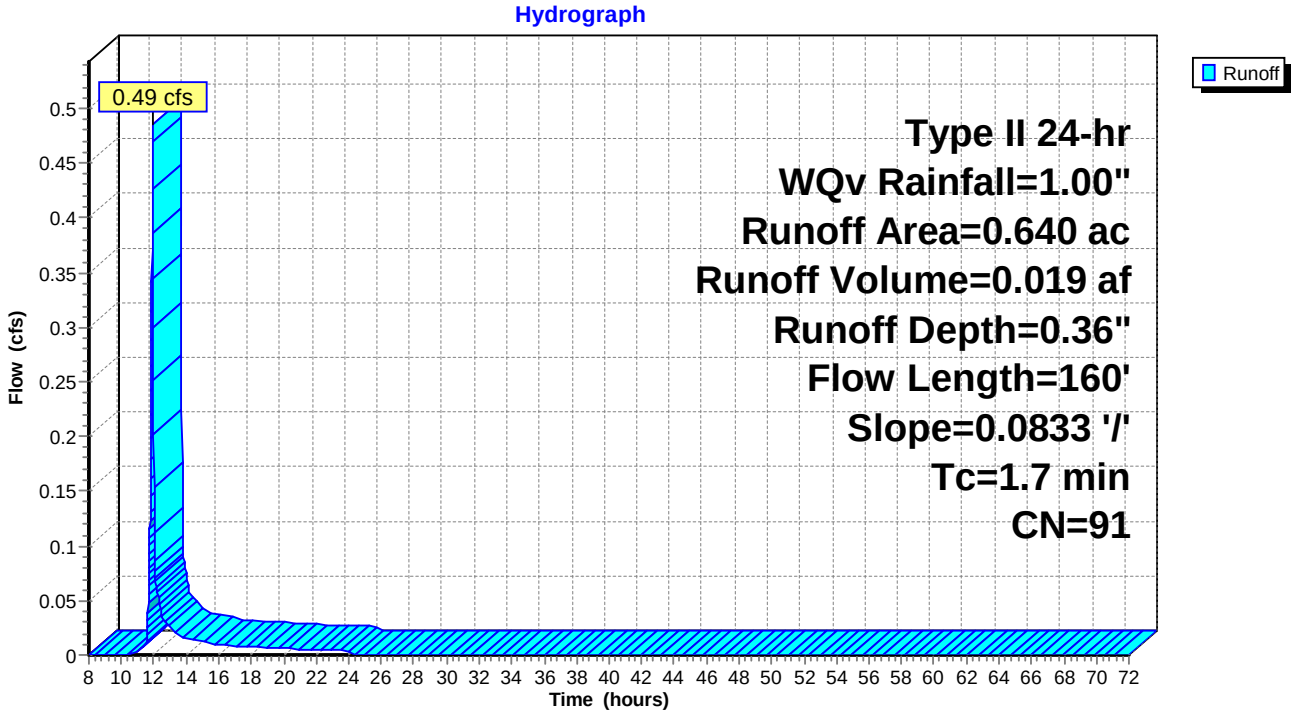
Runoff = 0.49 cfs @ 11.92 hrs, Volume= 0.019 af, Depth= 0.36"
Routed to Link 1L : S/N 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	0.640	91	Modified CN
	0.640	91	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	160	0.0833	1.56		**Lag/CN Method, LAG**

Subcatchment 1S: DA-1



Summary for Subcatchment 2S: DA-2

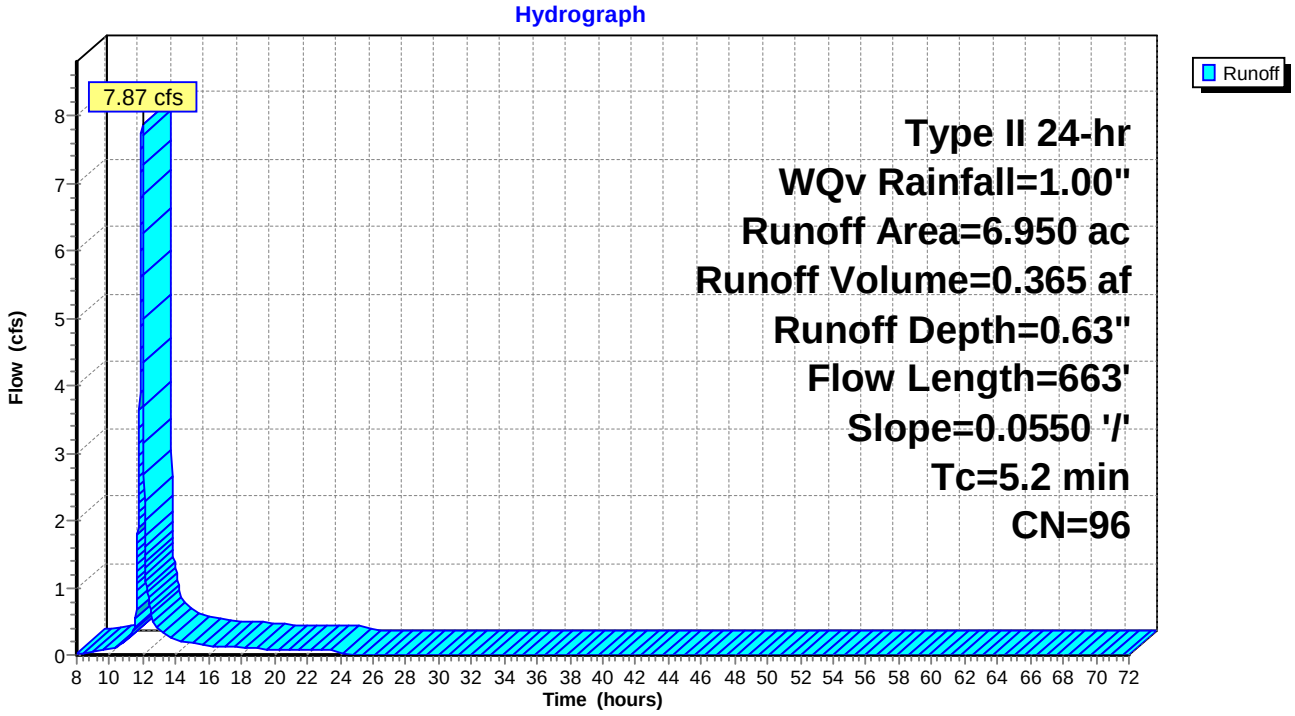
Runoff = 7.87 cfs @ 11.96 hrs, Volume= 0.365 af, Depth= 0.63"
Routed to Pond 2F : Forebay #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	6.950	96	Modified CN
	6.950	96	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	663	0.0550	2.13		**Lag/CN Method, LAG**

Subcatchment 2S: DA-2



Summary for Subcatchment 3S: DA-3

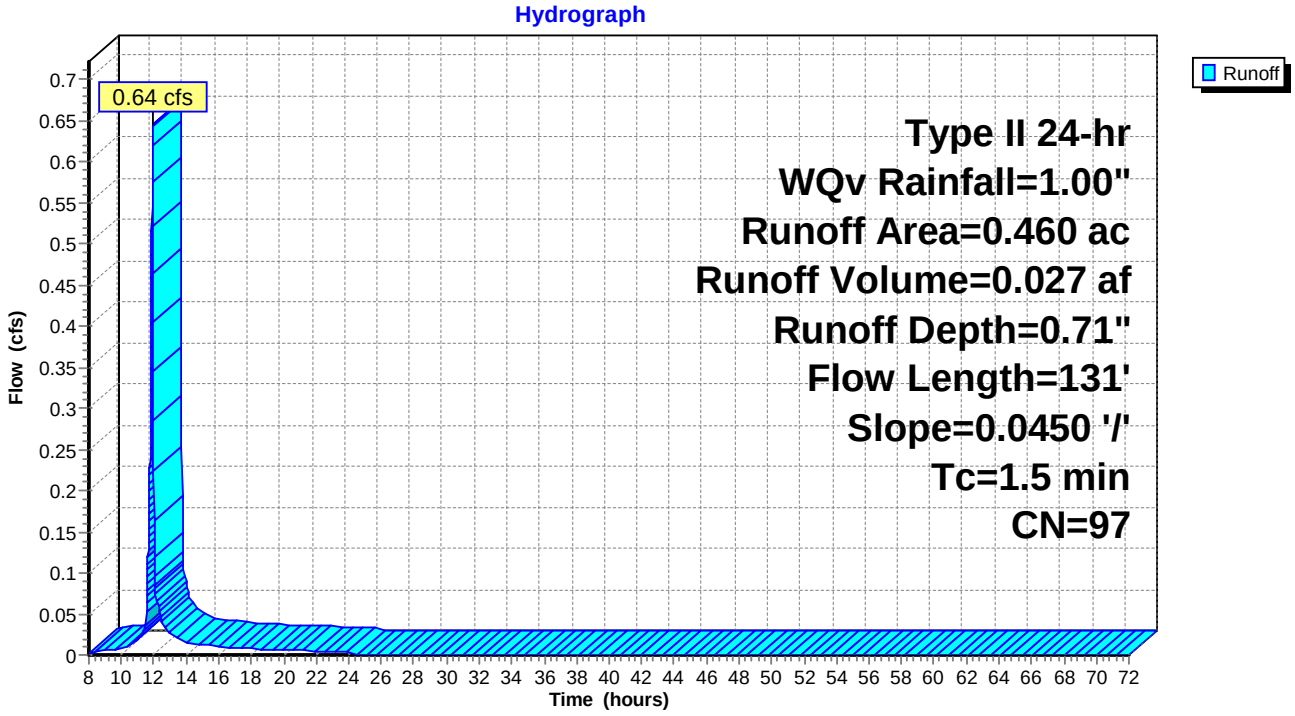
Runoff = 0.64 cfs @ 11.92 hrs, Volume= 0.027 af, Depth= 0.71"
Routed to Pond 3Pa : (2) 10'x6' Filterra Units (FTIBC1006)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	0.460	97	Modified CN
	0.460	97	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	131	0.0450	1.47		**Lag/CN Method, LAG**

Subcatchment 3S: DA-3



Summary for Subcatchment 4S: DA-4

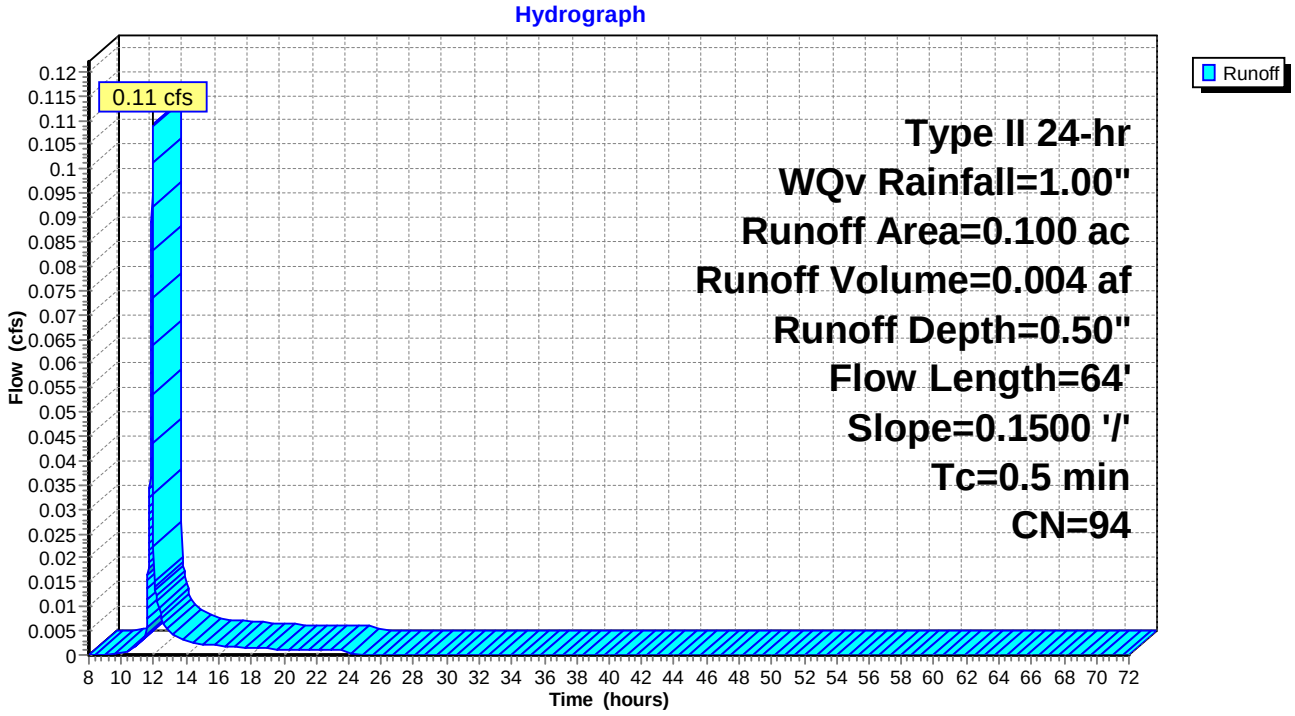
Runoff = 0.11 cfs @ 11.91 hrs, Volume= 0.004 af, Depth= 0.50"
Routed to Pond 4P : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	0.100	94	Modified CN
	0.100	94	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	64	0.1500	1.99		**Lag/CN Method, LAG**

