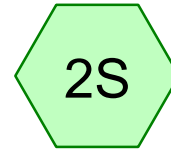
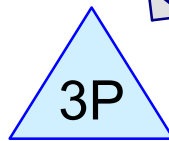


EAST



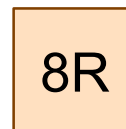
WEST



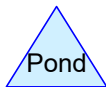
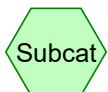
FILTRATION



(new Reach)



(new Reach)



Routing Diagram for Premier Properties Post Developed
 Prepared by HP, Printed 4/25/2017
 HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Premier Properties Post Developed

Prepared by HP

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Printed 4/25/2017

Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.704	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.956	98	Paved parking, HSG B (1S, 2S)
0.504	98	Roofs, HSG B (1S, 2S)
2.164	86	TOTAL AREA

Premier Properties Post Developed

Prepared by HP

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Printed 4/25/2017

Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.164	HSG B	1S, 2S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.164		TOTAL AREA

Premier Properties Post Developed

Prepared by HP

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Printed 4/25/2017

Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.704	0.000	0.000	0.000	0.704	>75% Grass cover, Good	1S, 2S
0.000	0.956	0.000	0.000	0.000	0.956	Paved parking	1S, 2S
0.000	0.504	0.000	0.000	0.000	0.504	Roofs	1S, 2S
0.000	2.164	0.000	0.000	0.000	2.164	TOTAL AREA	

Premier Properties Post Developed

Prepared by HP

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Printed 4/25/2017

Page 5

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	7R	858.30	858.00	70.0	0.0043	0.013	18.0	0.0	0.0
2	8R	858.00	856.75	200.0	0.0063	0.013	24.0	0.0	0.0

Premier Properties Post Developed

Type II 24-hr 1-Year Rainfall=1.90"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 6

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST

Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>0.53"
Tc=0.0 min CN=82 Runoff=0.82 cfs 0.030 af

Subcatchment 2S: WEST

Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>0.81"
Tc=0.0 min CN=88 Runoff=2.70 cfs 0.101 af

Reach 7R: (new Reach)

Avg. Flow Depth=0.34' Max Vel=2.59 fps Inflow=0.82 cfs 0.063 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=0.76 cfs 0.063 af

Reach 8R: (new Reach)

Avg. Flow Depth=0.28' Max Vel=2.76 fps Inflow=0.76 cfs 0.063 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=0.70 cfs 0.063 af

Pond 3P: FILTRATION

Peak Elev=860.64' Storage=0.070 af Inflow=2.70 cfs 0.101 af
Outflow=0.08 cfs 0.034 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.131 af Average Runoff Depth = 0.72"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

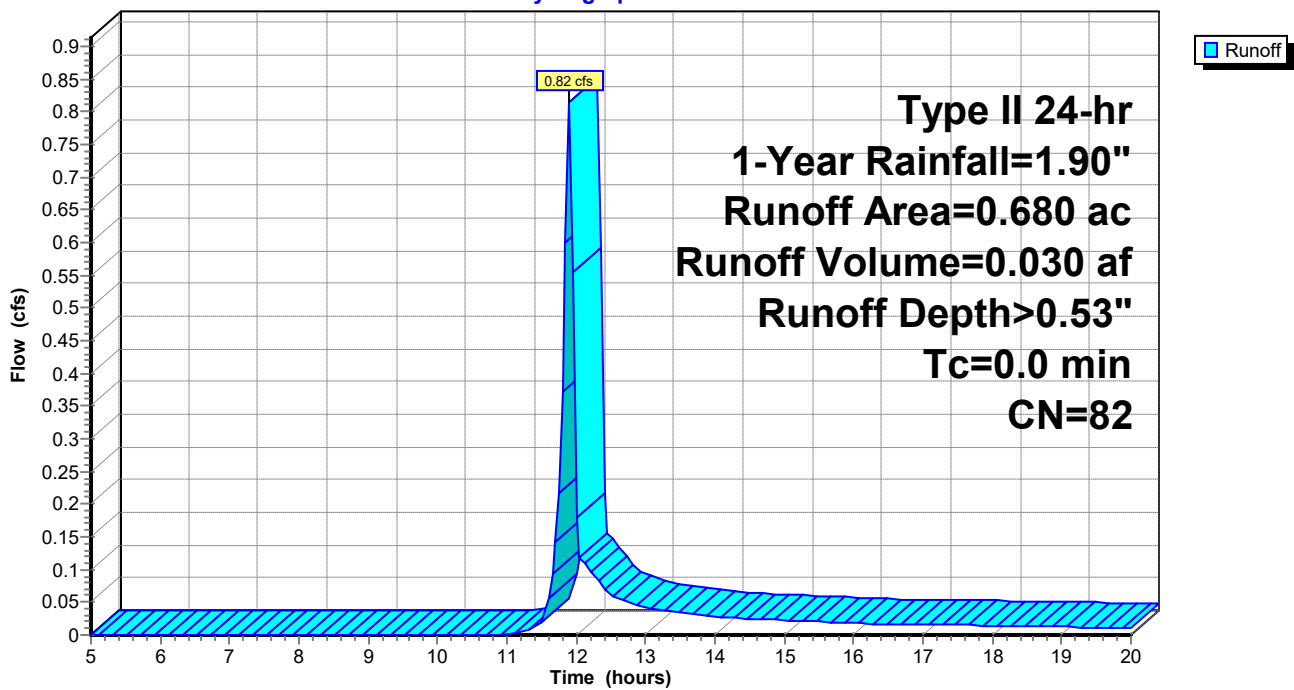
Runoff = 0.82 cfs @ 11.90 hrs, Volume= 0.030 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-Year Rainfall=1.90"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST

Hydrograph



Summary for Subcatchment 2S: WEST

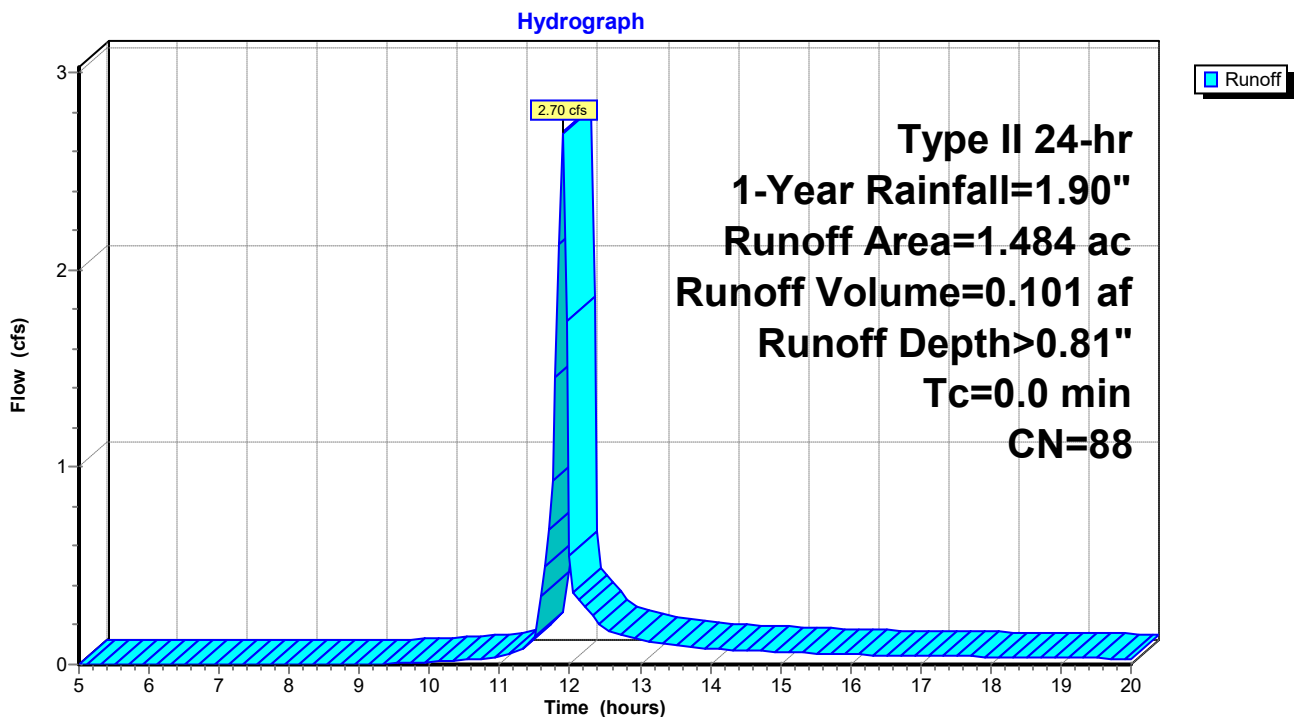
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 2.70 cfs @ 11.89 hrs, Volume= 0.101 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-Year Rainfall=1.90"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

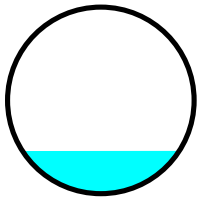
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.35" for 1-Year event
 Inflow = 0.82 cfs @ 11.90 hrs, Volume= 0.063 af
 Outflow = 0.76 cfs @ 11.91 hrs, Volume= 0.063 af, Atten= 6%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.59 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.9 min

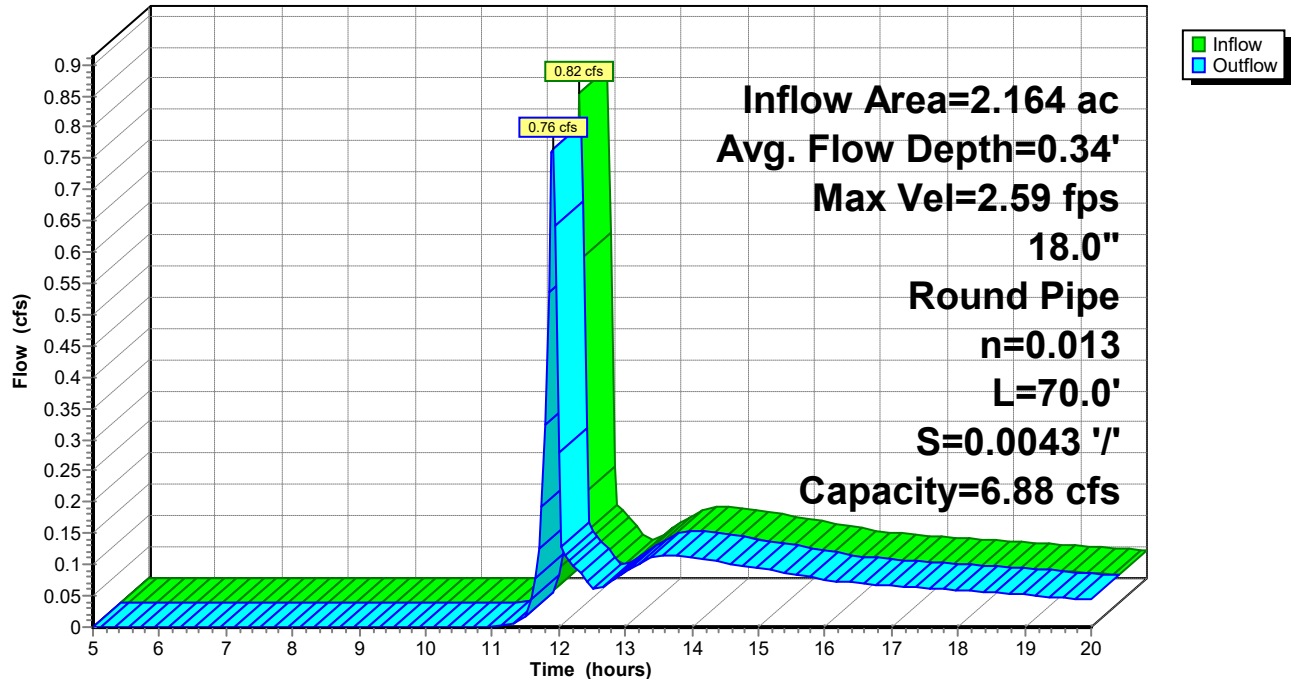
Peak Storage= 21 cf @ 11.90 hrs
 Average Depth at Peak Storage= 0.34'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
 n= 0.013 Corrugated PE, smooth interior
 Length= 70.0' Slope= 0.0043 '/'
 Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

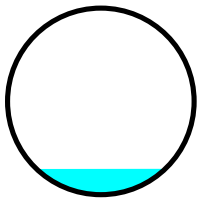
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.02' @ 12.00 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.35" for 1-Year event
Inflow = 0.76 cfs @ 11.91 hrs, Volume= 0.063 af
Outflow = 0.70 cfs @ 11.94 hrs, Volume= 0.063 af, Atten= 8%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.76 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 2.4 min

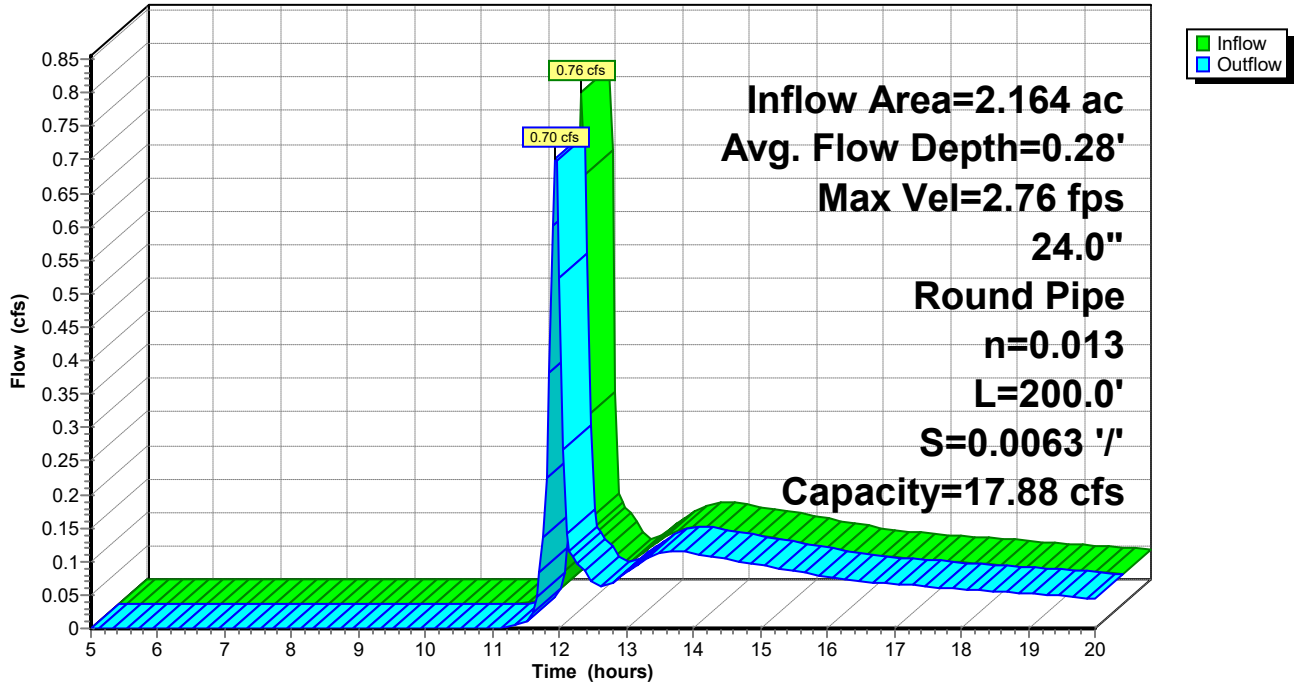
Peak Storage= 53 cf @ 11.93 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)

