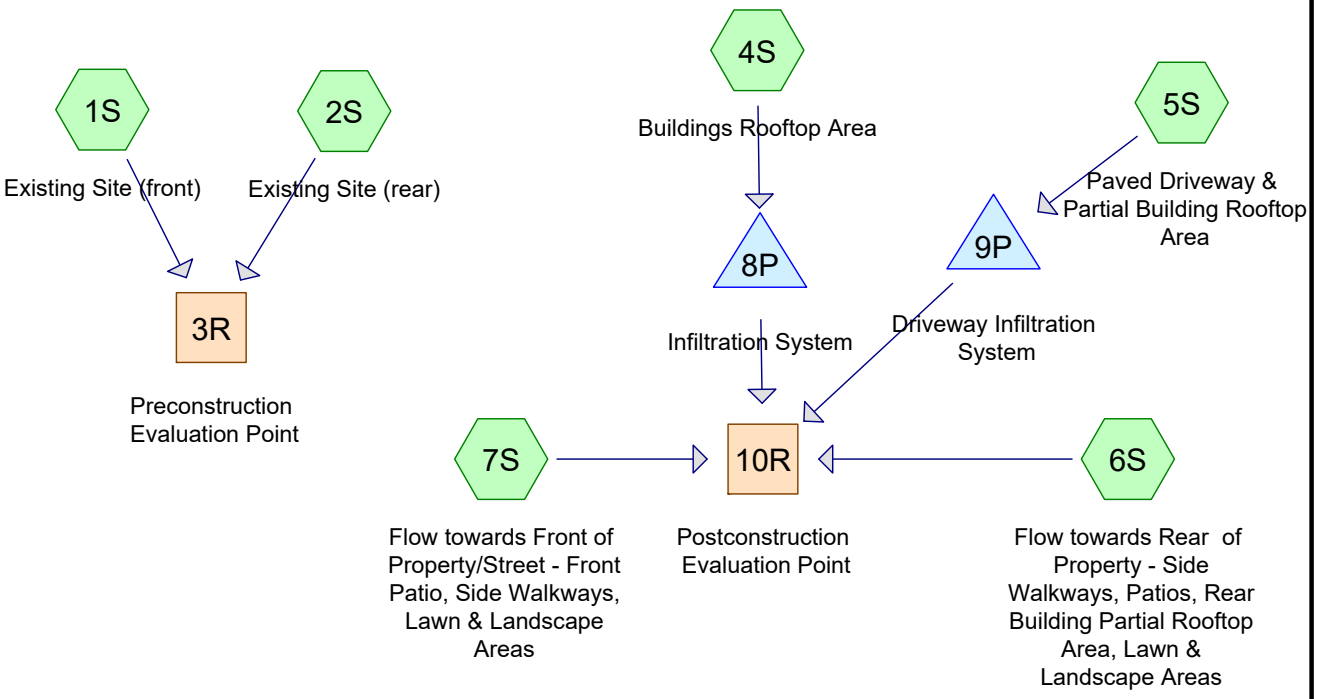


Subcat Reach Pond Link

Routing Diagram for 23 Johnson Place Hydrocad 2
Prepared by Hayes & Associates, Printed 7/17/2020

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 4273 MA Somerville Middlesex County South
Rainfall events imported from "NRCS-Rain.txt" for 4206 MA Newton Middlesex County South
Rainfall events imported from "NRCS-Rain.txt" for 4206 MA Newton Middlesex County South

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.078	98	(E) Driveway (1S)
0.001	98	(E) Front Porch (1S)
0.003	98	(E) Front Walkway (1S)
0.001	98	(E) Front site wall @ driveway (1S)
0.001	98	(E) Front site wall @ house (1S)
0.021	98	(E) Paved Pool Deck (2S)
0.002	98	(E) Paver Patio (1S)
0.008	98	(E) Rear Covered Patio (1S)
0.002	98	(E) Rear Walkway to Pool (1S)
0.029	98	(E) Roof Area (1S)
0.001	98	(E) Side Porch (1S)
0.001	98	(E)Side Walkway (1S)
0.008	98	(P) Center Patios (6S)
0.090	98	(P) Driveway (5S)
0.037	98	(P) Front Building Rooftop Area (4S)
0.019	98	(P) Front Building Roof (5S)
0.005	98	(P) Front Patio (7S)
0.019	98	(P) Rear Building Rooftop Area (7S)
0.019	98	(P) Rear Building Rooftop Area (6S)
0.008	98	(P) Rear Patio (6S)
0.013	98	(P) Right Side Walkway (7S)
0.015	98	(P) Side Walkways & Stairs (6S)
0.121	49	50-75% Grass cover, Fair, HSG A (1S)
0.154	39	>75% Grass cover, Good, HSG A (6S, 7S)
0.116	57	Woods/grass comb., Poor, HSG A (2S)
0.772	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.391	HSG A	1S, 2S, 6S, 7S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.381	Other	1S, 2S, 4S, 5S, 6S, 7S
0.772		**TOTAL AREA**