Subcatchment 4S: DA-4



Summary for Subcatchment 5S: DA-5

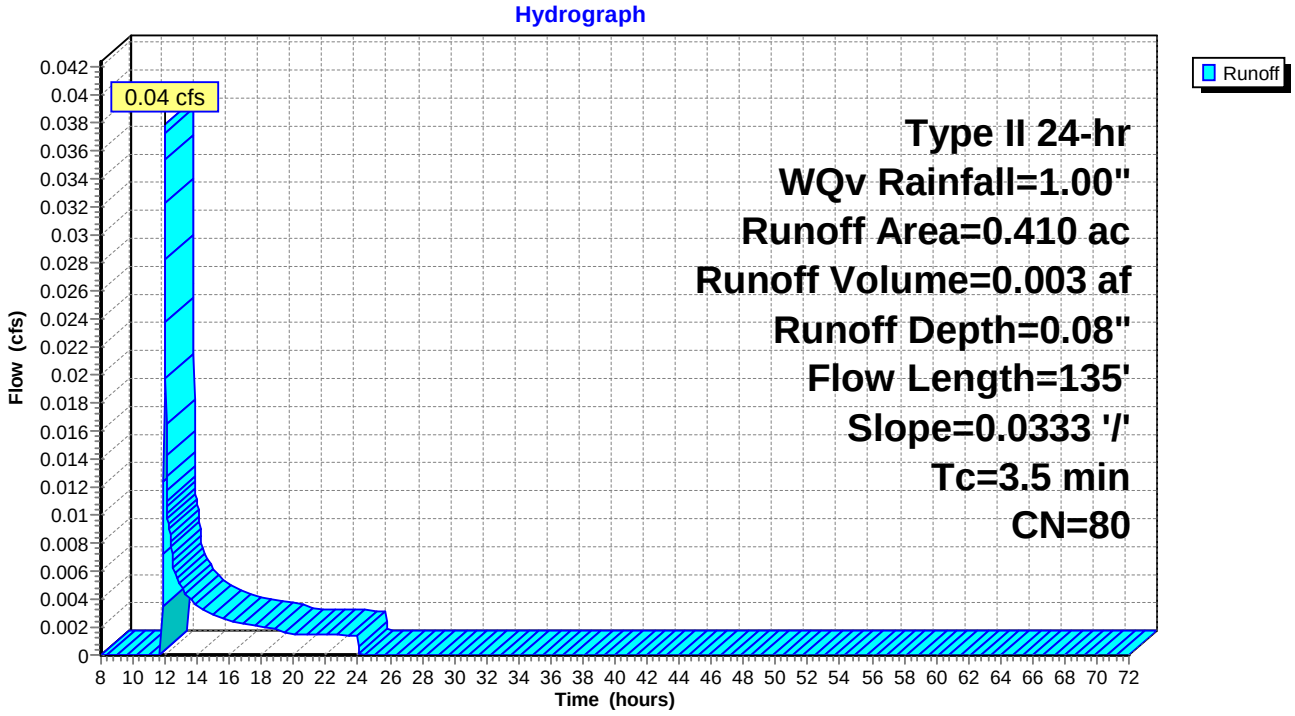
Runoff = 0.04 cfs @ 11.98 hrs, Volume= 0.003 af, Depth= 0.08"
Routed to Link 4L : S/N 004

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	0.410	80	CN
	0.410	80	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	135	0.0333	0.64		**Lag/CN Method,**

Subcatchment 5S: DA-5



Summary for Pond 2F: Forebay #1

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 0.63" for WQv event
Inflow = 7.87 cfs @ 11.96 hrs, Volume= 0.365 af
Outflow = 7.60 cfs @ 11.98 hrs, Volume= 0.365 af, Atten= 3%, Lag= 1.1 min
Primary = 7.60 cfs @ 11.98 hrs, Volume= 0.365 af
Routed to Pond 2P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 328.00' Surf.Area= 2,628 sf Storage= 3,057 cf
Peak Elev= 328.27' @ 11.98 hrs Surf.Area= 3,239 sf Storage= 3,851 cf (794 cf above start)

Plug-Flow detention time= 118.5 min calculated for 0.295 af (81% of inflow)
Center-of-Mass det. time= 3.2 min (813.5 - 810.3)

3,057/16,296 = 19% WQv IN FOREBAY

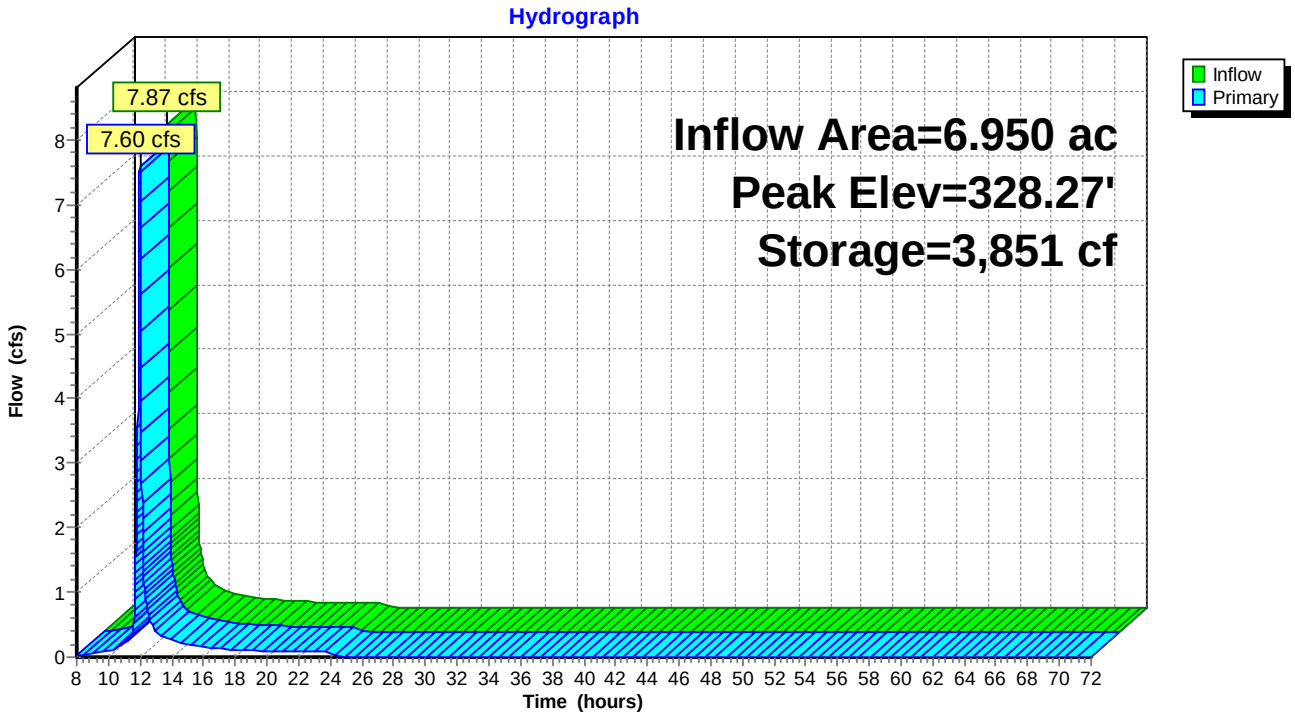
Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	13,093 cf	**Forebay Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.00	513	516.0	0	0	513
327.00	1,557	529.0	988	988	1,714
328.00	2,628	541.0	2,069	3,057	2,867
329.00	5,198	591.0	3,841	6,898	7,407
330.00	7,249	696.0	6,195	13,093	18,180

Device	Routing	Invert	Outlet Devices
#1	Primary	328.00'	**20.0' long x 18.0' breadth Stone Spillway**
			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

Primary OutFlow Max=7.58 cfs @ 11.98 hrs HW=328.27' (Free Discharge)
↑—**1=Stone Spillway** (Weir Controls 7.58 cfs @ 1.40 fps)

Pond 2F: Forebay #1



Summary for Pond 2P: Gravel Wetland

[42] Hint: Gap in defined storage above volume #1 at 326.08'
[81] Warning: Exceeded Pond 2F by 0.04' @ 20.15 hrs

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 0.63" for WQv event
Inflow = 7.60 cfs @ 11.98 hrs, Volume= 0.365 af
Outflow = 0.08 cfs @ 19.99 hrs, Volume= 0.365 af, Atten= 99%, Lag= 480.6 min
Primary = 0.08 cfs @ 19.99 hrs, Volume= 0.365 af
Routed to Link 1L : S/N 001
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : S/N 001

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 326.42' Surf.Area= 8,003 sf Storage= 6,634 cf
Peak Elev= 328.05' @ 19.99 hrs Surf.Area= 17,873 sf Storage= 18,465 cf (11,831 cf above start)

Plug-Flow detention time= 2,461.8 min calculated for 0.213 af (58% of inflow)
Center-of-Mass det. time= 1,560.8 min (2,374.2 - 813.5)

1,561/1,440 = 108% OF 24-HR EXTENDED DETENTION PROVIDED

Volume	Invert	Avail.Storage	Storage Description
#1	323.83'	6,634 cf	**2.25' Stone Storage (Irregular)** Listed below (Recalc) 16,585 cf Overall x 40.0% Voids
#2	326.75'	33,290 cf	**Surface Storage (Irregular)** Listed below (Recalc)
		39,924 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
323.83	6,757	545.0	0	0	6,757
326.08	8,003	573.0	16,585	16,585	9,548