Hydrograph



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 0.81" for 1-Year event
 Inflow = 2.70 cfs @ 11.89 hrs, Volume= 0.101 af
 Outflow = 0.08 cfs @ 13.82 hrs, Volume= 0.034 af, Atten= 97%, Lag= 115.4 min
 Primary = 0.08 cfs @ 13.82 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 860.64' @ 13.82 hrs Surf.Area= 0.053 ac Storage= 0.070 af

Plug-Flow detention time= 255.1 min calculated for 0.034 af (33% of inflow)
 Center-of-Mass det. time= 167.3 min (954.3 - 787.0)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

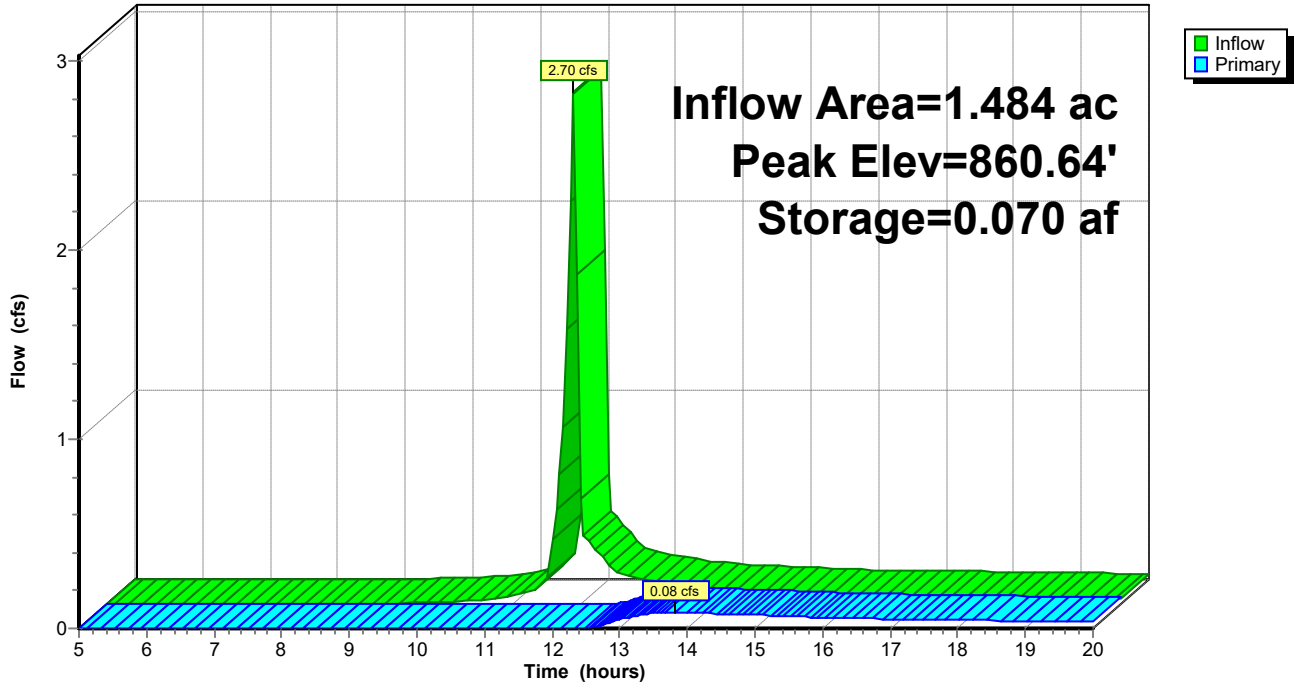
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.08 cfs @ 13.82 hrs HW=860.64' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.08 cfs @ 1.29 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 2-Year Rainfall=2.23"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 14

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>0.73"
Tc=0.0 min CN=82 Runoff=1.13 cfs 0.041 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>1.07"
Tc=0.0 min CN=88 Runoff=3.49 cfs 0.132 af

Reach 7R: (new Reach) Avg. Flow Depth=0.41' Max Vel=2.85 fps Inflow=1.13 cfs 0.106 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=1.07 cfs 0.106 af

Reach 8R: (new Reach) Avg. Flow Depth=0.32' Max Vel=3.06 fps Inflow=1.07 cfs 0.106 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=0.98 cfs 0.105 af

Pond 3P: FILTRATION Peak Elev=860.76' Storage=0.076 af Inflow=3.49 cfs 0.132 af
Outflow=0.25 cfs 0.064 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.173 af Average Runoff Depth = 0.96"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

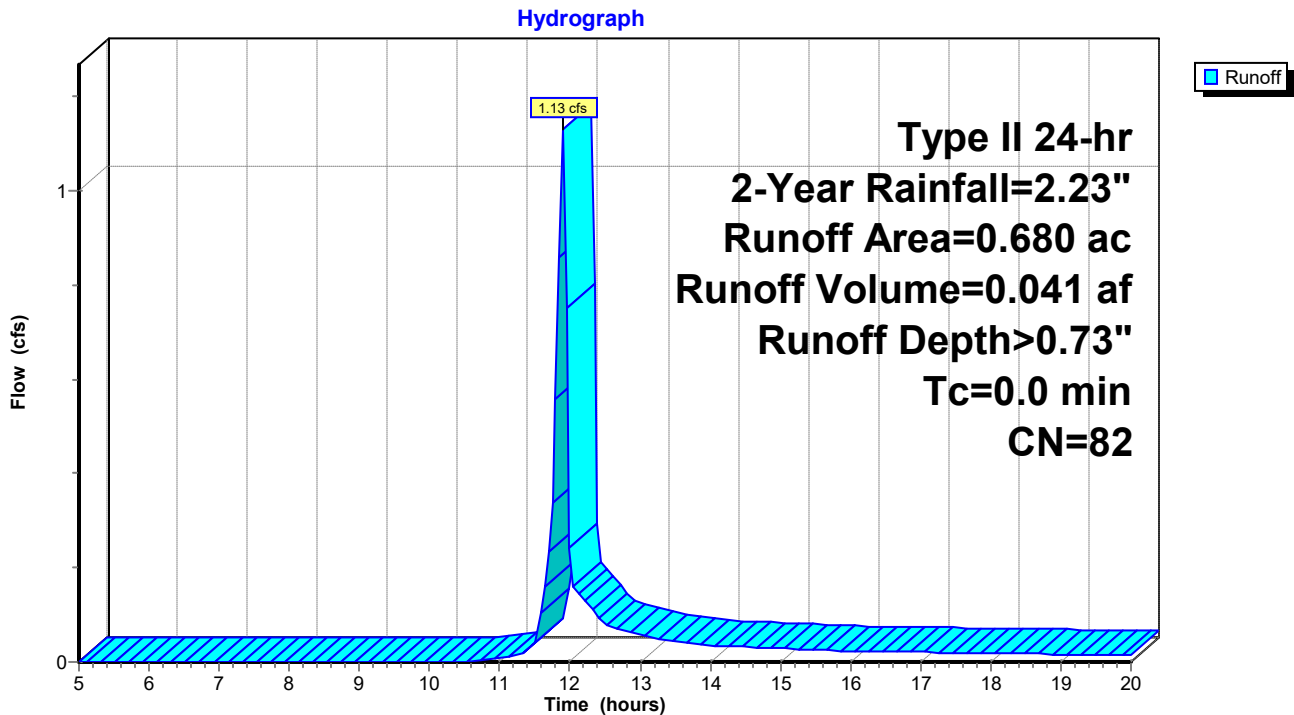
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.13 cfs @ 11.90 hrs, Volume= 0.041 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=2.23"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST



Summary for Subcatchment 2S: WEST

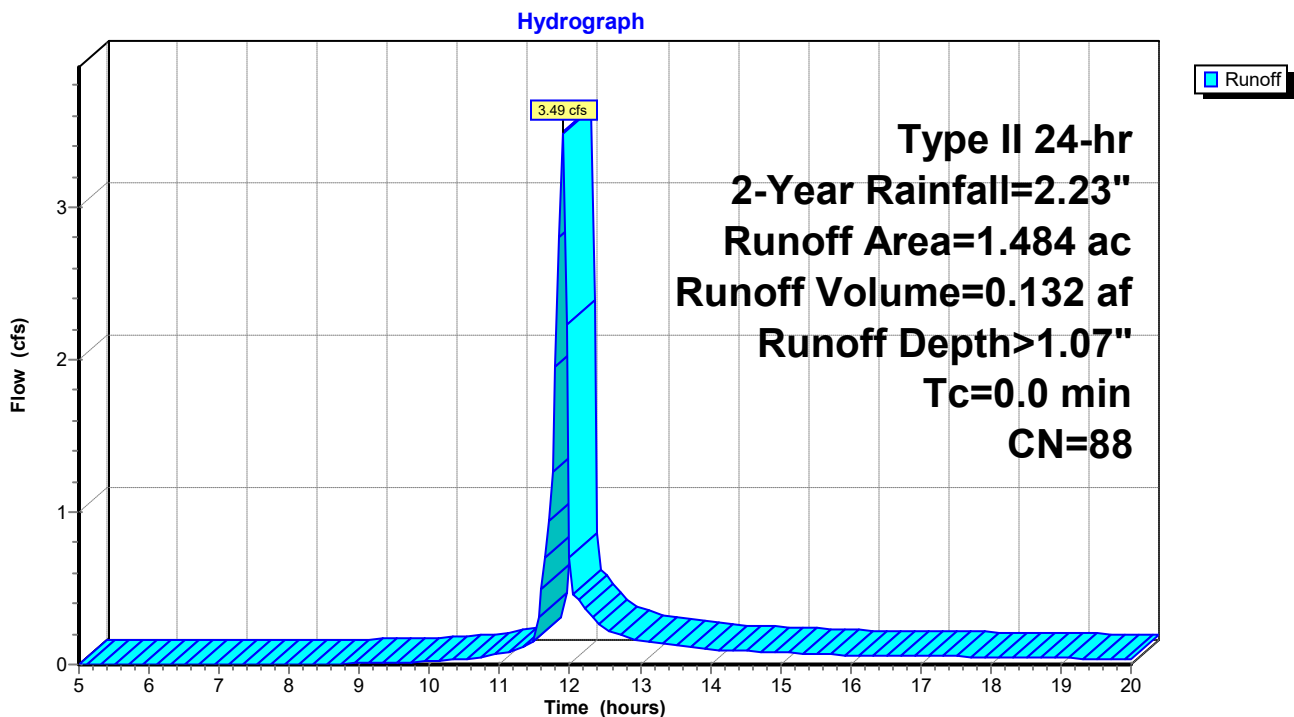
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.49 cfs @ 11.89 hrs, Volume= 0.132 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=2.23"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

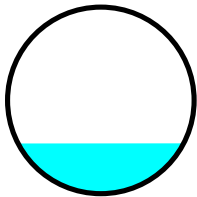
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.59" for 2-Year event
Inflow = 1.13 cfs @ 11.90 hrs, Volume= 0.106 af
Outflow = 1.07 cfs @ 11.90 hrs, Volume= 0.106 af, Atten= 5%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.85 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.8 min

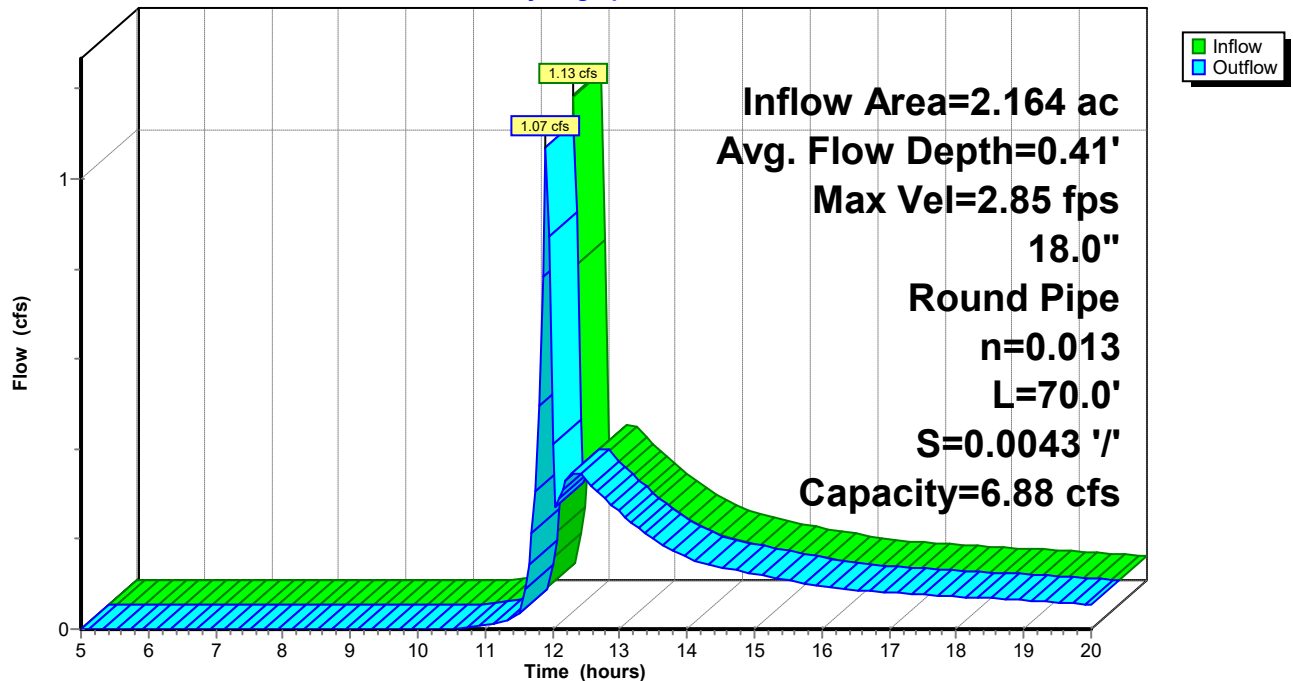
Peak Storage= 27 cf @ 11.90 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 70.0' Slope= 0.0043 '/'
Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

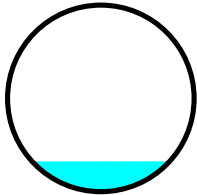
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.01' @ 12.00 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.59" for 2-Year event
Inflow = 1.07 cfs @ 11.90 hrs, Volume= 0.106 af
Outflow = 0.98 cfs @ 11.94 hrs, Volume= 0.105 af, Atten= 8%, Lag= 2.0 min

