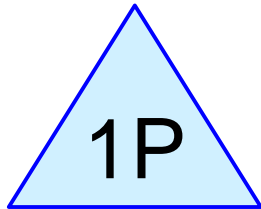
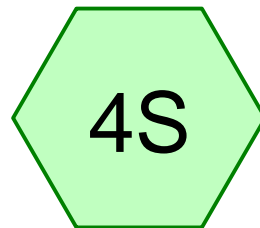
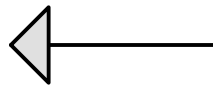
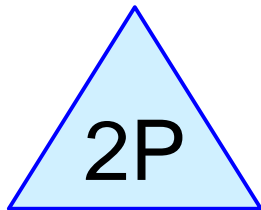


DA 1 (from GIS)

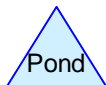
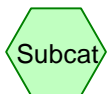


Pond 1



Pond 2

DA 2 (from GIS)



Summary for Subcatchment 3S: DA 1 (from GIS)

Runoff = 2.64 cfs @ 12.22 hrs, Volume= 0.458 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
8.902	39	>75% Grass cover, Good, HSG A
3.208	61	>75% Grass cover, Good, HSG B
8.290	74	>75% Grass cover, Good, HSG C
6.382	80	>75% Grass cover, Good, HSG D
* 3.102	98	
29.884	66	Weighted Average
26.782		89.62% Pervious Area
3.102		10.38% Impervious Area

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

Summary for Subcatchment 4S: DA 2 (from GIS)

Runoff = 3.22 cfs @ 12.05 hrs, Volume= 0.263 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
1.104	39	>75% Grass cover, Good, HSG A
3.296	61	>75% Grass cover, Good, HSG B
7.207	74	>75% Grass cover, Good, HSG C
* 0.833	98	
12.440	69	Weighted Average
11.607		93.30% Pervious Area
0.833		6.70% Impervious Area

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

Summary for Pond 1P: Pond 1

Inflow Area = 29.884 ac, 10.38% Impervious, Inflow Depth = 0.18" for 1 year event
 Inflow = 2.64 cfs @ 12.22 hrs, Volume= 0.458 af
 Outflow = 0.28 cfs @ 19.18 hrs, Volume= 0.297 af, Atten= 89%, Lag= 418.1 min
 Primary = 0.28 cfs @ 19.18 hrs, Volume= 0.297 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Starting Elev= 272.50' Surf.Area= 0.494 ac Storage= 1.127 af
 Peak Elev= 273.09' @ 19.18 hrs Surf.Area= 0.515 ac Storage= 1.422 af (0.295 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 1,095.7 min (2,056.3 - 960.6)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	2.478 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
270.00	0.409	0.000	0.000
271.00	0.442	0.425	0.425
272.00	0.476	0.459	0.884
273.00	0.512	0.494	1.378
274.00	0.549	0.531	1.909
275.00	0.588	0.568	2.478

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	12.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 270.00' / 269.70' S= 0.0150 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	272.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	273.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	274.50'	25.0' long x 15.0' breadth Broad-Crested Rectangular Weir 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=0.28 cfs @ 19.18 hrs HW=273.09' (Free Discharge)

- ↑ 1=Culvert (Passes 0.28 cfs of 6.08 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 3.55 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.26 cfs @ 0.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=272.50' (Free Discharge)

- ↑ 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Pond 2

lowered orifice elevation, increased pond footprint, raised spillway

Inflow Area =	42.324 ac,	9.30% Impervious,	Inflow Depth > 0.16" for 1 year event
Inflow =	3.22 cfs @ 12.05 hrs,	Volume=	0.560 af
Outflow =	0.10 cfs @ 25.80 hrs,	Volume=	0.532 af, Atten= 97%, Lag= 824.5 min
Primary =	0.10 cfs @ 25.80 hrs,	Volume=	0.532 af
Secondary =	0.00 cfs @ 0.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Starting Elev= 257.00' Surf.Area= 3,500 sf Storage= 3,929 cf
 Peak Elev= 260.07' @ 25.80 hrs Surf.Area= 6,568 sf Storage= 19,370 cf (15,441 cf above start)
 Flood Elev= 260.50' Surf.Area= 7,000 sf Storage= 22,304 cf (18,375 cf above start)

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Type II 24-hr 1 year Rainfall=2.10"

Prepared by TCE

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Plug-Flow detention time= 2,330.0 min calculated for 0.442 af (79% of inflow)

Center-of-Mass det. time= 1,474.1 min (3,000.7 - 1,526.6)

Volume	Invert	Avail.Storage	Storage Description
#1	255.00'	22,304 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.00	1,307	0	0
256.00	1,525	1,416	1,416
257.00	3,500	2,513	3,929
257.50	4,000	1,875	5,804
258.00	4,500	2,125	7,929
258.50	5,000	2,375	10,304
259.00	5,500	2,625	12,929
259.50	6,000	2,875	15,804
260.00	6,500	3,125	18,929
260.50	7,000	3,375	22,304

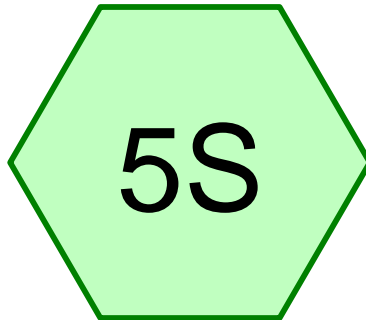
Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	1.5" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Secondary	260.25'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.10 cfs @ 25.80 hrs HW=260.07' (Free Discharge)

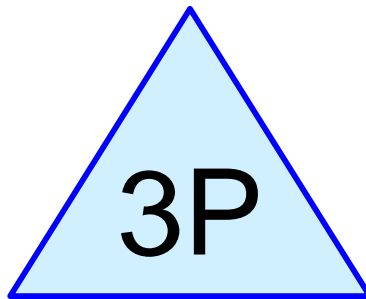
↑**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 8.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=257.00' (Free Discharge)

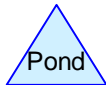
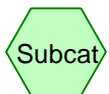
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Area B (GIS)



Pond 2 (from map)



Summary for Subcatchment 5S: Area B (GIS)

Runoff = 6.26 cfs @ 12.01 hrs, Volume= 0.392 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-99.99 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
3.890	98	Paved parking & roofs
12.046	61	>75% Grass cover, Good, HSG B
0.900	74	>75% Grass cover, Good, HSG C
16.836	70	Weighted Average
12.946		76.89% Pervious Area
3.890		23.11% Impervious Area

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

Summary for Pond 3P: Pond 2 (from map)

lowered & reduced size of control orifice, raised elevation of overflow grate

Inflow Area = 16.836 ac, 23.11% Impervious, Inflow Depth = 0.28" for 1 year event
 Inflow = 6.26 cfs @ 12.01 hrs, Volume= 0.392 af
 Outflow = 0.17 cfs @ 20.83 hrs, Volume= 0.343 af, Atten= 97%, Lag= 529.4 min
 Primary = 0.17 cfs @ 20.83 hrs, Volume= 0.343 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-99.99 hrs, dt= 0.03 hrs
 Starting Elev= 167.00' Surf.Area= 0.046 ac Storage= 0.040 af
 Peak Elev= 171.03' @ 20.83 hrs Surf.Area= 0.105 ac Storage= 0.342 af (0.302 af above start)
 Flood Elev= 174.00' Surf.Area= 0.155 ac Storage= 0.725 af (0.686 af above start)

Plug-Flow detention time= 2,284.1 min calculated for 0.303 af (77% of inflow)
 Center-of-Mass det. time= 1,945.1 min (2,861.9 - 916.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	166.00'	0.725 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
166.00	0.034	153.6	0.000	0.000	0.034
168.00	0.059	203.8	0.092	0.092	0.068
170.00	0.091	243.2	0.149	0.241	0.102
172.00	0.120	270.8	0.210	0.451	0.130
174.00	0.155	301.4	0.274	0.725	0.165