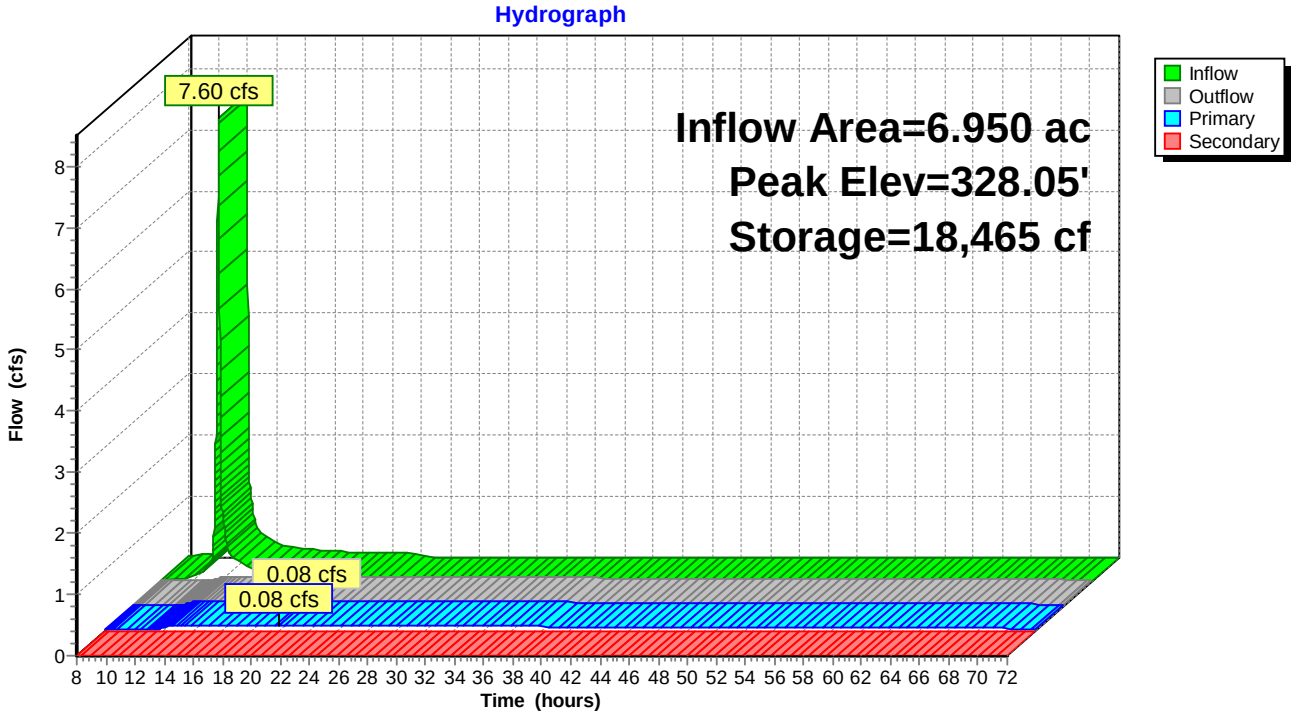
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.75	8,380	568.0	0	0	8,380
327.00	8,664	571.0	2,130	2,130	8,687
328.00	9,820	584.0	9,236	11,366	10,014
329.00	10,914	602.0	10,362	21,729	11,813
330.00	12,221	612.0	11,561	33,290	12,954

Device	Routing	Invert	Outlet Devices
#1	Primary	326.42'	**18.0" Round 18" Outlet Pipe** L= 11.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.42' / 326.25' S= 0.0155 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.42'	**1.6" Vert. 1.6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	328.05'	**12.0" W x 6.0" H Vert. Two 12"(W)x6"(H) Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.05'	**20.0' long x 10.0' breadth Stone Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.08 cfs @ 19.99 hrs HW=328.05' (Free Discharge)
└─**1=18" Outlet Pipe** (Passes 0.08 cfs of 7.30 cfs potential flow)
  └─**2=1.6" Orifice** (Orifice Controls 0.08 cfs @ 6.01 fps)
  └─**3=Two 12"(W)x6"(H) Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.42' (Free Discharge)
└─**4=Stone Spillway** (Controls 0.00 cfs)

Pond 2P: Gravel Wetland



Summary for Pond 3Pa: (2) 10'x6' Filterra Units (FTIBC1006)

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 0.71" for WQv event
Inflow = 0.64 cfs @ 11.92 hrs, Volume= 0.027 af
Outflow = 0.39 cfs @ 11.83 hrs, Volume= 0.027 af, Atten= 40%, Lag= 0.0 min
Primary = 0.39 cfs @ 11.83 hrs, Volume= 0.027 af
Routed to Pond 3Pb : Pipe Storage

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 328.83' @ 11.97 hrs Surf.Area= 120 sf Storage= 74 cf

Plug-Flow detention time= 3.7 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (796.0 - 795.2)

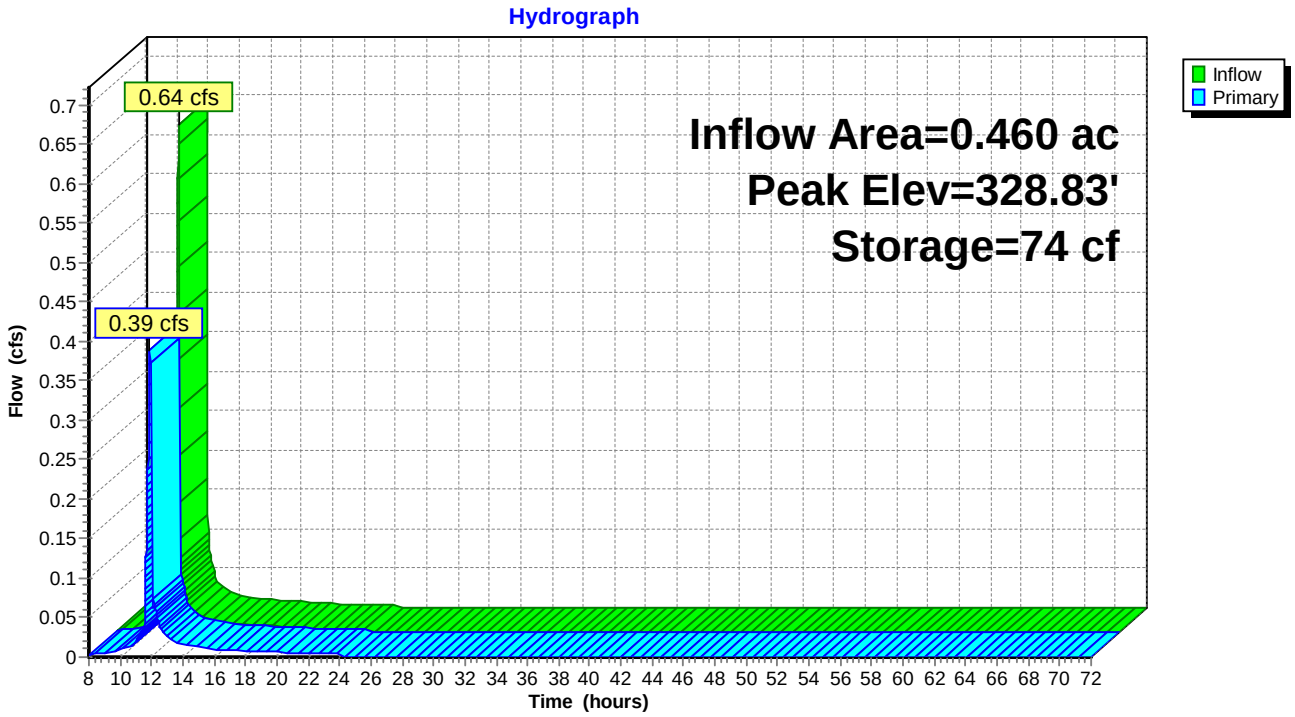
328.83' - 328.21' = 0.62' = 7.4" < 9" MAXIMUM PONDING RECOMMENDED BY 2017 VSMM

Volume	Invert	Avail.Storage	Storage Description
#1	328.21'	132 cf	**6.00'W x 10.00'L x 1.10'H Vault** x 2

Device	Routing	Invert	Outlet Devices
#1	Device 3	328.21'	**140.000 in/hr Filtration over Surface area from 328.20' - 328.22'** Excluded Surface area = 0 sf
#2	Device 3	328.96'	**10.0" Horiz. 10" Overflow Pipe X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	325.71'	**10.0" Round 10" PVC Pipe** L= 54.0' Ke= 0.200 Inlet / Outlet Invert= 325.71' / 324.98' S= 0.0135 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.39 cfs @ 11.83 hrs HW=328.22' (Free Discharge)
└**3=10" PVC Pipe** (Passes 0.39 cfs of 4.31 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.39 cfs)
  └**2=10" Overflow Pipe** (Controls 0.00 cfs)

Pond 3Pa: (2) 10'x6' Filterra Units (FTIBC1006)



Summary for Pond 3Pb: Pipe Storage

[79] Warning: Submerged Pond 3Pa Primary device # 3 INLET by 0.50'

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 0.70" for WQv event
Inflow = 0.39 cfs @ 11.83 hrs, Volume= 0.027 af
Outflow = 0.03 cfs @ 13.07 hrs, Volume= 0.027 af, Atten= 94%, Lag= 74.7 min
Primary = 0.03 cfs @ 13.07 hrs, Volume= 0.027 af
Routed to Link 2L : S/N 002

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 326.21' @ 13.07 hrs Surf.Area= 0.021 ac Storage= 0.014 af

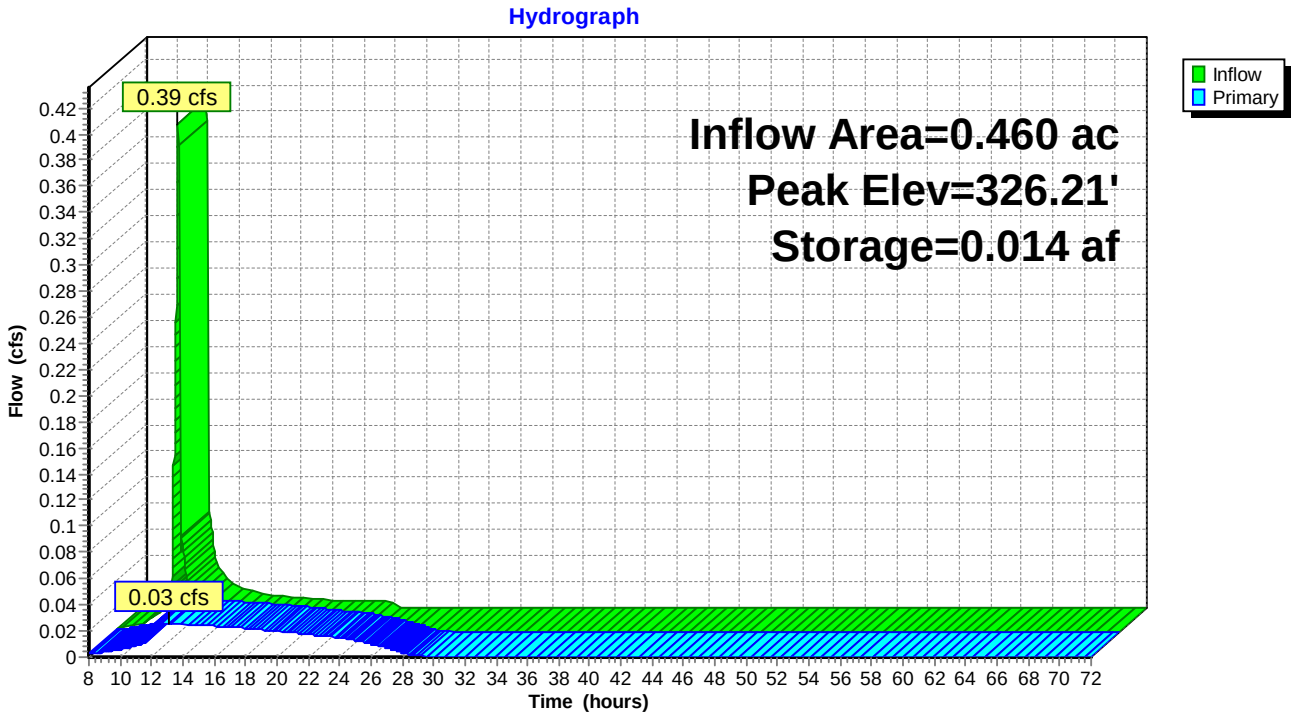
Plug-Flow detention time= 278.3 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 278.2 min (1,074.3 - 796.0)

Volume	Invert	Avail.Storage	Storage Description
#1	325.25'	0.078 af	**48.0" Round 48" Pipe** L= 270.0'

Device	Routing	Invert	Outlet Devices
#1	Device 3	325.25'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#2	Device 3	328.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	325.25'	**15.0" Round 15" Outlet Pipe** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 325.25' / 324.98' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.03 cfs @ 13.07 hrs HW=326.21' (Free Discharge)
└**3=15" Outlet Pipe** (Passes 0.03 cfs of 2.61 cfs potential flow)
  ├**1=1" Orifice** (Orifice Controls 0.03 cfs @ 4.60 fps)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3Pb: Pipe Storage