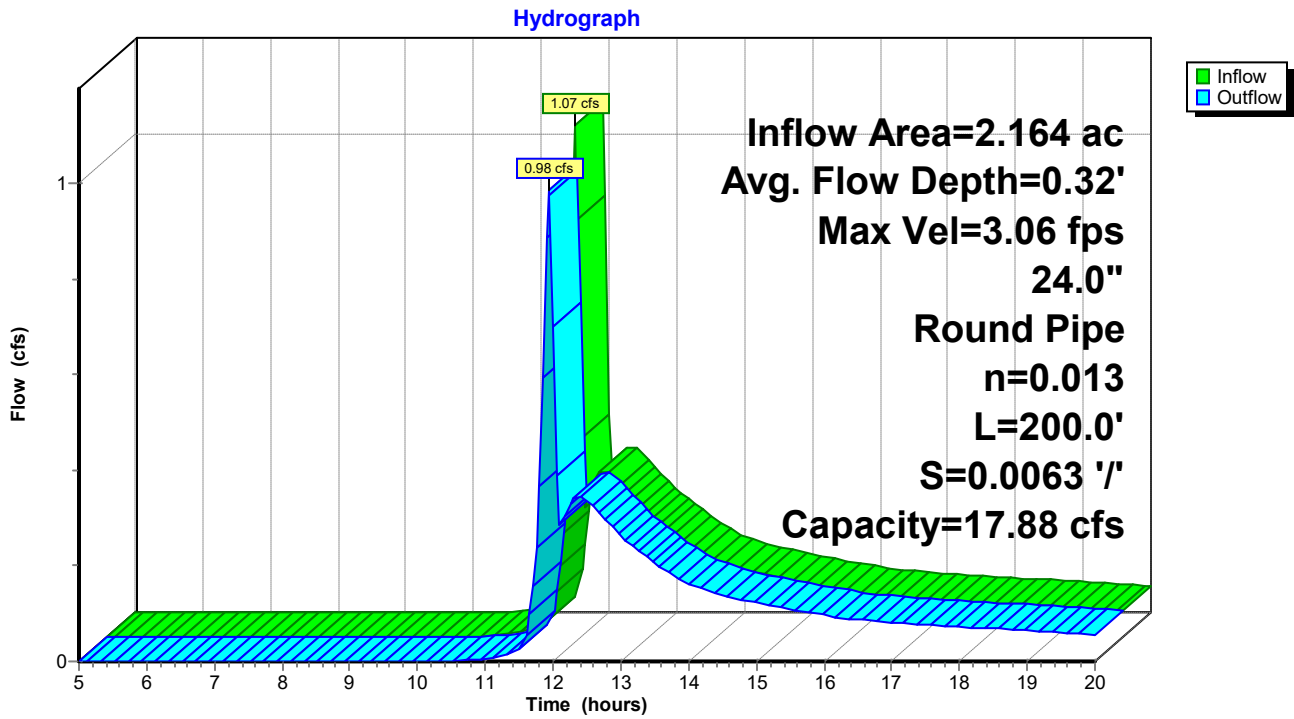
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.06 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 2.2 min

Peak Storage= 66 cf @ 11.92 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 1.07" for 2-Year event
 Inflow = 3.49 cfs @ 11.89 hrs, Volume= 0.132 af
 Outflow = 0.25 cfs @ 12.44 hrs, Volume= 0.064 af, Atten= 93%, Lag= 33.0 min
 Primary = 0.25 cfs @ 12.44 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 860.76' @ 12.44 hrs Surf.Area= 0.055 ac Storage= 0.076 af

Plug-Flow detention time= 187.1 min calculated for 0.064 af (49% of inflow)
 Center-of-Mass det. time= 105.9 min (887.1 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

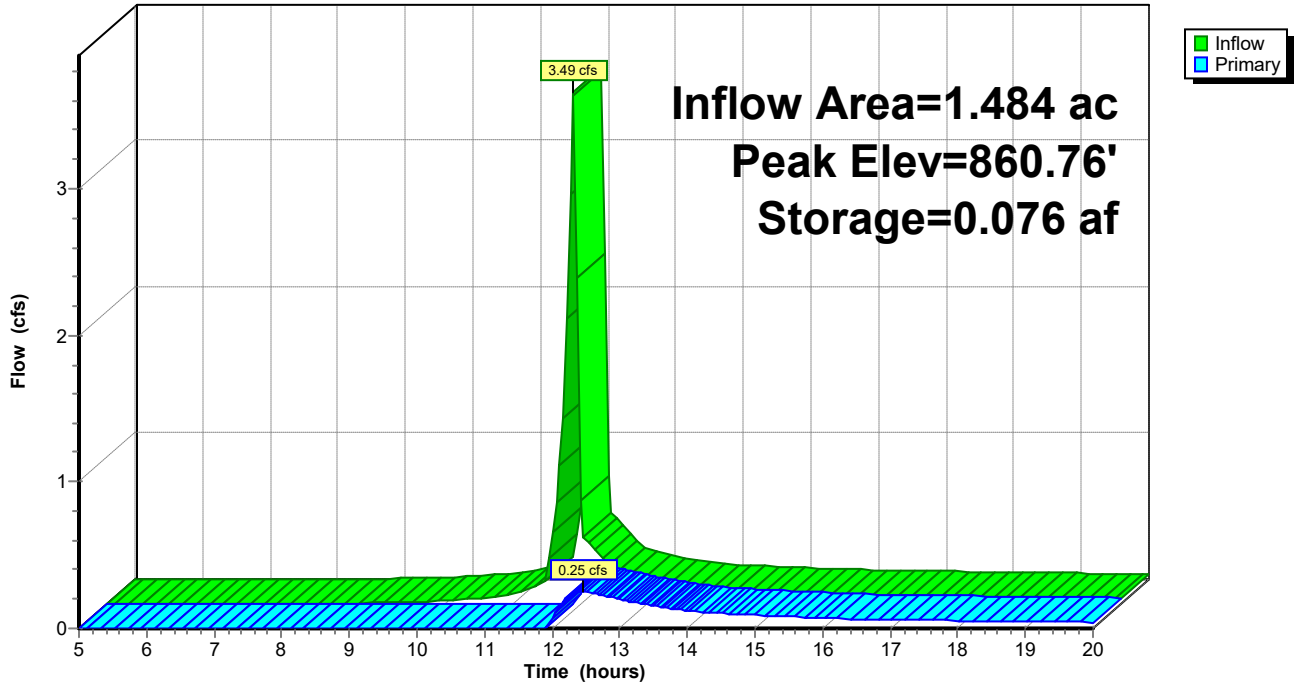
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.25 cfs @ 12.44 hrs HW=860.76' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.25 cfs @ 1.73 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 5-Year Rainfall=2.75"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 22

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>1.09"
Tc=0.0 min CN=82 Runoff=1.66 cfs 0.062 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>1.48"
Tc=0.0 min CN=88 Runoff=4.77 cfs 0.183 af

Reach 7R: (new Reach) Avg. Flow Depth=0.56' Max Vel=3.36 fps Inflow=1.99 cfs 0.177 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=1.98 cfs 0.176 af

Reach 8R: (new Reach) Avg. Flow Depth=0.45' Max Vel=3.74 fps Inflow=1.98 cfs 0.176 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=1.89 cfs 0.176 af

Pond 3P: FILTRATION Peak Elev=861.08' Storage=0.095 af Inflow=4.77 cfs 0.183 af
Outflow=1.06 cfs 0.115 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.245 af Average Runoff Depth = 1.36"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

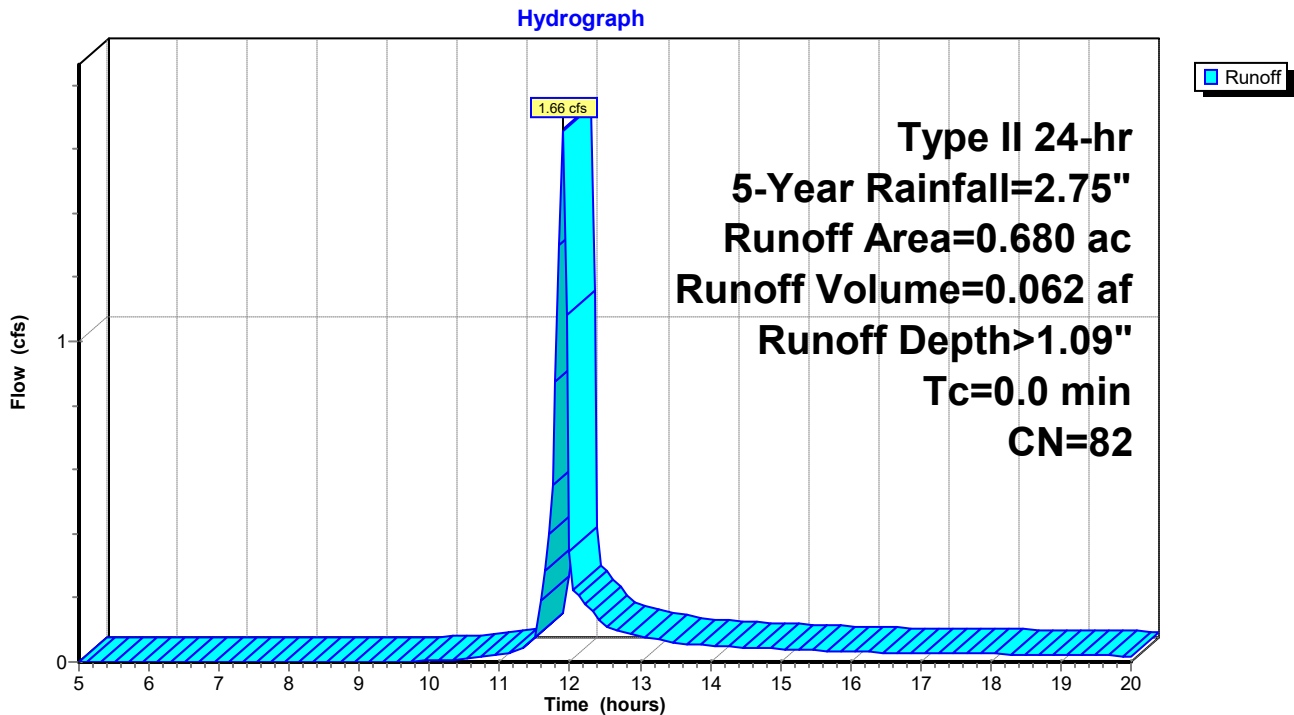
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.66 cfs @ 11.89 hrs, Volume= 0.062 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 5-Year Rainfall=2.75"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST



Summary for Subcatchment 2S: WEST

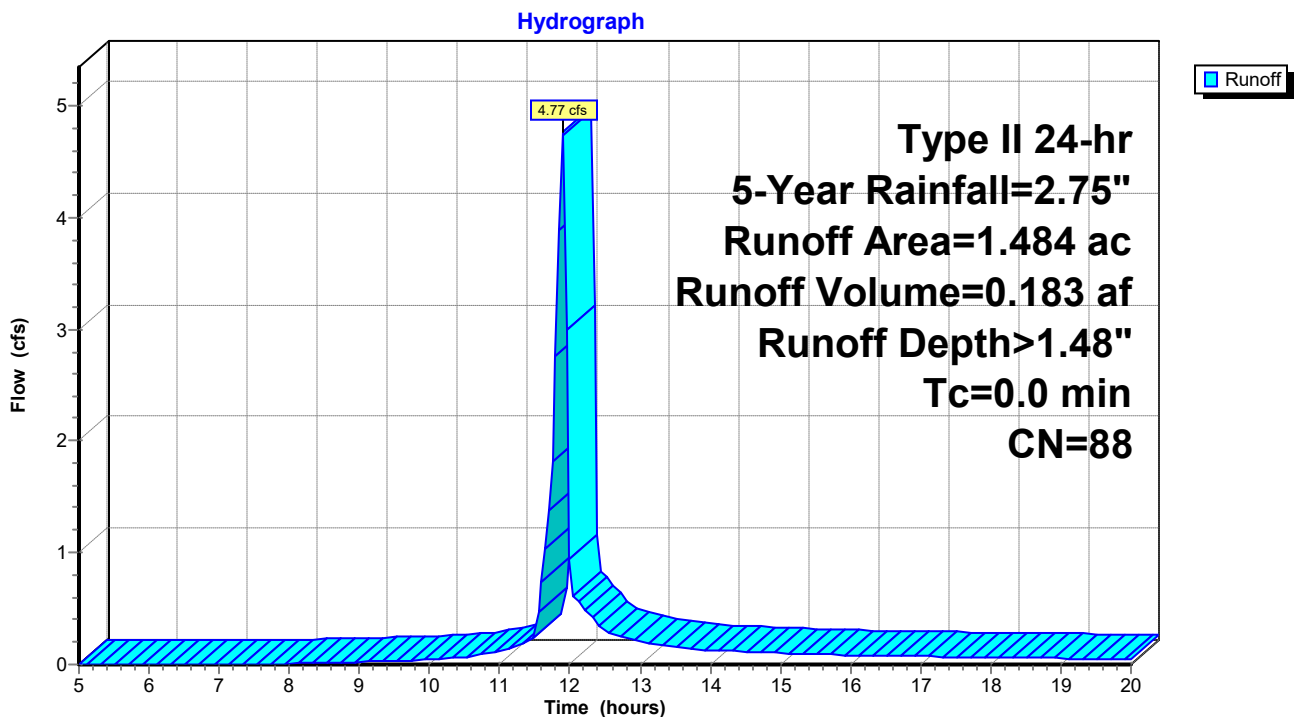
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.77 cfs @ 11.89 hrs, Volume= 0.183 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 5-Year Rainfall=2.75"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

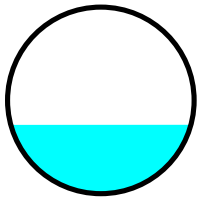
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.98" for 5-Year event
 Inflow = 1.99 cfs @ 11.93 hrs, Volume= 0.177 af
 Outflow = 1.98 cfs @ 11.94 hrs, Volume= 0.176 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.36 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.8 min

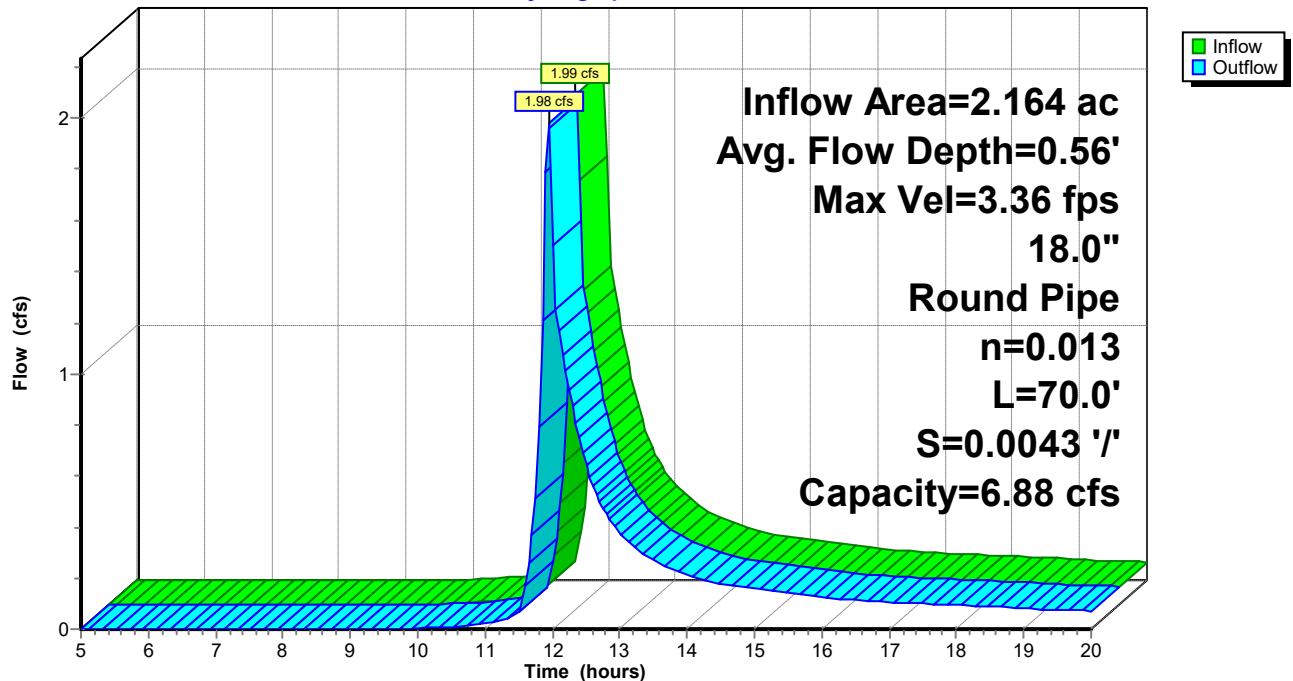
Peak Storage= 42 cf @ 11.93 hrs
 Average Depth at Peak Storage= 0.56'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
 n= 0.013 Corrugated PE, smooth interior
 Length= 70.0' Slope= 0.0043 '/'
 Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