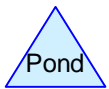
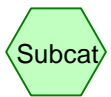
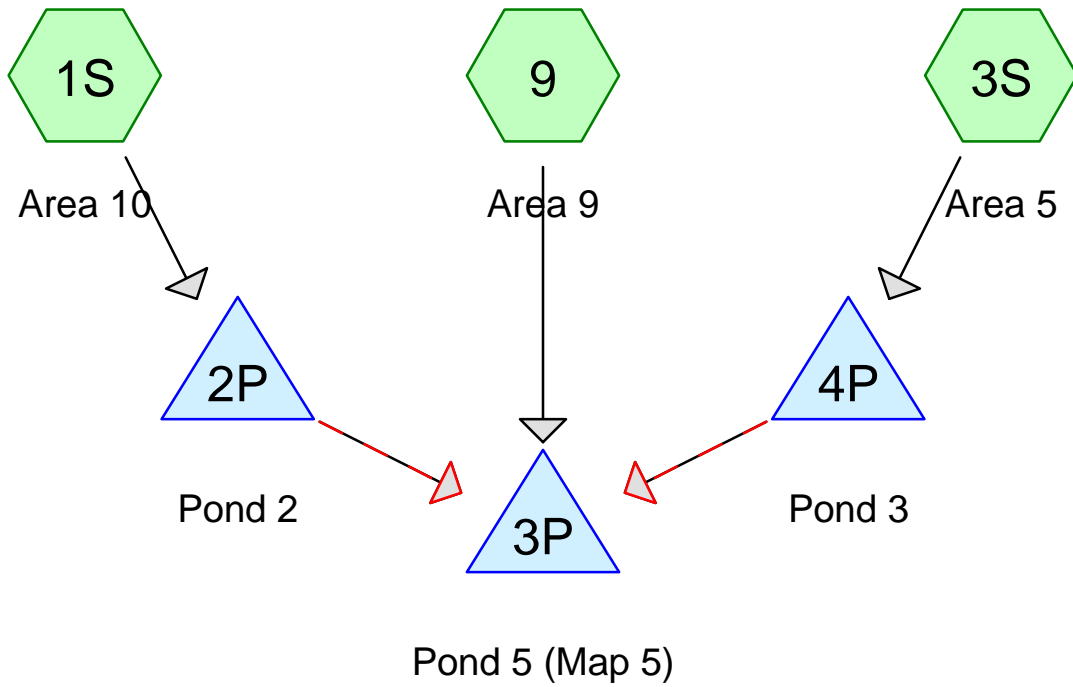
Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	24.0" Round Culvert L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 166.50' S= 0.0143 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Device 1	167.00'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	171.00'	24.0" Horiz. overflow grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	172.00'	60.0' long x 10.0' breadth Broad-Crested Rectangular Weir 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=0.15 cfs @ 20.83 hrs HW=171.03' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.15 cfs of 22.72 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 9.61 fps)
- ↑ **3=overflow grate** (Weir Controls 0.10 cfs @ 0.56 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)

- ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Summary for Subcatchment 1S: Area 10

Runoff = 7.19 cfs @ 12.08 hrs, Volume= 0.491 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 10.130	79	
10.130		100.00% Pervious Area

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

Summary for Subcatchment 3S: Area 5

Runoff = 7.16 cfs @ 12.11 hrs, Volume= 0.523 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 10.060	80	
10.060		100.00% Pervious Area

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

Summary for Subcatchment 9: Area 9

Runoff = 1.70 cfs @ 12.23 hrs, Volume= 0.194 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 6.360	73	
6.360		100.00% Pervious Area

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

Summary for Pond 2P: Pond 2

Inflow Area = 10.130 ac, 0.00% Impervious, Inflow Depth = 0.58" for 1 year event
 Inflow = 7.19 cfs @ 12.08 hrs, Volume= 0.491 af
 Outflow = 0.10 cfs @ 12.82 hrs, Volume= 0.225 af, Atten= 99%, Lag= 44.3 min
 Primary = 0.10 cfs @ 12.82 hrs, Volume= 0.225 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Starting Elev= 384.00' Surf.Area= 0.000 ac Storage= 0.110 af
 Peak Elev= 384.98' @ 24.85 hrs Surf.Area= 0.000 ac Storage= 0.573 af (0.463 af above start)

Plug-Flow detention time= 4,609.8 min calculated for 0.115 af (23% of inflow)
 Center-of-Mass det. time= 3,306.8 min (4,183.0 - 876.2)

Volume	Invert	Avail.Storage	Storage Description
#1	383.00'	2.970 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
383.00	0.000
384.00	0.110
385.00	0.580
386.00	1.090
387.00	1.660
388.00	2.280
389.00	2.970

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	24.0" Round Culvert L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 383.00' / 382.25' S= 0.0125 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Device 1	384.00'	2.5" Vert. Orifice/Grate C= 0.600
#3	Secondary	388.00'	12.6' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59
#4	Secondary	388.50'	20.0' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 12.82 hrs HW=384.50' TW=384.12' (Dynamic Tailwater)

- ↑1=Culvert (Passes 0.10 cfs of 4.53 cfs potential flow)
- ↑2=Orifice/Grate (Orifice Controls 0.10 cfs @ 2.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' TW=383.00' (Dynamic Tailwater)

- ↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
- ↑4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Pond 5 (Map 5)

added control orifice

[80] Warning: Exceeded Pond 2P by 0.08' @ 21.75 hrs (0.05 cfs 0.075 af)

Inflow Area = 26.550 ac, 0.00% Impervious, Inflow Depth > 0.42" for 1 year event
 Inflow = 1.88 cfs @ 12.23 hrs, Volume= 0.937 af
 Outflow = 0.12 cfs @ 25.33 hrs, Volume= 0.811 af, Atten= 94%, Lag= 786.1 min
 Primary = 0.12 cfs @ 25.33 hrs, Volume= 0.811 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 385.05' @ 25.33 hrs Surf.Area= 0.250 ac Storage= 0.241 af
 Flood Elev= 388.00' Surf.Area= 1.420 ac Storage= 2.357 af

Plug-Flow detention time= 1,164.5 min calculated for 0.811 af (86% of inflow)
 Center-of-Mass det. time= 730.0 min (3,314.9 - 2,584.9)

Volume	Invert	Avail.Storage	Storage Description
#1	383.00'	5.197 af	Custom Stage Data (Pyramidal) Listed below

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
383.00	0.035	0.000	0.000	0.035
384.00	0.095	0.063	0.063	0.095
385.00	0.240	0.162	0.225	0.240
386.00	0.460	0.344	0.569	0.461
387.00	0.870	0.654	1.223	0.871
388.00	1.420	1.134	2.357	1.421
389.00	1.420	1.420	3.777	1.444
390.00	1.420	1.420	5.197	1.467

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	18.0" Round Culvert L= 80.0' Ke= 0.900 Inlet / Outlet Invert= 383.00' / 382.00' S= 0.0125 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	383.00'	1.8" Vert. Orifice/Grate C= 0.600
#3	Device 1	387.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	389.50'	35.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32

Primary OutFlow Max=0.12 cfs @ 25.33 hrs HW=385.05' (Free Discharge)

- 1=Culvert (Passes 0.12 cfs of 6.52 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.12 cfs @ 6.76 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Pond 3

Inflow Area = 10.060 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1 year event
 Inflow = 7.16 cfs @ 12.11 hrs, Volume= 0.523 af
 Outflow = 0.13 cfs @ 15.48 hrs, Volume= 0.518 af, Atten= 98%, Lag= 202.1 min
 Primary = 0.13 cfs @ 15.48 hrs, Volume= 0.518 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 386.37' @ 24.15 hrs Surf.Area= 0.000 ac Storage= 0.396 af