Summary for Pond 4P: Bioretention Basin

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 0.50" for WQv event
Inflow = 0.11 cfs @ 11.91 hrs, Volume= 0.004 af
Outflow = 0.00 cfs @ 11.33 hrs, Volume= 0.004 af, Atten= 98%, Lag= 0.0 min
Primary = 0.00 cfs @ 11.33 hrs, Volume= 0.004 af
Routed to Link 3L : S/N 003

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 328.39' @ 15.45 hrs Surf.Area= 380 sf Storage= 106 cf

Plug-Flow detention time= 523.9 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 523.9 min (1,348.4 - 824.5)

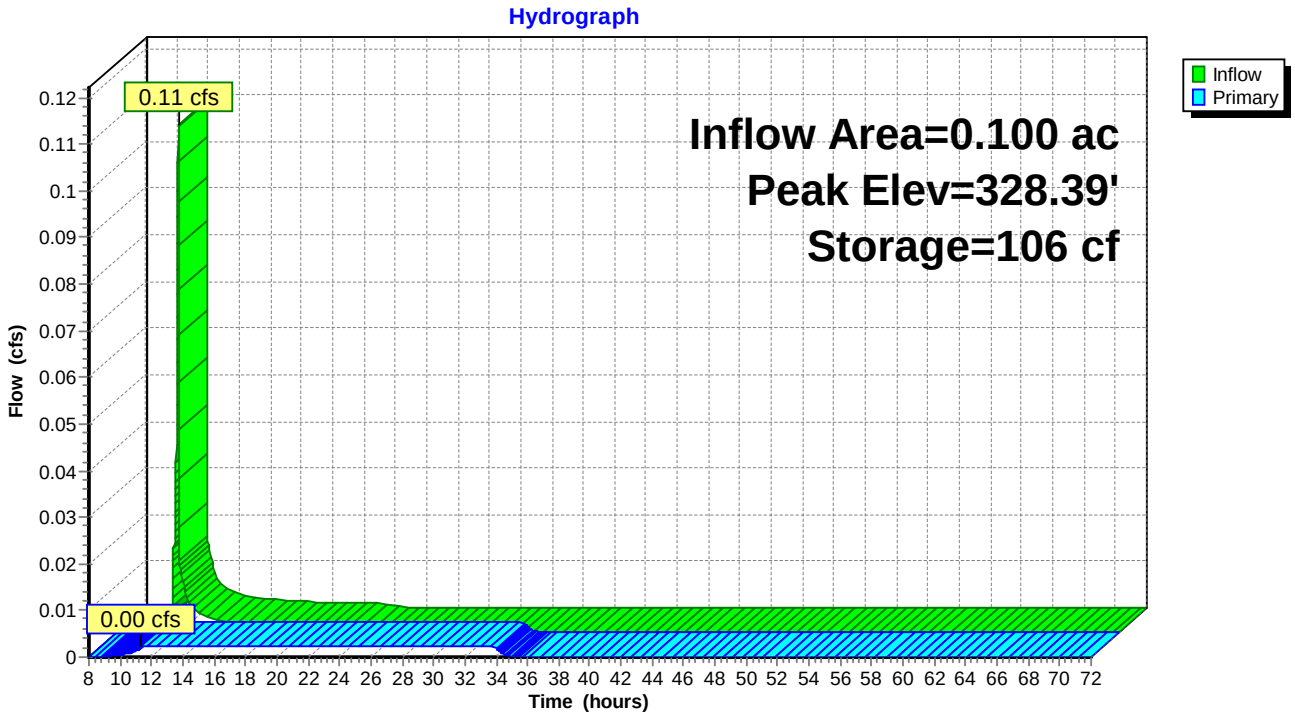
Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	978 cf	**Surface Ponding (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	180	72.0	0	0	180
329.00	844	160.0	471	471	1,809
329.50	1,195	183.0	507	978	2,442

Device	Routing	Invert	Outlet Devices
#1	Device 4	328.00'	**0.500 in/hr Filtration over Surface area from 327.99' - 328.01'** Excluded Surface area = 0 sf
#2	Device 4	328.90'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 4	329.25'	**6.0" Horiz. 6" Cast-iron dome inlet grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	324.75'	**12.0" Round 12" Outlet Pipe** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.75' / 324.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 11.33 hrs HW=328.02' (Free Discharge)
└**4=12" Outlet Pipe** (Passes 0.00 cfs of 6.02 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.00 cfs)
  ├**2=1" Orifice** (Controls 0.00 cfs)
  └**3=6" Cast-iron dome inlet grate** (Controls 0.00 cfs)

Pond 4P: Bioretention Basin

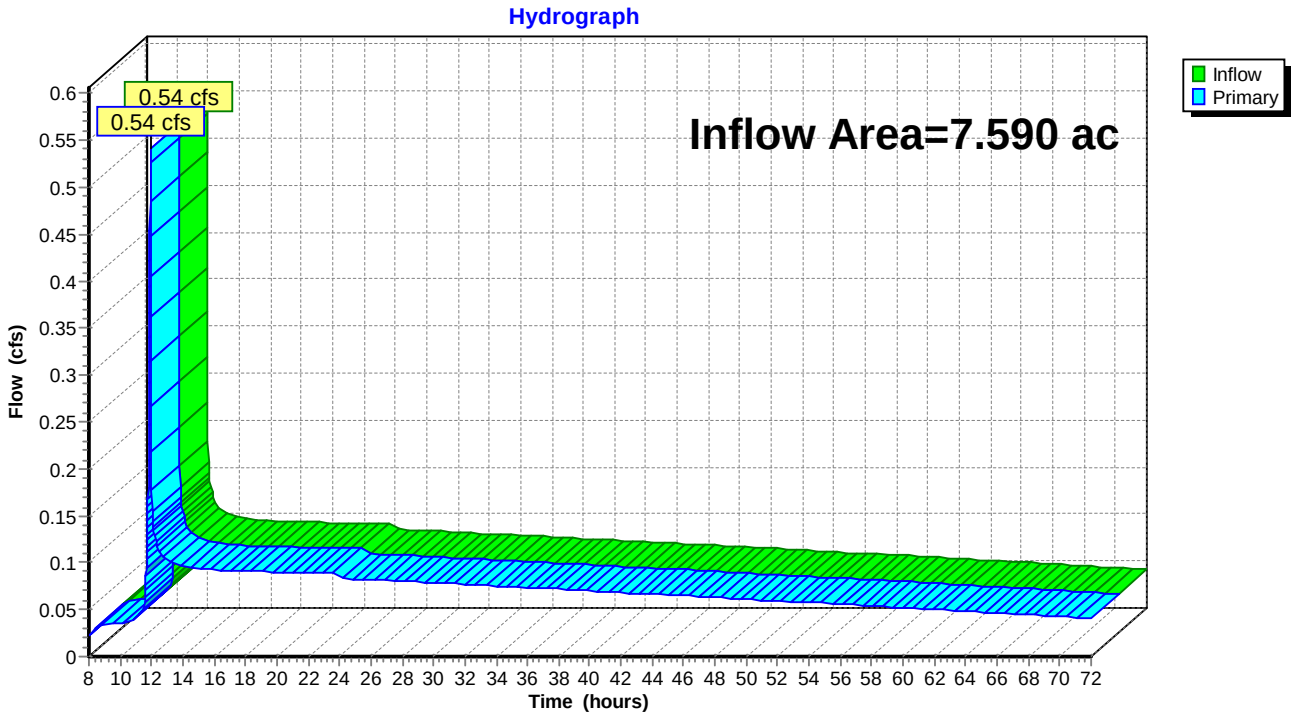


Summary for Link 1L: S/N 001

Inflow Area = 7.590 ac, 0.00% Impervious, Inflow Depth = 0.61" for WQv event
Inflow = 0.54 cfs @ 11.92 hrs, Volume= 0.384 af
Primary = 0.54 cfs @ 11.92 hrs, Volume= 0.384 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 1L: S/N 001

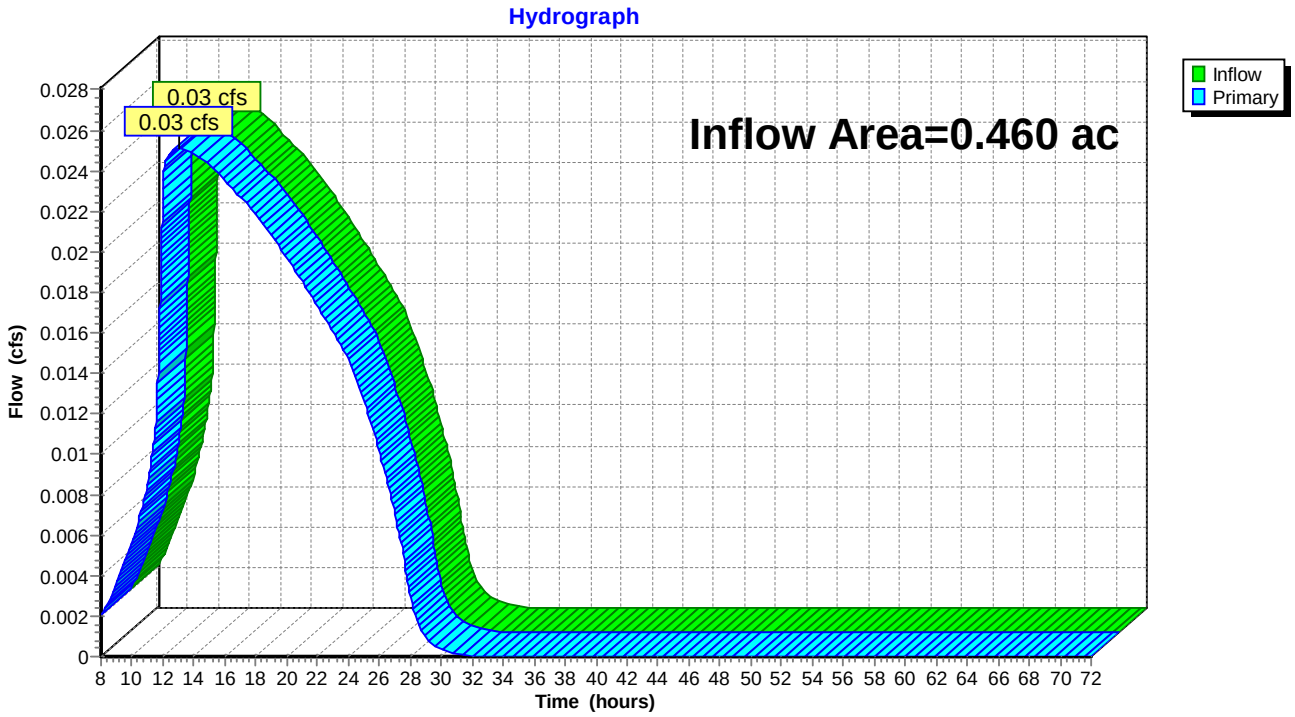


Summary for Link 2L: S/N 002

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 0.70" for WQv event
Inflow = 0.03 cfs @ 13.07 hrs, Volume= 0.027 af
Primary = 0.03 cfs @ 13.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 2L: S/N 002