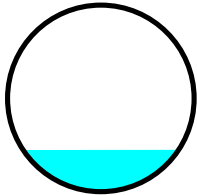
[61] Hint: Exceeded Reach 7R outlet invert by 0.45' @ 11.95 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 0.98" for 5-Year event
Inflow = 1.98 cfs @ 11.94 hrs, Volume= 0.176 af
Outflow = 1.89 cfs @ 11.96 hrs, Volume= 0.176 af, Atten= 5%, Lag= 1.4 min

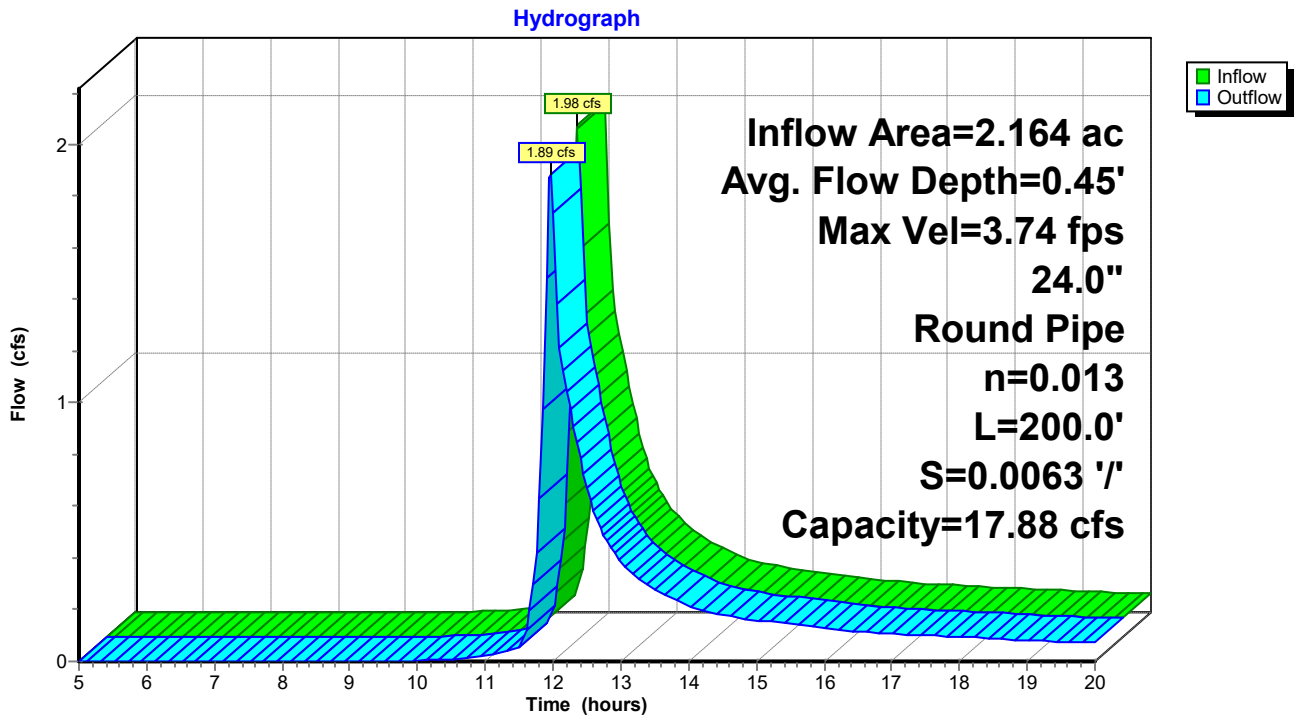
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.74 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 2.0 min

Peak Storage= 105 cf @ 11.95 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 1.48" for 5-Year event
 Inflow = 4.77 cfs @ 11.89 hrs, Volume= 0.183 af
 Outflow = 1.06 cfs @ 12.02 hrs, Volume= 0.115 af, Atten= 78%, Lag= 7.4 min
 Primary = 1.06 cfs @ 12.02 hrs, Volume= 0.115 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 861.08' @ 12.02 hrs Surf.Area= 0.059 ac Storage= 0.095 af

Plug-Flow detention time= 142.9 min calculated for 0.115 af (63% of inflow)
 Center-of-Mass det. time= 69.6 min (843.6 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

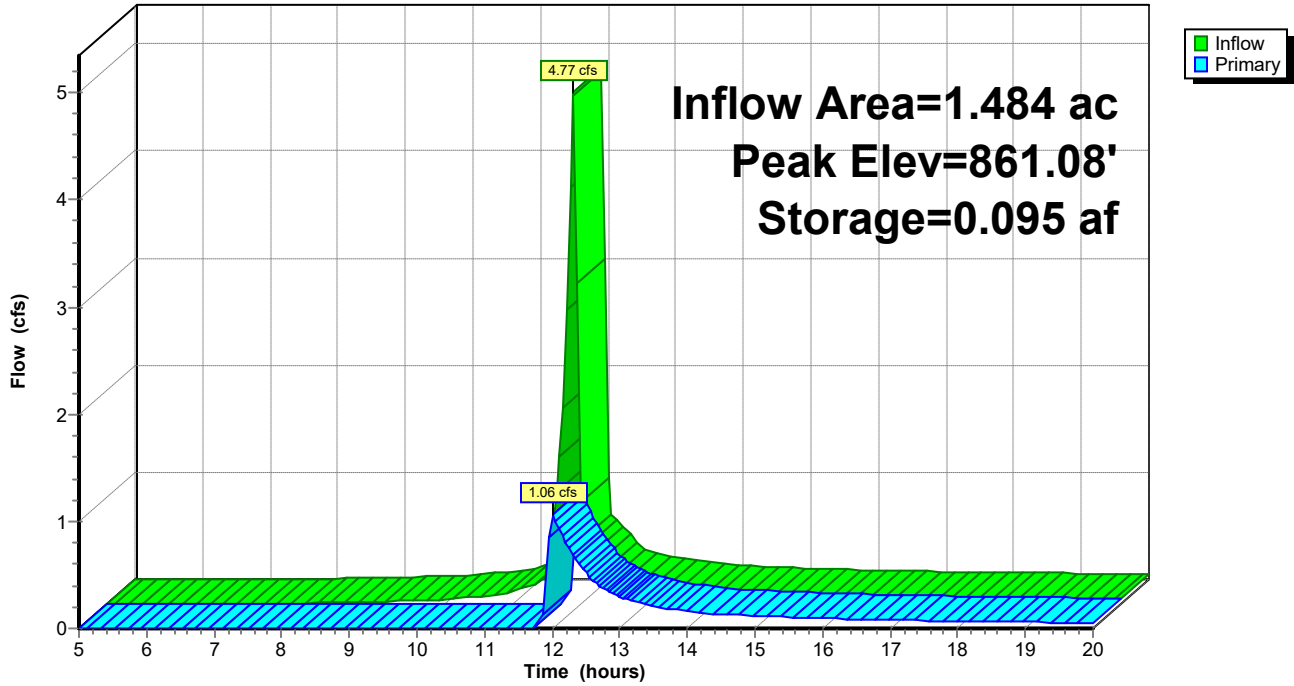
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=1.04 cfs @ 12.02 hrs HW=861.08' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.04 cfs @ 2.58 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 10-Year Rainfall=3.23"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 30

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>1.44"
Tc=0.0 min CN=82 Runoff=2.18 cfs 0.082 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>1.89"
Tc=0.0 min CN=88 Runoff=5.98 cfs 0.233 af

Reach 7R: (new Reach) Avg. Flow Depth=0.75' Max Vel=3.85 fps Inflow=3.51 cfs 0.246 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=3.36 cfs 0.246 af

Reach 8R: (new Reach) Avg. Flow Depth=0.59' Max Vel=4.37 fps Inflow=3.36 cfs 0.246 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=3.26 cfs 0.245 af

Pond 3P: FILTRATION Peak Elev=861.41' Storage=0.115 af Inflow=5.98 cfs 0.233 af
Outflow=1.85 cfs 0.164 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.315 af Average Runoff Depth = 1.75"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

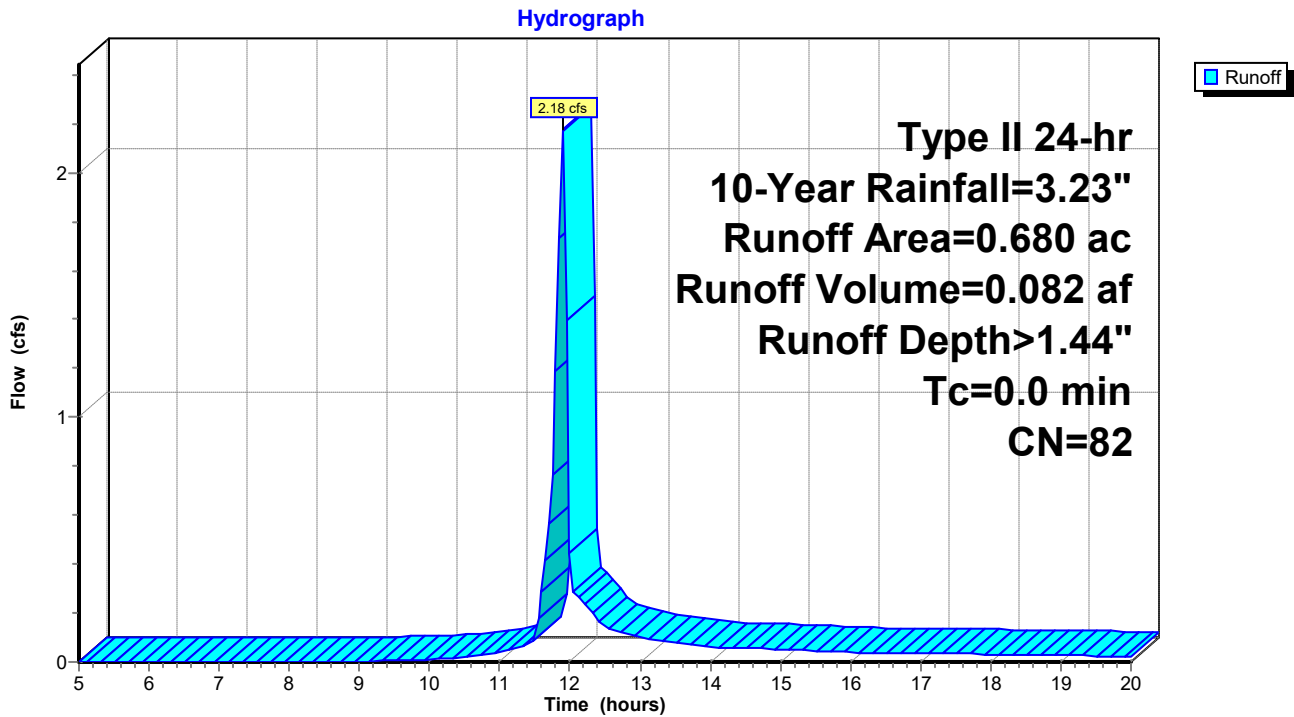
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 2.18 cfs @ 11.89 hrs, Volume= 0.082 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year Rainfall=3.23"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST



Summary for Subcatchment 2S: WEST

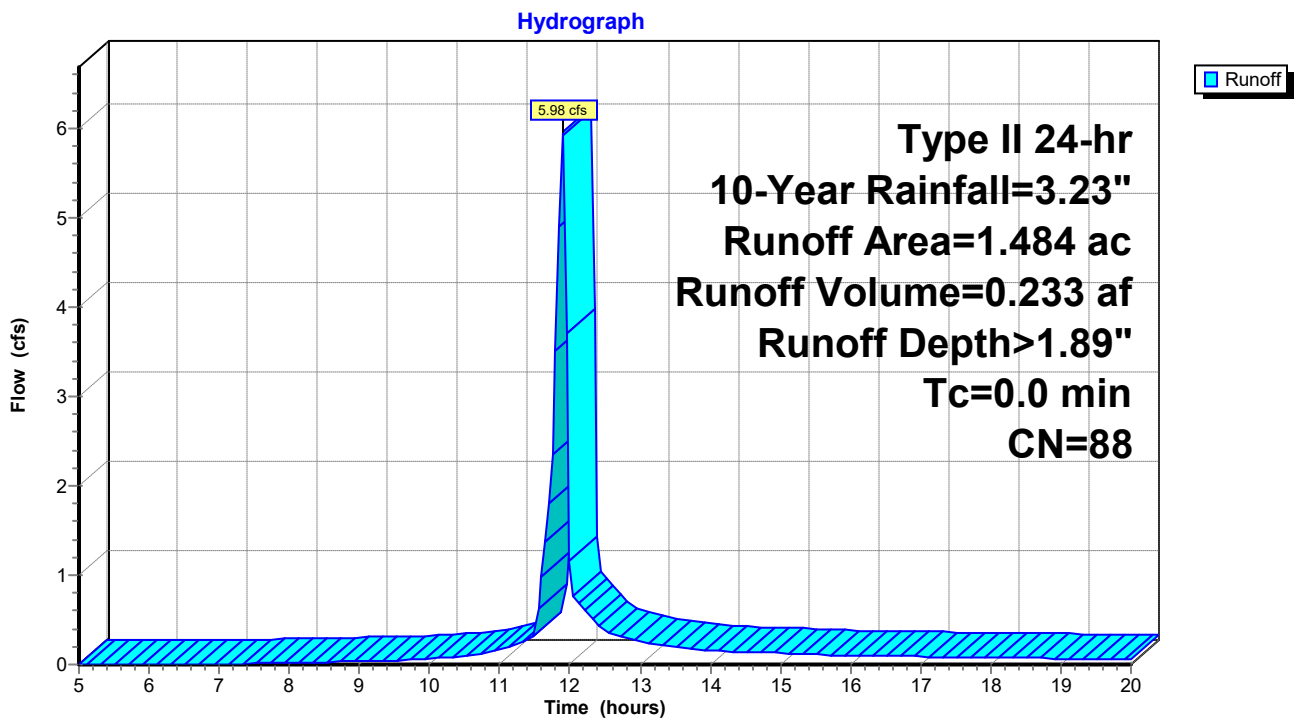
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 5.98 cfs @ 11.89 hrs, Volume= 0.233 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Year Rainfall=3.23"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

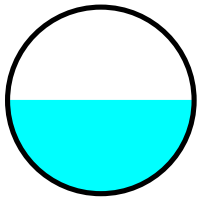
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 1.36" for 10-Year event
 Inflow = 3.51 cfs @ 11.92 hrs, Volume= 0.246 af
 Outflow = 3.36 cfs @ 11.93 hrs, Volume= 0.246 af, Atten= 4%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.85 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.8 min