Plug-Flow detention time= 1,645.3 min calculated for 0.518 af (99% of inflow)
 Center-of-Mass det. time= 1,641.3 min (2,515.4 - 874.2)

Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	1.810 af	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (acre-feet)
384.50	0.000
385.00	0.050
386.00	0.280
387.00	0.590
388.00	0.930
389.00	1.330
390.00	1.810

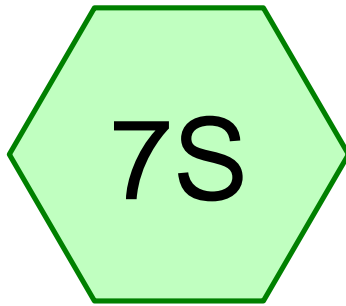
Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	18.0" Round Culvert L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 384.50' / 383.00' S= 0.0375 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Device 1	384.50'	2.0" Vert. Orifice/Grate C= 0.600
#3	Secondary	387.50'	12.6' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#4	Secondary	389.00'	20.0' long x 1.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32

Primary OutFlow Max=0.13 cfs @ 15.48 hrs HW=386.19' TW=384.59' (Dynamic Tailwater)

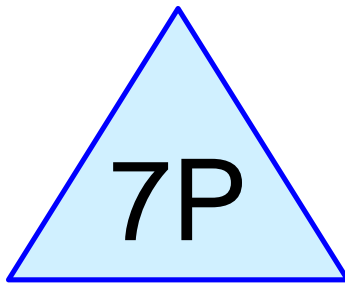
- ↑ **1=Culvert** (Passes 0.13 cfs of 8.26 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 6.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.50' TW=383.00' (Dynamic Tailwater)

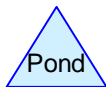
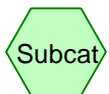
- ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Updated DA



Modified Pond



M8 - Route 7 - Updated

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Type II 24-hr 1 year Rainfall=2.10"

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Summary for Subcatchment 7S: Updated DA

Runoff = 24.33 cfs @ 12.75 hrs, Volume= 4.830 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 12.129	98	Impervious, HSG B
10.499	61	>75% Grass cover, Good, HSG B
26.260	60	Woods, Fair, HSG B
* 17.317	98	Impervious, HSG C
8.496	74	>75% Grass cover, Good, HSG C
19.802	73	Woods, Fair, HSG C
* 3.349	98	Impervious, HSG D
5.493	80	>75% Grass cover, Good, HSG D
11.910	79	Woods, Fair, HSG D
115.255	77	Weighted Average
82.460		71.55% Pervious Area
32.795		28.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.8	5,331	0.0420	1.37		Lag/CN Method,

Summary for Pond 7P: Modified Pond

Inflow Area = 115.255 ac, 28.45% Impervious, Inflow Depth = 0.50" for 1 year event
 Inflow = 24.33 cfs @ 12.75 hrs, Volume= 4.830 af
 Outflow = 12.80 cfs @ 13.49 hrs, Volume= 4.794 af, Atten= 47%, Lag= 44.3 min
 Primary = 12.80 cfs @ 13.49 hrs, Volume= 4.794 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 146.24' Surf.Area= 0.386 ac Storage= 0.389 af
 Peak Elev= 150.68' @ 13.49 hrs Surf.Area= 0.553 ac Storage= 2.168 af (1.779 af above start)

Plug-Flow detention time= 837.4 min calculated for 4.405 af (91% of inflow)
 Center-of-Mass det. time= 717.5 min (1,649.4 - 931.9)

Volume	Invert	Avail.Storage	Storage Description
#1	144.50'	2.305 af	Custom Stage Data (Irregular) Listed below (Recalc)
#2	145.10'	1.343 af	100.00'W x 130.00'L x 5.00'H Prismatic
		1.492 af	Overall x 90.0% Voids
		3.648 af	Total Available Storage

M8 - Route 7 - Updated

Type II 24-hr 1 year Rainfall=2.10"

Prepared by TCE

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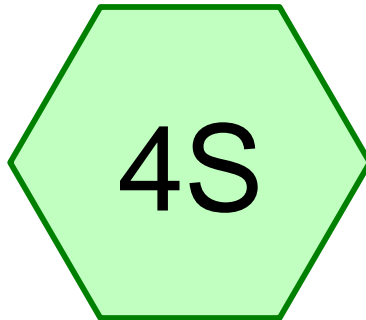
Page 3

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
144.50	0.012	360.0	0.000	0.000	0.012
146.00	0.081	470.0	0.062	0.062	0.179
150.00	0.231	564.0	0.598	0.660	0.363
154.00	0.383	543.0	1.215	1.876	0.429
155.00	0.478	606.0	0.430	2.305	0.562

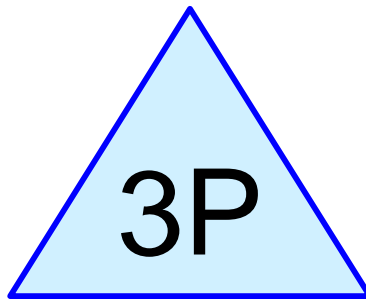
Device	Routing	Invert	Outlet Devices
#1	Primary	145.10'	30.0" Round Culvert L= 128.0' Ke= 0.500 Inlet / Outlet Invert= 145.10' / 143.82' S= 0.0100 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	146.24'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	148.40'	3.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	150.24'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.76 cfs @ 13.49 hrs HW=150.68' (Free Discharge)

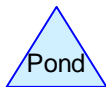
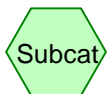
- ↑ **1=Culvert** (Passes 12.76 cfs of 49.17 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.49 cfs @ 10.00 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.07 fps)
- ↑ **4=Orifice/Grate** (Weir Controls 11.92 cfs @ 2.16 fps)



Auto Spa



Pond Contours from map



Summary for Subcatchment 4S: Auto Spa

Runoff = 1.93 cfs @ 12.31 hrs, Volume= 0.234 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 6.020	76	
6.020		100.00% Pervious Area

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

Summary for Pond 3P: Pond Contours from map

replaced 4 x 1.5" control orifices

Inflow Area = 6.020 ac, 0.00% Impervious, Inflow Depth = 0.47" for 1 year event
 Inflow = 1.93 cfs @ 12.31 hrs, Volume= 0.234 af
 Outflow = 0.06 cfs @ 24.31 hrs, Volume= 0.234 af, Atten= 97%, Lag= 720.1 min
 Primary = 0.06 cfs @ 24.31 hrs, Volume= 0.234 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.95' @ 24.31 hrs Surf.Area= 0.167 ac Storage= 0.176 af
 Flood Elev= 143.50' Surf.Area= 0.189 ac Storage= 0.274 af

Plug-Flow detention time= 1,402.1 min calculated for 0.234 af (100% of inflow)
 Center-of-Mass det. time= 1,402.9 min (2,308.7 - 905.8)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	0.274 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
140.50	0.000	0.000	0.000
141.00	0.027	0.007	0.007
142.00	0.078	0.052	0.059
143.00	0.172	0.125	0.184
143.50	0.189	0.090	0.274

Device	Routing	Invert	Outlet Devices
#1	Primary	140.50'	12.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 140.50' / 140.40' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	140.50'	1.2" Vert. Orifice/Grate C= 0.600
#3	Device 1	143.00'	8.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Secondary	143.00'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir

Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
	2.50	3.00	3.50	4.00	4.50	5.00	5.50			
Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68
	2.72	2.73	2.76	2.79	2.88	3.07	3.32			

Primary OutFlow Max=0.06 cfs @ 24.31 hrs HW=142.95' (Free Discharge)