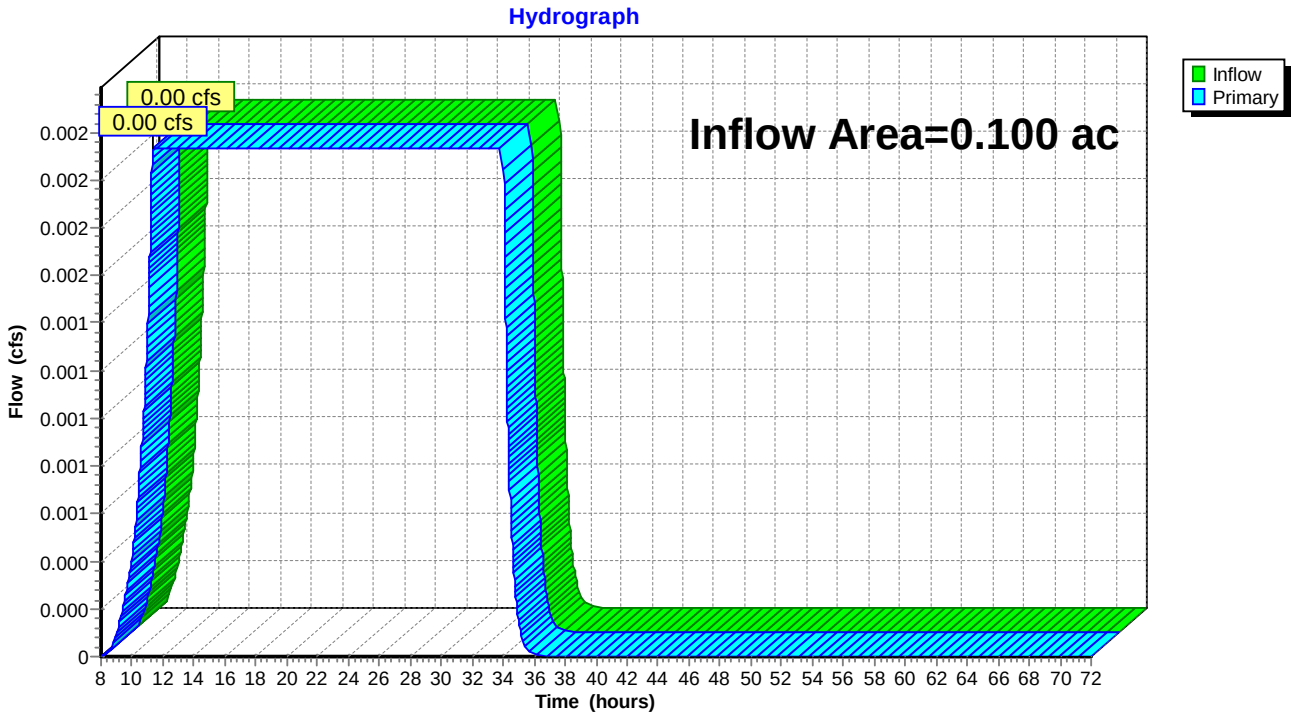


Summary for Link 3L: S/N 003

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 0.50" for WQv event
Inflow = 0.00 cfs @ 11.33 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 11.33 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 3L: S/N 003

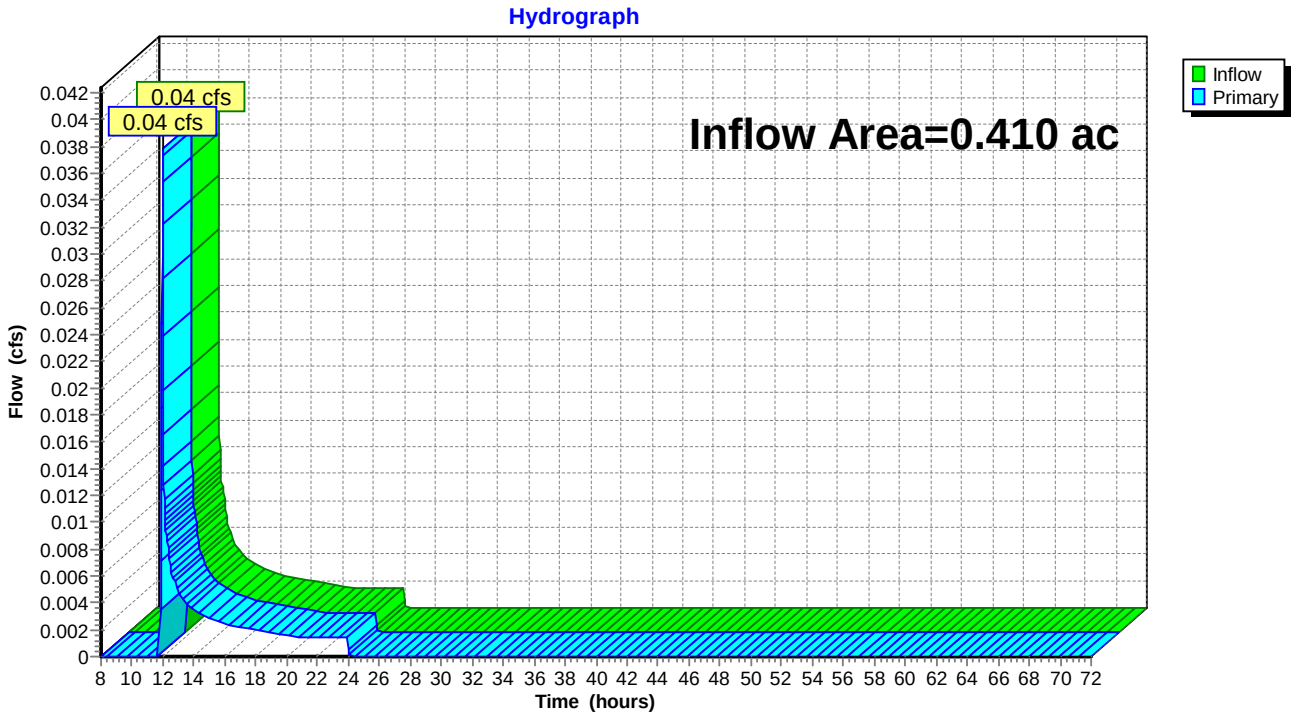


Summary for Link 4L: S/N 004

Inflow Area = 0.410 ac, 0.00% Impervious, Inflow Depth = 0.08" for WQv event
Inflow = 0.04 cfs @ 11.98 hrs, Volume= 0.003 af
Primary = 0.04 cfs @ 11.98 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Link 4L: S/N 004



Summary for Subcatchment 6S: DA-1

Runoff = 0.78 cfs @ 11.94 hrs, Volume= 0.032 af, Depth= 0.60"
Routed to Link 5L : S/N 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=1.99"

	Area (ac)	CN	Description
*	0.640	81	Modified CN
	0.640	81	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	160	0.0833	1.08		**Lag/CN Method, LAG**

Summary for Subcatchment 7S: DA-2

Runoff = 16.69 cfs @ 11.97 hrs, Volume= 0.803 af, Depth= 1.39"
Routed to Pond 7F : Forebay #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=1.99"

	Area (ac)	CN	Description
*	6.950	94	Modified CN
	6.950	94	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	663	0.0550	1.93		**Lag/CN Method, LAG**

Summary for Subcatchment 8S: DA-3

Runoff = 1.26 cfs @ 11.92 hrs, Volume= 0.053 af, Depth= 1.39"
Routed to Pond 8Pa : (2) 10'x6' Filterra Units (FTIBC1006)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=1.99"

	Area (ac)	CN	Description
*	0.460	94	Modified CN
	0.460	94	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	131	0.0450	1.26		**Lag/CN Method, LAG**

Summary for Subcatchment 9S: DA-4

Runoff = 0.25 cfs @ 11.91 hrs, Volume= 0.010 af, Depth= 1.15"
Routed to Pond 9P : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=1.99"

	Area (ac)	CN	Description
*	0.100	91	Modified CN
	0.100	91	100.00% Pervious Area

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

Summary for Subcatchment 10S: DA-5

Runoff = 0.34 cfs @ 11.96 hrs, Volume= 0.015 af, Depth= 0.44"
Routed to Link 8L : S/N 004

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=1.99"

	Area (ac)	CN	Description
*	0.410	77	CN
	0.410	77	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	135	0.0333	0.59		**Lag/CN Method,**

Summary for Pond 7F: Forebay #1

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 1.39" for 1 year event
Inflow = 16.69 cfs @ 11.97 hrs, Volume= 0.803 af
Outflow = 16.27 cfs @ 11.98 hrs, Volume= 0.803 af, Atten= 3%, Lag= 1.0 min
Primary = 16.27 cfs @ 11.98 hrs, Volume= 0.803 af
Routed to Pond 7P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 328.00' Surf.Area= 2,628 sf Storage= 3,057 cf
Peak Elev= 328.45' @ 11.98 hrs Surf.Area= 3,675 sf Storage= 4,466 cf (1,409 cf above start)

Plug-Flow detention time= 69.9 min calculated for 0.733 af (91% of inflow)
Center-of-Mass det. time= 2.8 min (803.3 - 800.5)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	13,093 cf	**Forebay Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.00	513	516.0	0	0	513
327.00	1,557	529.0	988	988	1,714
328.00	2,628	541.0	2,069	3,057	2,867
329.00	5,198	591.0	3,841	6,898	7,407
330.00	7,249	696.0	6,195	13,093	18,180

Device	Routing	Invert	Outlet Devices
#1	Primary	328.00'	**20.0' long x 18.0' breadth Stone Spillway**
			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

Primary OutFlow Max=16.23 cfs @ 11.98 hrs HW=328.45' (Free Discharge)
1=Stone Spillway (Weir Controls 16.23 cfs @ 1.81 fps)

Summary for Pond 7P: Gravel Wetland

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 1.39" for 1 year event
Inflow = 16.27 cfs @ 11.98 hrs, Volume= 0.803 af
Outflow = 9.46 cfs @ 12.07 hrs, Volume= 0.803 af, Atten= 42%, Lag= 4.9 min
Primary = 1.15 cfs @ 12.07 hrs, Volume= 0.427 af
Routed to Link 5L : S/N 001
Secondary = 8.31 cfs @ 12.07 hrs, Volume= 0.376 af
Routed to Link 5L : S/N 001

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 326.42' Surf.Area= 8,003 sf Storage= 6,634 cf
Peak Elev= 328.35' @ 12.07 hrs Surf.Area= 18,199 sf Storage= 21,499 cf (14,865 cf above start)

Plug-Flow detention time= 1,026.2 min calculated for 0.651 af (81% of inflow)
Center-of-Mass det. time= 748.5 min (1,551.8 - 803.3)

749/720 = 104% OF 12-HR EXTENDED DETENTION PROVIDED, NOT REQUIRED DUE TO LAPLATTE DRAINAGE AREA WAIVER

Volume	Invert	Avail.Storage	Storage Description
#1	323.83'	6,634 cf	**2.25' Stone Storage (Irregular)** Listed below (Recalc)
			16,585 cf Overall x 40.0% Voids
#2	326.75'	33,290 cf	**Surface Storage (Irregular)** Listed below (Recalc)
		39,924 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
323.83	6,757	545.0	0	0	6,757
326.08	8,003	573.0	16,585	16,585	9,548

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.75	8,380	568.0	0	0	8,380
327.00	8,664	571.0	2,130	2,130	8,687
328.00	9,820	584.0	9,236	11,366	10,014
329.00	10,914	602.0	10,362	21,729	11,813
330.00	12,221	612.0	11,561	33,290	12,954

Device	Routing	Invert	Outlet Devices
#1	Primary	326.42'	**18.0" Round 18" Outlet Pipe** L= 11.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.42' / 326.25' S= 0.0155 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.42'	**1.6" Vert. 1.6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	328.05'	**12.0" W x 6.0" H Vert. Two 12"(W)x6"(H) Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.05'	**20.0' long x 10.0' breadth Stone Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.14 cfs @ 12.07 hrs HW=328.35' (Free Discharge)
└**1=18" Outlet Pipe** (Passes 1.14 cfs of 8.76 cfs potential flow)
  ├**2=1.6" Orifice** (Orifice Controls 0.09 cfs @ 6.57 fps)
  └**3=Two 12"(W)x6"(H) Orifice** (Orifice Controls 1.05 cfs @ 1.76 fps)

Secondary OutFlow Max=8.26 cfs @ 12.07 hrs HW=328.35' (Free Discharge)
└**4=Stone Spillway** (Weir Controls 8.26 cfs @ 1.38 fps)

Summary for Pond 8Pa: (2) 10'x6' Filterra Units (FTIBC1006)