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	0.000	0.000	0.000	0.078	0.078	(E) Driveway	1S
0.000	0.000	0.000	0.000	0.001	0.001	(E) Front Porch	1S
0.000	0.000	0.000	0.000	0.003	0.003	(E) Front Walkway	1S
0.000	0.000	0.000	0.000	0.001	0.001	(E) Front site wall @ driveway	1S
0.000	0.000	0.000	0.000	0.001	0.001	(E) Front site wall @ house	1S
0.000	0.000	0.000	0.000	0.021	0.021	(E) Paved Pool Deck	2S
0.000	0.000	0.000	0.000	0.002	0.002	(E) Paver Patio	1S
0.000	0.000	0.000	0.000	0.008	0.008	(E) Rear Covered Patio	1S
0.000	0.000	0.000	0.000	0.002	0.002	(E) Rear Walkway to Pool	1S
0.000	0.000	0.000	0.000	0.029	0.029	(E) Roof Area	1S
0.000	0.000	0.000	0.000	0.001	0.001	(E) Side Porch	1S
0.000	0.000	0.000	0.000	0.001	0.001	(E)Side Walkway	1S
0.000	0.000	0.000	0.000	0.008	0.008	(P) Center Patios	6S
0.000	0.000	0.000	0.000	0.090	0.090	(P) Driveway	5S
0.000	0.000	0.000	0.000	0.037	0.037	(P) Front Building Rooftop Area	4S
0.000	0.000	0.000	0.000	0.019	0.019	(P) Front Building Roof	5S
0.000	0.000	0.000	0.000	0.005	0.005	(P) Front Patio	7S
0.000	0.000	0.000	0.000	0.019	0.019	(P) Rear Building Rooftop Area	7S
0.000	0.000	0.000	0.000	0.019	0.019	(P) Rear Building Rooftop Area	6S
0.000	0.000	0.000	0.000	0.008	0.008	(P) Rear Patio	6S
0.000	0.000	0.000	0.000	0.013	0.013	(P) Right Side Walkway	7S
0.000	0.000	0.000	0.000	0.015	0.015	(P) Side Walkways & Stairs	6S
0.121	0.000	0.000	0.000	0.000	0.121	50-75% Grass cover, Fair	1S
0.154	0.000	0.000	0.000	0.000	0.154	>75% Grass cover, Good	6S, 7S
0.116	0.000	0.000	0.000	0.000	0.116	Woods/grass comb., Poor	2S
0.391	**0.000**	**0.000**	**0.000**	**0.381**	**0.772**	**TOTAL AREA**	

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	3R	1.00	0.00	1.0	1.0000	0.009	24.0	0.0	0.0
2	10R	1.00	0.00	1.0	1.0000	0.009	24.0	0.0	0.0

Time span=0.00-27.00 hrs, dt=0.01 hrs, 2701 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: Existing Site (front) Runoff Area=10,773 sf 51.04% Impervious Runoff Depth=1.01"
Tc=6.0 min CN=74 Runoff=0.27 cfs 0.021 af

Subcatchment 2S: Existing Site (rear) Runoff Area=5,994 sf 15.40% Impervious Runoff Depth=0.50"
Tc=6.0 min CN=63 Runoff=0.06 cfs 0.006 af

Subcatchment 4S: Buildings Rooftop Area Runoff Area=1,624 sf 100.00% Impervious Runoff Depth=2.93"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

Subcatchment 5S: Paved Driveway & Runoff Area=4,765 sf 100.00% Impervious Runoff Depth=2.93"
Tc=6.0 min CN=98 Runoff=0.31 cfs 0.027 af

Subcatchment 6S: Flow towards Rear of Runoff Area=5,705 sf 38.58% Impervious Runoff Depth=0.46"
Tc=6.0 min CN=62 Runoff=0.05 cfs 0.005 af

Subcatchment 7S: Flow towards Front of Runoff Area=4,774 sf 33.07% Impervious Runoff Depth=0.36"
Tc=6.0 min CN=59 Runoff=0.02 cfs 0.003 af

Reach 3R: Preconstruction Evaluation Avg. Flow Depth=0.05' Max Vel=16.91 fps Inflow=0.33 cfs 0.027 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=0.33 cfs 0.027 af

Reach 10R: Postconstruction Avg. Flow Depth=0.02' Max Vel=10.96 fps Inflow=0.07 cfs 0.008 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=0.07 cfs 0.008 af

Pond 8P: Infiltration System Peak Elev=56.66' Storage=36 cf Inflow=0.11 cfs 0.009 af
Discarded=0.06 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.009 af

Pond 9P: Driveway Infiltration System Peak Elev=47.66' Storage=31 cf Inflow=0.31 cfs 0.027 af
Discarded=0.22 cfs 0.027 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.027 af

Total Runoff Area = 0.772 ac Runoff Volume = 0.071 af Average Runoff Depth = 1.10"
50.67% Pervious = 0.391 ac 49.33% Impervious = 0.381 ac

Summary for Subcatchment 1S: Existing Site (front)

Runoff = 0.27 cfs @ 12.14 hrs, Volume= 0.021 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	1,265	98	(E) Roof Area
*	41	98	(E) Front Porch
*	131	98	(E) Front Walkway
*	46	98	(E) Front site wall @ house
*	34	98	(E) Front site wall @ driveway
*	23	98	(E) Side Porch
*	22	98	(E)Side Walkway
*	3,416	98	(E) Driveway
*	365	98	(E) Rear Covered Patio
*	85	98	(E) Rear Walkway to Pool
*	71	98	(E) Paver Patio
	5,274	49	50-75% Grass cover, Fair, HSG A
	10,773	74	Weighted Average
	5,274		48.96% Pervious Area
	5,499		51.04% Impervious Area

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

Summary for Subcatchment 2S: Existing Site (rear)

Runoff = 0.06 cfs @ 12.14 hrs, Volume= 0.006 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	923	98	(E) Paved Pool Deck
	5,071	57	Woods/grass comb., Poor, HSG A
	5,994	63	Weighted Average
	5,071		84.60% Pervious Area
	923		15.40% Impervious Area

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

Summary for Subcatchment 4S: Buildings Rooftop Area

Runoff = 0.11 cfs @ 12.13 hrs, Volume= 0.009 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	1,624	98	(P) Front Building Rooftop Area
	1,624		100.00% Impervious Area

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

Summary for Subcatchment 5S: Paved Driveway & Partial Building Rooftop Area

Runoff = 0.31 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	3,925	98	(P) Driveway
*	420	98	(P) Front Building Roof
*	420	98	(P) Front Building Roof
	4,765	98	Weighted Average
	4,765		100.00% Impervious Area

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

hment 6S: Flow towards Rear of Property - Side Walkways, Patios, Rear Building Partial Rooftop Area,

Runoff = 0.05 cfs @ 12.15 hrs, Volume= 0.005 af, Depth= 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	653	98	(P) Side Walkways & Stairs
*	366	98	(P) Center Patios
*	366	98	(P) Rear Patio
*	816	98	(P) Rear Building Rooftop Area
	3,504	39	>75% Grass cover, Good, HSG A
	5,705	62	Weighted Average
	3,504		61.42% Pervious Area
	2,201		38.58% Impervious Area

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

for Subcatchment 7S: Flow towards Front of Property/Street - Front Patio, Side Walkways, Lawn & Lan

Runoff = 0.02 cfs @ 12.15 hrs, Volume= 0.003 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.16"

	Area (sf)	CN	Description
*	808	98	(P) Rear Building Rooftop Area
*	221	98	(P) Front Patio
*	550	98	(P) Right Side Walkway
	3,195	39	>75% Grass cover, Good, HSG A
	4,774	59	Weighted Average
	3,195		66.93% Pervious Area
	1,579		33.07% Impervious Area

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

Summary for Reach 3R: Preconstruction Evaluation Point

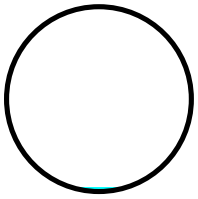
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.385 ac, 38.30% Impervious, Inflow Depth = 0.83" for 2-Year event
Inflow = 0.33 cfs @ 12.14 hrs, Volume= 0.027 af
Outflow = 0.33 cfs @ 12.14 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Max. Velocity= 16.91 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.45 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Reach 10R: Postconstruction Evaluation Point

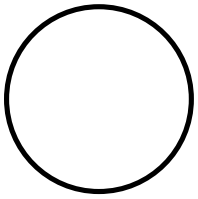
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.387 ac, 60.29% Impervious, Inflow Depth = 0.26" for 2-Year event
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 0.008 af
Outflow = 0.07 cfs @ 12.15 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.96 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.27 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Pond 8P: Infiltration System

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth = 2.93" for 2-Year event
Inflow = 0.11 cfs @ 12.13 hrs, Volume= 0.009 af
Outflow = 0.06 cfs @ 12.21 hrs, Volume= 0.009 af, Atten= 42%, Lag= 4.6 min
Discarded = 0.06 cfs @ 12.21 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 56.66' @ 12.21 hrs Surf.Area= 132 sf Storage= 36 cf
Flood Elev= 62.00' Surf.Area= 132 sf Storage= 108 cf

Plug-Flow detention time= 6.8 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 6.9 min (767.6 - 760.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	103 cf	**6.00'W x 22.00'L x 2.00'H Prismatoid** 264 cf Overall - 5 cf Embedded = 259 cf x 40.0% Voids
#2	56.50'	4 cf	**6.0" Round 6" Perforated Pipe** Inside #1 L= 20.0' S= 0.0001 '/' 5 cf Overall - 0.5" Wall Thickness = 4 cf
#3	56.50'	14 cf	**4.0" Round Drainage Pipe from downspouts** L= 160.0' S= 1.0000 '/'
#4	62.00'	1 cf	**0.33'D x 6.00'H Downspout Overflow Piping**-Impervious
		122 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	62.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.21 hrs HW=56.66' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 9P: Driveway Infiltration System

Inflow Area = 0.109 ac,100.00% Impervious, Inflow Depth = 2.93" for 2-Year event
Inflow = 0.31 cfs @ 12.13 hrs, Volume= 0.027 af
Outflow = 0.22 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 28%, Lag= 0.0 min
Discarded = 0.22 cfs @ 12.07 hrs, Volume= 0.027 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 47.66' @ 12.18 hrs Surf.Area= 484 sf Storage= 31 cf
Flood Elev= 50.75' Surf.Area= 497 sf Storage= 429 cf

Plug-Flow detention time= 0.8 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (761.5 - 760.7)

Volume	Invert	Avail.Storage	Storage Description
#1	47.50'	380 cf	**11.00'W x 44.00'L x 2.00'H Prismatoid** 968 cf Overall - 18 cf Embedded = 950 cf x 40.0% Voids
#2	48.00'	14 cf	**8.0" Round 8" Perforated Pipe** Inside #1 L= 40.0' S= 0.0001 '/' 18 cf Overall - 0.5" Wall Thickness = 14 cf
#3	48.25'	4 cf	**12.0" Round Pipe Storage** L= 5.0' S= 0.0100 '/'
#4	48.25'	41 cf	**4.00'D x 3.30'H Vertical Cone/Cylinder**
		439 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	47.50'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	50.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.07 hrs HW=47.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=47.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-27.00 hrs, dt=0.01 hrs, 2701 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: Existing Site (front) Runoff Area=10,773 sf 51.04% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=74 Runoff=0.60 cfs 0.045 af

Subcatchment 2S: Existing Site (rear) Runoff Area=5,994 sf 15.40% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=63 Runoff=0.20 cfs 0.016 af

Subcatchment 4S: Buildings Rooftop Area Runoff Area=1,624 sf 100.00% Impervious Runoff Depth=4.53"
Tc=6.0 min CN=98 Runoff=0.16 cfs 0.014 af

Subcatchment 5S: Paved Driveway & Runoff Area=4,765 sf 100.00% Impervious Runoff Depth=4.53"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.041 af

Subcatchment 6S: Flow towards Rear of Runoff Area=5,705 sf 38.58% Impervious Runoff Depth=1.30"
Tc=6.0 min CN=62 Runoff=0.18 cfs 0.014 af

Subcatchment 7S: Flow towards Front of Runoff Area=4,774 sf 33.07% Impervious Runoff Depth=1.11"
Tc=6.0 min CN=59 Runoff=0.12 cfs 0.010 af

Reach 3R: Preconstruction Evaluation Avg. Flow Depth=0.07' Max Vel=21.94 fps Inflow=0.80 cfs 0.061 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=0.80 cfs 0.061 af

Reach 10R: Postconstruction Avg. Flow Depth=0.05' Max Vel=16.44 fps Inflow=0.30 cfs 0.024 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=0.30 cfs 0.024 af

Pond 8P: Infiltration System Peak Elev=57.35' Storage=73 cf Inflow=0.16 cfs 0.014 af
Discarded=0.06 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.014 af

Pond 9P: Driveway Infiltration System Peak Elev=48.11' Storage=119 cf Inflow=0.47 cfs 0.041 af
Discarded=0.22 cfs 0.041 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.041 af

Total Runoff Area = 0.772 ac Runoff Volume = 0.140 af Average Runoff Depth = 2.18"
50.67% Pervious = 0.391 ac 49.33% Impervious = 0.381 ac

Summary for Subcatchment 1S: Existing Site (front)

Runoff = 0.60 cfs @ 12.13 hrs, Volume= 0.045 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	1,265	98	(E) Roof Area
*	41	98	(E) Front Porch
*	131	98	(E) Front Walkway
*	46	98	(E) Front site wall @ house
*	34	98	(E) Front site wall @ driveway
*	23	98	(E) Side Porch
*	22	98	(E)Side Walkway
*	3,416	98	(E) Driveway
*	365	98	(E) Rear Covered Patio
*	85	98	(E) Rear Walkway to Pool
*	71	98	(E) Paver Patio
	5,274	49	50-75% Grass cover, Fair, HSG A
	10,773	74	Weighted Average
	5,274		48.96% Pervious Area
	5,499		51.04% Impervious Area

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

Summary for Subcatchment 2S: Existing Site (rear)

Runoff = 0.20 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	923	98	(E) Paved Pool Deck
	5,071	57	Woods/grass comb., Poor, HSG A
	5,994	63	Weighted Average
	5,071		84.60% Pervious Area
	923		15.40% Impervious Area

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

Summary for Subcatchment 4S: Buildings Rooftop Area

Runoff = 0.16 cfs @ 12.13 hrs, Volume= 0.014 af, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	1,624	98	(P) Front Building Rooftop Area
	1,624		100.00% Impervious Area

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

Summary for Subcatchment 5S: Paved Driveway & Partial Building Rooftop Area

Runoff = 0.47 cfs @ 12.13 hrs, Volume= 0.041 af, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	3,925	98	(P) Driveway
*	420	98	(P) Front Building Roof
*	420	98	(P) Front Building Roof
	4,765	98	Weighted Average
	4,765		100.00% Impervious Area

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

hment 6S: Flow towards Rear of Property - Side Walkways, Patios, Rear Building Partial Rooftop Area,

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	653	98	(P) Side Walkways & Stairs
*	366	98	(P) Center Patios
*	366	98	(P) Rear Patio
*	816	98	(P) Rear Building Rooftop Area
	3,504	39	>75% Grass cover, Good, HSG A
	5,705	62	Weighted Average
	3,504		61.42% Pervious Area
	2,201		38.58% Impervious Area

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

for Subcatchment 7S: Flow towards Front of Property/Street - Front Patio, Side Walkways, Lawn & Lan

Runoff = 0.12 cfs @ 12.14 hrs, Volume= 0.010 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.77"

	Area (sf)	CN	Description
*	808	98	(P) Rear Building Rooftop Area
*	221	98	(P) Front Patio
*	550	98	(P) Right Side Walkway
	3,195	39	>75% Grass cover, Good, HSG A
	4,774	59	Weighted Average
	3,195		66.93% Pervious Area
	1,579		33.07% Impervious Area

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

Summary for Reach 3R: Preconstruction Evaluation Point

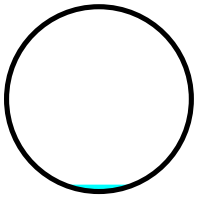
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.385 ac, 38.30% Impervious, Inflow Depth = 1.89" for 10-Year event
Inflow = 0.80 cfs @ 12.13 hrs, Volume= 0.061 af
Outflow = 0.80 cfs @ 12.13 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Max. Velocity= 21.94 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.84 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Reach 10R: Postconstruction Evaluation Point

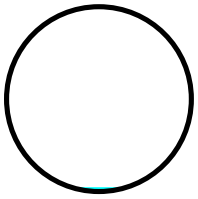
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.387 ac, 60.29% Impervious, Inflow Depth = 0.75" for 10-Year event
Inflow = 0.30 cfs @ 12.14 hrs, Volume= 0.024 af
Outflow = 0.30 cfs @ 12.14 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 16.44 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.44 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Pond 8P: Infiltration System

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth = 4.53" for 10-Year event
Inflow = 0.16 cfs @ 12.13 hrs, Volume= 0.014 af
Outflow = 0.06 cfs @ 12.15 hrs, Volume= 0.014 af, Atten= 62%, Lag= 1.3 min
Discarded = 0.06 cfs @ 12.15 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 57.35' @ 12.26 hrs Surf.Area= 132 sf Storage= 73 cf
Flood Elev= 62.00' Surf.Area= 132 sf Storage= 108 cf

Plug-Flow detention time= 8.5 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 8.6 min (760.0 - 751.4)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	103 cf	**6.00'W x 22.00'L x 2.00'H Prismatoid** 264 cf Overall - 5 cf Embedded = 259 cf x 40.0% Voids
#2	56.50'	4 cf	**6.0" Round 6" Perforated Pipe** Inside #1 L= 20.0' S= 0.0001 '/' 5 cf Overall - 0.5" Wall Thickness = 4 cf
#3	56.50'	14 cf	**4.0" Round Drainage Pipe from downspouts** L= 160.0' S= 1.0000 '/'
#4	62.00'	1 cf	**0.33'D x 6.00'H Downspout Overflow Piping**-Impervious
		122 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	62.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.15 hrs HW=57.06' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 9P: Driveway Infiltration System

Inflow Area = 0.109 ac,100.00% Impervious, Inflow Depth = 4.53" for 10-Year event
Inflow = 0.47 cfs @ 12.13 hrs, Volume= 0.041 af
Outflow = 0.22 cfs @ 11.99 hrs, Volume= 0.041 af, Atten= 53%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.99 hrs, Volume= 0.041 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 48.11' @ 12.23 hrs Surf.Area= 484 sf Storage= 119 cf
Flood Elev= 50.75' Surf.Area= 497 sf Storage= 429 cf

Plug-Flow detention time= 1.6 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (753.1 - 751.4)

Volume	Invert	Avail.Storage	Storage Description
#1	47.50'	380 cf	**11.00'W x 44.00'L x 2.00'H Prismatoid** 968 cf Overall - 18 cf Embedded = 950 cf x 40.0% Voids
#2	48.00'	14 cf	**8.0" Round 8" Perforated Pipe** Inside #1 L= 40.0' S= 0.0001 '/' 18 cf Overall - 0.5" Wall Thickness = 14 cf
#3	48.25'	4 cf	**12.0" Round Pipe Storage** L= 5.0' S= 0.0100 '/'
#4	48.25'	41 cf	**4.00'D x 3.30'H Vertical Cone/Cylinder**
		439 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	47.50'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	50.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 11.99 hrs HW=47.54' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=47.50' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-27.00 hrs, dt=0.01 hrs, 2701 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: Existing Site (front) Runoff Area=10,773 sf 51.04% Impervious Runoff Depth=3.21"
Tc=6.0 min CN=74 Runoff=0.89 cfs 0.066 af

Subcatchment 2S: Existing Site (rear) Runoff Area=5,994 sf 15.40% Impervious Runoff Depth=2.20"
Tc=6.0 min CN=63 Runoff=0.33 cfs 0.025 af

Subcatchment 4S: Buildings Rooftop Area Runoff Area=1,624 sf 100.00% Impervious Runoff Depth=5.79"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.018 af

Subcatchment 5S: Paved Driveway & Runoff Area=4,765 sf 100.00% Impervious Runoff Depth=5.79"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.053 af

Subcatchment 6S: Flow towards Rear of Runoff Area=5,705 sf 38.58% Impervious Runoff Depth=2.11"
Tc=6.0 min CN=62 Runoff=0.30 cfs 0.023 af

Subcatchment 7S: Flow towards Front of Runoff Area=4,774 sf 33.07% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=59 Runoff=0.22 cfs 0.017 af

Reach 3R: Preconstruction Evaluation Avg. Flow Depth=0.09' Max Vel=24.88 fps Inflow=1.22 cfs 0.091 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=1.22 cfs 0.091 af

Reach 10R: Postconstruction Avg. Flow Depth=0.06' Max Vel=19.10 fps Inflow=0.52 cfs 0.040 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=0.52 cfs 0.040 af

Pond 8P: Infiltration System Peak Elev=62.01' Storage=108 cf Inflow=0.20 cfs 0.018 af
Discarded=0.06 cfs 0.018 af Primary=0.03 cfs 0.000 af Outflow=0.09 cfs 0.018 af

Pond 9P: Driveway Infiltration System Peak Elev=48.51' Storage=206 cf Inflow=0.60 cfs 0.053 af
Discarded=0.23 cfs 0.053 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.053 af

Total Runoff Area = 0.772 ac Runoff Volume = 0.202 af Average Runoff Depth = 3.14"
50.67% Pervious = 0.391 ac 49.33% Impervious = 0.381 ac

Summary for Subcatchment 1S: Existing Site (front)

Runoff = 0.89 cfs @ 12.13 hrs, Volume= 0.066 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	1,265	98	(E) Roof Area
*	41	98	(E) Front Porch
*	131	98	(E) Front Walkway
*	46	98	(E) Front site wall @ house
*	34	98	(E) Front site wall @ driveway
*	23	98	(E) Side Porch
*	22	98	(E)Side Walkway
*	3,416	98	(E) Driveway
*	365	98	(E) Rear Covered Patio
*	85	98	(E) Rear Walkway to Pool
*	71	98	(E) Paver Patio
	5,274	49	50-75% Grass cover, Fair, HSG A
	10,773	74	Weighted Average
	5,274		48.96% Pervious Area
	5,499		51.04% Impervious Area

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

Summary for Subcatchment 2S: Existing Site (rear)

Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.025 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	923	98	(E) Paved Pool Deck
	5,071	57	Woods/grass comb., Poor, HSG A
	5,994	63	Weighted Average
	5,071		84.60% Pervious Area
	923		15.40% Impervious Area

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

Summary for Subcatchment 4S: Buildings Rooftop Area

Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.018 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	1,624	98	(P) Front Building Rooftop Area
	1,624		100.00% Impervious Area

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

Summary for Subcatchment 5S: Paved Driveway & Partial Building Rooftop Area

Runoff = 0.60 cfs @ 12.13 hrs, Volume= 0.053 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	3,925	98	(P) Driveway
*	420	98	(P) Front Building Roof
*	420	98	(P) Front Building Roof
	4,765	98	Weighted Average
	4,765		100.00% Impervious Area

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

hment 6S: Flow towards Rear of Property - Side Walkways, Patios, Rear Building Partial Rooftop Area,

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 0.023 af, Depth= 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	653	98	(P) Side Walkways & Stairs
*	366	98	(P) Center Patios
*	366	98	(P) Rear Patio
*	816	98	(P) Rear Building Rooftop Area
	3,504	39	>75% Grass cover, Good, HSG A
	5,705	62	Weighted Average
	3,504		61.42% Pervious Area
	2,201		38.58% Impervious Area

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

for Subcatchment 7S: Flow towards Front of Property/Street - Front Patio, Side Walkways, Lawn & Lan

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.017 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.03"

	Area (sf)	CN	Description
*	808	98	(P) Rear Building Rooftop Area
*	221	98	(P) Front Patio
*	550	98	(P) Right Side Walkway
	3,195	39	>75% Grass cover, Good, HSG A
	4,774	59	Weighted Average
	3,195		66.93% Pervious Area
	1,579		33.07% Impervious Area

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

Summary for Reach 3R: Preconstruction Evaluation Point

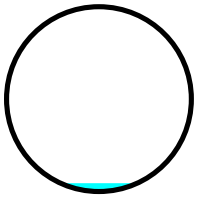
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.385 ac, 38.30% Impervious, Inflow Depth = 2.85" for 25-Year event
Inflow = 1.22 cfs @ 12.13 hrs, Volume= 0.091 af
Outflow = 1.22 cfs @ 12.13 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Max. Velocity= 24.88 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 10.20 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Reach 10R: Postconstruction Evaluation Point

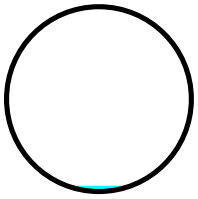
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.387 ac, 60.29% Impervious, Inflow Depth = 1.24" for 25-Year event
Inflow = 0.52 cfs @ 12.14 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.14 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 19.10 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.63 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Pond 8P: Infiltration System

[58] Hint: Peaked 0.01' above defined flood level

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth = 5.79" for 25-Year event
Inflow = 0.20 cfs @ 12.13 hrs, Volume= 0.018 af
Outflow = 0.09 cfs @ 12.26 hrs, Volume= 0.018 af, Atten= 56%, Lag= 8.1 min
Discarded = 0.06 cfs @ 12.10 hrs, Volume= 0.018 af
Primary = 0.03 cfs @ 12.26 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 62.01' @ 12.26 hrs Surf.Area= 132 sf Storage= 108 cf
Flood Elev= 62.00' Surf.Area= 132 sf Storage= 108 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.6 min (757.7 - 747.1)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	103 cf	**6.00'W x 22.00'L x 2.00'H Prismatoid** 264 cf Overall - 5 cf Embedded = 259 cf x 40.0% Voids
#2	56.50'	4 cf	**6.0" Round 6" Perforated Pipe** Inside #1 L= 20.0' S= 0.0001 '/' 5 cf Overall - 0.5" Wall Thickness = 4 cf
#3	56.50'	14 cf	**4.0" Round Drainage Pipe from downspouts** L= 160.0' S= 1.0000 '/'
#4	62.00'	1 cf	**0.33'D x 6.00'H Downspout Overflow Piping**-Impervious
		122 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	62.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.10 hrs HW=57.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.01 cfs @ 12.26 hrs HW=62.01' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.01 cfs @ 0.32 fps)

Summary for Pond 9P: Driveway Infiltration System

Inflow Area = 0.109 ac,100.00% Impervious, Inflow Depth = 5.79" for 25-Year event
Inflow = 0.60 cfs @ 12.13 hrs, Volume= 0.053 af
Outflow = 0.23 cfs @ 12.26 hrs, Volume= 0.053 af, Atten= 61%, Lag= 8.0 min
Discarded = 0.23 cfs @ 12.26 hrs, Volume= 0.053 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 48.51' @ 12.26 hrs Surf.Area= 501 sf Storage= 206 cf
Flood Elev= 50.75' Surf.Area= 497 sf Storage= 429 cf

Plug-Flow detention time= 2.8 min calculated for 0.053 af (100% of inflow)
Center-of-Mass det. time= 2.8 min (749.9 - 747.1)

Volume	Invert	Avail.Storage	Storage Description
#1	47.50'	380 cf	**11.00'W x 44.00'L x 2.00'H Prismatoid** 968 cf Overall - 18 cf Embedded = 950 cf x 40.0% Voids
#2	48.00'	14 cf	**8.0" Round 8" Perforated Pipe** Inside #1 L= 40.0' S= 0.0001 '/' 18 cf Overall - 0.5" Wall Thickness = 14 cf
#3	48.25'	4 cf	**12.0" Round Pipe Storage** L= 5.0' S= 0.0100 '/'
#4	48.25'	41 cf	**4.00'D x 3.30'H Vertical Cone/Cylinder**
		439 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	47.50'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	50.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.23 cfs @ 12.26 hrs HW=48.51' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=47.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-27.00 hrs, dt=0.01 hrs, 2701 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: Existing Site (front) Runoff Area=10,773 sf 51.04% Impervious Runoff Depth=5.48"
Tc=6.0 min CN=74 Runoff=1.49 cfs 0.113 af

Subcatchment 2S: Existing Site (rear) Runoff Area=5,994 sf 15.40% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=63 Runoff=0.64 cfs 0.048 af

Subcatchment 4S: Buildings Rooftop Area Runoff Area=1,624 sf 100.00% Impervious Runoff Depth=8.38"
Tc=6.0 min CN=98 Runoff=0.29 cfs 0.026 af

Subcatchment 5S: Paved Driveway & Runoff Area=4,765 sf 100.00% Impervious Runoff Depth=8.38"
Tc=6.0 min CN=98 Runoff=0.86 cfs 0.076 af

Subcatchment 6S: Flow towards Rear of Runoff Area=5,705 sf 38.58% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=62 Runoff=0.59 cfs 0.044 af

Subcatchment 7S: Flow towards Front of Runoff Area=4,774 sf 33.07% Impervious Runoff Depth=3.69"
Tc=6.0 min CN=59 Runoff=0.45 cfs 0.034 af

Reach 3R: Preconstruction Evaluation Avg. Flow Depth=0.12' Max Vel=29.41 fps Inflow=2.13 cfs 0.161 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=2.13 cfs 0.161 af

Reach 10R: Postconstruction Avg. Flow Depth=0.09' Max Vel=25.13 fps Inflow=1.26 cfs 0.080 af
24.0" Round Pipe n=0.009 L=1.0' S=1.0000 '/' Capacity=326.77 cfs Outflow=1.26 cfs 0.080 af

Pond 8P: Infiltration System Peak Elev=62.09' Storage=108 cf Inflow=0.29 cfs 0.026 af
Discarded=0.06 cfs 0.024 af Primary=0.22 cfs 0.002 af Outflow=0.28 cfs 0.026 af

Pond 9P: Driveway Infiltration System Peak Elev=50.70' Storage=429 cf Inflow=0.86 cfs 0.076 af
Discarded=0.23 cfs 0.076 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.076 af

Total Runoff Area = 0.772 ac Runoff Volume = 0.341 af Average Runoff Depth = 5.30"
50.67% Pervious = 0.391 ac 49.33% Impervious = 0.381 ac

Summary for Subcatchment 1S: Existing Site (front)

Runoff = 1.49 cfs @ 12.13 hrs, Volume= 0.113 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	1,265	98	(E) Roof Area
*	41	98	(E) Front Porch
*	131	98	(E) Front Walkway
*	46	98	(E) Front site wall @ house
*	34	98	(E) Front site wall @ driveway
*	23	98	(E) Side Porch
*	22	98	(E)Side Walkway
*	3,416	98	(E) Driveway
*	365	98	(E) Rear Covered Patio
*	85	98	(E) Rear Walkway to Pool
*	71	98	(E) Paver Patio
	5,274	49	50-75% Grass cover, Fair, HSG A
	10,773	74	Weighted Average
	5,274		48.96% Pervious Area
	5,499		51.04% Impervious Area

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

Summary for Subcatchment 2S: Existing Site (rear)

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 0.048 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	923	98	(E) Paved Pool Deck
	5,071	57	Woods/grass comb., Poor, HSG A
	5,994	63	Weighted Average
	5,071		84.60% Pervious Area
	923		15.40% Impervious Area

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

Summary for Subcatchment 4S: Buildings Rooftop Area

Runoff = 0.29 cfs @ 12.13 hrs, Volume= 0.026 af, Depth= 8.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	1,624	98	(P) Front Building Rooftop Area
	1,624		100.00% Impervious Area

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

Summary for Subcatchment 5S: Paved Driveway & Partial Building Rooftop Area

Runoff = 0.86 cfs @ 12.13 hrs, Volume= 0.076 af, Depth= 8.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	3,925	98	(P) Driveway
*	420	98	(P) Front Building Roof
*	420	98	(P) Front Building Roof
	4,765	98	Weighted Average
	4,765		100.00% Impervious Area

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

hment 6S: Flow towards Rear of Property - Side Walkways, Patios, Rear Building Partial Rooftop Area,

Runoff = 0.59 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	653	98	(P) Side Walkways & Stairs
*	366	98	(P) Center Patios
*	366	98	(P) Rear Patio
*	816	98	(P) Rear Building Rooftop Area
	3,504	39	>75% Grass cover, Good, HSG A
	5,705	62	Weighted Average
	3,504		61.42% Pervious Area
	2,201		38.58% Impervious Area

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

for Subcatchment 7S: Flow towards Front of Property/Street - Front Patio, Side Walkways, Lawn & Lan

Runoff = 0.45 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.62"

	Area (sf)	CN	Description
*	808	98	(P) Rear Building Rooftop Area
*	221	98	(P) Front Patio
*	550	98	(P) Right Side Walkway
	3,195	39	>75% Grass cover, Good, HSG A
	4,774	59	Weighted Average
	3,195		66.93% Pervious Area
	1,579		33.07% Impervious Area

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

Summary for Reach 3R: Preconstruction Evaluation Point

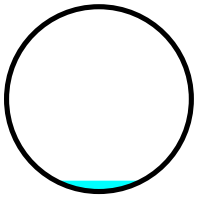
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.385 ac, 38.30% Impervious, Inflow Depth = 5.01" for 100-Year event
Inflow = 2.13 cfs @ 12.13 hrs, Volume= 0.161 af
Outflow = 2.13 cfs @ 12.13 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Max. Velocity= 29.41 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 11.02 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Reach 10R: Postconstruction Evaluation Point

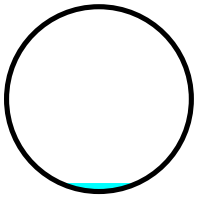
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.387 ac, 60.29% Impervious, Inflow Depth = 2.47" for 100-Year event
Inflow = 1.26 cfs @ 12.13 hrs, Volume= 0.080 af
Outflow = 1.26 cfs @ 12.13 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 25.13 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 10.08 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 326.77 cfs

24.0" Round Pipe
n= 0.009 PVC, smooth interior
Length= 1.0' Slope= 1.0000 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Summary for Pond 8P: Infiltration System

[58] Hint: Peaked 0.09' above defined flood level

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth = 8.38" for 100-Year event
Inflow = 0.29 cfs @ 12.13 hrs, Volume= 0.026 af
Outflow = 0.28 cfs @ 12.13 hrs, Volume= 0.026 af, Atten= 4%, Lag= 0.2 min
Discarded = 0.06 cfs @ 12.03 hrs, Volume= 0.024 af
Primary = 0.22 cfs @ 12.13 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 62.09' @ 12.13 hrs Surf.Area= 132 sf Storage= 108 cf
Flood Elev= 62.00' Surf.Area= 132 sf Storage= 108 cf

Plug-Flow detention time= 14.9 min calculated for 0.026 af (99% of inflow)
Center-of-Mass det. time= 10.3 min (751.9 - 741.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	103 cf	**6.00'W x 22.00'L x 2.00'H Prismatoid** 264 cf Overall - 5 cf Embedded = 259 cf x 40.0% Voids
#2	56.50'	4 cf	**6.0" Round 6" Perforated Pipe** Inside #1 L= 20.0' S= 0.0001 '/' 5 cf Overall - 0.5" Wall Thickness = 4 cf
#3	56.50'	14 cf	**4.0" Round Drainage Pipe from downspouts** L= 160.0' S= 1.0000 '/'
#4	62.00'	1 cf	**0.33'D x 6.00'H Downspout Overflow Piping**-Impervious
		122 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	62.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.03 hrs HW=57.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.34 cfs @ 12.13 hrs HW=62.09' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.34 cfs @ 0.95 fps)

Summary for Pond 9P: Driveway Infiltration System

Inflow Area = 0.109 ac,100.00% Impervious, Inflow Depth = 8.38" for 100-Year event
Inflow = 0.86 cfs @ 12.13 hrs, Volume= 0.076 af
Outflow = 0.23 cfs @ 12.84 hrs, Volume= 0.076 af, Atten= 73%, Lag= 42.4 min
Discarded = 0.23 cfs @ 12.84 hrs, Volume= 0.076 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 50.70' @ 12.34 hrs Surf.Area= 497 sf Storage= 429 cf
Flood Elev= 50.75' Surf.Area= 497 sf Storage= 429 cf

Plug-Flow detention time= 6.6 min calculated for 0.076 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (748.3 - 741.7)

Volume	Invert	Avail.Storage	Storage Description
#1	47.50'	380 cf	**11.00'W x 44.00'L x 2.00'H Prismatoid** 968 cf Overall - 18 cf Embedded = 950 cf x 40.0% Voids
#2	48.00'	14 cf	**8.0" Round 8" Perforated Pipe** Inside #1 L= 40.0' S= 0.0001 '/' 18 cf Overall - 0.5" Wall Thickness = 14 cf
#3	48.25'	4 cf	**12.0" Round Pipe Storage** L= 5.0' S= 0.0100 '/'
#4	48.25'	41 cf	**4.00'D x 3.30'H Vertical Cone/Cylinder**
		439 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	47.50'	**20.000 in/hr Exfiltration over Surface area**
#2	Primary	50.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.23 cfs @ 12.84 hrs HW=48.77' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=47.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)