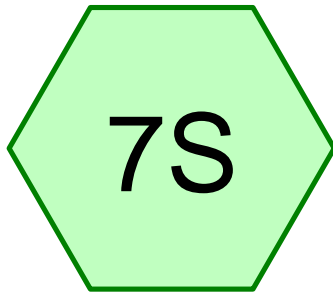
↑1=Culvert (Passes 0.06 cfs of 5.28 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 0.06 cfs @ 7.46 fps)

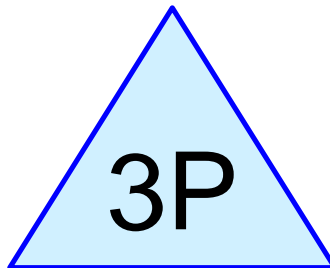
↑3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=140.50' (Free Discharge)

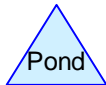
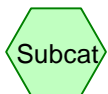
↑4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



DA (TCE GIS)



South Pond



Summary for Subcatchment 7S: DA (TCE GIS)

Runoff = 6.75 cfs @ 12.30 hrs, Volume= 0.718 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 1.484	98	Impervious, HSG B
0.113	61	>75% Grass cover, Good, HSG B
1.762	60	Woods, Fair, HSG B
* 0.539	98	Impervious, HSG C
0.551	74	>75% Grass cover, Good, HSG C
0.112	73	Woods, Fair, HSG C
* 3.281	98	Impervious, HSG D
0.164	80	>75% Grass cover, Good, HSG D
1.904	79	Woods, Fair, HSG D
9.910	85	Weighted Average
4.606		46.48% Pervious Area
5.304		53.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	1,082	0.0074	0.54		Lag/CN Method,

Summary for Pond 3P: South Pond

Inflow Area = 9.910 ac, 53.52% Impervious, Inflow Depth = 0.87" for 1 year event
 Inflow = 6.75 cfs @ 12.30 hrs, Volume= 0.718 af
 Outflow = 0.18 cfs @ 23.33 hrs, Volume= 0.714 af, Atten= 97%, Lag= 661.8 min
 Primary = 0.18 cfs @ 23.33 hrs, Volume= 0.714 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 153.72' @ 23.33 hrs Surf.Area= 8,117 sf Storage= 23,468 cf

Plug-Flow detention time= 1,545.0 min calculated for 0.714 af (99% of inflow)
 Center-of-Mass det. time= 1,543.5 min (2,412.2 - 868.7)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	25,812 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	4,500	0	0
151.00	5,766	5,133	5,133
153.00	7,104	12,870	18,003
154.00	8,514	7,809	25,812

M10 - Shelb Mead So Pond (A) Rev 2016 0224

Type II 24-hr 1 year Rainfall=2.10"

Prepared by TCE

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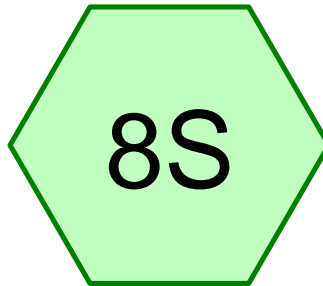
Device	Routing	Invert	Outlet Devices
#1	Primary	149.82'	24.0" Round Culvert L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 149.82' / 149.50' S= 0.0128 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Device 1	150.00'	1.9" Vert. Orifice C= 0.600
#3	Device 1	153.78'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.18 cfs @ 23.33 hrs HW=153.72' (Free Discharge)

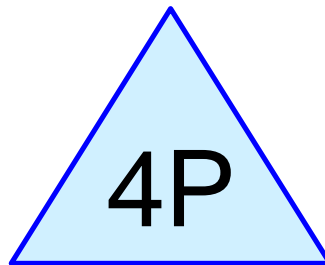
↑ **1=Culvert** (Passes 0.18 cfs of 23.06 cfs potential flow)

↑ **2=Orifice** (Orifice Controls 0.18 cfs @ 9.19 fps)

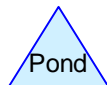
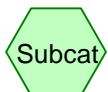
↑ **3=Grate** (Controls 0.00 cfs)



North Pond (TCE GIS)



North Pond



Summary for Subcatchment 8S: North Pond (TCE GIS)

Runoff = 1.96 cfs @ 12.10 hrs, Volume= 0.161 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
1.738	98	Paved roads w/curbs & sewers
2.627	61	>75% Grass cover, Good, HSG B
0.905	60	Woods, Fair, HSG B
5.270	73	Weighted Average
3.532		67.02% Pervious Area
1.738		32.98% Impervious Area

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

Summary for Pond 4P: North Pond

Inflow Area = 5.270 ac, 32.98% Impervious, Inflow Depth = 0.37" for 1 year event
 Inflow = 1.96 cfs @ 12.10 hrs, Volume= 0.161 af
 Outflow = 0.04 cfs @ 24.18 hrs, Volume= 0.160 af, Atten= 98%, Lag= 724.4 min
 Primary = 0.04 cfs @ 24.18 hrs, Volume= 0.160 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 158.85' @ 24.18 hrs Surf.Area= 3,846 sf Storage= 5,446 cf

Plug-Flow detention time= 1,610.8 min calculated for 0.160 af (99% of inflow)
 Center-of-Mass det. time= 1,607.8 min (2,514.0 - 906.2)

Volume	Invert	Avail.Storage	Storage Description
#1	156.75'	10,332 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.75	0	0	0
158.00	3,600	2,250	2,250
159.00	3,888	3,744	5,994
160.00	4,788	4,338	10,332

Device	Routing	Invert	Outlet Devices
#1	Primary	156.75'	24.0" Round Culvert L= 30.0' Ke= 0.200 Inlet / Outlet Invert= 150.00' / 156.75' S= -0.2250 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	156.75'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	159.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

M11 - Shelb Mead No Pond Rev 2016 0224

Type II 24-hr 1 year Rainfall=2.10"

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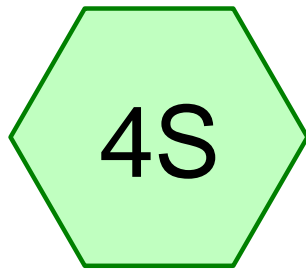
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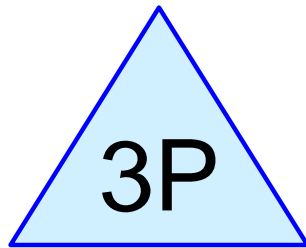
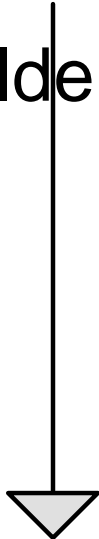
Page 3

Primary OutFlow Max=0.04 cfs @ 24.18 hrs HW=158.85' (Free Discharge)

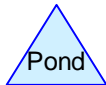
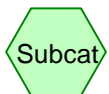
- ↑ 1=Culvert (Passes 0.04 cfs of 19.86 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 6.91 fps)
- ↑ 3=Orifice/Grate (Controls 0.00 cfs)



Boulder Hill



Pond



Summary for Subcatchment 4S: Boulder Hill

Runoff = 17.15 cfs @ 12.13 hrs, Volume= 1.348 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 25.900	80	
25.900		100.00% Pervious Area

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

Summary for Pond 3P: Pond

simplified orifices to single 2" for 1-year control

Inflow Area = 25.900 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1 year event
 Inflow = 17.15 cfs @ 12.13 hrs, Volume= 1.348 af
 Outflow = 0.05 cfs @ 24.44 hrs, Volume= 0.153 af, Atten= 100%, Lag= 738.4 min
 Primary = 0.05 cfs @ 24.44 hrs, Volume= 0.153 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 197.20' @ 24.44 hrs Surf.Area= 16,793 sf Storage= 56,500 cf
 Flood Elev= 200.00' Surf.Area= 21,000 sf Storage= 109,500 cf