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 1.39" for 1 year event
Inflow = 1.26 cfs @ 11.92 hrs, Volume= 0.053 af
Outflow = 1.25 cfs @ 11.92 hrs, Volume= 0.053 af, Atten= 1%, Lag= 0.2 min
Primary = 1.25 cfs @ 11.92 hrs, Volume= 0.053 af
Routed to Pond 8Pb : Pipe Storage

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 329.10' @ 11.92 hrs Surf.Area= 120 sf Storage= 106 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (797.4 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	328.21'	132 cf	**6.00'W x 10.00'L x 1.10'H Vault** x 2

Device	Routing	Invert	Outlet Devices
#1	Device 3	328.21'	**140.000 in/hr Filtration over Surface area from 328.20' - 328.22'** Excluded Surface area = 0 sf
#2	Device 3	328.96'	**10.0" Horiz. 10" Overflow Pipe X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	325.71'	**10.0" Round 10" PVC Pipe** L= 54.0' Ke= 0.200

Inlet / Outlet Invert= 325.71' / 324.98' S= 0.0135 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=1.25 cfs @ 11.92 hrs HW=329.10' (Free Discharge)
└**3=10" PVC Pipe** (Passes 1.25 cfs of 5.04 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.39 cfs)
  └**2=10" Overflow Pipe** (Weir Controls 0.86 cfs @ 1.21 fps)

Summary for Pond 8Pb: Pipe Storage

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 1.39" for 1 year event
Inflow = 1.25 cfs @ 11.92 hrs, Volume= 0.053 af
Outflow = 0.03 cfs @ 13.87 hrs, Volume= 0.053 af, Atten= 97%, Lag= 116.8 min
Primary = 0.03 cfs @ 13.87 hrs, Volume= 0.053 af
Routed to Link 6L : S/N 002

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 326.94' @ 13.87 hrs Surf.Area= 0.024 ac Storage= 0.031 af

Plug-Flow detention time= 469.8 min calculated for 0.053 af (100% of inflow)
Center-of-Mass det. time= 469.8 min (1,267.2 - 797.4)

470/720 = 65% OF 12-HR EXTENDED DETENTION PROVIDED, 1" MINIMUM ORIFICE SIZE USED

Volume	Invert	Avail.Storage	Storage Description
#1	325.25'	0.078 af	**48.0" Round 48" Pipe** L= 270.0'

Device	Routing	Invert	Outlet Devices
#1	Device 3	325.25'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#2	Device 3	328.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	325.25'	**15.0" Round 15" Outlet Pipe** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 325.25' / 324.98' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.03 cfs @ 13.87 hrs HW=326.94' (Free Discharge)
└**3=15" Outlet Pipe** (Passes 0.03 cfs of 5.09 cfs potential flow)
  ├**1=1" Orifice** (Orifice Controls 0.03 cfs @ 6.18 fps)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: Bioretention Basin

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 1.15" for 1 year event
Inflow = 0.25 cfs @ 11.91 hrs, Volume= 0.010 af
Outflow = 0.00 cfs @ 10.32 hrs, Volume= 0.010 af, Atten= 99%, Lag= 0.0 min
Primary = 0.00 cfs @ 10.32 hrs, Volume= 0.010 af
Routed to Link 7L : S/N 003

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 328.78' @ 21.53 hrs Surf.Area= 656 sf Storage= 307 cf

Plug-Flow detention time= 1,379.0 min calculated for 0.010 af (100% of inflow)

Center-of-Mass det. time= 1,379.1 min (2,192.5 - 813.4)

1,379/720 = 192% OF 12-HR EXTENDED DETENTION PROVIDED, ALL OF CPv FILTERING THRU MEDIA

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	978 cf	**Surface Ponding (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	180	72.0	0	0	180
329.00	844	160.0	471	471	1,809
329.50	1,195	183.0	507	978	2,442

Device	Routing	Invert	Outlet Devices
#1	Device 4	328.00'	**0.500 in/hr Filtration over Surface area from 327.99' - 328.01'** Excluded Surface area = 0 sf
#2	Device 4	328.90'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 4	329.25'	**6.0" Horiz. 6" Cast-iron dome inlet grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	324.75'	**12.0" Round 12" Outlet Pipe** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.75' / 324.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 10.32 hrs HW=328.02' (Free Discharge)
└─**4=12" Outlet Pipe** (Passes 0.00 cfs of 6.02 cfs potential flow)
  ├─**1=Filtration** (Exfiltration Controls 0.00 cfs)
  ├─**2=1" Orifice** (Controls 0.00 cfs)
  └─**3=6" Cast-iron dome inlet grate** (Controls 0.00 cfs)

Summary for Link 5L: S/N 001

Inflow Area = 7.590 ac, 0.00% Impervious, Inflow Depth = 1.32" for 1 year event
Inflow = 9.59 cfs @ 12.06 hrs, Volume= 0.835 af
Primary = 9.59 cfs @ 12.06 hrs, Volume= 0.835 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 6L: S/N 002

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 1.39" for 1 year event
Inflow = 0.03 cfs @ 13.87 hrs, Volume= 0.053 af
Primary = 0.03 cfs @ 13.87 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 7L: S/N 003

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 1.15" for 1 year event
Inflow = 0.00 cfs @ 10.32 hrs, Volume= 0.010 af
Primary = 0.00 cfs @ 10.32 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 8L: S/N 004

Inflow Area = 0.410 ac, 0.00% Impervious, Inflow Depth = 0.44" for 1 year event
Inflow = 0.34 cfs @ 11.96 hrs, Volume= 0.015 af
Primary = 0.34 cfs @ 11.96 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 11S: DA-1

Runoff = 2.22 cfs @ 11.93 hrs, Volume= 0.091 af, Depth= 1.70"
Routed to Link 9L : S/N 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.640	82	Modified CN
	0.640	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	160	0.0833	1.12		**Lag/CN Method, LAG**

Summary for Subcatchment 12S: DA-2

Runoff = 30.51 cfs @ 11.97 hrs, Volume= 1.528 af, Depth= 2.64"
Routed to Pond 12F : Forebay #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	6.950	93	Modified CN
	6.950	93	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	663	0.0550	1.84		**Lag/CN Method, LAG**

Summary for Subcatchment 13S: DA-3

Runoff = 2.31 cfs @ 11.92 hrs, Volume= 0.101 af, Depth= 2.64"
Routed to Pond 13Pa : (2) 10'x6' Filterra Units (FTIBC1006)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.460	93	Modified CN
	0.460	93	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	131	0.0450	1.20		**Lag/CN Method, LAG**

Summary for Subcatchment 14S: DA-4

Runoff = 0.48 cfs @ 11.91 hrs, Volume= 0.020 af, Depth= 2.35"
Routed to Pond 14P : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.100	90	Modified CN
	0.100	90	100.00% Pervious Area

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

Summary for Subcatchment 15S: DA 5

Runoff = 0.92 cfs @ 11.96 hrs, Volume= 0.040 af, Depth= 1.17"
Routed to Link 12L : S/N 004

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.410	74	CN
	0.410	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	135	0.0333	0.54		**Lag/CN Method,**

Summary for Subcatchment 16S: DA-3 PRE-CONSTRUCTION

Runoff = 1.77 cfs @ 11.94 hrs, Volume= 0.077 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.460	86	Modified CN
	0.460	86	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	131	0.0200	0.60		**Lag/CN Method, LAG**

Summary for Subcatchment 17S: DA-4

PRE-CONSTRUCTION

Runoff = 0.30 cfs @ 11.92 hrs, Volume= 0.012 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.100	78	Modified CN
	0.100	78	100.00% Pervious Area

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

Summary for Subcatchment 35S: DA 5

Runoff = 0.87 cfs @ 11.96 hrs, Volume= 0.038 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.40"

	Area (ac)	CN	Description
*	0.410	73	CN
	0.410	73	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	135	0.0333	0.52		**Lag/CN Method,**

Summary for Pond 12F: Forebay #1

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10 year event
Inflow = 30.51 cfs @ 11.97 hrs, Volume= 1.528 af
Outflow = 29.79 cfs @ 11.99 hrs, Volume= 1.528 af, Atten= 2%, Lag= 1.0 min
Primary = 29.79 cfs @ 11.99 hrs, Volume= 1.528 af
Routed to Pond 12P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 328.00' Surf.Area= 2,628 sf Storage= 3,057 cf
Peak Elev= 328.68' @ 11.99 hrs Surf.Area= 4,272 sf Storage= 5,369 cf (2,311 cf above start)

Plug-Flow detention time= 45.3 min calculated for 1.458 af (95% of inflow)
Center-of-Mass det. time= 2.5 min (789.9 - 787.4)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	13,093 cf	**Forebay Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.00	513	516.0	0	0	513
327.00	1,557	529.0	988	988	1,714
328.00	2,628	541.0	2,069	3,057	2,867
329.00	5,198	591.0	3,841	6,898	7,407
330.00	7,249	696.0	6,195	13,093	18,180

Device	Routing	Invert	Outlet Devices
#1	Primary	328.00'	**20.0' long x 18.0' breadth Stone Spillway**
			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

Primary OutFlow Max=29.73 cfs @ 11.99 hrs HW=328.68' (Free Discharge)
1=Stone Spillway (Weir Controls 29.73 cfs @ 2.20 fps)

Summary for Pond 12P: Gravel Wetland

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10 year event
Inflow = 29.79 cfs @ 11.99 hrs, Volume= 1.528 af
Outflow = 27.40 cfs @ 12.02 hrs, Volume= 1.528 af, Atten= 8%, Lag= 1.9 min
Primary = 2.84 cfs @ 12.02 hrs, Volume= 0.516 af
Routed to Link 9L : S/N 001
Secondary = 24.56 cfs @ 12.02 hrs, Volume= 1.012 af
Routed to Link 9L : S/N 001

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 326.42' Surf.Area= 8,003 sf Storage= 6,634 cf
Peak Elev= 328.64' @ 12.02 hrs Surf.Area= 18,519 sf Storage= 24,528 cf (17,894 cf above start)

Plug-Flow detention time= 518.2 min calculated for 1.376 af (90% of inflow)
Center-of-Mass det. time= 408.9 min (1,198.8 - 789.9)

NOT REQUIRED DUE TO LAPLATTE DRAINAGE AREA WAIVER

Volume	Invert	Avail.Storage	Storage Description
#1	323.83'	6,634 cf	**2.25' Stone Storage (Irregular)** Listed below (Recalc)
			16,585 cf Overall x 40.0% Voids
#2	326.75'	33,290 cf	**Surface Storage (Irregular)** Listed below (Recalc)
		39,924 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
323.83	6,757	545.0	0	0	6,757
326.08	8,003	573.0	16,585	16,585	9,548

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.75	8,380	568.0	0	0	8,380
327.00	8,664	571.0	2,130	2,130	8,687
328.00	9,820	584.0	9,236	11,366	10,014
329.00	10,914	602.0	10,362	21,729	11,813
330.00	12,221	612.0	11,561	33,290	12,954

Device	Routing	Invert	Outlet Devices
#1	Primary	326.42'	**18.0" Round 18" Outlet Pipe** L= 11.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.42' / 326.25' S= 0.0155 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.42'	**1.6" Vert. 1.6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	328.05'	**12.0" W x 6.0" H Vert. Two 12"(W)x6"(H) Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.05'	**20.0' long x 10.0' breadth Stone Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.84 cfs @ 12.02 hrs HW=328.64' (Free Discharge)
└**1=18" Outlet Pipe** (Passes 2.84 cfs of 10.27 cfs potential flow)
  ├**2=1.6" Orifice** (Orifice Controls 0.10 cfs @ 7.07 fps)
  └**3=Two 12"(W)x6"(H) Orifice** (Orifice Controls 2.74 cfs @ 2.74 fps)

Secondary OutFlow Max=24.53 cfs @ 12.02 hrs HW=328.64' (Free Discharge)
└**4=Stone Spillway** (Weir Controls 24.53 cfs @ 2.07 fps)

Summary for Pond 13Pa: (2) 10'x6' Filterra Units (FTIBC1006)