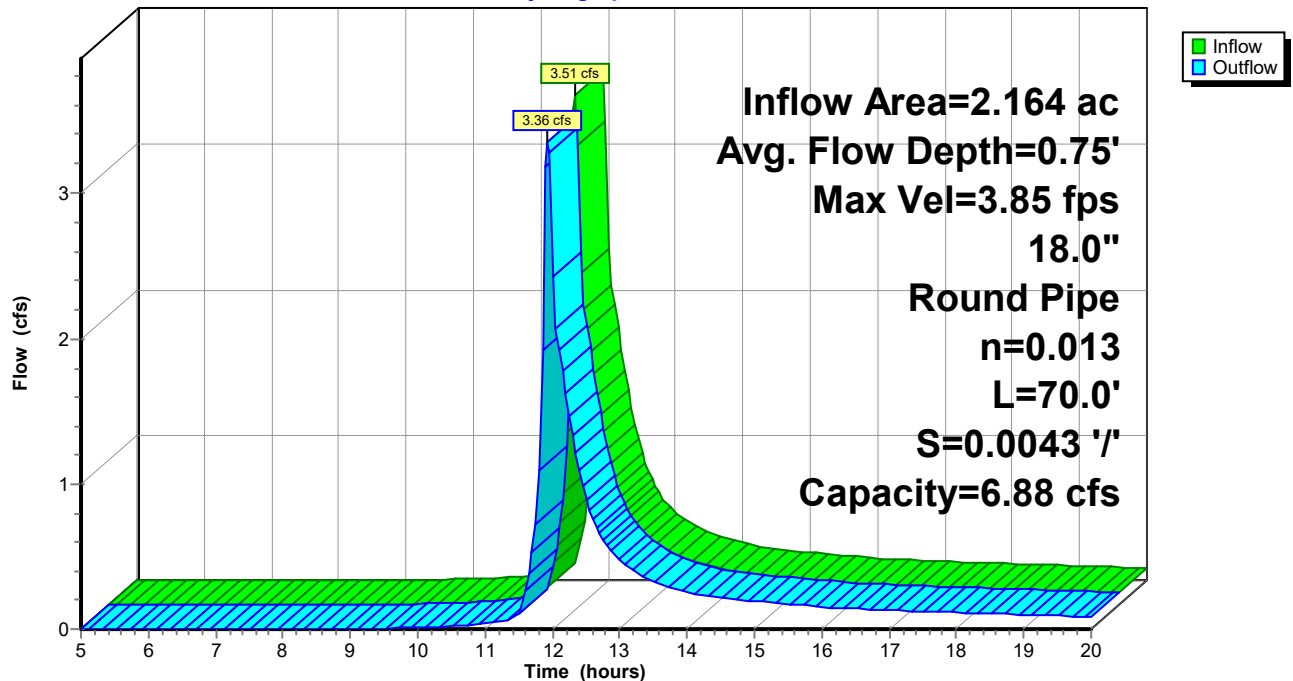
Peak Storage= 62 cf @ 11.92 hrs
 Average Depth at Peak Storage= 0.75'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
 n= 0.013 Corrugated PE, smooth interior
 Length= 70.0' Slope= 0.0043 '/'
 Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

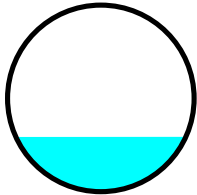
[61] Hint: Exceeded Reach 7R outlet invert by 0.59' @ 11.95 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 1.36" for 10-Year event
Inflow = 3.36 cfs @ 11.93 hrs, Volume= 0.246 af
Outflow = 3.26 cfs @ 11.95 hrs, Volume= 0.245 af, Atten= 3%, Lag= 1.5 min

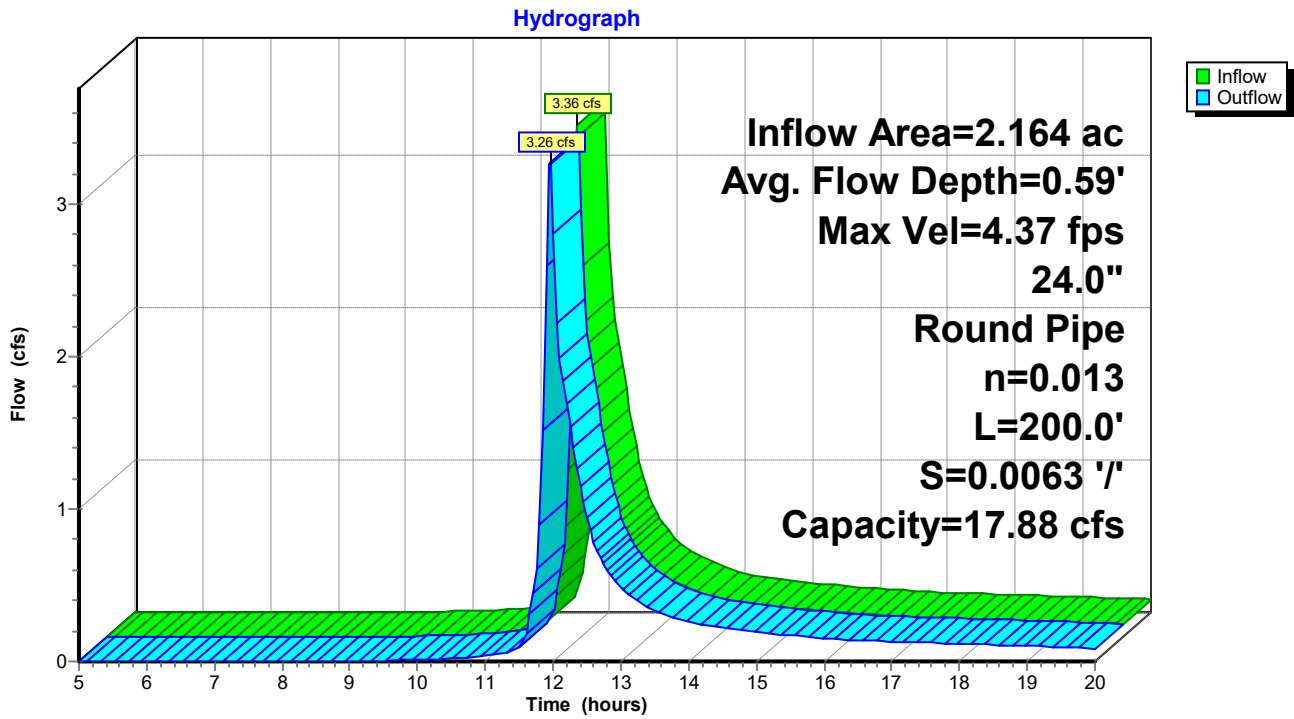
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.37 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 2.0 min

Peak Storage= 155 cf @ 11.94 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 1.89" for 10-Year event
 Inflow = 5.98 cfs @ 11.89 hrs, Volume= 0.233 af
 Outflow = 1.85 cfs @ 12.00 hrs, Volume= 0.164 af, Atten= 69%, Lag= 6.4 min
 Primary = 1.85 cfs @ 12.00 hrs, Volume= 0.164 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 861.41' @ 12.00 hrs Surf.Area= 0.064 ac Storage= 0.115 af

Plug-Flow detention time= 123.8 min calculated for 0.164 af (70% of inflow)
 Center-of-Mass det. time= 57.1 min (825.6 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

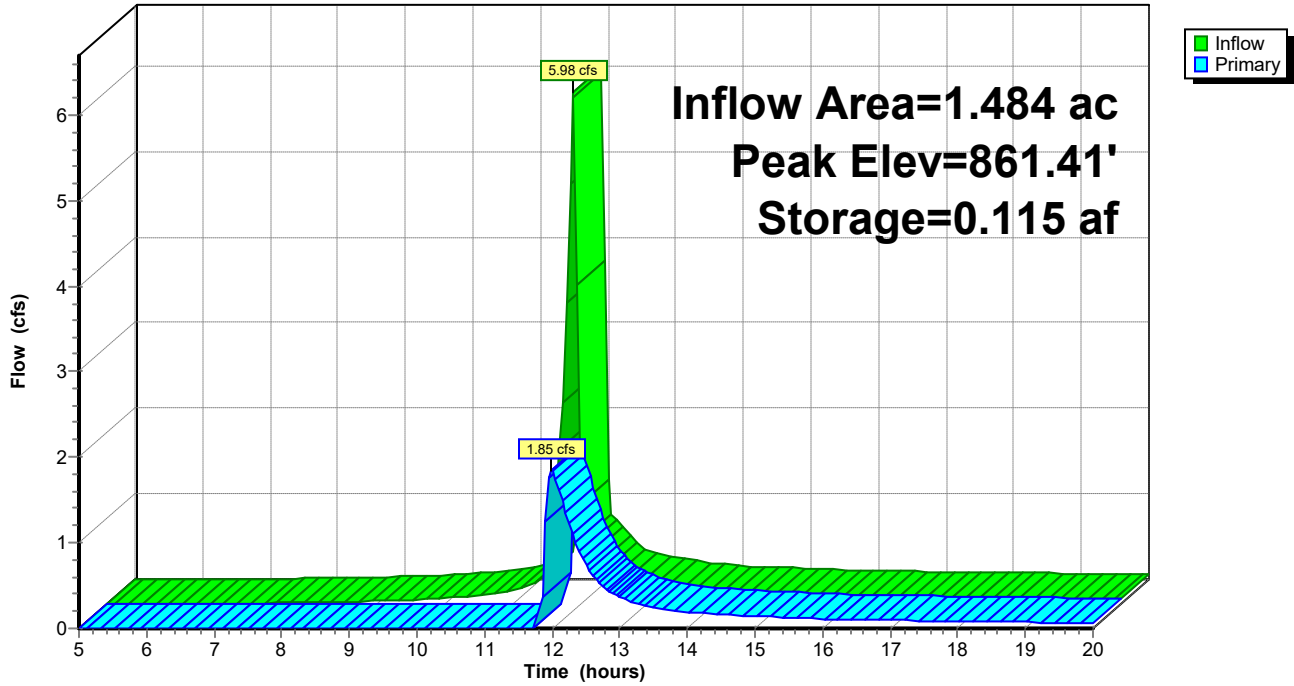
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=1.84 cfs @ 12.00 hrs HW=861.41' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.84 cfs @ 3.38 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 25-Year Rainfall=4.00"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 38

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>2.04"
Tc=0.0 min CN=82 Runoff=3.04 cfs 0.116 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>2.55"
Tc=0.0 min CN=88 Runoff=7.91 cfs 0.316 af

Reach 7R: (new Reach) Avg. Flow Depth=0.98' Max Vel=4.28 fps Inflow=5.27 cfs 0.361 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=5.14 cfs 0.361 af

Reach 8R: (new Reach) Avg. Flow Depth=0.73' Max Vel=4.86 fps Inflow=5.14 cfs 0.361 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=4.93 cfs 0.361 af

Pond 3P: FILTRATION Peak Elev=861.92' Storage=0.149 af Inflow=7.91 cfs 0.316 af
Outflow=2.63 cfs 0.246 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.431 af Average Runoff Depth = 2.39"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

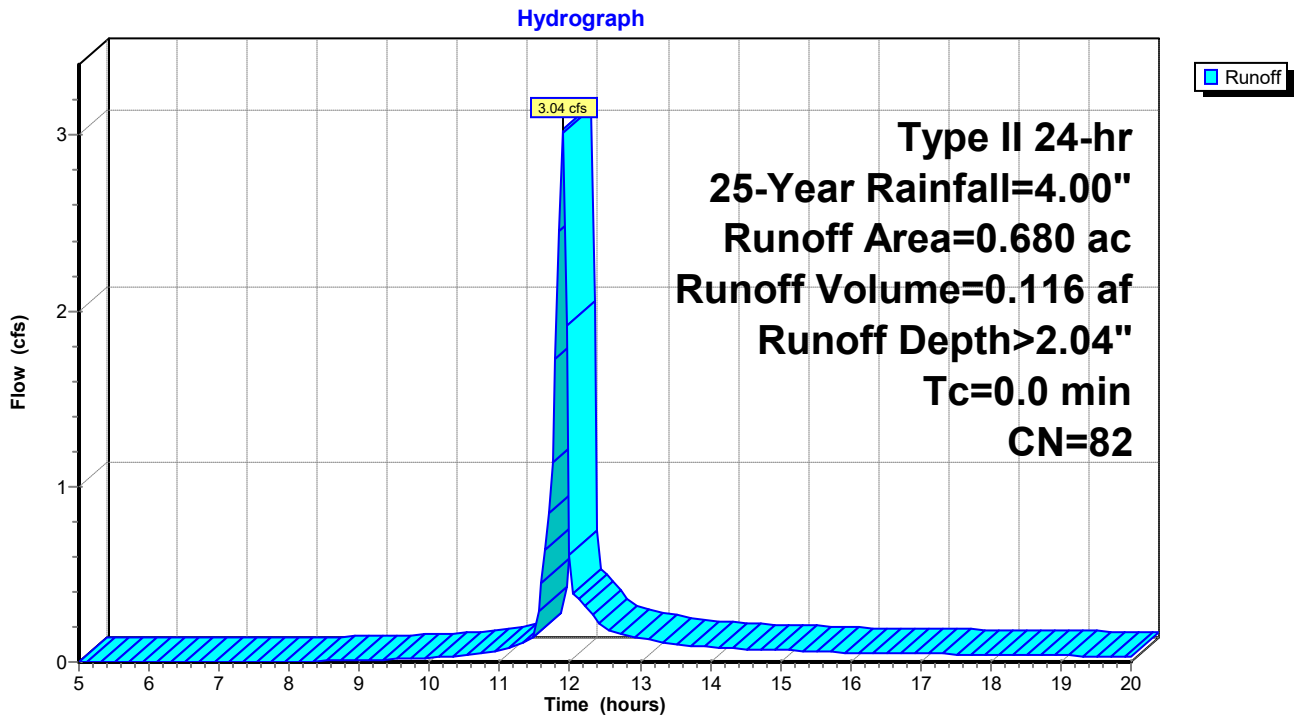
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.04 cfs @ 11.89 hrs, Volume= 0.116 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.00"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST



Summary for Subcatchment 2S: WEST

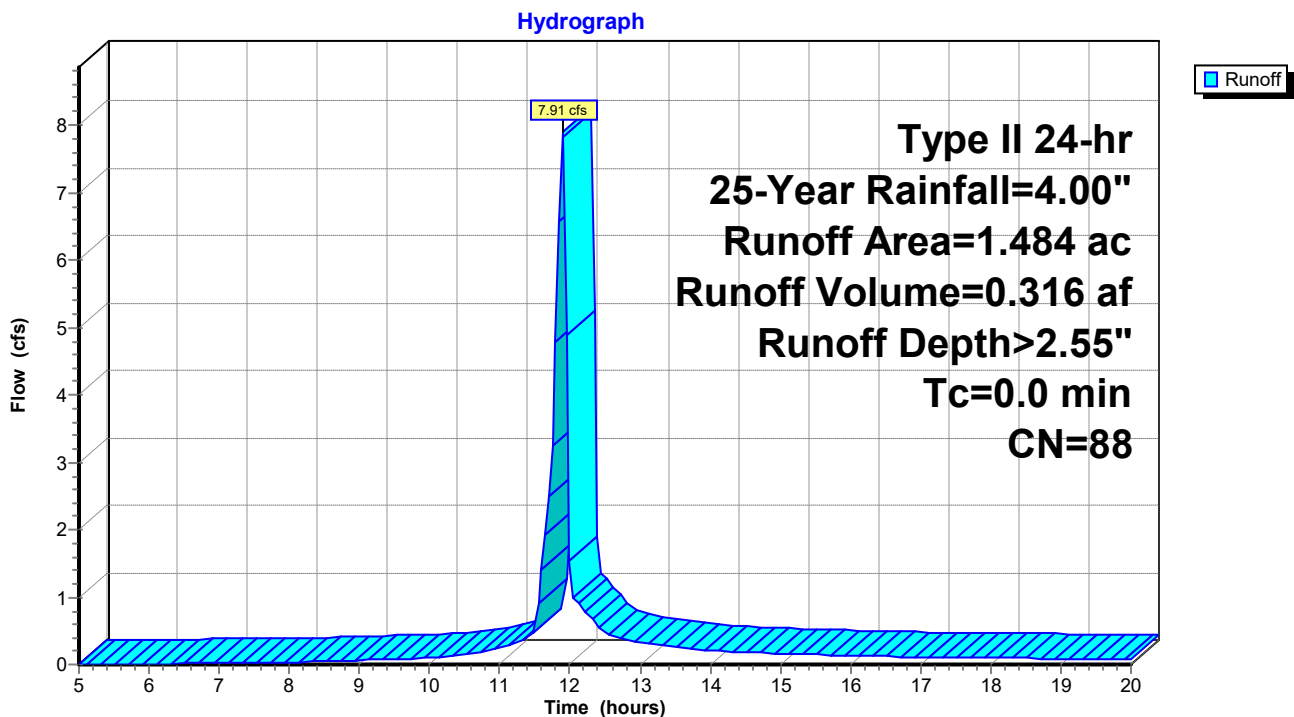
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 7.91 cfs @ 11.89 hrs, Volume= 0.316 af, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=4.00"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