Plug-Flow detention time= 1,106.1 min calculated for 0.153 af (11% of inflow)
 Center-of-Mass det. time= 946.9 min (1,823.0 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1	193.00'	109,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
193.00	9,000	0	0
194.00	12,000	10,500	10,500
196.00	15,000	27,000	37,500
198.00	18,000	33,000	70,500
200.00	21,000	39,000	109,500

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	24.0" Round Culvert L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 192.50' / 192.00' S= 0.0143 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	193.00'	1.0" Vert. Orifice C= 0.600
#3	Device 1	199.50'	36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	200.00'	8.0' long x 4.0' breadth Broad-Crested Rectangular Weir

Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
	2.50	3.00	3.50	4.00	4.50	5.00	5.50			
Coef. (English)	2.38	2.54	2.69	2.68	2.67	2.67	2.65	2.66	2.66	2.68
	2.72	2.73	2.76	2.79	2.88	3.07	3.32			

Primary OutFlow Max=0.05 cfs @ 24.44 hrs HW=197.20' (Free Discharge)

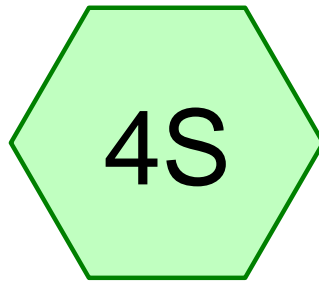
↑ **1=Culvert** (Passes 0.05 cfs of 29.08 cfs potential flow)

↑ **2=Orifice** (Orifice Controls 0.05 cfs @ 9.81 fps)

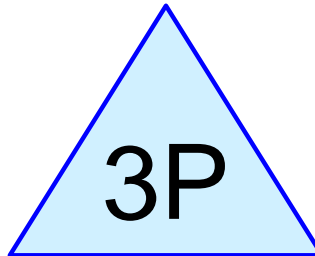
↑ **3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=193.00' (Free Discharge)

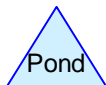
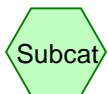
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



002



Pond 2 (from site plans)



Summary for Subcatchment 4S: 002

Runoff = 4.58 cfs @ 12.05 hrs, Volume= 0.278 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 5.340	80	
5.340		100.00% Pervious Area

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

Summary for Pond 3P: Pond 2 (from site plans)

Inflow Area = 5.340 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1 year event
 Inflow = 4.58 cfs @ 12.05 hrs, Volume= 0.278 af
 Outflow = 0.04 cfs @ 24.17 hrs, Volume= 0.145 af, Atten= 99%, Lag= 727.1 min
 Primary = 0.04 cfs @ 24.17 hrs, Volume= 0.145 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.01 hrs
 Peak Elev= 371.89' @ 24.17 hrs Surf.Area= 0.134 ac Storage= 0.240 af

Plug-Flow detention time= 1,391.4 min calculated for 0.145 af (52% of inflow)
 Center-of-Mass det. time= 1,251.4 min (2,121.0 - 869.6)

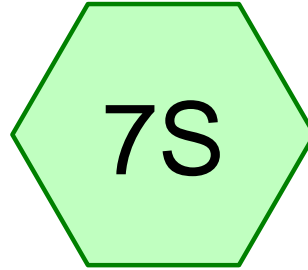
Volume	Invert	Avail.Storage	Storage Description
#1	369.50'	0.585 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
369.50	0.034	0.000	0.000
370.00	0.087	0.030	0.030
372.00	0.137	0.224	0.254
374.00	0.194	0.331	0.585

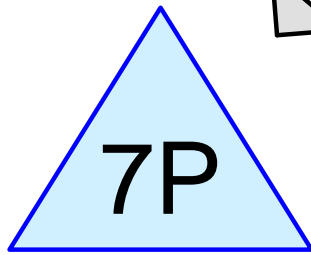
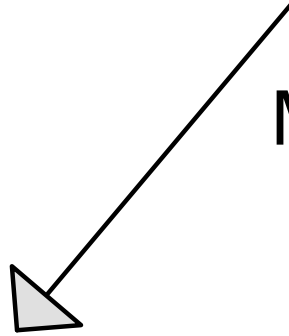
Device	Routing	Invert	Outlet Devices
#1	Primary	369.50'	15.0" Round Culvert L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 369.50' / 366.50' S= 0.0769 1' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	369.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	371.90'	8.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Primary	372.30'	6.0" Vert. Orifice/Grate X 6.00 C= 0.600
#5	Device 1	373.25'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 24.17 hrs HW=371.89' (Free Discharge)

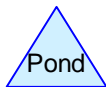
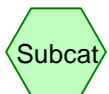
- 1=Culvert (Passes 0.04 cfs of 7.85 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 7.38 fps)
- 5=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Orifice/Grate (Controls 0.00 cfs)



M27 DA



M27



Summary for Subcatchment 7S: M27 DA

Runoff = 2.61 cfs @ 12.13 hrs, Volume= 0.243 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 0.893	98	Impervious, HSG B
0.878	61	>75% Grass cover, Good, HSG B
3.342	60	Woods, Fair, HSG B
* 0.765	98	Impervious, HSG C
0.604	74	>75% Grass cover, Good, HSG C
2.207	73	Woods, Fair, HSG C
8.689	72	Weighted Average
7.031		80.92% Pervious Area
1.658		19.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	825	0.0400	0.80		Lag/CN Method,

Summary for Pond 7P: M27

Inflow Area = 8.689 ac, 19.08% Impervious, Inflow Depth = 0.34" for 1 year event
 Inflow = 2.61 cfs @ 12.13 hrs, Volume= 0.243 af
 Outflow = 0.06 cfs @ 24.19 hrs, Volume= 0.242 af, Atten= 98%, Lag= 723.2 min
 Primary = 0.06 cfs @ 24.19 hrs, Volume= 0.242 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 157.50' Surf.Area= 2,856 sf Storage= 1,344 cf
 Peak Elev= 159.68' @ 24.19 hrs Surf.Area= 4,495 sf Storage= 9,307 cf (7,963 cf above start)

Plug-Flow detention time= 1,723.9 min calculated for 0.211 af (87% of inflow)
 Center-of-Mass det. time= 1,451.7 min (2,365.7 - 914.0)

Volume	Invert	Avail.Storage	Storage Description
#1	157.00'	22,080 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
157.00	2,520	0	0
158.00	3,192	2,856	2,856
159.00	3,936	3,564	6,420
160.00	4,752	4,344	10,764
161.00	5,640	5,196	15,960
162.00	6,600	6,120	22,080

M27- Deer Run Rev 2016 0225

Type II 24-hr 1 year Rainfall=2.10"