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10 year event
Inflow = 2.31 cfs @ 11.92 hrs, Volume= 0.101 af
Outflow = 2.30 cfs @ 11.92 hrs, Volume= 0.101 af, Atten= 1%, Lag= 0.1 min
Primary = 2.30 cfs @ 11.92 hrs, Volume= 0.101 af
Routed to Pond 13Pb : Pipe Storage

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 329.19' @ 11.92 hrs Surf.Area= 120 sf Storage= 118 cf

Plug-Flow detention time= 1.1 min calculated for 0.101 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (784.2 - 783.5)

Volume	Invert	Avail.Storage	Storage Description
#1	328.21'	132 cf	**6.00'W x 10.00'L x 1.10'H Vault** x 2

Device	Routing	Invert	Outlet Devices
#1	Device 3	328.21'	**140.000 in/hr Filtration over Surface area from 328.20' - 328.22'** Excluded Surface area = 0 sf
#2	Device 3	328.96'	**10.0" Horiz. 10" Overflow Pipe X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	325.71'	**10.0" Round 10" PVC Pipe** L= 54.0' Ke= 0.200 Inlet / Outlet Invert= 325.71' / 324.98' S= 0.0135 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=2.29 cfs @ 11.92 hrs HW=329.19' (Free Discharge)
└**3=10" PVC Pipe** (Passes 2.29 cfs of 5.11 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.39 cfs)
  └**2=10" Overflow Pipe** (Weir Controls 1.90 cfs @ 1.57 fps)

Summary for Pond 13Pb: Pipe Storage

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10 year event
Inflow = 2.30 cfs @ 11.92 hrs, Volume= 0.101 af
Outflow = 0.05 cfs @ 14.95 hrs, Volume= 0.101 af, Atten= 98%, Lag= 181.8 min
Primary = 0.05 cfs @ 14.95 hrs, Volume= 0.101 af
Routed to Link 10L : S/N 002

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 328.35' @ 14.95 hrs Surf.Area= 0.021 ac Storage= 0.065 af

Plug-Flow detention time= 719.0 min calculated for 0.101 af (100% of inflow)
Center-of-Mass det. time= 719.1 min (1,503.3 - 784.2)

Volume	Invert	Avail.Storage	Storage Description
#1	325.25'	0.078 af	**48.0" Round 48" Pipe** L= 270.0'

Device	Routing	Invert	Outlet Devices
#1	Device 3	325.25'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#2	Device 3	328.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	325.25'	**15.0" Round 15" Outlet Pipe** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 325.25' / 324.98' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.05 cfs @ 14.95 hrs HW=328.35' (Free Discharge)
└**3=15" Outlet Pipe** (Passes 0.05 cfs of 8.78 cfs potential flow)
  ├**1=1" Orifice** (Orifice Controls 0.05 cfs @ 8.42 fps)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 14P: Bioretention Basin

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 2.35" for 10 year event
Inflow = 0.48 cfs @ 11.91 hrs, Volume= 0.020 af
Outflow = 0.01 cfs @ 13.99 hrs, Volume= 0.020 af, Atten= 98%, Lag= 124.7 min
Primary = 0.01 cfs @ 13.99 hrs, Volume= 0.020 af
Routed to Link 11L : S/N 003

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 329.07' @ 13.99 hrs Surf.Area= 892 sf Storage= 535 cf

Plug-Flow detention time= 1,227.0 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 1,227.2 min (2,023.7 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	978 cf	**Surface Ponding (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	180	72.0	0	0	180
329.00	844	160.0	471	471	1,809
329.50	1,195	183.0	507	978	2,442

Device	Routing	Invert	Outlet Devices
#1	Device 4	328.00'	**0.500 in/hr Filtration over Surface area from 327.99' - 328.01'** Excluded Surface area = 0 sf
#2	Device 4	328.90'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 4	329.25'	**6.0" Horiz. 6" Cast-iron dome inlet grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	324.75'	**12.0" Round 12" Outlet Pipe** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.75' / 324.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 13.99 hrs HW=329.07' (Free Discharge)
└**4=12" Outlet Pipe** (Passes 0.01 cfs of 7.18 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.00 cfs)
  ├**2=1" Orifice** (Orifice Controls 0.01 cfs @ 1.75 fps)
  └**3=6" Cast-iron dome inlet grate** (Controls 0.00 cfs)

Summary for Link 9L: S/N 001

Inflow Area = 7.590 ac, 0.00% Impervious, Inflow Depth = 2.56" for 10 year event
Inflow = 28.22 cfs @ 12.01 hrs, Volume= 1.619 af
Primary = 28.22 cfs @ 12.01 hrs, Volume= 1.619 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 10L: S/N 002

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 2.64" for 10 year event
Inflow = 0.05 cfs @ 14.95 hrs, Volume= 0.101 af
Primary = 0.05 cfs @ 14.95 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 11L: S/N 003

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 2.35" for 10 year event
Inflow = 0.01 cfs @ 13.99 hrs, Volume= 0.020 af
Primary = 0.01 cfs @ 13.99 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 12L: S/N 004

Inflow Area = 0.410 ac, 0.00% Impervious, Inflow Depth = 1.17" for 10 year event
Inflow = 0.92 cfs @ 11.96 hrs, Volume= 0.040 af
Primary = 0.92 cfs @ 11.96 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

The Qp10 storm takes into account runoff from the HCI site using flows from the original stormwater permit application 6506-INDS (SEE NEXT PAGE FOR 6506-INDS RESULTS).

Pre Development Peak Discharge = 3.39 cfs (2.52+0.87),

Pre-routed, post development peak discharge = 8.89 cfs (7.97+0.92),

Routed, post development peak discharge = 1.93 cfs (1.01+0.92)

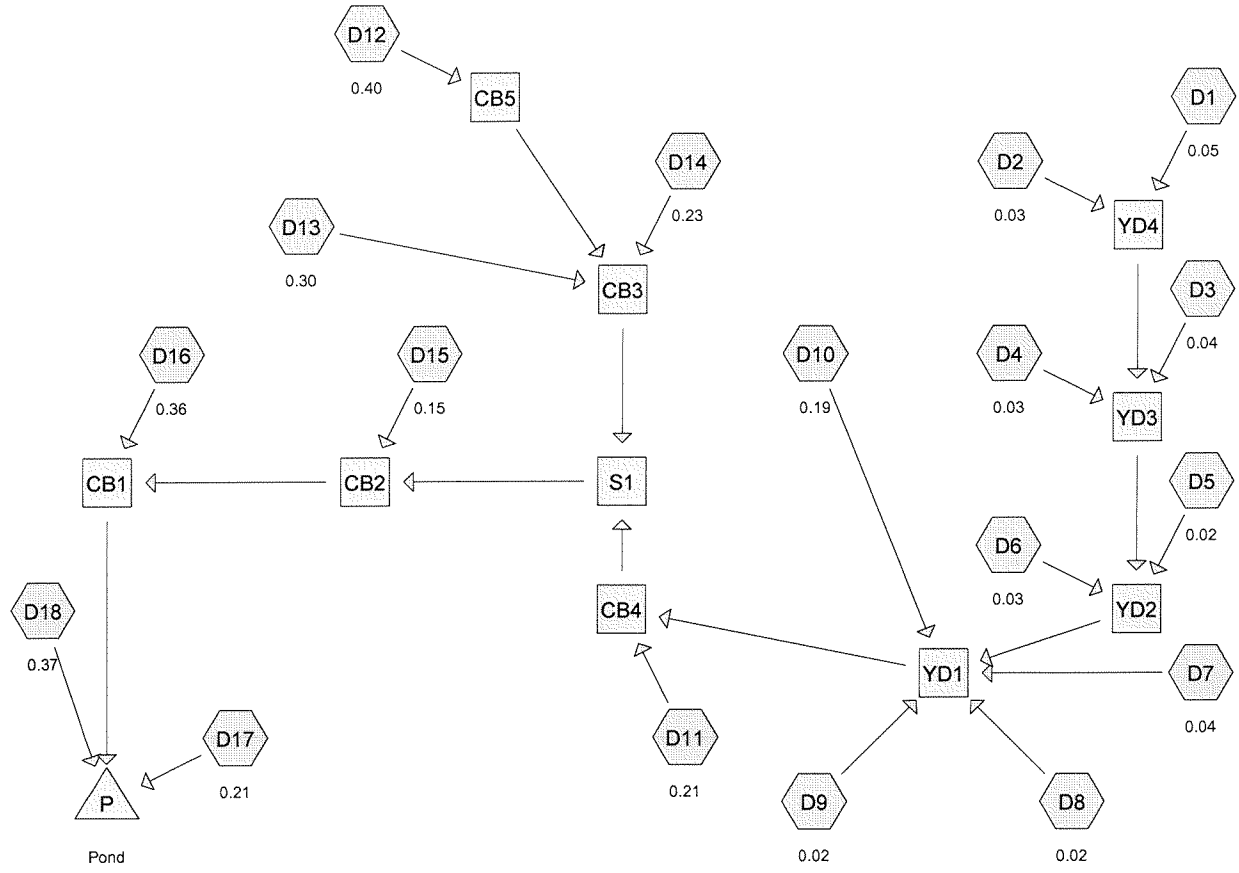
Subcatchment EX: 3.06

Runoff = 2.52 cfs @ 12.31 hrs, Volume= 0.279 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-720.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-year Rainfall=3.20"

Area (sf)	CN	Description
6,447	98	Paved parking & roofs
125,927	74	>75% Grass cover, Good, HSG C
892	61	>75% Grass cover, Good, HSG B
133,266	75	Weighted Average
126,819		Pervious Area
6,447		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0200	0.83		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.20"
2.5	20	0.1000	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"
14.9	60	0.0040	0.07		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.20"
15.8	420	0.0040	0.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.6	520	Total			



Subcat Reach Pond Link

Drainage Diagram for 2007039-HinesburgCenter
Prepared by Llewellyn-Howley Inc. 10/20/2010

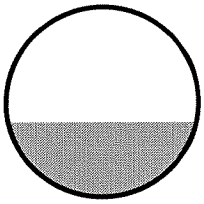
Reach YD4:

Inflow Area = 0.086 ac, Inflow Depth = 2.47" for 10-year event
Inflow = 0.29 cfs @ 11.91 hrs, Volume= 0.018 af
Outflow = 0.28 cfs @ 11.92 hrs, Volume= 0.018 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-720.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.28 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 1.3 min

Peak Storage= 7 cf @ 11.91 hrs, Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 0.67', Capacity at Bank-Full= 0.89 cfs

8.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 55.0' Slope= 0.0055 '/'
Inlet Invert= 330.50', Outlet Invert= 330.20'



Pond P: Pond

Inflow Area = 2.699 ac, Inflow Depth = 2.23" for 10-year event
Inflow = 7.97 cfs @ 11.99 hrs, Volume= 0.502 af
Outflow = 1.01 cfs @ 12.50 hrs, Volume= 0.502 af, Atten= 87%, Lag= 30.5 min
Primary = 1.01 cfs @ 12.50 hrs, Volume= 0.502 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-720.00 hrs, dt= 0.05 hrs
Peak Elev= 329.92' @ 12.50 hrs Surf.Area= 7,759 sf Storage= 12,309 cf

Plug-Flow detention time= 853.7 min calculated for 0.502 af (100% of inflow)
Center-of-Mass det. time= 854.4 min (1,646.5 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	23,567 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	5,031	0	0
329.00	6,478	5,755	5,755
330.00	7,869	7,174	12,928
331.00	13,408	10,639	23,567

Device	Routing	Invert	Outlet Devices
#1	Primary	327.80'	**12.0" x 100.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 327.30' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	328.00'	**2.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	329.80'	**24.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Secondary	330.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 6.0' Crest Height

Primary OutFlow Max=1.00 cfs @ 12.50 hrs HW=329.92' (Free Discharge)
└─**1=Culvert** (Passes 1.00 cfs of 3.57 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.53 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.86 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.00' (Free Discharge)
└─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 18S: DA-1