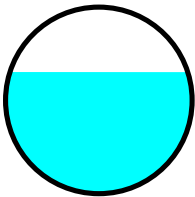
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 2.00" for 25-Year event
 Inflow = 5.27 cfs @ 11.91 hrs, Volume= 0.361 af
 Outflow = 5.14 cfs @ 11.91 hrs, Volume= 0.361 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.28 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.61 fps, Avg. Travel Time= 0.7 min

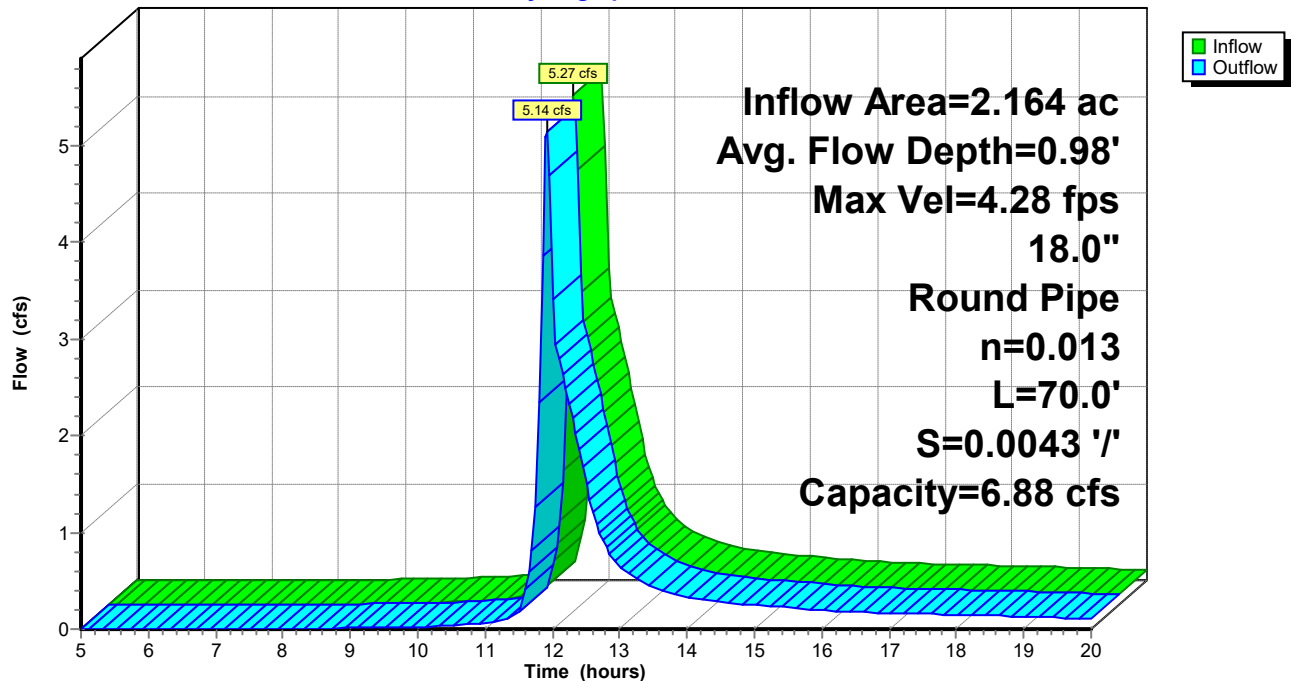
Peak Storage= 85 cf @ 11.91 hrs
 Average Depth at Peak Storage= 0.98'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
 n= 0.013 Corrugated PE, smooth interior
 Length= 70.0' Slope= 0.0043 '/'
 Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

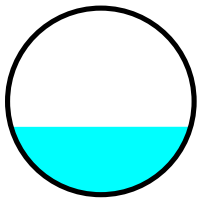
[61] Hint: Exceeded Reach 7R outlet invert by 0.72' @ 11.90 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 2.00" for 25-Year event
Inflow = 5.14 cfs @ 11.91 hrs, Volume= 0.361 af
Outflow = 4.93 cfs @ 11.94 hrs, Volume= 0.361 af, Atten= 4%, Lag= 1.4 min

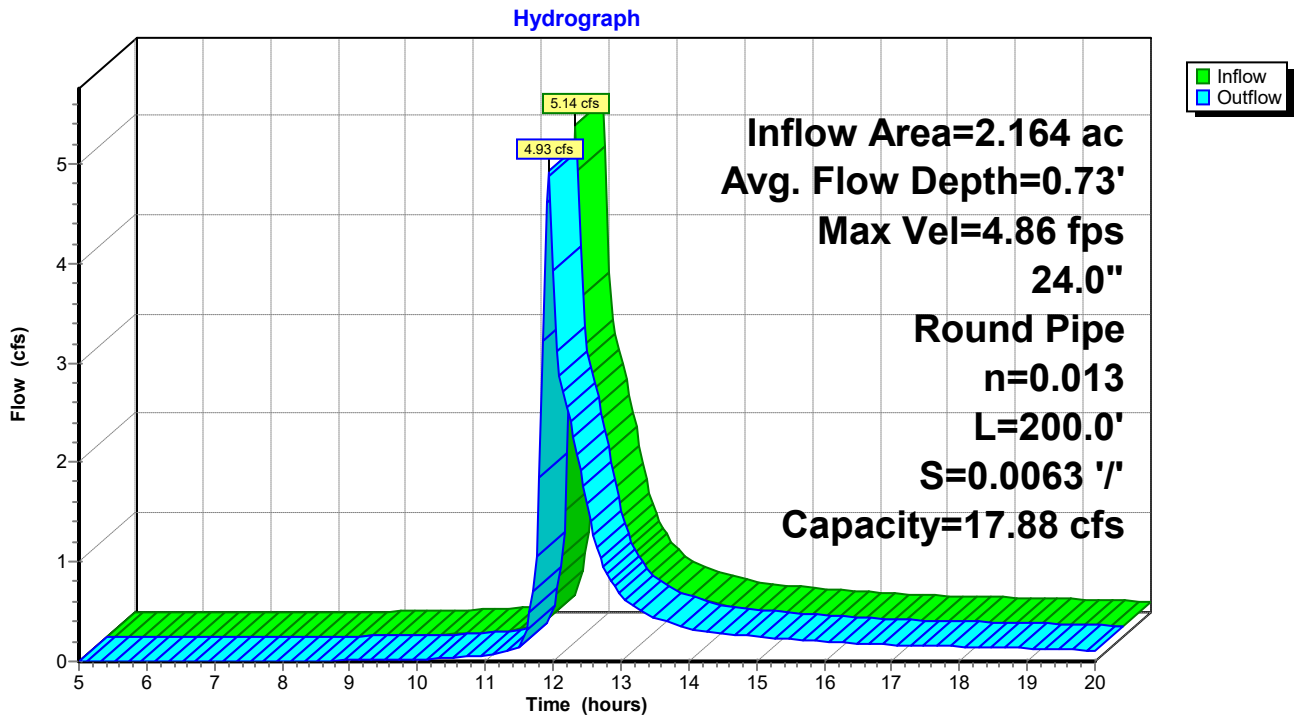
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.86 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 1.9 min

Peak Storage= 207 cf @ 11.92 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 2.55" for 25-Year event
 Inflow = 7.91 cfs @ 11.89 hrs, Volume= 0.316 af
 Outflow = 2.63 cfs @ 11.99 hrs, Volume= 0.246 af, Atten= 67%, Lag= 6.0 min
 Primary = 2.63 cfs @ 11.99 hrs, Volume= 0.246 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 861.92' @ 11.99 hrs Surf.Area= 0.072 ac Storage= 0.149 af

Plug-Flow detention time= 107.7 min calculated for 0.246 af (78% of inflow)
 Center-of-Mass det. time= 49.9 min (811.5 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

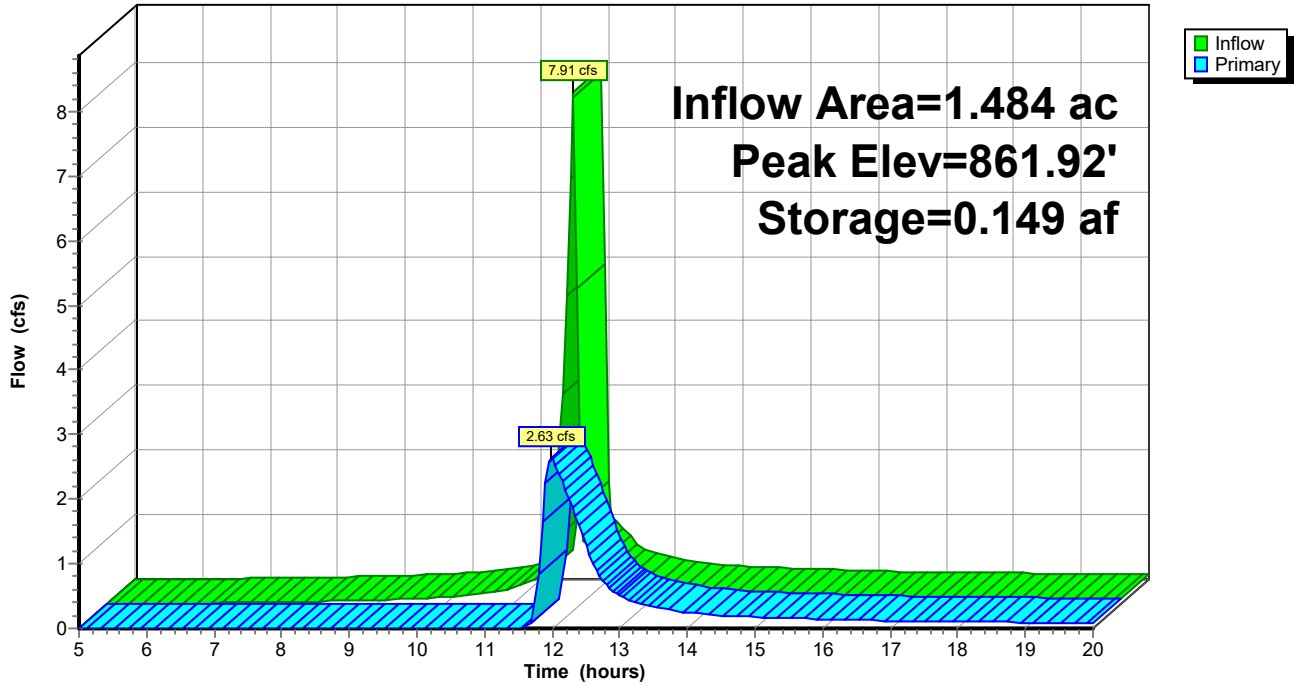
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=2.61 cfs @ 11.99 hrs HW=861.91' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 2.61 cfs @ 4.79 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 50-Year Rainfall=4.70"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 46

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>2.61"
Tc=0.0 min CN=82 Runoff=3.83 cfs 0.148 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>3.17"
Tc=0.0 min CN=88 Runoff=9.68 cfs 0.392 af

Reach 7R: (new Reach) Avg. Flow Depth=1.17' Max Vel=4.43 fps Inflow=6.59 cfs 0.470 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=6.45 cfs 0.470 af

Reach 8R: (new Reach) Avg. Flow Depth=0.83' Max Vel=5.18 fps Inflow=6.45 cfs 0.470 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=6.27 cfs 0.469 af

Pond 3P: FILTRATION Peak Elev=862.31' Storage=0.179 af Inflow=9.68 cfs 0.392 af
Outflow=3.51 cfs 0.322 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.541 af Average Runoff Depth = 3.00"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

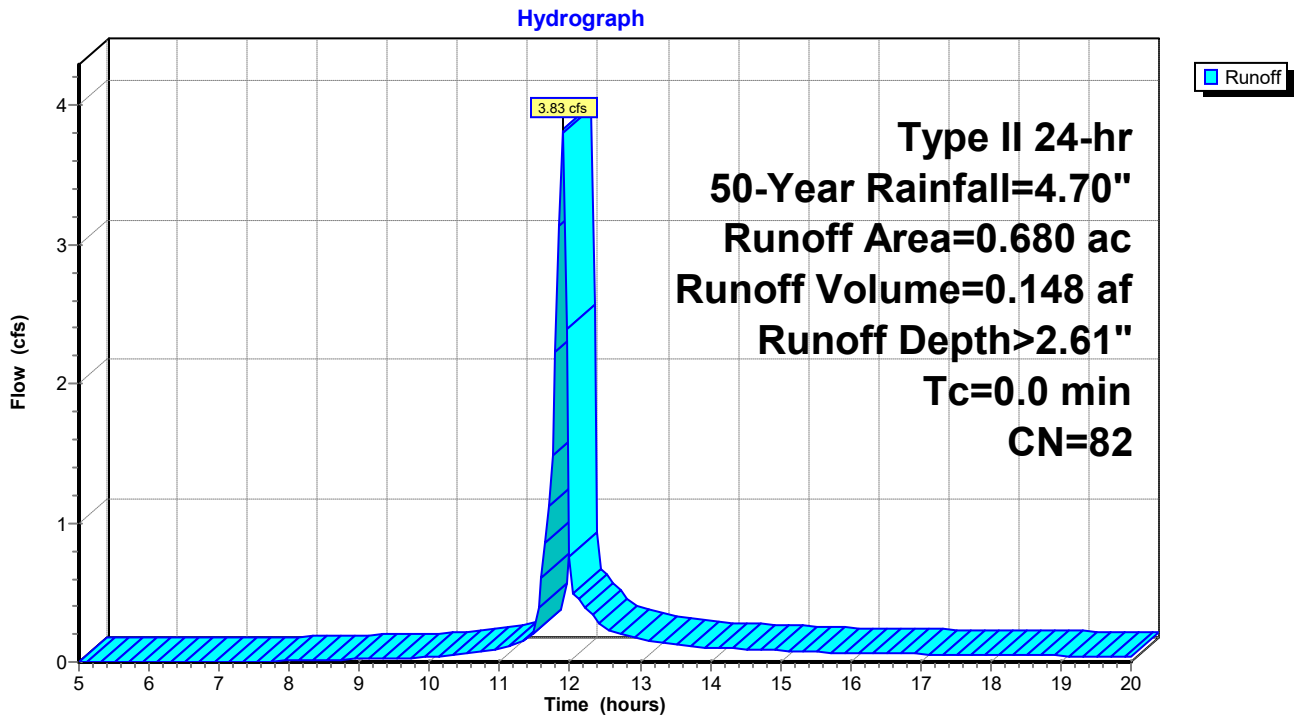
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.83 cfs @ 11.89 hrs, Volume= 0.148 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year Rainfall=4.70"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST



Summary for Subcatchment 2S: WEST

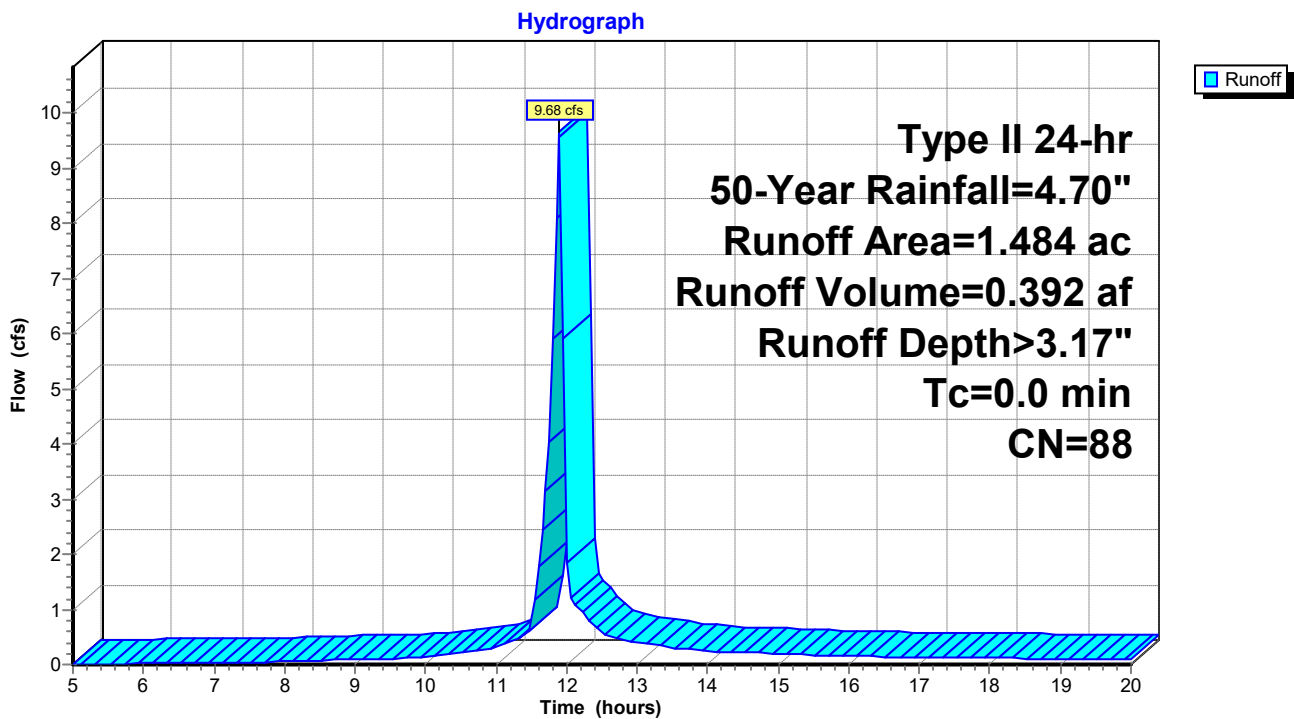
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 9.68 cfs @ 11.89 hrs, Volume= 0.392 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 50-Year Rainfall=4.70"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

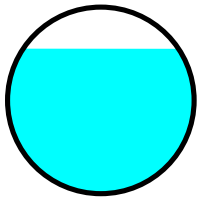
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 2.61" for 50-Year event
Inflow = 6.59 cfs @ 11.91 hrs, Volume= 0.470 af
Outflow = 6.45 cfs @ 11.91 hrs, Volume= 0.470 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.43 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.7 min

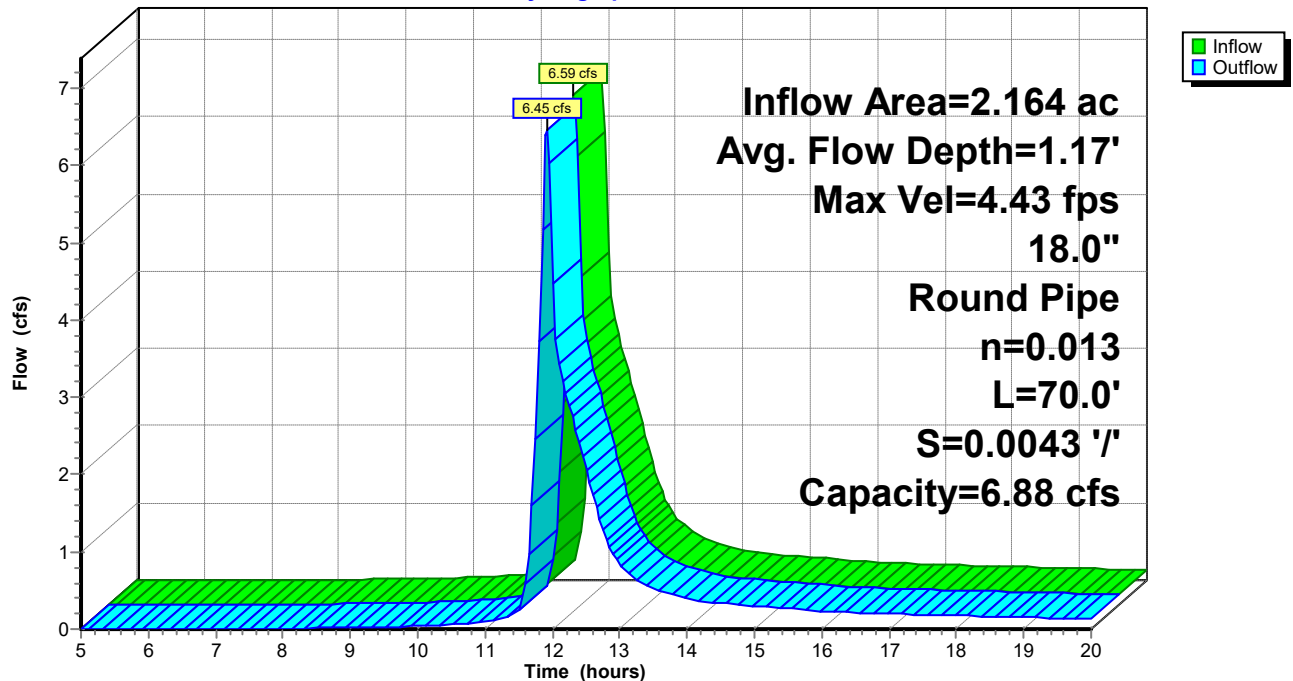
Peak Storage= 103 cf @ 11.91 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 70.0' Slope= 0.0043 '/'
Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

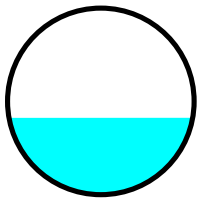
[61] Hint: Exceeded Reach 7R outlet invert by 0.81' @ 11.90 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 2.61" for 50-Year event
Inflow = 6.45 cfs @ 11.91 hrs, Volume= 0.470 af
Outflow = 6.27 cfs @ 11.93 hrs, Volume= 0.469 af, Atten= 3%, Lag= 1.3 min

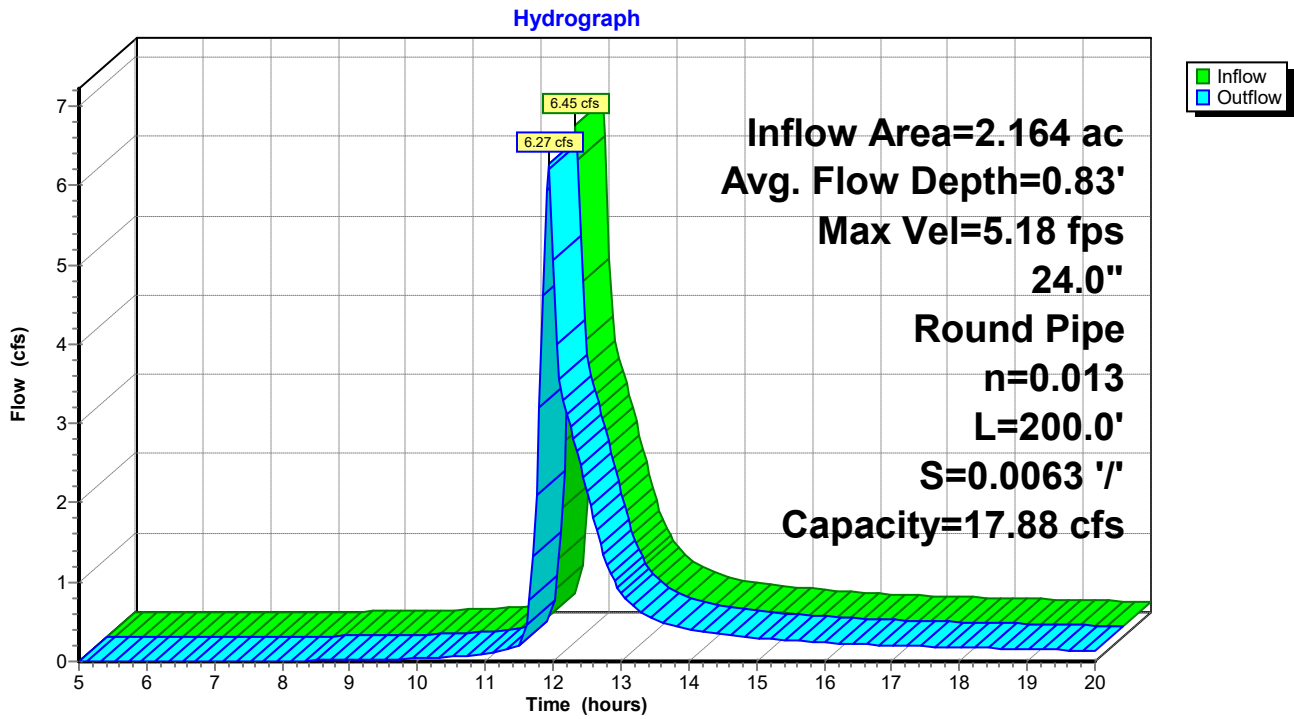
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.18 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 1.8 min

Peak Storage= 245 cf @ 11.92 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)



Summary for Pond 3P: FILTRATION

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 3.17" for 50-Year event
 Inflow = 9.68 cfs @ 11.89 hrs, Volume= 0.392 af
 Outflow = 3.51 cfs @ 11.99 hrs, Volume= 0.322 af, Atten= 64%, Lag= 5.7 min
 Primary = 3.51 cfs @ 11.99 hrs, Volume= 0.322 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 862.31' @ 11.98 hrs Surf.Area= 0.078 ac Storage= 0.179 af

Plug-Flow detention time= 98.9 min calculated for 0.321 af (82% of inflow)
 Center-of-Mass det. time= 47.7 min (804.2 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismatic Z=3.1

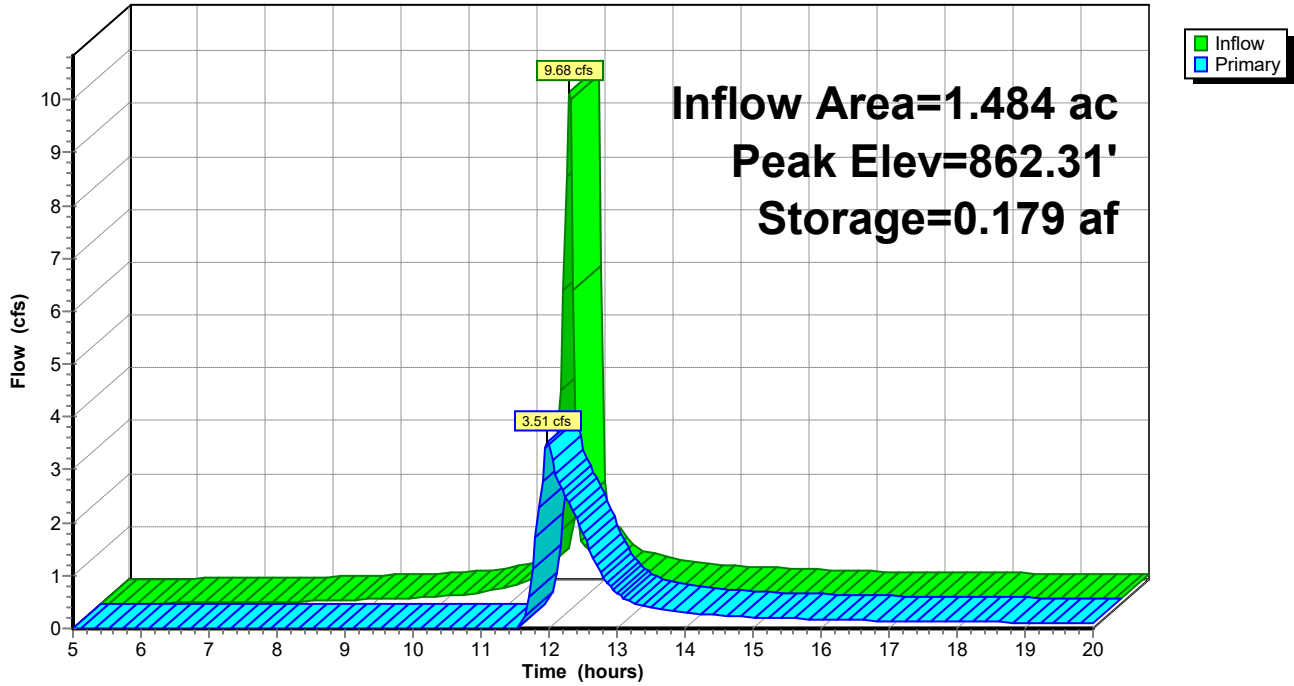
Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=3.46 cfs @ 11.99 hrs HW=862.30' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 3.09 cfs @ 5.67 fps)
- 2=Orifice/Grate (Orifice Controls 0.37 cfs @ 1.87 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph



Premier Properties Post Developed

Type II 24-hr 100-Year Rainfall=5.52"

Prepared by HP

Printed 4/25/2017

HydroCAD® 10.00-20 s/n 09715 © 2017 HydroCAD Software Solutions LLC

Page 54

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: EAST Runoff Area=0.680 ac 56.47% Impervious Runoff Depth>3.31"
Tc=0.0 min CN=82 Runoff=4.78 cfs 0.188 af

Subcatchment 2S: WEST Runoff Area=1.484 ac 72.51% Impervious Runoff Depth>3.91"
Tc=0.0 min CN=88 Runoff=11.74 cfs 0.484 af

Reach 7R: (new Reach) Avg. Flow Depth=1.50' Max Vel=4.44 fps Inflow=8.67 cfs 0.600 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0043 '/' Capacity=6.88 cfs Outflow=6.88 cfs 0.599 af

Reach 8R: (new Reach) Avg. Flow Depth=0.86' Max Vel=5.32 fps Inflow=6.88 cfs 0.599 af
24.0" Round Pipe n=0.013 L=200.0' S=0.0063 '/' Capacity=17.88 cfs Outflow=6.88 cfs 0.599 af

Pond 3P: FILTRATION Peak Elev=862.68' Storage=0.209 af Inflow=11.74 cfs 0.484 af
Outflow=5.09 cfs 0.412 af

Total Runoff Area = 2.164 ac Runoff Volume = 0.671 af Average Runoff Depth = 3.72"
32.53% Pervious = 0.704 ac 67.47% Impervious = 1.460 ac

Summary for Subcatchment 1S: EAST

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

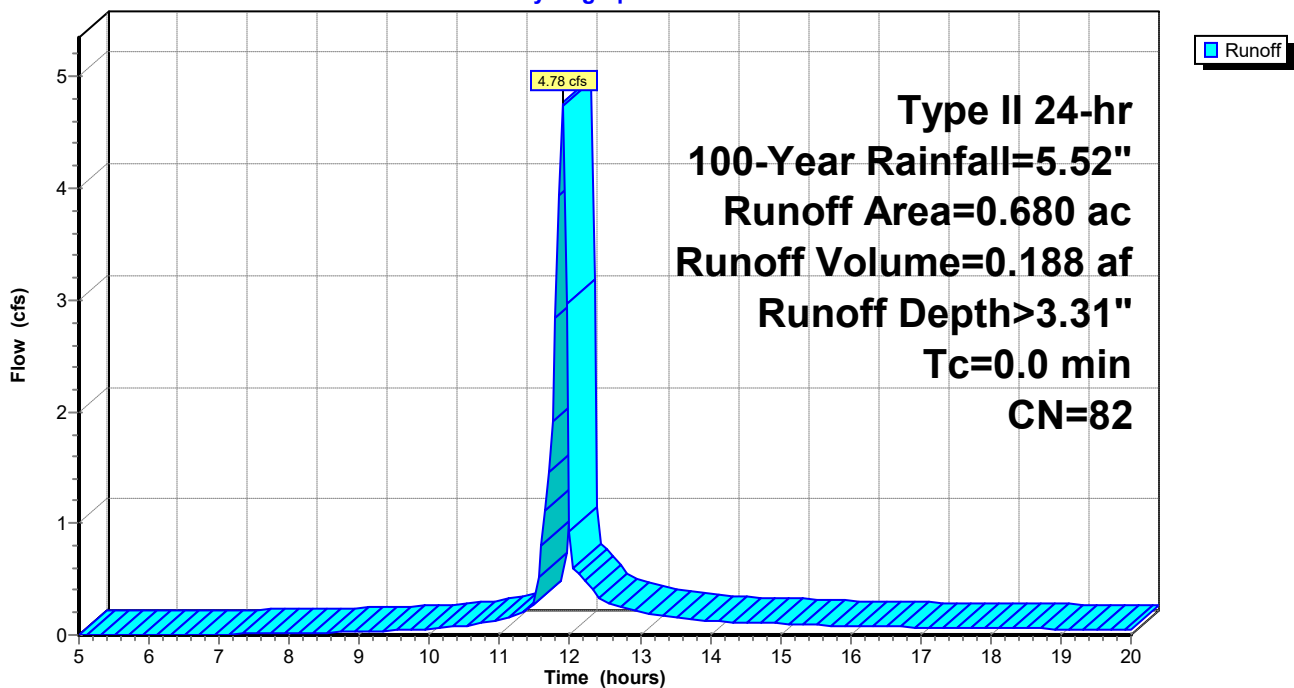
Runoff = 4.78 cfs @ 11.89 hrs, Volume= 0.188 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.52"

Area (ac)	CN	Description
0.132	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.296	61	>75% Grass cover, Good, HSG B
0.680	82	Weighted Average
0.296		43.53% Pervious Area
0.384		56.47% Impervious Area

Subcatchment 1S: EAST

Hydrograph



Summary for Subcatchment 2S: WEST

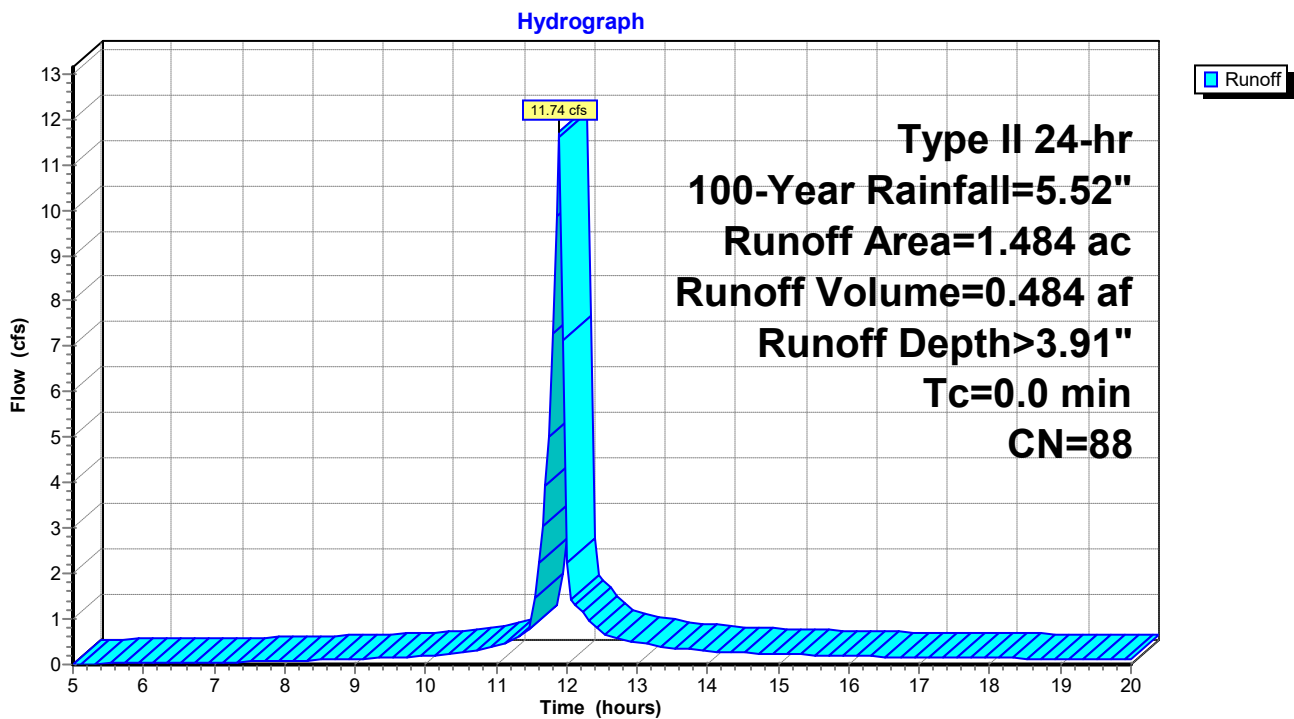
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 11.74 cfs @ 11.89 hrs, Volume= 0.484 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=5.52"

Area (ac)	CN	Description
0.127	98	Paved parking, HSG B
0.697	98	Paved parking, HSG B
0.252	98	Roofs, HSG B
0.408	61	>75% Grass cover, Good, HSG B
1.484	88	Weighted Average
0.408		27.49% Pervious Area
1.076		72.51% Impervious Area

Subcatchment 2S: WEST



Summary for Reach 7R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

[55] Hint: Peak inflow is 126% of Manning's capacity

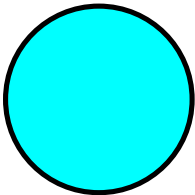
[76] Warning: Detained 0.011 af (Pond w/culvert advised)

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 3.33" for 100-Year event
Inflow = 8.67 cfs @ 11.91 hrs, Volume= 0.600 af
Outflow = 6.88 cfs @ 11.98 hrs, Volume= 0.599 af, Atten= 21%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.44 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.7 min

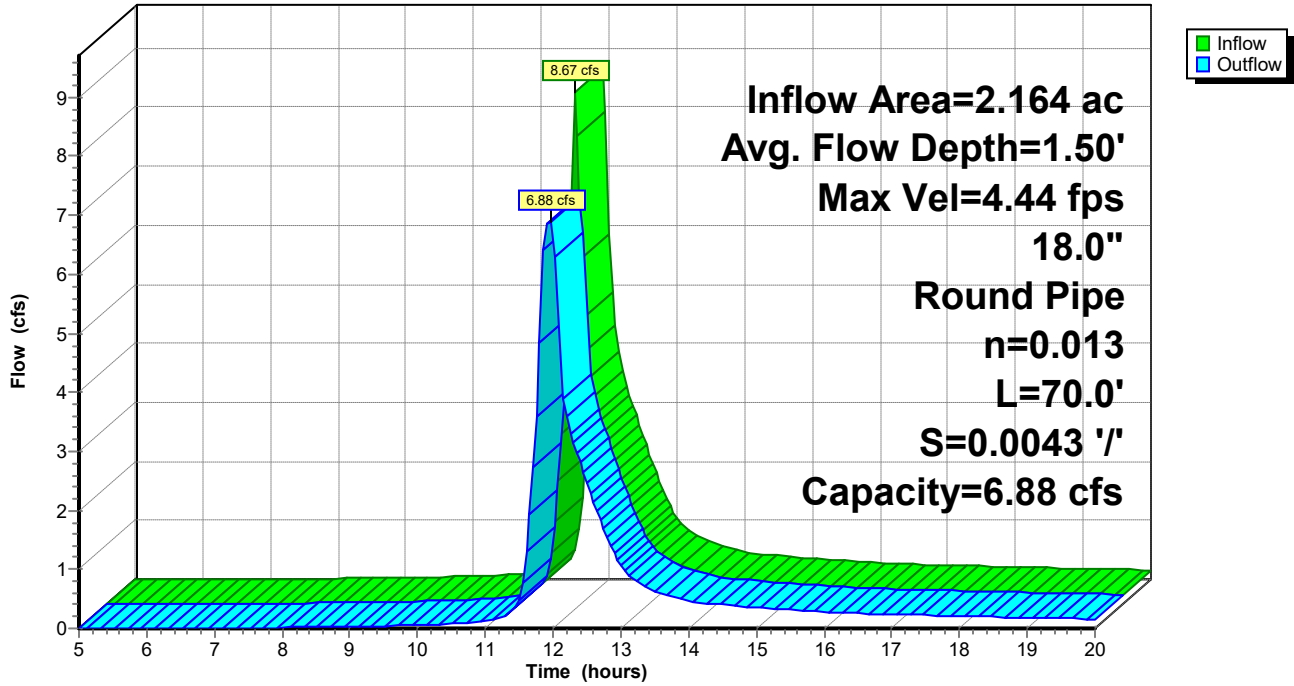
Peak Storage= 124 cf @ 11.90 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.88 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 70.0' Slope= 0.0043 '/'
Inlet Invert= 858.30', Outlet Invert= 858.00'



Reach 7R: (new Reach)

Hydrograph



Summary for Reach 8R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

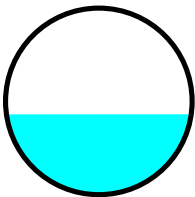
[61] Hint: Exceeded Reach 7R outlet invert by 0.86' @ 12.00 hrs

Inflow Area = 2.164 ac, 67.47% Impervious, Inflow Depth > 3.32" for 100-Year event
Inflow = 6.88 cfs @ 11.98 hrs, Volume= 0.599 af
Outflow = 6.88 cfs @ 11.99 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.32 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 1.7 min

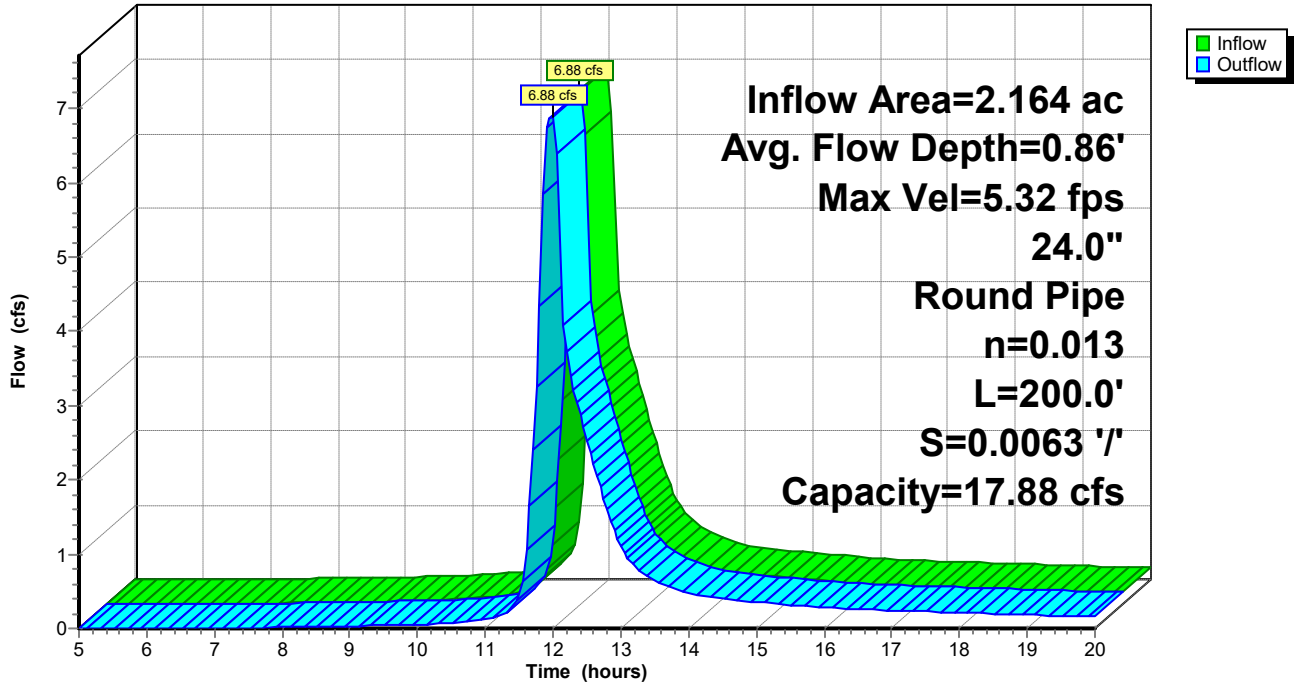
Peak Storage= 259 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.88 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 200.0' Slope= 0.0063 '/'
Inlet Invert= 858.00', Outlet Invert= 856.75'



Reach 8R: (new Reach)

Hydrograph



Summary for Pond 3P: FILTRATION

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.484 ac, 72.51% Impervious, Inflow Depth > 3.91" for 100-Year event
 Inflow = 11.74 cfs @ 11.89 hrs, Volume= 0.484 af
 Outflow = 5.09 cfs @ 11.97 hrs, Volume= 0.412 af, Atten= 57%, Lag= 5.0 min
 Primary = 5.09 cfs @ 11.97 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 862.68' @ 11.97 hrs Surf.Area= 0.085 ac Storage= 0.209 af

Plug-Flow detention time= 91.1 min calculated for 0.411 af (85% of inflow)
 Center-of-Mass det. time= 45.8 min (797.7 - 751.9)

Volume	Invert	Avail.Storage	Storage Description
#1	859.00'	0.456 af	35.00'W x 41.00'L x 6.00'H Prismaoid Z=3.1

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	10.0" Vert. Orifice/Grate C= 0.600
#2	Primary	862.00'	12.0" Vert. Orifice/Grate C= 0.600
#3	Primary	864.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=4.94 cfs @ 11.97 hrs HW=862.65' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 3.46 cfs @ 6.34 fps)
- 2=Orifice/Grate (Orifice Controls 1.49 cfs @ 2.75 fps)
- 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: FILTRATION

Hydrograph