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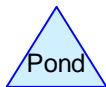
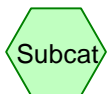
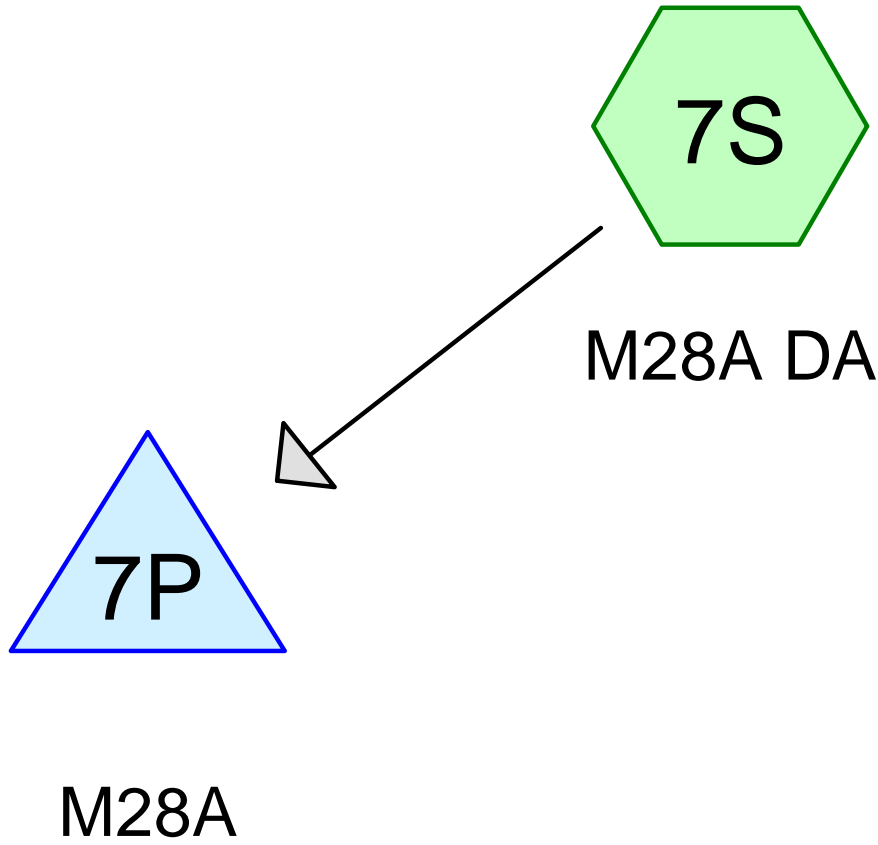
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Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	24.0" Round Culvert L= 173.0' Ke= 0.500 Inlet / Outlet Invert= 154.00' / 52.00' S= 0.5896 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	157.50'	1.3" Vert. Orifice/Grate C= 0.600
#3	Device 1	161.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 24.19 hrs HW=159.68' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.06 cfs of 32.74 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 7.03 fps)
- ↑ **3=Orifice/Grate** (Controls 0.00 cfs)



Summary for Subcatchment 7S: M28A DA

Runoff = 2.41 cfs @ 12.22 hrs, Volume= 0.232 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 1.317	98	Impervious, HSG C
0.273	74	>75% Grass cover, Good, HSG C
2.876	73	Woods, Fair, HSG C
4.466	80	Weighted Average
3.149		70.51% Pervious Area
1.317		29.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.3	610	0.0066	0.39		Lag/CN Method,

Summary for Pond 7P: M28A

Inflow Area = 4.466 ac, 29.49% Impervious, Inflow Depth = 0.62" for 1 year event
 Inflow = 2.41 cfs @ 12.22 hrs, Volume= 0.232 af
 Outflow = 0.14 cfs @ 16.02 hrs, Volume= 0.230 af, Atten= 94%, Lag= 228.2 min
 Primary = 0.14 cfs @ 16.02 hrs, Volume= 0.230 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 172.00' Surf.Area= 2,548 sf Storage= 3,776 cf
 Peak Elev= 174.02' @ 16.02 hrs Surf.Area= 4,138 sf Storage= 10,493 cf (6,717 cf above start)

Plug-Flow detention time= 2,355.6 min calculated for 0.143 af (62% of inflow)
 Center-of-Mass det. time= 1,486.4 min (2,369.3 - 882.9)

Volume	Invert	Avail.Storage	Storage Description
#1	170.00'	14,975 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
170.00	1,264	0	0
171.00	1,870	1,567	1,567
172.00	2,548	2,209	3,776
173.00	3,298	2,923	6,699
174.00	4,120	3,709	10,408
175.00	5,014	4,567	14,975

Device	Routing	Invert	Outlet Devices
#1	Primary	168.00'	24.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 168.00' / 166.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	172.00'	1.1" Vert. Orifice/Grate C= 0.600
#3	Device 1	174.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

M28A - Shelb Camping Rev 2016 0225

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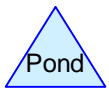
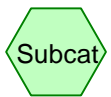
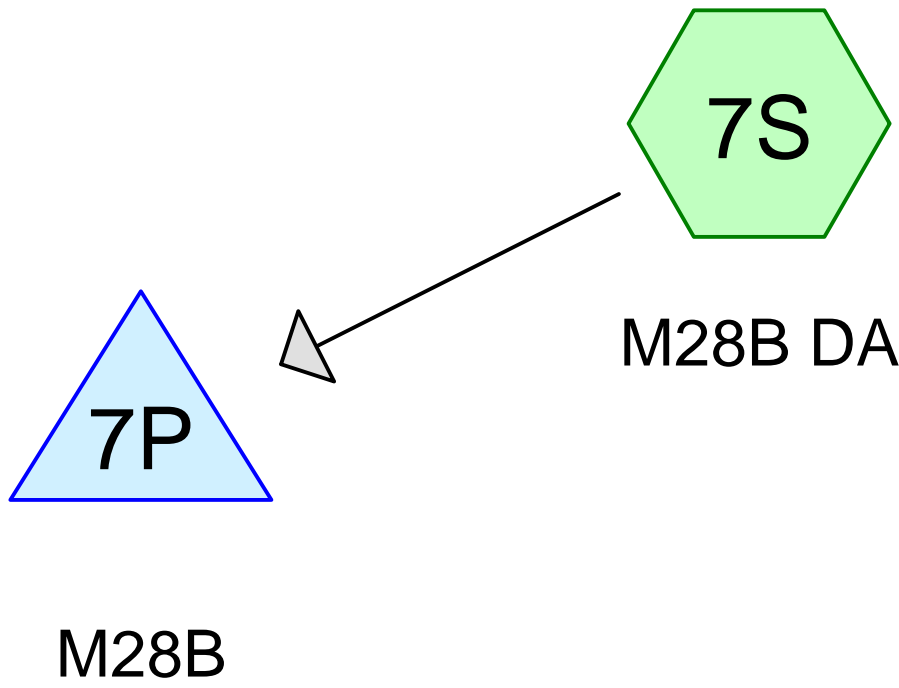
Type II 24-hr 1 year Rainfall=2.10"

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Primary OutFlow Max=0.11 cfs @ 16.02 hrs HW=174.02' (Free Discharge)

- ↑ 1=Culvert (Passes 0.11 cfs of 33.89 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 6.77 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.06 cfs @ 0.47 fps)



Summary for Subcatchment 7S: M28B DA

Runoff = 4.38 cfs @ 12.09 hrs, Volume= 0.297 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 0.523	98	Impervious, HSG B
0.171	61	>75% Grass cover, Good, HSG B
0.754	60	Woods, Fair, HSG B
* 1.741	98	Impervious, HSG C
0.362	74	>75% Grass cover, Good, HSG C
1.770	73	Woods, Fair, HSG C
5.321	81	Weighted Average
3.057		57.45% Pervious Area
2.264		42.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	535	0.0149	0.58		Lag/CN Method,

Summary for Pond 7P: M28B

Inflow Area = 5.321 ac, 42.55% Impervious, Inflow Depth = 0.67" for 1 year event
 Inflow = 4.38 cfs @ 12.09 hrs, Volume= 0.297 af
 Outflow = 0.08 cfs @ 24.10 hrs, Volume= 0.293 af, Atten= 98%, Lag= 720.6 min
 Primary = 0.08 cfs @ 24.10 hrs, Volume= 0.293 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 171.00' Surf.Area= 4,625 sf Storage= 7,414 cf
 Peak Elev= 172.75' @ 24.10 hrs Surf.Area= 6,448 sf Storage= 17,101 cf (9,687 cf above start)

Plug-Flow detention time= 2,772.9 min calculated for 0.123 af (42% of inflow)
 Center-of-Mass det. time= 1,514.3 min (2,382.8 - 868.5)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	26,005 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,825	0	0
170.00	3,689	3,257	3,257
171.00	4,625	4,157	7,414
172.00	5,633	5,129	12,543
173.00	6,713	6,173	18,716
174.00	7,865	7,289	26,005

M28B - Shelb Camping Rev 2016 0225

Type II 24-hr 1 year Rainfall=2.10"

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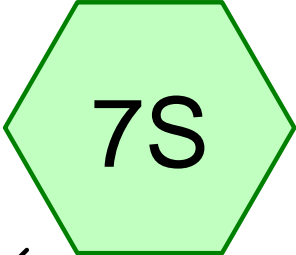
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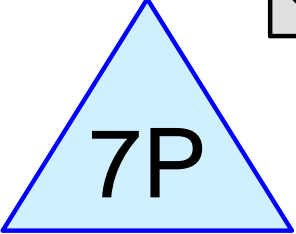
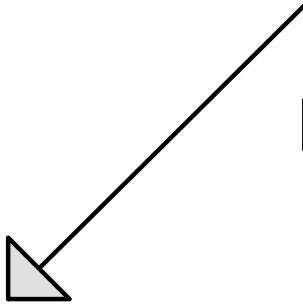
Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	24.0" Round Culvert L= 116.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 166.00' S= 0.0086 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	171.00'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	173.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 24.10 hrs HW=172.75' (Free Discharge)

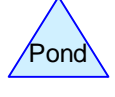
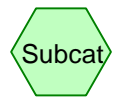
- 1=Culvert (Passes 0.08 cfs of 32.03 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.08 cfs @ 6.26 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)



M29 DA



M29 Option 2



Summary for Subcatchment 7S: M29 DA

Runoff = 32.86 cfs @ 12.15 hrs, Volume= 2.584 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 6.998	98	Impervious, HSG B
1.871	61	>75% Grass cover, Good, HSG B
0.799	60	Woods, Fair, HSG B
* 5.008	98	Impervious, HSG C
4.200	74	>75% Grass cover, Good, HSG C
6.328	73	Woods, Fair, HSG C
* 3.411	98	Impervious, HSG D
0.989	80	>75% Grass cover, Good, HSG D
8.415	79	Woods, Fair, HSG D
38.019	84	Weighted Average
22.602		59.45% Pervious Area
15.417		40.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	1,942	0.0515	1.55		Lag/CN Method,

Summary for Pond 7P: M29 Option 2

Inflow Area = 38.019 ac, 40.55% Impervious, Inflow Depth = 0.82" for 1 year event
 Inflow = 32.86 cfs @ 12.15 hrs, Volume= 2.584 af
 Outflow = 1.82 cfs @ 14.73 hrs, Volume= 2.394 af, Atten= 94%, Lag= 155.1 min
 Primary = 1.82 cfs @ 14.73 hrs, Volume= 2.394 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 163.00' Surf.Area= 29,861 sf Storage= 55,213 cf
 Peak Elev= 165.17' @ 14.73 hrs Surf.Area= 34,988 sf Storage= 125,611 cf (70,399 cf above start)

Plug-Flow detention time= 2,865.7 min calculated for 1.126 af (44% of inflow)
 Center-of-Mass det. time= 1,446.4 min (2,307.7 - 861.2)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	155,400 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	25,380	0	0
162.00	27,592	26,486	26,486
163.00	29,861	28,727	55,213
164.00	32,186	31,024	86,236
165.00	34,568	33,377	119,613
166.00	37,006	35,787	155,400

M29 Option 1 - Shelb Comms-Rice Rev 2016 0225

Type II 24-hr 1 year Rainfall=2.10"

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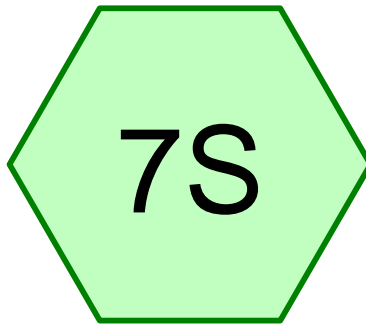
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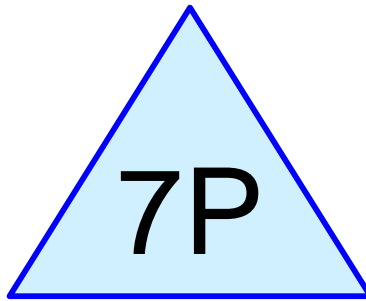
Device	Routing	Invert	Outlet Devices
#1	Primary	159.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 159.00' / 154.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	163.00'	3.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	165.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.81 cfs @ 14.73 hrs HW=165.17' (Free Discharge)

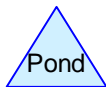
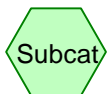
- 1=Culvert (Passes 1.81 cfs of 34.40 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.34 cfs @ 6.89 fps)
- 3=Orifice/Grate (Weir Controls 1.47 cfs @ 1.36 fps)



M32 DA



M32



Summary for Subcatchment 7S: M32 DA

Runoff = 15.04 cfs @ 12.11 hrs, Volume= 1.097 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 0.053	98	Impervious, HSG B
0.484	61	>75% Grass cover, Good, HSG B
0.381	60	Woods, Fair, HSG B
* 3.069	98	Impervious, HSG C
3.930	74	>75% Grass cover, Good, HSG C
1.538	73	Woods, Fair, HSG C
* 1.303	98	Impervious, HSG D
1.372	80	>75% Grass cover, Good, HSG D
7.552	79	Woods, Fair, HSG D
19.682	81	Weighted Average
15.257		77.52% Pervious Area
4.425		22.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	1,504	0.0602	1.44		Lag/CN Method,

Summary for Pond 7P: M32

Inflow Area = 19.682 ac, 22.48% Impervious, Inflow Depth = 0.67" for 1 year event
 Inflow = 15.04 cfs @ 12.11 hrs, Volume= 1.097 af
 Outflow = 0.91 cfs @ 14.24 hrs, Volume= 1.051 af, Atten= 94%, Lag= 127.9 min
 Primary = 0.91 cfs @ 14.24 hrs, Volume= 1.051 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 161.00' Surf.Area= 5,781 sf Storage= 5,253 cf
 Peak Elev= 164.61' @ 14.24 hrs Surf.Area= 10,202 sf Storage= 33,832 cf (28,579 cf above start)

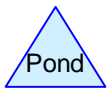
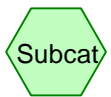
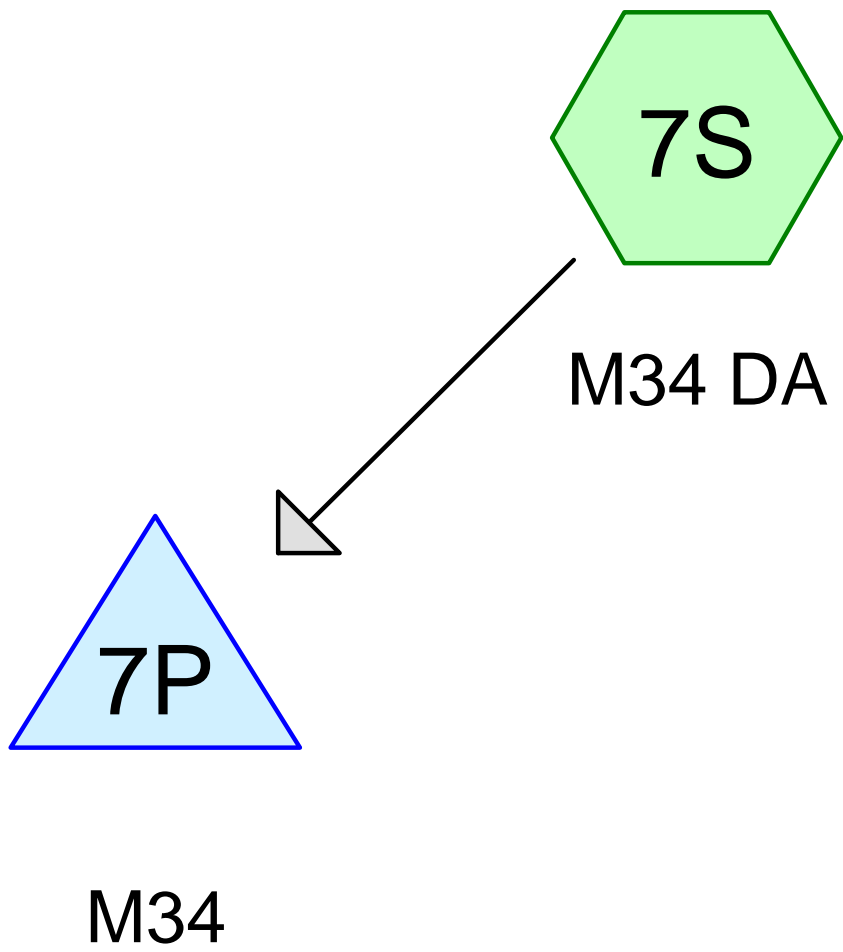
Plug-Flow detention time= 1,722.5 min calculated for 0.931 af (85% of inflow)
 Center-of-Mass det. time= 1,459.5 min (2,329.9 - 870.4)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	37,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	4,725	0	0
161.00	5,781	5,253	5,253
162.00	6,909	6,345	11,598
163.00	8,109	7,509	19,107
164.00	9,381	8,745	27,852
165.00	10,725	10,053	37,905

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	24.0" Round Culvert L= 173.0' Ke= 0.500 Inlet / Outlet Invert= 157.00' / 55.00' S= 0.5896 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	161.00'	1.7" Vert. Orifice/Grate C= 0.600
#3	Device 1	164.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.90 cfs @ 14.24 hrs HW=164.61' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.90 cfs of 38.89 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 9.06 fps)
- ↑ **3=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.09 fps)



Summary for Subcatchment 7S: M34 DA

Runoff = 12.03 cfs @ 12.15 hrs, Volume= 0.998 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 3.576	98	Impervious, HSG C
1.915	74	>75% Grass cover, Good, HSG C
12.495	73	Woods, Fair, HSG C
* 0.791	98	Impervious, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.297	79	Woods, Fair, HSG D
20.584	79	Weighted Average
16.217		78.78% Pervious Area
4.367		21.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	1,290	0.0388	1.05		Lag/CN Method,

Summary for Pond 7P: M34

Inflow Area = 20.584 ac, 21.22% Impervious, Inflow Depth = 0.58" for 1 year event
 Inflow = 12.03 cfs @ 12.15 hrs, Volume= 0.998 af
 Outflow = 0.27 cfs @ 24.14 hrs, Volume= 0.984 af, Atten= 98%, Lag= 719.6 min
 Primary = 0.27 cfs @ 24.14 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 194.50' Surf.Area= 11,881 sf Storage= 16,397 cf
 Peak Elev= 196.89' @ 24.14 hrs Surf.Area= 15,216 sf Storage= 48,706 cf (32,309 cf above start)

Plug-Flow detention time= 2,249.2 min calculated for 0.607 af (61% of inflow)
 Center-of-Mass det. time= 1,456.4 min (2,338.2 - 881.7)

Volume	Invert	Avail.Storage	Storage Description
#1	193.00'	66,526 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
193.00	10,000	0	0
194.00	11,236	10,618	10,618
194.50	11,881	5,779	16,397
195.00	12,544	6,106	22,504
196.00	13,924	13,234	35,738
197.00	15,376	14,650	50,388
198.00	16,900	16,138	66,526

M34 - Hullcrest South - Rev 2016 0225

Type II 24-hr 1 year Rainfall=2.10"

Prepared by TCE

Printed 9/12/2016

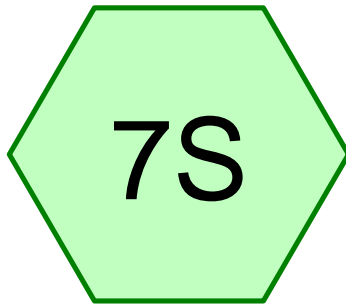
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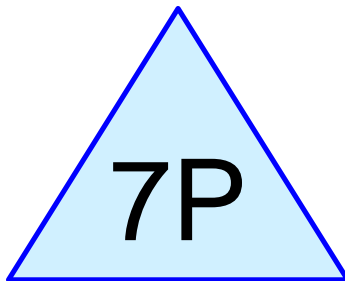
Device	Routing	Invert	Outlet Devices
#1	Primary	191.00'	24.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 191.00' / 186.00' S= 0.1667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	194.50'	2.6" Vert. Orifice/Grate C= 0.600
#3	Device 1	197.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 24.14 hrs HW=196.89' (Free Discharge)

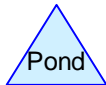
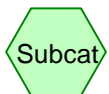
- 1=Culvert (Passes 0.27 cfs of 33.45 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.27 cfs @ 7.27 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)



M35 DA



M35



Summary for Subcatchment 7S: M35 DA

Runoff = 13.55 cfs @ 12.12 hrs, Volume= 1.049 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
* 0.885	98	Impervious, HSG A
0.800	39	>75% Grass cover, Good, HSG A
1.334	36	Woods, Fair, HSG A
* 0.011	98	Impervious, HSG C
0.141	73	Woods, Fair, HSG C
* 3.000	98	Impervious, HSG D
3.282	80	>75% Grass cover, Good, HSG D
13.804	79	Woods, Fair, HSG D
23.257	78	Weighted Average
19.361		83.25% Pervious Area
3.896		16.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	1,780	0.0915	1.67		Lag/CN Method,

Summary for Pond 7P: M35

Inflow Area = 23.257 ac, 16.75% Impervious, Inflow Depth = 0.54" for 1 year event
 Inflow = 13.55 cfs @ 12.12 hrs, Volume= 1.049 af
 Outflow = 0.62 cfs @ 16.16 hrs, Volume= 1.036 af, Atten= 95%, Lag= 242.1 min
 Primary = 0.62 cfs @ 16.16 hrs, Volume= 1.036 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Starting Elev= 248.00' Surf.Area= 7,920 sf Storage= 7,392 cf
 Peak Elev= 251.07' @ 16.16 hrs Surf.Area= 11,617 sf Storage= 37,246 cf (29,854 cf above start)

Plug-Flow detention time= 1,786.6 min calculated for 0.866 af (83% of inflow)
 Center-of-Mass det. time= 1,437.3 min (2,321.0 - 883.7)

Volume	Invert	Avail.Storage	Storage Description
#1	247.00'	48,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
247.00	6,864	0	0
248.00	7,920	7,392	7,392
249.00	9,048	8,484	15,876
250.00	10,248	9,648	25,524
251.00	11,520	10,884	36,408
252.00	12,864	12,192	48,600

M35- Morse Drive Rev 2016 0225

Type II 24-hr 1 year Rainfall=2.10"

Prepared by TCE

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Device	Routing	Invert	Outlet Devices
#1	Primary	244.00'	24.0" Round Culvert L= 173.0' Ke= 0.500 Inlet / Outlet Invert= 244.00' / 142.00' S= 0.5896 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	248.00'	2.1" Vert. Orifice/Grate C= 0.600
#3	Device 1	251.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.60 cfs @ 16.16 hrs HW=251.07' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.60 cfs of 37.28 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 8.32 fps)
- ↑ **3=Orifice/Grate** (Weir Controls 0.40 cfs @ 0.88 fps)