Runoff = 4.00 cfs @ 11.93 hrs, Volume= 0.168 af, Depth= 3.15"
Routed to Link 13L : S/N 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.640	82	Modified CN
	0.640	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	160	0.0833	1.12		**Lag/CN Method, LAG**

Summary for Subcatchment 19S: DA-2

Runoff = 47.89 cfs @ 11.97 hrs, Volume= 2.477 af, Depth= 4.28"
Routed to Pond 19F : Forebay #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	6.950	93	Modified CN
	6.950	93	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	663	0.0550	1.84		**Lag/CN Method, LAG**

Summary for Subcatchment 20S: DA-3

Runoff = 3.62 cfs @ 11.92 hrs, Volume= 0.164 af, Depth= 4.28"
Routed to Pond 20Pa : (2) 10'x6' Filterra Units (FTIBC1006)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.460	93	Modified CN
	0.460	93	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	131	0.0450	1.20		**Lag/CN Method, LAG**

Summary for Subcatchment 21S: DA-4

Runoff = 0.74 cfs @ 11.91 hrs, Volume= 0.030 af, Depth= 3.64"
Routed to Pond 21P : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.100	87	Modified CN
	0.100	87	100.00% Pervious Area

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

Summary for Subcatchment 22S: DA 5

Runoff = 1.76 cfs @ 11.96 hrs, Volume= 0.077 af, Depth= 2.26"
Routed to Link 16L : S/N 004

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.410	72	CN
	0.410	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	135	0.0333	0.51		**Lag/CN Method,**

Summary for Subcatchment 23S: DA-3

PRE-CONSTRUCTION

Runoff = 3.03 cfs @ 11.94 hrs, Volume= 0.136 af, Depth= 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.460	86	Modified CN
	0.460	86	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	131	0.0200	0.60		**Lag/CN Method,**

Summary for Subcatchment 24S: DA-4

PRE-CONSTRUCTION

Runoff = 0.58 cfs @ 11.92 hrs, Volume= 0.023 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.100	78	Modified CN
	0.100	78	100.00% Pervious Area

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

Summary for Subcatchment 25S: DA 5

PRE-CONSTRUCTION

Runoff = 1.76 cfs @ 11.96 hrs, Volume= 0.077 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.08"

	Area (ac)	CN	Description
*	0.410	72	CN
	0.410	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	135	0.0333	0.51		**Lag/CN Method,**

Summary for Pond 19F: Forebay #1

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 year event
Inflow = 47.89 cfs @ 11.97 hrs, Volume= 2.477 af
Outflow = 46.81 cfs @ 11.98 hrs, Volume= 2.477 af, Atten= 2%, Lag= 1.0 min
Primary = 46.81 cfs @ 11.98 hrs, Volume= 2.477 af
Routed to Pond 19P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 328.00' Surf.Area= 2,628 sf Storage= 3,057 cf
Peak Elev= 328.92' @ 11.98 hrs Surf.Area= 4,973 sf Storage= 6,513 cf (3,456 cf above start)

Plug-Flow detention time= 32.4 min calculated for 2.407 af (97% of inflow)
Center-of-Mass det. time= 2.3 min (776.7 - 774.4)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	13,093 cf	**Forebay Storage (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.00	513	516.0	0	0	513
327.00	1,557	529.0	988	988	1,714
328.00	2,628	541.0	2,069	3,057	2,867
329.00	5,198	591.0	3,841	6,898	7,407
330.00	7,249	696.0	6,195	13,093	18,180

Device	Routing	Invert	Outlet Devices
#1	Primary	328.00'	**20.0' long x 18.0' breadth Stone Spillway**
			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

Primary OutFlow Max=46.73 cfs @ 11.98 hrs HW=328.92' (Free Discharge)
1=Stone Spillway (Weir Controls 46.73 cfs @ 2.53 fps)

Summary for Pond 19P: Gravel Wetland

Inflow Area = 6.950 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 year event
Inflow = 46.81 cfs @ 11.98 hrs, Volume= 2.477 af
Outflow = 43.46 cfs @ 12.01 hrs, Volume= 2.477 af, Atten= 7%, Lag= 1.8 min
Primary = 3.70 cfs @ 12.01 hrs, Volume= 0.622 af
Routed to Link 13L : S/N 001
Secondary = 39.76 cfs @ 12.01 hrs, Volume= 1.855 af
Routed to Link 13L : S/N 001

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Starting Elev= 326.42' Surf.Area= 8,003 sf Storage= 6,634 cf
Peak Elev= 328.87' @ 12.01 hrs Surf.Area= 18,768 sf Storage= 26,924 cf (20,290 cf above start)

Plug-Flow detention time= 328.1 min calculated for 2.324 af (94% of inflow)
Center-of-Mass det. time= 266.0 min (1,042.7 - 776.7)

NOT REQUIRED DUE TO LAPLATTE DRAINAGE AREA WAIVER

Volume	Invert	Avail.Storage	Storage Description
#1	323.83'	6,634 cf	**2.25' Stone Storage (Irregular)** Listed below (Recalc)
			16,585 cf Overall x 40.0% Voids
#2	326.75'	33,290 cf	**Surface Storage (Irregular)** Listed below (Recalc)
		39,924 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
323.83	6,757	545.0	0	0	6,757
326.08	8,003	573.0	16,585	16,585	9,548

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
326.75	8,380	568.0	0	0	8,380
327.00	8,664	571.0	2,130	2,130	8,687
328.00	9,820	584.0	9,236	11,366	10,014
329.00	10,914	602.0	10,362	21,729	11,813
330.00	12,221	612.0	11,561	33,290	12,954

Device	Routing	Invert	Outlet Devices
#1	Primary	326.42'	**18.0" Round 18" Outlet Pipe** L= 11.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.42' / 326.25' S= 0.0155 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.42'	**1.6" Vert. 1.6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	328.05'	**12.0" W x 6.0" H Vert. Two 12"(W)x6"(H) Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.05'	**20.0' long x 10.0' breadth Stone Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.70 cfs @ 12.01 hrs HW=328.87' (Free Discharge)
└**1=18" Outlet Pipe** (Passes 3.70 cfs of 11.08 cfs potential flow)
  ├**2=1.6" Orifice** (Orifice Controls 0.10 cfs @ 7.43 fps)
  └**3=Two 12"(W)x6"(H) Orifice** (Orifice Controls 3.59 cfs @ 3.59 fps)

Secondary OutFlow Max=39.68 cfs @ 12.01 hrs HW=328.87' (Free Discharge)
└**4=Stone Spillway** (Weir Controls 39.68 cfs @ 2.43 fps)

Summary for Pond 20Pa: (2) 10'x6' Filterra Units (FTIBC1006)

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 year event
Inflow = 3.62 cfs @ 11.92 hrs, Volume= 0.164 af
Outflow = 3.71 cfs @ 11.92 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.1 min
Primary = 3.71 cfs @ 11.92 hrs, Volume= 0.164 af
Routed to Pond 20Pb : Pipe Storage

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 329.36' @ 11.92 hrs Surf.Area= 120 sf Storage= 132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (771.1 - 770.5)

Volume	Invert	Avail.Storage	Storage Description
#1	328.21'	132 cf	**6.00'W x 10.00'L x 1.10'H Vault** x 2

Device	Routing	Invert	Outlet Devices
#1	Device 3	328.21'	**140.000 in/hr Filtration over Surface area from 328.20' - 328.22'** Excluded Surface area = 0 sf
#2	Device 3	328.96'	**10.0" Horiz. 10" Overflow Pipe X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	325.71'	**10.0" Round 10" PVC Pipe** L= 54.0' Ke= 0.200 Inlet / Outlet Invert= 325.71' / 324.98' S= 0.0135 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.68 cfs @ 11.92 hrs HW=329.35' (Free Discharge)
└**3=10" PVC Pipe** (Passes 3.68 cfs of 5.23 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.39 cfs)
  └**2=10" Overflow Pipe** (Orifice Controls 3.29 cfs @ 3.01 fps)

Summary for Pond 20Pb: Pipe Storage

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 year event
Inflow = 3.71 cfs @ 11.92 hrs, Volume= 0.164 af
Outflow = 2.37 cfs @ 11.98 hrs, Volume= 0.164 af, Atten= 36%, Lag= 3.1 min
Primary = 2.37 cfs @ 11.98 hrs, Volume= 0.164 af
Routed to Link 14L : S/N 002

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 329.22' @ 11.98 hrs Surf.Area= 0.004 ac Storage= 0.078 af

Plug-Flow detention time= 604.6 min calculated for 0.164 af (100% of inflow)
Center-of-Mass det. time= 604.6 min (1,375.7 - 771.1)

Volume	Invert	Avail.Storage	Storage Description
#1	325.25'	0.078 af	**48.0" Round 48" Pipe** L= 270.0'

Device	Routing	Invert	Outlet Devices
#1	Device 3	325.25'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#2	Device 3	328.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Primary	325.25'	**15.0" Round 15" Outlet Pipe** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 325.25' / 324.98' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.33 cfs @ 11.98 hrs HW=329.22' (Free Discharge)
└**3=15" Outlet Pipe** (Passes 2.33 cfs of 10.43 cfs potential flow)
  ├**1=1" Orifice** (Orifice Controls 0.05 cfs @ 9.54 fps)
  └**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.27 cfs @ 1.70 fps)

Summary for Pond 21P: Bioretention Basin

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 3.64" for 100 year event
Inflow = 0.74 cfs @ 11.91 hrs, Volume= 0.030 af
Outflow = 0.06 cfs @ 12.37 hrs, Volume= 0.030 af, Atten= 93%, Lag= 27.6 min
Primary = 0.06 cfs @ 12.37 hrs, Volume= 0.030 af
Routed to Link 15L : S/N 003

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 329.29' @ 12.37 hrs Surf.Area= 1,038 sf Storage= 741 cf

Plug-Flow detention time= 936.7 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 936.9 min (1,729.4 - 792.5)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	978 cf	**Surface Ponding (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
328.00	180	72.0	0	0	180
329.00	844	160.0	471	471	1,809
329.50	1,195	183.0	507	978	2,442

Device	Routing	Invert	Outlet Devices
#1	Device 4	328.00'	**0.500 in/hr Filtration over Surface area from 327.99' - 328.01'** Excluded Surface area = 0 sf
#2	Device 4	328.90'	**1.0" Vert. 1" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 4	329.25'	**6.0" Horiz. 6" Cast-iron dome inlet grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	324.75'	**12.0" Round 12" Outlet Pipe** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.75' / 324.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.37 hrs HW=329.29' (Free Discharge)
└**4=12" Outlet Pipe** (Passes 0.06 cfs of 7.39 cfs potential flow)
  ├**1=Filtration** (Exfiltration Controls 0.00 cfs)
  ├**2=1" Orifice** (Orifice Controls 0.02 cfs @ 2.83 fps)
  └**3=6" Cast-iron dome inlet grate** (Weir Controls 0.04 cfs @ 0.63 fps)

Summary for Link 13L: S/N 001

Inflow Area = 7.590 ac, 0.00% Impervious, Inflow Depth = 4.18" for 100 year event
Inflow = 45.03 cfs @ 12.01 hrs, Volume= 2.645 af
Primary = 45.03 cfs @ 12.01 hrs, Volume= 2.645 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 14L: S/N 002

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 year event
Inflow = 2.37 cfs @ 11.98 hrs, Volume= 0.164 af
Primary = 2.37 cfs @ 11.98 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 15L: S/N 003

Inflow Area = 0.100 ac, 0.00% Impervious, Inflow Depth = 3.64" for 100 year event
Inflow = 0.06 cfs @ 12.37 hrs, Volume= 0.030 af
Primary = 0.06 cfs @ 12.37 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Summary for Link 16L: S/N 004

Inflow Area = 0.410 ac, 0.00% Impervious, Inflow Depth = 2.26" for 100 year event
Inflow = 1.76 cfs @ 11.96 hrs, Volume= 0.077 af
Primary = 1.76 cfs @ 11.96 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs