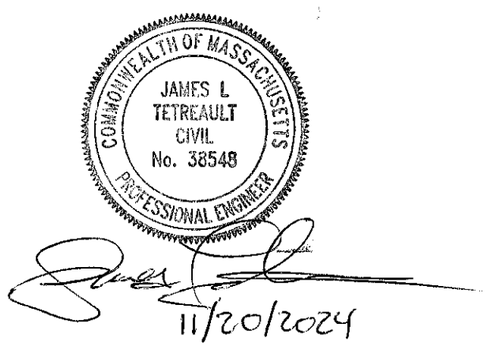
DRAINAGE REPORT
FOR COMPREHENSIVE PERMIT DEVELOPMENT
AT
AT 250 TURNPIKE ROAD, SOUTHBOROUGH, MA

Job #245-502 Client #502

APRIL 15, 2024
REVISED NOVEMBER 20, 2024



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INTRODUCTION

The purpose of this Drainage Report is to confirm that, following the construction of 32 townhouse style rental units in a combination of duplex and triplex layouts under a comprehensive permit process, that the peak rate of runoff from this property to the two properties that receive runoff from it, Turnpike Road (Route 9) and Parkerville Road, will not increase in any of the 2, 10, 25 or 100 year return frequency storm events.

The property at 250 Turnpike Road receives runoff from the abutting Eagle Leasing site and from the Sarsen Stone Way subdivision. There are two existing detention basins on site that receive discharge from the existing drainage systems behind the existing building and from the lower parking area. There is also an existing detention basin on the east side of two Sarsen Stone Way lots and a small existing detention basin on the Eagle Leasing site.

In addition to constructing 32 townhouse style units, the Applicant proposes to construct parking spaces, driving aisles, sidewalks and landscaped areas that would all increase the peak rate of flow of runoff from the property if no mitigation was undertaken. The Applicant will construct a total of four in ground detention/infiltration structures to both infiltrate and detain runoff. (Additionally, there will be another installed on lot A for the proposed contractor's yard use building proposed on that site). Through the use of these infiltration/detention structures, the peak rate of flow from the site will be kept at or below the predevelopment rate of flow.

On the right side of the proposed main access drive at station 5+50, a detention/infiltration structure with 46 8'x8'x5'high Retain-it modules will be constructed. In addition, at three locations on site (behind units 9-11, behind unit 24 and behind units 20&21) smaller infiltration structures will be installed to receive roof runoff from nearby units.

Flow from parking areas discharged into both structures will pass through CDS stormwater filtration units to remove TSS before infiltration.

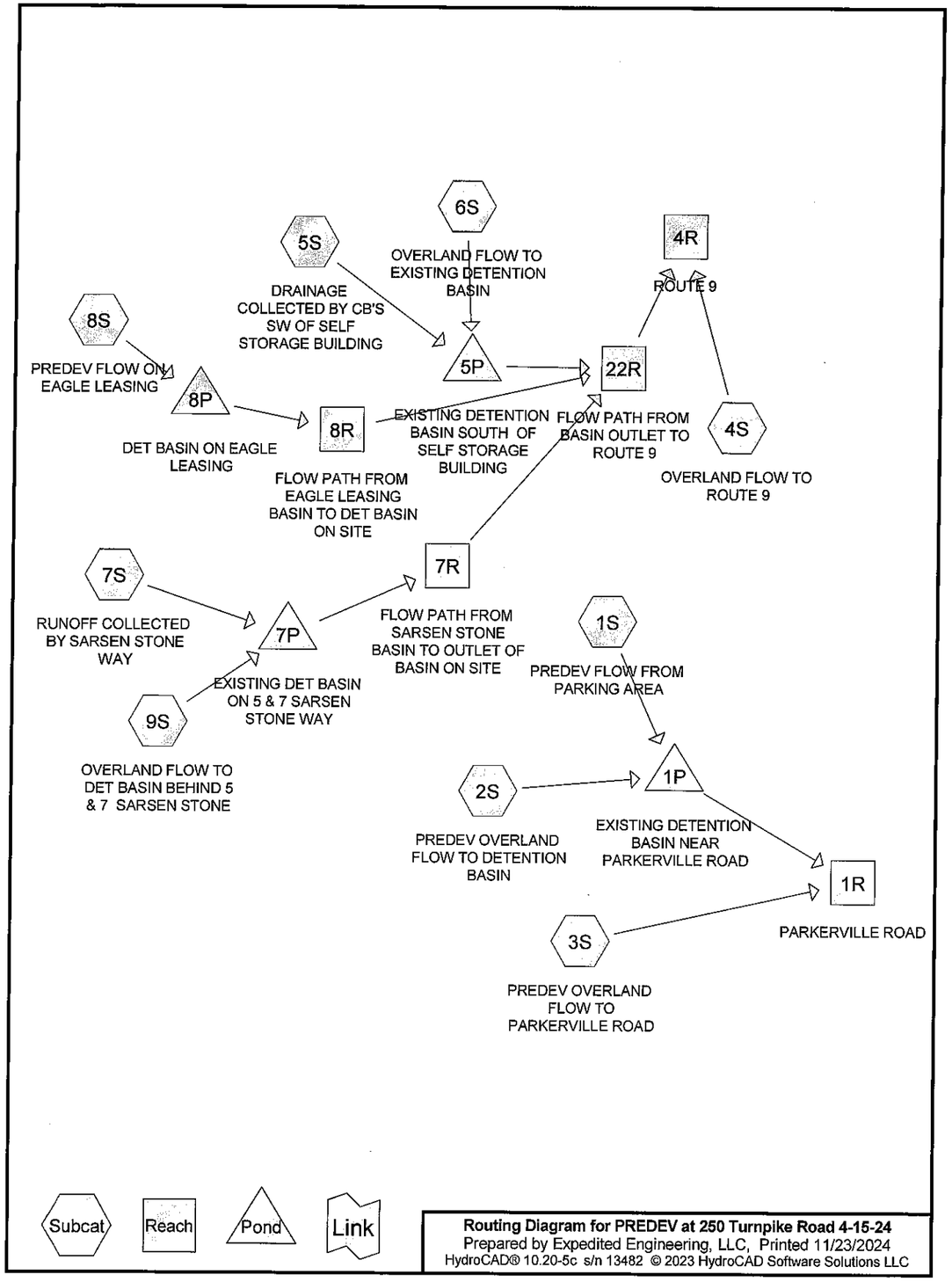
Soils on site are a mix of Woodbridge series soils categorized as hydrologic soil group C soils and Canton series soils categorized as hydrologic soil group B soils.

Calculations were made using the HydroCAD stormwater modeling program. The first table, below, compares the peak predevelopment and postdevelopment rates of flows of stormwater at the design points:

DESIGN POINT	PEAK FLOW RATE (in cfs)			
	2 yr storm	10 yr storm	25 yr storm	100 yr storm
Flow to Turnpike Road				
Reach #4 pre	14.41 pre	34.86 pre	57.74 pre	92.67 pre
Reach #14 post	14.41	34.86	57.74	92.67
Flow to Parkerville Road				
Reach #1 pre	3.71 pre	9.01 pre	12.61 pre	18.40 pre
Reach #11 post	2.49	6.84	9.58	14.72

The next table compares the volume of runoff leaving the site in the pre and postdevelopment conditions at the design points.

DESIGN POINT	VOLUME OF FLOW (in acre-feet)			
	2 yr storm	10 yr storm	25 yr storm	100 yr storm
Flow to Turnpike Road				
Reach #4 pre	2.744 pre	5.781 pre	7.857 pre	11.205 pre
Reach #14 post	2.744	5.781	7.857	11.205
Flow to Parkerville Road				
Reach #1 pre	0.550 pre	1.199 pre	1.664 pre	2.435 pre
Reach #11 post	0.383	0.956	1.414	2.191



Routing Diagram for PREDEV at 250 Turnpike Road 4-15-24
Prepared by Expedited Engineering, LLC, Printed 11/23/2024

2 YEAR STORM

PREDEVELOPMENT

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.878	68	1 acre lots, 20% imp, HSG B (7S)
7.286	84	1 acre lots, 20% imp, HSG D (7S)
1.998	70	1/2 acre lots, 25% imp, HSG B (9S)
0.311	85	1/2 acre lots, 25% imp, HSG D (9S)
2.200	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 8S)
0.927	74	>75% Grass cover, Good, HSG C (1S, 4S, 5S, 8S)
0.142	80	>75% Grass cover, Good, HSG D (8S)
2.814	98	Paved parking, HSG B (1S, 4S, 5S, 8S)
2.638	98	Paved parking, HSG C (4S, 5S, 8S)
0.005	98	Paved parking, HSG D (8S)
0.018	98	Roofs, HSG B (3S)
0.143	98	Water Surface, HSG B (2S, 9S)
0.057	98	Water Surface, HSG C (6S)
5.548	55	Woods, Good, HSG B (2S, 3S, 4S, 8S, 9S)
5.715	70	Woods, Good, HSG C (2S, 3S, 4S, 6S, 9S)
32.681	**75**	**TOTAL AREA**

Summary for Subcatchment 1S: PREDEV FLOW FROM PARKING AREA

Runoff = 3.14 cfs @ 12.08 hrs, Volume= 0.247 af, Depth> 2.98"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 2S: PREDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 0.16 cfs @ 12.20 hrs, Volume= 0.020 af, Depth> 0.54"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
1,161	70	Woods, Good, HSG C
14,991	55	Woods, Good, HSG B
19,065	62	Weighted Average
16,152		84.72% Pervious Area
2,913		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 2.02 cfs @ 12.42 hrs, Volume= 0.284 af, Depth> 0.66"
Routed to Reach 1R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
144,569	70	Woods, Good, HSG C
63,690	55	Woods, Good, HSG B
16,200	61	>75% Grass cover, Good, HSG B
780	98	Roofs, HSG B
225,239	65	Weighted Average
224,459		99.65% Pervious Area
780		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 4S: OVERLAND FLOW TO ROUTE 9

Runoff = 3.03 cfs @ 12.28 hrs, Volume= 0.342 af, Depth> 0.90"
Routed to Reach 4R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
54,059	55	Woods, Good, HSG B
24,068	55	Woods, Good, HSG B
36,060	70	Woods, Good, HSG C
33,500	61	>75% Grass cover, Good, HSG B
1,900	74	>75% Grass cover, Good, HSG C
42,307	98	Paved parking, HSG B
2,250	98	Paved parking, HSG B
4,349	98	Paved parking, HSG C
198,493	70	Weighted Average
149,587		75.36% Pervious Area
48,906		24.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 5S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 1.04 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 1.79"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 6S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 0.93 cfs @ 12.19 hrs, Volume= 0.090 af, Depth> 0.95"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 7S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 15.43 cfs @ 12.13 hrs, Volume= 1.214 af, Depth> 1.43"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 8S: PREDEV FLOW ON EAGLE LEASING

Runoff = 8.93 cfs @ 12.18 hrs, Volume= 0.788 af, Depth> 1.57"
Routed to Pond 8P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 9S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 2.99 cfs @ 12.10 hrs, Volume= 0.247 af, Depth> 0.80"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Reach 1R: PARKERVILLE ROAD

Inflow Area = 6.603 ac, 15.88% Impervious, Inflow Depth > 1.00" for 2 YEAR event
Inflow = 3.71 cfs @ 12.36 hrs, Volume= 0.550 af
Outflow = 3.71 cfs @ 12.36 hrs, Volume= 0.550 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 4R: ROUTE 9

Inflow Area = 26.078 ac, 27.75% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 14.41 cfs @ 12.38 hrs, Volume= 2.744 af
Outflow = 14.41 cfs @ 12.38 hrs, Volume= 2.744 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

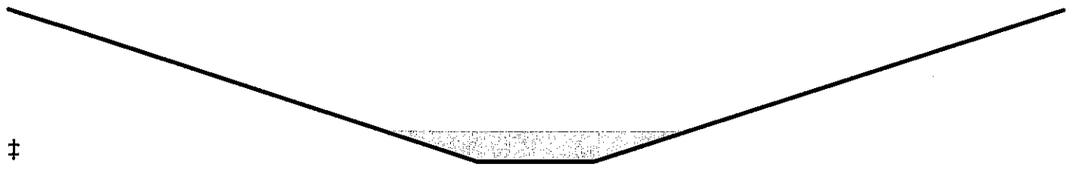
Summary for Reach 7R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af
Outflow = 5.74 cfs @ 12.56 hrs, Volume= 1.454 af, Atten= 0%, Lag= 2.9 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 3.0 min

Peak Storage= 575 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 5.21'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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Summary for Reach 8R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 1.57" for 2 YEAR event
Inflow = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af
Outflow = 5.24 cfs @ 12.41 hrs, Volume= 0.787 af, Atten= 0%, Lag= 0.7 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.09 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.8 min

Peak Storage= 116 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.36' , Surface Width= 3.14'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'

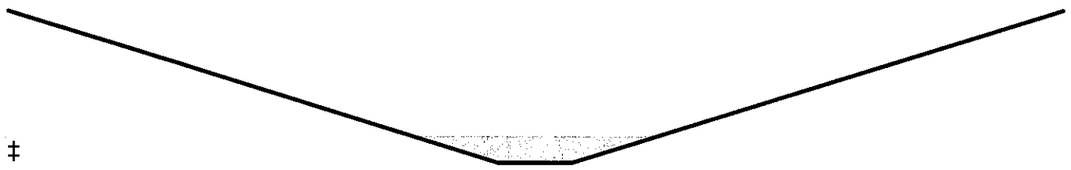
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 1.34" for 2 YEAR event
Inflow = 11.90 cfs @ 12.46 hrs, Volume= 2.405 af
Outflow = 11.90 cfs @ 12.50 hrs, Volume= 2.402 af, Atten= 0%, Lag= 2.1 min
Routed to Reach 4R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 2.3 min

Peak Storage= 841 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.34' , Surface Width= 9.84'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Pond 1P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.432 ac, 71.98% Impervious, Inflow Depth > 2.24" for 2 YEAR event
Inflow = 3.23 cfs @ 12.09 hrs, Volume= 0.267 af
Outflow = 2.00 cfs @ 12.20 hrs, Volume= 0.266 af, Atten= 38%, Lag= 6.8 min
Primary = 2.00 cfs @ 12.20 hrs, Volume= 0.266 af
Routed to Reach 1R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.29' @ 12.20 hrs Surf.Area= 3,644 sf Storage= 1,431 cf

Plug-Flow detention time= 9.9 min calculated for 0.266 af (100% of inflow)
Center-of-Mass det. time= 8.8 min (783.9 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.00 cfs @ 12.20 hrs HW=309.29' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.00 cfs @ 3.02 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 1.21" for 2 YEAR event
Inflow = 1.75 cfs @ 12.13 hrs, Volume= 0.164 af
Outflow = 1.02 cfs @ 12.38 hrs, Volume= 0.164 af, Atten= 42%, Lag= 15.3 min
Primary = 1.02 cfs @ 12.38 hrs, Volume= 0.164 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.08' @ 12.38 hrs Surf.Area= 3,729 sf Storage= 1,230 cf

Plug-Flow detention time= 18.4 min calculated for 0.164 af (99% of inflow)
Center-of-Mass det. time= 15.5 min (868.1 - 852.6)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.02 cfs @ 12.38 hrs HW=326.08' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.02 cfs @ 3.10 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 18.37 cfs @ 12.12 hrs, Volume= 1.461 af
Outflow = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af, Atten= 69%, Lag= 23.4 min
Primary = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af
Routed to Reach 7R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 353.80' @ 12.51 hrs Surf.Area= 8,316 sf Storage= 16,011 cf

Plug-Flow detention time= 26.3 min calculated for 1.456 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (875.2 - 850.9)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=5.74 cfs @ 12.51 hrs HW=353.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.74 cfs @ 7.31 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 1.57" for 2 YEAR event
Inflow = 8.93 cfs @ 12.18 hrs, Volume= 0.788 af
Outflow = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af, Atten= 41%, Lag= 13.2 min
Primary = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af
Routed to Reach 8R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 344.92' @ 12.40 hrs Surf.Area= 5,269 sf Storage= 3,684 cf

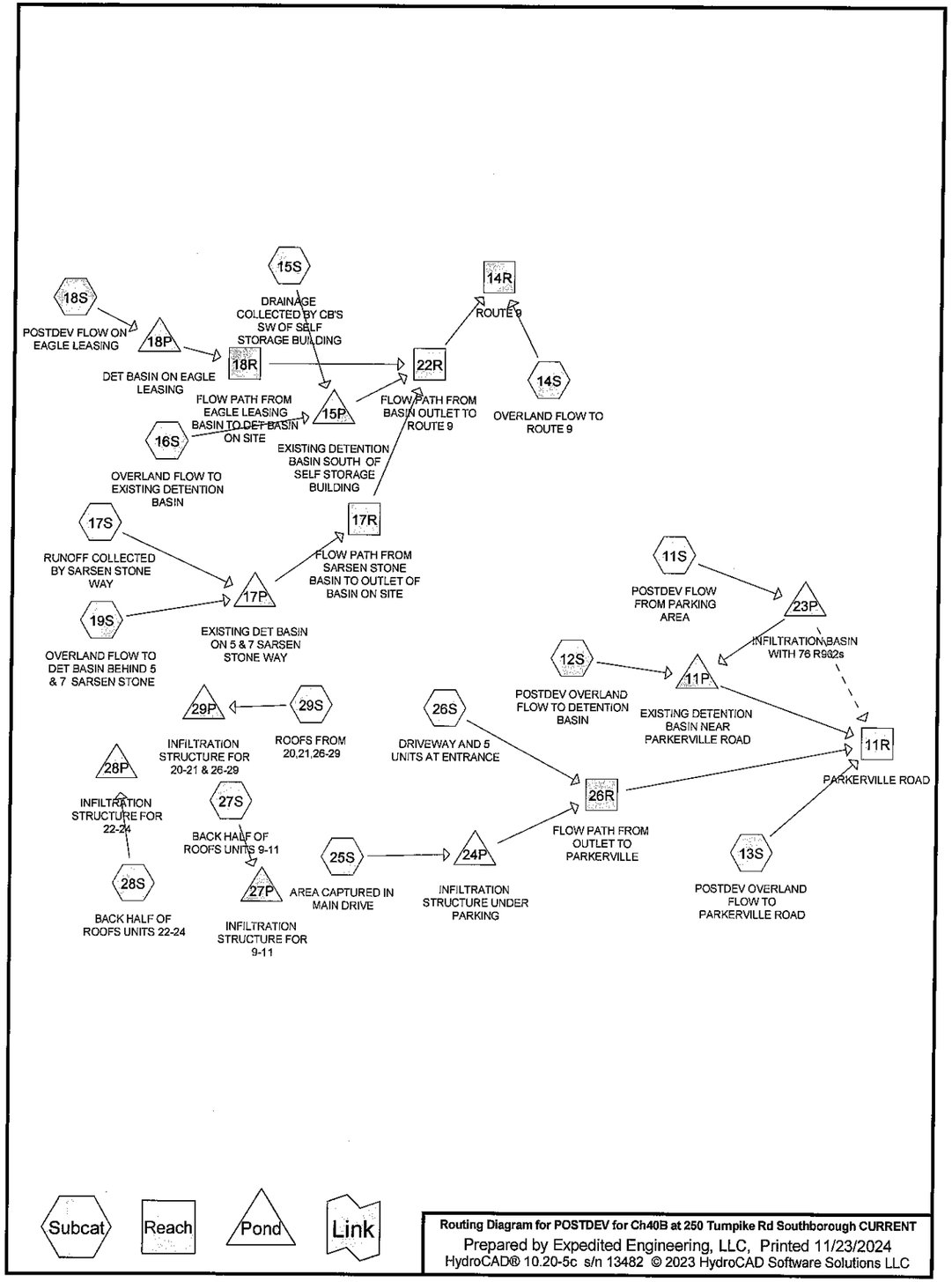
Plug-Flow detention time= 4.4 min calculated for 0.788 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (846.2 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=5.25 cfs @ 12.40 hrs HW=344.92' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.25 cfs @ 6.68 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)



Routing Diagram for POSTDEV for Ch40B at 250 Tumpike Rd Southborough CURRENT

Prepared by Expedited Engineering, LLC, Printed 11/23/2024

POSTDEVELOPMENT

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.878	68	1 acre lots, 20% imp, HSG B (17S)
7.286	84	1 acre lots, 20% imp, HSG D (17S)
1.998	70	1/2 acre lots, 25% imp, HSG B (19S)
0.311	85	1/2 acre lots, 25% imp, HSG D (19S)
2.470	61	>75% Grass cover, Good, HSG B (11S, 12S, 13S, 14S, 15S, 18S, 25S)
2.755	74	>75% Grass cover, Good, HSG C (11S, 12S, 13S, 14S, 15S, 18S, 25S, 26S)
0.142	80	>75% Grass cover, Good, HSG D (18S)
3.057	98	Paved parking, HSG B (11S, 14S, 15S, 18S, 25S)
3.656	98	Paved parking, HSG C (15S, 18S, 25S, 26S)
0.005	98	Paved parking, HSG D (18S)
0.044	98	Roofs, HSG B (13S)
0.380	98	Roofs, HSG C (13S, 14S, 27S, 28S, 29S)
0.143	98	Water Surface, HSG B (12S, 19S)
0.057	98	Water Surface, HSG C (16S)
4.318	55	Woods, Good, HSG B (12S, 13S, 14S, 18S, 19S, 25S)
3.180	70	Woods, Good, HSG C (12S, 13S, 14S, 16S, 19S)
32.681	**77**	**TOTAL AREA**

Summary for Subcatchment 11S: POSTDEV FLOW FROM PARKING AREA

Runoff = 3.14 cfs @ 12.08 hrs, Volume= 0.247 af, Depth> 2.98"
Routed to Pond 23P : INFILTRATION BASIN WITH 76 R902s

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 12S: POSTDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 0.60 cfs @ 12.17 hrs, Volume= 0.053 af, Depth> 1.12"
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
12,916	70	Woods, Good, HSG C
189	55	Woods, Good, HSG B
7,152	74	>75% Grass cover, Good, HSG C
1,644	61	>75% Grass cover, Good, HSG B
24,814	74	Weighted Average
21,901		88.26% Pervious Area
2,913		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 1.41 cfs @ 12.40 hrs, Volume= 0.184 af, Depth> 0.80"
Routed to Reach 11R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
1,943	55	Woods, Good, HSG B
1,148	98	Roofs, HSG B
1,254	61	>75% Grass cover, Good, HSG B
183	70	Woods, Good, HSG C
1,148	98	Roofs, HSG C
5,275	74	>75% Grass cover, Good, HSG C
22,271	55	Woods, Good, HSG B
789	98	Roofs, HSG B
19,728	61	>75% Grass cover, Good, HSG B
26,543	70	Woods, Good, HSG C
4,032	98	Roofs, HSG C
36,320	74	>75% Grass cover, Good, HSG C
120,634	68	Weighted Average
113,517		94.10% Pervious Area
7,117		5.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 14S: OVERLAND FLOW TO ROUTE 9

Runoff = 3.03 cfs @ 12.28 hrs, Volume= 0.342 af, Depth> 0.90"
Routed to Reach 14R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
31,704	70	Woods, Good, HSG C
0	98	Roofs, HSG C
4,306	98	Roofs, HSG C
11,703	74	>75% Grass cover, Good, HSG C
76,405	55	Woods, Good, HSG B
44,135	98	Paved parking, HSG B
30,229	61	>75% Grass cover, Good, HSG B
198,482	70	Weighted Average
150,041		75.59% Pervious Area
48,441		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 15S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 1.04 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 1.79"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 16S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 0.93 cfs @ 12.19 hrs, Volume= 0.090 af, Depth> 0.95"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 17S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 15.43 cfs @ 12.13 hrs, Volume= 1.214 af, Depth> 1.43"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 18S: POSTDEV FLOW ON EAGLE LEASING

Runoff = 8.93 cfs @ 12.18 hrs, Volume= 0.788 af, Depth> 1.57"
Routed to Pond 18P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 19S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 2.99 cfs @ 12.10 hrs, Volume= 0.247 af, Depth> 0.80"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Subcatchment 25S: AREA CAPTURED IN MAIN DRIVE

Runoff = 3.04 cfs @ 12.22 hrs, Volume= 0.295 af, Depth> 2.02"
Routed to Pond 24P : INFILTRATION STRUCTURE UNDER PARKING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
37,506	98	Paved parking, HSG C
11,007	98	Paved parking, HSG B
8,588	61	>75% Grass cover, Good, HSG B
16,641	74	>75% Grass cover, Good, HSG C
2,422	55	Woods, Good, HSG B
76,164	87	Weighted Average
27,651		36.30% Pervious Area
48,513		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
0.5	55	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	167	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.2	351	Total			

Summary for Subcatchment 26S: DRIVEWAY AND 5 UNITS AT ENTRANCE

Runoff = 0.75 cfs @ 12.20 hrs, Volume= 0.071 af, Depth> 2.37"
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
4,449	74	>75% Grass cover, Good, HSG C
11,225	98	Paved parking, HSG C
15,674	91	Weighted Average
4,449		28.38% Pervious Area
11,225		71.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.3	19	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.6	69	Total			

Summary for Subcatchment 27S: BACK HALF OF ROOFS UNITS 9-11

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Depth> 3.10"
Routed to Pond 27P : INFILTRATION STRUCTURE FOR 9-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK HALF OF ROOFS UNITS 22-24

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af, Depth> 3.10"
Routed to Pond 28P : INFILTRATION STRUCTURE FOR 22-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 29S: ROOFS FROM 20,21,26-29

Runoff = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af, Depth> 3.10"
Routed to Pond 29P : INFILTRATION STRUCTURE FOR 20-21 & 26-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 2 YEAR Rainfall=3.33"

Area (sf)	CN	Description
4,032	98	Roofs, HSG C
4,032		100.00% Impervious Area

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

Summary for Reach 11R: PARKERVILLE ROAD

Inflow Area = 6.442 ac, 39.83% Impervious, Inflow Depth > 0.71" for 2 YEAR event
Inflow = 2.49 cfs @ 12.35 hrs, Volume= 0.383 af
Outflow = 2.49 cfs @ 12.35 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 14R: ROUTE 9

Inflow Area = 26.078 ac, 27.71% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 14.41 cfs @ 12.38 hrs, Volume= 2.744 af
Outflow = 14.41 cfs @ 12.38 hrs, Volume= 2.744 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

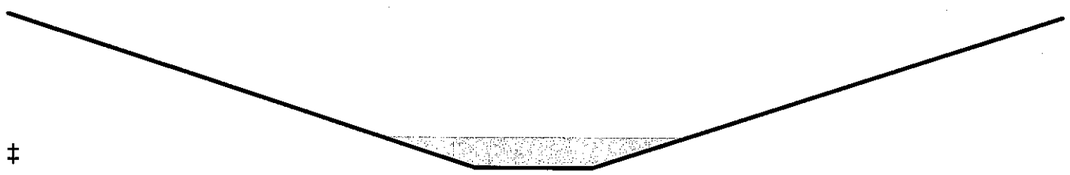
Summary for Reach 17R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af
Outflow = 5.74 cfs @ 12.56 hrs, Volume= 1.454 af, Atten= 0%, Lag= 2.9 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 3.0 min

Peak Storage= 575 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 5.21'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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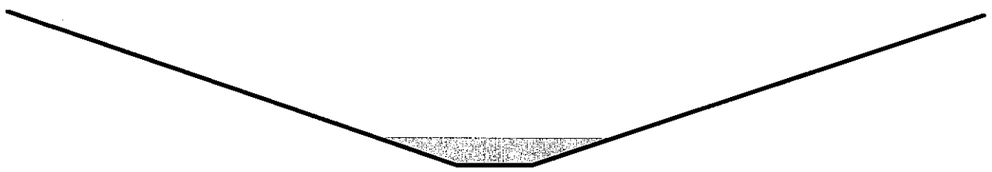
Summary for Reach 18R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 1.57" for 2 YEAR event
Inflow = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af
Outflow = 5.24 cfs @ 12.41 hrs, Volume= 0.787 af, Atten= 0%, Lag= 0.7 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.09 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.8 min

Peak Storage= 116 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.36' , Surface Width= 3.14'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



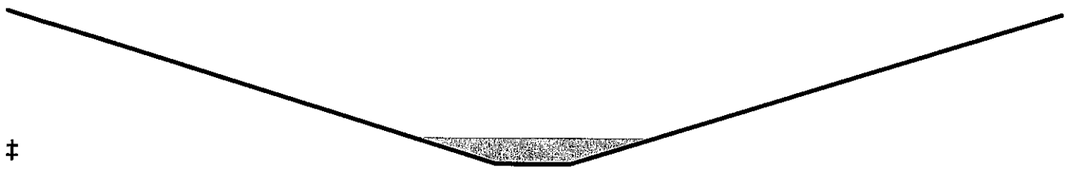
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 1.34" for 2 YEAR event
Inflow = 11.90 cfs @ 12.46 hrs, Volume= 2.405 af
Outflow = 11.90 cfs @ 12.50 hrs, Volume= 2.402 af, Atten= 0%, Lag= 2.1 min
Routed to Reach 14R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 2.3 min

Peak Storage= 841 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.34' , Surface Width= 9.84'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



‡

Summary for Reach 26R: FLOW PATH FROM OUTLET TO PARKERVILLE

Inflow Area = 2.108 ac, 65.05% Impervious, Inflow Depth > 0.83" for 2 YEAR event
Inflow = 0.82 cfs @ 12.53 hrs, Volume= 0.146 af
Outflow = 0.81 cfs @ 12.64 hrs, Volume= 0.145 af, Atten= 1%, Lag= 6.1 min
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.84 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 7.8 min

Peak Storage= 160 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 8.46'
Bank-Full Depth= 1.00' Flow Area= 26.0 sf, Capacity= 232.32 cfs

6.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 20.0 '/' Top Width= 46.00'
Length= 360.0' Slope= 0.0375 '/'
Inlet Invert= 318.00', Outlet Invert= 304.50'

‡

Summary for Pond 11P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.564 ac, 65.90% Impervious, Inflow Depth > 0.41" for 2 YEAR event
Inflow = 0.60 cfs @ 12.17 hrs, Volume= 0.053 af
Outflow = 0.44 cfs @ 12.30 hrs, Volume= 0.053 af, Atten= 27%, Lag= 8.0 min
Primary = 0.44 cfs @ 12.30 hrs, Volume= 0.053 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 308.83' @ 12.30 hrs Surf.Area= 1,526 sf Storage= 251 cf

Plug-Flow detention time= 9.0 min calculated for 0.053 af (100% of inflow)
Center-of-Mass det. time= 7.5 min (870.3 - 862.7)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.44 cfs @ 12.30 hrs HW=308.83' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.44 cfs @ 1.95 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 1.21" for 2 YEAR event
Inflow = 1.75 cfs @ 12.13 hrs, Volume= 0.164 af
Outflow = 1.02 cfs @ 12.38 hrs, Volume= 0.164 af, Atten= 42%, Lag= 15.3 min
Primary = 1.02 cfs @ 12.38 hrs, Volume= 0.164 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.08' @ 12.38 hrs Surf.Area= 3,729 sf Storage= 1,230 cf

Plug-Flow detention time= 18.4 min calculated for 0.164 af (99% of inflow)
Center-of-Mass det. time= 15.5 min (868.1 - 852.6)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.02 cfs @ 12.38 hrs HW=326.08' (Free Discharge)
1=Culvert (Barrel Controls 1.02 cfs @ 3.10 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 17P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 1.26" for 2 YEAR event
Inflow = 18.37 cfs @ 12.12 hrs, Volume= 1.461 af
Outflow = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af, Atten= 69%, Lag= 23.4 min
Primary = 5.74 cfs @ 12.51 hrs, Volume= 1.456 af
Routed to Reach 17R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 353.80' @ 12.51 hrs Surf.Area= 8,316 sf Storage= 16,011 cf

Plug-Flow detention time= 26.3 min calculated for 1.456 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (875.2 - 850.9)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=5.74 cfs @ 12.51 hrs HW=353.80' (Free Discharge)
1=Culvert (Inlet Controls 5.74 cfs @ 7.31 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 18P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 1.57" for 2 YEAR event
Inflow = 8.93 cfs @ 12.18 hrs, Volume= 0.788 af
Outflow = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af, Atten= 41%, Lag= 13.2 min
Primary = 5.25 cfs @ 12.40 hrs, Volume= 0.788 af
Routed to Reach 18R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 344.92' @ 12.40 hrs Surf.Area= 5,269 sf Storage= 3,684 cf

Plug-Flow detention time= 4.4 min calculated for 0.788 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (846.2 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=5.25 cfs @ 12.40 hrs HW=344.92' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 5.25 cfs @ 6.68 fps)
└ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: INFILTRATION BASIN WITH 76 R902s

Inflow Area = 0.994 ac, 96.93% Impervious, Inflow Depth > 2.98" for 2 YEAR event
Inflow = 3.14 cfs @ 12.08 hrs, Volume= 0.247 af
Outflow = 0.23 cfs @ 11.56 hrs, Volume= 0.247 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.23 cfs @ 11.56 hrs, Volume= 0.247 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 304.62' @ 13.40 hrs Surf.Area= 3,879 sf Storage= 4,607 cf

Plug-Flow detention time= 173.7 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 172.6 min (937.1 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	8,272 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,681 cf Overall x 40.0% Voids
#2	303.00'	4,966 cf	**Cultec R-902HD v2** x 76 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap

76 Chambers in 4 Rows
Cap Storage= 18.0 cf x 2 x 4 rows = 144.2 cf

13,238 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
302.50	2,433	0	0
311.00	2,433	20,681	20,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	310.00'	**10.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 310.00' / 309.50' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#3	Secondary	307.50'	**6.0" Round Culvert** L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 307.50' / 306.25' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 11.56 hrs HW=303.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=302.50' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=302.50' (Free Discharge)
└**3=Culvert** (Controls 0.00 cfs)

Summary for Pond 24P: INFILTRATION STRUCTURE UNDER PARKING

Inflow Area = 1.748 ac, 63.70% Impervious, Inflow Depth > 2.02" for 2 YEAR event
Inflow = 3.04 cfs @ 12.22 hrs, Volume= 0.295 af
Outflow = 0.77 cfs @ 12.74 hrs, Volume= 0.286 af, Atten= 75%, Lag= 31.3 min
Discarded = 0.18 cfs @ 11.28 hrs, Volume= 0.212 af
Primary = 0.59 cfs @ 12.74 hrs, Volume= 0.074 af
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 322.64' @ 12.74 hrs Surf.Area= 3,284 sf Storage= 4,942 cf

Plug-Flow detention time= 157.3 min calculated for 0.286 af (97% of inflow)
Center-of-Mass det. time= 139.9 min (964.8 - 824.8)

Volume	Invert	Avail.Storage	Storage Description
#1	320.50'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 26,272 cf Overall - 16,683 cf Embedded = 9,589 cf x 40.0% Voids
#2	321.00'	12,422 cf	**retain_it retain_it 5.0'** x 46 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 976.7 cf perimeter wall
		16,258 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.50	3,284	0	0
328.50	3,284	26,272	26,272

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	326.70'	**8.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 326.70' / 319.00' S= 0.4278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Primary	322.00'	**6.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 322.00' / 320.00' S= 0.1111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 11.28 hrs HW=320.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.59 cfs @ 12.74 hrs HW=322.63' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 0.59 cfs @ 2.99 fps)

Summary for Pond 27P: INFILTRATION STRUCTURE FOR 9-11

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 3.10" for 2 YEAR event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 10.68 hrs, Volume= 0.008 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.01 cfs @ 10.68 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 338.17' @ 13.83 hrs Surf.Area= 270 sf Storage= 171 cf

Plug-Flow detention time= 223.2 min calculated for 0.008 af (95% of inflow)
Center-of-Mass det. time= 192.6 min (946.9 - 754.3)

Volume	Invert	Avail.Storage	Storage Description
#1	337.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	337.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
337.00	270	0	0
342.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	337.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 10.68 hrs HW=337.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 28P: INFILTRATION STRUCTURE FOR 22-24

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 3.10" for 2 YEAR event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 10.68 hrs, Volume= 0.008 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.01 cfs @ 10.68 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 333.17' @ 13.83 hrs Surf.Area= 270 sf Storage= 171 cf

Plug-Flow detention time= 223.2 min calculated for 0.008 af (95% of inflow)
Center-of-Mass det. time= 192.6 min (946.9 - 754.3)

Volume	Invert	Avail.Storage	Storage Description
#1	332.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	332.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
332.00	270	0	0
337.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	332.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 10.68 hrs HW=332.05' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 29P: INFILTRATION STRUCTURE FOR 20-21 & 26-29

Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 3.10" for 2 YEAR event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 0.024 af
Outflow = 0.01 cfs @ 10.24 hrs, Volume= 0.019 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.01 cfs @ 10.24 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 328.46' @ 14.43 hrs Surf.Area= 589 sf Storage= 496 cf

Plug-Flow detention time= 253.1 min calculated for 0.019 af (80% of inflow)
Center-of-Mass det. time= 177.5 min (931.8 - 754.3)

Volume	Invert	Avail.Storage	Storage Description
#1	327.00'	697 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,240 cf Overall - 1,496 cf Embedded = 1,744 cf x 40.0% Voids
#2	327.50'	1,113 cf	**Shea Dry Well 300gal** x 24 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 24 Chambers in 4 Rows
		1,811 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
327.00	589	0	0
332.50	589	3,240	3,240

Device	Routing	Invert	Outlet Devices
#1	Discarded	327.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 10.24 hrs HW=327.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

10 YEAR STORM

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW FROM PARKING AREA

Runoff = 4.92 cfs @ 12.08 hrs, Volume= 0.396 af, Depth> 4.78"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 2S: PREDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 0.61 cfs @ 12.17 hrs, Volume= 0.055 af, Depth> 1.52"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
1,161	70	Woods, Good, HSG C
14,991	55	Woods, Good, HSG B
19,065	62	Weighted Average
16,152		84.72% Pervious Area
2,913		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 6.22 cfs @ 12.37 hrs, Volume= 0.748 af, Depth> 1.74"
Routed to Reach 1R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
144,569	70	Woods, Good, HSG C
63,690	55	Woods, Good, HSG B
16,200	61	>75% Grass cover, Good, HSG B
780	98	Roofs, HSG B
225,239	65	Weighted Average
224,459		99.65% Pervious Area
780		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 4S: OVERLAND FLOW TO ROUTE 9

Runoff = 7.81 cfs @ 12.26 hrs, Volume= 0.810 af, Depth> 2.13"
Routed to Reach 4R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
54,059	55	Woods, Good, HSG B
24,068	55	Woods, Good, HSG B
36,060	70	Woods, Good, HSG C
33,500	61	>75% Grass cover, Good, HSG B
1,900	74	>75% Grass cover, Good, HSG C
42,307	98	Paved parking, HSG B
2,250	98	Paved parking, HSG B
4,349	98	Paved parking, HSG C
198,493	70	Weighted Average
149,587		75.36% Pervious Area
48,906		24.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 5S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 1.96 cfs @ 12.09 hrs, Volume= 0.141 af, Depth> 3.40"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 6S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 2.32 cfs @ 12.18 hrs, Volume= 0.209 af, Depth> 2.22"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 7S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 31.84 cfs @ 12.12 hrs, Volume= 2.472 af, Depth> 2.92"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 8S: PREDEV FLOW ON EAGLE LEASING

Runoff = 17.78 cfs @ 12.17 hrs, Volume= 1.559 af, Depth> 3.10"
Routed to Pond 8P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 9S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 8.29 cfs @ 12.09 hrs, Volume= 0.609 af, Depth> 1.98"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Reach 1R: PARKERVILLE ROAD

Inflow Area = 6.603 ac, 15.88% Impervious, Inflow Depth > 2.18" for 10 YEAR event
Inflow = 9.01 cfs @ 12.36 hrs, Volume= 1.199 af
Outflow = 9.01 cfs @ 12.36 hrs, Volume= 1.199 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 4R: ROUTE 9

Inflow Area = 26.078 ac, 27.75% Impervious, Inflow Depth > 2.66" for 10 YEAR event
Inflow = 34.86 cfs @ 12.38 hrs, Volume= 5.781 af
Outflow = 34.86 cfs @ 12.38 hrs, Volume= 5.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

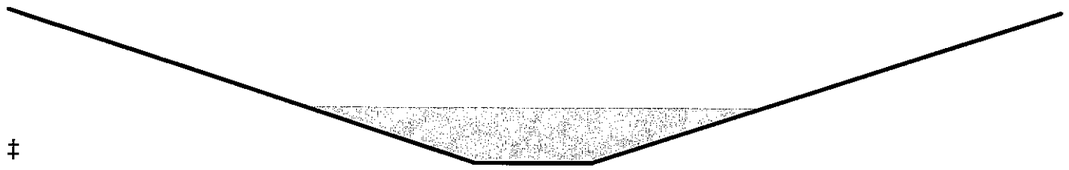
Summary for Reach 7R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 2.66" for 10 YEAR event
Inflow = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af
Outflow = 19.61 cfs @ 12.37 hrs, Volume= 3.069 af, Atten= 1%, Lag= 2.4 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.50 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 2.5 min

Peak Storage= 1,420 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.73' , Surface Width= 7.82'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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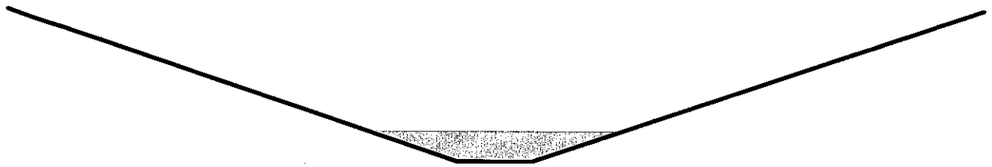
Summary for Reach 8R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 3.10" for 10 YEAR event
Inflow = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af
Outflow = 6.71 cfs @ 12.54 hrs, Volume= 1.558 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.56 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.89 fps, Avg. Travel Time= 0.7 min

Peak Storage= 139 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 3.41'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



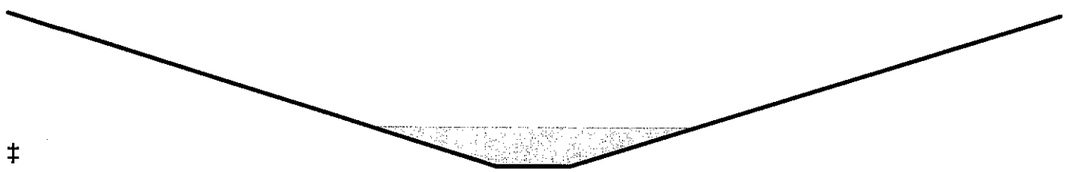
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 2.77" for 10 YEAR event
Inflow = 28.52 cfs @ 12.37 hrs, Volume= 4.975 af
Outflow = 28.34 cfs @ 12.40 hrs, Volume= 4.971 af, Atten= 1%, Lag= 1.9 min
Routed to Reach 4R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.81 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.20 fps, Avg. Travel Time= 2.0 min

Peak Storage= 1,598 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 13.26'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Pond 1P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.432 ac, 71.98% Impervious, Inflow Depth > 3.79" for 10 YEAR event
Inflow = 5.38 cfs @ 12.09 hrs, Volume= 0.452 af
Outflow = 2.89 cfs @ 12.24 hrs, Volume= 0.451 af, Atten= 46%, Lag= 9.3 min
Primary = 2.89 cfs @ 12.24 hrs, Volume= 0.451 af
Routed to Reach 1R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.58' @ 12.24 hrs Surf.Area= 5,028 sf Storage= 2,725 cf

Plug-Flow detention time= 11.0 min calculated for 0.451 af (100% of inflow)
Center-of-Mass det. time= 9.9 min (778.9 - 769.0)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.89 cfs @ 12.24 hrs HW=309.58' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.89 cfs @ 3.68 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 2.58" for 10 YEAR event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 0.350 af
Outflow = 2.32 cfs @ 12.35 hrs, Volume= 0.349 af, Atten= 40%, Lag= 13.4 min
Primary = 2.32 cfs @ 12.35 hrs, Volume= 0.349 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.48' @ 12.35 hrs Surf.Area= 3,869 sf Storage= 2,757 cf

Plug-Flow detention time= 18.8 min calculated for 0.349 af (100% of inflow)
Center-of-Mass det. time= 16.3 min (848.6 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.32 cfs @ 12.35 hrs HW=326.48' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.32 cfs @ 3.73 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 2.67" for 10 YEAR event
Inflow = 39.78 cfs @ 12.12 hrs, Volume= 3.081 af
Outflow = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af, Atten= 50%, Lag= 12.9 min
Primary = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af
Routed to Reach 7R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 355.39' @ 12.33 hrs Surf.Area= 15,154 sf Storage= 34,144 cf

Plug-Flow detention time= 35.3 min calculated for 3.067 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (863.2 - 829.7)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=19.66 cfs @ 12.33 hrs HW=355.39' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.46 cfs @ 9.49 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 12.21 cfs @ 1.57 fps)

Summary for Pond 8P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 3.10" for 10 YEAR event
Inflow = 17.78 cfs @ 12.17 hrs, Volume= 1.559 af
Outflow = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af, Atten= 62%, Lag= 21.4 min
Primary = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af
Routed to Reach 8R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 346.15' @ 12.53 hrs Surf.Area= 11,290 sf Storage= 13,617 cf

Plug-Flow detention time= 12.5 min calculated for 1.556 af (100% of inflow)
Center-of-Mass det. time= 12.3 min (834.8 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=6.71 cfs @ 12.53 hrs HW=346.15' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.71 cfs @ 8.54 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

POSTDEVELOPMENT

Summary for Subcatchment 11S: POSTDEV FLOW FROM PARKING AREA

Runoff = 4.92 cfs @ 12.08 hrs, Volume= 0.396 af, Depth> 4.78"
Routed to Pond 23P : INFILTRATION BASIN WITH 76 R902s

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 12S: POSTDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 1.38 cfs @ 12.16 hrs, Volume= 0.117 af, Depth> 2.47"
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
12,916	70	Woods, Good, HSG C
189	55	Woods, Good, HSG B
7,152	74	>75% Grass cover, Good, HSG C
1,644	61	>75% Grass cover, Good, HSG B
24,814	74	Weighted Average
21,901		88.26% Pervious Area
2,913		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 3.85 cfs @ 12.36 hrs, Volume= 0.454 af, Depth> 1.97"
Routed to Reach 11R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
1,943	55	Woods, Good, HSG B
1,148	98	Roofs, HSG B
1,254	61	>75% Grass cover, Good, HSG B
183	70	Woods, Good, HSG C
1,148	98	Roofs, HSG C
5,275	74	>75% Grass cover, Good, HSG C
22,271	55	Woods, Good, HSG B
789	98	Roofs, HSG B
19,728	61	>75% Grass cover, Good, HSG B
26,543	70	Woods, Good, HSG C
4,032	98	Roofs, HSG C
36,320	74	>75% Grass cover, Good, HSG C
120,634	68	Weighted Average
113,517		94.10% Pervious Area
7,117		5.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 14S: OVERLAND FLOW TO ROUTE 9

Runoff = 7.81 cfs @ 12.26 hrs, Volume= 0.810 af, Depth> 2.13"
Routed to Reach 14R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
31,704	70	Woods, Good, HSG C
0	98	Roofs, HSG C
4,306	98	Roofs, HSG C
11,703	74	>75% Grass cover, Good, HSG C
76,405	55	Woods, Good, HSG B
44,135	98	Paved parking, HSG B
30,229	61	>75% Grass cover, Good, HSG B
198,482	70	Weighted Average
150,041		75.59% Pervious Area
48,441		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 15S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 1.96 cfs @ 12.09 hrs, Volume= 0.141 af, Depth> 3.40"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 16S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 2.32 cfs @ 12.18 hrs, Volume= 0.209 af, Depth> 2.22"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 17S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 31.84 cfs @ 12.12 hrs, Volume= 2.472 af, Depth> 2.92"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 18S: POSTDEV FLOW ON EAGLE LEASING

Runoff = 17.78 cfs @ 12.17 hrs, Volume= 1.559 af, Depth> 3.10"
Routed to Pond 18P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 19S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 8.29 cfs @ 12.09 hrs, Volume= 0.609 af, Depth> 1.98"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Subcatchment 25S: AREA CAPTURED IN MAIN DRIVE

Runoff = 5.47 cfs @ 12.22 hrs, Volume= 0.538 af, Depth> 3.69"
Routed to Pond 24P : INFILTRATION STRUCTURE UNDER PARKING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
37,506	98	Paved parking, HSG C
11,007	98	Paved parking, HSG B
8,588	61	>75% Grass cover, Good, HSG B
16,641	74	>75% Grass cover, Good, HSG C
2,422	55	Woods, Good, HSG B
76,164	87	Weighted Average
27,651		36.30% Pervious Area
48,513		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
0.5	55	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	167	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.2	351	Total			

Summary for Subcatchment 26S: DRIVEWAY AND 5 UNITS AT ENTRANCE

Runoff = 1.27 cfs @ 12.20 hrs, Volume= 0.123 af, Depth> 4.11"
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
4,449	74	>75% Grass cover, Good, HSG C
11,225	98	Paved parking, HSG C
15,674	91	Weighted Average
4,449		28.38% Pervious Area
11,225		71.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.3	19	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.6	69	Total			

Summary for Subcatchment 27S: BACK HALF OF ROOFS UNITS 9-11

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 4.90"
Routed to Pond 27P : INFILTRATION STRUCTURE FOR 9-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK HALF OF ROOFS UNITS 22-24

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 4.90"
Routed to Pond 28P : INFILTRATION STRUCTURE FOR 22-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 29S: ROOFS FROM 20,21,26-29

Runoff = 0.48 cfs @ 12.07 hrs, Volume= 0.038 af, Depth> 4.90"
Routed to Pond 29P : INFILTRATION STRUCTURE FOR 20-21 & 26-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 YEAR Rainfall=5.14"

Area (sf)	CN	Description
4,032	98	Roofs, HSG C
4,032		100.00% Impervious Area

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

Summary for Reach 11R: PARKERVILLE ROAD

Inflow Area = 6.442 ac, 39.83% Impervious, Inflow Depth > 1.78" for 10 YEAR event
Inflow = 6.84 cfs @ 12.35 hrs, Volume= 0.956 af
Outflow = 6.84 cfs @ 12.35 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 14R: ROUTE 9

Inflow Area = 26.078 ac, 27.71% Impervious, Inflow Depth > 2.66" for 10 YEAR event
Inflow = 34.86 cfs @ 12.38 hrs, Volume= 5.781 af
Outflow = 34.86 cfs @ 12.38 hrs, Volume= 5.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

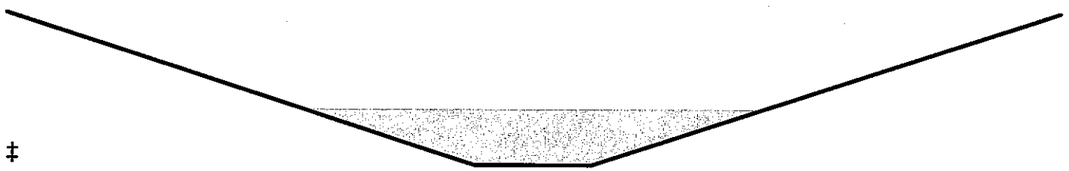
Summary for Reach 17R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 2.66" for 10 YEAR event
Inflow = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af
Outflow = 19.61 cfs @ 12.37 hrs, Volume= 3.069 af, Atten= 1%, Lag= 2.4 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.50 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 2.5 min

Peak Storage= 1,420 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.73' , Surface Width= 7.82'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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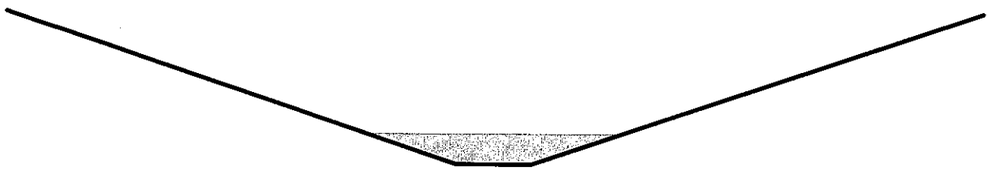
Summary for Reach 18R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 3.10" for 10 YEAR event
Inflow = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af
Outflow = 6.71 cfs @ 12.54 hrs, Volume= 1.558 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.56 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.89 fps, Avg. Travel Time= 0.7 min

Peak Storage= 139 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 3.41'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



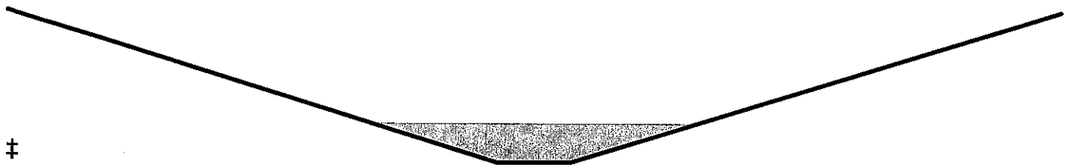
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 2.77" for 10 YEAR event
Inflow = 28.52 cfs @ 12.37 hrs, Volume= 4.975 af
Outflow = 28.34 cfs @ 12.40 hrs, Volume= 4.971 af, Atten= 1%, Lag= 1.9 min
Routed to Reach 14R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.81 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.20 fps, Avg. Travel Time= 2.0 min

Peak Storage= 1,598 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 13.26'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Reach 26R: FLOW PATH FROM OUTLET TO PARKERVILLE

Inflow Area = 2.108 ac, 65.05% Impervious, Inflow Depth > 2.19" for 10 YEAR event
Inflow = 2.04 cfs @ 12.26 hrs, Volume= 0.385 af
Outflow = 2.03 cfs @ 12.34 hrs, Volume= 0.385 af, Atten= 1%, Lag= 4.7 min
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.46 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 6.5 min

Peak Storage= 297 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 10.10'
Bank-Full Depth= 1.00' Flow Area= 26.0 sf, Capacity= 232.32 cfs

6.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 20.0 '/' Top Width= 46.00'
Length= 360.0' Slope= 0.0375 '/'
Inlet Invert= 318.00', Outlet Invert= 304.50'

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Summary for Pond 11P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.564 ac, 65.90% Impervious, Inflow Depth > 0.90" for 10 YEAR event
Inflow = 1.38 cfs @ 12.16 hrs, Volume= 0.117 af
Outflow = 0.99 cfs @ 12.29 hrs, Volume= 0.117 af, Atten= 29%, Lag= 7.8 min
Primary = 0.99 cfs @ 12.29 hrs, Volume= 0.117 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.01' @ 12.29 hrs Surf.Area= 2,381 sf Storage= 611 cf

Plug-Flow detention time= 9.4 min calculated for 0.117 af (100% of inflow)
Center-of-Mass det. time= 8.1 min (847.5 - 839.4)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.99 cfs @ 12.29 hrs HW=309.01' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.99 cfs @ 2.44 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 2.58" for 10 YEAR event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 0.350 af
Outflow = 2.32 cfs @ 12.35 hrs, Volume= 0.349 af, Atten= 40%, Lag= 13.4 min
Primary = 2.32 cfs @ 12.35 hrs, Volume= 0.349 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.48' @ 12.35 hrs Surf.Area= 3,869 sf Storage= 2,757 cf

Plug-Flow detention time= 18.8 min calculated for 0.349 af (100% of inflow)
Center-of-Mass det. time= 16.3 min (848.6 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.32 cfs @ 12.35 hrs HW=326.48' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.32 cfs @ 3.73 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 2.67" for 10 YEAR event
Inflow = 39.78 cfs @ 12.12 hrs, Volume= 3.081 af
Outflow = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af, Atten= 50%, Lag= 12.9 min
Primary = 19.80 cfs @ 12.33 hrs, Volume= 3.072 af
Routed to Reach 17R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 355.39' @ 12.33 hrs Surf.Area= 15,154 sf Storage= 34,144 cf

Plug-Flow detention time= 35.3 min calculated for 3.067 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (863.2 - 829.7)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=19.66 cfs @ 12.33 hrs HW=355.39' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.46 cfs @ 9.49 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 12.21 cfs @ 1.57 fps)

Summary for Pond 18P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 3.10" for 10 YEAR event
Inflow = 17.78 cfs @ 12.17 hrs, Volume= 1.559 af
Outflow = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af, Atten= 62%, Lag= 21.4 min
Primary = 6.71 cfs @ 12.53 hrs, Volume= 1.558 af
Routed to Reach 18R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 346.15' @ 12.53 hrs Surf.Area= 11,290 sf Storage= 13,617 cf

Plug-Flow detention time= 12.5 min calculated for 1.556 af (100% of inflow)
Center-of-Mass det. time= 12.3 min (834.8 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=6.71 cfs @ 12.53 hrs HW=346.15' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 6.71 cfs @ 8.54 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: INFILTRATION BASIN WITH 76 R902s

Inflow Area = 0.994 ac, 96.93% Impervious, Inflow Depth > 4.78" for 10 YEAR event
Inflow = 4.92 cfs @ 12.08 hrs, Volume= 0.396 af
Outflow = 0.23 cfs @ 10.48 hrs, Volume= 0.266 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.23 cfs @ 10.48 hrs, Volume= 0.266 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 306.73' @ 15.72 hrs Surf.Area= 2,790 sf Storage= 9,039 cf

Plug-Flow detention time= 265.0 min calculated for 0.266 af (67% of inflow)
Center-of-Mass det. time= 167.2 min (921.9 - 754.7)

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	8,272 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,681 cf Overall x 40.0% Voids
#2	303.00'	4,966 cf	**Cultec R-902HD v2** x 76 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap

76 Chambers in 4 Rows
Cap Storage= 18.0 cf x 2 x 4 rows = 144.2 cf

13,238 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
302.50	2,433	0	0
311.00	2,433	20,681	20,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	310.00'	**10.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 310.00' / 309.50' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#3	Secondary	307.50'	**6.0" Round Culvert** L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 307.50' / 306.25' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 10.48 hrs HW=303.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=302.50' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=302.50' (Free Discharge)
↑**3=Culvert** (Controls 0.00 cfs)

Summary for Pond 24P: INFILTRATION STRUCTURE UNDER PARKING

Inflow Area = 1.748 ac, 63.70% Impervious, Inflow Depth > 3.69" for 10 YEAR event
Inflow = 5.47 cfs @ 12.22 hrs, Volume= 0.538 af
Outflow = 1.51 cfs @ 12.70 hrs, Volume= 0.498 af, Atten= 73%, Lag= 28.9 min
Discarded = 0.18 cfs @ 9.92 hrs, Volume= 0.236 af
Primary = 1.32 cfs @ 12.70 hrs, Volume= 0.262 af
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 324.21' @ 12.70 hrs Surf.Area= 3,284 sf Storage= 9,056 cf

Plug-Flow detention time= 123.4 min calculated for 0.497 af (92% of inflow)
Center-of-Mass det. time= 85.6 min (893.6 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	320.50'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 26,272 cf Overall - 16,683 cf Embedded = 9,589 cf x 40.0% Voids
#2	321.00'	12,422 cf	**retain_it retain_it 5.0'** x 46 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 976.7 cf perimeter wall
		16,258 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.50	3,284	0	0
328.50	3,284	26,272	26,272

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	326.70'	**8.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 326.70' / 319.00' S= 0.4278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Primary	322.00'	**6.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 322.00' / 320.00' S= 0.1111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 9.92 hrs HW=320.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.32 cfs @ 12.70 hrs HW=324.20' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 1.32 cfs @ 6.73 fps)

Summary for Pond 27P: INFILTRATION STRUCTURE FOR 9-11

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 4.90" for 10 YEAR event
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 9.32 hrs, Volume= 0.009 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.01 cfs @ 9.32 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 339.04' @ 15.25 hrs Surf.Area= 270 sf Storage= 322 cf

Plug-Flow detention time= 253.1 min calculated for 0.009 af (66% of inflow)
Center-of-Mass det. time= 151.8 min (898.0 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	337.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	337.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
337.00	270	0	0
342.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	337.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 9.32 hrs HW=337.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.01 cfs)

Summary for Pond 28P: INFILTRATION STRUCTURE FOR 22-24

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 4.90" for 10 YEAR event
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 9.32 hrs, Volume= 0.009 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.01 cfs @ 9.32 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 334.04' @ 15.25 hrs Surf.Area= 270 sf Storage= 322 cf

Plug-Flow detention time= 253.1 min calculated for 0.009 af (66% of inflow)
Center-of-Mass det. time= 151.8 min (898.0 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	332.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	332.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
332.00	270	0	0
337.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	332.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 9.32 hrs HW=332.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.01 cfs)

Summary for Pond 29P: INFILTRATION STRUCTURE FOR 20-21 & 26-29

Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 4.90" for 10 YEAR event
Inflow = 0.48 cfs @ 12.07 hrs, Volume= 0.038 af
Outflow = 0.01 cfs @ 8.76 hrs, Volume= 0.021 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.01 cfs @ 8.76 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 329.57' @ 15.81 hrs Surf.Area= 589 sf Storage= 932 cf

Plug-Flow detention time= 253.7 min calculated for 0.021 af (56% of inflow)
Center-of-Mass det. time= 135.5 min (881.8 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	327.00'	697 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,240 cf Overall - 1,496 cf Embedded = 1,744 cf x 40.0% Voids
#2	327.50'	1,113 cf	**Shea Dry Well 300gal** x 24 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 24 Chambers in 4 Rows
		1,811 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
327.00	589	0	0
332.50	589	3,240	3,240

Device	Routing	Invert	Outlet Devices
#1	Discarded	327.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 8.76 hrs HW=327.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

25 YEAR STORM

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW FROM PARKING AREA

Runoff = 6.03 cfs @ 12.08 hrs, Volume= 0.490 af, Depth> 5.91"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 2S: PREDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 0.95 cfs @ 12.16 hrs, Volume= 0.083 af, Depth> 2.27"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
1,161	70	Woods, Good, HSG C
14,991	55	Woods, Good, HSG B
19,065	62	Weighted Average
16,152		84.72% Pervious Area
2,913		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 9.32 cfs @ 12.36 hrs, Volume= 1.092 af, Depth> 2.53"
Routed to Reach 1R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
144,569	70	Woods, Good, HSG C
63,690	55	Woods, Good, HSG B
16,200	61	>75% Grass cover, Good, HSG B
780	98	Roofs, HSG B
225,239	65	Weighted Average
224,459		99.65% Pervious Area
780		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 4S: OVERLAND FLOW TO ROUTE 9

Runoff = 11.20 cfs @ 12.26 hrs, Volume= 1.143 af, Depth> 3.01"
Routed to Reach 4R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
54,059	55	Woods, Good, HSG B
24,068	55	Woods, Good, HSG B
36,060	70	Woods, Good, HSG C
33,500	61	>75% Grass cover, Good, HSG B
1,900	74	>75% Grass cover, Good, HSG C
42,307	98	Paved parking, HSG B
2,250	98	Paved parking, HSG B
4,349	98	Paved parking, HSG C
198,493	70	Weighted Average
149,587		75.36% Pervious Area
48,906		24.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 5S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 2.54 cfs @ 12.09 hrs, Volume= 0.185 af, Depth> 4.45"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 6S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 3.31 cfs @ 12.18 hrs, Volume= 0.293 af, Depth> 3.11"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 7S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 42.58 cfs @ 12.12 hrs, Volume= 3.317 af, Depth> 3.92"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 8S: PREDEV FLOW ON EAGLE LEASING

Runoff = 23.50 cfs @ 12.17 hrs, Volume= 2.071 af, Depth> 4.12"
Routed to Pond 8P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 9S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 12.06 cfs @ 12.09 hrs, Volume= 0.871 af, Depth> 2.83"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Reach 1R: PARKERVILLE ROAD

Inflow Area = 6.603 ac, 15.88% Impervious, Inflow Depth > 3.02" for 25 YEAR event
Inflow = 12.61 cfs @ 12.35 hrs, Volume= 1.664 af
Outflow = 12.61 cfs @ 12.35 hrs, Volume= 1.664 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 4R: ROUTE 9

Inflow Area = 26.078 ac, 27.75% Impervious, Inflow Depth > 3.62" for 25 YEAR event
Inflow = 57.74 cfs @ 12.29 hrs, Volume= 7.857 af
Outflow = 57.74 cfs @ 12.29 hrs, Volume= 7.857 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

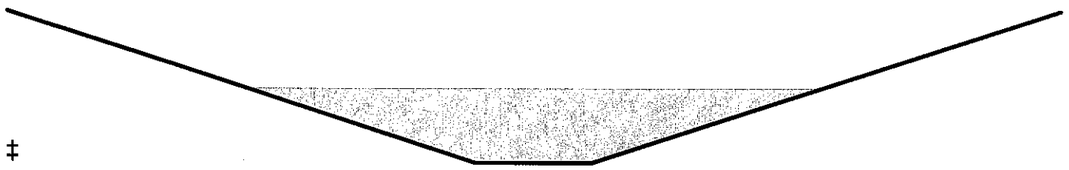
Summary for Reach 7R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 3.62" for 25 YEAR event
Inflow = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af
Outflow = 37.57 cfs @ 12.26 hrs, Volume= 4.172 af, Atten= 2%, Lag= 2.2 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.51 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.77 fps, Avg. Travel Time= 2.4 min

Peak Storage= 2,298 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.98' , Surface Width= 9.83'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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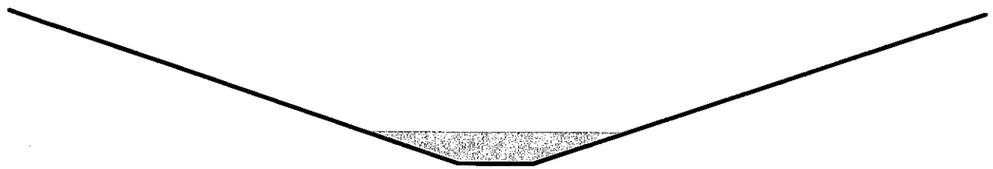
Summary for Reach 8R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 4.12" for 25 YEAR event
Inflow = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af
Outflow = 7.31 cfs @ 12.59 hrs, Volume= 2.070 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.74 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.17 fps, Avg. Travel Time= 0.6 min

Peak Storage= 148 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 3.51'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



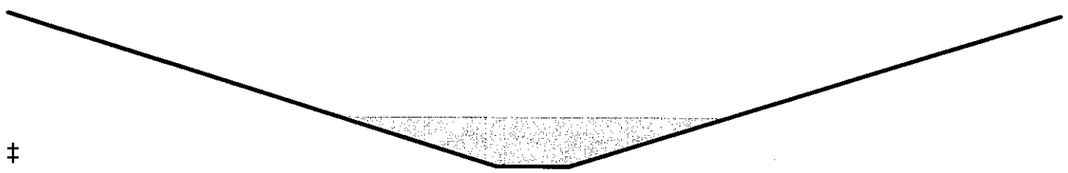
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 3.75" for 25 YEAR event
Inflow = 47.36 cfs @ 12.26 hrs, Volume= 6.719 af
Outflow = 46.70 cfs @ 12.29 hrs, Volume= 6.714 af, Atten= 1%, Lag= 2.0 min
Routed to Reach 4R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.75 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.41 fps, Avg. Travel Time= 1.9 min

Peak Storage= 2,319 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.64' , Surface Width= 15.85'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Pond 1P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.432 ac, 71.98% Impervious, Inflow Depth > 4.80" for 25 YEAR event
Inflow = 6.77 cfs @ 12.09 hrs, Volume= 0.573 af
Outflow = 3.32 cfs @ 12.27 hrs, Volume= 0.572 af, Atten= 51%, Lag= 11.1 min
Primary = 3.32 cfs @ 12.27 hrs, Volume= 0.572 af
Routed to Reach 1R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.77' @ 12.27 hrs Surf.Area= 5,904 sf Storage= 3,757 cf

Plug-Flow detention time= 11.9 min calculated for 0.572 af (100% of inflow)
Center-of-Mass det. time= 10.9 min (777.3 - 766.4)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.32 cfs @ 12.27 hrs HW=309.77' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.32 cfs @ 4.23 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 3.52" for 25 YEAR event
Inflow = 5.29 cfs @ 12.13 hrs, Volume= 0.478 af
Outflow = 3.04 cfs @ 12.36 hrs, Volume= 0.476 af, Atten= 43%, Lag= 14.0 min
Primary = 3.04 cfs @ 12.36 hrs, Volume= 0.476 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.77' @ 12.36 hrs Surf.Area= 3,969 sf Storage= 3,867 cf

Plug-Flow detention time= 19.2 min calculated for 0.476 af (100% of inflow)
Center-of-Mass det. time= 16.7 min (840.8 - 824.1)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.04 cfs @ 12.36 hrs HW=326.77' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.04 cfs @ 3.94 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 3.63" for 25 YEAR event
Inflow = 54.09 cfs @ 12.11 hrs, Volume= 4.188 af
Outflow = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af, Atten= 29%, Lag= 6.3 min
Primary = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af
Routed to Reach 7R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 355.68' @ 12.22 hrs Surf.Area= 16,553 sf Storage= 38,816 cf

Plug-Flow detention time= 32.7 min calculated for 4.169 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (852.1 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=37.43 cfs @ 12.22 hrs HW=355.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.73 cfs @ 9.84 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 29.70 cfs @ 2.20 fps)

Summary for Pond 8P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 4.12" for 25 YEAR event
Inflow = 23.50 cfs @ 12.17 hrs, Volume= 2.071 af
Outflow = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af, Atten= 69%, Lag= 24.4 min
Primary = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af
Routed to Reach 8R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 346.74' @ 12.58 hrs Surf.Area= 15,568 sf Storage= 21,543 cf

Plug-Flow detention time= 18.9 min calculated for 2.067 af (100% of inflow)
Center-of-Mass det. time= 18.7 min (833.1 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=7.31 cfs @ 12.58 hrs HW=346.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.31 cfs @ 9.31 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

POSTDEVELOPMENT

Summary for Subcatchment 11S: POSTDEV FLOW FROM PARKING AREA

Runoff = 6.03 cfs @ 12.08 hrs, Volume= 0.490 af, Depth> 5.91"
Routed to Pond 23P : INFILTRATION BASIN WITH 76 R902s

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 12S: POSTDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 1.92 cfs @ 12.16 hrs, Volume= 0.162 af, Depth> 3.41"
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
12,916	70	Woods, Good, HSG C
189	55	Woods, Good, HSG B
7,152	74	>75% Grass cover, Good, HSG C
1,644	61	>75% Grass cover, Good, HSG B
24,814	74	Weighted Average
21,901		88.26% Pervious Area
2,913		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 5.60 cfs @ 12.35 hrs, Volume= 0.650 af, Depth> 2.81"
Routed to Reach 11R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
1,943	55	Woods, Good, HSG B
1,148	98	Roofs, HSG B
1,254	61	>75% Grass cover, Good, HSG B
183	70	Woods, Good, HSG C
1,148	98	Roofs, HSG C
5,275	74	>75% Grass cover, Good, HSG C
22,271	55	Woods, Good, HSG B
789	98	Roofs, HSG B
19,728	61	>75% Grass cover, Good, HSG B
26,543	70	Woods, Good, HSG C
4,032	98	Roofs, HSG C
36,320	74	>75% Grass cover, Good, HSG C
120,634	68	Weighted Average
113,517		94.10% Pervious Area
7,117		5.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 14S: OVERLAND FLOW TO ROUTE 9

Runoff = 11.20 cfs @ 12.26 hrs, Volume= 1.143 af, Depth> 3.01"
Routed to Reach 14R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
31,704	70	Woods, Good, HSG C
0	98	Roofs, HSG C
4,306	98	Roofs, HSG C
11,703	74	>75% Grass cover, Good, HSG C
76,405	55	Woods, Good, HSG B
44,135	98	Paved parking, HSG B
30,229	61	>75% Grass cover, Good, HSG B
198,482	70	Weighted Average
150,041		75.59% Pervious Area
48,441		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 15S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 2.54 cfs @ 12.09 hrs, Volume= 0.185 af, Depth> 4.45"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 16S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 3.31 cfs @ 12.18 hrs, Volume= 0.293 af, Depth> 3.11"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 17S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 42.58 cfs @ 12.12 hrs, Volume= 3.317 af, Depth> 3.92"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 18S: POSTDEV FLOW ON EAGLE LEASING

Runoff = 23.50 cfs @ 12.17 hrs, Volume= 2.071 af, Depth> 4.12"
Routed to Pond 18P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 19S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 12.06 cfs @ 12.09 hrs, Volume= 0.871 af, Depth> 2.83"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Subcatchment 25S: AREA CAPTURED IN MAIN DRIVE

Runoff = 6.99 cfs @ 12.22 hrs, Volume= 0.694 af, Depth> 4.76"
Routed to Pond 24P : INFILTRATION STRUCTURE UNDER PARKING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
37,506	98	Paved parking, HSG C
11,007	98	Paved parking, HSG B
8,588	61	>75% Grass cover, Good, HSG B
16,641	74	>75% Grass cover, Good, HSG C
2,422	55	Woods, Good, HSG B
76,164	87	Weighted Average
27,651		36.30% Pervious Area
48,513		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
0.5	55	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	167	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.2	351	Total			

Summary for Subcatchment 26S: DRIVEWAY AND 5 UNITS AT ENTRANCE

Runoff = 1.59 cfs @ 12.19 hrs, Volume= 0.156 af, Depth> 5.21"
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
4,449	74	>75% Grass cover, Good, HSG C
11,225	98	Paved parking, HSG C
15,674	91	Weighted Average
4,449		28.38% Pervious Area
11,225		71.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.3	19	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.6	69	Total			

Summary for Subcatchment 27S: BACK HALF OF ROOFS UNITS 9-11

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 6.03"
Routed to Pond 27P : INFILTRATION STRUCTURE FOR 9-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK HALF OF ROOFS UNITS 22-24

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 6.03"
Routed to Pond 28P : INFILTRATION STRUCTURE FOR 22-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 29S: ROOFS FROM 20,21,26-29

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 0.047 af, Depth> 6.03"
Routed to Pond 29P : INFILTRATION STRUCTURE FOR 20-21 & 26-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 25 YEAR Rainfall=6.27"

Area (sf)	CN	Description
4,032	98	Roofs, HSG C
4,032		100.00% Impervious Area

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

Summary for Reach 11R: PARKERVILLE ROAD

Inflow Area = 6.442 ac, 39.83% Impervious, Inflow Depth > 2.63" for 25 YEAR event
Inflow = 9.58 cfs @ 12.34 hrs, Volume= 1.414 af
Outflow = 9.58 cfs @ 12.34 hrs, Volume= 1.414 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 14R: ROUTE 9

Inflow Area = 26.078 ac, 27.71% Impervious, Inflow Depth > 3.62" for 25 YEAR event
Inflow = 57.74 cfs @ 12.29 hrs, Volume= 7.857 af
Outflow = 57.74 cfs @ 12.29 hrs, Volume= 7.857 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

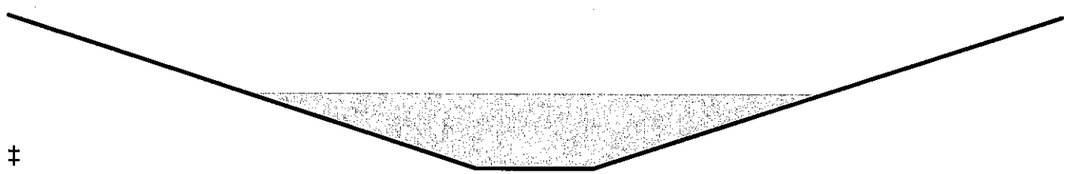
Summary for Reach 17R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 3.62" for 25 YEAR event
Inflow = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af
Outflow = 37.57 cfs @ 12.26 hrs, Volume= 4.172 af, Atten= 2%, Lag= 2.2 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.51 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.77 fps, Avg. Travel Time= 2.4 min

Peak Storage= 2,298 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.98' , Surface Width= 9.83'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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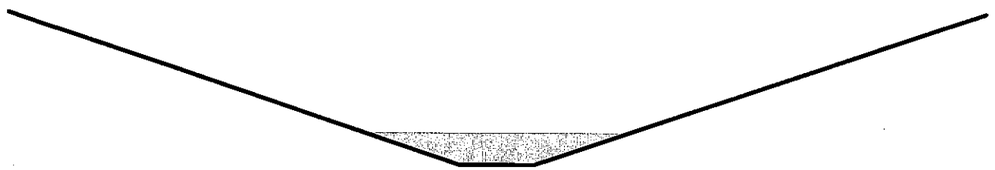
Summary for Reach 18R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 4.12" for 25 YEAR event
Inflow = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af
Outflow = 7.31 cfs @ 12.59 hrs, Volume= 2.070 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.74 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.17 fps, Avg. Travel Time= 0.6 min

Peak Storage= 148 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 3.51'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



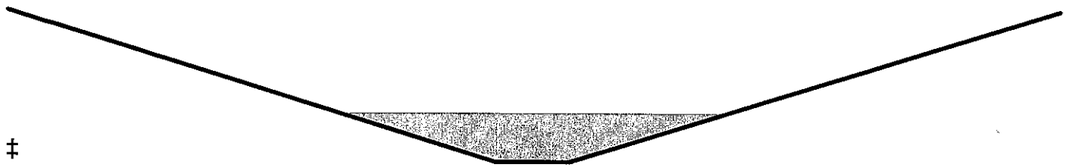
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 3.75" for 25 YEAR event
Inflow = 47.36 cfs @ 12.26 hrs, Volume= 6.719 af
Outflow = 46.70 cfs @ 12.29 hrs, Volume= 6.714 af, Atten= 1%, Lag= 2.0 min
Routed to Reach 14R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.75 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.41 fps, Avg. Travel Time= 1.9 min

Peak Storage= 2,319 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.64' , Surface Width= 15.85'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Reach 26R: FLOW PATH FROM OUTLET TO PARKERVILLE

Inflow Area = 2.108 ac, 65.05% Impervious, Inflow Depth > 3.13" for 25 YEAR event
Inflow = 2.70 cfs @ 12.24 hrs, Volume= 0.549 af
Outflow = 2.68 cfs @ 12.31 hrs, Volume= 0.549 af, Atten= 1%, Lag= 4.2 min
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 6.0 min

Peak Storage= 360 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 10.77'
Bank-Full Depth= 1.00' Flow Area= 26.0 sf, Capacity= 232.32 cfs

6.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 20.0 '/' Top Width= 46.00'
Length= 360.0' Slope= 0.0375 '/'
Inlet Invert= 318.00', Outlet Invert= 304.50'

‡

Summary for Pond 11P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.564 ac, 65.90% Impervious, Inflow Depth > 1.24" for 25 YEAR event
Inflow = 1.92 cfs @ 12.16 hrs, Volume= 0.162 af
Outflow = 1.35 cfs @ 12.29 hrs, Volume= 0.161 af, Atten= 30%, Lag= 7.9 min
Primary = 1.35 cfs @ 12.29 hrs, Volume= 0.161 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.11' @ 12.29 hrs Surf.Area= 2,846 sf Storage= 873 cf

Plug-Flow detention time= 9.6 min calculated for 0.161 af (100% of inflow)
Center-of-Mass det. time= 8.4 min (838.6 - 830.2)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.34 cfs @ 12.29 hrs HW=309.11' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.34 cfs @ 2.66 fps)
└─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 3.52" for 25 YEAR event
Inflow = 5.29 cfs @ 12.13 hrs, Volume= 0.478 af
Outflow = 3.04 cfs @ 12.36 hrs, Volume= 0.476 af, Atten= 43%, Lag= 14.0 min
Primary = 3.04 cfs @ 12.36 hrs, Volume= 0.476 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 326.77' @ 12.36 hrs Surf.Area= 3,969 sf Storage= 3,867 cf

Plug-Flow detention time= 19.2 min calculated for 0.476 af (100% of inflow)
Center-of-Mass det. time= 16.7 min (840.8 - 824.1)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.04 cfs @ 12.36 hrs HW=326.77' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.04 cfs @ 3.94 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 3.63" for 25 YEAR event
Inflow = 54.09 cfs @ 12.11 hrs, Volume= 4.188 af
Outflow = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af, Atten= 29%, Lag= 6.3 min
Primary = 38.15 cfs @ 12.22 hrs, Volume= 4.176 af
Routed to Reach 17R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 355.68' @ 12.22 hrs Surf.Area= 16,553 sf Storage= 38,816 cf

Plug-Flow detention time= 32.7 min calculated for 4.169 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (852.1 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=37.43 cfs @ 12.22 hrs HW=355.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.73 cfs @ 9.84 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 29.70 cfs @ 2.20 fps)

Summary for Pond 18P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 4.12" for 25 YEAR event
Inflow = 23.50 cfs @ 12.17 hrs, Volume= 2.071 af
Outflow = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af, Atten= 69%, Lag= 24.4 min
Primary = 7.31 cfs @ 12.58 hrs, Volume= 2.070 af
Routed to Reach 18R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 346.74' @ 12.58 hrs Surf.Area= 15,568 sf Storage= 21,543 cf

Plug-Flow detention time= 18.9 min calculated for 2.067 af (100% of inflow)
Center-of-Mass det. time= 18.7 min (833.1 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=7.31 cfs @ 12.58 hrs HW=346.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.31 cfs @ 9.31 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: INFILTRATION BASIN WITH 76 R902s

Inflow Area = 0.994 ac, 96.93% Impervious, Inflow Depth > 5.91" for 25 YEAR event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 0.490 af
Outflow = 0.55 cfs @ 12.93 hrs, Volume= 0.302 af, Atten= 91%, Lag= 50.8 min
Discarded = 0.23 cfs @ 9.84 hrs, Volume= 0.248 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD
Secondary = 0.41 cfs @ 12.93 hrs, Volume= 0.054 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 307.94' @ 12.93 hrs Surf.Area= 2,450 sf Storage= 10,261 cf

Plug-Flow detention time= 213.5 min calculated for 0.302 af (62% of inflow)
Center-of-Mass det. time= 107.8 min (858.7 - 750.9)

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	8,272 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,681 cf Overall x 40.0% Voids
#2	303.00'	4,966 cf	**Cultec R-902HD v2** x 76 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap

76 Chambers in 4 Rows
Cap Storage= 18.0 cf x 2 x 4 rows = 144.2 cf

13,238 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
302.50	2,433	0	0
311.00	2,433	20,681	20,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	310.00'	**10.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 310.00' / 309.50' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#3	Secondary	307.50'	**6.0" Round Culvert** L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 307.50' / 306.25' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 9.84 hrs HW=303.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=302.50' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.41 cfs @ 12.93 hrs HW=307.94' (Free Discharge)
↑**3=Culvert** (Inlet Controls 0.41 cfs @ 2.26 fps)

Summary for Pond 24P: INFILTRATION STRUCTURE UNDER PARKING

Inflow Area = 1.748 ac, 63.70% Impervious, Inflow Depth > 4.76" for 25 YEAR event
Inflow = 6.99 cfs @ 12.22 hrs, Volume= 0.694 af
Outflow = 1.85 cfs @ 12.71 hrs, Volume= 0.641 af, Atten= 74%, Lag= 29.4 min
Discarded = 0.18 cfs @ 9.20 hrs, Volume= 0.247 af
Primary = 1.66 cfs @ 12.71 hrs, Volume= 0.393 af
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 325.35' @ 12.71 hrs Surf.Area= 3,284 sf Storage= 12,048 cf

Plug-Flow detention time= 116.6 min calculated for 0.639 af (92% of inflow)
Center-of-Mass det. time= 77.5 min (878.5 - 800.9)

Volume	Invert	Avail.Storage	Storage Description
#1	320.50'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 26,272 cf Overall - 16,683 cf Embedded = 9,589 cf x 40.0% Voids
#2	321.00'	12,422 cf	**retain_it retain_it 5.0'** x 46 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 976.7 cf perimeter wall
		16,258 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.50	3,284	0	0
328.50	3,284	26,272	26,272

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	326.70'	**8.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 326.70' / 319.00' S= 0.4278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Primary	322.00'	**6.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 322.00' / 320.00' S= 0.1111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 9.20 hrs HW=320.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.66 cfs @ 12.71 hrs HW=325.35' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 1.66 cfs @ 8.47 fps)

Summary for Pond 27P: INFILTRATION STRUCTURE FOR 9-11

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 6.03" for 25 YEAR event
Inflow = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 8.72 hrs, Volume= 0.010 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.01 cfs @ 8.72 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 339.65' @ 15.81 hrs Surf.Area= 270 sf Storage= 427 cf

Plug-Flow detention time= 250.8 min calculated for 0.010 af (56% of inflow)
Center-of-Mass det. time= 131.8 min (875.0 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1	337.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	337.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
337.00	270	0	0
342.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	337.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 8.72 hrs HW=337.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 28P: INFILTRATION STRUCTURE FOR 22-24

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 6.03" for 25 YEAR event
Inflow = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af
Outflow = 0.01 cfs @ 8.72 hrs, Volume= 0.010 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.01 cfs @ 8.72 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 334.65' @ 15.81 hrs Surf.Area= 270 sf Storage= 427 cf

Plug-Flow detention time= 250.8 min calculated for 0.010 af (56% of inflow)
Center-of-Mass det. time= 131.8 min (875.0 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1	332.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	332.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
332.00	270	0	0
337.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	332.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 8.72 hrs HW=332.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 29P: INFILTRATION STRUCTURE FOR 20-21 & 26-29

Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 6.03" for 25 YEAR event
Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.047 af
Outflow = 0.01 cfs @ 8.20 hrs, Volume= 0.022 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.01 cfs @ 8.20 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 330.33' @ 16.52 hrs Surf.Area= 589 sf Storage= 1,226 cf

Plug-Flow detention time= 251.6 min calculated for 0.022 af (47% of inflow)
Center-of-Mass det. time= 114.6 min (857.8 - 743.2)

Volume	Invert	Avail.Storage	Storage Description
#1	327.00'	697 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,240 cf Overall - 1,496 cf Embedded = 1,744 cf x 40.0% Voids
#2	327.50'	1,113 cf	**Shea Dry Well 300gal** x 24 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 24 Chambers in 4 Rows
		1,811 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
327.00	589	0	0
332.50	589	3,240	3,240

Device	Routing	Invert	Outlet Devices
#1	Discarded	327.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 8.20 hrs HW=327.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

100 YEAR STORM

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW FROM PARKING AREA

Runoff = 7.73 cfs @ 12.08 hrs, Volume= 0.634 af, Depth> 7.65"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 2S: PREDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 1.52 cfs @ 12.16 hrs, Volume= 0.130 af, Depth> 3.56"
Routed to Pond 1P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
1,161	70	Woods, Good, HSG C
14,991	55	Woods, Good, HSG B
19,065	62	Weighted Average
16,152		84.72% Pervious Area
2,913		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 14.51 cfs @ 12.35 hrs, Volume= 1.673 af, Depth> 3.88"
Routed to Reach 1R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
144,569	70	Woods, Good, HSG C
63,690	55	Woods, Good, HSG B
16,200	61	>75% Grass cover, Good, HSG B
780	98	Roofs, HSG B
225,239	65	Weighted Average
224,459		99.65% Pervious Area
780		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 4S: OVERLAND FLOW TO ROUTE 9

Runoff = 16.69 cfs @ 12.25 hrs, Volume= 1.693 af, Depth> 4.46"
Routed to Reach 4R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
54,059	55	Woods, Good, HSG B
24,068	55	Woods, Good, HSG B
36,060	70	Woods, Good, HSG C
33,500	61	>75% Grass cover, Good, HSG B
1,900	74	>75% Grass cover, Good, HSG C
42,307	98	Paved parking, HSG B
2,250	98	Paved parking, HSG B
4,349	98	Paved parking, HSG C
198,493	70	Weighted Average
149,587		75.36% Pervious Area
48,906		24.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 5S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 3.43 cfs @ 12.09 hrs, Volume= 0.254 af, Depth> 6.10"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 6S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 4.88 cfs @ 12.18 hrs, Volume= 0.431 af, Depth> 4.58"
Routed to Pond 5P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 7S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 59.36 cfs @ 12.12 hrs, Volume= 4.667 af, Depth> 5.51"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 8S: PREDEV FLOW ON EAGLE LEASING

Runoff = 32.38 cfs @ 12.17 hrs, Volume= 2.884 af, Depth> 5.74"
Routed to Pond 8P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 9S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 18.23 cfs @ 12.09 hrs, Volume= 1.306 af, Depth> 4.24"
Routed to Pond 7P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Reach 1R: PARKERVILLE ROAD

Inflow Area = 6.603 ac, 15.88% Impervious, Inflow Depth > 4.42" for 100 YEAR event
Inflow = 18.40 cfs @ 12.35 hrs, Volume= 2.435 af
Outflow = 18.40 cfs @ 12.35 hrs, Volume= 2.435 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 4R: ROUTE 9

Inflow Area = 26.078 ac, 27.75% Impervious, Inflow Depth > 5.16" for 100 YEAR event
Inflow = 92.67 cfs @ 12.22 hrs, Volume= 11.205 af
Outflow = 92.67 cfs @ 12.22 hrs, Volume= 11.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

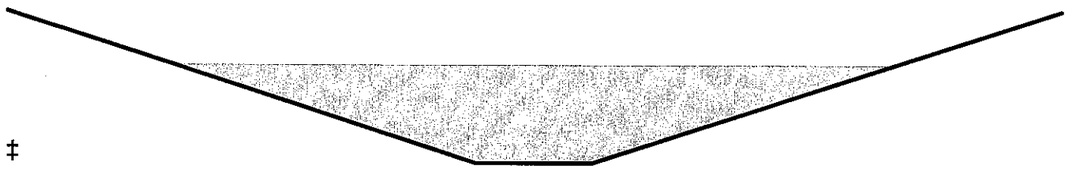
Summary for Reach 7R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 5.16" for 100 YEAR event
Inflow = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af
Outflow = 67.27 cfs @ 12.19 hrs, Volume= 5.952 af, Atten= 10%, Lag= 1.9 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.61 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.97 fps, Avg. Travel Time= 2.2 min

Peak Storage= 3,662 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.29' , Surface Width= 12.32'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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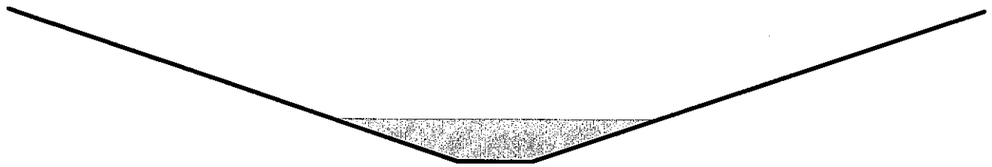
Summary for Reach 8R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 5.74" for 100 YEAR event
Inflow = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af
Outflow = 13.65 cfs @ 12.49 hrs, Volume= 2.883 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 9.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.50 fps, Avg. Travel Time= 0.6 min

Peak Storage= 236 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.56' , Surface Width= 4.36'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



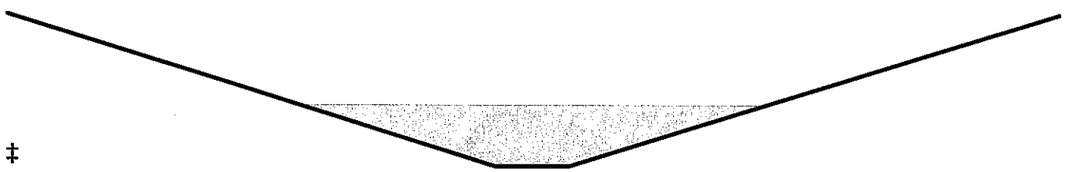
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 5.31" for 100 YEAR event
Inflow = 77.89 cfs @ 12.19 hrs, Volume= 9.518 af
Outflow = 76.38 cfs @ 12.22 hrs, Volume= 9.512 af, Atten= 2%, Lag= 1.3 min
Routed to Reach 4R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 8.82 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.69 fps, Avg. Travel Time= 1.7 min

Peak Storage= 3,385 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.80' , Surface Width= 19.04'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Pond 1P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.432 ac, 71.98% Impervious, Inflow Depth > 6.40" for 100 YEAR event
Inflow = 8.95 cfs @ 12.09 hrs, Volume= 0.763 af
Outflow = 3.89 cfs @ 12.32 hrs, Volume= 0.762 af, Atten= 57%, Lag= 13.9 min
Primary = 3.89 cfs @ 12.32 hrs, Volume= 0.762 af
Routed to Reach 1R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 310.06' @ 12.32 hrs Surf.Area= 6,999 sf Storage= 5,636 cf

Plug-Flow detention time= 13.6 min calculated for 0.762 af (100% of inflow)
Center-of-Mass det. time= 12.6 min (776.0 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.89 cfs @ 12.32 hrs HW=310.06' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.89 cfs @ 4.96 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 5.04" for 100 YEAR event
Inflow = 7.56 cfs @ 12.13 hrs, Volume= 0.685 af
Outflow = 4.02 cfs @ 12.38 hrs, Volume= 0.683 af, Atten= 47%, Lag= 15.3 min
Primary = 4.02 cfs @ 12.38 hrs, Volume= 0.683 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 327.28' @ 12.38 hrs Surf.Area= 4,147 sf Storage= 5,932 cf

Plug-Flow detention time= 20.3 min calculated for 0.683 af (100% of inflow)
Center-of-Mass det. time= 18.0 min (832.5 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=4.02 cfs @ 12.38 hrs HW=327.27' (Free Discharge)
└─**1=Culvert** (Barrel Controls 4.02 cfs @ 5.12 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 5.17" for 100 YEAR event
Inflow = 76.71 cfs @ 12.11 hrs, Volume= 5.973 af
Outflow = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af, Atten= 3%, Lag= 2.9 min
Primary = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af
Routed to Reach 7R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 356.15' @ 12.16 hrs Surf.Area= 18,050 sf Storage= 44,275 cf

Plug-Flow detention time= 30.6 min calculated for 5.947 af (100% of inflow)
Center-of-Mass det. time= 28.8 min (840.1 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=73.98 cfs @ 12.16 hrs HW=356.15' (Free Discharge)
1=Culvert (Inlet Controls 8.15 cfs @ 10.38 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 65.83 cfs @ 2.86 fps)

Summary for Pond 8P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 5.74" for 100 YEAR event
Inflow = 32.38 cfs @ 12.17 hrs, Volume= 2.884 af
Outflow = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af, Atten= 58%, Lag= 18.8 min
Primary = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af
Routed to Reach 8R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 347.28' @ 12.48 hrs Surf.Area= 19,484 sf Storage= 31,008 cf

Plug-Flow detention time= 23.4 min calculated for 2.879 af (100% of inflow)
Center-of-Mass det. time= 23.2 min (828.4 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=13.66 cfs @ 12.48 hrs HW=347.28' (Free Discharge)
1=Culvert (Inlet Controls 7.82 cfs @ 9.96 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 5.84 cfs @ 1.74 fps)

POSTDEVELOPMENT

Summary for Subcatchment 11S: POSTDEV FLOW FROM PARKING AREA

Runoff = 7.73 cfs @ 12.08 hrs, Volume= 0.634 af, Depth> 7.65"
Routed to Pond 23P : INFILTRATION BASIN WITH 76 R902s

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
41,985	98	Paved parking, HSG B
280	74	>75% Grass cover, Good, HSG C
1,049	61	>75% Grass cover, Good, HSG B
43,314	97	Weighted Average
1,329		3.07% Pervious Area
41,985		96.93% Impervious Area

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

Summary for Subcatchment 12S: POSTDEV OVERLAND FLOW TO DETENTION BASIN

Runoff = 2.77 cfs @ 12.15 hrs, Volume= 0.234 af, Depth> 4.93"
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
2,913	98	Water Surface, HSG B
12,916	70	Woods, Good, HSG C
189	55	Woods, Good, HSG B
7,152	74	>75% Grass cover, Good, HSG C
1,644	61	>75% Grass cover, Good, HSG B
24,814	74	Weighted Average
21,901		88.26% Pervious Area
2,913		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	58	0.1600	2.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	108	Total			

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO PARKERVILLE ROAD

Runoff = 8.49 cfs @ 12.34 hrs, Volume= 0.974 af, Depth> 4.22"
Routed to Reach 11R : PARKERVILLE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
1,943	55	Woods, Good, HSG B
1,148	98	Roofs, HSG B
1,254	61	>75% Grass cover, Good, HSG B
183	70	Woods, Good, HSG C
1,148	98	Roofs, HSG C
5,275	74	>75% Grass cover, Good, HSG C
22,271	55	Woods, Good, HSG B
789	98	Roofs, HSG B
19,728	61	>75% Grass cover, Good, HSG B
26,543	70	Woods, Good, HSG C
4,032	98	Roofs, HSG C
36,320	74	>75% Grass cover, Good, HSG C
120,634	68	Weighted Average
113,517		94.10% Pervious Area
7,117		5.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
9.9	754	0.0640	1.26		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	243	0.0370	4.76	57.07	**Channel Flow, 2' WIDE BOTTOM, 10:1 SIDE SLOPES,1'DEEP** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
24.6	1,047	Total			

Summary for Subcatchment 14S: OVERLAND FLOW TO ROUTE 9

Runoff = 16.68 cfs @ 12.25 hrs, Volume= 1.692 af, Depth> 4.46"
Routed to Reach 14R : ROUTE 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
31,704	70	Woods, Good, HSG C
0	98	Roofs, HSG C
4,306	98	Roofs, HSG C
11,703	74	>75% Grass cover, Good, HSG C
76,405	55	Woods, Good, HSG B
44,135	98	Paved parking, HSG B
30,229	61	>75% Grass cover, Good, HSG B
198,482	70	Weighted Average
150,041		75.59% Pervious Area
48,441		24.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.1	242	0.0600	3.67		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	709	0.0680	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	365	0.0160	3.13	37.53	**Channel Flow,** Area= 12.0 sf Perim= 22.1' r= 0.54' n= 0.040 Earth, cobble bottom, clean sides
18.3	1,366	Total			

Summary for Subcatchment 15S: DRAINAGE COLLECTED BY CB'S SW OF SELF STORAGE BUILDING

Runoff = 3.43 cfs @ 12.09 hrs, Volume= 0.254 af, Depth> 6.10"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
6,345	61	>75% Grass cover, Good, HSG B
3,301	74	>75% Grass cover, Good, HSG C
6,254	98	Paved parking, HSG B
5,860	98	Paved parking, HSG C
21,760	84	Weighted Average
9,646		44.33% Pervious Area
12,114		55.67% Impervious Area

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

Summary for Subcatchment 16S: OVERLAND FLOW TO EXISTING DETENTION BASIN

Runoff = 4.88 cfs @ 12.18 hrs, Volume= 0.431 af, Depth> 4.58"
Routed to Pond 15P : EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
46,762	70	Woods, Good, HSG C
2,500	98	Water Surface, HSG C
49,262	71	Weighted Average
46,762		94.93% Pervious Area
2,500		5.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	324	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.7	374	Total			

Summary for Subcatchment 17S: RUNOFF COLLECTED BY SARSEN STONE WAY

Runoff = 59.36 cfs @ 12.12 hrs, Volume= 4.667 af, Depth> 5.51"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
317,393	84	1 acre lots, 20% imp, HSG D
125,360	68	1 acre lots, 20% imp, HSG B
442,753	79	Weighted Average
354,202		80.00% Pervious Area
88,551		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
2.0	214	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.6	175	0.1000	4.74		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	210	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.4	649	Total			

Summary for Subcatchment 18S: POSTDEV FLOW ON EAGLE LEASING

Runoff = 32.38 cfs @ 12.17 hrs, Volume= 2.884 af, Depth> 5.74"
Routed to Pond 18P : DET BASIN ON EAGLE LEASING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
24,658	98	Paved parking, HSG B
8,220	61	>75% Grass cover, Good, HSG B
104,681	98	Paved parking, HSG C
34,894	74	>75% Grass cover, Good, HSG C
235	98	Paved parking, HSG D
6,197	80	>75% Grass cover, Good, HSG D
30,530	61	>75% Grass cover, Good, HSG B
5,140	98	Paved parking, HSG B
48,076	55	Woods, Good, HSG B
262,631	81	Weighted Average
127,917		48.71% Pervious Area
134,714		51.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0600	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
4.2	413	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	360	0.0440	2.10		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
12.4	823	Total			

Summary for Subcatchment 19S: OVERLAND FLOW TO DET BASIN BEHIND 5 & 7 SARSEN STONE

Runoff = 18.23 cfs @ 12.09 hrs, Volume= 1.306 af, Depth> 4.24"
Routed to Pond 17P : EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
20,407	70	Woods, Good, HSG C
3,300	98	Water Surface, HSG B
36,775	55	Woods, Good, HSG B
13,560	85	1/2 acre lots, 25% imp, HSG D
87,016	70	1/2 acre lots, 25% imp, HSG B
161,058	68	Weighted Average
132,614		82.34% Pervious Area
28,444		17.66% Impervious Area

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

Summary for Subcatchment 25S: AREA CAPTURED IN MAIN DRIVE

Runoff = 9.32 cfs @ 12.21 hrs, Volume= 0.939 af, Depth> 6.44"
Routed to Pond 24P : INFILTRATION STRUCTURE UNDER PARKING

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
37,506	98	Paved parking, HSG C
11,007	98	Paved parking, HSG B
8,588	61	>75% Grass cover, Good, HSG B
16,641	74	>75% Grass cover, Good, HSG C
2,422	55	Woods, Good, HSG B
76,164	87	Weighted Average
27,651		36.30% Pervious Area
48,513		63.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
0.5	55	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	167	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.2	351	Total			

Summary for Subcatchment 26S: DRIVEWAY AND 5 UNITS AT ENTRANCE

Runoff = 2.08 cfs @ 12.19 hrs, Volume= 0.208 af, Depth> 6.92"
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
4,449	74	>75% Grass cover, Good, HSG C
11,225	98	Paved parking, HSG C
15,674	91	Weighted Average
4,449		28.38% Pervious Area
11,225		71.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.3	19	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.6	69	Total			

Summary for Subcatchment 27S: BACK HALF OF ROOFS UNITS 9-11

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth> 7.77"
Routed to Pond 27P : INFILTRATION STRUCTURE FOR 9-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 28S: BACK HALF OF ROOFS UNITS 22-24

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth> 7.77"
Routed to Pond 28P : INFILTRATION STRUCTURE FOR 22-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
1,512	98	Roofs, HSG C
1,512		100.00% Impervious Area

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

Summary for Subcatchment 29S: ROOFS FROM 20,21,26-29

Runoff = 0.74 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 7.77"
Routed to Pond 29P : INFILTRATION STRUCTURE FOR 20-21 & 26-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Type III 24-hr 100 YEAR Rainfall=8.01"

Area (sf)	CN	Description
4,032	98	Roofs, HSG C
4,032		100.00% Impervious Area

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

Summary for Reach 11R: PARKERVILLE ROAD

Inflow Area = 6.442 ac, 39.83% Impervious, Inflow Depth > 4.08" for 100 YEAR event
Inflow = 14.72 cfs @ 12.33 hrs, Volume= 2.191 af
Outflow = 14.72 cfs @ 12.33 hrs, Volume= 2.191 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Summary for Reach 14R: ROUTE 9

Inflow Area = 26.078 ac, 27.71% Impervious, Inflow Depth > 5.16" for 100 YEAR event
Inflow = 92.67 cfs @ 12.22 hrs, Volume= 11.205 af
Outflow = 92.67 cfs @ 12.22 hrs, Volume= 11.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

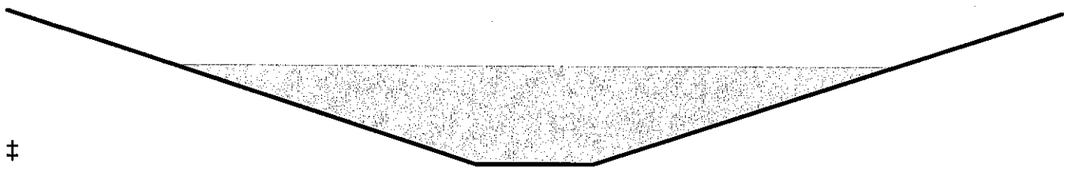
Summary for Reach 17R: FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 5.16" for 100 YEAR event
Inflow = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af
Outflow = 67.27 cfs @ 12.19 hrs, Volume= 5.952 af, Atten= 10%, Lag= 1.9 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.61 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.97 fps, Avg. Travel Time= 2.2 min

Peak Storage= 3,662 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.29' , Surface Width= 12.32'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 198.41 cfs

2.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 18.00'
Length= 397.0' Slope= 0.0642 '/'
Inlet Invert= 349.00', Outlet Invert= 323.50'



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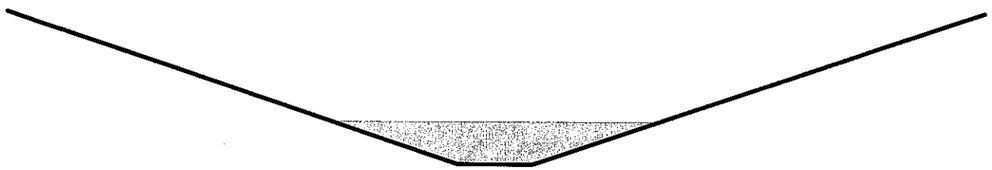
Summary for Reach 18R: FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 5.74" for 100 YEAR event
Inflow = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af
Outflow = 13.65 cfs @ 12.49 hrs, Volume= 2.883 af, Atten= 0%, Lag= 0.6 min
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 9.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.50 fps, Avg. Travel Time= 0.6 min

Peak Storage= 236 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.56' , Surface Width= 4.36'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 271.03 cfs

1.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 157.0' Slope= 0.1025 '/'
Inlet Invert= 342.10', Outlet Invert= 326.00'



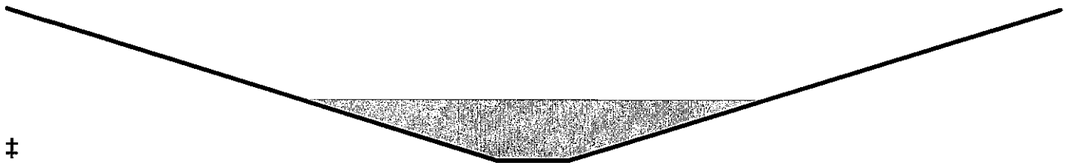
Summary for Reach 22R: FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Inflow Area = 21.521 ac, 28.41% Impervious, Inflow Depth > 5.31" for 100 YEAR event
Inflow = 77.89 cfs @ 12.19 hrs, Volume= 9.518 af
Outflow = 76.38 cfs @ 12.22 hrs, Volume= 9.512 af, Atten= 2%, Lag= 1.3 min
Routed to Reach 14R : ROUTE 9

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 8.82 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.69 fps, Avg. Travel Time= 1.7 min

Peak Storage= 3,385 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.80' , Surface Width= 19.04'
Bank-Full Depth= 2.00' Flow Area= 46.0 sf, Capacity= 707.92 cfs

3.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 43.00'
Length= 383.0' Slope= 0.0888 '/'
Inlet Invert= 349.00', Outlet Invert= 315.00'



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Summary for Reach 26R: FLOW PATH FROM OUTLET TO PARKERVILLE

Inflow Area = 2.108 ac, 65.05% Impervious, Inflow Depth > 4.64" for 100 YEAR event
Inflow = 4.59 cfs @ 12.50 hrs, Volume= 0.816 af
Outflow = 4.57 cfs @ 12.56 hrs, Volume= 0.815 af, Atten= 0%, Lag= 3.6 min
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 5.4 min

Peak Storage= 524 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 12.35'
Bank-Full Depth= 1.00' Flow Area= 26.0 sf, Capacity= 232.32 cfs

6.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 20.0 '/' Top Width= 46.00'
Length= 360.0' Slope= 0.0375 '/'
Inlet Invert= 318.00', Outlet Invert= 304.50'

‡

Summary for Pond 11P: EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD

Inflow Area = 1.564 ac, 65.90% Impervious, Inflow Depth > 1.80" for 100 YEAR event
Inflow = 2.77 cfs @ 12.15 hrs, Volume= 0.234 af
Outflow = 1.88 cfs @ 12.29 hrs, Volume= 0.234 af, Atten= 32%, Lag= 8.3 min
Primary = 1.88 cfs @ 12.29 hrs, Volume= 0.234 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 309.25' @ 12.29 hrs Surf.Area= 3,503 sf Storage= 1,322 cf

Plug-Flow detention time= 9.9 min calculated for 0.234 af (100% of inflow)
Center-of-Mass det. time= 8.8 min (828.3 - 819.5)

Volume	Invert	Avail.Storage	Storage Description
#1	308.50'	20,440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.50	0	0	0
310.00	6,960	5,220	5,220
312.00	8,260	15,220	20,440

Device	Routing	Invert	Outlet Devices
#1	Primary	308.50'	**12.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 308.50' / 308.10' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	311.50'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.88 cfs @ 12.29 hrs HW=309.25' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.88 cfs @ 2.96 fps)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 15P: EXISTING DETENTION BASIN SOUTH OF SELF STORAGE BUILDING

Inflow Area = 1.630 ac, 20.58% Impervious, Inflow Depth > 5.04" for 100 YEAR event
Inflow = 7.56 cfs @ 12.13 hrs, Volume= 0.685 af
Outflow = 4.02 cfs @ 12.38 hrs, Volume= 0.683 af, Atten= 47%, Lag= 15.3 min
Primary = 4.02 cfs @ 12.38 hrs, Volume= 0.683 af
Routed to Reach 22R : FLOW PATH FROM BASIN OUTLET TO ROUTE 9

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 327.28' @ 12.38 hrs Surf.Area= 4,147 sf Storage= 5,932 cf

Plug-Flow detention time= 20.3 min calculated for 0.683 af (100% of inflow)
Center-of-Mass det. time= 18.0 min (832.5 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1	325.50'	12,719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.50	0	0	0
326.00	3,700	925	925
328.00	4,400	8,100	9,025
328.75	5,450	3,694	12,719

Device	Routing	Invert	Outlet Devices
#1	Primary	325.50'	**12.0" Round Culvert** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 325.50' / 325.25' S= 0.0066 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	328.25'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=4.02 cfs @ 12.38 hrs HW=327.27' (Free Discharge)
1=Culvert (Barrel Controls 4.02 cfs @ 5.12 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 17P: EXISTING DET BASIN ON 5 & 7 SARSEN STONE WAY

Inflow Area = 13.862 ac, 19.38% Impervious, Inflow Depth > 5.17" for 100 YEAR event
Inflow = 76.71 cfs @ 12.11 hrs, Volume= 5.973 af
Outflow = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af, Atten= 3%, Lag= 2.9 min
Primary = 74.33 cfs @ 12.16 hrs, Volume= 5.957 af
Routed to Reach 17R : FLOW PATH FROM SARSEN STONE BASIN TO OUTLET OF BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 356.15' @ 12.16 hrs Surf.Area= 18,050 sf Storage= 44,275 cf

Plug-Flow detention time= 30.6 min calculated for 5.947 af (100% of inflow)
Center-of-Mass det. time= 28.8 min (840.1 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	351.00'	44,275 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
351.00	0	0	0
352.00	6,070	3,035	3,035
354.00	8,560	14,630	17,665
356.00	18,050	26,610	44,275

Device	Routing	Invert	Outlet Devices
#1	Primary	351.00'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 351.00' / 349.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	355.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=73.98 cfs @ 12.16 hrs HW=356.15' (Free Discharge)
1=Culvert (Inlet Controls 8.15 cfs @ 10.38 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 65.83 cfs @ 2.86 fps)

Summary for Pond 18P: DET BASIN ON EAGLE LEASING

Inflow Area = 6.029 ac, 51.29% Impervious, Inflow Depth > 5.74" for 100 YEAR event
Inflow = 32.38 cfs @ 12.17 hrs, Volume= 2.884 af
Outflow = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af, Atten= 58%, Lag= 18.8 min
Primary = 13.68 cfs @ 12.48 hrs, Volume= 2.883 af
Routed to Reach 18R : FLOW PATH FROM EAGLE LEASING BASIN TO DET BASIN ON SITE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 347.28' @ 12.48 hrs Surf.Area= 19,484 sf Storage= 31,008 cf

Plug-Flow detention time= 23.4 min calculated for 2.879 af (100% of inflow)
Center-of-Mass det. time= 23.2 min (828.4 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	342.50'	46,903 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.50	0	0	0
344.00	1,030	773	773
346.00	10,200	11,230	12,003
348.00	24,700	34,900	46,903

Device	Routing	Invert	Outlet Devices
#1	Primary	342.50'	**12.0" Round Culvert** L= 33.0' Ke= 0.500 Inlet / Outlet Invert= 342.50' / 342.10' S= 0.0121 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Primary	347.00'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.5' Crest Height

Primary OutFlow Max=13.66 cfs @ 12.48 hrs HW=347.28' (Free Discharge)
↑**1=Culvert** (Inlet Controls 7.82 cfs @ 9.96 fps)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.84 cfs @ 1.74 fps)

Summary for Pond 23P: INFILTRATION BASIN WITH 76 R902s

Inflow Area = 0.994 ac, 96.93% Impervious, Inflow Depth > 7.65" for 100 YEAR event
Inflow = 7.73 cfs @ 12.08 hrs, Volume= 0.634 af
Outflow = 1.19 cfs @ 12.57 hrs, Volume= 0.428 af, Atten= 85%, Lag= 29.0 min
Discarded = 0.23 cfs @ 9.00 hrs, Volume= 0.260 af
Primary = 0.05 cfs @ 12.57 hrs, Volume= 0.001 af
Routed to Pond 11P : EXISTING DETENTION BASIN NEAR PARKERVILLE ROAD
Secondary = 1.00 cfs @ 12.57 hrs, Volume= 0.167 af
Routed to Reach 11R : PARKERVILLE ROAD

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 310.12' @ 12.57 hrs Surf.Area= 2,450 sf Storage= 12,377 cf

Plug-Flow detention time= 168.4 min calculated for 0.427 af (67% of inflow)
Center-of-Mass det. time= 70.4 min (817.1 - 746.7)

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	8,272 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,681 cf Overall x 40.0% Voids
#2	303.00'	4,966 cf	**Cultec R-902HD v2** x 76 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap

76 Chambers in 4 Rows
Cap Storage= 18.0 cf x 2 x 4 rows = 144.2 cf

13,238 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
302.50	2,433	0	0
311.00	2,433	20,681	20,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	310.00'	**10.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 310.00' / 309.50' S= 0.0098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#3	Secondary	307.50'	**6.0" Round Culvert** L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 307.50' / 306.25' S= 0.0145 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.23 cfs @ 9.00 hrs HW=303.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.05 cfs @ 12.57 hrs HW=310.11' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.05 cfs @ 1.56 fps)

Secondary OutFlow Max=1.00 cfs @ 12.57 hrs HW=310.11' (Free Discharge)
└**3=Culvert** (Barrel Controls 1.00 cfs @ 5.11 fps)

Summary for Pond 24P: INFILTRATION STRUCTURE UNDER PARKING

Inflow Area = 1.748 ac, 63.70% Impervious, Inflow Depth > 6.44" for 100 YEAR event
Inflow = 9.32 cfs @ 12.21 hrs, Volume= 0.939 af
Outflow = 3.93 cfs @ 12.57 hrs, Volume= 0.871 af, Atten= 58%, Lag= 21.0 min
Discarded = 0.18 cfs @ 8.40 hrs, Volume= 0.263 af
Primary = 3.75 cfs @ 12.57 hrs, Volume= 0.608 af
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 327.84' @ 12.57 hrs Surf.Area= 3,284 sf Storage= 15,392 cf

Plug-Flow detention time= 106.5 min calculated for 0.871 af (93% of inflow)
Center-of-Mass det. time= 68.9 min (861.7 - 792.8)

Volume	Invert	Avail.Storage	Storage Description
#1	320.50'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 26,272 cf Overall - 16,683 cf Embedded = 9,589 cf x 40.0% Voids
#2	321.00'	12,422 cf	**retain_it retain_it 5.0'** x 46 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 976.7 cf perimeter wall
		16,258 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.50	3,284	0	0
328.50	3,284	26,272	26,272

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	326.70'	**8.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 326.70' / 319.00' S= 0.4278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Primary	322.00'	**6.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 322.00' / 320.00' S= 0.1111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 8.40 hrs HW=320.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=3.74 cfs @ 12.57 hrs HW=327.84' (Free Discharge)
├**2=Culvert** (Inlet Controls 1.51 cfs @ 4.32 fps)
└**3=Culvert** (Inlet Controls 2.23 cfs @ 11.38 fps)

Summary for Pond 27P: INFILTRATION STRUCTURE FOR 9-11

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 7.77" for 100 YEAR event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 7.88 hrs, Volume= 0.010 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.01 cfs @ 7.88 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 340.64' @ 16.73 hrs Surf.Area= 270 sf Storage= 598 cf

Plug-Flow detention time= 249.7 min calculated for 0.010 af (46% of inflow)
Center-of-Mass det. time= 105.6 min (845.5 - 739.9)

Volume	Invert	Avail.Storage	Storage Description
#1	337.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	337.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
337.00	270	0	0
342.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	337.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 7.88 hrs HW=337.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 28P: INFILTRATION STRUCTURE FOR 22-24

Inflow Area = 0.035 ac,100.00% Impervious, Inflow Depth > 7.77" for 100 YEAR event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af
Outflow = 0.01 cfs @ 7.88 hrs, Volume= 0.010 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.01 cfs @ 7.88 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 335.64' @ 16.73 hrs Surf.Area= 270 sf Storage= 598 cf

Plug-Flow detention time= 249.7 min calculated for 0.010 af (46% of inflow)
Center-of-Mass det. time= 105.6 min (845.5 - 739.9)

Volume	Invert	Avail.Storage	Storage Description
#1	332.00'	291 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,350 cf Overall - 623 cf Embedded = 727 cf x 40.0% Voids
#2	332.50'	464 cf	**Shea Dry Well 300gal** x 10 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 10 Chambers in 2 Rows
		754 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
332.00	270	0	0
337.00	270	1,350	1,350

Device	Routing	Invert	Outlet Devices
#1	Discarded	332.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 7.88 hrs HW=332.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Summary for Pond 29P: INFILTRATION STRUCTURE FOR 20-21 & 26-29

Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 7.77" for 100 YEAR event
Inflow = 0.74 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.01 cfs @ 7.12 hrs, Volume= 0.023 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.01 cfs @ 7.12 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 332.05' @ 17.55 hrs Surf.Area= 589 sf Storage= 1,704 cf

Plug-Flow detention time= 254.4 min calculated for 0.023 af (39% of inflow)
Center-of-Mass det. time= 88.2 min (828.1 - 739.9)

Volume	Invert	Avail.Storage	Storage Description
#1	327.00'	697 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,240 cf Overall - 1,496 cf Embedded = 1,744 cf x 40.0% Voids
#2	327.50'	1,113 cf	**Shea Dry Well 300gal** x 24 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 24 Chambers in 4 Rows
		1,811 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
327.00	589	0	0
332.50	589	3,240	3,240

Device	Routing	Invert	Outlet Devices
#1	Discarded	327.00'	**1.020 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 7.12 hrs HW=327.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

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NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: MA

Data description

Data type: Precipitation depth | Units: English | Time series type: Partial duration

Select location

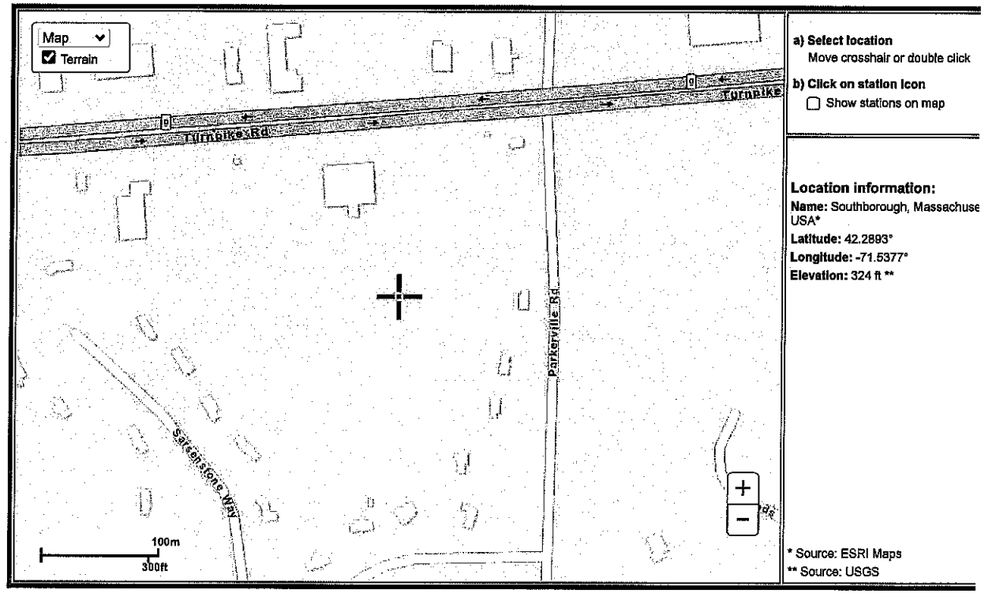
1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: [ ] Longitude: [ ] Submit

b) By station (list of MA stations): Select station

c) By address: 250 Turnpike Road, Southborough, M

2) Use map:



a) Select location
Move crosshair or double click

b) Click on station icon
Show stations on map

Location information:
Name: Southborough, Massachuse USA*
Latitude: 42.2893°
Longitude: -71.5377°
Elevation: 324 ft **

* Source: ESRI Maps
** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 10, Version 3

PF tabular PF graphical Supplementary information Print page

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.336 (0.258-0.434)	0.402 (0.308-0.520)	0.510 (0.390-0.662)	0.599 (0.455-0.781)	0.722 (0.533-0.982)	0.814 (0.590-1.13)	0.911 (0.643-1.31)	1.02 (0.684-1.50)	1.18 (0.761-1.79)	1.30 (0.826-2.03)
10-min	0.476 (0.365-0.615)	0.569 (0.436-0.736)	0.721 (0.550-0.935)	0.848 (0.645-1.11)	1.02 (0.755-1.39)	1.15 (0.835-1.60)	1.29 (0.911-1.86)	1.45 (0.970-2.13)	1.67 (1.08-2.54)	1.85 (1.17-2.87)
15-min	0.560 (0.430-0.723)	0.670 (0.513-0.866)	0.850 (0.649-1.10)	0.998 (0.758-1.30)	1.20 (0.888-1.64)	1.36 (0.983-1.88)	1.52 (1.07-2.19)	1.70 (1.14-2.50)	1.96 (1.27-2.98)	2.17 (1.38-3.38)
30-min	0.764 (0.587-0.987)	0.915 (0.701-1.18)	1.16 (0.887-1.51)	1.36 (1.04-1.78)	1.64 (1.21-2.24)	1.86 (1.34-2.58)	2.08 (1.46-2.99)	2.32 (1.58-3.42)	2.68 (1.74-4.08)	2.97 (1.88-4.62)
60-min	0.969 (0.744-1.25)	1.16 (0.889-1.50)	1.47 (1.12-1.91)	1.73 (1.32-2.26)	2.08 (1.54-2.84)	2.35 (1.70-3.27)	2.63 (1.86-3.80)	2.95 (1.98-4.34)	3.40 (2.20-5.18)	3.77 (2.39-5.86)
2-hr	1.22 (0.942-1.56)	1.48 (1.14-1.90)	1.90 (1.46-2.44)	2.24 (1.72-2.91)	2.72 (2.03-3.70)	3.08 (2.25-4.28)	3.46 (2.47-5.00)	3.92 (2.64-5.74)	4.61 (2.99-6.97)	5.19 (3.29-8.00)
3-hr	1.40 (1.08-1.79)	1.70 (1.32-2.18)	2.20 (1.70-2.82)	2.61 (2.00-3.37)	3.17 (2.37-4.30)	3.59 (2.64-4.98)	4.04 (2.90-5.84)	4.59 (3.10-6.70)	5.43 (3.53-8.19)	6.15 (3.91-9.45)

6-hr	1.79 (1.40-2.28)	2.18 (1.70-2.78)	2.82 (2.19-3.50)	3.35 (2.59-4.30)	4.08 (3.07-5.49)	4.62 (3.41-6.36)	5.20 (3.76-7.47)	5.92 (4.00-8.57)	7.02 (4.59-10.5)	7.97 (5.08-12.1)
12-hr	2.28 (1.79-2.88)	2.77 (2.17-3.50)	3.57 (2.79-4.53)	4.24 (3.29-5.40)	5.15 (3.89-6.88)	5.83 (4.32-7.96)	6.56 (4.75-9.33)	7.45 (5.06-10.7)	8.80 (5.76-13.1)	9.95 (6.37-15.1)
24-hr	2.72 (2.15-3.42)	3.33 (2.63-4.18)	4.32 (3.40-5.44)	5.14 (4.02-6.51)	6.27 (4.77-8.33)	7.11 (5.30-9.65)	8.01 (5.84-11.3)	9.12 (6.22-13.0)	10.8 (7.10-15.9)	12.3 (7.87-18.4)
2-day	3.05 (2.42-3.80)	3.78 (3.00-4.71)	4.97 (3.93-6.22)	5.95 (4.69-7.49)	7.31 (5.60-9.67)	8.31 (6.25-11.2)	9.41 (6.92-13.3)	10.8 (7.38-15.3)	12.9 (8.51-18.9)	14.8 (9.53-22.0)
3-day	3.30 (2.64-4.10)	4.08 (3.26-5.08)	5.36 (4.26-6.68)	6.42 (5.07-8.05)	7.88 (6.05-10.4)	8.95 (6.76-12.1)	10.1 (7.47-14.3)	11.6 (7.96-16.4)	13.9 (9.18-20.3)	15.9 (10.3-23.6)
4-day	3.55 (2.84-4.39)	4.36 (3.49-5.40)	5.69 (4.53-7.07)	6.79 (5.38-8.49)	8.31 (6.39-10.9)	9.42 (7.12-12.7)	10.6 (7.86-14.9)	12.2 (8.36-17.1)	14.5 (9.60-21.1)	16.6 (10.7-24.5)
7-day	4.24 (3.42-5.23)	5.11 (4.11-6.30)	6.52 (5.22-8.07)	7.70 (6.13-9.57)	9.31 (7.19-12.1)	10.5 (7.98-14.0)	11.8 (8.70-16.3)	13.4 (9.22-18.7)	15.7 (10.4-22.7)	17.8 (11.5-26.1)
10-day	4.92 (3.97-6.04)	5.82 (4.69-7.15)	7.28 (5.85-8.98)	8.50 (6.79-10.5)	10.2 (7.87-13.2)	11.4 (8.55-15.1)	12.8 (9.39-17.5)	14.3 (9.91-19.9)	16.6 (11.1-23.9)	18.6 (12.0-27.2)
20-day	6.95 (5.65-8.47)	7.91 (6.42-9.65)	9.48 (7.67-11.6)	10.8 (8.67-13.3)	12.6 (9.76-16.1)	13.9 (10.6-18.1)	15.3 (11.2-20.6)	16.9 (11.7-23.2)	19.0 (12.7-27.0)	20.6 (13.4-30.0)
30-day	8.62 (7.04-10.5)	9.62 (7.85-11.7)	11.3 (9.15-13.7)	12.6 (10.2-15.5)	14.5 (11.3-18.4)	15.9 (12.1-20.5)	17.4 (12.7-23.1)	18.8 (13.2-25.8)	20.8 (13.9-29.4)	22.2 (14.5-32.2)
45-day	10.7 (8.76-12.9)	11.7 (9.61-14.2)	13.5 (11.0-16.3)	14.9 (12.1-18.2)	16.8 (13.1-21.2)	18.4 (14.0-23.5)	19.8 (14.5-26.1)	21.2 (14.9-28.0)	23.0 (15.4-32.4)	24.2 (15.8-34.8)
60-day	12.4 (10.2-15.0)	13.5 (11.1-16.3)	15.3 (12.5-18.5)	16.7 (13.6-20.4)	18.8 (14.7-23.5)	20.4 (15.5-25.9)	21.9 (16.0-28.5)	23.2 (16.3-31.5)	24.8 (16.7-34.8)	25.9 (16.9-37.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: Precipitation frequency estimates Submit

Main Link Categories:
Home | OWP

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Water Prediction (OWP)
1325 East West Highway
Silver Spring, MD 20910
Page Author: HDSC webmaster
Page last modified: April 21, 2017

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

FD 250 Turnpike, LLC
Owner Name

250 Turnpike Road
Street Address

27/002A
Map/Lot #

Southborough
City

MA
State

01772
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

DH 21822
11-13-2023

2. Soil Survey Available? ☒ Yes ☐ No If yes:

Web soil survey
Source

310B
Soil Map Unit

Woodbridge(near edge of mapped Canton)
Soil Name

severe
Soil Limitations

Till
Soil Parent material

uncertain
Landform

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes:

Year Published/Source

Map Unit

Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer:

Wetland Type

7. Current Water Resource Conditions (USGS): 11/13/23
Month/Day/ Year
Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed:

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 21 (Hole #) 11-13-23 (Date) 9:40 (Time) 33° PTLY CLOUDY (Weather) (Latitude) (Longitude)

1. Land Use WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) Vegetation SOME STONES (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 6/0 (Slope (%))
   Description of Location: SOUTH OF EXISTING PARKING
2. Soil Parent Material: TILL UNCERTAIN (Landform) UNCERTAIN (Position on Landscape (SU, SH, BS, FS, TS))
3. Distances from: Open Water Body 120 feet; Property Line 15' feet; Drainage Way ✓ feet; Drinking Water Well ✓ feet; Wetlands 80 feet; Other ____ feet
4. Unsuitable Materials Present: ☑ Yes ☐ No If Yes: ☐ Disturbed Soil ☑ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock
5. Groundwater Observed: ☐ Yes ☑ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-30"	FILL	(MOSTLY SAND)						10			
30"-66"	C1	LOAMY SAND	10YR 7/3				10	25			
66"-88"	C2	LOAMY SAND	10YR 7/3			10YR 5/6 & 10YR 7/1	10	25			

Additional Notes: -C1, C2 JUST SLIGHTLY BETTER THAN SANDY LOAM TEXTURE NOT ON THE SAND SIDE OF THE RANGE

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 27 (Hole #) 11-13-23 (Date) 10:00 (Time) 35° PTLY CLOUDY (Weather) ____ (Latitude) ____ (Longitude)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) ____ (Vegetation) SOME STONES (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 6% (Slope (%))

Description of Location: WEST OF WC FLAG B16R

2. Soil Parent Material: TILL ____ UNCERTAIN (Landform) UNCERTAIN (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body ~55 feet; Property Line 70 feet FROM #125; Drainage Way ____ feet; Drinking Water Well ____ feet; Wetlands 35 feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6"	Ap	SANDY LOAM	10YR3/2								
6"-30"	B	SANDY LOAM	10YR5/6								
30"-42"	C1	LOAMY SAND	10YR7/3				10	25			
42"-72"	C2	LOAMY SAND	10YR7/2			>5% 10YR5/6	10	25			

Additional Notes: - LOAMY SAND TEXTURED (BARELY) IN MULTIPLE HAND TESTS

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole # 21	Obs. Hole # 22
☑ Depth observed standing water in observation hole	NOT OBS ~~inches~~	NOT OBS inches
☑ Depth weeping from side of observation hole	NOT OBS inches	NOT OBS inches
☑ Depth to soil redoximorphic features (mottles)	66" inches	42" inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	____ inches	____ inches

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# ____ S_c ____ S_r ____ OW_c ____ OW_{max} ____ OW_r ____ S_h ____

2. Estimated Depth to High Groundwater: ____ inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: 30" 16" inches Lower boundary: 88" 72" inches

c. If no, at what depth was impervious material observed? Upper boundary: ____ inches Lower boundary: ____ inches

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

11/13/23
Date

JAMES LETOURNEAU SE 2421
Typed or Printed Name of Soil Evaluator / License #

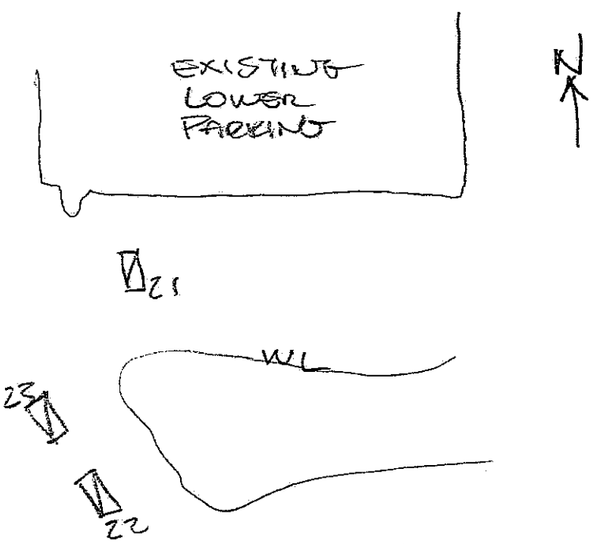
JUN 24
Expiration Date of License

Name of Approving Authority Witness

Approving Authority

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:



Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

FD 250 Turnpike, LLC
Owner Name

250 Turnpike Road
Street Address

27/002A
Map/Lot #

Southborough
City

MA
State

01772
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: Web soil survey (Source) 310B (Soil Map Unit) DH23 11/13/2023

Woodbridge(near edge of mapped Canton)
Soil Name

severe
Soil Limitations

Till
Soil Parent material

uncertain
Landform

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes: (Year Published/Source) (Map Unit)

Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No If yes, MassGIS Wetland Data Layer: (Wetland Type)

7. Current Water Resource Conditions (USGS): 11/13/23 (Month/Day/ Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed:

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 23 (Hole #) 11/13/23 (Date) 10:20 (Time) 33° PTLY CLOUDY (Weather) ____ (Latitude) ____ Longitude:

1. Land Use WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) DECIDUOUS TREES (Vegetation) SOME STONES (Surface Stones (e.g., cobbles, stones, boulders, etc.)) ____ Slope (%)

Description of Location: NEAR TOE OF SLOPE BOTH NORTH & SOUTH

2. Soil Parent Material: TILL UNCERTAIN (Landform) UNCERTAIN (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body 60' feet; Property Line 80' feet (TO HOUSE); Drainage Way ____ feet; Drinking Water Well ____ feet; Wetlands 40 feet; Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6"	Ap	SANDY LOAM	10YR 3/2								
6"-28"	B	SANDY LOAM	10YR 7/6								
28"-40"	C1	LOAMY SAND	10YR 7/3				10	20			
40"-74"	C2	LOAMY SAND	10YR 7/3			75% 10YR 5/6	10	20			

Additional Notes: VERY SIMILAR TO DH22

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: _____ Hole # _____ Date _____ Time _____ Weather _____ Latitude _____ Longitude:

1. Land Use: _____ (e.g., woodland, agricultural field, vacant lot, etc.) _____ Vegetation _____ Surface Stones (e.g., cobbles, stones, boulders, etc.) _____ Slope (%)

Description of Location: _____

2. Soil Parent Material: _____ _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			

Additional Notes: _____

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole # 13	Obs. Hole # _____
☑ Depth observed standing water in observation hole	NOT OBSERVED inches	_____ inches
☑ Depth weeping from side of observation hole	NOT OBSERVED inches	_____ inches
☑ Depth to soil redoximorphic features (mottles)	40" inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number _____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

2. Estimated Depth to High Groundwater: _____ inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: 6" inches Lower boundary: 74" inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of Southborough

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator — Date: 11/13/23

Typed or Printed Name of Soil Evaluator / License #: JAMES TETREAULT SE2421 — Expiration Date of License: JULY 25

Name of Approving Authority Witness — Approving Authority

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:

SEE LOG FOR DH'S 21 22