

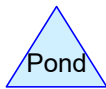
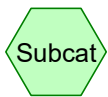
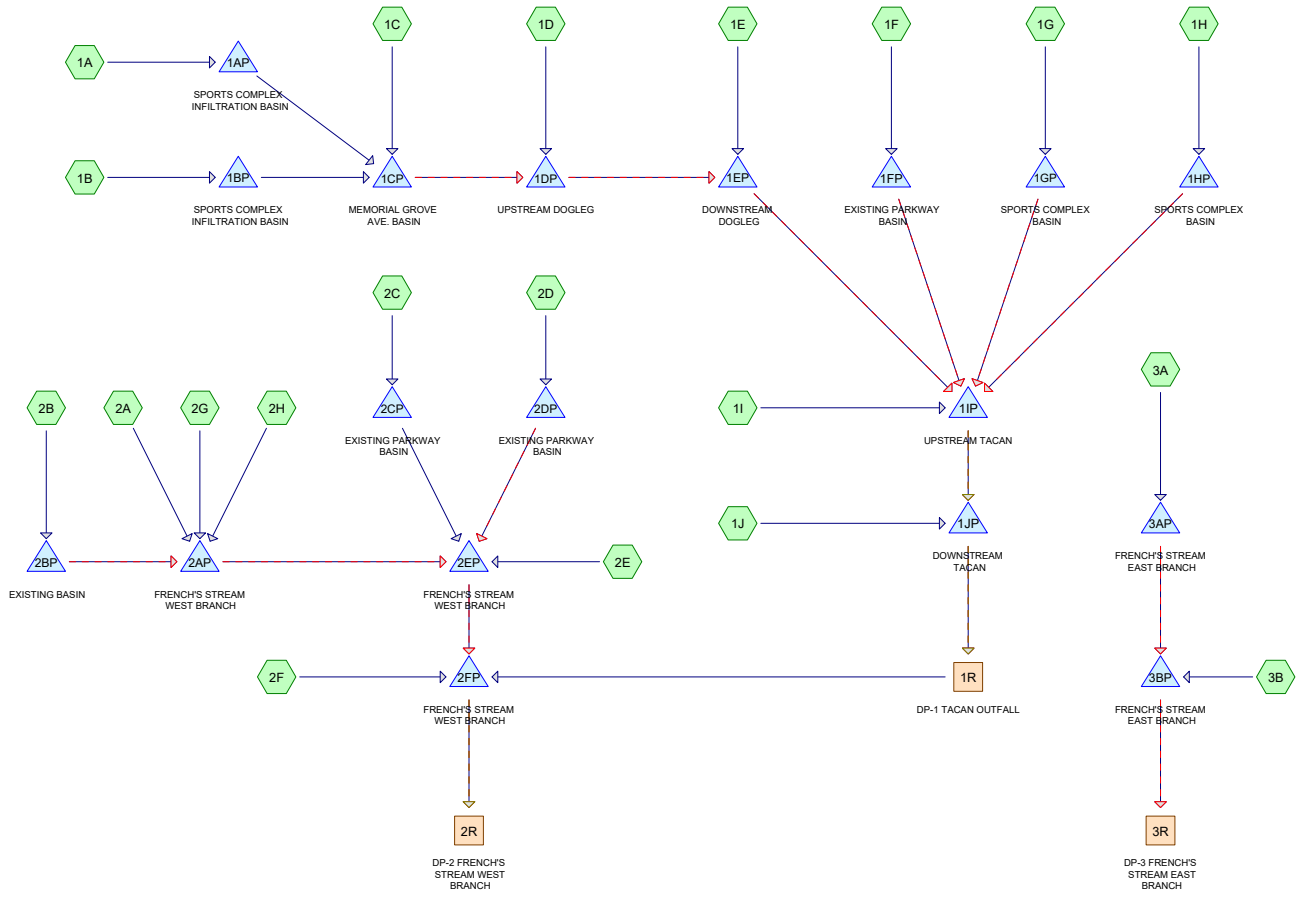
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# **Appendix C**

## Stormwater Management Supporting Documentation

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**Stormwater Management  
Attachment 1: Pre-Development HydroCAD Report**



**Routing Diagram for SWNAS - Existing Watershed**  
 Prepared by Tetra Tech, Printed 12/1/2023  
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# SWNAS - Existing Watershed

Prepared by Tetra Tech

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
50.470	39	>75% Grass cover, Good, HSG A (1A, 1B, 1C, 1D, 1I, 2C, 2D, 2E)
117.200	61	>75% Grass cover, Good, HSG B (1E, 1F, 1I, 2A, 2F, 2G, 2H, 3B)
62.430	74	>75% Grass cover, Good, HSG C (1C, 1D, 1F, 1I, 2A, 2B, 2C, 2D)
32.810	80	>75% Grass cover, Good, HSG D (1C, 1D, 1G, 1H, 1I, 2E, 2F, 3B)
1.080	85	Artificial Turf (1G, 1H)
1.560	30	Brush, Good, HSG A (1C, 1D, 1I)
24.380	48	Brush, Good, HSG B (1I, 1J)
0.990	65	Brush, Good, HSG C (1D, 1I)
39.550	73	Brush, Good, HSG D (1D, 1I, 1J, 3A, 3B)
2.700	100	Open Water (1C, 1F, 1I, 3B)
215.480	98	Pavement (1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B)
34.380	98	Roof (2A, 2B, 2G, 2H)
8.150	98	Roofs (1C, 1D, 1E, 1I, 2C)
26.950	30	Woods, Good, HSG A (1C, 1D, 1I, 2A, 2E)
51.760	55	Woods, Good, HSG B (1I, 2F, 3A, 3B)
18.830	70	Woods, Good, HSG C (1C, 1D, 1I, 2E)
376.010	77	Woods, Good, HSG D (1C, 1D, 1I, 2A, 2E, 2F, 3A, 3B)
1.620	57	Woods/grass comb., Poor, HSG A (2A)
<b>1,066.350</b>	<b>75</b>	<b>TOTAL AREA</b>



# SWNAS - Existing Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1A:

Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af, Depth= 2.54"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

# SWNAS - Existing Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1B:

Runoff = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 2.45"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

**SWNAS - Existing Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 37.06 cfs @ 12.61 hrs, Volume= 5.728 af, Depth= 1.49"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00'

**SWNAS - Existing Watershed**

*Type III 24-hr 2-year Rainfall=3.40"*

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n= 0.013 Concrete pipe, bends & connections

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44.5 3,027 Total

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1D:**

Runoff = 4.42 cfs @ 14.23 hrs, Volume= 1.767 af, Depth= 0.66"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1E:

Runoff = 25.58 cfs @ 12.09 hrs, Volume= 1.817 af, Depth= 1.93"  
Routed to Pond 1EP : DOWNSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1F:**

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.366 af, Depth= 1.36"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1G:**

Runoff = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af, Depth= 2.54"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			



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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1H:

Runoff = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af, Depth= 2.74"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1I:**

Runoff = 138.80 cfs @ 13.50 hrs, Volume= 36.843 af, Depth= 1.42"

Routed to Pond 1IP : UPSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1J:

Runoff = 5.24 cfs @ 12.41 hrs, Volume= 0.811 af, Depth= 0.53"  
Routed to Pond 1JP : DOWNSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2A:**

Runoff = 49.29 cfs @ 13.61 hrs, Volume= 14.315 af, Depth= 1.11"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
111.4	2,530	Total			

# SWNAS - Existing Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2B:

Runoff = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af, Depth= 2.74"  
Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2C:**

Runoff = 24.26 cfs @ 12.09 hrs, Volume= 1.798 af, Depth= 1.17"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2D:**

Runoff = 7.94 cfs @ 12.37 hrs, Volume= 0.993 af, Depth= 0.95"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2E:**

Runoff = 10.25 cfs @ 13.39 hrs, Volume= 3.087 af, Depth= 0.61"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			



**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2F:**

Runoff = 38.60 cfs @ 13.15 hrs, Volume= 9.170 af, Depth= 0.89"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
76.9	1,130	Total			

# SWNAS - Existing Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2G:

Assumed Tc value

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Runoff = 10.95 cfs @ 13.60 hrs, Volume= 3.126 af, Depth= 2.26"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2H:**

Assumed Tc value

Runoff = 4.32 cfs @ 13.60 hrs, Volume= 1.244 af, Depth= 1.70"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 3A:**

Runoff = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af, Depth= 1.42"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 3B:**

Runoff = 51.95 cfs @ 13.44 hrs, Volume= 14.215 af, Depth= 1.29"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

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*Type III 24-hr 2-year Rainfall=3.40"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 1.31" for 2-year event  
Inflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af  
Outflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 1.21" for 2-year event  
Inflow = 177.44 cfs @ 13.78 hrs, Volume= 87.973 af  
Outflow = 177.44 cfs @ 13.78 hrs, Volume= 87.973 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 2-year Rainfall=3.40"*

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### **Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event  
Inflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af  
Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af  
 Outflow = 0.78 cfs @ 12.37 hrs, Volume= 0.167 af, Atten= 66%, Lag= 17.0 min  
 Discarded = 0.12 cfs @ 11.44 hrs, Volume= 0.138 af  
 Primary = 0.66 cfs @ 12.37 hrs, Volume= 0.030 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 170.39' @ 12.37 hrs Surf.Area= 2,201 sf Storage= 2,430 cf

Plug-Flow detention time= 125.1 min calculated for 0.167 af (100% of inflow)  
 Center-of-Mass det. time= 125.1 min ( 920.7 - 795.6 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 11.44 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=0.66 cfs @ 12.37 hrs HW=170.39' TW=150.62' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 0.66 cfs @ 2.72 fps)

**SWNAS - Existing Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

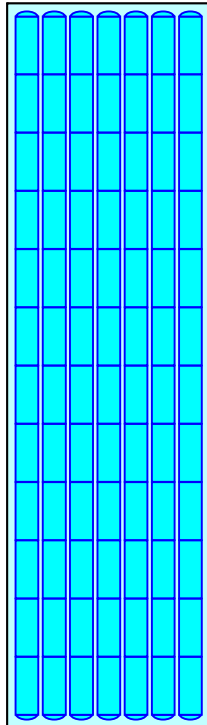
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 2.45" for 2-year event  
 Inflow = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af  
 Outflow = 0.98 cfs @ 12.33 hrs, Volume= 0.183 af, Atten= 61%, Lag= 14.4 min  
 Discarded = 0.13 cfs @ 11.38 hrs, Volume= 0.148 af  
 Primary = 0.85 cfs @ 12.33 hrs, Volume= 0.035 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 170.82' @ 12.33 hrs Surf.Area= 2,378 sf Storage= 2,564 cf

Plug-Flow detention time= 124.3 min calculated for 0.183 af (100% of inflow)  
 Center-of-Mass det. time= 124.3 min ( 924.5 - 800.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 11.38 hrs HW=169.06' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.84 cfs @ 12.33 hrs HW=170.82' TW=150.54' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 0.84 cfs @ 2.85 fps)

**SWNAS - Existing Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

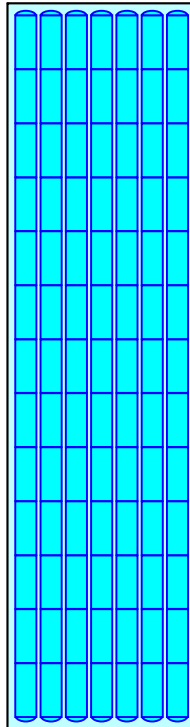
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 1.45" for 2-year event  
 Inflow = 37.75 cfs @ 12.61 hrs, Volume= 5.793 af  
 Outflow = 13.43 cfs @ 13.42 hrs, Volume= 5.733 af, Atten= 64%, Lag= 48.4 min  
 Primary = 13.43 cfs @ 13.42 hrs, Volume= 5.733 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.90' @ 13.42 hrs Surf.Area= 57,158 sf Storage= 98,206 cf

Plug-Flow detention time= 195.8 min calculated for 5.732 af (99% of inflow)  
 Center-of-Mass det. time= 190.0 min ( 1,067.2 - 877.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=13.43 cfs @ 13.42 hrs HW=151.90' TW=144.46' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 13.43 cfs @ 5.07 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 80.230 ac, 29.59% Impervious, Inflow Depth > 1.12" for 2-year event  
 Inflow = 16.92 cfs @ 13.73 hrs, Volume= 7.500 af  
 Outflow = 16.87 cfs @ 13.74 hrs, Volume= 7.500 af, Atten= 0%, Lag= 0.8 min  
 Primary = 8.08 cfs @ 13.75 hrs, Volume= 3.401 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG  
 Secondary = 8.79 cfs @ 13.73 hrs, Volume= 4.099 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.59' @ 14.08 hrs Surf.Area= 1,022 sf Storage= 489 cf

Plug-Flow detention time= 0.4 min calculated for 7.500 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 1,056.8 - 1,056.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=8.05 cfs @ 13.75 hrs HW=144.56' TW=144.09' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 8.05 cfs @ 2.10 fps)

**Secondary OutFlow** Max=8.76 cfs @ 13.73 hrs HW=144.56' TW=144.08' (Dynamic Tailwater)  
 ↑2=Culvert (Outlet Controls 8.76 cfs @ 2.14 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1EP: DOWNSTREAM DOGLEG**

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 1.22" for 2-year event  
 Inflow = 25.83 cfs @ 12.09 hrs, Volume= 9.317 af  
 Outflow = 25.49 cfs @ 12.10 hrs, Volume= 9.317 af, Atten= 1%, Lag= 0.7 min  
 Primary = 25.49 cfs @ 12.10 hrs, Volume= 9.317 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.18' @ 14.35 hrs Surf.Area= 1,669 sf Storage= 1,728 cf

Plug-Flow detention time= 1.4 min calculated for 9.316 af (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 1,012.7 - 1,011.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	<b>48.0" Round Culvert X 2.00</b> L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=25.40 cfs @ 12.10 hrs HW=143.79' TW=138.78' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 25.40 cfs @ 3.71 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 12.080 ac, 30.88% Impervious, Inflow Depth = 1.36" for 2-year event  
 Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.366 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.29' @ 24.34 hrs Surf.Area= 22,680 sf Storage= 59,490 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)  
 ↑1=Culvert ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)



**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af  
 Outflow = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af, Atten= 25%, Lag= 13.8 min  
 Primary = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 168.31' @ 12.62 hrs Surf.Area= 2,853 sf Storage= 3,949 cf

Plug-Flow detention time= 29.9 min calculated for 0.666 af (99% of inflow)  
 Center-of-Mass det. time= 22.5 min ( 839.6 - 817.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.97 cfs @ 12.62 hrs HW=168.31' TW=139.73' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 3.97 cfs @ 5.06 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 2.74" for 2-year event  
 Inflow = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af  
 Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af, Atten= 20%, Lag= 3.6 min  
 Primary = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 163.57' @ 12.14 hrs Surf.Area= 823 sf Storage= 816 cf

Plug-Flow detention time= 12.1 min calculated for 0.299 af (99% of inflow)  
 Center-of-Mass det. time= 7.7 min ( 792.9 - 785.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.21 cfs @ 12.14 hrs HW=163.56' TW=138.87' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 3.21 cfs @ 4.09 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1IP: UPSTREAM TACAN**

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 1.35" for 2-year event  
 Inflow = 158.48 cfs @ 13.50 hrs, Volume= 47.124 af  
 Outflow = 64.10 cfs @ 15.27 hrs, Volume= 47.121 af, Atten= 60%, Lag= 106.5 min  
 Primary = 32.05 cfs @ 15.27 hrs, Volume= 23.436 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Secondary = 32.05 cfs @ 15.27 hrs, Volume= 23.686 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 143.29' @ 15.27 hrs Surf.Area= 384,554 sf Storage= 651,132 cf

Plug-Flow detention time= 117.0 min calculated for 47.115 af (100% of inflow)  
 Center-of-Mass det. time= 116.8 min ( 1,066.2 - 949.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	<b>30.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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**Primary OutFlow** Max=32.05 cfs @ 15.27 hrs HW=143.29' TW=135.71' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 32.05 cfs @ 10.20 fps)

**Secondary OutFlow** Max=32.05 cfs @ 15.27 hrs HW=143.29' TW=135.71' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 32.05 cfs @ 10.20 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=137.80' TW=133.50' (Dynamic Tailwater)

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 1.31" for 2-year event  
 Inflow = 64.99 cfs @ 15.17 hrs, Volume= 47.932 af  
 Outflow = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af, Atten= 0%, Lag= 0.4 min  
 Primary = 64.99 cfs @ 15.18 hrs, Volume= 47.932 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.71' @ 15.18 hrs Surf.Area= 1,295 sf Storage= 1,432 cf

Plug-Flow detention time= 0.4 min calculated for 47.932 af (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 1,064.1 - 1,063.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=64.99 cfs @ 15.18 hrs HW=135.71' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 64.99 cfs @ 5.71 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 1.51" for 2-year event  
 Inflow = 86.32 cfs @ 13.49 hrs, Volume= 27.695 af  
 Outflow = 83.23 cfs @ 13.79 hrs, Volume= 27.695 af, Atten= 4%, Lag= 17.4 min  
 Primary = 40.50 cfs @ 13.79 hrs, Volume= 13.266 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 42.73 cfs @ 13.79 hrs, Volume= 14.428 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.84' @ 13.79 hrs Surf.Area= 48,939 sf Storage= 30,872 cf

Plug-Flow detention time= 3.6 min calculated for 27.695 af (100% of inflow)  
 Center-of-Mass det. time= 3.6 min ( 931.7 - 928.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=40.50 cfs @ 13.79 hrs HW=144.84' TW=141.56' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 40.50 cfs @ 5.27 fps)

**Secondary OutFlow** Max=42.73 cfs @ 13.79 hrs HW=144.84' TW=141.56' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 42.73 cfs @ 5.56 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 2.74" for 2-year event  
 Inflow = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af  
 Outflow = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af, Atten= 80%, Lag= 25.7 min  
 Primary = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.76' @ 12.51 hrs Surf.Area= 67,575 sf Storage= 163,282 cf

Plug-Flow detention time= 116.8 min calculated for 9.009 af (97% of inflow)  
 Center-of-Mass det. time= 96.7 min ( 881.8 - 785.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=25.15 cfs @ 12.51 hrs HW=147.76' TW=143.76' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 25.15 cfs @ 8.00 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 18.420 ac, 57.11% Impervious, Inflow Depth = 1.17" for 2-year event  
 Inflow = 24.26 cfs @ 12.09 hrs, Volume= 1.798 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.10' @ 24.34 hrs Surf.Area= 24,810 sf Storage= 78,326 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=138.00' TW=138.00' (Dynamic Tailwater)

- ↑ 1=Culvert ( Controls 0.00 cfs)
- ↑ 2=Orifice/Grate ( Controls 0.00 cfs)



**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.580 ac, 44.83% Impervious, Inflow Depth = 0.95" for 2-year event  
 Inflow = 7.94 cfs @ 12.37 hrs, Volume= 0.993 af  
 Outflow = 0.32 cfs @ 20.63 hrs, Volume= 0.124 af, Atten= 96%, Lag= 495.5 min  
 Primary = 0.32 cfs @ 20.63 hrs, Volume= 0.124 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.25' @ 20.63 hrs Surf.Area= 10,635 sf Storage= 38,403 cf

Plug-Flow detention time= 601.4 min calculated for 0.124 af (12% of inflow)  
 Center-of-Mass det. time= 441.6 min ( 1,329.5 - 887.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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**Primary OutFlow** Max=0.32 cfs @ 20.63 hrs HW=146.25' TW=139.04' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 0.32 cfs of 26.00 cfs potential flow)

↳ **2=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.76 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 312.160 ac, 23.88% Impervious, Inflow Depth = 1.19" for 2-year event  
 Inflow = 92.47 cfs @ 13.72 hrs, Volume= 30.905 af  
 Outflow = 91.37 cfs @ 13.89 hrs, Volume= 30.905 af, Atten= 1%, Lag= 10.2 min  
 Primary = 91.37 cfs @ 13.89 hrs, Volume= 30.905 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 141.57' @ 13.89 hrs Surf.Area= 25,957 sf Storage= 32,091 cf

Plug-Flow detention time= 5.0 min calculated for 30.905 af (100% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 942.7 - 937.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=91.37 cfs @ 13.89 hrs HW=141.57' TW=130.42' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 91.37 cfs @ 8.54 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 1.21" for 2-year event  
 Inflow = 177.59 cfs @ 13.71 hrs, Volume= 88.007 af  
 Outflow = 177.44 cfs @ 13.78 hrs, Volume= 87.973 af, Atten= 0%, Lag= 4.0 min  
 Primary = 65.60 cfs @ 13.78 hrs, Volume= 24.686 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 111.84 cfs @ 13.78 hrs, Volume= 63.287 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 130.43' @ 13.78 hrs Surf.Area= 19,660 sf Storage= 44,178 cf

Plug-Flow detention time= 5.9 min calculated for 87.961 af (100% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 1,013.6 - 1,008.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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**Primary OutFlow** Max=65.60 cfs @ 13.78 hrs HW=130.43' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Inlet Controls 65.60 cfs @ 5.73 fps)

**Secondary OutFlow** Max=111.84 cfs @ 13.78 hrs HW=130.43' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 111.84 cfs @ 6.77 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 1.42" for 2-year event  
 Inflow = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af  
 Outflow = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af, Atten= 1%, Lag= 3.1 min  
 Primary = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.79' @ 13.10 hrs Surf.Area= 3,411 sf Storage= 5,608 cf

Plug-Flow detention time= 4.0 min calculated for 7.319 af (100% of inflow)  
 Center-of-Mass det. time= 3.2 min ( 913.0 - 909.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=34.35 cfs @ 13.10 hrs HW=144.79' TW=132.44' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 34.35 cfs @ 5.52 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.50' TW=129.20' (Dynamic Tailwater)  
 ↑2=Spillway over Path ( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event  
 Inflow = 82.52 cfs @ 13.31 hrs, Volume= 21.534 af  
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 8%, Lag= 16.7 min  
 Primary = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 132.93' @ 13.59 hrs Surf.Area= 36,830 sf Storage= 59,880 cf

Plug-Flow detention time= 8.8 min calculated for 21.531 af (100% of inflow)  
 Center-of-Mass det. time= 8.8 min ( 943.4 - 934.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=76.28 cfs @ 13.59 hrs HW=132.93' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 76.28 cfs @ 6.74 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=129.20' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path ( Controls 0.00 cfs)

# SWNAS - Existing Watershed

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1A:

Runoff = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 4.19"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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



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## Summary for Subcatchment 1B:

Runoff = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af, Depth= 4.08"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

**SWNAS - Existing Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 73.04 cfs @ 12.61 hrs, Volume= 11.111 af, Depth= 2.89"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00'

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n= 0.013 Concrete pipe, bends & connections

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44.5 3,027 Total

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1D:**

Runoff = 12.72 cfs @ 14.07 hrs, Volume= 4.440 af, Depth= 1.65"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1E:**

Runoff = 45.35 cfs @ 12.09 hrs, Volume= 3.259 af, Depth= 3.46"  
Routed to Pond 1EP : DOWNSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1F:**

Runoff = 38.35 cfs @ 12.09 hrs, Volume= 2.725 af, Depth= 2.71"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

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

**SWNAS - Existing Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1G:**

Runoff = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af, Depth= 4.19"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1H:

Runoff = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af, Depth= 4.41"  
Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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



**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1I:**

Runoff = 280.25 cfs @ 13.39 hrs, Volume= 72.472 af, Depth= 2.80"  
 Routed to Pond 1IP : UPSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1J:

Runoff = 18.11 cfs @ 12.35 hrs, Volume= 2.193 af, Depth= 1.43"  
Routed to Pond 1JP : DOWNSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2A:**

Runoff = 111.02 cfs @ 13.49 hrs, Volume= 30.344 af, Depth= 2.36"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
111.4	2,530	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2B:**

Runoff = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af, Depth= 4.41"

Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2C:**

Runoff = 52.61 cfs @ 12.09 hrs, Volume= 3.752 af, Depth= 2.44"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2D:**

Runoff = 19.10 cfs @ 12.35 hrs, Volume= 2.213 af, Depth= 2.11"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2E:**

Runoff = 31.43 cfs @ 13.29 hrs, Volume= 7.938 af, Depth= 1.57"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2F:**

Runoff = 96.20 cfs @ 13.07 hrs, Volume= 20.811 af, Depth= 2.03"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
76.9	1,130	Total			



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## Summary for Subcatchment 2G:

Assumed Tc value

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Runoff = 18.52 cfs @ 13.47 hrs, Volume= 5.337 af, Depth= 3.87"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 8.14 cfs @ 13.60 hrs, Volume= 2.318 af, Depth= 3.17"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 3A:**

Runoff = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af, Depth= 2.80"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 3B:**

Runoff = 109.34 cfs @ 13.43 hrs, Volume= 28.778 af, Depth= 2.62"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 2.65" for 10-year event  
Inflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af  
Outflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 2.48" for 10-year event

Inflow = 293.61 cfs @ 13.63 hrs, Volume= 180.623 af

Outflow = 293.61 cfs @ 13.63 hrs, Volume= 180.623 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event  
Inflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af  
Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af  
 Outflow = 3.63 cfs @ 12.11 hrs, Volume= 0.276 af, Atten= 1%, Lag= 1.7 min  
 Discarded = 0.12 cfs @ 10.44 hrs, Volume= 0.170 af  
 Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.106 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.02' @ 12.11 hrs Surf.Area= 2,201 sf Storage= 2,829 cf

Plug-Flow detention time= 100.4 min calculated for 0.276 af (100% of inflow)  
 Center-of-Mass det. time= 100.4 min ( 882.5 - 782.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 10.44 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=3.37 cfs @ 12.11 hrs HW=170.99' TW=150.88' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 3.37 cfs @ 3.84 fps)



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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

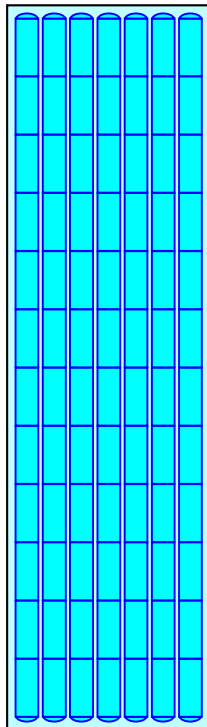
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 4.08" for 10-year event  
 Inflow = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af  
 Outflow = 3.62 cfs @ 12.13 hrs, Volume= 0.306 af, Atten= 12%, Lag= 2.6 min  
 Discarded = 0.13 cfs @ 10.34 hrs, Volume= 0.184 af  
 Primary = 3.49 cfs @ 12.13 hrs, Volume= 0.122 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.25' @ 12.13 hrs Surf.Area= 2,378 sf Storage= 2,975 cf

Plug-Flow detention time= 98.7 min calculated for 0.306 af (100% of inflow)  
 Center-of-Mass det. time= 98.7 min ( 884.9 - 786.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 10.34 hrs HW=169.06' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=3.48 cfs @ 12.13 hrs HW=171.25' TW=150.91' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 3.48 cfs @ 3.82 fps)

**SWNAS - Existing Watershed**

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

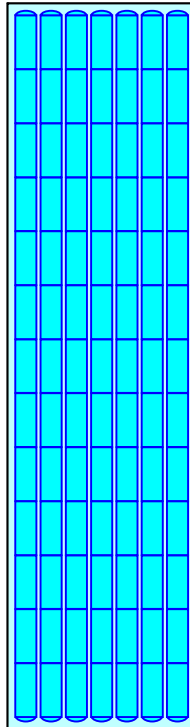
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 2.84" for 10-year event  
 Inflow = 74.20 cfs @ 12.61 hrs, Volume= 11.339 af  
 Outflow = 26.36 cfs @ 13.37 hrs, Volume= 11.278 af, Atten= 64%, Lag= 45.7 min  
 Primary = 26.36 cfs @ 13.37 hrs, Volume= 11.278 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 153.47' @ 13.37 hrs Surf.Area= 66,324 sf Storage= 195,497 cf

Plug-Flow detention time= 156.5 min calculated for 11.276 af (99% of inflow)  
 Center-of-Mass det. time= 153.5 min ( 1,010.8 - 857.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=26.36 cfs @ 13.37 hrs HW=153.47' TW=145.63' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 26.36 cfs @ 6.63 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 80.230 ac, 29.59% Impervious, Inflow Depth > 2.35" for 10-year event  
 Inflow = 37.68 cfs @ 13.75 hrs, Volume= 15.718 af  
 Outflow = 37.00 cfs @ 13.86 hrs, Volume= 15.718 af, Atten= 2%, Lag= 6.4 min  
 Primary = 18.18 cfs @ 13.88 hrs, Volume= 7.533 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG  
 Secondary = 18.82 cfs @ 13.84 hrs, Volume= 8.184 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.01' @ 14.26 hrs Surf.Area= 5,943 sf Storage= 4,848 cf

Plug-Flow detention time= 1.8 min calculated for 15.718 af (100% of inflow)  
 Center-of-Mass det. time= 1.8 min ( 1,006.7 - 1,005.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=18.09 cfs @ 13.88 hrs HW=145.95' TW=145.47' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 18.09 cfs @ 2.45 fps)

**Secondary OutFlow** Max=18.73 cfs @ 13.84 hrs HW=145.94' TW=145.45' (Dynamic Tailwater)  
 ↑**2=Culvert** (Outlet Controls 18.73 cfs @ 2.47 fps)

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**Summary for Pond 1EP: DOWNSTREAM DOGLEG**

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 2.49" for 10-year event  
 Inflow = 47.87 cfs @ 12.09 hrs, Volume= 18.977 af  
 Outflow = 47.09 cfs @ 12.11 hrs, Volume= 18.977 af, Atten= 2%, Lag= 0.8 min  
 Primary = 47.09 cfs @ 12.11 hrs, Volume= 18.977 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.62' @ 14.68 hrs Surf.Area= 3,551 sf Storage= 5,221 cf

Plug-Flow detention time= 3.0 min calculated for 18.977 af (100% of inflow)  
 Center-of-Mass det. time= 3.0 min ( 975.4 - 972.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	<b>48.0" Round Culvert X 2.00</b> L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=46.86 cfs @ 12.11 hrs HW=144.53' TW=139.94' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 46.86 cfs @ 4.21 fps)

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 12.080 ac, 30.88% Impervious, Inflow Depth = 2.71" for 10-year event  
 Inflow = 38.35 cfs @ 12.09 hrs, Volume= 2.725 af  
 Outflow = 1.95 cfs @ 14.95 hrs, Volume= 1.234 af, Atten= 95%, Lag= 171.6 min  
 Primary = 1.95 cfs @ 14.95 hrs, Volume= 1.234 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.16' @ 14.95 hrs Surf.Area= 24,770 sf Storage= 79,920 cf

Plug-Flow detention time= 453.6 min calculated for 1.234 af (45% of inflow)  
 Center-of-Mass det. time= 333.7 min ( 1,162.6 - 828.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.95 cfs @ 14.95 hrs HW=147.16' TW=144.89' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 1.95 cfs @ 3.25 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af  
 Outflow = 5.67 cfs @ 12.67 hrs, Volume= 1.102 af, Atten= 34%, Lag= 17.1 min  
 Primary = 5.34 cfs @ 12.67 hrs, Volume= 1.098 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.33 cfs @ 12.67 hrs, Volume= 0.003 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.36' @ 12.67 hrs Surf.Area= 4,179 sf Storage= 7,713 cf

Plug-Flow detention time= 26.1 min calculated for 1.102 af (99% of inflow)  
 Center-of-Mass det. time= 21.7 min ( 825.4 - 803.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.34 cfs @ 12.67 hrs HW=169.36' TW=141.60' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.34 cfs @ 6.79 fps)

**Secondary OutFlow** Max=0.33 cfs @ 12.67 hrs HW=169.36' TW=141.60' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.33 cfs @ 0.64 fps)



**SWNAS - Existing Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 4.41" for 10-year event  
 Inflow = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af  
 Outflow = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af, Atten= 31%, Lag= 4.9 min  
 Primary = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.27' @ 12.17 hrs Surf.Area= 1,803 sf Storage= 1,616 cf

Plug-Flow detention time= 9.8 min calculated for 0.483 af (100% of inflow)  
 Center-of-Mass det. time= 6.8 min ( 779.7 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.34 cfs @ 12.17 hrs HW=164.27' TW=140.13' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 4.34 cfs @ 5.52 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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**Summary for Pond 1IP: UPSTREAM TACAN**

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 2.70" for 10-year event  
 Inflow = 322.78 cfs @ 13.39 hrs, Volume= 94.267 af  
 Outflow = 75.62 cfs @ 16.52 hrs, Volume= 94.263 af, Atten= 77%, Lag= 187.9 min  
 Primary = 37.81 cfs @ 16.52 hrs, Volume= 47.067 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Secondary = 37.81 cfs @ 16.52 hrs, Volume= 47.196 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.05' @ 16.52 hrs Surf.Area= 1,099,064 sf Storage= 1,895,130 cf

Plug-Flow detention time= 273.9 min calculated for 94.250 af (100% of inflow)  
 Center-of-Mass det. time= 273.7 min ( 1,203.9 - 930.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	<b>30.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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**Primary OutFlow** Max=37.81 cfs @ 16.52 hrs HW=145.05' TW=135.92' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 37.81 cfs @ 12.03 fps)

**Secondary OutFlow** Max=37.81 cfs @ 16.52 hrs HW=145.05' TW=135.92' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 37.81 cfs @ 12.03 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=137.80' TW=133.50' (Dynamic Tailwater)

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

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**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 2.65" for 10-year event  
 Inflow = 77.14 cfs @ 15.71 hrs, Volume= 96.456 af  
 Outflow = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af, Atten= 0%, Lag= 0.4 min  
 Primary = 77.14 cfs @ 15.72 hrs, Volume= 96.456 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.93' @ 15.72 hrs Surf.Area= 1,421 sf Storage= 1,724 cf

Plug-Flow detention time= 0.4 min calculated for 96.443 af (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 1,197.1 - 1,196.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=77.14 cfs @ 15.72 hrs HW=135.93' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 77.14 cfs @ 5.97 fps)

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 2.87" for 10-year event  
 Inflow = 162.90 cfs @ 13.49 hrs, Volume= 52.697 af  
 Outflow = 142.57 cfs @ 13.98 hrs, Volume= 52.697 af, Atten= 12%, Lag= 29.5 min  
 Primary = 69.87 cfs @ 13.98 hrs, Volume= 25.483 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 72.70 cfs @ 13.98 hrs, Volume= 27.214 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.13' @ 13.98 hrs Surf.Area= 130,203 sf Storage= 142,749 cf

Plug-Flow detention time= 8.1 min calculated for 52.689 af (100% of inflow)  
 Center-of-Mass det. time= 8.1 min ( 926.1 - 917.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=69.87 cfs @ 13.98 hrs HW=146.13' TW=143.46' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 69.87 cfs @ 6.27 fps)

**Secondary OutFlow** Max=72.70 cfs @ 13.98 hrs HW=146.13' TW=143.46' (Dynamic Tailwater)  
 ↑2=Culvert (Barrel Controls 72.70 cfs @ 6.52 fps)

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 4.41" for 10-year event  
 Inflow = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af  
 Outflow = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af, Atten= 84%, Lag= 28.6 min  
 Primary = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.13' @ 12.56 hrs Surf.Area= 81,286 sf Storage= 266,655 cf

Plug-Flow detention time= 125.7 min calculated for 14.696 af (98% of inflow)  
 Center-of-Mass det. time= 112.3 min ( 885.2 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=30.75 cfs @ 12.56 hrs HW=149.13' TW=144.44' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 30.75 cfs @ 9.79 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 18.420 ac, 57.11% Impervious, Inflow Depth = 2.44" for 10-year event  
 Inflow = 52.61 cfs @ 12.09 hrs, Volume= 3.752 af  
 Outflow = 3.17 cfs @ 14.47 hrs, Volume= 1.413 af, Atten= 94%, Lag= 143.0 min  
 Primary = 3.17 cfs @ 14.47 hrs, Volume= 1.413 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.25' @ 14.47 hrs Surf.Area= 28,608 sf Storage= 108,793 cf

Plug-Flow detention time= 354.8 min calculated for 1.413 af (38% of inflow)  
 Center-of-Mass det. time= 228.0 min ( 1,064.4 - 836.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=3.17 cfs @ 14.47 hrs HW=146.25' TW=143.44' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 3.17 cfs of 38.80 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Weir Controls 3.17 cfs @ 1.62 fps)

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.580 ac, 44.83% Impervious, Inflow Depth = 2.11" for 10-year event  
 Inflow = 19.10 cfs @ 12.35 hrs, Volume= 2.213 af  
 Outflow = 7.10 cfs @ 12.85 hrs, Volume= 1.344 af, Atten= 63%, Lag= 30.1 min  
 Primary = 7.10 cfs @ 12.85 hrs, Volume= 1.344 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.62' @ 12.85 hrs Surf.Area= 11,206 sf Storage= 42,395 cf

Plug-Flow detention time= 216.1 min calculated for 1.344 af (61% of inflow)  
 Center-of-Mass det. time= 102.0 min ( 965.2 - 863.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63



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**Primary OutFlow** Max=7.10 cfs @ 12.85 hrs HW=146.62' TW=141.72' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 7.10 cfs of 27.56 cfs potential flow)

↳ **2=Orifice/Grate** (Weir Controls 7.10 cfs @ 2.12 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 312.160 ac, 23.88% Impervious, Inflow Depth = 2.44" for 10-year event  
 Inflow = 171.28 cfs @ 13.77 hrs, Volume= 63.391 af  
 Outflow = 164.11 cfs @ 14.21 hrs, Volume= 63.391 af, Atten= 4%, Lag= 26.4 min  
 Primary = 164.11 cfs @ 14.21 hrs, Volume= 63.391 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 143.51' @ 14.21 hrs Surf.Area= 52,987 sf Storage= 112,572 cf

Plug-Flow detention time= 7.4 min calculated for 63.382 af (100% of inflow)  
 Center-of-Mass det. time= 7.4 min ( 939.5 - 932.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=164.11 cfs @ 14.21 hrs HW=143.51' TW=131.69' (Dynamic Tailwater)  
 ↑**1=Culvert** (Inlet Controls 164.11 cfs @ 8.36 fps)

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**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 2.48" for 10-year event  
 Inflow = 296.18 cfs @ 13.42 hrs, Volume= 180.659 af  
 Outflow = 293.61 cfs @ 13.63 hrs, Volume= 180.623 af, Atten= 1%, Lag= 12.9 min  
 Primary = 119.47 cfs @ 13.63 hrs, Volume= 59.794 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 174.14 cfs @ 13.63 hrs, Volume= 120.829 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 131.81' @ 13.63 hrs Surf.Area= 49,819 sf Storage= 85,540 cf

Plug-Flow detention time= 5.2 min calculated for 180.623 af (100% of inflow)  
 Center-of-Mass det. time= 4.6 min ( 1,078.8 - 1,074.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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*Type III 24-hr 10-year Rainfall=5.10"*

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**Primary OutFlow** Max=119.47 cfs @ 13.63 hrs HW=131.81' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 119.47 cfs @ 7.25 fps)

**Secondary OutFlow** Max=174.14 cfs @ 13.63 hrs HW=131.81' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 174.14 cfs @ 7.77 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 2.80" for 10-year event  
 Inflow = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af  
 Outflow = 61.56 cfs @ 13.30 hrs, Volume= 14.402 af, Atten= 12%, Lag= 15.3 min  
 Primary = 60.25 cfs @ 13.30 hrs, Volume= 14.376 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 1.31 cfs @ 13.30 hrs, Volume= 0.027 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.83' @ 13.30 hrs Surf.Area= 28,525 sf Storage= 31,582 cf

Plug-Flow detention time= 5.1 min calculated for 14.402 af (100% of inflow)  
 Center-of-Mass det. time= 4.6 min ( 894.7 - 890.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=60.25 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 60.25 cfs @ 8.52 fps)

**Secondary OutFlow** Max=1.31 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 1.31 cfs @ 0.98 fps)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event  
 Inflow = 169.73 cfs @ 13.43 hrs, Volume= 43.180 af  
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 10%, Lag= 20.5 min  
 Primary = 152.02 cfs @ 13.77 hrs, Volume= 43.159 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 1.42 cfs @ 13.77 hrs, Volume= 0.021 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.16' @ 13.77 hrs Surf.Area= 58,726 sf Storage= 164,766 cf

Plug-Flow detention time= 12.1 min calculated for 43.174 af (100% of inflow)  
 Center-of-Mass det. time= 12.1 min ( 927.1 - 914.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=152.01 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 152.01 cfs @ 8.20 fps)

**Secondary OutFlow** Max=1.42 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 1.42 cfs @ 0.63 fps)

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1A:

Runoff = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af, Depth= 5.27"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

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## Summary for Subcatchment 1B:

Runoff = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 5.15"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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



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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 97.47 cfs @ 12.61 hrs, Volume= 14.847 af, Depth= 3.86"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00'

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n= 0.013 Concrete pipe, bends & connections

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44.5 3,027 Total

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**Summary for Subcatchment 1D:**

Runoff = 19.29 cfs @ 13.92 hrs, Volume= 6.493 af, Depth= 2.41"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1E:**

Runoff = 58.27 cfs @ 12.09 hrs, Volume= 4.229 af, Depth= 4.49"

Routed to Pond 1EP : DOWNSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1F:**

Runoff = 51.74 cfs @ 12.09 hrs, Volume= 3.679 af, Depth= 3.65"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1G:**

Runoff = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af, Depth= 5.27"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1H:

Runoff = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af, Depth= 5.49"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1I:**

Runoff = 377.40 cfs @ 13.39 hrs, Volume= 97.331 af, Depth= 3.76"  
 Routed to Pond 1IP : UPSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			



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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1J:**

Runoff = 28.41 cfs @ 12.33 hrs, Volume= 3.284 af, Depth= 2.14"  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2A:**

Runoff = 154.99 cfs @ 13.49 hrs, Volume= 41.871 af, Depth= 3.26"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
111.4	2,530	Total			

# SWNAS - Existing Watershed

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2B:

Runoff = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af, Depth= 5.49"  
Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

# SWNAS - Existing Watershed

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2C:

Runoff = 72.47 cfs @ 12.09 hrs, Volume= 5.148 af, Depth= 3.35"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2D:**

Runoff = 27.18 cfs @ 12.35 hrs, Volume= 3.108 af, Depth= 2.96"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2E:**

Runoff = 48.10 cfs @ 13.28 hrs, Volume= 11.696 af, Depth= 2.32"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2F:**

Runoff = 138.40 cfs @ 13.07 hrs, Volume= 29.413 af, Depth= 2.87"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
76.9	1,130	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2G:

Assumed Tc value

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Runoff = 23.43 cfs @ 13.47 hrs, Volume= 6.803 af, Depth= 4.93"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>



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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 10.69 cfs @ 13.60 hrs, Volume= 3.052 af, Depth= 4.17"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 3A:**

Runoff = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af, Depth= 3.76"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 3B:**

Runoff = 149.28 cfs @ 13.43 hrs, Volume= 39.057 af, Depth= 3.55"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

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*Type III 24-hr 25-year Rainfall=6.20"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 3.58" for 25-year event

Inflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af

Outflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 3.40" for 25-year event

Inflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af

Outflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event  
Inflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af  
Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af  
 Outflow = 5.02 cfs @ 12.07 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.12 cfs @ 9.74 hrs, Volume= 0.186 af  
 Primary = 4.89 cfs @ 12.07 hrs, Volume= 0.161 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.26' @ 12.07 hrs Surf.Area= 2,201 sf Storage= 2,832 cf

Plug-Flow detention time= 91.8 min calculated for 0.347 af (100% of inflow)  
 Center-of-Mass det. time= 91.8 min ( 867.9 - 776.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115'/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 9.74 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=4.79 cfs @ 12.07 hrs HW=171.24' TW=151.22' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 4.79 cfs @ 4.17 fps)

**SWNAS - Existing Watershed**

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Type III 24-hr 25-year Rainfall=6.20"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

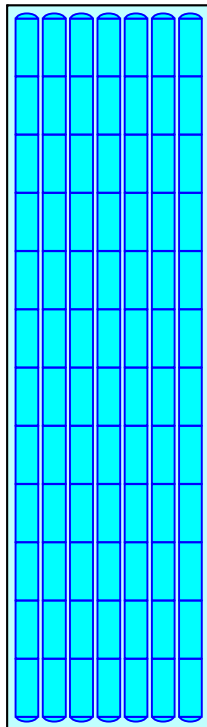
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone





**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 5.15" for 25-year event  
 Inflow = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af  
 Outflow = 5.49 cfs @ 12.08 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 9.62 hrs, Volume= 0.202 af  
 Primary = 5.36 cfs @ 12.08 hrs, Volume= 0.185 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.52' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,056 cf

Plug-Flow detention time= 89.9 min calculated for 0.386 af (100% of inflow)  
 Center-of-Mass det. time= 89.9 min ( 869.9 - 780.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap x 91 Inside #1</b> Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB-Impervious</b>
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic) Listed below (Recalc)</b>
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 9.62 hrs HW=169.06' (Free Discharge)

↑ **2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=5.22 cfs @ 12.08 hrs HW=171.50' TW=151.24' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 5.22 cfs @ 4.14 fps)

**SWNAS - Existing Watershed**

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Type III 24-hr 25-year Rainfall=6.20"

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

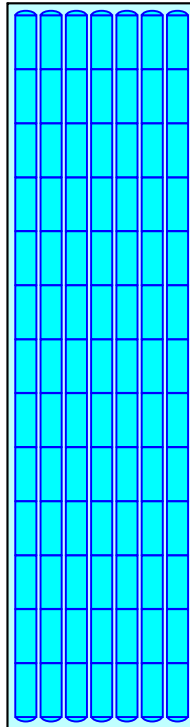
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 3.81" for 25-year event  
 Inflow = 98.92 cfs @ 12.61 hrs, Volume= 15.192 af  
 Outflow = 33.58 cfs @ 13.39 hrs, Volume= 15.130 af, Atten= 66%, Lag= 46.8 min  
 Primary = 33.58 cfs @ 13.39 hrs, Volume= 15.130 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 154.51' @ 13.39 hrs Surf.Area= 72,496 sf Storage= 267,257 cf

Plug-Flow detention time= 150.0 min calculated for 15.128 af (100% of inflow)  
 Center-of-Mass det. time= 147.8 min ( 996.7 - 848.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=33.58 cfs @ 13.39 hrs HW=154.51' TW=146.33' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 33.58 cfs @ 8.45 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 80.230 ac, 29.59% Impervious, Inflow Depth > 3.23" for 25-year event  
 Inflow = 51.54 cfs @ 13.85 hrs, Volume= 21.623 af  
 Outflow = 50.07 cfs @ 13.93 hrs, Volume= 21.623 af, Atten= 3%, Lag= 4.9 min  
 Primary = 24.92 cfs @ 13.95 hrs, Volume= 10.557 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG  
 Secondary = 25.15 cfs @ 13.92 hrs, Volume= 11.066 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.93' @ 14.39 hrs Surf.Area= 9,612 sf Storage= 11,983 cf

Plug-Flow detention time= 3.8 min calculated for 21.623 af (100% of inflow)  
 Center-of-Mass det. time= 3.8 min ( 995.1 - 991.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=24.80 cfs @ 13.95 hrs HW=146.82' TW=146.23' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 24.80 cfs @ 2.71 fps)

**Secondary OutFlow** Max=25.03 cfs @ 13.92 hrs HW=146.81' TW=146.22' (Dynamic Tailwater)  
 ↑**2=Culvert** (Outlet Controls 25.03 cfs @ 2.70 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1EP: DOWNSTREAM DOGLEG**

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 3.39" for 25-year event  
 Inflow = 63.46 cfs @ 12.09 hrs, Volume= 25.853 af  
 Outflow = 62.18 cfs @ 12.11 hrs, Volume= 25.853 af, Atten= 2%, Lag= 0.9 min  
 Primary = 62.18 cfs @ 12.11 hrs, Volume= 25.853 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.41' @ 14.63 hrs Surf.Area= 6,039 sf Storage= 8,815 cf

Plug-Flow detention time= 4.3 min calculated for 25.849 af (100% of inflow)  
 Center-of-Mass det. time= 4.3 min ( 967.3 - 963.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	<b>48.0" Round Culvert X 2.00</b> L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=61.90 cfs @ 12.11 hrs HW=145.03' TW=140.71' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 61.90 cfs @ 4.38 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 12.080 ac, 30.88% Impervious, Inflow Depth = 3.65" for 25-year event  
 Inflow = 51.74 cfs @ 12.09 hrs, Volume= 3.679 af  
 Outflow = 4.87 cfs @ 13.03 hrs, Volume= 2.188 af, Atten= 91%, Lag= 56.6 min  
 Primary = 4.87 cfs @ 13.03 hrs, Volume= 2.188 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.58' @ 13.03 hrs Surf.Area= 25,821 sf Storage= 90,661 cf

Plug-Flow detention time= 335.8 min calculated for 2.188 af (59% of inflow)  
 Center-of-Mass det. time= 228.4 min ( 1,048.6 - 820.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.87 cfs @ 13.03 hrs HW=147.58' TW=143.54' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 4.87 cfs @ 4.08 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af  
 Outflow = 9.07 cfs @ 12.55 hrs, Volume= 1.388 af, Atten= 15%, Lag= 10.5 min  
 Primary = 5.58 cfs @ 12.55 hrs, Volume= 1.309 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 3.49 cfs @ 12.55 hrs, Volume= 0.078 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.58' @ 12.55 hrs Surf.Area= 4,379 sf Storage= 8,644 cf

Plug-Flow detention time= 23.7 min calculated for 1.387 af (99% of inflow)  
 Center-of-Mass det. time= 20.2 min ( 817.9 - 797.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.58 cfs @ 12.55 hrs HW=169.57' TW=142.09' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.58 cfs @ 7.10 fps)

**Secondary OutFlow** Max=3.49 cfs @ 12.55 hrs HW=169.57' TW=142.09' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 3.49 cfs @ 1.41 fps)

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 5.49" for 25-year event  
 Inflow = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af  
 Outflow = 5.12 cfs @ 12.17 hrs, Volume= 0.602 af, Atten= 34%, Lag= 5.3 min  
 Primary = 4.74 cfs @ 12.17 hrs, Volume= 0.600 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.39 cfs @ 12.17 hrs, Volume= 0.002 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.58' @ 12.17 hrs Surf.Area= 2,625 sf Storage= 2,285 cf

Plug-Flow detention time= 8.9 min calculated for 0.602 af (100% of inflow)  
 Center-of-Mass det. time= 6.6 min ( 774.3 - 767.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.74 cfs @ 12.17 hrs HW=164.57' TW=140.94' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 4.74 cfs @ 6.03 fps)

**Secondary OutFlow** Max=0.38 cfs @ 12.17 hrs HW=164.57' TW=140.94' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.38 cfs @ 0.73 fps)



**SWNAS - Existing Watershed**

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**Summary for Pond 1IP: UPSTREAM TACAN**

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 3.65" for 25-year event  
 Inflow = 435.95 cfs @ 13.39 hrs, Volume= 127.361 af  
 Outflow = 94.05 cfs @ 16.71 hrs, Volume= 127.357 af, Atten= 78%, Lag= 199.2 min  
 Primary = 40.05 cfs @ 16.71 hrs, Volume= 61.754 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Secondary = 40.05 cfs @ 16.71 hrs, Volume= 61.903 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Tertiary = 13.95 cfs @ 16.71 hrs, Volume= 3.700 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.81' @ 16.71 hrs Surf.Area= 1,330,651 sf Storage= 2,822,453 cf

Plug-Flow detention time= 366.6 min calculated for 127.357 af (100% of inflow)  
 Center-of-Mass det. time= 366.5 min ( 1,287.8 - 921.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	<b>30.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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**Primary OutFlow** Max=40.05 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 40.05 cfs @ 12.75 fps)

**Secondary OutFlow** Max=40.05 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 40.05 cfs @ 12.75 fps)

**Tertiary OutFlow** Max=13.95 cfs @ 16.71 hrs HW=145.81' TW=136.23' (Dynamic Tailwater)

↑**3=Broad-Crested Rectangular Weir** (Weir Controls 13.95 cfs @ 1.50 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 3.58" for 25-year event  
 Inflow = 95.85 cfs @ 16.65 hrs, Volume= 130.641 af  
 Outflow = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af, Atten= 0%, Lag= 0.6 min  
 Primary = 95.85 cfs @ 16.66 hrs, Volume= 130.641 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.23' @ 16.66 hrs Surf.Area= 2,319 sf Storage= 2,276 cf

Plug-Flow detention time= 0.4 min calculated for 130.623 af (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 1,277.7 - 1,277.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=95.85 cfs @ 16.66 hrs HW=136.23' TW=0.00' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 95.85 cfs @ 6.32 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 3.82" for 25-year event  
 Inflow = 215.82 cfs @ 13.49 hrs, Volume= 70.130 af  
 Outflow = 168.18 cfs @ 13.96 hrs, Volume= 70.130 af, Atten= 22%, Lag= 28.4 min  
 Primary = 82.96 cfs @ 14.17 hrs, Volume= 34.167 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 85.55 cfs @ 13.96 hrs, Volume= 35.963 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.91' @ 14.17 hrs Surf.Area= 208,066 sf Storage= 275,343 cf

Plug-Flow detention time= 12.9 min calculated for 70.121 af (100% of inflow)  
 Center-of-Mass det. time= 12.9 min ( 927.9 - 915.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=82.92 cfs @ 14.17 hrs HW=146.91' TW=145.03' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 82.92 cfs @ 6.60 fps)

**Secondary OutFlow** Max=85.43 cfs @ 13.96 hrs HW=146.87' TW=144.88' (Dynamic Tailwater)  
 ↑2=Culvert (Inlet Controls 85.43 cfs @ 6.80 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 5.49" for 25-year event  
 Inflow = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af  
 Outflow = 33.70 cfs @ 12.59 hrs, Volume= 18.405 af, Atten= 86%, Lag= 30.3 min  
 Primary = 33.70 cfs @ 12.59 hrs, Volume= 18.405 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.96' @ 12.59 hrs Surf.Area= 87,833 sf Storage= 336,733 cf

Plug-Flow detention time= 138.8 min calculated for 18.405 af (98% of inflow)  
 Center-of-Mass det. time= 127.8 min ( 895.4 - 767.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=33.70 cfs @ 12.59 hrs HW=149.96' TW=144.82' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 33.70 cfs @ 10.73 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 18.420 ac, 57.11% Impervious, Inflow Depth = 3.35" for 25-year event  
 Inflow = 72.47 cfs @ 12.09 hrs, Volume= 5.148 af  
 Outflow = 10.52 cfs @ 12.63 hrs, Volume= 2.809 af, Atten= 85%, Lag= 32.6 min  
 Primary = 10.52 cfs @ 12.63 hrs, Volume= 2.809 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.54' @ 12.63 hrs Surf.Area= 29,622 sf Storage= 117,526 cf

Plug-Flow detention time= 249.7 min calculated for 2.809 af (55% of inflow)  
 Center-of-Mass det. time= 136.5 min ( 963.8 - 827.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=10.52 cfs @ 12.63 hrs HW=146.54' TW=141.98' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 10.52 cfs of 40.90 cfs potential flow)

↑ **2=Orifice/Grate** (Weir Controls 10.52 cfs @ 2.41 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.580 ac, 44.83% Impervious, Inflow Depth = 2.96" for 25-year event  
 Inflow = 27.18 cfs @ 12.35 hrs, Volume= 3.108 af  
 Outflow = 17.45 cfs @ 12.62 hrs, Volume= 2.239 af, Atten= 36%, Lag= 16.6 min  
 Primary = 17.45 cfs @ 12.62 hrs, Volume= 2.239 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.02' @ 12.62 hrs Surf.Area= 11,834 sf Storage= 47,025 cf

Plug-Flow detention time= 162.3 min calculated for 2.239 af (72% of inflow)  
 Center-of-Mass det. time= 67.0 min ( 920.2 - 853.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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**Primary OutFlow** Max=17.45 cfs @ 12.62 hrs HW=147.02' TW=141.95' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 17.45 cfs of 29.18 cfs potential flow)

↳ **2=Orifice/Grate** (Orifice Controls 17.45 cfs @ 4.36 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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



**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 312.160 ac, 23.88% Impervious, Inflow Depth = 3.34" for 25-year event  
 Inflow = 215.04 cfs @ 13.59 hrs, Volume= 86.875 af  
 Outflow = 193.74 cfs @ 14.39 hrs, Volume= 86.875 af, Atten= 10%, Lag= 47.5 min  
 Primary = 193.74 cfs @ 14.39 hrs, Volume= 86.875 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.08' @ 14.39 hrs Surf.Area= 72,655 sf Storage= 210,329 cf

Plug-Flow detention time= 10.7 min calculated for 86.863 af (100% of inflow)  
 Center-of-Mass det. time= 10.7 min ( 940.0 - 929.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=193.74 cfs @ 14.39 hrs HW=145.08' TW=132.30' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 193.74 cfs @ 9.87 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 3.40" for 25-year event  
 Inflow = 373.46 cfs @ 13.25 hrs, Volume= 246.930 af  
 Outflow = 363.68 cfs @ 13.54 hrs, Volume= 246.895 af, Atten= 3%, Lag= 17.5 min  
 Primary = 148.57 cfs @ 13.54 hrs, Volume= 84.548 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 215.11 cfs @ 13.54 hrs, Volume= 162.347 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 132.74' @ 13.54 hrs Surf.Area= 71,401 sf Storage= 142,442 cf

Plug-Flow detention time= 5.2 min calculated for 246.860 af (100% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 1,119.4 - 1,114.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

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**Primary OutFlow** Max=148.57 cfs @ 13.54 hrs HW=132.74' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 148.57 cfs @ 7.86 fps)

**Secondary OutFlow** Max=215.11 cfs @ 13.54 hrs HW=132.74' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 215.11 cfs @ 8.36 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 3.76" for 25-year event  
 Inflow = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af  
 Outflow = 80.94 cfs @ 13.31 hrs, Volume= 19.344 af, Atten= 13%, Lag= 16.5 min  
 Primary = 65.43 cfs @ 13.31 hrs, Volume= 18.404 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 15.51 cfs @ 13.31 hrs, Volume= 0.941 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.40' @ 13.31 hrs Surf.Area= 77,102 sf Storage= 58,131 cf

Plug-Flow detention time= 6.4 min calculated for 19.342 af (100% of inflow)  
 Center-of-Mass det. time= 6.2 min ( 887.8 - 881.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=65.43 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 65.43 cfs @ 9.26 fps)

**Secondary OutFlow** Max=15.51 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 15.51 cfs @ 2.23 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event  
 Inflow = 229.36 cfs @ 13.43 hrs, Volume= 58.401 af  
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 3%, Lag= 9.0 min  
 Primary = 166.13 cfs @ 13.58 hrs, Volume= 55.050 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 56.01 cfs @ 13.58 hrs, Volume= 3.351 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.81' @ 13.58 hrs Surf.Area= 66,525 sf Storage= 204,979 cf

Plug-Flow detention time= 12.7 min calculated for 58.393 af (100% of inflow)  
 Center-of-Mass det. time= 12.7 min ( 919.5 - 906.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=166.13 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 166.13 cfs @ 8.47 fps)

**Secondary OutFlow** Max=56.00 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 56.00 cfs @ 2.26 fps)

# SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1A:

Runoff = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af, Depth= 6.94"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1B:**

Runoff = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af, Depth= 6.83"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 135.86 cfs @ 12.61 hrs, Volume= 20.834 af, Depth= 5.41"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
0.690	30	Woods, Good, HSG A
3.980	70	Woods, Good, HSG C
2.380	77	Woods, Good, HSG D
0.150	30	Brush, Good, HSG A
6.810	39	>75% Grass cover, Good, HSG A
9.130	74	>75% Grass cover, Good, HSG C
3.270	80	>75% Grass cover, Good, HSG D
46.170	79	Weighted Average
26.410		57.20% Pervious Area
19.760		42.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00'



**SWNAS - Existing Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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n= 0.013 Concrete pipe, bends & connections

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44.5 3,027 Total

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**Summary for Subcatchment 1D:**

Runoff = 30.52 cfs @ 13.91 hrs, Volume= 9.985 af, Depth= 3.70"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 2.270	98	Pavement
* 0.200	98	Roofs
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
10.550	77	Woods, Good, HSG D
0.560	30	Brush, Good, HSG A
0.160	65	Brush, Good, HSG C
0.320	73	Brush, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
32.370	64	Weighted Average
29.900		92.37% Pervious Area
2.470		7.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
1.1	57	0.0273	0.83		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.5	154	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
2.9	116	0.0173	0.66		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
5.7	307	0.0326	0.90		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
3.8	49	0.0018	0.21		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
15.7	614	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
50.2	583	0.0015	0.19		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
25.0	407	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	121	0.0372	1.35		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
143.9	2,508	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1E:**

Runoff = 78.20 cfs @ 12.09 hrs, Volume= 5.760 af, Depth= 6.12"  
Routed to Pond 1EP : DOWNSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.380	98	Pavement
* 0.980	98	Roofs
3.940	61	>75% Grass cover, Good, HSG B
11.300	85	Weighted Average
3.940		34.87% Pervious Area
7.360		65.13% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1F:**

Runoff = 72.87 cfs @ 12.09 hrs, Volume= 5.217 af, Depth= 5.18"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.320	98	Pavement
* 0.410	100	Open Water
3.880	61	>75% Grass cover, Good, HSG B
4.470	74	>75% Grass cover, Good, HSG C
12.080	77	Weighted Average
8.350		69.12% Pervious Area
3.730		30.88% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1G:**

Runoff = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af, Depth= 6.94"  
 Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

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## Summary for Subcatchment 1H:

Runoff = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af, Depth= 7.18"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1I:**

Runoff = 531.06 cfs @ 13.39 hrs, Volume= 137.302 af, Depth= 5.30"

Routed to Pond 1IP : UPSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 111.920	98	Pavement
* 3.230	98	Roofs
* 0.140	100	Open Water
0.900	30	Woods, Good, HSG A
3.660	55	Woods, Good, HSG B
0.630	70	Woods, Good, HSG C
53.120	77	Woods, Good, HSG D
0.850	30	Brush, Good, HSG A
12.070	48	Brush, Good, HSG B
0.830	65	Brush, Good, HSG C
22.050	73	Brush, Good, HSG D
14.020	39	>75% Grass cover, Good, HSG A
56.110	61	>75% Grass cover, Good, HSG B
18.330	74	>75% Grass cover, Good, HSG C
13.090	80	>75% Grass cover, Good, HSG D
310.950	78	Weighted Average
195.660		62.92% Pervious Area
115.290		37.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1J:**

Runoff = 46.18 cfs @ 12.31 hrs, Volume= 5.168 af, Depth= 3.37"  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.780	98	Pavement
12.310	48	Brush, Good, HSG B
2.320	73	Brush, Good, HSG D
18.410	61	Weighted Average
14.630		79.47% Pervious Area
3.780		20.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0120	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
10.5	560	0.0160	0.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
22.2	660	Total			



**SWNAS - Existing Watershed**

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**Summary for Subcatchment 2A:**

Runoff = 226.01 cfs @ 13.49 hrs, Volume= 60.729 af, Depth= 4.72"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
12.500	30	Woods, Good, HSG A
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
154.350	73	Weighted Average
150.060		97.22% Pervious Area
4.290		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
37.9	1,525	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
111.4	2,530	Total			

# SWNAS - Existing Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2B:

Runoff = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af, Depth= 7.18"

Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2C:**

Runoff = 104.23 cfs @ 12.09 hrs, Volume= 7.424 af, Depth= 4.84"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 8.840	98	Pavement
* 1.680	98	Roofs
7.280	39	>75% Grass cover, Good, HSG A
0.620	74	>75% Grass cover, Good, HSG C
18.420	74	Weighted Average
7.900		42.89% Pervious Area
10.520		57.11% Impervious Area

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

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2D:**

Runoff = 40.34 cfs @ 12.34 hrs, Volume= 4.590 af, Depth= 4.38"  
 Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.640	98	Pavement
5.310	39	>75% Grass cover, Good, HSG A
1.630	74	>75% Grass cover, Good, HSG C
12.580	70	Weighted Average
6.940		55.17% Pervious Area
5.640		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0096	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.40"
0.2	31	0.0112	2.15		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
10.0	162	0.0015	0.27		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
11.3	457	0.0011	0.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.5	43	0.0054	1.49		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.3	43	0.1569	2.77		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.9	836	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2E:**

Runoff = 76.38 cfs @ 13.28 hrs, Volume= 18.122 af, Depth= 3.59"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.360	98	Pavement
7.660	30	Woods, Good, HSG A
9.500	70	Woods, Good, HSG C
26.720	77	Woods, Good, HSG D
12.800	39	>75% Grass cover, Good, HSG A
0.530	80	>75% Grass cover, Good, HSG D
60.570	63	Weighted Average
57.210		94.45% Pervious Area
3.360		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2F:**

Runoff = 207.68 cfs @ 13.07 hrs, Volume= 43.714 af, Depth= 4.26"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 12.830	98	Pavement
33.890	55	Woods, Good, HSG B
33.300	77	Woods, Good, HSG D
34.210	61	>75% Grass cover, Good, HSG B
8.770	80	>75% Grass cover, Good, HSG D
123.000	69	Weighted Average
110.170		89.57% Pervious Area
12.830		10.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
29.0	1,030	0.0140	0.59		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
76.9	1,130	Total			

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2G:**

Assumed Tc value

Runoff = 31.00 cfs @ 13.47 hrs, Volume= 9.092 af, Depth= 6.59"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

# SWNAS - Existing Watershed

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 14.69 cfs @ 13.47 hrs, Volume= 4.218 af, Depth= 5.76"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>



**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 3A:**

Runoff = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af, Depth= 5.30"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 3B:**

Runoff = 212.96 cfs @ 13.43 hrs, Volume= 55.695 af, Depth= 5.07"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

## **SWNAS - Existing Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 5.10" for 100-year event  
Inflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af  
Outflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

## **SWNAS - Existing Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 4.88" for 100-year event  
Inflow = 458.06 cfs @ 13.47 hrs, Volume= 354.670 af  
Outflow = 458.06 cfs @ 13.47 hrs, Volume= 354.670 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event  
Inflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af  
Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af  
 Outflow = 5.94 cfs @ 12.08 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.12 cfs @ 8.94 hrs, Volume= 0.207 af  
 Primary = 5.81 cfs @ 12.08 hrs, Volume= 0.250 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.41' @ 12.08 hrs Surf.Area= 2,201 sf Storage= 2,834 cf

Plug-Flow detention time= 82.8 min calculated for 0.457 af (100% of inflow)  
 Center-of-Mass det. time= 82.8 min ( 852.2 - 769.4 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 8.94 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=5.80 cfs @ 12.08 hrs HW=171.41' TW=151.84' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 5.80 cfs @ 4.37 fps)

**SWNAS - Existing Watershed**

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Type III 24-hr 100-year Rainfall=7.90"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

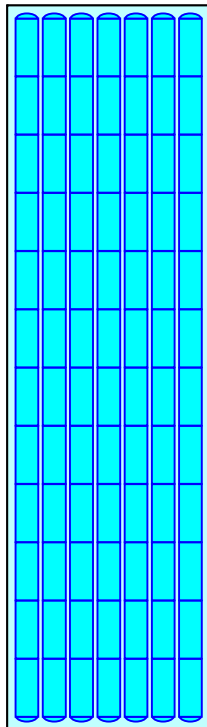
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 6.83" for 100-year event  
 Inflow = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af  
 Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 8.82 hrs, Volume= 0.224 af  
 Primary = 6.75 cfs @ 12.08 hrs, Volume= 0.288 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.80' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,060 cf

Plug-Flow detention time= 80.7 min calculated for 0.512 af (100% of inflow)  
 Center-of-Mass det. time= 80.7 min ( 853.7 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 8.82 hrs HW=169.06' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=6.70 cfs @ 12.08 hrs HW=171.78' TW=151.83' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 6.70 cfs @ 4.27 fps)



**SWNAS - Existing Watershed**

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

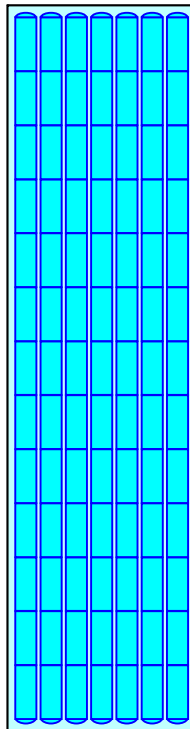
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



**SWNAS - Existing Watershed**

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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 5.36" for 100-year event  
 Inflow = 137.75 cfs @ 12.61 hrs, Volume= 21.372 af  
 Outflow = 42.71 cfs @ 13.43 hrs, Volume= 21.309 af, Atten= 69%, Lag= 49.7 min  
 Primary = 42.21 cfs @ 13.43 hrs, Volume= 21.298 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.50 cfs @ 13.43 hrs, Volume= 0.012 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 156.07' @ 13.43 hrs Surf.Area= 82,223 sf Storage= 388,123 cf

Plug-Flow detention time= 150.3 min calculated for 21.309 af (100% of inflow)  
 Center-of-Mass det. time= 148.4 min ( 987.7 - 839.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=42.21 cfs @ 13.43 hrs HW=156.07' TW=147.54' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 42.21 cfs @ 10.62 fps)

**Secondary OutFlow** Max=0.50 cfs @ 13.43 hrs HW=156.07' TW=147.54' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir(Weir Controls 0.50 cfs @ 0.71 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 80.230 ac, 29.59% Impervious, Inflow Depth > 4.68" for 100-year event  
 Inflow = 71.77 cfs @ 13.91 hrs, Volume= 31.294 af  
 Outflow = 65.48 cfs @ 13.92 hrs, Volume= 31.294 af, Atten= 9%, Lag= 1.1 min  
 Primary = 32.74 cfs @ 13.92 hrs, Volume= 15.457 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG  
 Secondary = 32.74 cfs @ 13.92 hrs, Volume= 15.838 af  
 Routed to Pond 1EP : DOWNSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.96' @ 14.67 hrs Surf.Area= 20,149 sf Storage= 41,249 cf

Plug-Flow detention time= 7.4 min calculated for 31.290 af (100% of inflow)  
 Center-of-Mass det. time= 7.4 min ( 988.1 - 980.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=32.54 cfs @ 13.92 hrs HW=148.39' TW=147.31' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 32.54 cfs @ 3.38 fps)

**Secondary OutFlow** Max=32.54 cfs @ 13.92 hrs HW=148.39' TW=147.31' (Dynamic Tailwater)  
 ↑**2=Culvert** (Outlet Controls 32.54 cfs @ 3.38 fps)

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1EP: DOWNSTREAM DOGLEG**

Inflow Area = 91.530 ac, 33.98% Impervious, Inflow Depth > 4.86" for 100-year event  
 Inflow = 85.25 cfs @ 12.09 hrs, Volume= 37.054 af  
 Outflow = 82.39 cfs @ 12.12 hrs, Volume= 37.054 af, Atten= 3%, Lag= 1.4 min  
 Primary = 82.39 cfs @ 12.12 hrs, Volume= 37.054 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.97' @ 14.84 hrs Surf.Area= 13,002 sf Storage= 23,625 cf

Plug-Flow detention time= 5.5 min calculated for 37.054 af (100% of inflow)  
 Center-of-Mass det. time= 5.5 min ( 963.0 - 957.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.10'	60,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.10	0	0	0
144.00	1,520	1,444	1,444
145.00	2,355	1,938	3,382
146.00	4,275	3,315	6,697
147.00	8,570	6,423	13,119
148.00	13,120	10,845	23,964
149.00	17,750	15,435	39,399
150.00	25,315	21,533	60,932

Device	Routing	Invert	Outlet Devices
#1	Primary	142.10'	<b>48.0" Round Culvert X 2.00</b> L= 2,830.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.10' / 134.60' S= 0.0027 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=81.99 cfs @ 12.12 hrs HW=145.78' TW=141.88' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 81.99 cfs @ 4.44 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 12.080 ac, 30.88% Impervious, Inflow Depth = 5.18" for 100-year event  
 Inflow = 72.87 cfs @ 12.09 hrs, Volume= 5.217 af  
 Outflow = 13.33 cfs @ 12.55 hrs, Volume= 3.726 af, Atten= 82%, Lag= 27.5 min  
 Primary = 13.33 cfs @ 12.55 hrs, Volume= 3.726 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.54' @ 12.55 hrs Surf.Area= 28,531 sf Storage= 116,776 cf

Plug-Flow detention time= 257.0 min calculated for 3.726 af (71% of inflow)  
 Center-of-Mass det. time= 165.6 min ( 975.8 - 810.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=13.33 cfs @ 12.55 hrs HW=148.54' TW=143.11' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 13.33 cfs @ 5.16 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=137.80' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af  
 Outflow = 13.09 cfs @ 12.47 hrs, Volume= 1.832 af, Atten= 5%, Lag= 6.0 min  
 Primary = 5.76 cfs @ 12.47 hrs, Volume= 1.607 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 7.33 cfs @ 12.47 hrs, Volume= 0.225 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.75' @ 12.47 hrs Surf.Area= 4,540 sf Storage= 9,423 cf

Plug-Flow detention time= 20.8 min calculated for 1.832 af (100% of inflow)  
 Center-of-Mass det. time= 18.1 min ( 809.0 - 790.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.76 cfs @ 12.47 hrs HW=169.75' TW=142.90' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.76 cfs @ 7.34 fps)

**Secondary OutFlow** Max=7.33 cfs @ 12.47 hrs HW=169.75' TW=142.90' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 7.33 cfs @ 1.81 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 7.18" for 100-year event  
 Inflow = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af  
 Outflow = 7.89 cfs @ 12.15 hrs, Volume= 0.788 af, Atten= 21%, Lag= 3.7 min  
 Primary = 5.00 cfs @ 12.15 hrs, Volume= 0.755 af  
 Routed to Pond 1IP : UPSTREAM TACAN  
 Secondary = 2.89 cfs @ 12.15 hrs, Volume= 0.033 af  
 Routed to Pond 1IP : UPSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.79' @ 12.15 hrs Surf.Area= 3,201 sf Storage= 2,902 cf

Plug-Flow detention time= 8.2 min calculated for 0.788 af (100% of inflow)  
 Center-of-Mass det. time= 6.2 min ( 767.9 - 761.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.00 cfs @ 12.15 hrs HW=164.79' TW=141.97' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.00 cfs @ 6.36 fps)

**Secondary OutFlow** Max=2.88 cfs @ 12.15 hrs HW=164.79' TW=141.97' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 2.88 cfs @ 1.44 fps)

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**Summary for Pond 1IP: UPSTREAM TACAN**

Inflow Area = 419.060 ac, 36.50% Impervious, Inflow Depth = 5.17" for 100-year event  
 Inflow = 608.26 cfs @ 13.39 hrs, Volume= 180.703 af  
 Outflow = 167.67 cfs @ 16.05 hrs, Volume= 180.699 af, Atten= 72%, Lag= 159.9 min  
 Primary = 42.08 cfs @ 16.05 hrs, Volume= 72.610 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Secondary = 42.08 cfs @ 16.05 hrs, Volume= 72.774 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN  
 Tertiary = 83.51 cfs @ 16.05 hrs, Volume= 35.315 af  
 Routed to Pond 1JP : DOWNSTREAM TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.54' @ 16.05 hrs Surf.Area= 1,566,257 sf Storage= 3,875,260 cf

Plug-Flow detention time= 368.4 min calculated for 180.699 af (100% of inflow)  
 Center-of-Mass det. time= 368.3 min ( 1,280.4 - 912.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	137.80'	4,634,030 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.80	0	0	0
138.00	42,340	4,234	4,234
139.00	55,626	48,983	53,217
140.00	71,656	63,641	116,858
141.00	96,790	84,223	201,081
142.00	154,769	125,780	326,860
143.00	296,905	225,837	552,697
144.00	600,300	448,603	1,001,300
145.00	1,084,818	842,559	1,843,859
146.00	1,388,214	1,236,516	3,080,375
147.00	1,719,095	1,553,655	4,634,030

Device	Routing	Invert	Outlet Devices
#1	Primary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.40' S= 0.0131 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	137.80'	<b>24.0" Round Culvert</b> L= 30.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 137.80' / 137.30' S= 0.0164 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#3	Tertiary	145.50'	<b>30.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63



## **SWNAS - Existing Watershed**

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**Primary OutFlow** Max=42.08 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 42.08 cfs @ 13.39 fps)

**Secondary OutFlow** Max=42.08 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)

↑**2=Culvert** (Inlet Controls 42.08 cfs @ 13.39 fps)

**Tertiary OutFlow** Max=83.51 cfs @ 16.05 hrs HW=146.54' TW=137.35' (Dynamic Tailwater)

↑**3=Broad-Crested Rectangular Weir**(Weir Controls 83.51 cfs @ 2.68 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 1JP: DOWNSTREAM TACAN**

Inflow Area = 437.470 ac, 35.83% Impervious, Inflow Depth > 5.10" for 100-year event  
 Inflow = 170.80 cfs @ 16.00 hrs, Volume= 185.867 af  
 Outflow = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af, Atten= 0%, Lag= 0.9 min  
 Primary = 170.79 cfs @ 16.01 hrs, Volume= 185.867 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.35' @ 16.01 hrs Surf.Area= 5,666 sf Storage= 6,977 cf

Plug-Flow detention time= 0.5 min calculated for 185.841 af (100% of inflow)  
 Center-of-Mass det. time= 0.5 min ( 1,269.1 - 1,268.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	98,669 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,465	1,831	1,831
137.00	5,100	3,283	5,114
138.00	6,735	5,918	11,031
139.00	8,330	7,533	18,564
140.00	9,930	9,130	27,694
141.00	11,565	10,748	38,441
142.00	13,220	12,393	50,834
143.00	15,005	14,113	64,946
144.00	16,830	15,918	80,864
145.00	18,780	17,805	98,669

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=170.79 cfs @ 16.01 hrs HW=137.35' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 170.79 cfs @ 7.28 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 220.590 ac, 24.94% Impervious, Inflow Depth = 5.34" for 100-year event  
 Inflow = 302.63 cfs @ 13.49 hrs, Volume= 98.197 af  
 Outflow = 174.77 cfs @ 15.02 hrs, Volume= 98.197 af, Atten= 42%, Lag= 91.8 min  
 Primary = 87.38 cfs @ 15.02 hrs, Volume= 48.325 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 87.38 cfs @ 15.02 hrs, Volume= 49.872 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.37' @ 14.55 hrs Surf.Area= 463,281 sf Storage= 734,502 cf

Plug-Flow detention time= 31.8 min calculated for 98.183 af (100% of inflow)  
 Center-of-Mass det. time= 31.8 min ( 942.4 - 910.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=87.45 cfs @ 15.02 hrs HW=148.28' TW=146.20' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 87.45 cfs @ 6.96 fps)

**Secondary OutFlow** Max=87.45 cfs @ 15.02 hrs HW=148.28' TW=146.20' (Dynamic Tailwater)  
 ↑2=Culvert (Inlet Controls 87.45 cfs @ 6.96 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 7.18" for 100-year event  
 Inflow = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af  
 Outflow = 60.17 cfs @ 12.50 hrs, Volume= 24.157 af, Atten= 81%, Lag= 24.9 min  
 Primary = 36.61 cfs @ 12.39 hrs, Volume= 22.379 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 24.16 cfs @ 12.52 hrs, Volume= 1.778 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.94' @ 12.52 hrs Surf.Area= 94,618 sf Storage= 426,331 cf

Plug-Flow detention time= 152.8 min calculated for 24.157 af (99% of inflow)  
 Center-of-Mass det. time= 144.2 min ( 905.9 - 761.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=36.54 cfs @ 12.39 hrs HW=150.86' TW=145.03' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 36.54 cfs @ 11.63 fps)

**Secondary OutFlow** Max=24.16 cfs @ 12.52 hrs HW=150.94' TW=145.32' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 24.16 cfs @ 2.56 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 18.420 ac, 57.11% Impervious, Inflow Depth = 4.84" for 100-year event  
 Inflow = 104.23 cfs @ 12.09 hrs, Volume= 7.424 af  
 Outflow = 24.43 cfs @ 12.50 hrs, Volume= 5.085 af, Atten= 77%, Lag= 24.5 min  
 Primary = 24.43 cfs @ 12.50 hrs, Volume= 5.085 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.61' @ 12.50 hrs Surf.Area= 33,249 sf Storage= 150,968 cf

Plug-Flow detention time= 190.7 min calculated for 5.084 af (68% of inflow)  
 Center-of-Mass det. time= 94.0 min ( 910.8 - 816.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=24.43 cfs @ 12.50 hrs HW=147.61' TW=142.63' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 24.43 cfs of 47.62 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 24.43 cfs @ 6.11 fps)

**SWNAS - Existing Watershed**

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.580 ac, 44.83% Impervious, Inflow Depth = 4.38" for 100-year event  
 Inflow = 40.34 cfs @ 12.34 hrs, Volume= 4.590 af  
 Outflow = 26.42 cfs @ 12.60 hrs, Volume= 3.721 af, Atten= 35%, Lag= 15.9 min  
 Primary = 26.42 cfs @ 12.60 hrs, Volume= 3.721 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.08' @ 12.60 hrs Surf.Area= 13,563 sf Storage= 60,486 cf

Plug-Flow detention time= 124.2 min calculated for 3.721 af (81% of inflow)  
 Center-of-Mass det. time= 48.8 min ( 890.8 - 842.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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**Primary OutFlow** Max=26.42 cfs @ 12.60 hrs HW=148.08' TW=143.06' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 26.42 cfs of 33.08 cfs potential flow)

↳ **2=Orifice/Grate** (Orifice Controls 26.42 cfs @ 6.60 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 312.160 ac, 23.88% Impervious, Inflow Depth = 4.81" for 100-year event  
 Inflow = 268.35 cfs @ 13.05 hrs, Volume= 125.125 af  
 Outflow = 219.93 cfs @ 14.26 hrs, Volume= 125.125 af, Atten= 18%, Lag= 72.6 min  
 Primary = 219.93 cfs @ 14.26 hrs, Volume= 125.125 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.34' @ 14.26 hrs Surf.Area= 92,512 sf Storage= 313,483 cf

Plug-Flow detention time= 15.4 min calculated for 125.107 af (100% of inflow)  
 Center-of-Mass det. time= 15.4 min ( 951.5 - 936.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=219.93 cfs @ 14.26 hrs HW=146.34' TW=133.70' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 219.93 cfs @ 11.20 fps)



**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 27.98% Impervious, Inflow Depth = 4.88" for 100-year event  
 Inflow = 483.24 cfs @ 13.16 hrs, Volume= 354.706 af  
 Outflow = 458.06 cfs @ 13.47 hrs, Volume= 354.670 af, Atten= 5%, Lag= 18.7 min  
 Primary = 189.85 cfs @ 13.47 hrs, Volume= 128.906 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 268.20 cfs @ 13.47 hrs, Volume= 225.764 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 134.13' @ 13.47 hrs Surf.Area= 95,941 sf Storage= 259,668 cf

Plug-Flow detention time= 6.6 min calculated for 354.621 af (100% of inflow)  
 Center-of-Mass det. time= 6.4 min ( 1,117.1 - 1,110.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Existing Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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**Primary OutFlow** Max=189.85 cfs @ 13.47 hrs HW=134.13' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 189.85 cfs @ 9.67 fps)

**Secondary OutFlow** Max=268.20 cfs @ 13.47 hrs HW=134.13' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 268.20 cfs @ 9.49 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** ( Controls 0.00 cfs)

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 5.30" for 100-year event  
 Inflow = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af  
 Outflow = 105.51 cfs @ 13.38 hrs, Volume= 27.291 af, Atten= 20%, Lag= 24.6 min  
 Primary = 69.92 cfs @ 13.38 hrs, Volume= 23.972 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 35.59 cfs @ 13.38 hrs, Volume= 3.319 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.92' @ 13.38 hrs Surf.Area= 137,190 sf Storage= 114,298 cf

Plug-Flow detention time= 9.2 min calculated for 27.291 af (100% of inflow)  
 Center-of-Mass det. time= 8.9 min ( 880.7 - 871.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=69.92 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 69.92 cfs @ 9.89 fps)

**Secondary OutFlow** Max=35.58 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 35.58 cfs @ 2.92 fps)

**SWNAS - Existing Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event  
 Inflow = 318.31 cfs @ 13.43 hrs, Volume= 82.986 af  
 Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 1%, Lag= 5.0 min  
 Primary = 184.83 cfs @ 13.51 hrs, Volume= 70.933 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 129.49 cfs @ 13.51 hrs, Volume= 12.053 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.34' @ 13.51 hrs Surf.Area= 73,867 sf Storage= 242,197 cf

Plug-Flow detention time= 12.5 min calculated for 82.974 af (100% of inflow)  
 Center-of-Mass det. time= 12.5 min ( 910.3 - 897.8 )

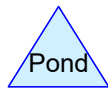
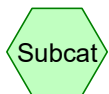
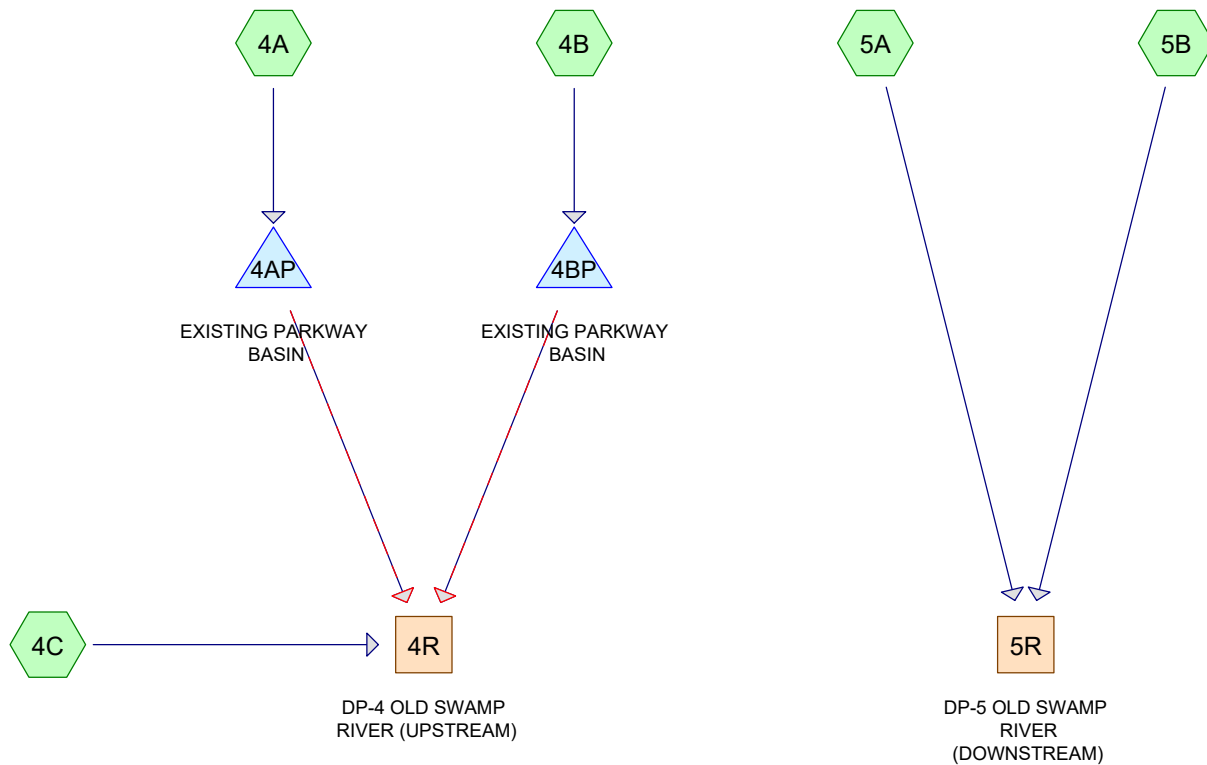
Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=184.83 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 184.83 cfs @ 9.41 fps)

**Secondary OutFlow** Max=129.49 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 129.49 cfs @ 2.99 fps)



**Routing Diagram for SWNAS - Existing Watershed Swamp River**

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# SWNAS - Existing Watershed Swamp River

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.660	39	>75% Grass cover, Good, HSG A (5B)
32.570	61	>75% Grass cover, Good, HSG B (4C, 5B)
0.650	74	>75% Grass cover, Good, HSG C (4C)
18.510	80	>75% Grass cover, Good, HSG D (4C, 5A, 5B)
7.520	48	Brush, Good, HSG B (4A, 4B, 4C, 5B)
1.360	73	Brush, Good, HSG D (4C)
44.260	98	Pavement (4A, 4B, 4C, 5A, 5B)
0.200	100	Water - Basin (4A)
0.400	100	Water - Basin Area (4B)
4.390	30	Woods, Good, HSG A (5A, 5B)
31.160	55	Woods, Good, HSG B (4C, 5B)
2.630	70	Woods, Good, HSG C (4C)
71.820	77	Woods, Good, HSG D (4C, 5A, 5B)
<b>218.130</b>	<b>74</b>	<b>TOTAL AREA</b>

# SWNAS - Existing Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 4A:

Runoff = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af, Depth= 0.79"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af, Depth= 2.54"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

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



**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 4C:**

Runoff = 18.34 cfs @ 13.73 hrs, Volume= 5.656 af, Depth= 1.06"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 5A:**

Runoff = 25.45 cfs @ 12.98 hrs, Volume= 5.145 af, Depth= 1.29"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 5B:**

Runoff = 43.79 cfs @ 12.98 hrs, Volume= 9.096 af, Depth= 1.11"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 0.98" for 2-year event  
Inflow = 18.83 cfs @ 13.73 hrs, Volume= 5.920 af  
Outflow = 18.83 cfs @ 13.73 hrs, Volume= 5.920 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed Swamp River**

*Type III 24-hr 2-year Rainfall=3.40"*

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 1.17" for 2-year event  
Inflow = 69.24 cfs @ 12.98 hrs, Volume= 14.241 af  
Outflow = 69.24 cfs @ 12.98 hrs, Volume= 14.241 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 0.79" for 2-year event  
 Inflow = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af  
 Outflow = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af, Atten= 66%, Lag= 23.3 min  
 Primary = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.52' @ 12.49 hrs Surf.Area= 5,925 sf Storage= 2,898 cf

Plug-Flow detention time= 85.7 min calculated for 0.263 af (100% of inflow)  
 Center-of-Mass det. time= 85.7 min ( 967.6 - 881.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.08 cfs @ 12.49 hrs HW=146.52' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.08 cfs @ 2.50 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.57' @ 24.34 hrs Surf.Area= 14,463 sf Storage= 37,451 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

# SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 4A:

Runoff = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af, Depth= 1.87"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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



**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af, Depth= 4.19"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

	Area (ac)	CN	Description
*	3.130	98	Pavement
*	0.400	100	Water - Basin Area
	0.530	48	Brush, Good, HSG B
	4.060	92	Weighted Average
	0.530		13.05% Pervious Area
	3.530		86.95% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 4C:**

Runoff = 41.83 cfs @ 13.73 hrs, Volume= 12.185 af, Depth= 2.28"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

# SWNAS - Existing Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 5A:

Runoff = 53.02 cfs @ 12.97 hrs, Volume= 10.416 af, Depth= 2.62"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 5B:**

Runoff = 97.52 cfs @ 12.97 hrs, Volume= 19.282 af, Depth= 2.36"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 2.20" for 10-year event  
Inflow = 43.18 cfs @ 13.61 hrs, Volume= 13.244 af  
Outflow = 43.18 cfs @ 13.61 hrs, Volume= 13.244 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed Swamp River**

*Type III 24-hr 10-year Rainfall=5.10"*

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 2.44" for 10-year event

Inflow = 150.54 cfs @ 12.97 hrs, Volume= 29.698 af

Outflow = 150.54 cfs @ 12.97 hrs, Volume= 29.698 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 1.87" for 10-year event  
 Inflow = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af  
 Outflow = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af, Atten= 63%, Lag= 19.1 min  
 Primary = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.16' @ 12.41 hrs Surf.Area= 7,002 sf Storage= 7,049 cf

Plug-Flow detention time= 58.8 min calculated for 0.621 af (100% of inflow)  
 Center-of-Mass det. time= 59.1 min ( 913.4 - 854.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.12 cfs @ 12.41 hrs HW=147.16' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 3.12 cfs @ 3.97 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af  
 Outflow = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af, Atten= 97%, Lag= 214.3 min  
 Primary = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.30' @ 15.66 hrs Surf.Area= 16,042 sf Storage= 48,608 cf

Plug-Flow detention time= 590.5 min calculated for 0.438 af (31% of inflow)  
 Center-of-Mass det. time= 439.8 min ( 1,221.9 - 782.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.63 cfs @ 15.66 hrs HW=137.30' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 0.63 cfs @ 2.15 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 4A:**

Runoff = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af, Depth= 2.68"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af, Depth= 5.27"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 4C:**

Runoff = 58.85 cfs @ 13.60 hrs, Volume= 16.911 af, Depth= 3.16"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 5A:**

Runoff = 72.20 cfs @ 12.91 hrs, Volume= 14.136 af, Depth= 3.55"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 5B:**

Runoff = 135.56 cfs @ 12.97 hrs, Volume= 26.606 af, Depth= 3.26"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 3.09" for 25-year event  
Inflow = 62.26 cfs @ 13.60 hrs, Volume= 18.604 af  
Outflow = 62.26 cfs @ 13.60 hrs, Volume= 18.604 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed Swamp River**

*Type III 24-hr 25-year Rainfall=6.20"*

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 3.35" for 25-year event

Inflow = 207.66 cfs @ 12.97 hrs, Volume= 40.743 af

Outflow = 207.66 cfs @ 12.97 hrs, Volume= 40.743 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 2.68" for 25-year event  
 Inflow = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af  
 Outflow = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af, Atten= 67%, Lag= 20.3 min  
 Primary = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.66' @ 12.43 hrs Surf.Area= 7,752 sf Storage= 10,737 cf

Plug-Flow detention time= 54.0 min calculated for 0.889 af (100% of inflow)  
 Center-of-Mass det. time= 54.3 min ( 897.9 - 843.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.11 cfs @ 12.43 hrs HW=147.66' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 4.11 cfs @ 5.23 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af  
 Outflow = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af, Atten= 94%, Lag= 92.1 min  
 Primary = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.55' @ 13.62 hrs Surf.Area= 16,545 sf Storage= 52,744 cf

Plug-Flow detention time= 430.2 min calculated for 0.802 af (45% of inflow)  
 Center-of-Mass det. time= 306.4 min ( 1,082.6 - 776.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.49 cfs @ 13.62 hrs HW=137.55' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.49 cfs @ 2.75 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4A:**

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af, Depth= 4.04"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af, Depth= 6.94"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

	Area (ac)	CN	Description
*	3.130	98	Pavement
*	0.400	100	Water - Basin Area
	0.530	48	Brush, Good, HSG B
	4.060	92	Weighted Average
	0.530		13.05% Pervious Area
	3.530		86.95% Impervious Area

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

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4C:**

Runoff = 86.52 cfs @ 13.60 hrs, Volume= 24.673 af, Depth= 4.61"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.880	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
34.020	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
10.650	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
64.270	72	Weighted Average
60.390		93.96% Pervious Area
3.880		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5A:**

Runoff = 102.90 cfs @ 12.90 hrs, Volume= 20.158 af, Depth= 5.07"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.470	98	Pavement
3.920	30	Woods, Good, HSG A
26.070	77	Woods, Good, HSG D
14.280	80	>75% Grass cover, Good, HSG D
47.740	76	Weighted Average
44.270		92.73% Pervious Area
3.470		7.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5B:**

Runoff = 197.19 cfs @ 12.91 hrs, Volume= 38.590 af, Depth= 4.72"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 32.440	98	Pavement
0.470	30	Woods, Good, HSG A
23.820	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
2.160	48	Brush, Good, HSG B
2.660	39	>75% Grass cover, Good, HSG A
21.920	61	>75% Grass cover, Good, HSG B
2.880	80	>75% Grass cover, Good, HSG D
98.080	73	Weighted Average
65.640		66.92% Pervious Area
32.440		33.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
48.3	1,890	0.0170	0.65		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
68.3	1,990	Total			

**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 12.38% Impervious, Inflow Depth = 4.54" for 100-year event  
Inflow = 92.99 cfs @ 13.60 hrs, Volume= 27.383 af  
Outflow = 92.99 cfs @ 13.60 hrs, Volume= 27.383 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 24.63% Impervious, Inflow Depth = 4.83" for 100-year event  
Inflow = 300.11 cfs @ 12.90 hrs, Volume= 58.748 af  
Outflow = 300.11 cfs @ 12.90 hrs, Volume= 58.748 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 4.04" for 100-year event  
 Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af  
 Outflow = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af, Atten= 72%, Lag= 22.3 min  
 Primary = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.47' @ 12.46 hrs Surf.Area= 8,987 sf Storage= 17,483 cf

Plug-Flow detention time= 52.7 min calculated for 1.339 af (100% of inflow)  
 Center-of-Mass det. time= 52.9 min ( 884.6 - 831.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.33 cfs @ 12.46 hrs HW=148.47' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 5.33 cfs @ 6.79 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Existing Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af  
 Outflow = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af, Atten= 89%, Lag= 39.2 min  
 Primary = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 138.19' @ 12.74 hrs Surf.Area= 17,819 sf Storage= 63,713 cf

Plug-Flow detention time= 341.6 min calculated for 1.370 af (58% of inflow)  
 Center-of-Mass det. time= 234.3 min ( 1,003.8 - 769.4 )

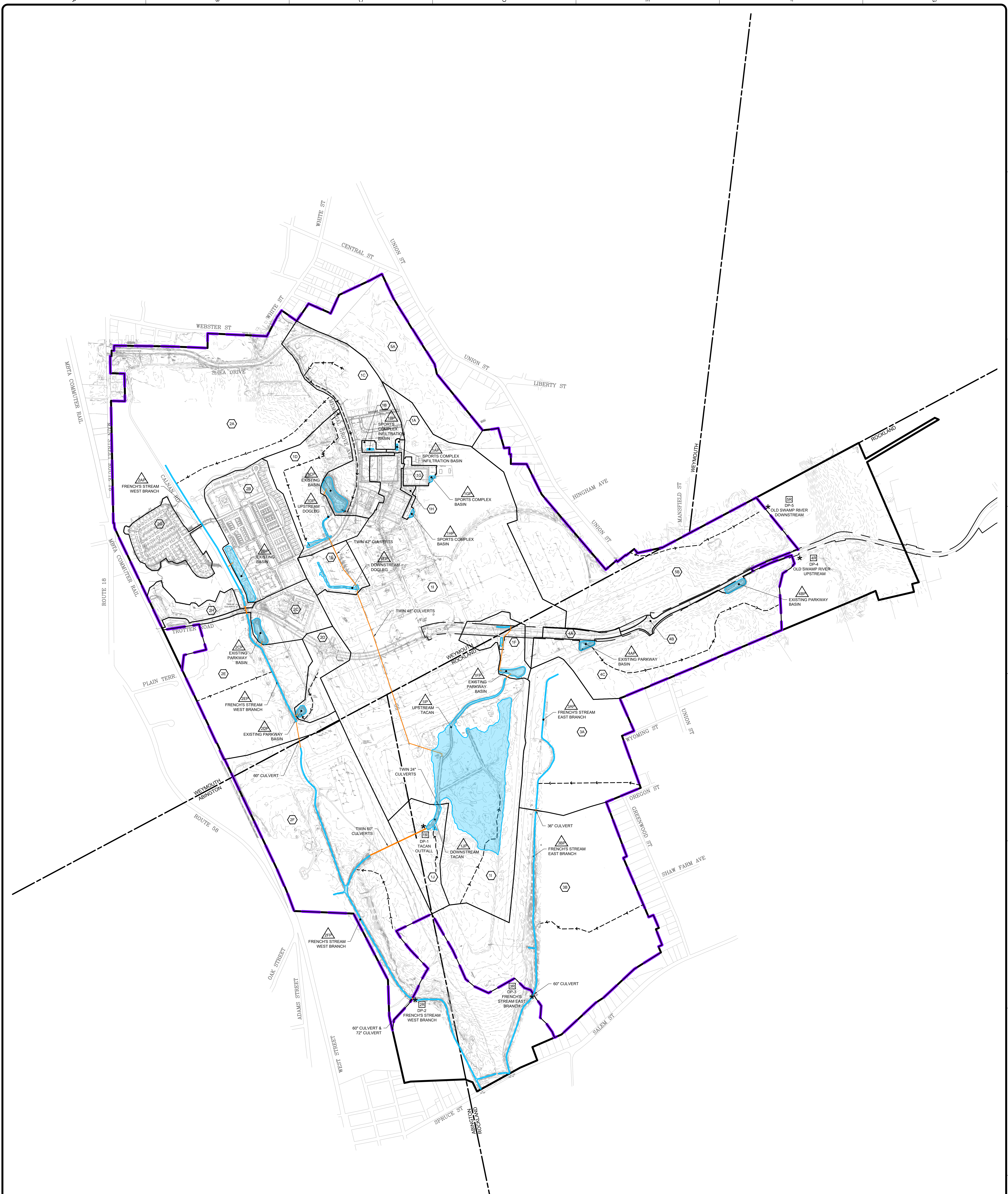
Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

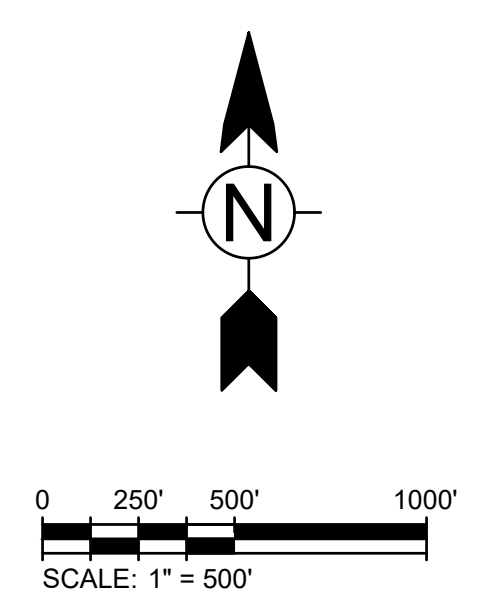
**Primary OutFlow** Max=3.36 cfs @ 12.74 hrs HW=138.19' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 3.36 cfs @ 4.28 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)





- LEGEND:**
- OVERALL WATERSHED BOUNDARY
  - SUBCATCHMENT BOUNDARY
  - → → TO FLOW PATH
  - EXISTING CULVERT
  - EXISTING STORMWATER BASIN/STREAM
  - ⬡ SUBCATCHMENT ID
  - ⬠ POND ID
  - ★ [ ] DESIGN POINT



100 Nickerson Road  
Marlborough, MA 01752  
PHONE: 1 (508) 786-2200 FAX: 1 (508) 786-2201

MARK	DATE	DESCRIPTION	BY

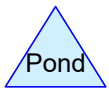
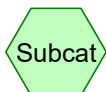
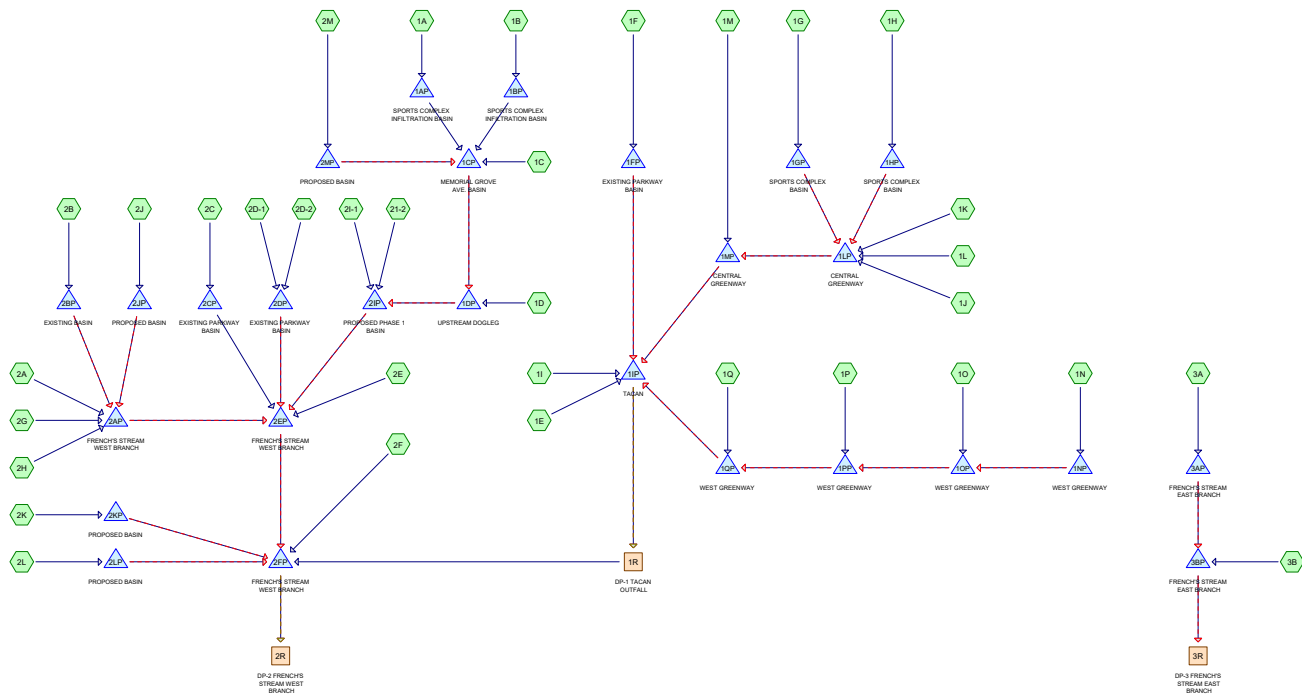
Client: Brookfield Properties / New England Development  
 Proj. Loc.: Weymouth, Rockland, and Abington Massachusetts  
**South Weymouth Naval Air Station**  
**Pre-Development Watershed Map**

Project No.: 143-33244-21001  
 Designed By: TAB  
 Drawn By: TAB  
 Checked By: JSH

**FIG. 1**



**Stormwater Management**  
**Attachment 2: Post-Development HydroCAD Report**



**Routing Diagram for SWNAS - Proposed Watershed**  
 Prepared by Tetra Tech, Printed 12/1/2023  
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# SWNAS - Proposed Watershed

Prepared by Tetra Tech

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
24.340	39	>75% Grass cover, Good, HSG A (1A, 1B, 1C, 1D, 1E, 1N, 2C, 2D-2, 2E, 21-2)
78.720	61	>75% Grass cover, Good, HSG B (1F, 1I, 1L, 1M, 2A, 2F, 2G, 2H, 3B)
43.740	74	>75% Grass cover, Good, HSG C (1D, 1F, 1I, 1L, 1N, 1O, 1P, 1Q, 2A, 2B, 2C)
18.270	80	>75% Grass cover, Good, HSG D (1D, 1G, 1H, 1I, 2E, 2J, 3B)
1.080	85	Artificial Turf (1G, 1H)
14.760	48	Brush, Good, HSG B (1I)
34.880	73	Brush, Good, HSG D (1I, 3A, 3B)
2.560	100	Open Water (1C, 1F, 3B)
79.150	98	Pavement (1A, 1B, 1C, 1F, 1G, 1H, 1J, 2A, 2B, 2C, 2D-1, 2G, 2H, 3A, 3B)
302.140	88	Proposed Development Area (1C, 1D, 1E, 1I, 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 2I-1, 2J, 2K, 2L, 2M, 21-2)
34.380	98	Roof (2A, 2B, 2G, 2H)
3.740	98	Roofs (1C, 2C)
13.130	30	Woods, Good, HSG A (1D, 2E)
36.730	55	Woods, Good, HSG B (1I, 2F, 3A, 3B)
13.060	70	Woods, Good, HSG C (1D, 2E)
364.050	77	Woods, Good, HSG D (1D, 1E, 1I, 2A, 2E, 2F, 2K, 3A, 3B)
1.620	57	Woods/grass comb., Poor, HSG A (2A)
<b>1,066.350</b>	<b>78</b>	<b>TOTAL AREA</b>

# SWNAS - Proposed Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1A:

Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af, Depth= 2.54"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

# SWNAS - Proposed Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1B:

Runoff = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 2.45"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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



# SWNAS - Proposed Watershed

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 31.91 cfs @ 12.61 hrs, Volume= 4.867 af, Depth= 2.18"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

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**Summary for Subcatchment 1D:**

Runoff = 6.27 cfs @ 13.15 hrs, Volume= 1.601 af, Depth= 0.66"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
72.2	1,740	Total			

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1E:

Runoff = 220.01 cfs @ 12.09 hrs, Volume= 15.659 af, Depth= 1.70"  
Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 63.870	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
110.510	82	Weighted Average
110.510		100.00% Pervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1F:

Runoff = 22.57 cfs @ 12.09 hrs, Volume= 1.603 af, Depth= 1.93"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1G:**

Runoff = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af, Depth= 2.54"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

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**Summary for Subcatchment 1H:**

Runoff = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af, Depth= 2.74"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 1I:**

Runoff = 26.20 cfs @ 13.51 hrs, Volume= 7.760 af, Depth= 0.84"  
 Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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## Summary for Subcatchment 1J:

Runoff = 14.87 cfs @ 12.08 hrs, Volume= 1.188 af, Depth= 3.17"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

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



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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1K:

Runoff = 64.29 cfs @ 12.14 hrs, Volume= 5.252 af, Depth= 2.18"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

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

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## Summary for Subcatchment 1L:

Runoff = 61.62 cfs @ 12.14 hrs, Volume= 5.015 af, Depth= 2.01"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

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

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## Summary for Subcatchment 1M:

Runoff = 20.36 cfs @ 12.14 hrs, Volume= 1.656 af, Depth= 1.93"  
Routed to Pond 1MP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

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

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## Summary for Subcatchment 1N:

Assumed slope of 0.002

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Runoff = 51.89 cfs @ 12.14 hrs, Volume= 4.223 af, Depth= 2.01"  
Routed to Pond 1NP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 10:**

Runoff = 18.63 cfs @ 12.09 hrs, Volume= 1.327 af, Depth= 2.09"

Routed to Pond 1OP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 1P:

Runoff = 46.73 cfs @ 12.09 hrs, Volume= 3.329 af, Depth= 2.09"  
Routed to Pond 1PP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

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

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## Summary for Subcatchment 1Q:

Runoff = 41.44 cfs @ 12.09 hrs, Volume= 2.953 af, Depth= 2.09"  
Routed to Pond 1QP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

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

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## Summary for Subcatchment 2A:

Runoff = 61.33 cfs @ 13.40 hrs, Volume= 16.037 af, Depth= 1.36"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
100.5	2,090	Total			



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## Summary for Subcatchment 2B:

Runoff = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af, Depth= 2.74"

Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2C:

Runoff = 40.71 cfs @ 12.08 hrs, Volume= 3.121 af, Depth= 2.95"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 10.340	98	Pavement
* 1.680	98	Roofs
0.400	39	>75% Grass cover, Good, HSG A
0.290	74	>75% Grass cover, Good, HSG C
12.710	96	Weighted Average
0.690		5.43% Pervious Area
12.020		94.57% Impervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2D-1:

Runoff = 6.94 cfs @ 12.08 hrs, Volume= 0.554 af, Depth= 3.17"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 2.100	98	Pavement
2.100		100.00% Impervious Area

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

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## Summary for Subcatchment 2D-2:

Runoff = 0.00 cfs @ 23.42 hrs, Volume= 0.000 af, Depth= 0.00"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
0.670	39	>75% Grass cover, Good, HSG A
0.670		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2E:**

Runoff = 8.30 cfs @ 13.39 hrs, Volume= 2.499 af, Depth= 0.61"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2F:**

Runoff = 16.19 cfs @ 13.06 hrs, Volume= 3.855 af, Depth= 0.75"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
70.4	775	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2G:**

Assumed Tc value

Runoff = 10.95 cfs @ 13.60 hrs, Volume= 3.126 af, Depth= 2.26"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

# SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 4.32 cfs @ 13.60 hrs, Volume= 1.244 af, Depth= 1.70"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>



# SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2I-1:

Runoff = 53.05 cfs @ 12.14 hrs, Volume= 4.334 af, Depth= 2.18"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2J:**

Runoff = 38.48 cfs @ 12.09 hrs, Volume= 2.742 af, Depth= 2.09"

Routed to Pond 2JP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 2K:**

Runoff = 45.61 cfs @ 12.09 hrs, Volume= 3.239 af, Depth= 1.85"

Routed to Pond 2KP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

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

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Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2L:

Runoff = 27.16 cfs @ 12.09 hrs, Volume= 1.940 af, Depth= 2.18"  
Routed to Pond 2LP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 2M:

Runoff = 49.15 cfs @ 12.09 hrs, Volume= 3.512 af, Depth= 2.18"  
Routed to Pond 2MP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 3A:**

Runoff = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af, Depth= 1.42"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 3B:**

Runoff = 51.95 cfs @ 13.44 hrs, Volume= 14.215 af, Depth= 1.29"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

# SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 21-2:

Runoff = 9.60 cfs @ 12.15 hrs, Volume= 0.875 af, Depth= 0.89"

Routed to Pond ZIP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

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



## **SWNAS - Proposed Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth > 1.55" for 2-year event  
Inflow = 54.18 cfs @ 15.01 hrs, Volume= 48.916 af  
Outflow = 54.18 cfs @ 15.01 hrs, Volume= 48.916 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 2-year Rainfall=3.40"*

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 1.39" for 2-year event  
Inflow = 175.24 cfs @ 13.78 hrs, Volume= 101.076 af  
Outflow = 175.24 cfs @ 13.78 hrs, Volume= 101.076 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event  
Inflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af  
Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 2.29 cfs @ 12.09 hrs, Volume= 0.167 af  
 Outflow = 0.78 cfs @ 12.37 hrs, Volume= 0.167 af, Atten= 66%, Lag= 17.0 min  
 Discarded = 0.12 cfs @ 11.44 hrs, Volume= 0.138 af  
 Primary = 0.66 cfs @ 12.37 hrs, Volume= 0.030 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 170.39' @ 12.37 hrs Surf.Area= 2,201 sf Storage= 2,430 cf

Plug-Flow detention time= 125.1 min calculated for 0.167 af (100% of inflow)  
 Center-of-Mass det. time= 125.1 min ( 920.7 - 795.6 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 11.44 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=0.66 cfs @ 12.37 hrs HW=170.39' TW=151.40' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 0.66 cfs @ 2.72 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

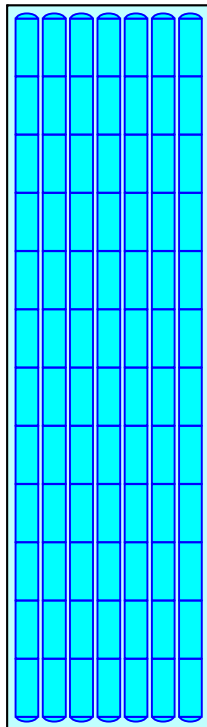
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 2.45" for 2-year event  
 Inflow = 2.53 cfs @ 12.09 hrs, Volume= 0.183 af  
 Outflow = 0.98 cfs @ 12.33 hrs, Volume= 0.183 af, Atten= 61%, Lag= 14.4 min  
 Discarded = 0.13 cfs @ 11.38 hrs, Volume= 0.148 af  
 Primary = 0.85 cfs @ 12.33 hrs, Volume= 0.035 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 170.82' @ 12.33 hrs Surf.Area= 2,378 sf Storage= 2,564 cf

Plug-Flow detention time= 124.3 min calculated for 0.183 af (100% of inflow)  
 Center-of-Mass det. time= 124.3 min ( 924.5 - 800.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 11.38 hrs HW=169.06' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=0.84 cfs @ 12.33 hrs HW=170.82' TW=151.29' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 0.84 cfs @ 2.85 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

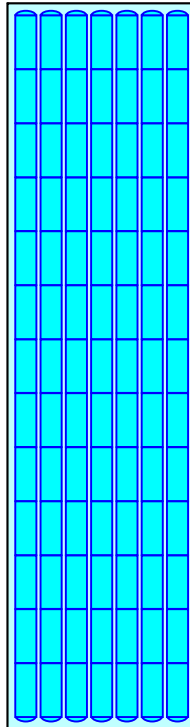
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 2.07" for 2-year event  
 Inflow = 51.28 cfs @ 12.51 hrs, Volume= 8.274 af  
 Outflow = 20.41 cfs @ 13.25 hrs, Volume= 8.213 af, Atten= 60%, Lag= 44.6 min  
 Primary = 20.41 cfs @ 13.25 hrs, Volume= 8.213 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 152.58' @ 13.25 hrs Surf.Area= 61,121 sf Storage= 138,842 cf

Plug-Flow detention time= 171.7 min calculated for 8.213 af (99% of inflow)  
 Center-of-Mass det. time= 166.5 min ( 1,020.8 - 854.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=20.41 cfs @ 13.25 hrs HW=152.58' TW=144.75' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 20.41 cfs @ 5.61 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 1.53" for 2-year event  
 Inflow = 26.62 cfs @ 13.17 hrs, Volume= 9.814 af  
 Outflow = 26.62 cfs @ 13.19 hrs, Volume= 9.814 af, Atten= 0%, Lag= 1.3 min  
 Primary = 12.84 cfs @ 13.19 hrs, Volume= 4.487 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN  
 Secondary = 13.78 cfs @ 13.19 hrs, Volume= 5.326 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.75' @ 13.19 hrs Surf.Area= 1,257 sf Storage= 676 cf

Plug-Flow detention time= 0.3 min calculated for 9.814 af (100% of inflow)  
 Center-of-Mass det. time= 0.3 min ( 1,010.4 - 1,010.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=12.84 cfs @ 13.19 hrs HW=144.75' TW=140.76' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 12.84 cfs @ 2.96 fps)

**Secondary OutFlow** Max=13.78 cfs @ 13.19 hrs HW=144.75' TW=140.76' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 13.78 cfs @ 3.00 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 1.93" for 2-year event  
 Inflow = 22.57 cfs @ 12.09 hrs, Volume= 1.603 af  
 Outflow = 0.16 cfs @ 24.07 hrs, Volume= 0.113 af, Atten= 99%, Lag= 719.1 min  
 Primary = 0.16 cfs @ 24.07 hrs, Volume= 0.113 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.69' @ 24.07 hrs Surf.Area= 23,631 sf Storage= 68,602 cf

Plug-Flow detention time= 1,252.5 min calculated for 0.113 af (7% of inflow)  
 Center-of-Mass det. time= 1,052.7 min ( 1,876.1 - 823.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.16 cfs @ 24.07 hrs HW=146.69' TW=135.32' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 0.16 cfs @ 1.62 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 5.30 cfs @ 12.39 hrs, Volume= 0.673 af  
 Outflow = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af, Atten= 25%, Lag= 13.8 min  
 Primary = 3.97 cfs @ 12.62 hrs, Volume= 0.666 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 168.31' @ 12.62 hrs Surf.Area= 2,853 sf Storage= 3,949 cf

Plug-Flow detention time= 29.9 min calculated for 0.666 af (99% of inflow)  
 Center-of-Mass det. time= 22.5 min ( 839.6 - 817.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.97 cfs @ 12.62 hrs HW=168.31' TW=148.95' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 3.97 cfs @ 5.06 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 2.74" for 2-year event  
 Inflow = 4.04 cfs @ 12.08 hrs, Volume= 0.301 af  
 Outflow = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af, Atten= 20%, Lag= 3.6 min  
 Primary = 3.22 cfs @ 12.14 hrs, Volume= 0.299 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 163.57' @ 12.14 hrs Surf.Area= 823 sf Storage= 816 cf

Plug-Flow detention time= 12.1 min calculated for 0.299 af (99% of inflow)  
 Center-of-Mass det. time= 7.7 min ( 792.9 - 785.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.21 cfs @ 12.14 hrs HW=163.56' TW=148.54' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 3.21 cfs @ 4.09 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1IP: TACAN**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth = 1.55" for 2-year event  
 Inflow = 261.57 cfs @ 12.10 hrs, Volume= 48.918 af  
 Outflow = 54.18 cfs @ 15.01 hrs, Volume= 48.916 af, Atten= 79%, Lag= 175.0 min  
 Primary = 54.18 cfs @ 15.01 hrs, Volume= 48.916 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 142.92' @ 15.01 hrs Surf.Area= 372,066 sf Storage= 646,032 cf

Plug-Flow detention time= 119.7 min calculated for 48.910 af (100% of inflow)  
 Center-of-Mass det. time= 119.6 min ( 1,039.2 - 919.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	<b>24.0" W x 24.0" H Vert. Low Flow Orifice</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.40'	<b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

**Primary OutFlow** Max=54.18 cfs @ 15.01 hrs HW=142.92' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 54.18 cfs of 383.77 cfs potential flow)
- 2=Low Flow Orifice (Orifice Controls 54.18 cfs @ 13.54 fps)
- 3=Custom Weir/Orifice ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1LP: CENTRAL GREENWAY**

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 2.20" for 2-year event  
 Inflow = 143.46 cfs @ 12.13 hrs, Volume= 12.419 af  
 Outflow = 69.42 cfs @ 12.25 hrs, Volume= 12.415 af, Atten= 52%, Lag= 6.9 min  
 Primary = 69.42 cfs @ 12.25 hrs, Volume= 12.415 af  
 Routed to Pond 1MP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1MP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.07' @ 12.43 hrs Surf.Area= 59,905 sf Storage= 117,720 cf

Plug-Flow detention time= 42.1 min calculated for 12.413 af (100% of inflow)  
 Center-of-Mass det. time= 42.2 min ( 856.3 - 814.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>42.0" Round Culvert X 2.00</b> L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	<b>130.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=68.14 cfs @ 12.25 hrs HW=148.93' TW=147.91' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 68.14 cfs @ 5.36 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1IP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 2.16" for 2-year event  
 Inflow = 85.66 cfs @ 12.20 hrs, Volume= 14.071 af  
 Outflow = 59.95 cfs @ 12.56 hrs, Volume= 14.067 af, Atten= 30%, Lag= 21.5 min  
 Primary = 59.95 cfs @ 12.56 hrs, Volume= 14.067 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.40' @ 12.56 hrs Surf.Area= 37,695 sf Storage= 77,753 cf

Plug-Flow detention time= 27.3 min calculated for 14.067 af (100% of inflow)  
 Center-of-Mass det. time= 26.7 min ( 879.5 - 852.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>42.0" Round Culvert</b> L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	<b>130.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=59.95 cfs @ 12.56 hrs HW=148.40' TW=141.63' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 59.95 cfs @ 6.28 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event  
 Inflow = 51.89 cfs @ 12.14 hrs, Volume= 4.223 af  
 Outflow = 8.50 cfs @ 12.68 hrs, Volume= 4.189 af, Atten= 84%, Lag= 32.4 min  
 Primary = 8.50 cfs @ 12.68 hrs, Volume= 4.189 af  
 Routed to Pond 1OP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1OP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.91' @ 12.72 hrs Surf.Area= 59,740 sf Storage= 86,123 cf

Plug-Flow detention time= 208.8 min calculated for 4.189 af (99% of inflow)  
 Center-of-Mass det. time= 203.9 min ( 1,027.5 - 823.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	<b>24.0" Round Culvert</b> L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 38.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=8.50 cfs @ 12.68 hrs HW=148.91' TW=148.37' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 8.50 cfs @ 3.53 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1OP: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 2.02" for 2-year event  
 Inflow = 21.92 cfs @ 12.09 hrs, Volume= 5.516 af  
 Outflow = 11.17 cfs @ 12.38 hrs, Volume= 5.512 af, Atten= 49%, Lag= 17.4 min  
 Primary = 11.17 cfs @ 12.38 hrs, Volume= 5.512 af  
 Routed to Pond 1PP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1PP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.38' @ 12.84 hrs Surf.Area= 12,406 sf Storage= 18,185 cf

Plug-Flow detention time= 31.6 min calculated for 5.511 af (100% of inflow)  
 Center-of-Mass det. time= 29.3 min ( 1,006.0 - 976.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>24.0" Round Culvert</b> L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=11.07 cfs @ 12.38 hrs HW=148.27' TW=147.60' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 11.07 cfs @ 3.89 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth > 2.04" for 2-year event  
 Inflow = 56.13 cfs @ 12.09 hrs, Volume= 8.841 af  
 Outflow = 14.41 cfs @ 13.48 hrs, Volume= 8.807 af, Atten= 74%, Lag= 83.1 min  
 Primary = 14.41 cfs @ 13.48 hrs, Volume= 8.807 af  
 Routed to Pond 1QP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1QP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.83' @ 13.08 hrs Surf.Area= 45,219 sf Storage= 82,150 cf

Plug-Flow detention time= 107.6 min calculated for 8.806 af (100% of inflow)  
 Center-of-Mass det. time= 98.3 min ( 1,032.8 - 934.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>24.0" Round Culvert</b> L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=14.41 cfs @ 13.48 hrs HW=147.81' TW=146.56' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 14.41 cfs @ 4.59 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 1QP: WEST GREENWAY**

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 2.05" for 2-year event  
 Inflow = 51.18 cfs @ 12.09 hrs, Volume= 11.759 af  
 Outflow = 20.55 cfs @ 12.56 hrs, Volume= 11.318 af, Atten= 60%, Lag= 28.2 min  
 Primary = 20.55 cfs @ 12.56 hrs, Volume= 11.318 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.66' @ 12.56 hrs Surf.Area= 43,146 sf Storage= 74,424 cf

Plug-Flow detention time= 110.8 min calculated for 11.317 af (96% of inflow)  
 Center-of-Mass det. time= 66.7 min ( 1,045.2 - 978.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>36.0" Round Culvert</b> L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	<b>36.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	148.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=20.55 cfs @ 12.56 hrs HW=146.66' TW=141.63' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 20.55 cfs of 36.75 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 20.55 cfs @ 4.13 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 1.71" for 2-year event  
 Inflow = 104.15 cfs @ 13.29 hrs, Volume= 31.813 af  
 Outflow = 98.29 cfs @ 13.65 hrs, Volume= 31.813 af, Atten= 6%, Lag= 21.5 min  
 Primary = 47.94 cfs @ 13.65 hrs, Volume= 15.281 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 50.36 cfs @ 13.65 hrs, Volume= 16.531 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.16' @ 13.65 hrs Surf.Area= 66,980 sf Storage= 49,612 cf

Plug-Flow detention time= 4.5 min calculated for 31.813 af (100% of inflow)  
 Center-of-Mass det. time= 4.5 min ( 922.8 - 918.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=47.94 cfs @ 13.65 hrs HW=145.16' TW=141.86' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 47.94 cfs @ 5.55 fps)

**Secondary OutFlow** Max=50.36 cfs @ 13.65 hrs HW=145.16' TW=141.86' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 50.36 cfs @ 5.83 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 2.74" for 2-year event  
 Inflow = 125.27 cfs @ 12.08 hrs, Volume= 9.333 af  
 Outflow = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af, Atten= 80%, Lag= 25.7 min  
 Primary = 25.15 cfs @ 12.51 hrs, Volume= 9.010 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.76' @ 12.51 hrs Surf.Area= 67,575 sf Storage= 163,282 cf

Plug-Flow detention time= 117.1 min calculated for 9.009 af (97% of inflow)  
 Center-of-Mass det. time= 97.0 min ( 882.2 - 785.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=25.15 cfs @ 12.51 hrs HW=147.76' TW=144.21' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 25.15 cfs @ 8.00 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

# SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Pond 2CP: EXISTING PARKWAY BASIN

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.710 ac, 94.57% Impervious, Inflow Depth = 2.95" for 2-year event  
 Inflow = 40.71 cfs @ 12.08 hrs, Volume= 3.121 af  
 Outflow = 1.72 cfs @ 14.87 hrs, Volume= 0.782 af, Atten= 96%, Lag= 167.1 min  
 Primary = 1.72 cfs @ 14.87 hrs, Volume= 0.782 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.16' @ 14.87 hrs Surf.Area= 28,330 sf Storage= 106,450 cf

Plug-Flow detention time= 495.6 min calculated for 0.782 af (25% of inflow)  
 Center-of-Mass det. time= 312.1 min ( 1,084.4 - 772.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=1.72 cfs @ 14.87 hrs HW=146.16' TW=141.19' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.72 cfs of 38.20 cfs potential flow)

↑ **2=Orifice/Grate** (Weir Controls 1.72 cfs @ 1.32 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 2.770 ac, 75.81% Impervious, Inflow Depth = 2.40" for 2-year event  
 Inflow = 6.94 cfs @ 12.08 hrs, Volume= 0.554 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.76' @ 24.34 hrs Surf.Area= 8,472 sf Storage= 24,152 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

└─1=Culvert ( Controls 0.00 cfs)

└─2=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

└─3=Broad-Crested Rectangular Weir( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 401.120 ac, 22.54% Impervious, Inflow Depth > 1.33" for 2-year event  
 Inflow = 106.39 cfs @ 13.64 hrs, Volume= 44.394 af  
 Outflow = 104.58 cfs @ 13.84 hrs, Volume= 44.394 af, Atten= 2%, Lag= 11.9 min  
 Primary = 104.58 cfs @ 13.84 hrs, Volume= 44.394 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 141.90' @ 13.84 hrs Surf.Area= 33,303 sf Storage= 41,753 cf

Plug-Flow detention time= 5.2 min calculated for 44.388 af (100% of inflow)  
 Center-of-Mass det. time= 5.1 min ( 1,024.6 - 1,019.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=104.58 cfs @ 13.84 hrs HW=141.90' TW=130.40' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 104.58 cfs @ 8.78 fps)

**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 1.39" for 2-year event  
 Inflow = 175.37 cfs @ 13.72 hrs, Volume= 101.114 af  
 Outflow = 175.24 cfs @ 13.78 hrs, Volume= 101.076 af, Atten= 0%, Lag= 3.8 min  
 Primary = 64.54 cfs @ 13.78 hrs, Volume= 28.308 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 110.70 cfs @ 13.78 hrs, Volume= 72.768 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 130.40' @ 13.78 hrs Surf.Area= 19,536 sf Storage= 43,659 cf

Plug-Flow detention time= 6.1 min calculated for 101.062 af (100% of inflow)  
 Center-of-Mass det. time= 4.9 min ( 1,031.5 - 1,026.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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*Type III 24-hr 2-year Rainfall=3.40"*

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**Primary OutFlow** Max=64.54 cfs @ 13.78 hrs HW=130.40' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Inlet Controls 64.54 cfs @ 5.70 fps)

**Secondary OutFlow** Max=110.70 cfs @ 13.78 hrs HW=130.40' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 110.70 cfs @ 6.75 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2IP: PROPOSED PHASE 1 BASIN**

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth > 1.60" for 2-year event  
 Inflow = 66.09 cfs @ 12.14 hrs, Volume= 15.023 af  
 Outflow = 10.30 cfs @ 16.94 hrs, Volume= 9.301 af, Atten= 84%, Lag= 287.9 min  
 Primary = 10.30 cfs @ 16.94 hrs, Volume= 9.301 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 142.17' @ 16.94 hrs Surf.Area= 136,900 sf Storage= 401,200 cf

Plug-Flow detention time= 568.0 min calculated for 9.300 af (62% of inflow)  
 Center-of-Mass det. time= 409.7 min ( 1,356.5 - 946.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	<b>36.0" W x 10.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	144.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	<b>20.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## SWNAS - Proposed Watershed

Type III 24-hr 2-year Rainfall=3.40"

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**Primary OutFlow** Max=10.30 cfs @ 16.94 hrs HW=142.17' TW=140.04' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 10.30 cfs of 43.97 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 10.30 cfs @ 4.12 fps)
- ↑ 3=Orifice/Grate ( Controls 0.00 cfs)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2JP: PROPOSED BASIN**

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 2.09" for 2-year event  
 Inflow = 38.48 cfs @ 12.09 hrs, Volume= 2.742 af  
 Outflow = 11.04 cfs @ 12.44 hrs, Volume= 2.396 af, Atten= 71%, Lag= 21.3 min  
 Primary = 11.04 cfs @ 12.44 hrs, Volume= 2.396 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 162.62' @ 12.44 hrs Surf.Area= 32,772 sf Storage= 50,528 cf

Plug-Flow detention time= 167.2 min calculated for 2.396 af (87% of inflow)  
 Center-of-Mass det. time= 110.2 min ( 926.5 - 816.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	<b>24.0" Round Culvert</b> L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	164.50'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=11.04 cfs @ 12.44 hrs HW=162.62' TW=144.13' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 11.04 cfs of 11.84 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 11.04 cfs @ 3.68 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2KP: PROPOSED BASIN**

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 1.85" for 2-year event  
 Inflow = 45.61 cfs @ 12.09 hrs, Volume= 3.239 af  
 Outflow = 4.67 cfs @ 12.98 hrs, Volume= 2.235 af, Atten= 90%, Lag= 53.5 min  
 Primary = 4.67 cfs @ 12.98 hrs, Volume= 2.235 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.68' @ 12.98 hrs Surf.Area= 46,503 sf Storage= 74,740 cf

Plug-Flow detention time= 296.5 min calculated for 2.235 af (69% of inflow)  
 Center-of-Mass det. time= 198.8 min ( 1,025.6 - 826.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	150.75'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	152.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.67 cfs @ 12.98 hrs HW=149.68' TW=130.12' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 4.67 cfs of 17.99 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 4.67 cfs @ 3.11 fps)
- ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)
- ↑ **4=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2LP: PROPOSED BASIN**

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-year event  
 Inflow = 27.16 cfs @ 12.09 hrs, Volume= 1.940 af  
 Outflow = 10.06 cfs @ 12.35 hrs, Volume= 1.714 af, Atten= 63%, Lag= 15.9 min  
 Primary = 10.06 cfs @ 12.35 hrs, Volume= 1.714 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 156.56' @ 12.35 hrs Surf.Area= 22,297 sf Storage= 32,284 cf

Plug-Flow detention time= 139.6 min calculated for 1.714 af (88% of inflow)  
 Center-of-Mass det. time= 85.3 min ( 897.9 - 812.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	<b>24.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	157.00'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	158.50'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	<b>10.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=10.06 cfs @ 12.35 hrs HW=156.56' TW=129.44' (Dynamic Tailwater)

- ↑ **1=Culvert** (Barrel Controls 10.06 cfs @ 5.28 fps)
- ↑ **2=Orifice/Grate** (Passes 10.06 cfs of 10.34 cfs potential flow)
- ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)
- ↑ **4=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 2MP: PROPOSED BASIN**

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 2.18" for 2-year event  
 Inflow = 49.15 cfs @ 12.09 hrs, Volume= 3.512 af  
 Outflow = 22.61 cfs @ 12.27 hrs, Volume= 3.342 af, Atten= 54%, Lag= 10.9 min  
 Primary = 22.61 cfs @ 12.27 hrs, Volume= 3.342 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 179.76' @ 12.27 hrs Surf.Area= 18,220 sf Storage= 44,575 cf

Plug-Flow detention time= 78.8 min calculated for 3.342 af (95% of inflow)  
 Center-of-Mass det. time= 52.3 min ( 864.9 - 812.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	<b>42.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	178.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	180.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=22.61 cfs @ 12.27 hrs HW=179.76' TW=151.14' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 22.61 cfs of 46.09 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 10.24 cfs @ 6.83 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 12.37 cfs @ 4.12 fps)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 1.42" for 2-year event  
 Inflow = 34.70 cfs @ 13.05 hrs, Volume= 7.325 af  
 Outflow = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af, Atten= 1%, Lag= 3.1 min  
 Primary = 34.35 cfs @ 13.10 hrs, Volume= 7.319 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.79' @ 13.10 hrs Surf.Area= 3,411 sf Storage= 5,608 cf

Plug-Flow detention time= 4.0 min calculated for 7.319 af (100% of inflow)  
 Center-of-Mass det. time= 3.2 min ( 913.0 - 909.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=34.35 cfs @ 13.10 hrs HW=144.79' TW=132.44' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 34.35 cfs @ 5.52 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=141.50' TW=129.20' (Dynamic Tailwater)  
 ↑2=Spillway over Path ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 1.33" for 2-year event  
 Inflow = 82.52 cfs @ 13.31 hrs, Volume= 21.534 af  
 Outflow = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af, Atten= 8%, Lag= 16.7 min  
 Primary = 76.28 cfs @ 13.59 hrs, Volume= 21.534 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 132.93' @ 13.59 hrs Surf.Area= 36,830 sf Storage= 59,880 cf

Plug-Flow detention time= 8.8 min calculated for 21.531 af (100% of inflow)  
 Center-of-Mass det. time= 8.8 min ( 943.4 - 934.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=76.28 cfs @ 13.59 hrs HW=132.93' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 76.28 cfs @ 6.74 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=129.20' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path ( Controls 0.00 cfs)

# SWNAS - Proposed Watershed

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1A:

Runoff = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 4.19"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

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## Summary for Subcatchment 1B:

Runoff = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af, Depth= 4.08"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

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## Summary for Subcatchment 1C:

Assumed pipe channel has slope 0.005 since no data given

Runoff = 54.31 cfs @ 12.61 hrs, Volume= 8.413 af, Depth= 3.76"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1D:**

Runoff = 18.51 cfs @ 13.07 hrs, Volume= 4.021 af, Depth= 1.65"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
72.2	1,740	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1E:**

Runoff = 409.37 cfs @ 12.09 hrs, Volume= 29.181 af, Depth= 3.17"  
Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 63.870	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
110.510	82	Weighted Average
110.510		100.00% Pervious Area

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



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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1F:

Runoff = 40.01 cfs @ 12.09 hrs, Volume= 2.875 af, Depth= 3.46"  
Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

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

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**Summary for Subcatchment 1G:**

Runoff = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af, Depth= 4.19"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

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## Summary for Subcatchment 1H:

Runoff = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af, Depth= 4.41"  
Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

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**Summary for Subcatchment 1I:**

Runoff = 66.81 cfs @ 13.50 hrs, Volume= 17.943 af, Depth= 1.95"  
 Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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## Summary for Subcatchment 1J:

Runoff = 22.46 cfs @ 12.08 hrs, Volume= 1.824 af, Depth= 4.86"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

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

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1K:

Runoff = 109.12 cfs @ 12.14 hrs, Volume= 9.078 af, Depth= 3.76"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 1L:**

Runoff = 107.77 cfs @ 12.14 hrs, Volume= 8.883 af, Depth= 3.56"  
 Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

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

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1M:

Runoff = 36.17 cfs @ 12.14 hrs, Volume= 2.970 af, Depth= 3.46"  
Routed to Pond 1MP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

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



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## Summary for Subcatchment 1N:

Assumed slope of 0.002

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Runoff = 90.75 cfs @ 12.14 hrs, Volume= 7.480 af, Depth= 3.56"  
Routed to Pond 1NP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 10:**

Runoff = 32.04 cfs @ 12.09 hrs, Volume= 2.322 af, Depth= 3.66"

Routed to Pond 1OP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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

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## Summary for Subcatchment 1P:

Runoff = 80.38 cfs @ 12.09 hrs, Volume= 5.825 af, Depth= 3.66"  
Routed to Pond 1PP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

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

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 1Q:

Runoff = 71.29 cfs @ 12.09 hrs, Volume= 5.166 af, Depth= 3.66"  
Routed to Pond 1QP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

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

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2A:

Runoff = 126.52 cfs @ 13.29 hrs, Volume= 31.997 af, Depth= 2.71"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
100.5	2,090	Total			

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## Summary for Subcatchment 2B:

Runoff = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af, Depth= 4.41"  
Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2C:**

Runoff = 62.44 cfs @ 12.08 hrs, Volume= 4.906 af, Depth= 4.63"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 10.340	98	Pavement
* 1.680	98	Roofs
0.400	39	>75% Grass cover, Good, HSG A
0.290	74	>75% Grass cover, Good, HSG C
12.710	96	Weighted Average
0.690		5.43% Pervious Area
12.020		94.57% Impervious Area

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

# SWNAS - Proposed Watershed

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2D-1:

Runoff = 10.48 cfs @ 12.08 hrs, Volume= 0.851 af, Depth= 4.86"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 2.100	98	Pavement
2.100		100.00% Impervious Area

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



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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2D-2:

Runoff = 0.03 cfs @ 12.46 hrs, Volume= 0.012 af, Depth= 0.22"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
0.670	39	>75% Grass cover, Good, HSG A
0.670		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2E:**

Runoff = 25.44 cfs @ 13.29 hrs, Volume= 6.425 af, Depth= 1.57"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2F:

Runoff = 44.14 cfs @ 12.99 hrs, Volume= 9.274 af, Depth= 1.80"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
70.4	775	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2G:

Assumed Tc value

---

Runoff = 18.52 cfs @ 13.47 hrs, Volume= 5.337 af, Depth= 3.87"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 8.14 cfs @ 13.60 hrs, Volume= 2.318 af, Depth= 3.17"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2I-1:

Runoff = 90.04 cfs @ 12.14 hrs, Volume= 7.490 af, Depth= 3.76"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2J:**

Runoff = 66.19 cfs @ 12.09 hrs, Volume= 4.797 af, Depth= 3.66"

Routed to Pond 2JP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2K:

Runoff = 82.14 cfs @ 12.09 hrs, Volume= 5.884 af, Depth= 3.36"  
Routed to Pond 2KP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

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



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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 2L:

Runoff = 46.03 cfs @ 12.09 hrs, Volume= 3.353 af, Depth= 3.76"  
Routed to Pond 2LP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 2M:**

Runoff = 83.32 cfs @ 12.09 hrs, Volume= 6.069 af, Depth= 3.76"

Routed to Pond 2MP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 3A:**

Runoff = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af, Depth= 2.80"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 3B:**

Runoff = 109.34 cfs @ 13.43 hrs, Volume= 28.778 af, Depth= 2.62"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

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Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 21-2:

Runoff = 23.84 cfs @ 12.15 hrs, Volume= 1.986 af, Depth= 2.03"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

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

## **SWNAS - Proposed Watershed**

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth > 2.96" for 10-year event  
Inflow = 62.29 cfs @ 16.45 hrs, Volume= 93.114 af  
Outflow = 62.29 cfs @ 16.45 hrs, Volume= 93.114 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 2.76" for 10-year event

Inflow = 266.28 cfs @ 13.73 hrs, Volume= 200.400 af

Outflow = 266.28 cfs @ 13.73 hrs, Volume= 200.400 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 10-year Rainfall=5.10"*

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### **Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event  
Inflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af  
Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.276 af  
 Outflow = 3.63 cfs @ 12.11 hrs, Volume= 0.276 af, Atten= 1%, Lag= 1.7 min  
 Discarded = 0.12 cfs @ 10.44 hrs, Volume= 0.170 af  
 Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.106 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.02' @ 12.11 hrs Surf.Area= 2,201 sf Storage= 2,829 cf

Plug-Flow detention time= 100.4 min calculated for 0.276 af (100% of inflow)  
 Center-of-Mass det. time= 100.4 min ( 882.5 - 782.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115'/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 10.44 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=3.37 cfs @ 12.11 hrs HW=170.99' TW=151.64' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 3.37 cfs @ 3.84 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

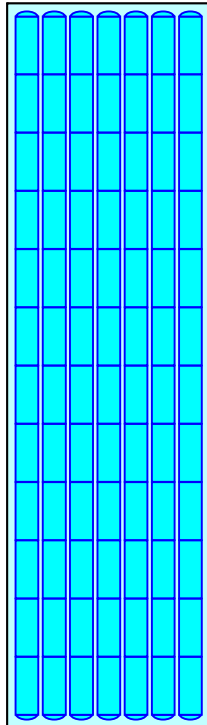
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 4.08" for 10-year event  
 Inflow = 4.12 cfs @ 12.08 hrs, Volume= 0.306 af  
 Outflow = 3.62 cfs @ 12.13 hrs, Volume= 0.306 af, Atten= 12%, Lag= 2.6 min  
 Discarded = 0.13 cfs @ 10.34 hrs, Volume= 0.184 af  
 Primary = 3.49 cfs @ 12.13 hrs, Volume= 0.122 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.25' @ 12.13 hrs Surf.Area= 2,378 sf Storage= 2,975 cf

Plug-Flow detention time= 98.7 min calculated for 0.306 af (100% of inflow)  
 Center-of-Mass det. time= 98.7 min ( 884.9 - 786.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 10.34 hrs HW=169.06' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=3.48 cfs @ 12.13 hrs HW=171.25' TW=151.70' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 3.48 cfs @ 3.82 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

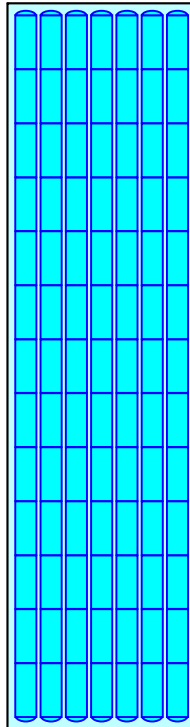
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



**SWNAS - Proposed Watershed**

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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 3.65" for 10-year event  
 Inflow = 84.65 cfs @ 12.20 hrs, Volume= 14.541 af  
 Outflow = 32.27 cfs @ 13.25 hrs, Volume= 14.478 af, Atten= 62%, Lag= 62.8 min  
 Primary = 32.27 cfs @ 13.25 hrs, Volume= 14.478 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 154.30' @ 13.25 hrs Surf.Area= 71,256 sf Storage= 252,476 cf

Plug-Flow detention time= 152.7 min calculated for 14.478 af (100% of inflow)  
 Center-of-Mass det. time= 149.5 min ( 984.4 - 834.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=32.27 cfs @ 13.25 hrs HW=154.30' TW=145.66' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 32.27 cfs @ 8.12 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 2.88" for 10-year event  
 Inflow = 50.51 cfs @ 13.08 hrs, Volume= 18.500 af  
 Outflow = 50.37 cfs @ 13.13 hrs, Volume= 18.500 af, Atten= 0%, Lag= 3.1 min  
 Primary = 24.69 cfs @ 13.13 hrs, Volume= 8.731 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN  
 Secondary = 25.69 cfs @ 13.13 hrs, Volume= 9.769 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.67' @ 13.13 hrs Surf.Area= 4,505 sf Storage= 3,093 cf

Plug-Flow detention time= 0.5 min calculated for 18.497 af (100% of inflow)  
 Center-of-Mass det. time= 0.5 min ( 971.8 - 971.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=24.69 cfs @ 13.13 hrs HW=145.67' TW=142.37' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 24.69 cfs @ 3.67 fps)

**Secondary OutFlow** Max=25.68 cfs @ 13.13 hrs HW=145.67' TW=142.37' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 25.68 cfs @ 3.68 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 3.46" for 10-year event  
 Inflow = 40.01 cfs @ 12.09 hrs, Volume= 2.875 af  
 Outflow = 2.42 cfs @ 13.94 hrs, Volume= 1.384 af, Atten= 94%, Lag= 111.4 min  
 Primary = 2.42 cfs @ 13.94 hrs, Volume= 1.384 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.23' @ 13.94 hrs Surf.Area= 24,966 sf Storage= 81,891 cf

Plug-Flow detention time= 418.6 min calculated for 1.384 af (48% of inflow)  
 Center-of-Mass det. time= 304.2 min ( 1,111.0 - 806.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=2.42 cfs @ 13.94 hrs HW=147.23' TW=144.29' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 2.42 cfs @ 3.44 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 8.54 cfs @ 12.39 hrs, Volume= 1.110 af  
 Outflow = 5.67 cfs @ 12.67 hrs, Volume= 1.102 af, Atten= 34%, Lag= 17.1 min  
 Primary = 5.34 cfs @ 12.67 hrs, Volume= 1.098 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 0.33 cfs @ 12.67 hrs, Volume= 0.003 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.36' @ 12.67 hrs Surf.Area= 4,179 sf Storage= 7,713 cf

Plug-Flow detention time= 26.1 min calculated for 1.102 af (99% of inflow)  
 Center-of-Mass det. time= 21.7 min ( 825.4 - 803.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.34 cfs @ 12.67 hrs HW=169.36' TW=150.34' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.34 cfs @ 6.79 fps)

**Secondary OutFlow** Max=0.33 cfs @ 12.67 hrs HW=169.36' TW=150.34' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.33 cfs @ 0.64 fps)



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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 4.41" for 10-year event  
 Inflow = 6.33 cfs @ 12.08 hrs, Volume= 0.485 af  
 Outflow = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af, Atten= 31%, Lag= 4.9 min  
 Primary = 4.34 cfs @ 12.17 hrs, Volume= 0.483 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.27' @ 12.17 hrs Surf.Area= 1,803 sf Storage= 1,616 cf

Plug-Flow detention time= 9.8 min calculated for 0.483 af (100% of inflow)  
 Center-of-Mass det. time= 6.8 min ( 779.7 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.34 cfs @ 12.17 hrs HW=164.27' TW=149.76' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 4.34 cfs @ 5.52 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1IP: TACAN**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth = 2.96" for 10-year event  
 Inflow = 491.57 cfs @ 12.09 hrs, Volume= 93.116 af  
 Outflow = 62.29 cfs @ 16.45 hrs, Volume= 93.114 af, Atten= 87%, Lag= 261.3 min  
 Primary = 62.29 cfs @ 16.45 hrs, Volume= 93.114 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.68' @ 16.45 hrs Surf.Area= 967,868 sf Storage= 1,769,529 cf

Plug-Flow detention time= 310.7 min calculated for 93.114 af (100% of inflow)  
 Center-of-Mass det. time= 310.6 min ( 1,219.0 - 908.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	<b>24.0" W x 24.0" H Vert. Low Flow Orifice</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.40'	<b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

**Primary OutFlow** Max=62.29 cfs @ 16.45 hrs HW=144.68' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 62.29 cfs of 428.45 cfs potential flow)
- 2=Low Flow Orifice (Orifice Controls 59.89 cfs @ 14.97 fps)
- 3=Custom Weir/Orifice (Weir Controls 2.40 cfs @ 1.73 fps)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1LP: CENTRAL GREENWAY**

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 3.78" for 10-year event  
 Inflow = 242.86 cfs @ 12.13 hrs, Volume= 21.369 af  
 Outflow = 104.16 cfs @ 12.19 hrs, Volume= 21.364 af, Atten= 57%, Lag= 3.7 min  
 Primary = 104.16 cfs @ 12.19 hrs, Volume= 21.364 af  
 Routed to Pond 1MP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1MP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.47' @ 12.49 hrs Surf.Area= 81,605 sf Storage= 216,572 cf

Plug-Flow detention time= 42.6 min calculated for 21.361 af (100% of inflow)  
 Center-of-Mass det. time= 42.7 min ( 842.6 - 799.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>42.0" Round Culvert X 2.00</b> L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	<b>130.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=101.59 cfs @ 12.19 hrs HW=149.92' TW=148.72' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 101.59 cfs @ 5.28 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1IP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 3.74" for 10-year event  
 Inflow = 136.66 cfs @ 12.18 hrs, Volume= 24.335 af  
 Outflow = 80.21 cfs @ 12.64 hrs, Volume= 24.331 af, Atten= 41%, Lag= 27.7 min  
 Primary = 80.21 cfs @ 12.64 hrs, Volume= 24.331 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.75' @ 12.64 hrs Surf.Area= 51,335 sf Storage= 137,467 cf

Plug-Flow detention time= 26.7 min calculated for 24.327 af (100% of inflow)  
 Center-of-Mass det. time= 26.5 min ( 865.1 - 838.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>42.0" Round Culvert</b> L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	<b>130.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=80.21 cfs @ 12.64 hrs HW=149.75' TW=143.27' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 80.21 cfs @ 8.34 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 3.56" for 10-year event  
 Inflow = 90.75 cfs @ 12.14 hrs, Volume= 7.480 af  
 Outflow = 9.21 cfs @ 16.04 hrs, Volume= 7.445 af, Atten= 90%, Lag= 234.3 min  
 Primary = 9.21 cfs @ 16.04 hrs, Volume= 7.445 af  
 Routed to Pond 1OP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1OP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.10' @ 13.16 hrs Surf.Area= 79,457 sf Storage= 169,117 cf

Plug-Flow detention time= 245.8 min calculated for 7.444 af (100% of inflow)  
 Center-of-Mass det. time= 243.3 min ( 1,050.7 - 807.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	<b>24.0" Round Culvert</b> L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 38.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=9.24 cfs @ 16.04 hrs HW=149.62' TW=149.22' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 9.24 cfs @ 2.95 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1OP: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 3.57" for 10-year event  
 Inflow = 37.39 cfs @ 12.08 hrs, Volume= 9.767 af  
 Outflow = 12.86 cfs @ 12.08 hrs, Volume= 9.763 af, Atten= 66%, Lag= 0.0 min  
 Primary = 12.86 cfs @ 12.08 hrs, Volume= 9.763 af  
 Routed to Pond 1PP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1PP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.73' @ 13.11 hrs Surf.Area= 19,081 sf Storage= 39,373 cf

Plug-Flow detention time= 41.3 min calculated for 9.763 af (100% of inflow)  
 Center-of-Mass det. time= 40.0 min ( 1,031.2 - 991.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>24.0" Round Culvert</b> L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=12.34 cfs @ 12.08 hrs HW=148.57' TW=147.84' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 12.34 cfs @ 3.97 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 3.60" for 10-year event  
 Inflow = 93.22 cfs @ 12.09 hrs, Volume= 15.588 af  
 Outflow = 18.67 cfs @ 14.09 hrs, Volume= 15.553 af, Atten= 80%, Lag= 120.1 min  
 Primary = 18.67 cfs @ 14.09 hrs, Volume= 15.553 af  
 Routed to Pond 1QP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1QP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.08' @ 13.12 hrs Surf.Area= 60,696 sf Storage= 147,885 cf

Plug-Flow detention time= 115.6 min calculated for 15.553 af (100% of inflow)  
 Center-of-Mass det. time= 110.1 min ( 1,055.0 - 945.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>24.0" Round Culvert</b> L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=18.67 cfs @ 14.09 hrs HW=148.98' TW=146.88' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 18.67 cfs @ 5.94 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 1QP: WEST GREENWAY**

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 3.61" for 10-year event  
 Inflow = 84.38 cfs @ 12.09 hrs, Volume= 20.718 af  
 Outflow = 33.71 cfs @ 12.46 hrs, Volume= 20.277 af, Atten= 60%, Lag= 22.7 min  
 Primary = 33.71 cfs @ 12.46 hrs, Volume= 20.277 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.43' @ 12.46 hrs Surf.Area= 52,531 sf Storage= 111,139 cf

Plug-Flow detention time= 85.0 min calculated for 20.277 af (98% of inflow)  
 Center-of-Mass det. time= 58.6 min ( 1,050.2 - 991.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>36.0" Round Culvert</b> L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	<b>36.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	148.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=33.71 cfs @ 12.46 hrs HW=147.43' TW=143.04' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 33.71 cfs of 47.23 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 33.71 cfs @ 5.62 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 3.15" for 10-year event  
 Inflow = 189.72 cfs @ 13.29 hrs, Volume= 58.801 af  
 Outflow = 157.60 cfs @ 13.86 hrs, Volume= 58.801 af, Atten= 17%, Lag= 34.0 min  
 Primary = 77.34 cfs @ 13.86 hrs, Volume= 28.487 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 80.26 cfs @ 13.86 hrs, Volume= 30.314 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.51' @ 13.86 hrs Surf.Area= 167,968 sf Storage= 199,436 cf

Plug-Flow detention time= 10.1 min calculated for 58.793 af (100% of inflow)  
 Center-of-Mass det. time= 10.1 min ( 916.5 - 906.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=77.34 cfs @ 13.86 hrs HW=146.51' TW=143.80' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 77.34 cfs @ 6.49 fps)

**Secondary OutFlow** Max=80.26 cfs @ 13.86 hrs HW=146.51' TW=143.80' (Dynamic Tailwater)  
 ↑2=Culvert (Barrel Controls 80.26 cfs @ 6.73 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 4.41" for 10-year event  
 Inflow = 196.19 cfs @ 12.08 hrs, Volume= 15.019 af  
 Outflow = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af, Atten= 84%, Lag= 28.6 min  
 Primary = 30.75 cfs @ 12.56 hrs, Volume= 14.696 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.13' @ 12.56 hrs Surf.Area= 81,286 sf Storage= 266,655 cf

Plug-Flow detention time= 129.2 min calculated for 14.696 af (98% of inflow)  
 Center-of-Mass det. time= 115.8 min ( 888.7 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=30.75 cfs @ 12.56 hrs HW=149.13' TW=144.93' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 30.75 cfs @ 9.79 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.710 ac, 94.57% Impervious, Inflow Depth = 4.63" for 10-year event  
 Inflow = 62.44 cfs @ 12.08 hrs, Volume= 4.906 af  
 Outflow = 16.66 cfs @ 12.43 hrs, Volume= 2.567 af, Atten= 73%, Lag= 21.1 min  
 Primary = 16.66 cfs @ 12.43 hrs, Volume= 2.567 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.75' @ 12.43 hrs Surf.Area= 30,311 sf Storage= 123,632 cf

Plug-Flow detention time= 269.8 min calculated for 2.567 af (52% of inflow)  
 Center-of-Mass det. time= 151.9 min ( 913.9 - 761.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=16.66 cfs @ 12.43 hrs HW=146.75' TW=141.46' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 16.66 cfs of 42.27 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 16.66 cfs @ 4.17 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 2.770 ac, 75.81% Impervious, Inflow Depth = 3.74" for 10-year event  
 Inflow = 10.48 cfs @ 12.08 hrs, Volume= 0.863 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.18' @ 24.34 hrs Surf.Area= 10,518 sf Storage= 37,608 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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*Type III 24-hr 10-year Rainfall=5.10"*

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**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

↳ **1=Culvert** ( Controls 0.00 cfs)

↳ **2=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed**

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 401.120 ac, 22.54% Impervious, Inflow Depth > 2.69" for 10-year event  
 Inflow = 183.10 cfs @ 13.65 hrs, Volume= 90.044 af  
 Outflow = 173.89 cfs @ 14.15 hrs, Volume= 90.044 af, Atten= 5%, Lag= 30.0 min  
 Primary = 173.89 cfs @ 14.15 hrs, Volume= 90.044 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 143.88' @ 14.15 hrs Surf.Area= 57,100 sf Storage= 132,926 cf

Plug-Flow detention time= 8.0 min calculated for 90.044 af (100% of inflow)  
 Center-of-Mass det. time= 8.0 min ( 1,009.3 - 1,001.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=173.89 cfs @ 14.15 hrs HW=143.88' TW=131.45' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 173.89 cfs @ 8.86 fps)

**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 2.76" for 10-year event  
 Inflow = 266.61 cfs @ 13.55 hrs, Volume= 200.438 af  
 Outflow = 266.28 cfs @ 13.73 hrs, Volume= 200.400 af, Atten= 0%, Lag= 11.0 min  
 Primary = 107.75 cfs @ 13.73 hrs, Volume= 65.702 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 158.54 cfs @ 13.73 hrs, Volume= 134.697 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 131.47' @ 13.73 hrs Surf.Area= 38,299 sf Storage= 70,508 cf

Plug-Flow detention time= 5.1 min calculated for 200.400 af (100% of inflow)  
 Center-of-Mass det. time= 4.5 min ( 1,104.3 - 1,099.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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**Primary OutFlow** Max=107.74 cfs @ 13.73 hrs HW=131.47' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 107.74 cfs @ 7.01 fps)

**Secondary OutFlow** Max=158.54 cfs @ 13.73 hrs HW=131.47' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 158.54 cfs @ 7.54 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)



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**Summary for Pond 2IP: PROPOSED PHASE 1 BASIN**

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth > 2.98" for 10-year event  
 Inflow = 127.44 cfs @ 12.14 hrs, Volume= 27.977 af  
 Outflow = 36.28 cfs @ 15.85 hrs, Volume= 22.251 af, Atten= 72%, Lag= 222.5 min  
 Primary = 36.28 cfs @ 15.85 hrs, Volume= 22.251 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 144.31' @ 15.32 hrs Surf.Area= 151,040 sf Storage= 708,876 cf

Plug-Flow detention time= 435.2 min calculated for 22.248 af (80% of inflow)  
 Center-of-Mass det. time= 335.0 min ( 1,252.5 - 917.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	<b>36.0" W x 10.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	144.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	<b>20.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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**Primary OutFlow** Max=36.36 cfs @ 15.85 hrs HW=144.25' TW=142.63' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 36.36 cfs of 43.40 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 15.35 cfs @ 6.14 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 16.01 cfs @ 5.34 fps)
- ↑ **4=Orifice/Grate** (Weir Controls 4.99 cfs @ 1.64 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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**Summary for Pond 2JP: PROPOSED BASIN**

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 3.66" for 10-year event  
 Inflow = 66.19 cfs @ 12.09 hrs, Volume= 4.797 af  
 Outflow = 18.29 cfs @ 12.44 hrs, Volume= 4.451 af, Atten= 72%, Lag= 21.3 min  
 Primary = 18.29 cfs @ 12.44 hrs, Volume= 4.451 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 163.62' @ 12.44 hrs Surf.Area= 34,830 sf Storage= 84,092 cf

Plug-Flow detention time= 130.9 min calculated for 4.451 af (93% of inflow)  
 Center-of-Mass det. time= 93.5 min ( 894.0 - 800.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	<b>24.0" Round Culvert</b> L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	164.50'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=18.29 cfs @ 12.44 hrs HW=163.62' TW=144.73' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 18.29 cfs of 19.23 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 18.29 cfs @ 6.10 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

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**Summary for Pond 2KP: PROPOSED BASIN**

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 3.36" for 10-year event  
 Inflow = 82.14 cfs @ 12.09 hrs, Volume= 5.884 af  
 Outflow = 10.01 cfs @ 12.73 hrs, Volume= 4.879 af, Atten= 88%, Lag= 38.3 min  
 Primary = 10.01 cfs @ 12.73 hrs, Volume= 4.879 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.92' @ 12.73 hrs Surf.Area= 51,905 sf Storage= 135,380 cf

Plug-Flow detention time= 247.9 min calculated for 4.879 af (83% of inflow)  
 Center-of-Mass det. time= 178.2 min ( 988.0 - 809.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	150.75'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	152.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=10.01 cfs @ 12.73 hrs HW=150.92' TW=130.90' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 10.01 cfs of 40.83 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 9.33 cfs @ 6.22 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 0.68 cfs @ 1.33 fps)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2LP: PROPOSED BASIN**

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 3.76" for 10-year event  
 Inflow = 46.03 cfs @ 12.09 hrs, Volume= 3.353 af  
 Outflow = 17.21 cfs @ 12.34 hrs, Volume= 3.127 af, Atten= 63%, Lag= 15.0 min  
 Primary = 17.21 cfs @ 12.34 hrs, Volume= 3.127 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 157.32' @ 12.34 hrs Surf.Area= 23,879 sf Storage= 50,005 cf

Plug-Flow detention time= 107.0 min calculated for 3.127 af (93% of inflow)  
 Center-of-Mass det. time= 71.4 min ( 868.6 - 797.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	<b>24.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	157.00'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	158.50'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	<b>10.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=17.21 cfs @ 12.34 hrs HW=157.32' TW=130.20' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Barrel Controls 17.21 cfs @ 5.92 fps)  
 ↑ **2=Orifice/Grate** (Passes < 16.53 cfs potential flow)  
 ↑ **3=Orifice/Grate** (Passes < 1.78 cfs potential flow)  
 ↑ **4=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)  
 ↑ **5=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

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Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 2MP: PROPOSED BASIN**

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 3.76" for 10-year event  
 Inflow = 83.32 cfs @ 12.09 hrs, Volume= 6.069 af  
 Outflow = 54.02 cfs @ 12.18 hrs, Volume= 5.900 af, Atten= 35%, Lag= 5.5 min  
 Primary = 54.02 cfs @ 12.18 hrs, Volume= 5.900 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 180.70' @ 12.18 hrs Surf.Area= 19,786 sf Storage= 62,372 cf

Plug-Flow detention time= 59.9 min calculated for 5.899 af (97% of inflow)  
 Center-of-Mass det. time= 43.5 min ( 840.7 - 797.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	<b>42.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	178.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	180.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=53.99 cfs @ 12.18 hrs HW=180.70' TW=151.92' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 53.99 cfs of 64.64 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 12.40 cfs @ 8.26 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 18.75 cfs @ 6.25 fps)
- ↑ 4=Orifice/Grate (Weir Controls 22.85 cfs @ 2.73 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 2.80" for 10-year event  
 Inflow = 69.64 cfs @ 13.04 hrs, Volume= 14.408 af  
 Outflow = 61.56 cfs @ 13.30 hrs, Volume= 14.402 af, Atten= 12%, Lag= 15.3 min  
 Primary = 60.25 cfs @ 13.30 hrs, Volume= 14.376 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 1.31 cfs @ 13.30 hrs, Volume= 0.027 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.83' @ 13.30 hrs Surf.Area= 28,525 sf Storage= 31,582 cf

Plug-Flow detention time= 5.1 min calculated for 14.402 af (100% of inflow)  
 Center-of-Mass det. time= 4.6 min ( 894.7 - 890.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=60.25 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 60.25 cfs @ 8.52 fps)

**Secondary OutFlow** Max=1.31 cfs @ 13.30 hrs HW=146.83' TW=134.60' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 1.31 cfs @ 0.98 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 2.67" for 10-year event  
 Inflow = 169.73 cfs @ 13.43 hrs, Volume= 43.180 af  
 Outflow = 153.44 cfs @ 13.77 hrs, Volume= 43.180 af, Atten= 10%, Lag= 20.5 min  
 Primary = 152.02 cfs @ 13.77 hrs, Volume= 43.159 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 1.42 cfs @ 13.77 hrs, Volume= 0.021 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.16' @ 13.77 hrs Surf.Area= 58,726 sf Storage= 164,766 cf

Plug-Flow detention time= 12.1 min calculated for 43.174 af (100% of inflow)  
 Center-of-Mass det. time= 12.1 min ( 927.1 - 914.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=152.01 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 152.01 cfs @ 8.20 fps)

**Secondary OutFlow** Max=1.42 cfs @ 13.77 hrs HW=135.16' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 1.42 cfs @ 0.63 fps)



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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1A:

Runoff = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af, Depth= 5.27"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

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## Summary for Subcatchment 1B:

Runoff = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 5.15"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 68.81 cfs @ 12.61 hrs, Volume= 10.770 af, Depth= 4.82"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1D:**

Runoff = 27.98 cfs @ 13.00 hrs, Volume= 5.881 af, Depth= 2.41"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
72.2	1,740	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1E:

Runoff = 535.14 cfs @ 12.09 hrs, Volume= 38.416 af, Depth= 4.17"  
Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 63.870	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
110.510	82	Weighted Average
110.510		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1F:**

Runoff = 51.41 cfs @ 12.09 hrs, Volume= 3.732 af, Depth= 4.49"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1G:**

Runoff = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af, Depth= 5.27"

Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

# SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1H:

Runoff = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af, Depth= 5.49"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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



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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1I:

Runoff = 96.96 cfs @ 13.40 hrs, Volume= 25.524 af, Depth= 2.78"  
 Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1J:

Runoff = 27.35 cfs @ 12.08 hrs, Volume= 2.236 af, Depth= 5.96"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1K:

Runoff = 138.09 cfs @ 12.14 hrs, Volume= 11.621 af, Depth= 4.82"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1L:

Runoff = 137.82 cfs @ 12.14 hrs, Volume= 11.476 af, Depth= 4.60"  
Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1M:

Runoff = 46.50 cfs @ 12.14 hrs, Volume= 3.855 af, Depth= 4.49"  
Routed to Pond 1MP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 1N:

Assumed slope of 0.002

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Runoff = 116.05 cfs @ 12.14 hrs, Volume= 9.663 af, Depth= 4.60"  
Routed to Pond 1NP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 10:

Runoff = 40.74 cfs @ 12.09 hrs, Volume= 2.986 af, Depth= 4.71"  
Routed to Pond 1OP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1P:**

Runoff = 102.19 cfs @ 12.09 hrs, Volume= 7.491 af, Depth= 4.71"  
 Routed to Pond 1PP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

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



**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 1Q:**

Runoff = 90.63 cfs @ 12.09 hrs, Volume= 6.643 af, Depth= 4.71"

Routed to Pond 1QP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2A:

Runoff = 171.79 cfs @ 13.29 hrs, Volume= 43.197 af, Depth= 3.65"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
100.5	2,090	Total			

# SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2B:

Runoff = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af, Depth= 5.49"

Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2C:

Runoff = 76.39 cfs @ 12.08 hrs, Volume= 6.065 af, Depth= 5.73"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 10.340	98	Pavement
* 1.680	98	Roofs
0.400	39	>75% Grass cover, Good, HSG A
0.290	74	>75% Grass cover, Good, HSG C
12.710	96	Weighted Average
0.690		5.43% Pervious Area
12.020		94.57% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2D-1:

Runoff = 12.76 cfs @ 12.08 hrs, Volume= 1.043 af, Depth= 5.96"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 2.100	98	Pavement
2.100		100.00% Impervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2D-2:

Runoff = 0.14 cfs @ 12.33 hrs, Volume= 0.028 af, Depth= 0.50"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
0.670	39	>75% Grass cover, Good, HSG A
0.670		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2E:**

Runoff = 38.94 cfs @ 13.28 hrs, Volume= 9.468 af, Depth= 2.32"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 2F:**

Runoff = 65.37 cfs @ 12.98 hrs, Volume= 13.370 af, Depth= 2.59"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
70.4	775	Total			



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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2G:

Assumed Tc value

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Runoff = 23.43 cfs @ 13.47 hrs, Volume= 6.803 af, Depth= 4.93"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 10.69 cfs @ 13.60 hrs, Volume= 3.052 af, Depth= 4.17"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.370	98	Pavement
* 1.690	98	Roof
3.720	61	>75% Grass cover, Good, HSG B
8.780	82	Weighted Average
3.720		42.37% Pervious Area
5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2I-1:

Runoff = 113.95 cfs @ 12.14 hrs, Volume= 9.589 af, Depth= 4.82"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2J:

Runoff = 84.15 cfs @ 12.09 hrs, Volume= 6.169 af, Depth= 4.71"  
Routed to Pond 2JP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2K:

Runoff = 106.14 cfs @ 12.09 hrs, Volume= 7.672 af, Depth= 4.38"  
Routed to Pond 2KP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

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

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Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2L:

Runoff = 58.22 cfs @ 12.09 hrs, Volume= 4.293 af, Depth= 4.82"  
Routed to Pond 2LP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 2M:

Runoff = 105.39 cfs @ 12.09 hrs, Volume= 7.770 af, Depth= 4.82"  
Routed to Pond 2MP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 3A:**

Runoff = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af, Depth= 3.76"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			



**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 3B:**

Runoff = 149.28 cfs @ 13.43 hrs, Volume= 39.057 af, Depth= 3.55"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

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## Summary for Subcatchment 21-2:

Runoff = 34.24 cfs @ 12.14 hrs, Volume= 2.807 af, Depth= 2.87"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

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

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth > 3.93" for 25-year event  
Inflow = 77.39 cfs @ 16.48 hrs, Volume= 123.614 af  
Outflow = 77.39 cfs @ 16.48 hrs, Volume= 123.614 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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**Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 3.71" for 25-year event  
Inflow = 316.61 cfs @ 13.50 hrs, Volume= 269.560 af  
Outflow = 316.61 cfs @ 13.50 hrs, Volume= 269.560 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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### **Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event

Inflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af

Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 4.56 cfs @ 12.08 hrs, Volume= 0.347 af  
 Outflow = 5.02 cfs @ 12.07 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.12 cfs @ 9.74 hrs, Volume= 0.186 af  
 Primary = 4.89 cfs @ 12.07 hrs, Volume= 0.161 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.26' @ 12.07 hrs Surf.Area= 2,201 sf Storage= 2,832 cf

Plug-Flow detention time= 91.8 min calculated for 0.347 af (100% of inflow)  
 Center-of-Mass det. time= 91.8 min ( 867.9 - 776.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115'/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 9.74 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=4.79 cfs @ 12.07 hrs HW=171.24' TW=151.99' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 4.79 cfs @ 4.17 fps)

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Type III 24-hr 25-year Rainfall=6.20"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

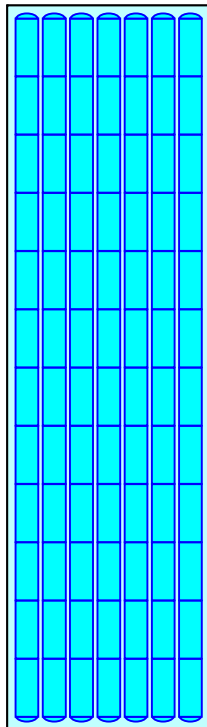
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Proposed Watershed**

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 5.15" for 25-year event  
 Inflow = 5.13 cfs @ 12.08 hrs, Volume= 0.386 af  
 Outflow = 5.49 cfs @ 12.08 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 9.62 hrs, Volume= 0.202 af  
 Primary = 5.36 cfs @ 12.08 hrs, Volume= 0.185 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.52' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,056 cf

Plug-Flow detention time= 89.9 min calculated for 0.386 af (100% of inflow)  
 Center-of-Mass det. time= 89.9 min ( 869.9 - 780.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 9.62 hrs HW=169.06' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=5.22 cfs @ 12.08 hrs HW=171.50' TW=152.04' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 5.22 cfs @ 4.14 fps)



**SWNAS - Proposed Watershed**

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

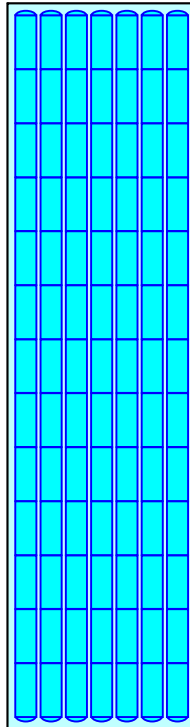
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 113.71 cfs @ 12.25 hrs, Volume= 18.716 af  
 Outflow = 38.48 cfs @ 13.27 hrs, Volume= 18.653 af, Atten= 66%, Lag= 61.3 min  
 Primary = 38.48 cfs @ 13.27 hrs, Volume= 18.653 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 155.35' @ 13.27 hrs Surf.Area= 77,627 sf Storage= 330,546 cf

Plug-Flow detention time= 150.6 min calculated for 18.653 af (100% of inflow)  
 Center-of-Mass det. time= 148.1 min ( 974.6 - 826.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=38.48 cfs @ 13.27 hrs HW=155.35' TW=146.23' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 38.48 cfs @ 9.68 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=150.00' TW=142.50' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 3.81" for 25-year event  
 Inflow = 66.03 cfs @ 13.07 hrs, Volume= 24.535 af  
 Outflow = 65.63 cfs @ 13.13 hrs, Volume= 24.535 af, Atten= 1%, Lag= 3.7 min  
 Primary = 32.41 cfs @ 13.13 hrs, Volume= 11.779 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN  
 Secondary = 33.22 cfs @ 13.13 hrs, Volume= 12.755 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.28' @ 15.58 hrs Surf.Area= 7,011 sf Storage= 6,577 cf

Plug-Flow detention time= 1.6 min calculated for 24.535 af (100% of inflow)  
 Center-of-Mass det. time= 1.6 min ( 961.2 - 959.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=32.41 cfs @ 13.13 hrs HW=146.27' TW=143.46' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 32.41 cfs @ 4.00 fps)

**Secondary OutFlow** Max=33.22 cfs @ 13.13 hrs HW=146.27' TW=143.46' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 33.22 cfs @ 3.99 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 4.49" for 25-year event  
 Inflow = 51.41 cfs @ 12.09 hrs, Volume= 3.732 af  
 Outflow = 6.04 cfs @ 12.73 hrs, Volume= 2.241 af, Atten= 88%, Lag= 38.7 min  
 Primary = 6.04 cfs @ 12.73 hrs, Volume= 2.241 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.72' @ 12.73 hrs Surf.Area= 26,178 sf Storage= 94,419 cf

Plug-Flow detention time= 327.4 min calculated for 2.240 af (60% of inflow)  
 Center-of-Mass det. time= 224.4 min ( 1,023.8 - 799.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=6.04 cfs @ 12.73 hrs HW=147.72' TW=143.95' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 6.04 cfs @ 4.29 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 10.61 cfs @ 12.37 hrs, Volume= 1.396 af  
 Outflow = 9.07 cfs @ 12.55 hrs, Volume= 1.388 af, Atten= 15%, Lag= 10.5 min  
 Primary = 5.58 cfs @ 12.55 hrs, Volume= 1.309 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 3.49 cfs @ 12.55 hrs, Volume= 0.078 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.58' @ 12.55 hrs Surf.Area= 4,379 sf Storage= 8,644 cf

Plug-Flow detention time= 23.7 min calculated for 1.387 af (99% of inflow)  
 Center-of-Mass det. time= 20.2 min ( 817.9 - 797.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.58 cfs @ 12.55 hrs HW=169.57' TW=151.37' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.58 cfs @ 7.10 fps)

**Secondary OutFlow** Max=3.49 cfs @ 12.55 hrs HW=169.57' TW=151.37' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 3.49 cfs @ 1.41 fps)

**SWNAS - Proposed Watershed**

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 5.49" for 25-year event  
 Inflow = 7.80 cfs @ 12.08 hrs, Volume= 0.604 af  
 Outflow = 5.12 cfs @ 12.17 hrs, Volume= 0.602 af, Atten= 34%, Lag= 5.3 min  
 Primary = 4.74 cfs @ 12.17 hrs, Volume= 0.600 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 0.39 cfs @ 12.17 hrs, Volume= 0.002 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.58' @ 12.17 hrs Surf.Area= 2,625 sf Storage= 2,285 cf

Plug-Flow detention time= 8.9 min calculated for 0.602 af (100% of inflow)  
 Center-of-Mass det. time= 6.6 min ( 774.3 - 767.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.74 cfs @ 12.17 hrs HW=164.57' TW=150.45' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 4.74 cfs @ 6.03 fps)

**Secondary OutFlow** Max=0.38 cfs @ 12.17 hrs HW=164.57' TW=150.45' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.38 cfs @ 0.73 fps)

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**Summary for Pond 1IP: TACAN**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth = 3.93" for 25-year event  
 Inflow = 638.03 cfs @ 12.09 hrs, Volume= 123.616 af  
 Outflow = 77.39 cfs @ 16.48 hrs, Volume= 123.614 af, Atten= 88%, Lag= 263.6 min  
 Primary = 77.39 cfs @ 16.48 hrs, Volume= 123.614 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.36' @ 16.48 hrs Surf.Area= 1,206,490 sf Storage= 2,519,595 cf

Plug-Flow detention time= 385.3 min calculated for 123.597 af (100% of inflow)  
 Center-of-Mass det. time= 385.2 min ( 1,292.2 - 907.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	<b>24.0" W x 24.0" H Vert. Low Flow Orifice</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.40'	<b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

**Primary OutFlow** Max=77.39 cfs @ 16.48 hrs HW=145.36' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 77.39 cfs of 444.62 cfs potential flow)
- 2=Low Flow Orifice (Orifice Controls 61.97 cfs @ 15.49 fps)
- 3=Custom Weir/Orifice (Weir Controls 15.42 cfs @ 3.21 fps)

**SWNAS - Proposed Watershed**

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**Summary for Pond 1LP: CENTRAL GREENWAY**

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 4.83" for 25-year event  
 Inflow = 306.99 cfs @ 12.13 hrs, Volume= 27.323 af  
 Outflow = 110.51 cfs @ 12.21 hrs, Volume= 27.319 af, Atten= 64%, Lag= 4.5 min  
 Primary = 110.51 cfs @ 12.21 hrs, Volume= 27.319 af  
 Routed to Pond 1MP : CENTRAL GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1MP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.37' @ 12.53 hrs Surf.Area= 92,532 sf Storage= 295,581 cf

Plug-Flow detention time= 45.9 min calculated for 27.315 af (100% of inflow)  
 Center-of-Mass det. time= 46.1 min ( 839.5 - 793.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>42.0" Round Culvert X 2.00</b> L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	<b>130.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=108.20 cfs @ 12.21 hrs HW=150.69' TW=149.33' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 108.20 cfs @ 5.62 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1IP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 4.78" for 25-year event  
 Inflow = 154.94 cfs @ 12.15 hrs, Volume= 31.174 af  
 Outflow = 89.03 cfs @ 12.72 hrs, Volume= 31.170 af, Atten= 43%, Lag= 34.1 min  
 Primary = 89.03 cfs @ 12.72 hrs, Volume= 31.170 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.44' @ 12.72 hrs Surf.Area= 55,939 sf Storage= 175,096 cf

Plug-Flow detention time= 28.5 min calculated for 31.166 af (100% of inflow)  
 Center-of-Mass det. time= 28.4 min ( 863.3 - 835.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	58,400	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>42.0" Round Culvert</b> L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	<b>130.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=89.03 cfs @ 12.72 hrs HW=150.44' TW=143.94' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 89.03 cfs @ 9.25 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event  
 Inflow = 116.05 cfs @ 12.14 hrs, Volume= 9.663 af  
 Outflow = 9.83 cfs @ 16.99 hrs, Volume= 9.628 af, Atten= 92%, Lag= 291.3 min  
 Primary = 9.83 cfs @ 16.99 hrs, Volume= 9.628 af  
 Routed to Pond 1OP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1OP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.82' @ 13.68 hrs Surf.Area= 93,007 sf Storage= 230,483 cf

Plug-Flow detention time= 289.3 min calculated for 9.626 af (100% of inflow)  
 Center-of-Mass det. time= 287.3 min ( 1,087.5 - 800.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	<b>24.0" Round Culvert</b> L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 38.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=9.86 cfs @ 16.99 hrs HW=150.26' TW=149.79' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 9.86 cfs @ 3.14 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1OP: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 4.61" for 25-year event  
 Inflow = 45.75 cfs @ 12.08 hrs, Volume= 12.614 af  
 Outflow = 12.55 cfs @ 12.10 hrs, Volume= 12.610 af, Atten= 73%, Lag= 1.5 min  
 Primary = 12.55 cfs @ 12.10 hrs, Volume= 12.610 af  
 Routed to Pond 1PP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1PP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.43' @ 13.47 hrs Surf.Area= 23,900 sf Storage= 54,316 cf

Plug-Flow detention time= 49.4 min calculated for 12.610 af (100% of inflow)  
 Center-of-Mass det. time= 48.3 min ( 1,066.2 - 1,017.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>24.0" Round Culvert</b> L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=12.03 cfs @ 12.10 hrs HW=149.29' TW=148.56' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 12.03 cfs @ 3.83 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 4.65" for 25-year event  
 Inflow = 114.71 cfs @ 12.09 hrs, Volume= 20.100 af  
 Outflow = 20.63 cfs @ 14.54 hrs, Volume= 20.064 af, Atten= 82%, Lag= 147.4 min  
 Primary = 20.63 cfs @ 14.54 hrs, Volume= 20.064 af  
 Routed to Pond 1QP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1QP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.75' @ 13.22 hrs Surf.Area= 69,546 sf Storage= 191,710 cf

Plug-Flow detention time= 124.9 min calculated for 20.062 af (100% of inflow)  
 Center-of-Mass det. time= 120.6 min ( 1,085.2 - 964.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>24.0" Round Culvert</b> L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=20.64 cfs @ 14.54 hrs HW=149.59' TW=147.02' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 20.64 cfs @ 6.57 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 1QP: WEST GREENWAY**

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 4.66" for 25-year event  
 Inflow = 104.74 cfs @ 12.09 hrs, Volume= 26.708 af  
 Outflow = 39.15 cfs @ 12.47 hrs, Volume= 26.266 af, Atten= 63%, Lag= 22.8 min  
 Primary = 39.15 cfs @ 12.47 hrs, Volume= 26.266 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.88' @ 12.47 hrs Surf.Area= 58,240 sf Storage= 136,437 cf

Plug-Flow detention time= 78.2 min calculated for 26.266 af (98% of inflow)  
 Center-of-Mass det. time= 57.0 min ( 1,069.6 - 1,012.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>36.0" Round Culvert</b> L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	<b>36.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	148.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=39.15 cfs @ 12.47 hrs HW=147.88' TW=143.64' (Dynamic Tailwater)  
 1=Culvert (Passes 39.15 cfs of 52.54 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 39.15 cfs @ 6.52 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)  
 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 4.14" for 25-year event  
 Inflow = 247.39 cfs @ 13.29 hrs, Volume= 77.280 af  
 Outflow = 182.14 cfs @ 13.85 hrs, Volume= 77.280 af, Atten= 26%, Lag= 33.6 min  
 Primary = 90.43 cfs @ 13.96 hrs, Volume= 37.852 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 92.38 cfs @ 13.85 hrs, Volume= 39.428 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.31' @ 14.07 hrs Surf.Area= 261,717 sf Storage= 369,480 cf

Plug-Flow detention time= 16.9 min calculated for 77.269 af (100% of inflow)  
 Center-of-Mass det. time= 16.9 min ( 920.1 - 903.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=90.33 cfs @ 13.96 hrs HW=147.31' TW=145.08' (Dynamic Tailwater)  
 ↑**1=Culvert** (Inlet Controls 90.33 cfs @ 7.19 fps)

**Secondary OutFlow** Max=92.20 cfs @ 13.85 hrs HW=147.28' TW=144.96' (Dynamic Tailwater)  
 ↑**2=Culvert** (Inlet Controls 92.20 cfs @ 7.34 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 5.49" for 25-year event  
 Inflow = 241.61 cfs @ 12.08 hrs, Volume= 18.728 af  
 Outflow = 33.32 cfs @ 12.42 hrs, Volume= 18.405 af, Atten= 86%, Lag= 20.4 min  
 Primary = 33.32 cfs @ 12.42 hrs, Volume= 18.405 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 149.97' @ 12.60 hrs Surf.Area= 87,865 sf Storage= 337,084 cf

Plug-Flow detention time= 144.7 min calculated for 18.405 af (98% of inflow)  
 Center-of-Mass det. time= 133.7 min ( 901.4 - 767.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=33.25 cfs @ 12.42 hrs HW=149.85' TW=145.02' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 33.25 cfs @ 10.58 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=141.70' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.710 ac, 94.57% Impervious, Inflow Depth = 5.73" for 25-year event  
 Inflow = 76.39 cfs @ 12.08 hrs, Volume= 6.065 af  
 Outflow = 22.56 cfs @ 12.40 hrs, Volume= 3.726 af, Atten= 70%, Lag= 19.1 min  
 Primary = 22.56 cfs @ 12.40 hrs, Volume= 3.726 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.37' @ 12.40 hrs Surf.Area= 32,437 sf Storage= 143,191 cf

Plug-Flow detention time= 235.2 min calculated for 3.726 af (61% of inflow)  
 Center-of-Mass det. time= 129.5 min ( 887.0 - 757.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=22.56 cfs @ 12.40 hrs HW=147.37' TW=141.87' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 22.56 cfs of 46.21 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 22.56 cfs @ 5.64 fps)



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Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 2.770 ac, 75.81% Impervious, Inflow Depth = 4.64" for 25-year event  
 Inflow = 12.80 cfs @ 12.08 hrs, Volume= 1.071 af  
 Outflow = 0.49 cfs @ 15.34 hrs, Volume= 0.203 af, Atten= 96%, Lag= 195.3 min  
 Primary = 0.49 cfs @ 15.34 hrs, Volume= 0.203 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.27' @ 15.34 hrs Surf.Area= 10,662 sf Storage= 38,583 cf

Plug-Flow detention time= 643.0 min calculated for 0.203 af (19% of inflow)  
 Center-of-Mass det. time= 361.7 min ( 1,111.9 - 750.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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**Primary OutFlow** Max=0.49 cfs @ 15.34 hrs HW=146.27' TW=145.17' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 0.49 cfs of 15.87 cfs potential flow)

↳ **2=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 401.120 ac, 22.54% Impervious, Inflow Depth > 3.65" for 25-year event  
 Inflow = 216.74 cfs @ 13.75 hrs, Volume= 121.881 af  
 Outflow = 199.15 cfs @ 14.71 hrs, Volume= 121.880 af, Atten= 8%, Lag= 57.9 min  
 Primary = 199.15 cfs @ 14.71 hrs, Volume= 121.880 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.33' @ 14.71 hrs Surf.Area= 76,038 sf Storage= 228,758 cf

Plug-Flow detention time= 11.2 min calculated for 121.880 af (100% of inflow)  
 Center-of-Mass det. time= 11.2 min ( 1,012.5 - 1,001.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=199.15 cfs @ 14.71 hrs HW=145.33' TW=131.93' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 199.15 cfs @ 10.14 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 3.71" for 25-year event  
 Inflow = 319.71 cfs @ 13.22 hrs, Volume= 269.598 af  
 Outflow = 316.61 cfs @ 13.50 hrs, Volume= 269.560 af, Atten= 1%, Lag= 16.8 min  
 Primary = 129.23 cfs @ 13.50 hrs, Volume= 92.535 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 187.38 cfs @ 13.50 hrs, Volume= 177.025 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 132.11' @ 13.50 hrs Surf.Area= 58,288 sf Storage= 101,424 cf

Plug-Flow detention time= 5.1 min calculated for 269.522 af (100% of inflow)  
 Center-of-Mass det. time= 4.7 min ( 1,136.7 - 1,132.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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**Primary OutFlow** Max=129.23 cfs @ 13.50 hrs HW=132.11' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 129.23 cfs @ 7.45 fps)

**Secondary OutFlow** Max=187.38 cfs @ 13.50 hrs HW=132.11' TW=0.00' (Dynamic Tailwater)

↳ **2=Culvert** (Barrel Controls 187.38 cfs @ 7.96 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↳ **3=Spillway over Path** ( Controls 0.00 cfs)

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**Summary for Pond ZIP: PROPOSED PHASE 1 BASIN**

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth = 3.93" for 25-year event  
 Inflow = 169.61 cfs @ 12.14 hrs, Volume= 36.931 af  
 Outflow = 57.56 cfs @ 17.56 hrs, Volume= 31.204 af, Atten= 66%, Lag= 325.3 min  
 Primary = 57.56 cfs @ 17.56 hrs, Volume= 31.204 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.99' @ 15.85 hrs Surf.Area= 162,334 sf Storage= 972,688 cf

Plug-Flow detention time= 409.1 min calculated for 31.204 af (84% of inflow)  
 Center-of-Mass det. time= 327.6 min ( 1,236.4 - 908.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	<b>36.0" W x 10.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	144.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	<b>20.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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**Primary OutFlow** Max=57.64 cfs @ 17.56 hrs HW=145.22' TW=142.35' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 57.64 cfs @ 8.15 fps)
- ↑ 2=Orifice/Grate (Passes < 20.39 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 21.49 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 47.92 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2JP: PROPOSED BASIN**

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 4.71" for 25-year event  
 Inflow = 84.15 cfs @ 12.09 hrs, Volume= 6.169 af  
 Outflow = 21.56 cfs @ 12.46 hrs, Volume= 5.823 af, Atten= 74%, Lag= 22.4 min  
 Primary = 21.56 cfs @ 12.46 hrs, Volume= 5.823 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.24' @ 12.46 hrs Surf.Area= 36,146 sf Storage= 106,135 cf

Plug-Flow detention time= 120.7 min calculated for 5.822 af (94% of inflow)  
 Center-of-Mass det. time= 90.2 min ( 883.7 - 793.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	<b>24.0" Round Culvert</b> L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	164.50'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=21.56 cfs @ 12.46 hrs HW=164.24' TW=145.09' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 21.56 cfs of 22.62 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 21.56 cfs @ 7.19 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2KP: PROPOSED BASIN**

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 4.38" for 25-year event  
 Inflow = 106.14 cfs @ 12.09 hrs, Volume= 7.672 af  
 Outflow = 17.84 cfs @ 12.56 hrs, Volume= 6.668 af, Atten= 83%, Lag= 28.3 min  
 Primary = 17.84 cfs @ 12.56 hrs, Volume= 6.668 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.60' @ 12.56 hrs Surf.Area= 53,855 sf Storage= 171,236 cf

Plug-Flow detention time= 225.1 min calculated for 6.667 af (87% of inflow)  
 Center-of-Mass det. time= 166.9 min ( 969.2 - 802.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	150.75'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	152.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=17.84 cfs @ 12.56 hrs HW=151.60' TW=131.16' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 17.84 cfs of 49.30 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 11.06 cfs @ 7.37 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 6.78 cfs @ 3.39 fps)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=148.00' TW=125.90' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2LP: PROPOSED BASIN**

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 4.82" for 25-year event  
 Inflow = 58.22 cfs @ 12.09 hrs, Volume= 4.293 af  
 Outflow = 19.90 cfs @ 12.36 hrs, Volume= 4.066 af, Atten= 66%, Lag= 16.8 min  
 Primary = 19.90 cfs @ 12.36 hrs, Volume= 4.066 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 157.82' @ 12.36 hrs Surf.Area= 24,919 sf Storage= 62,144 cf

Plug-Flow detention time= 97.2 min calculated for 4.066 af (95% of inflow)  
 Center-of-Mass det. time= 67.8 min ( 858.1 - 790.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	<b>24.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	157.00'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	158.50'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	<b>10.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=19.90 cfs @ 12.36 hrs HW=157.82' TW=130.72' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Barrel Controls 19.90 cfs @ 6.33 fps)  
 ↑ **2=Orifice/Grate** (Passes < 19.44 cfs potential flow)  
 ↑ **3=Orifice/Grate** (Passes < 6.59 cfs potential flow)  
 ↑ **4=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)  
 ↑ **5=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 2MP: PROPOSED BASIN**

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 4.82" for 25-year event  
 Inflow = 105.39 cfs @ 12.09 hrs, Volume= 7.770 af  
 Outflow = 71.51 cfs @ 12.17 hrs, Volume= 7.601 af, Atten= 32%, Lag= 5.1 min  
 Primary = 71.51 cfs @ 12.17 hrs, Volume= 7.601 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 181.13' @ 12.17 hrs Surf.Area= 20,526 sf Storage= 71,059 cf

Plug-Flow detention time= 53.1 min calculated for 7.600 af (98% of inflow)  
 Center-of-Mass det. time= 40.0 min ( 830.4 - 790.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	<b>42.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	178.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	180.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=71.51 cfs @ 12.17 hrs HW=181.13' TW=152.50' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 71.51 cfs @ 7.43 fps)
- ↑ 2=Orifice/Grate (Passes < 13.28 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 21.05 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 46.12 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=177.00' TW=150.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 3.76" for 25-year event  
 Inflow = 93.55 cfs @ 13.04 hrs, Volume= 19.350 af  
 Outflow = 80.94 cfs @ 13.31 hrs, Volume= 19.344 af, Atten= 13%, Lag= 16.5 min  
 Primary = 65.43 cfs @ 13.31 hrs, Volume= 18.404 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 15.51 cfs @ 13.31 hrs, Volume= 0.941 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.40' @ 13.31 hrs Surf.Area= 77,102 sf Storage= 58,131 cf

Plug-Flow detention time= 6.4 min calculated for 19.342 af (100% of inflow)  
 Center-of-Mass det. time= 6.2 min ( 887.8 - 881.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=65.43 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 65.43 cfs @ 9.26 fps)

**Secondary OutFlow** Max=15.51 cfs @ 13.31 hrs HW=147.40' TW=135.63' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 15.51 cfs @ 2.23 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 3.62" for 25-year event  
 Inflow = 229.36 cfs @ 13.43 hrs, Volume= 58.401 af  
 Outflow = 222.14 cfs @ 13.58 hrs, Volume= 58.401 af, Atten= 3%, Lag= 9.0 min  
 Primary = 166.13 cfs @ 13.58 hrs, Volume= 55.050 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 56.01 cfs @ 13.58 hrs, Volume= 3.351 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.81' @ 13.58 hrs Surf.Area= 66,525 sf Storage= 204,979 cf

Plug-Flow detention time= 12.7 min calculated for 58.393 af (100% of inflow)  
 Center-of-Mass det. time= 12.7 min ( 919.5 - 906.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=166.13 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 166.13 cfs @ 8.47 fps)

**Secondary OutFlow** Max=56.00 cfs @ 13.58 hrs HW=135.81' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 56.00 cfs @ 2.26 fps)

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1A:

Runoff = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af, Depth= 6.94"

Routed to Pond 1AP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.710	98	Pavement
0.080	39	>75% Grass cover, Good, HSG A
0.790	92	Weighted Average
0.080		10.13% Pervious Area
0.710		89.87% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1B:**

Runoff = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af, Depth= 6.83"

Routed to Pond 1BP : SPORTS COMPLEX INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 0.800	98	Pavement
0.100	39	>75% Grass cover, Good, HSG A
0.900	91	Weighted Average
0.100		11.11% Pervious Area
0.800		88.89% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1C:**

Assumed pipe channel has slope 0.005 since no data given

Runoff = 91.06 cfs @ 12.60 hrs, Volume= 14.461 af, Depth= 6.47"  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 2.790	88	Proposed Development Area
* 16.950	98	Pavement
* 2.060	98	Roofs
* 0.750	100	Open Water
4.270	39	>75% Grass cover, Good, HSG A
26.820	88	Weighted Average
7.060		26.32% Pervious Area
19.760		73.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0021	0.07		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.40"
4.4	94	0.0026	0.36		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.7	252	0.0061	0.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.1	14	0.0701	1.85		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.9	154	0.0155	0.87		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.4	438	0.0050	5.09	16.00	<b>Pipe Channel,</b> 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections
0.8	288	0.0050	5.91	29.00	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.013 Concrete pipe, bends & connections
0.7	295	0.0050	6.67	47.16	<b>Pipe Channel,</b> 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Concrete pipe, bends & connections
2.9	1,299	0.0050	7.39	71.14	<b>Pipe Channel,</b> 42.0" Round Area= 9.6 sf Perim= 11.0' r= 0.88' n= 0.013 Concrete pipe, bends & connections
0.2	93	0.0050	8.08	101.57	<b>Pipe Channel,</b> 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.013 Concrete pipe, bends & connections
44.5	3,027	Total			



**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1D:**

Runoff = 44.05 cfs @ 12.99 hrs, Volume= 9.044 af, Depth= 3.70"  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.040	88	Proposed Development Area
5.200	30	Woods, Good, HSG A
4.720	70	Woods, Good, HSG C
5.970	77	Woods, Good, HSG D
4.070	39	>75% Grass cover, Good, HSG A
4.100	74	>75% Grass cover, Good, HSG C
0.220	80	>75% Grass cover, Good, HSG D
29.320	64	Weighted Average
29.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.5	100	0.0244	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
38.7	1,640	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
72.2	1,740	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1E:**

Runoff = 730.46 cfs @ 12.09 hrs, Volume= 53.090 af, Depth= 5.76"  
Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 63.870	88	Proposed Development Area
44.030	77	Woods, Good, HSG D
2.610	39	>75% Grass cover, Good, HSG A
110.510	82	Weighted Average
110.510		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1F:

Runoff = 69.00 cfs @ 12.09 hrs, Volume= 5.082 af, Depth= 6.12"

Routed to Pond 1FP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.070	98	Pavement
* 0.410	100	Open Water
1.880	61	>75% Grass cover, Good, HSG B
2.610	74	>75% Grass cover, Good, HSG C
9.970	85	Weighted Average
4.490		45.04% Pervious Area
5.480		54.96% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1G:**

Runoff = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af, Depth= 6.94"  
 Routed to Pond 1GP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.850	98	Pavement
* 0.990	85	Artificial Turf
0.340	80	>75% Grass cover, Good, HSG D
3.180	92	Weighted Average
1.330		41.82% Pervious Area
1.850		58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5					<b>Direct Entry, Artificial Turf</b>
1.8	346	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.6	116	0.0050	3.21	2.52	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.0	11	0.0900	13.61	10.69	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, bends & connections
0.2	40	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
0.1	18	0.0050	4.20	7.43	<b>Pipe Channel,</b> 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
29.2	531	Total			

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1H:

Runoff = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af, Depth= 7.18"

Routed to Pond 1HP : SPORTS COMPLEX BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.000	98	Pavement
* 0.090	85	Artificial Turf
0.230	80	>75% Grass cover, Good, HSG D
1.320	94	Weighted Average
0.320		24.24% Pervious Area
1.000		75.76% Impervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1I:**

Runoff = 147.28 cfs @ 13.39 hrs, Volume= 38.179 af, Depth= 4.15"  
 Routed to Pond 1IP : TACAN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 15.650	88	Proposed Development Area
1.950	55	Woods, Good, HSG B
7.940	77	Woods, Good, HSG D
14.760	48	Brush, Good, HSG B
20.020	73	Brush, Good, HSG D
38.700	61	>75% Grass cover, Good, HSG B
5.070	74	>75% Grass cover, Good, HSG C
6.270	80	>75% Grass cover, Good, HSG D
110.360	68	Weighted Average
110.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	640	0.0090	0.47		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
33.5	1,005	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
103.9	1,745	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1J:**

Runoff = 34.90 cfs @ 12.08 hrs, Volume= 2.873 af, Depth= 7.66"

Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 4.500	98	Pavement
4.500		100.00% Impervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1K:

Runoff = 182.56 cfs @ 12.14 hrs, Volume= 15.605 af, Depth= 6.47"

Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 28.940	88	Proposed Development Area
28.940		100.00% Pervious Area

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



# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1L:

Runoff = 184.08 cfs @ 12.14 hrs, Volume= 15.555 af, Depth= 6.23"

Routed to Pond 1LP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 26.870	88	Proposed Development Area
2.070	61	>75% Grass cover, Good, HSG B
1.000	74	>75% Grass cover, Good, HSG C
29.940	86	Weighted Average
29.940		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1M:

Runoff = 62.45 cfs @ 12.14 hrs, Volume= 5.250 af, Depth= 6.12"  
Routed to Pond 1MP : CENTRAL GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 9.060	88	Proposed Development Area
1.240	61	>75% Grass cover, Good, HSG B
10.300	85	Weighted Average
10.300		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1N:**

Assumed slope of 0.002

Runoff = 155.00 cfs @ 12.14 hrs, Volume= 13.098 af, Depth= 6.23"  
Routed to Pond 1NP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 22.110	88	Proposed Development Area
0.530	39	>75% Grass cover, Good, HSG A
2.570	74	>75% Grass cover, Good, HSG C
25.210	86	Weighted Average
25.210		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 10:**

Runoff = 54.10 cfs @ 12.08 hrs, Volume= 4.028 af, Depth= 6.35"

Routed to Pond 1OP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 7.000	88	Proposed Development Area
0.610	74	>75% Grass cover, Good, HSG C
7.610	87	Weighted Average
7.610		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 1P:

Runoff = 135.71 cfs @ 12.08 hrs, Volume= 10.106 af, Depth= 6.35"

Routed to Pond 1PP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 17.420	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
19.090	87	Weighted Average
19.090		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 1Q:**

Runoff = 120.35 cfs @ 12.08 hrs, Volume= 8.962 af, Depth= 6.35"  
Routed to Pond 1QP : WEST GREENWAY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 15.260	88	Proposed Development Area
1.670	74	>75% Grass cover, Good, HSG C
16.930	87	Weighted Average
16.930		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2A:**

Runoff = 243.75 cfs @ 13.29 hrs, Volume= 61.264 af, Depth= 5.18"

Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 4.000	98	Pavement
* 0.290	98	Roof
115.050	77	Woods, Good, HSG D
1.620	57	Woods/grass comb., Poor, HSG A
4.390	61	>75% Grass cover, Good, HSG B
16.500	74	>75% Grass cover, Good, HSG C
141.850	77	Weighted Average
137.560		96.98% Pervious Area
4.290		3.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
27.0	1,085	0.0180	0.67		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
11.4	480	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
14.2	425	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
100.5	2,090	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2B:**

Runoff = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af, Depth= 7.18"

Routed to Pond 2BP : EXISTING BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.650	98	Pavement
* 26.600	98	Roof
7.650	74	>75% Grass cover, Good, HSG C
40.900	94	Weighted Average
7.650		18.70% Pervious Area
33.250		81.30% Impervious Area

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



# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2C:

Runoff = 97.87 cfs @ 12.08 hrs, Volume= 7.860 af, Depth= 7.42"

Routed to Pond 2CP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 10.340	98	Pavement
* 1.680	98	Roofs
0.400	39	>75% Grass cover, Good, HSG A
0.290	74	>75% Grass cover, Good, HSG C
12.710	96	Weighted Average
0.690		5.43% Pervious Area
12.020		94.57% Impervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2D-1:

Runoff = 16.29 cfs @ 12.08 hrs, Volume= 1.341 af, Depth= 7.66"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 2.100	98	Pavement
2.100		100.00% Impervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2D-2:

Runoff = 0.56 cfs @ 12.12 hrs, Volume= 0.062 af, Depth= 1.12"

Routed to Pond 2DP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
0.670	39	>75% Grass cover, Good, HSG A
0.670		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2E:**

Runoff = 61.83 cfs @ 13.28 hrs, Volume= 14.669 af, Depth= 3.59"

Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
7.930	30	Woods, Good, HSG A
8.340	70	Woods, Good, HSG C
22.160	77	Woods, Good, HSG D
7.040	39	>75% Grass cover, Good, HSG A
3.560	80	>75% Grass cover, Good, HSG D
49.030	63	Weighted Average
49.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	100	0.0300	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
59.1	1,034	0.0034	0.29		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
89.9	1,134	Total			

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Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2F:

Runoff = 100.81 cfs @ 12.92 hrs, Volume= 20.270 af, Depth= 3.93"

Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
20.570	55	Woods, Good, HSG B
25.620	77	Woods, Good, HSG D
15.770	61	>75% Grass cover, Good, HSG B
61.960	66	Weighted Average
61.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
22.5	675	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
70.4	775	Total			

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Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2G:

Assumed Tc value

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Runoff = 31.00 cfs @ 13.47 hrs, Volume= 9.092 af, Depth= 6.59"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 6.620	98	Pavement
* 5.800	98	Roof
4.140	61	>75% Grass cover, Good, HSG B
16.560	89	Weighted Average
4.140		25.00% Pervious Area
12.420		75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2H:

Assumed Tc value

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Runoff = 14.69 cfs @ 13.47 hrs, Volume= 4.218 af, Depth= 5.76"  
Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

	Area (ac)	CN	Description
*	3.370	98	Pavement
*	1.690	98	Roof
	3.720	61	>75% Grass cover, Good, HSG B
	8.780	82	Weighted Average
	3.720		42.37% Pervious Area
	5.060		57.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
120.0					<b>Direct Entry,</b>

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2I-1:

Runoff = 150.64 cfs @ 12.14 hrs, Volume= 12.876 af, Depth= 6.47"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 23.880	88	Proposed Development Area
23.880		100.00% Pervious Area

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



**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2J:**

Runoff = 111.75 cfs @ 12.08 hrs, Volume= 8.322 af, Depth= 6.35"

Routed to Pond 2JP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 14.430	88	Proposed Development Area
1.290	80	>75% Grass cover, Good, HSG D
15.720	87	Weighted Average
15.720		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 2K:**

Runoff = 143.23 cfs @ 12.09 hrs, Volume= 10.499 af, Depth= 6.00"

Routed to Pond 2KP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 12.610	88	Proposed Development Area
8.390	77	Woods, Good, HSG D
21.000	84	Weighted Average
21.000		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2L:

Runoff = 76.93 cfs @ 12.08 hrs, Volume= 5.764 af, Depth= 6.47"

Routed to Pond 2LP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 10.690	88	Proposed Development Area
10.690		100.00% Pervious Area

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

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 2M:

Runoff = 139.25 cfs @ 12.08 hrs, Volume= 10.434 af, Depth= 6.47"

Routed to Pond 2MP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 19.350	88	Proposed Development Area
19.350		100.00% Pervious Area

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

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 3A:**

Runoff = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af, Depth= 5.30"

Routed to Pond 3AP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.200	98	Pavement
0.160	55	Woods, Good, HSG B
50.970	77	Woods, Good, HSG D
5.490	73	Brush, Good, HSG D
61.820	78	Weighted Average
56.620		91.59% Pervious Area
5.200		8.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.7	100	0.0208	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
2.1	66	0.0114	0.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
37.0	1,272	0.0131	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
74.8	1,438	Total			

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 3B:**

Runoff = 212.96 cfs @ 13.43 hrs, Volume= 55.695 af, Depth= 5.07"

Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 9.990	98	Pavement
* 1.400	100	Open Water
14.050	55	Woods, Good, HSG B
83.920	77	Woods, Good, HSG D
9.370	73	Brush, Good, HSG D
6.810	61	>75% Grass cover, Good, HSG B
6.360	80	>75% Grass cover, Good, HSG D
131.900	76	Weighted Average
120.510		91.36% Pervious Area
11.390		8.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.3	100	0.0200	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
70.7	1,500	0.0050	0.35		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
107.0	1,600	Total			

# SWNAS - Proposed Watershed

Type III 24-hr 100-year Rainfall=7.90"

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## Summary for Subcatchment 21-2:

Runoff = 51.28 cfs @ 12.14 hrs, Volume= 4.172 af, Depth= 4.26"

Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 7.170	88	Proposed Development Area
4.570	39	>75% Grass cover, Good, HSG A
11.740	69	Weighted Average
11.740		100.00% Pervious Area

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

## **SWNAS - Proposed Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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### **Summary for Reach 1R: DP-1 TACAN OUTFALL**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth > 5.48" for 100-year event  
Inflow = 121.54 cfs @ 15.95 hrs, Volume= 172.424 af  
Outflow = 121.54 cfs @ 15.95 hrs, Volume= 172.424 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



## **SWNAS - Proposed Watershed**

*Type III 24-hr 100-year Rainfall=7.90"*

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### **Summary for Reach 2R: DP-2 FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 5.23" for 100-year event  
Inflow = 392.51 cfs @ 13.51 hrs, Volume= 380.682 af  
Outflow = 392.51 cfs @ 13.51 hrs, Volume= 380.682 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

## **SWNAS - Proposed Watershed**

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*Type III 24-hr 100-year Rainfall=7.90"*

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### **Summary for Reach 3R: DP-3 FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event  
Inflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af  
Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.790 ac, 89.87% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 5.92 cfs @ 12.08 hrs, Volume= 0.457 af  
 Outflow = 5.94 cfs @ 12.08 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.12 cfs @ 8.94 hrs, Volume= 0.207 af  
 Primary = 5.81 cfs @ 12.08 hrs, Volume= 0.250 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.41' @ 12.08 hrs Surf.Area= 2,201 sf Storage= 2,834 cf

Plug-Flow detention time= 82.8 min calculated for 0.457 af (100% of inflow)  
 Center-of-Mass det. time= 82.8 min ( 852.2 - 769.4 )

Volume	Invert	Avail.Storage	Storage Description
#1A	168.50'	1,559 cf	<b>24.83'W x 88.64'L x 2.33'H Field A</b> 5,136 cf Overall - 1,238 cf Embedded = 3,898 cf x 40.0% Voids
#2A	169.00'	1,238 cf	<b>ADS_StormTech SC-310 +Cap</b> x 84 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 84 Chambers in 7 Rows
#3	168.50'	85 cf	<b>4.00'D x 6.80'H CB</b> -Impervious
#4	175.20'	449 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,332 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.20	10	0	0
176.00	300	124	124
176.50	1,000	325	449

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	<b>18.0" Round Culvert</b> L= 13.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.00' / 169.85' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	168.50'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.12 cfs @ 8.94 hrs HW=168.58' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=5.80 cfs @ 12.08 hrs HW=171.41' TW=152.81' (Dynamic Tailwater)

↳ **1=Culvert** (Barrel Controls 5.80 cfs @ 4.37 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 100-year Rainfall=7.90"

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**Pond 1AP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

12 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 86.64' Row Length +12.0" End Stone x 2 = 88.64' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

84 Chambers x 14.7 cf = 1,238.3 cf Chamber Storage

5,136.2 cf Field - 1,238.3 cf Chambers = 3,897.9 cf Stone x 40.0% Voids = 1,559.1 cf Stone Storage

Chamber Storage + Stone Storage = 2,797.5 cf = 0.064 af

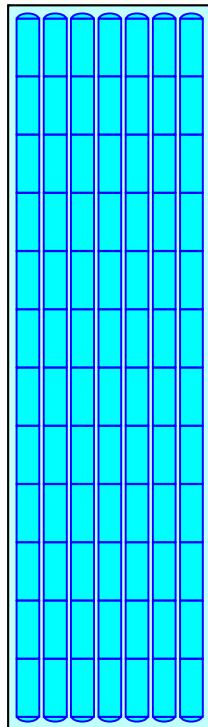
Overall Storage Efficiency = 54.5%

Overall System Size = 88.64' x 24.83' x 2.33'

84 Chambers

190.2 cy Field

144.4 cy Stone



**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN**

Inflow Area = 0.900 ac, 88.89% Impervious, Inflow Depth = 6.83" for 100-year event  
 Inflow = 6.69 cfs @ 12.08 hrs, Volume= 0.512 af  
 Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 8.82 hrs, Volume= 0.224 af  
 Primary = 6.75 cfs @ 12.08 hrs, Volume= 0.288 af

Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 171.80' @ 12.08 hrs Surf.Area= 2,378 sf Storage= 3,060 cf

Plug-Flow detention time= 80.7 min calculated for 0.512 af (100% of inflow)  
 Center-of-Mass det. time= 80.7 min ( 853.7 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	169.00'	1,683 cf	<b>24.83'W x 95.76'L x 2.33'H Field A</b> 5,549 cf Overall - 1,342 cf Embedded = 4,207 cf x 40.0% Voids
#2A	169.50'	1,342 cf	<b>ADS_StormTech SC-310 +Cap</b> x 91 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 91 Chambers in 7 Rows
#3	169.00'	72 cf	<b>4.00'D x 5.70'H CB</b> -Impervious
#4	172.70'	572 cf	<b>Ponding at CB (Prismatic)</b> Listed below (Recalc)
		3,668 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.70	10	0	0
173.00	300	47	47
174.50	400	525	572

Device	Routing	Invert	Outlet Devices
#1	Primary	170.50'	<b>12.0" Round Culvert X 2.00</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 170.50' / 170.20' S= 0.0130 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	169.00'	<b>2.410 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'

**Discarded OutFlow** Max=0.13 cfs @ 8.82 hrs HW=169.06' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=6.70 cfs @ 12.08 hrs HW=171.78' TW=152.80' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 6.70 cfs @ 4.27 fps)

**SWNAS - Proposed Watershed**

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Type III 24-hr 100-year Rainfall=7.90"

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**Pond 1BP: SPORTS COMPLEX INFILTRATION BASIN - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

13 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 93.76' Row Length +12.0" End Stone x 2 = 95.76' Base Length

7 Rows x 34.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 24.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

91 Chambers x 14.7 cf = 1,341.5 cf Chamber Storage

5,548.8 cf Field - 1,341.5 cf Chambers = 4,207.2 cf Stone x 40.0% Voids = 1,682.9 cf Stone Storage

Chamber Storage + Stone Storage = 3,024.4 cf = 0.069 af

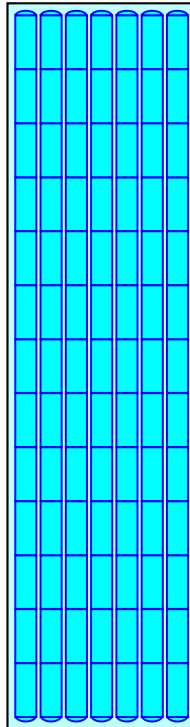
Overall Storage Efficiency = 54.5%

Overall System Size = 95.76' x 24.83' x 2.33'

91 Chambers

205.5 cy Field

155.8 cy Stone



**SWNAS - Proposed Watershed**

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**Summary for Pond 1CP: MEMORIAL GROVE AVE. BASIN**

Assumed slope of 0.005 for outlet culvert.

Inflow Area = 47.860 ac, 44.44% Impervious, Inflow Depth = 6.33" for 100-year event  
 Inflow = 154.87 cfs @ 12.43 hrs, Volume= 25.264 af  
 Outflow = 59.97 cfs @ 13.15 hrs, Volume= 25.200 af, Atten= 61%, Lag= 43.1 min  
 Primary = 45.10 cfs @ 13.15 hrs, Volume= 24.244 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG  
 Secondary = 14.87 cfs @ 13.15 hrs, Volume= 0.956 af  
 Routed to Pond 1DP : UPSTREAM DOGLEG

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 156.68' @ 13.15 hrs Surf.Area= 87,287 sf Storage= 439,423 cf

Plug-Flow detention time= 146.5 min calculated for 25.200 af (100% of inflow)  
 Center-of-Mass det. time= 144.6 min ( 961.9 - 817.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	468,178 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	46,495	0	0
151.00	52,090	49,293	49,293
152.00	57,750	54,920	104,213
153.00	63,535	60,643	164,855
154.00	69,445	66,490	231,345
155.00	75,475	72,460	303,805
156.00	81,635	78,555	382,360
157.00	90,000	85,818	468,178

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	<b>27.0" Round Culvert</b> L= 87.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.56' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.98 sf
#2	Secondary	156.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=45.10 cfs @ 13.15 hrs HW=156.68' TW=148.15' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 45.10 cfs @ 11.34 fps)

**Secondary OutFlow** Max=14.87 cfs @ 13.15 hrs HW=156.68' TW=148.15' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Weir Controls 14.87 cfs @ 2.20 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1DP: UPSTREAM DOGLEG**

Inflow Area = 77.180 ac, 27.56% Impervious, Inflow Depth > 5.32" for 100-year event  
 Inflow = 103.20 cfs @ 13.08 hrs, Volume= 34.245 af  
 Outflow = 98.50 cfs @ 13.26 hrs, Volume= 34.245 af, Atten= 5%, Lag= 11.1 min  
 Primary = 48.90 cfs @ 13.26 hrs, Volume= 16.737 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN  
 Secondary = 49.60 cfs @ 13.26 hrs, Volume= 17.508 af  
 Routed to Pond 2IP : PROPOSED PHASE 1 BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.22' @ 13.26 hrs Surf.Area= 15,507 sf Storage= 27,924 cf

Plug-Flow detention time= 4.4 min calculated for 34.245 af (100% of inflow)  
 Center-of-Mass det. time= 4.4 min ( 949.8 - 945.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.50'	67,808 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.50	0	0	0
144.00	180	135	135
145.00	1,610	895	1,030
146.00	5,900	3,755	4,785
147.00	9,900	7,900	12,685
148.00	14,165	12,033	24,718
149.00	20,375	17,270	41,988
150.00	31,265	25,820	67,808

Device	Routing	Invert	Outlet Devices
#1	Primary	142.60'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.60' / 142.26' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Secondary	142.50'	<b>42.0" Round Culvert</b> L= 782.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.50' / 142.19' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

**Primary OutFlow** Max=48.90 cfs @ 13.26 hrs HW=148.22' TW=145.34' (Dynamic Tailwater)  
 ↑**1=Culvert** (Barrel Controls 48.90 cfs @ 5.08 fps)

**Secondary OutFlow** Max=49.59 cfs @ 13.26 hrs HW=148.22' TW=145.34' (Dynamic Tailwater)  
 ↑**2=Culvert** (Barrel Controls 49.59 cfs @ 5.15 fps)



**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1FP: EXISTING PARKWAY BASIN**

Primary Culvert - Assumed Inverts, pipe diameter, and pipe material.

Inflow Area = 9.970 ac, 54.96% Impervious, Inflow Depth = 6.12" for 100-year event  
 Inflow = 69.00 cfs @ 12.09 hrs, Volume= 5.082 af  
 Outflow = 14.01 cfs @ 12.51 hrs, Volume= 3.591 af, Atten= 80%, Lag= 25.7 min  
 Primary = 14.01 cfs @ 12.51 hrs, Volume= 3.591 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.63' @ 12.51 hrs Surf.Area= 28,783 sf Storage= 119,124 cf

Plug-Flow detention time= 263.8 min calculated for 3.591 af (71% of inflow)  
 Center-of-Mass det. time= 173.0 min ( 963.9 - 790.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	197,068 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,065	0	0
144.00	17,300	13,683	13,683
145.00	19,605	18,453	32,135
146.00	21,970	20,788	52,923
147.00	24,385	23,178	76,100
148.00	26,860	25,623	101,723
149.00	29,935	28,398	130,120
150.00	31,980	30,958	161,078
151.00	40,000	35,990	197,068

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	<b>24.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.50' / 146.00' S= 0.0051 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=14.01 cfs @ 12.51 hrs HW=148.63' TW=144.47' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 14.01 cfs @ 5.22 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=143.00' TW=133.50' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1GP: SPORTS COMPLEX BASIN**

Inflow Area = 3.180 ac, 58.18% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 13.80 cfs @ 12.37 hrs, Volume= 1.840 af  
 Outflow = 13.09 cfs @ 12.47 hrs, Volume= 1.832 af, Atten= 5%, Lag= 6.0 min  
 Primary = 5.76 cfs @ 12.47 hrs, Volume= 1.607 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 7.33 cfs @ 12.47 hrs, Volume= 0.225 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 169.75' @ 12.47 hrs Surf.Area= 4,540 sf Storage= 9,423 cf

Plug-Flow detention time= 20.8 min calculated for 1.832 af (100% of inflow)  
 Center-of-Mass det. time= 18.1 min ( 809.0 - 790.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	10,588 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	1,085	0	0
167.00	1,395	1,240	1,240
168.00	2,415	1,905	3,145
169.00	3,850	3,133	6,278
170.00	4,770	4,310	10,588

Device	Routing	Invert	Outlet Devices
#1	Primary	166.30'	<b>12.0" Round Culvert</b> L= 57.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 166.30' / 166.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	169.30'	<b>9.0' long x 17.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.76 cfs @ 12.47 hrs HW=169.75' TW=152.34' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.76 cfs @ 7.34 fps)

**Secondary OutFlow** Max=7.33 cfs @ 12.47 hrs HW=169.75' TW=152.34' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 7.33 cfs @ 1.81 fps)

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**Summary for Pond 1HP: SPORTS COMPLEX BASIN**

Inflow Area = 1.320 ac, 75.76% Impervious, Inflow Depth = 7.18" for 100-year event  
 Inflow = 10.05 cfs @ 12.08 hrs, Volume= 0.790 af  
 Outflow = 7.89 cfs @ 12.15 hrs, Volume= 0.788 af, Atten= 21%, Lag= 3.7 min  
 Primary = 5.00 cfs @ 12.15 hrs, Volume= 0.755 af  
 Routed to Pond 1LP : CENTRAL GREENWAY  
 Secondary = 2.89 cfs @ 12.15 hrs, Volume= 0.033 af  
 Routed to Pond 1LP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 164.79' @ 12.15 hrs Surf.Area= 3,201 sf Storage= 2,902 cf

Plug-Flow detention time= 8.2 min calculated for 0.788 af (100% of inflow)  
 Center-of-Mass det. time= 6.2 min ( 767.9 - 761.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	8,055 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	180	90	90
163.00	515	348	438
164.00	1,060	788	1,225
165.00	3,780	2,420	3,645
166.00	5,040	4,410	8,055

Device	Routing	Invert	Outlet Devices
#1	Primary	162.00'	<b>12.0" Round Culvert</b> L= 58.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.70' S= 0.0052 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	164.50'	<b>7.0' long x 40.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.00 cfs @ 12.15 hrs HW=164.79' TW=151.13' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 5.00 cfs @ 6.36 fps)

**Secondary OutFlow** Max=2.88 cfs @ 12.15 hrs HW=164.79' TW=151.13' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 2.88 cfs @ 1.44 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1IP: TACAN**

Inflow Area = 377.860 ac, 3.40% Impervious, Inflow Depth = 5.48" for 100-year event  
 Inflow = 863.23 cfs @ 12.09 hrs, Volume= 172.426 af  
 Outflow = 121.54 cfs @ 15.95 hrs, Volume= 172.424 af, Atten= 86%, Lag= 231.6 min  
 Primary = 121.54 cfs @ 15.95 hrs, Volume= 172.424 af  
 Routed to Reach 1R : DP-1 TACAN OUTFALL

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.12' @ 15.95 hrs Surf.Area= 1,429,074 sf Storage= 3,522,887 cf

Plug-Flow detention time= 415.4 min calculated for 172.424 af (100% of inflow)  
 Center-of-Mass det. time= 415.3 min ( 1,324.2 - 908.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	133.50'	4,902,591 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.50	0	0	0
136.00	1,481	1,851	1,851
137.00	5,097	3,289	5,140
138.00	49,441	27,269	32,409
139.00	64,338	56,889	89,298
140.00	82,023	73,181	162,479
141.00	108,813	95,418	257,897
142.00	168,490	138,651	396,548
143.00	389,034	278,762	675,311
144.00	681,061	535,047	1,210,358
145.00	1,103,941	892,501	2,102,859
146.00	1,388,214	1,246,077	3,348,936
147.00	1,719,095	1,553,655	4,902,591

Device	Routing	Invert	Outlet Devices
#1	Primary	133.50'	<b>60.0" Round Culvert X 2.00</b> L= 899.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.50' / 130.80' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf
#2	Device 1	134.00'	<b>24.0" W x 24.0" H Vert. Low Flow Orifice</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.40'	<b>Custom Weir/Orifice, Cv= 2.62 (C= 3.28)</b> Elev. (feet) 144.40 145.40 145.40 146.10 146.10 146.60 146.60 147.00 Width (feet) 5.00 5.00 15.00 15.00 25.00 25.00 30.00 30.00

**Primary OutFlow** Max=121.54 cfs @ 15.95 hrs HW=146.12' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 121.54 cfs of 462.01 cfs potential flow)
- 2=Low Flow Orifice (Orifice Controls 64.21 cfs @ 16.05 fps)
- 3=Custom Weir/Orifice (Weir Controls 57.32 cfs @ 3.56 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1LP: CENTRAL GREENWAY**

Inflow Area = 67.880 ac, 10.83% Impervious, Inflow Depth = 6.48" for 100-year event  
 Inflow = 407.92 cfs @ 12.13 hrs, Volume= 36.653 af  
 Outflow = 175.95 cfs @ 12.37 hrs, Volume= 36.648 af, Atten= 57%, Lag= 14.3 min  
 Primary = 125.13 cfs @ 12.25 hrs, Volume= 34.785 af  
 Routed to Pond 1MP : CENTRAL GREENWAY  
 Secondary = 73.95 cfs @ 12.43 hrs, Volume= 1.863 af  
 Routed to Pond 1MP : CENTRAL GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 152.35' @ 12.43 hrs Surf.Area= 102,440 sf Storage= 390,710 cf

Plug-Flow detention time= 48.1 min calculated for 36.643 af (100% of inflow)  
 Center-of-Mass det. time= 48.2 min ( 834.1 - 785.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	397,457 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	17,910	0	0
147.00	30,745	24,328	24,328
148.00	44,380	37,563	61,890
149.00	58,820	51,600	113,490
150.00	74,055	66,438	179,928
151.00	90,090	82,073	262,000
152.00	96,730	93,410	355,410
152.42	103,495	42,047	397,457

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>42.0" Round Culvert X 2.00</b> L= 160.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	152.00'	<b>130.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=123.22 cfs @ 12.25 hrs HW=152.03' TW=150.26' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 123.22 cfs @ 6.40 fps)

**Secondary OutFlow** Max=73.93 cfs @ 12.43 hrs HW=152.35' TW=151.29' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 73.93 cfs @ 1.60 fps)

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**Summary for Pond 1IP: CENTRAL GREENWAY**

Inflow Area = 78.180 ac, 9.40% Impervious, Inflow Depth = 6.43" for 100-year event  
 Inflow = 206.04 cfs @ 12.35 hrs, Volume= 41.898 af  
 Outflow = 176.52 cfs @ 12.50 hrs, Volume= 41.895 af, Atten= 14%, Lag= 8.9 min  
 Primary = 99.51 cfs @ 12.50 hrs, Volume= 40.139 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 77.01 cfs @ 12.50 hrs, Volume= 1.756 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.36' @ 12.50 hrs Surf.Area= 62,344 sf Storage= 228,908 cf

Plug-Flow detention time= 29.9 min calculated for 41.895 af (100% of inflow)  
 Center-of-Mass det. time= 29.7 min ( 858.8 - 829.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	232,411 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	9,515	0	0
146.00	16,810	13,163	13,163
147.00	24,900	20,855	34,018
148.00	33,795	29,348	63,365
149.00	43,485	38,640	102,005
150.00	53,980	48,733	150,738
151.00	62,950	56,190	206,928
151.42	62,950	25,483	232,411

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>42.0" Round Culvert</b> L= 170.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 143.00' S= 0.0118 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Secondary	151.00'	<b>130.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=99.51 cfs @ 12.50 hrs HW=151.36' TW=144.45' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 99.51 cfs @ 10.34 fps)

**Secondary OutFlow** Max=76.97 cfs @ 12.50 hrs HW=151.36' TW=144.45' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 76.97 cfs @ 1.63 fps)

**SWNAS - Proposed Watershed**

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**Summary for Pond 1NP: WEST GREENWAY**

Inflow Area = 25.210 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event  
 Inflow = 155.00 cfs @ 12.14 hrs, Volume= 13.098 af  
 Outflow = 10.51 cfs @ 19.01 hrs, Volume= 13.060 af, Atten= 93%, Lag= 412.2 min  
 Primary = 10.51 cfs @ 19.01 hrs, Volume= 13.060 af  
 Routed to Pond 1OP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1OP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.84' @ 14.20 hrs Surf.Area= 103,091 sf Storage= 331,289 cf

Plug-Flow detention time= 366.8 min calculated for 13.060 af (100% of inflow)  
 Center-of-Mass det. time= 364.9 min ( 1,156.8 - 791.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	393,840 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	30,825	0	0
148.00	45,600	38,213	38,213
149.00	61,145	53,373	91,585
150.00	77,460	69,303	160,888
151.00	96,500	86,980	247,868
152.00	104,385	100,443	348,310
152.42	112,425	45,530	393,840

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	<b>24.0" Round Culvert</b> L= 130.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 146.50' S= 0.0038 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 38.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=10.54 cfs @ 19.01 hrs HW=150.96' TW=150.42' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 10.54 cfs @ 3.35 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=147.00' TW=146.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 1OP: WEST GREENWAY**

Inflow Area = 32.820 ac, 0.00% Impervious, Inflow Depth > 6.25" for 100-year event  
 Inflow = 56.21 cfs @ 12.08 hrs, Volume= 17.088 af  
 Outflow = 13.45 cfs @ 17.18 hrs, Volume= 17.084 af, Atten= 76%, Lag= 306.3 min  
 Primary = 13.45 cfs @ 17.18 hrs, Volume= 17.084 af  
 Routed to Pond 1PP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1PP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 151.42' @ 13.87 hrs Surf.Area= 28,697 sf Storage= 81,019 cf

Plug-Flow detention time= 64.1 min calculated for 17.084 af (100% of inflow)  
 Center-of-Mass det. time= 63.3 min ( 1,132.5 - 1,069.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	110,744 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,480	0	0
147.00	6,760	5,120	5,120
148.00	10,685	8,723	13,843
149.00	15,260	12,973	26,815
150.00	20,485	17,873	44,688
151.00	28,355	24,420	69,108
152.00	29,175	28,765	97,873
152.42	32,120	12,872	110,744

Device	Routing	Invert	Outlet Devices
#1	Primary	146.00'	<b>24.0" Round Culvert</b> L= 140.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 146.00' / 145.50' S= 0.0036 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	152.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=13.46 cfs @ 17.18 hrs HW=150.91' TW=149.99' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 13.46 cfs @ 4.29 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=146.00' TW=145.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



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**Summary for Pond 1PP: WEST GREENWAY**

Inflow Area = 51.910 ac, 0.00% Impervious, Inflow Depth = 6.29" for 100-year event  
 Inflow = 148.27 cfs @ 12.08 hrs, Volume= 27.189 af  
 Outflow = 22.65 cfs @ 14.53 hrs, Volume= 27.152 af, Atten= 85%, Lag= 146.8 min  
 Primary = 22.65 cfs @ 14.53 hrs, Volume= 27.152 af  
 Routed to Pond 1QP : WEST GREENWAY  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1QP : WEST GREENWAY

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.67' @ 13.38 hrs Surf.Area= 76,907 sf Storage= 259,733 cf

Plug-Flow detention time= 143.8 min calculated for 27.148 af (100% of inflow)  
 Center-of-Mass det. time= 140.5 min ( 1,143.9 - 1,003.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	13,590	0	0
146.00	24,145	18,868	18,868
147.00	35,350	29,748	48,615
148.00	47,205	41,278	89,893
149.00	59,705	53,455	143,348
150.00	72,855	66,280	209,628
151.00	78,910	75,883	285,510
151.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	<b>24.0" Round Culvert</b> L= 188.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.50' S= 0.0027 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Secondary	151.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=22.66 cfs @ 14.53 hrs HW=150.55' TW=147.45' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 22.66 cfs @ 7.21 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=144.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

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**Summary for Pond 1QP: WEST GREENWAY**

Inflow Area = 68.840 ac, 0.00% Impervious, Inflow Depth > 6.30" for 100-year event  
 Inflow = 135.84 cfs @ 12.09 hrs, Volume= 36.114 af  
 Outflow = 51.64 cfs @ 12.34 hrs, Volume= 35.671 af, Atten= 62%, Lag= 15.3 min  
 Primary = 51.64 cfs @ 12.34 hrs, Volume= 35.671 af  
 Routed to Pond 1IP : TACAN  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 1IP : TACAN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.44' @ 12.44 hrs Surf.Area= 65,542 sf Storage= 171,143 cf

Plug-Flow detention time= 75.8 min calculated for 35.671 af (99% of inflow)  
 Center-of-Mass det. time= 58.8 min ( 1,113.8 - 1,055.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	319,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	13,590	0	0
145.00	24,145	18,868	18,868
146.00	35,350	29,748	48,615
147.00	47,205	41,278	89,893
148.00	59,705	53,455	143,348
149.00	72,855	66,280	209,628
150.00	78,910	75,883	285,510
150.42	85,090	34,440	319,950

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>36.0" Round Culvert</b> L= 504.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 138.00' S= 0.0119 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	145.00'	<b>36.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	148.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	149.00'	<b>115.0' long x 50.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=51.52 cfs @ 12.34 hrs HW=148.42' TW=144.17' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Outlet Controls 51.52 cfs @ 7.29 fps)  
 ↑ **2=Orifice/Grate** (Passes < 44.61 cfs potential flow)  
 ↑ **3=Orifice/Grate** (Passes < 7.12 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=133.50' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

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**Summary for Pond 2AP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 223.810 ac, 24.58% Impervious, Inflow Depth = 5.72" for 100-year event  
 Inflow = 343.07 cfs @ 13.29 hrs, Volume= 106.708 af  
 Outflow = 178.16 cfs @ 13.09 hrs, Volume= 106.708 af, Atten= 48%, Lag= 0.0 min  
 Primary = 89.01 cfs @ 13.10 hrs, Volume= 52.693 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 89.86 cfs @ 13.06 hrs, Volume= 54.015 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.68' @ 14.62 hrs Surf.Area= 551,529 sf Storage= 893,977 cf

Plug-Flow detention time= 44.6 min calculated for 106.708 af (100% of inflow)  
 Center-of-Mass det. time= 44.6 min ( 944.2 - 899.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.70'	1,815,201 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.70	0	0	0
144.00	6,640	7,636	7,636
145.00	57,230	31,935	39,571
146.00	117,540	87,385	126,956
147.00	216,860	167,200	294,156
148.00	359,360	288,110	582,266
149.00	640,140	499,750	1,082,016
150.00	826,230	733,185	1,815,201

Device	Routing	Invert	Outlet Devices
#1	Primary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.60' S= 0.0008 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf
#2	Secondary	141.70'	<b>48.0" Round Culvert</b> L= 126.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.70' / 141.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

**Primary OutFlow** Max=88.37 cfs @ 13.10 hrs HW=147.27' TW=145.13' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 88.37 cfs @ 7.03 fps)

**Secondary OutFlow** Max=89.18 cfs @ 13.06 hrs HW=147.19' TW=145.02' (Dynamic Tailwater)  
 ↑2=Culvert (Inlet Controls 89.18 cfs @ 7.10 fps)

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Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2BP: EXISTING BASIN**

Inflow Area = 40.900 ac, 81.30% Impervious, Inflow Depth = 7.18" for 100-year event  
 Inflow = 311.35 cfs @ 12.08 hrs, Volume= 24.480 af  
 Outflow = 58.98 cfs @ 12.50 hrs, Volume= 24.157 af, Atten= 81%, Lag= 25.0 min  
 Primary = 35.29 cfs @ 12.32 hrs, Volume= 22.182 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 24.57 cfs @ 12.52 hrs, Volume= 1.976 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 150.96' @ 12.52 hrs Surf.Area= 94,691 sf Storage= 427,340 cf

Plug-Flow detention time= 164.8 min calculated for 24.157 af (99% of inflow)  
 Center-of-Mass det. time= 156.2 min ( 917.9 - 761.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	482,855 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	10,920	0	0
144.00	16,580	13,750	13,750
145.00	28,700	22,640	36,390
146.00	39,560	34,130	70,520
147.00	53,515	46,538	117,058
148.00	71,930	62,723	179,780
149.00	80,230	76,080	255,860
150.00	88,130	84,180	340,040
151.00	95,000	91,565	431,605
151.50	110,000	51,250	482,855

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	<b>24.0" Round Culvert</b> L= 79.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 144.00' / 143.21' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	150.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=35.20 cfs @ 12.32 hrs HW=150.71' TW=145.30' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 35.20 cfs @ 11.20 fps)

**Secondary OutFlow** Max=24.57 cfs @ 12.52 hrs HW=150.96' TW=145.83' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 24.57 cfs @ 2.57 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2CP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 12.710 ac, 94.57% Impervious, Inflow Depth = 7.42" for 100-year event  
 Inflow = 97.87 cfs @ 12.08 hrs, Volume= 7.860 af  
 Outflow = 29.31 cfs @ 12.40 hrs, Volume= 5.521 af, Atten= 70%, Lag= 18.8 min  
 Primary = 29.31 cfs @ 12.40 hrs, Volume= 5.521 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.32' @ 12.40 hrs Surf.Area= 35,758 sf Storage= 175,315 cf

Plug-Flow detention time= 224.5 min calculated for 5.521 af (70% of inflow)  
 Center-of-Mass det. time= 130.3 min ( 882.9 - 752.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	240,905 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	730	0	0
139.00	1,695	1,213	1,213
140.00	3,150	2,423	3,635
141.00	6,840	4,995	8,630
142.00	12,885	9,863	18,493
143.00	17,405	15,145	33,638
144.00	21,190	19,298	52,935
145.00	24,465	22,828	75,763
146.00	27,780	26,123	101,885
147.00	31,160	29,470	131,355
148.00	34,590	32,875	164,230
149.00	38,295	36,443	200,673
150.00	42,170	40,233	240,905

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>30.0" Round Culvert</b> L= 65.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.50' S= 0.0123 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	146.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=29.30 cfs @ 12.40 hrs HW=148.32' TW=142.62' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 29.30 cfs of 51.59 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 29.30 cfs @ 7.33 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2DP: EXISTING PARKWAY BASIN**

Existing basin information taken from Weymouth Patriot Parkway Utility As-Builts, prepared by LM Heavy Civil Construction LLC, dated October 15, 2018.

Inflow Area = 2.770 ac, 75.81% Impervious, Inflow Depth = 6.08" for 100-year event  
 Inflow = 16.78 cfs @ 12.08 hrs, Volume= 1.403 af  
 Outflow = 2.33 cfs @ 12.60 hrs, Volume= 0.534 af, Atten= 86%, Lag= 31.0 min  
 Primary = 2.33 cfs @ 12.60 hrs, Volume= 0.534 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.86' @ 15.89 hrs Surf.Area= 11,575 sf Storage= 45,091 cf

Plug-Flow detention time= 412.1 min calculated for 0.534 af (38% of inflow)  
 Center-of-Mass det. time= 241.5 min ( 990.5 - 749.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	89,683 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	105	0	0
140.00	1,200	653	653
141.00	2,565	1,883	2,535
142.00	4,380	3,473	6,008
143.00	6,200	5,290	11,298
144.00	7,440	6,820	18,118
145.00	8,800	8,120	26,238
146.00	10,240	9,520	35,758
147.00	11,800	11,020	46,778
148.00	13,425	12,613	59,390
149.00	15,130	14,278	73,668
150.00	16,900	16,015	89,683

Device	Routing	Invert	Outlet Devices
#1	Primary	142.30'	<b>24.0" Round Culvert</b> L= 51.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.30' / 141.70' S= 0.0118 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	146.20'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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**Primary OutFlow** Max=2.33 cfs @ 12.60 hrs HW=146.40' TW=143.39' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 2.33 cfs of 26.24 cfs potential flow)

↳ **2=Orifice/Grate** (Weir Controls 2.33 cfs @ 1.46 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=139.00' TW=138.00' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed**

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**Summary for Pond 2EP: FRENCH'S STREAM WEST BRANCH**

Per site visit outlet consists of one 60-inch culvert.

Inflow Area = 401.120 ac, 22.54% Impervious, Inflow Depth > 5.18" for 100-year event  
 Inflow = 262.29 cfs @ 13.09 hrs, Volume= 172.995 af  
 Outflow = 231.42 cfs @ 15.17 hrs, Volume= 172.995 af, Atten= 12%, Lag= 124.6 min  
 Primary = 231.42 cfs @ 15.17 hrs, Volume= 172.995 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.95' @ 15.17 hrs Surf.Area= 105,396 sf Storage= 373,381 cf

Plug-Flow detention time= 17.2 min calculated for 172.971 af (100% of inflow)  
 Center-of-Mass det. time= 17.1 min ( 1,026.1 - 1,009.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	524,160 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0	0
140.00	9,600	9,600	9,600
141.00	13,135	11,368	20,968
142.00	35,665	24,400	45,368
143.00	47,280	41,473	86,840
144.00	58,400	52,840	139,680
145.00	71,585	64,993	204,673
146.00	85,230	78,408	283,080
147.00	106,515	95,873	378,953
148.00	183,900	145,208	524,160

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	<b>60.0" Round Culvert</b> L= 380.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 135.70' S= 0.0061 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 19.63 sf

**Primary OutFlow** Max=231.42 cfs @ 15.17 hrs HW=146.95' TW=133.05' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 231.42 cfs @ 11.79 fps)



**Summary for Pond 2FP: FRENCH'S STREAM WEST BRANCH**

Inflow Area = 872.630 ac, 11.83% Impervious, Inflow Depth > 5.24" for 100-year event  
 Inflow = 403.94 cfs @ 13.15 hrs, Volume= 380.721 af  
 Outflow = 392.51 cfs @ 13.51 hrs, Volume= 380.682 af, Atten= 3%, Lag= 21.7 min  
 Primary = 159.00 cfs @ 13.51 hrs, Volume= 136.870 af  
     Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Secondary = 233.51 cfs @ 13.51 hrs, Volume= 243.812 af  
     Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 2R : DP-2 FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 133.20' @ 13.51 hrs Surf.Area= 80,170 sf Storage= 177,475 cf

Plug-Flow detention time= 6.0 min calculated for 380.682 af (100% of inflow)  
 Center-of-Mass det. time= 5.7 min ( 1,155.1 - 1,149.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	125.90'	665,278 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.90	0	0	0
130.00	17,650	36,182	36,182
131.00	22,340	19,995	56,177
132.00	56,105	39,223	95,400
133.00	76,835	66,470	161,870
134.00	93,610	85,223	247,092
135.00	111,175	102,393	349,485
136.00	153,700	132,438	481,922
137.00	213,010	183,355	665,278

Device	Routing	Invert	Outlet Devices
#1	Primary	127.60'	<b>60.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 126.60' / 127.60' S= -0.0294 '/' Cc= 0.900 n= 0.013, Flow Area= 19.63 sf
#2	Secondary	126.70'	<b>72.0" Round Culvert</b> L= 34.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 125.90' / 126.70' S= -0.0235 '/' Cc= 0.900 n= 0.013, Flow Area= 28.27 sf
#3	Tertiary	135.50'	<b>10.0' long x 20.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## **SWNAS - Proposed Watershed**

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**Primary OutFlow** Max=159.00 cfs @ 13.51 hrs HW=133.20' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 159.00 cfs @ 8.11 fps)

**Secondary OutFlow** Max=233.51 cfs @ 13.51 hrs HW=133.20' TW=0.00' (Dynamic Tailwater)

↑**2=Culvert** (Barrel Controls 233.51 cfs @ 8.63 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=125.90' TW=0.00' (Dynamic Tailwater)

↑**3=Spillway over Path** ( Controls 0.00 cfs)

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**Summary for Pond ZIP: PROPOSED PHASE 1 BASIN**

Inflow Area = 112.800 ac, 18.86% Impervious, Inflow Depth = 5.46" for 100-year event  
 Inflow = 232.37 cfs @ 12.14 hrs, Volume= 51.293 af  
 Outflow = 59.57 cfs @ 19.75 hrs, Volume= 45.564 af, Atten= 74%, Lag= 456.8 min  
 Primary = 59.57 cfs @ 19.75 hrs, Volume= 33.812 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 39.63 cfs @ 15.62 hrs, Volume= 11.751 af  
 Routed to Pond 2EP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.16' @ 15.30 hrs Surf.Area= 170,290 sf Storage= 1,166,595 cf

Plug-Flow detention time= 369.2 min calculated for 45.564 af (89% of inflow)  
 Center-of-Mass det. time= 306.2 min ( 1,205.3 - 899.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	1,312,748 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	116,400	0	0
140.00	122,800	119,600	119,600
141.00	129,270	126,035	245,635
142.00	135,790	132,530	378,165
143.00	142,360	139,075	517,240
144.00	148,990	145,675	662,915
145.00	155,680	152,335	815,250
146.00	162,400	159,040	974,290
147.00	169,220	165,810	1,140,100
148.00	176,075	172,648	1,312,748

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	141.00'	<b>36.0" W x 10.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	144.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	146.00'	<b>20.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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**Primary OutFlow** Max=59.66 cfs @ 19.75 hrs HW=145.33' TW=142.26' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 59.66 cfs @ 8.44 fps)
- ↑ 2=Orifice/Grate (Passes < 21.10 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 22.02 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 50.05 cfs potential flow)

**Secondary OutFlow** Max=39.73 cfs @ 15.62 hrs HW=147.14' TW=146.91' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir (Weir Controls 39.73 cfs @ 1.74 fps)

**SWNAS - Proposed Watershed**

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**Summary for Pond 2JP: PROPOSED BASIN**

Inflow Area = 15.720 ac, 0.00% Impervious, Inflow Depth = 6.35" for 100-year event  
 Inflow = 111.75 cfs @ 12.08 hrs, Volume= 8.322 af  
 Outflow = 26.81 cfs @ 12.47 hrs, Volume= 7.976 af, Atten= 76%, Lag= 23.2 min  
 Primary = 26.81 cfs @ 12.47 hrs, Volume= 7.976 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2AP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 165.14' @ 12.47 hrs Surf.Area= 38,103 sf Storage= 139,715 cf

Plug-Flow detention time= 111.8 min calculated for 7.976 af (96% of inflow)  
 Center-of-Mass det. time= 87.8 min ( 873.2 - 785.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	214,373 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	29,530	0	0
162.00	31,505	30,518	30,518
163.00	33,540	32,523	63,040
164.00	35,635	34,588	97,628
165.00	37,790	36,713	134,340
166.00	40,000	38,895	173,235
167.00	42,275	41,138	214,373

Device	Routing	Invert	Outlet Devices
#1	Primary	161.00'	<b>24.0" Round Culvert</b> L= 53.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 161.00' / 155.00' S= 0.1132 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	161.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	164.50'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	165.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=26.81 cfs @ 12.47 hrs HW=165.14' TW=145.70' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Inlet Controls 26.81 cfs @ 8.53 fps)  
 ↑ **2=Orifice/Grate** (Passes < 25.58 cfs potential flow)  
 ↑ **3=Orifice/Grate** (Passes < 20.17 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=161.00' TW=141.70' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2KP: PROPOSED BASIN**

Inflow Area = 21.000 ac, 0.00% Impervious, Inflow Depth = 6.00" for 100-year event  
 Inflow = 143.23 cfs @ 12.09 hrs, Volume= 10.499 af  
 Outflow = 33.75 cfs @ 12.48 hrs, Volume= 9.494 af, Atten= 76%, Lag= 23.7 min  
 Primary = 33.75 cfs @ 12.48 hrs, Volume= 9.494 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 12.48 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 152.50' @ 12.48 hrs Surf.Area= 56,254 sf Storage= 220,968 cf

Plug-Flow detention time= 198.6 min calculated for 9.493 af (90% of inflow)  
 Center-of-Mass det. time= 151.9 min ( 945.4 - 793.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	249,350 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	42,500	0	0
149.00	44,800	43,650	43,650
150.00	47,300	46,050	89,700
151.00	52,300	49,800	139,500
152.00	54,900	53,600	193,100
153.00	57,600	56,250	249,350

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	<b>36.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 146.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	149.00'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	150.75'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	152.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	152.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=33.75 cfs @ 12.48 hrs HW=152.50' TW=131.69' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 33.75 cfs of 58.96 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 13.02 cfs @ 8.68 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 11.44 cfs @ 5.72 fps)
- ↑ **4=Orifice/Grate** (Weir Controls 9.29 cfs @ 2.32 fps)

**Secondary OutFlow** Max=0.00 cfs @ 12.48 hrs HW=152.50' TW=131.69' (Dynamic Tailwater)

- ↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.10 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2LP: PROPOSED BASIN**

Inflow Area = 10.690 ac, 0.00% Impervious, Inflow Depth = 6.47" for 100-year event  
 Inflow = 76.93 cfs @ 12.08 hrs, Volume= 5.764 af  
 Outflow = 24.21 cfs @ 12.39 hrs, Volume= 5.538 af, Atten= 69%, Lag= 18.3 min  
 Primary = 24.21 cfs @ 12.39 hrs, Volume= 5.538 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond 2FP : FRENCH'S STREAM WEST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 158.56' @ 12.39 hrs Surf.Area= 26,494 sf Storage= 81,164 cf

Plug-Flow detention time= 87.2 min calculated for 5.537 af (96% of inflow)  
 Center-of-Mass det. time= 64.5 min ( 847.0 - 782.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	155.00'	121,490 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
155.00	19,190	0	0
156.00	21,160	20,175	20,175
157.00	23,200	22,180	42,355
158.00	25,290	24,245	66,600
159.00	27,430	26,360	92,960
160.00	29,630	28,530	121,490

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	<b>24.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	155.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	157.00'	<b>36.0" W x 8.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	158.50'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	159.00'	<b>10.0' long x 30.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=24.21 cfs @ 12.39 hrs HW=158.56' TW=131.43' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 24.21 cfs @ 7.71 fps)
- ↑ 2=Orifice/Grate (Passes < 23.09 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 10.64 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 0.41 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=155.00' TW=125.90' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 2MP: PROPOSED BASIN**

Inflow Area = 19.350 ac, 0.00% Impervious, Inflow Depth = 6.47" for 100-year event  
 Inflow = 139.25 cfs @ 12.08 hrs, Volume= 10.434 af  
 Outflow = 89.94 cfs @ 12.18 hrs, Volume= 10.264 af, Atten= 35%, Lag= 5.5 min  
 Primary = 82.52 cfs @ 12.18 hrs, Volume= 10.189 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN  
 Secondary = 7.42 cfs @ 12.18 hrs, Volume= 0.075 af  
 Routed to Pond 1CP : MEMORIAL GROVE AVE. BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 181.92' @ 12.18 hrs Surf.Area= 21,869 sf Storage= 87,767 cf

Plug-Flow detention time= 47.0 min calculated for 10.264 af (98% of inflow)  
 Center-of-Mass det. time= 36.7 min ( 819.2 - 782.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	177.00'	89,400 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
177.00	14,000	0	0
178.00	15,500	14,750	14,750
179.00	17,000	16,250	31,000
180.00	18,600	17,800	48,800
181.00	20,300	19,450	68,250
182.00	22,000	21,150	89,400

Device	Routing	Invert	Outlet Devices
#1	Primary	177.00'	<b>42.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 177.00' / 176.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	177.50'	<b>36.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	178.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	180.00'	<b>36.0" x 36.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	181.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=82.50 cfs @ 12.18 hrs HW=181.92' TW=153.37' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 82.50 cfs @ 8.58 fps)
- ↑ 2=Orifice/Grate (Passes < 14.75 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 24.66 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 60.07 cfs potential flow)

**Secondary OutFlow** Max=7.39 cfs @ 12.18 hrs HW=181.92' TW=153.37' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir (Weir Controls 7.39 cfs @ 1.75 fps)



**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 3AP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 61.820 ac, 8.41% Impervious, Inflow Depth = 5.30" for 100-year event  
 Inflow = 131.39 cfs @ 12.97 hrs, Volume= 27.297 af  
 Outflow = 105.51 cfs @ 13.38 hrs, Volume= 27.291 af, Atten= 20%, Lag= 24.6 min  
 Primary = 69.92 cfs @ 13.38 hrs, Volume= 23.972 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH  
 Secondary = 35.59 cfs @ 13.38 hrs, Volume= 3.319 af  
 Routed to Pond 3BP : FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.92' @ 13.38 hrs Surf.Area= 137,190 sf Storage= 114,298 cf

Plug-Flow detention time= 9.2 min calculated for 27.291 af (100% of inflow)  
 Center-of-Mass det. time= 8.9 min ( 880.7 - 871.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	141.50'	125,603 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.50	0	0	0
145.00	3,630	6,353	6,353
146.00	12,565	8,098	14,450
147.00	31,705	22,135	36,585
148.00	146,330	89,018	125,603

Device	Routing	Invert	Outlet Devices
#1	Primary	142.20'	<b>36.0" Round Culvert</b> L= 42.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 141.50' / 142.20' S= -0.0167 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	146.70'	<b>10.0' long x 15.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=69.92 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 69.92 cfs @ 9.89 fps)

**Secondary OutFlow** Max=35.58 cfs @ 13.38 hrs HW=147.92' TW=136.31' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 35.58 cfs @ 2.92 fps)

**SWNAS - Proposed Watershed**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 3BP: FRENCH'S STREAM EAST BRANCH**

Inflow Area = 193.720 ac, 8.56% Impervious, Inflow Depth = 5.14" for 100-year event  
 Inflow = 318.31 cfs @ 13.43 hrs, Volume= 82.986 af  
 Outflow = 314.32 cfs @ 13.51 hrs, Volume= 82.986 af, Atten= 1%, Lag= 5.0 min  
 Primary = 184.83 cfs @ 13.51 hrs, Volume= 70.933 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH  
 Secondary = 129.49 cfs @ 13.51 hrs, Volume= 12.053 af  
 Routed to Reach 3R : DP-3 FRENCH'S STREAM EAST BRANCH

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.34' @ 13.51 hrs Surf.Area= 73,867 sf Storage= 242,197 cf

Plug-Flow detention time= 12.5 min calculated for 82.974 af (100% of inflow)  
 Center-of-Mass det. time= 12.5 min ( 910.3 - 897.8 )

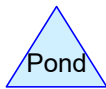
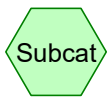
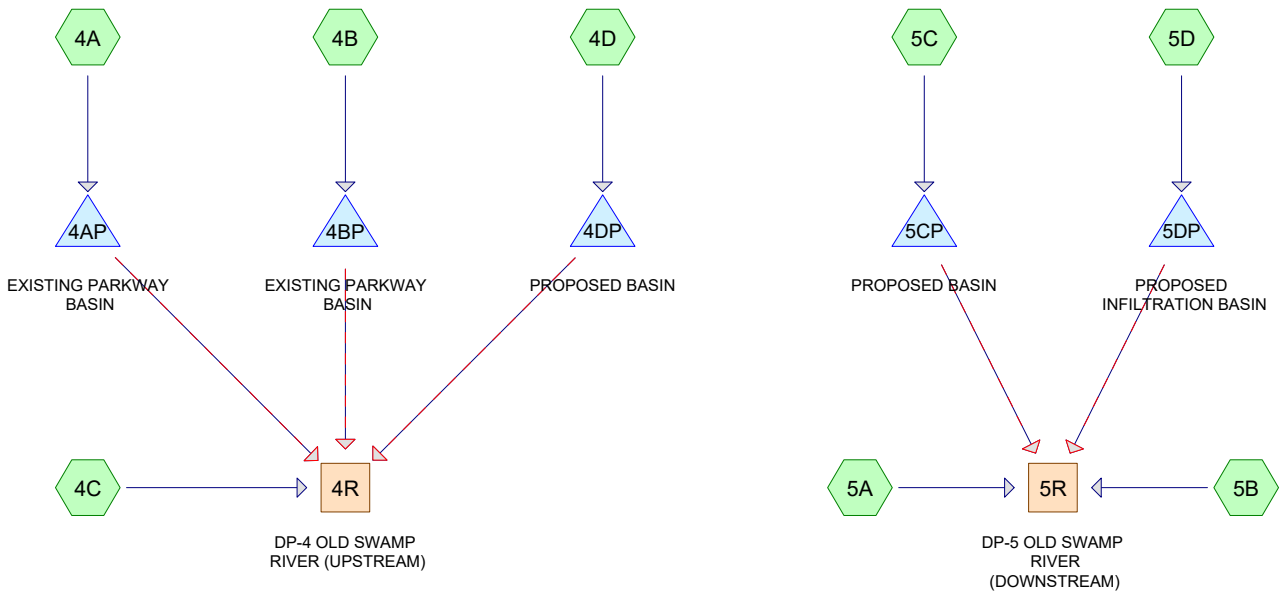
Volume	Invert	Avail.Storage	Storage Description
#1	129.20'	1,254,593 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.20	0	0	0
130.00	2,770	1,108	1,108
131.00	10,320	6,545	7,653
132.00	30,890	20,605	28,258
133.00	37,250	34,070	62,328
134.00	45,960	41,605	103,933
135.00	56,730	51,345	155,278
136.00	68,875	62,803	218,081
137.00	83,650	76,263	294,343
138.00	105,010	94,330	388,673
139.00	125,940	115,475	504,148
140.00	161,860	143,900	648,048
141.00	187,685	174,773	822,821
142.00	214,700	201,193	1,024,013
143.00	246,460	230,580	1,254,593

Device	Routing	Invert	Outlet Devices
#1	Primary	129.20'	<b>60.0" Round Culvert</b> L= 20.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 129.20' / 128.90' S= 0.0150 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 19.63 sf
#2	Secondary	135.10'	<b>35.0' long x 10.0' breadth Spillway over Path</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=184.83 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Barrel Controls 184.83 cfs @ 9.41 fps)

**Secondary OutFlow** Max=129.49 cfs @ 13.51 hrs HW=136.34' TW=0.00' (Dynamic Tailwater)  
 ↑2=Spillway over Path (Weir Controls 129.49 cfs @ 2.99 fps)



**Routing Diagram for SWNAS - Proposed Watershed Swamp River**  
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# SWNAS - Proposed Watershed Swamp River

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.120	61	>75% Grass cover, Good, HSG B (4C, 5B)
1.500	74	>75% Grass cover, Good, HSG C (4C, 4D)
1.350	80	>75% Grass cover, Good, HSG D (4C)
5.360	48	Brush, Good, HSG B (4A, 4B, 4C)
1.360	73	Brush, Good, HSG D (4C)
7.470	98	Pavement (4A, 4B, 4C)
88.710	88	Proposed Development Area (4D, 5C, 5D)
0.600	100	Water - Basin Area (4A, 4B)
36.490	55	Woods, Good, HSG B (4C, 5A, 5B, 5D)
2.630	70	Woods, Good, HSG C (4C)
60.540	77	Woods, Good, HSG D (4C, 5A, 5C)
<b>218.130</b>	<b>77</b>	<b>TOTAL AREA</b>

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 4A:

Runoff = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af, Depth= 0.79"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af, Depth= 2.54"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 4C:**

Runoff = 17.58 cfs @ 13.73 hrs, Volume= 5.362 af, Depth= 1.11"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 4D:

Runoff = 15.19 cfs @ 12.09 hrs, Volume= 1.080 af, Depth= 2.01"  
Routed to Pond 4DP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

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



# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

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Runoff = 17.84 cfs @ 12.10 hrs, Volume= 1.336 af, Depth= 1.11"  
Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 5B:

Runoff = 2.60 cfs @ 13.67 hrs, Volume= 1.009 af, Depth= 0.38"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
48.2	1,445	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
96.1	1,545	Total			

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Subcatchment 5C:**

Runoff = 107.94 cfs @ 12.09 hrs, Volume= 7.668 af, Depth= 1.93"

Routed to Pond 5CP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 34.230	88	Proposed Development Area
13.460	77	Woods, Good, HSG D
47.690	85	Weighted Average
47.690		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 2-year Rainfall=3.40"

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## Summary for Subcatchment 5D:

Runoff = 122.02 cfs @ 12.09 hrs, Volume= 8.677 af, Depth= 2.01"

Routed to Pond 5DP : PROPOSED INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.40"

Area (ac)	CN	Description
* 48.880	88	Proposed Development Area
2.920	55	Woods, Good, HSG B
51.800	86	Weighted Average
51.800		100.00% Pervious Area

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

**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 0.93" for 2-year event  
Inflow = 18.07 cfs @ 13.73 hrs, Volume= 5.626 af  
Outflow = 18.07 cfs @ 13.73 hrs, Volume= 5.626 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 0.00% Impervious, Inflow Depth > 0.87" for 2-year event  
Inflow = 26.62 cfs @ 12.12 hrs, Volume= 10.556 af  
Outflow = 26.62 cfs @ 12.12 hrs, Volume= 10.556 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 0.79" for 2-year event  
 Inflow = 3.20 cfs @ 12.10 hrs, Volume= 0.264 af  
 Outflow = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af, Atten= 66%, Lag= 23.3 min  
 Primary = 1.08 cfs @ 12.49 hrs, Volume= 0.263 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.52' @ 12.49 hrs Surf.Area= 5,925 sf Storage= 2,898 cf

Plug-Flow detention time= 85.7 min calculated for 0.263 af (100% of inflow)  
 Center-of-Mass det. time= 85.7 min ( 967.6 - 881.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.08 cfs @ 12.49 hrs HW=146.52' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.08 cfs @ 2.50 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 2.54" for 2-year event  
 Inflow = 11.77 cfs @ 12.09 hrs, Volume= 0.860 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.57' @ 24.34 hrs Surf.Area= 14,463 sf Storage= 37,451 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)



**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event  
 Inflow = 15.19 cfs @ 12.09 hrs, Volume= 1.080 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 136.83' @ 24.34 hrs Surf.Area= 27,652 sf Storage= 47,063 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	146,205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	23,585	0	0
136.00	25,780	24,683	24,683
137.00	28,030	26,905	51,588
138.00	30,340	29,185	80,773
139.00	32,700	31,520	112,293
140.00	35,125	33,913	146,205

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	<b>15.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	137.50'	<b>12.0" W x 3.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	138.90'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert ( Controls 0.00 cfs)
- ↑ 2=Orifice/Grate ( Controls 0.00 cfs)
- ↑ 3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 47.690 ac, 0.00% Impervious, Inflow Depth = 1.93" for 2-year event  
 Inflow = 107.94 cfs @ 12.09 hrs, Volume= 7.668 af  
 Outflow = 15.36 cfs @ 12.64 hrs, Volume= 7.549 af, Atten= 86%, Lag= 32.8 min  
 Primary = 15.36 cfs @ 12.64 hrs, Volume= 7.549 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 173.65' @ 12.64 hrs Surf.Area= 98,839 sf Storage= 157,264 cf

Plug-Flow detention time= 258.8 min calculated for 7.549 af (98% of inflow)  
 Center-of-Mass det. time= 249.5 min ( 1,073.0 - 823.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	172.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	173.75'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	175.25'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.60'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Type III 24-hr 2-year Rainfall=3.40"

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**Primary OutFlow** Max=15.36 cfs @ 12.64 hrs HW=173.65' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 15.36 cfs of 19.50 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 15.36 cfs @ 5.12 fps)
- ↑ 3=Orifice/Grate ( Controls 0.00 cfs)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Summary for Pond 5DP: PROPOSED INFILTRATION BASIN**

Inflow Area = 51.800 ac, 0.00% Impervious, Inflow Depth = 2.01" for 2-year event  
 Inflow = 122.02 cfs @ 12.09 hrs, Volume= 8.677 af  
 Outflow = 7.88 cfs @ 13.93 hrs, Volume= 8.677 af, Atten= 94%, Lag= 110.2 min  
 Discarded = 5.57 cfs @ 13.93 hrs, Volume= 8.015 af  
 Primary = 2.31 cfs @ 13.93 hrs, Volume= 0.662 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 143.89' @ 13.93 hrs Surf.Area= 99,851 sf Storage= 180,706 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 286.6 min ( 1,106.5 - 819.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,825	0	0
143.00	96,055	93,940	93,940
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	143.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	145.75'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.30'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	142.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

# **SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 2-year Rainfall=3.40"

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**Discarded OutFlow** Max=5.57 cfs @ 13.93 hrs HW=143.89' (Free Discharge)

↑**5=Exfiltration** (Exfiltration Controls 5.57 cfs)

**Primary OutFlow** Max=2.31 cfs @ 13.93 hrs HW=143.89' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 2.31 cfs of 24.71 cfs potential flow)

↑**2=Orifice/Grate** (Orifice Controls 2.31 cfs @ 1.99 fps)

↑**3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 4A:

Runoff = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af, Depth= 1.87"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af, Depth= 4.19"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 4C:**

Runoff = 39.18 cfs @ 13.61 hrs, Volume= 11.367 af, Depth= 2.36"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			



# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 4D:

Runoff = 26.53 cfs @ 12.09 hrs, Volume= 1.914 af, Depth= 3.56"  
Routed to Pond 4DP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

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Runoff = 39.60 cfs @ 12.09 hrs, Volume= 2.831 af, Depth= 2.36"  
Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Subcatchment 5B:**

Runoff = 10.68 cfs @ 13.45 hrs, Volume= 3.082 af, Depth= 1.16"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
48.2	1,445	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
96.1	1,545	Total			

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 5C:

Runoff = 191.38 cfs @ 12.09 hrs, Volume= 13.753 af, Depth= 3.46"

Routed to Pond 5CP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 34.230	88	Proposed Development Area
13.460	77	Woods, Good, HSG D
47.690	85	Weighted Average
47.690		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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## Summary for Subcatchment 5D:

Runoff = 213.05 cfs @ 12.09 hrs, Volume= 15.369 af, Depth= 3.56"

Routed to Pond 5DP : PROPOSED INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=5.10"

Area (ac)	CN	Description
* 48.880	88	Proposed Development Area
2.920	55	Woods, Good, HSG B
51.800	86	Weighted Average
51.800		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

*Type III 24-hr 10-year Rainfall=5.10"*

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**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 2.13" for 10-year event  
Inflow = 40.55 cfs @ 13.60 hrs, Volume= 12.815 af  
Outflow = 40.55 cfs @ 13.60 hrs, Volume= 12.815 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 0.00% Impervious, Inflow Depth > 2.06" for 10-year event  
Inflow = 60.95 cfs @ 12.38 hrs, Volume= 24.977 af  
Outflow = 60.95 cfs @ 12.38 hrs, Volume= 24.977 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 1.87" for 10-year event  
 Inflow = 8.47 cfs @ 12.09 hrs, Volume= 0.621 af  
 Outflow = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af, Atten= 63%, Lag= 19.1 min  
 Primary = 3.12 cfs @ 12.41 hrs, Volume= 0.621 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.16' @ 12.41 hrs Surf.Area= 7,002 sf Storage= 7,049 cf

Plug-Flow detention time= 58.8 min calculated for 0.621 af (100% of inflow)  
 Center-of-Mass det. time= 59.1 min ( 913.4 - 854.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.12 cfs @ 12.41 hrs HW=147.16' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 3.12 cfs @ 3.97 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)



**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 10-year Rainfall=5.10"

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**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 4.19" for 10-year event  
 Inflow = 18.89 cfs @ 12.08 hrs, Volume= 1.417 af  
 Outflow = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af, Atten= 97%, Lag= 214.3 min  
 Primary = 0.63 cfs @ 15.66 hrs, Volume= 0.438 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.30' @ 15.66 hrs Surf.Area= 16,042 sf Storage= 48,608 cf

Plug-Flow detention time= 590.5 min calculated for 0.438 af (31% of inflow)  
 Center-of-Mass det. time= 439.8 min ( 1,221.9 - 782.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.63 cfs @ 15.66 hrs HW=137.30' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 0.63 cfs @ 2.15 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 3.56" for 10-year event  
 Inflow = 26.53 cfs @ 12.09 hrs, Volume= 1.914 af  
 Outflow = 0.40 cfs @ 20.25 hrs, Volume= 0.389 af, Atten= 99%, Lag= 489.8 min  
 Primary = 0.40 cfs @ 20.25 hrs, Volume= 0.389 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.75' @ 20.25 hrs Surf.Area= 29,757 sf Storage= 73,409 cf

Plug-Flow detention time= 820.5 min calculated for 0.389 af (20% of inflow)  
 Center-of-Mass det. time= 659.1 min ( 1,462.7 - 803.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	146,205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	23,585	0	0
136.00	25,780	24,683	24,683
137.00	28,030	26,905	51,588
138.00	30,340	29,185	80,773
139.00	32,700	31,520	112,293
140.00	35,125	33,913	146,205

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	<b>15.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	137.50'	<b>12.0" W x 3.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	138.90'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.40 cfs @ 20.25 hrs HW=137.75' TW=0.00' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 0.40 cfs of 8.52 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 1.60 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 47.690 ac, 0.00% Impervious, Inflow Depth = 3.46" for 10-year event  
 Inflow = 191.38 cfs @ 12.09 hrs, Volume= 13.753 af  
 Outflow = 33.13 cfs @ 12.55 hrs, Volume= 13.631 af, Atten= 83%, Lag= 28.1 min  
 Primary = 33.13 cfs @ 12.55 hrs, Volume= 13.631 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 174.86' @ 12.55 hrs Surf.Area= 104,024 sf Storage= 280,494 cf

Plug-Flow detention time= 211.1 min calculated for 13.631 af (99% of inflow)  
 Center-of-Mass det. time= 205.6 min ( 1,012.3 - 806.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	172.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	173.75'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	175.25'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.60'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 10-year Rainfall=5.10"

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**Primary OutFlow** Max=33.13 cfs @ 12.55 hrs HW=174.86' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 33.13 cfs of 48.57 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 22.17 cfs @ 7.39 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 10.96 cfs @ 3.65 fps)
- ↑ 4=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 5DP: PROPOSED INFILTRATION BASIN**

Inflow Area = 51.800 ac, 0.00% Impervious, Inflow Depth = 3.56" for 10-year event  
 Inflow = 213.05 cfs @ 12.09 hrs, Volume= 15.369 af  
 Outflow = 21.26 cfs @ 12.92 hrs, Volume= 15.369 af, Atten= 90%, Lag= 49.9 min  
 Discarded = 5.87 cfs @ 12.92 hrs, Volume= 9.937 af  
 Primary = 15.39 cfs @ 12.92 hrs, Volume= 5.433 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 145.15' @ 12.92 hrs Surf.Area= 105,275 sf Storage= 310,715 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 257.4 min ( 1,061.1 - 803.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,825	0	0
143.00	96,055	93,940	93,940
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	143.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	145.75'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.30'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	142.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

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**Discarded OutFlow** Max=5.87 cfs @ 12.92 hrs HW=145.15' (Free Discharge)

↳ **5=Exfiltration** (Exfiltration Controls 5.87 cfs)

**Primary OutFlow** Max=15.39 cfs @ 12.92 hrs HW=145.15' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 15.39 cfs of 55.19 cfs potential flow)

↳ **2=Orifice/Grate** (Orifice Controls 15.39 cfs @ 5.13 fps)

↳ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 4A:

Runoff = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af, Depth= 2.68"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af, Depth= 5.27"  
Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

	Area (ac)	CN	Description
*	3.130	98	Pavement
*	0.400	100	Water - Basin Area
	0.530	48	Brush, Good, HSG B
	4.060	92	Weighted Average
	0.530		13.05% Pervious Area
	3.530		86.95% Impervious Area

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



**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 4C:**

Runoff = 54.71 cfs @ 13.60 hrs, Volume= 15.685 af, Depth= 3.26"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 4D:

Runoff = 33.91 cfs @ 12.09 hrs, Volume= 2.472 af, Depth= 4.60"  
Routed to Pond 4DP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 5A:

Assume Tc 10% less than existing conditions.

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Runoff = 54.97 cfs @ 12.09 hrs, Volume= 3.906 af, Depth= 3.26"  
Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

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

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 5B:

Runoff = 17.84 cfs @ 13.35 hrs, Volume= 4.786 af, Depth= 1.80"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
48.2	1,445	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
96.1	1,545	Total			

# SWNAS - Proposed Watershed Swamp River

Type III 24-hr 25-year Rainfall=6.20"

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## Summary for Subcatchment 5C:

Runoff = 245.93 cfs @ 12.09 hrs, Volume= 17.850 af, Depth= 4.49"

Routed to Pond 5CP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 34.230	88	Proposed Development Area
13.460	77	Woods, Good, HSG D
47.690	85	Weighted Average
47.690		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Subcatchment 5D:**

Runoff = 272.29 cfs @ 12.09 hrs, Volume= 19.856 af, Depth= 4.60"

Routed to Pond 5DP : PROPOSED INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.20"

Area (ac)	CN	Description
* 48.880	88	Proposed Development Area
2.920	55	Woods, Good, HSG B
51.800	86	Weighted Average
51.800		100.00% Pervious Area

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

**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 3.04" for 25-year event  
Inflow = 58.70 cfs @ 13.60 hrs, Volume= 18.325 af  
Outflow = 58.70 cfs @ 13.60 hrs, Volume= 18.325 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 0.00% Impervious, Inflow Depth > 2.92" for 25-year event  
Inflow = 94.55 cfs @ 12.12 hrs, Volume= 35.470 af  
Outflow = 94.55 cfs @ 12.12 hrs, Volume= 35.470 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 2.68" for 25-year event  
 Inflow = 12.38 cfs @ 12.09 hrs, Volume= 0.890 af  
 Outflow = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af, Atten= 67%, Lag= 20.3 min  
 Primary = 4.11 cfs @ 12.43 hrs, Volume= 0.889 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.66' @ 12.43 hrs Surf.Area= 7,752 sf Storage= 10,737 cf

Plug-Flow detention time= 54.0 min calculated for 0.889 af (100% of inflow)  
 Center-of-Mass det. time= 54.3 min ( 897.9 - 843.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=4.11 cfs @ 12.43 hrs HW=147.66' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 4.11 cfs @ 5.23 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 5.27" for 25-year event  
 Inflow = 23.45 cfs @ 12.08 hrs, Volume= 1.782 af  
 Outflow = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af, Atten= 94%, Lag= 92.1 min  
 Primary = 1.49 cfs @ 13.62 hrs, Volume= 0.803 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 137.55' @ 13.62 hrs Surf.Area= 16,545 sf Storage= 52,744 cf

Plug-Flow detention time= 430.2 min calculated for 0.802 af (45% of inflow)  
 Center-of-Mass det. time= 306.4 min ( 1,082.6 - 776.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.49 cfs @ 13.62 hrs HW=137.55' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.49 cfs @ 2.75 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event  
 Inflow = 33.91 cfs @ 12.09 hrs, Volume= 2.472 af  
 Outflow = 0.84 cfs @ 16.90 hrs, Volume= 0.948 af, Atten= 98%, Lag= 289.2 min  
 Primary = 0.84 cfs @ 16.90 hrs, Volume= 0.948 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 138.11' @ 16.90 hrs Surf.Area= 30,600 sf Storage= 84,238 cf

Plug-Flow detention time= 634.9 min calculated for 0.947 af (38% of inflow)  
 Center-of-Mass det. time= 508.6 min ( 1,305.2 - 796.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	146,205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	23,585	0	0
136.00	25,780	24,683	24,683
137.00	28,030	26,905	51,588
138.00	30,340	29,185	80,773
139.00	32,700	31,520	112,293
140.00	35,125	33,913	146,205

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	<b>15.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	137.50'	<b>12.0" W x 3.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	138.90'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.84 cfs @ 16.90 hrs HW=138.11' TW=0.00' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 0.84 cfs of 9.27 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 3.34 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 47.690 ac, 0.00% Impervious, Inflow Depth = 4.49" for 25-year event  
 Inflow = 245.93 cfs @ 12.09 hrs, Volume= 17.850 af  
 Outflow = 47.28 cfs @ 12.53 hrs, Volume= 17.727 af, Atten= 81%, Lag= 26.6 min  
 Primary = 47.28 cfs @ 12.53 hrs, Volume= 17.727 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 175.59' @ 12.53 hrs Surf.Area= 107,211 sf Storage= 357,447 cf

Plug-Flow detention time= 193.0 min calculated for 17.727 af (99% of inflow)  
 Center-of-Mass det. time= 188.6 min ( 988.0 - 799.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	172.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	173.75'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	175.25'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.60'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 25-year Rainfall=6.20"

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**Primary OutFlow** Max=47.28 cfs @ 12.53 hrs HW=175.59' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 47.28 cfs of 62.90 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 25.38 cfs @ 8.46 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 16.64 cfs @ 5.55 fps)
- ↑ 4=Orifice/Grate (Weir Controls 5.26 cfs @ 1.92 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 5DP: PROPOSED INFILTRATION BASIN**

Inflow Area = 51.800 ac, 0.00% Impervious, Inflow Depth = 4.60" for 25-year event  
 Inflow = 272.29 cfs @ 12.09 hrs, Volume= 19.856 af  
 Outflow = 31.44 cfs @ 12.74 hrs, Volume= 19.856 af, Atten= 88%, Lag= 39.4 min  
 Discarded = 6.10 cfs @ 12.74 hrs, Volume= 10.805 af  
 Primary = 25.35 cfs @ 12.74 hrs, Volume= 9.050 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 146.07' @ 12.74 hrs Surf.Area= 109,297 sf Storage= 408,561 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 248.3 min ( 1,044.8 - 796.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,825	0	0
143.00	96,055	93,940	93,940
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	143.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	145.75'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.30'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	142.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

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Type III 24-hr 25-year Rainfall=6.20"

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**Discarded OutFlow** Max=6.10 cfs @ 12.74 hrs HW=146.07' (Free Discharge)

↑**5=Exfiltration** (Exfiltration Controls 6.10 cfs)

**Primary OutFlow** Max=25.35 cfs @ 12.74 hrs HW=146.07' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 25.35 cfs of 70.49 cfs potential flow)

↑**2=Orifice/Grate** (Orifice Controls 20.71 cfs @ 6.90 fps)

↑**3=Orifice/Grate** (Weir Controls 4.64 cfs @ 1.84 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4A:**

Runoff = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af, Depth= 4.04"

Routed to Pond 4AP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 1.340	98	Pavement
* 0.200	100	Water - Basin Area
2.440	48	Brush, Good, HSG B
3.980	67	Weighted Average
2.440		61.31% Pervious Area
1.540		38.69% Impervious Area

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



**Summary for Subcatchment 4B:**

10" RCP pipe was assumed entering main 24" pipeline and inverts were assumed 0.005.

24"RCP - inverts assumed 0.005

(2) 48" RCP were assumed 0.005 invert and only entered as 1-48" RCP

60"RCP and last 48" RCP had assumed invert at 0.005

Runoff = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af, Depth= 6.94"  
 Routed to Pond 4BP : EXISTING PARKWAY BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.130	98	Pavement
* 0.400	100	Water - Basin Area
0.530	48	Brush, Good, HSG B
4.060	92	Weighted Average
0.530		13.05% Pervious Area
3.530		86.95% Impervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4C:**

Runoff = 79.82 cfs @ 13.60 hrs, Volume= 22.749 af, Depth= 4.72"

Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 3.000	98	Pavement
7.340	55	Woods, Good, HSG B
2.630	70	Woods, Good, HSG C
35.350	77	Woods, Good, HSG D
2.390	48	Brush, Good, HSG B
1.360	73	Brush, Good, HSG D
3.750	61	>75% Grass cover, Good, HSG B
0.650	74	>75% Grass cover, Good, HSG C
1.350	80	>75% Grass cover, Good, HSG D
57.820	73	Weighted Average
54.820		94.81% Pervious Area
3.000		5.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.40"
106.9	3,208	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
120.0	3,308	Total			

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 4D:**

Runoff = 45.26 cfs @ 12.08 hrs, Volume= 3.351 af, Depth= 6.23"  
 Routed to Pond 4DP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 5.600	88	Proposed Development Area
0.850	74	>75% Grass cover, Good, HSG C
6.450	86	Weighted Average
6.450		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5A:**

Assume Tc 10% less than existing conditions.

Runoff = 79.64 cfs @ 12.09 hrs, Volume= 5.666 af, Depth= 4.72"  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
2.670	55	Woods, Good, HSG B
11.730	77	Woods, Good, HSG D
14.400	73	Weighted Average
14.400		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5B:**

Runoff = 30.70 cfs @ 13.35 hrs, Volume= 7.800 af, Depth= 2.93"

Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
23.560	55	Woods, Good, HSG B
8.370	61	>75% Grass cover, Good, HSG B
31.930	57	Weighted Average
31.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.9	100	0.0100	0.03		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.40"
48.2	1,445	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
96.1	1,545	Total			

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5C:**

Runoff = 330.04 cfs @ 12.09 hrs, Volume= 24.309 af, Depth= 6.12"

Routed to Pond 5CP : PROPOSED BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 34.230	88	Proposed Development Area
13.460	77	Woods, Good, HSG D
47.690	85	Weighted Average
47.690		100.00% Pervious Area

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

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Subcatchment 5D:**

Runoff = 363.46 cfs @ 12.08 hrs, Volume= 26.912 af, Depth= 6.23"

Routed to Pond 5DP : PROPOSED INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Type III 24-hr 100-year Rainfall=7.90"

Area (ac)	CN	Description
* 48.880	88	Proposed Development Area
2.920	55	Woods, Good, HSG B
51.800	86	Weighted Average
51.800		100.00% Pervious Area

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

**Summary for Reach 4R: DP-4 OLD SWAMP RIVER (UPSTREAM)**

Inflow Area = 72.310 ac, 11.16% Impervious, Inflow Depth = 4.53" for 100-year event  
Inflow = 87.52 cfs @ 13.60 hrs, Volume= 27.284 af  
Outflow = 87.52 cfs @ 13.60 hrs, Volume= 27.284 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**Summary for Reach 5R: DP-5 OLD SWAMP RIVER (DOWNSTREAM)**

Inflow Area = 145.820 ac, 0.00% Impervious, Inflow Depth > 4.35" for 100-year event  
Inflow = 154.24 cfs @ 12.34 hrs, Volume= 52.844 af  
Outflow = 154.24 cfs @ 12.34 hrs, Volume= 52.844 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 4AP: EXISTING PARKWAY BASIN**

Inflow Area = 3.980 ac, 38.69% Impervious, Inflow Depth = 4.04" for 100-year event  
 Inflow = 18.83 cfs @ 12.09 hrs, Volume= 1.339 af  
 Outflow = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af, Atten= 72%, Lag= 22.3 min  
 Primary = 5.33 cfs @ 12.46 hrs, Volume= 1.339 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 148.47' @ 12.46 hrs Surf.Area= 8,987 sf Storage= 17,483 cf

Plug-Flow detention time= 52.7 min calculated for 1.339 af (100% of inflow)  
 Center-of-Mass det. time= 52.9 min ( 884.6 - 831.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	145.98'	34,245 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.98	0	0	0
146.00	5,020	50	50
147.00	6,760	5,890	5,940
148.00	8,260	7,510	13,450
149.00	9,815	9,038	22,488
150.00	13,700	11,758	34,245

Device	Routing	Invert	Outlet Devices
#1	Primary	145.98'	<b>12.0" Round Culvert</b> L= 23.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 145.98' / 137.17' S= 0.3830 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	149.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.33 cfs @ 12.46 hrs HW=148.47' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 5.33 cfs @ 6.79 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=145.98' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 4BP: EXISTING PARKWAY BASIN**

Inflow Area = 4.060 ac, 86.95% Impervious, Inflow Depth = 6.94" for 100-year event  
 Inflow = 30.44 cfs @ 12.08 hrs, Volume= 2.350 af  
 Outflow = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af, Atten= 89%, Lag= 39.2 min  
 Primary = 3.36 cfs @ 12.74 hrs, Volume= 1.370 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 138.19' @ 12.74 hrs Surf.Area= 17,819 sf Storage= 63,713 cf

Plug-Flow detention time= 341.6 min calculated for 1.370 af (58% of inflow)  
 Center-of-Mass det. time= 234.3 min ( 1,003.8 - 769.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	146,263 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.00	1,775	0	0
133.00	4,345	3,060	3,060
134.00	7,050	5,698	8,758
135.00	10,730	8,890	17,648
136.00	13,160	11,945	29,593
137.00	15,450	14,305	43,898
138.00	17,430	16,440	60,338
139.00	19,460	18,445	78,783
140.00	21,550	20,505	99,288
141.00	23,700	22,625	121,913
142.00	25,000	24,350	146,263

Device	Routing	Invert	Outlet Devices
#1	Primary	136.90'	<b>12.0" Round Culvert</b> L= 98.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 136.90' / 135.23' S= 0.0170 '/ Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	141.50'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=3.36 cfs @ 12.74 hrs HW=138.19' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 3.36 cfs @ 4.28 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.00' TW=0.00' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 4DP: PROPOSED BASIN**

Inflow Area = 6.450 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event  
 Inflow = 45.26 cfs @ 12.08 hrs, Volume= 3.351 af  
 Outflow = 1.35 cfs @ 15.98 hrs, Volume= 1.825 af, Atten= 97%, Lag= 233.8 min  
 Primary = 1.35 cfs @ 15.98 hrs, Volume= 1.825 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 4R : DP-4 OLD SWAMP RIVER (UPSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 138.88' @ 15.98 hrs Surf.Area= 32,414 sf Storage= 108,470 cf

Plug-Flow detention time= 651.0 min calculated for 1.825 af (54% of inflow)  
 Center-of-Mass det. time= 542.1 min ( 1,330.3 - 788.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	146,205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	23,585	0	0
136.00	25,780	24,683	24,683
137.00	28,030	26,905	51,588
138.00	30,340	29,185	80,773
139.00	32,700	31,520	112,293
140.00	35,125	33,913	146,205

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	<b>15.0" Round Culvert</b> L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 135.00' / 134.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	137.50'	<b>12.0" W x 3.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	138.90'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.00'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.35 cfs @ 15.98 hrs HW=138.88' TW=0.00' (Dynamic Tailwater)  
 ↑ **1=Culvert** (Passes 1.35 cfs of 10.66 cfs potential flow)  
 ↑ **2=Orifice/Grate** (Orifice Controls 1.35 cfs @ 5.39 fps)  
 ↑ **3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=135.00' TW=0.00' (Dynamic Tailwater)  
 ↑ **4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Summary for Pond 5CP: PROPOSED BASIN**

Inflow Area = 47.690 ac, 0.00% Impervious, Inflow Depth = 6.12" for 100-year event  
 Inflow = 330.04 cfs @ 12.09 hrs, Volume= 24.309 af  
 Outflow = 73.06 cfs @ 12.49 hrs, Volume= 24.185 af, Atten= 78%, Lag= 24.5 min  
 Primary = 73.06 cfs @ 12.49 hrs, Volume= 24.185 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 176.56' @ 12.49 hrs Surf.Area= 111,542 sf Storage= 463,276 cf

Plug-Flow detention time= 170.2 min calculated for 24.181 af (99% of inflow)  
 Center-of-Mass det. time= 167.3 min ( 958.2 - 790.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	172.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
172.00	91,826	0	0
173.00	96,055	93,941	93,941
174.00	100,340	98,198	192,138
175.00	104,600	102,470	294,608
176.00	109,000	106,800	401,408
177.00	113,530	111,265	512,673
178.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	172.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 172.00' / 170.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	172.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	173.75'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	175.25'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Secondary	176.60'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**SWNAS - Proposed Watershed Swamp River**

Type III 24-hr 100-year Rainfall=7.90"

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**Primary OutFlow** Max=73.06 cfs @ 12.49 hrs HW=176.56' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 73.06 cfs of 77.67 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 29.09 cfs @ 9.70 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 21.92 cfs @ 7.31 fps)
- ↑ 4=Orifice/Grate (Orifice Controls 22.05 cfs @ 5.51 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=172.00' TW=0.00' (Dynamic Tailwater)

- ↑ 5=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 5DP: PROPOSED INFILTRATION BASIN**

Inflow Area = 51.800 ac, 0.00% Impervious, Inflow Depth = 6.23" for 100-year event  
 Inflow = 363.46 cfs @ 12.08 hrs, Volume= 26.912 af  
 Outflow = 56.47 cfs @ 12.57 hrs, Volume= 26.913 af, Atten= 84%, Lag= 29.0 min  
 Discarded = 6.41 cfs @ 12.57 hrs, Volume= 11.719 af  
 Primary = 50.06 cfs @ 12.57 hrs, Volume= 15.194 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 5R : DP-5 OLD SWAMP RIVER (DOWNSTREAM)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 147.29' @ 12.57 hrs Surf.Area= 114,821 sf Storage= 545,658 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 221.7 min ( 1,009.8 - 788.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	628,438 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	91,825	0	0
143.00	96,055	93,940	93,940
144.00	100,340	98,198	192,138
145.00	104,600	102,470	294,608
146.00	109,000	106,800	401,408
147.00	113,530	111,265	512,673
148.00	118,000	115,765	628,438

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	<b>42.0" Round Culvert</b> L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 140.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 9.62 sf
#2	Device 1	143.50'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	145.75'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.30'	<b>10.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	142.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

# **SWNAS - Proposed Watershed Swamp River**

*Type III 24-hr 100-year Rainfall=7.90"*

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**Discarded OutFlow** Max=6.41 cfs @ 12.57 hrs HW=147.29' (Free Discharge)

↳ **5=Exfiltration** (Exfiltration Controls 6.41 cfs)

**Primary OutFlow** Max=50.06 cfs @ 12.57 hrs HW=147.29' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 50.06 cfs of 87.15 cfs potential flow)

↳ **2=Orifice/Grate** (Orifice Controls 26.17 cfs @ 8.72 fps)

↳ **3=Orifice/Grate** (Orifice Controls 23.89 cfs @ 5.97 fps)

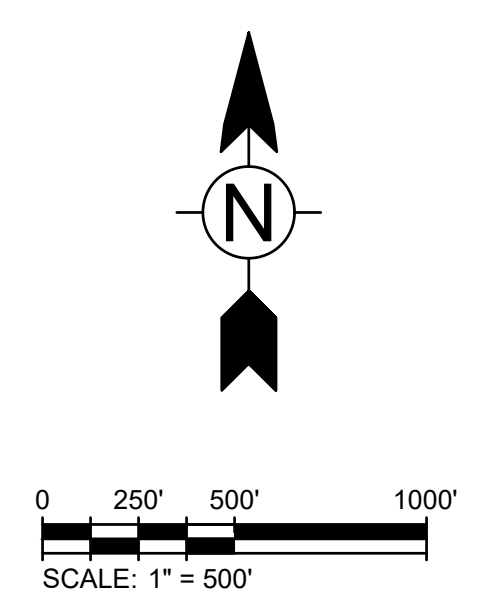
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)

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





- LEGEND:**
- OVERALL WATERSHED BOUNDARY
  - SUBCATCHMENT BOUNDARY
  - FLOW PATH
  - EXISTING CULVERT
  - PROPOSED CULVERT
  - PROPOSED DEVELOPMENT AREA
  - EXISTING STORMWATER BASIN/STREAM
  - PROPOSED STORMWATER BASIN
  - 2A SUBCATCHMENT ID
  - ACP POND ID
  - ★ DESIGN POINT



**TETRA TECH**  
 www.tetra-tech.com  
 100 Nickerson Road  
 Marlborough, MA 01752  
 PHONE: 1 (508) 786-2200 FAX: 1 (508) 786-2201

MARK	DATE	DESCRIPTION	BY

Client: Brookfield Properties / New England Development  
 Proj. Loc.: Weymouth, Rockland, and Abington Massachusetts  
**South Weymouth Naval Air Station**  
**Post Development Watershed Map**

Project No.: 143-33244-21001  
 Designed By: TAB  
 Drawn By: TAB  
 Checked By: JSH

**FIG. 2**



**Stormwater Management**  
**Attachment 3: Supporting Documentation**



NOAA Atlas 14, Volume 10, Version 3  
 Location name: Town of Rockland,  
 Massachusetts, USA\*  
 Latitude: 42.1521°, Longitude: -70.93°  
 Elevation: 150.61 ft\*\*



\* source: ESRI Maps  
 \*\* source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerials](#)

**PF tabular**

<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
<b>5-min</b>	<b>0.302</b> (0.231-0.392)	<b>0.376</b> (0.287-0.488)	<b>0.497</b> (0.378-0.646)	<b>0.597</b> (0.452-0.780)	<b>0.735</b> (0.543-1.00)	<b>0.837</b> (0.608-1.16)	<b>0.948</b> (0.674-1.36)	<b>1.08</b> (0.723-1.56)	<b>1.28</b> (0.828-1.90)	<b>1.46</b> (0.921-2.19)
<b>10-min</b>	<b>0.428</b> (0.327-0.555)	<b>0.533</b> (0.407-0.691)	<b>0.704</b> (0.536-0.916)	<b>0.847</b> (0.641-1.11)	<b>1.04</b> (0.769-1.42)	<b>1.19</b> (0.862-1.65)	<b>1.34</b> (0.955-1.93)	<b>1.53</b> (1.02-2.21)	<b>1.82</b> (1.17-2.70)	<b>2.06</b> (1.31-3.11)
<b>15-min</b>	<b>0.504</b> (0.385-0.653)	<b>0.627</b> (0.479-0.813)	<b>0.829</b> (0.630-1.08)	<b>0.996</b> (0.754-1.30)	<b>1.23</b> (0.904-1.67)	<b>1.40</b> (1.01-1.94)	<b>1.58</b> (1.12-2.27)	<b>1.80</b> (1.21-2.60)	<b>2.14</b> (1.38-3.17)	<b>2.43</b> (1.54-3.65)
<b>30-min</b>	<b>0.700</b> (0.535-0.907)	<b>0.872</b> (0.665-1.13)	<b>1.15</b> (0.877-1.50)	<b>1.39</b> (1.05-1.81)	<b>1.71</b> (1.26-2.32)	<b>1.94</b> (1.41-2.69)	<b>2.20</b> (1.56-3.16)	<b>2.51</b> (1.68-3.62)	<b>2.98</b> (1.92-4.42)	<b>3.38</b> (2.14-5.09)
<b>60-min</b>	<b>0.896</b> (0.685-1.16)	<b>1.12</b> (0.852-1.45)	<b>1.48</b> (1.12-1.92)	<b>1.77</b> (1.34-2.32)	<b>2.19</b> (1.61-2.97)	<b>2.49</b> (1.81-3.45)	<b>2.82</b> (2.00-4.05)	<b>3.22</b> (2.15-4.64)	<b>3.82</b> (2.47-5.66)	<b>4.33</b> (2.74-6.53)
<b>2-hr</b>	<b>1.14</b> (0.872-1.46)	<b>1.44</b> (1.10-1.85)	<b>1.92</b> (1.47-2.48)	<b>2.33</b> (1.77-3.02)	<b>2.88</b> (2.14-3.90)	<b>3.29</b> (2.40-4.54)	<b>3.74</b> (2.68-5.34)	<b>4.29</b> (2.88-6.13)	<b>5.13</b> (3.33-7.54)	<b>5.86</b> (3.72-8.74)
<b>3-hr</b>	<b>1.32</b> (1.01-1.69)	<b>1.66</b> (1.28-2.13)	<b>2.23</b> (1.71-2.86)	<b>2.69</b> (2.05-3.48)	<b>3.34</b> (2.48-4.50)	<b>3.81</b> (2.79-5.24)	<b>4.33</b> (3.11-6.17)	<b>4.97</b> (3.34-7.07)	<b>5.96</b> (3.87-8.70)	<b>6.81</b> (4.33-10.1)
<b>6-hr</b>	<b>1.73</b> (1.33-2.20)	<b>2.15</b> (1.66-2.73)	<b>2.83</b> (2.18-3.62)	<b>3.40</b> (2.61-4.36)	<b>4.19</b> (3.13-5.59)	<b>4.77</b> (3.50-6.49)	<b>5.40</b> (3.88-7.60)	<b>6.17</b> (4.16-8.69)	<b>7.36</b> (4.79-10.6)	<b>8.38</b> (5.35-12.3)
<b>12-hr</b>	<b>2.26</b> (1.76-2.86)	<b>2.75</b> (2.13-3.48)	<b>3.55</b> (2.74-4.50)	<b>4.21</b> (3.24-5.36)	<b>5.12</b> (3.83-6.77)	<b>5.79</b> (4.26-7.79)	<b>6.52</b> (4.70-9.07)	<b>7.40</b> (5.01-10.3)	<b>8.73</b> (5.71-12.5)	<b>9.86</b> (6.31-14.3)
<b>24-hr</b>	<b>2.77</b> (2.16-3.48)	<b>3.35</b> (2.61-4.21)	<b>4.31</b> (3.35-5.43)	<b>5.10</b> (3.94-6.45)	<b>6.19</b> (4.65-8.12)	<b>7.00</b> (5.17-9.34)	<b>7.87</b> (5.69-10.8)	<b>8.92</b> (6.06-12.3)	<b>10.5</b> (6.88-14.8)	<b>11.8</b> (7.59-17.0)
<b>2-day</b>	<b>3.16</b> (2.47-3.94)	<b>3.88</b> (3.04-4.84)	<b>5.06</b> (3.94-6.33)	<b>6.04</b> (4.68-7.58)	<b>7.38</b> (5.58-9.61)	<b>8.38</b> (6.22-11.1)	<b>9.46</b> (6.87-12.9)	<b>10.8</b> (7.34-14.7)	<b>12.7</b> (8.38-17.9)	<b>14.4</b> (9.30-20.5)
<b>3-day</b>	<b>3.46</b> (2.71-4.29)	<b>4.23</b> (3.32-5.26)	<b>5.50</b> (4.30-6.85)	<b>6.55</b> (5.09-8.19)	<b>7.99</b> (6.05-10.4)	<b>9.06</b> (6.74-11.9)	<b>10.2</b> (7.44-13.9)	<b>11.6</b> (7.94-15.8)	<b>13.7</b> (9.06-19.1)	<b>15.6</b> (10.0-22.0)
<b>4-day</b>	<b>3.73</b> (2.94-4.63)	<b>4.53</b> (3.56-5.62)	<b>5.83</b> (4.57-7.25)	<b>6.92</b> (5.39-8.62)	<b>8.40</b> (6.37-10.9)	<b>9.51</b> (7.08-12.5)	<b>10.7</b> (7.79-14.5)	<b>12.1</b> (8.31-16.4)	<b>14.3</b> (9.46-19.9)	<b>16.2</b> (10.5-22.7)
<b>7-day</b>	<b>4.50</b> (3.55-5.54)	<b>5.32</b> (4.20-6.56)	<b>6.67</b> (5.25-8.24)	<b>7.79</b> (6.09-9.66)	<b>9.34</b> (7.10-12.0)	<b>10.5</b> (7.83-13.6)	<b>11.7</b> (8.54-15.7)	<b>13.2</b> (9.05-17.7)	<b>15.4</b> (10.2-21.1)	<b>17.3</b> (11.2-24.0)
<b>10-day</b>	<b>5.21</b> (4.12-6.39)	<b>6.05</b> (4.79-7.44)	<b>7.44</b> (5.86-9.16)	<b>8.59</b> (6.73-10.6)	<b>10.2</b> (7.75-13.0)	<b>11.4</b> (8.49-14.7)	<b>12.6</b> (9.19-16.7)	<b>14.1</b> (9.70-18.8)	<b>16.2</b> (10.8-22.2)	<b>18.1</b> (11.7-25.0)
<b>20-day</b>	<b>7.27</b> (5.78-8.86)	<b>8.20</b> (6.51-10.0)	<b>9.73</b> (7.70-11.9)	<b>11.0</b> (8.65-13.5)	<b>12.7</b> (9.71-16.0)	<b>14.1</b> (10.5-17.9)	<b>15.4</b> (11.2-20.0)	<b>16.9</b> (11.7-22.3)	<b>18.8</b> (12.6-25.4)	<b>20.4</b> (13.3-27.9)
<b>30-day</b>	<b>8.99</b> (7.16-10.9)	<b>9.99</b> (7.95-12.1)	<b>11.6</b> (9.22-14.1)	<b>13.0</b> (10.2-15.8)	<b>14.8</b> (11.3-18.5)	<b>16.3</b> (12.2-20.5)	<b>17.7</b> (12.8-22.7)	<b>19.1</b> (13.3-25.1)	<b>21.0</b> (14.0-28.1)	<b>22.3</b> (14.6-30.4)
<b>45-day</b>	<b>11.1</b> (8.91-13.5)	<b>12.2</b> (9.76-14.8)	<b>14.0</b> (11.1-17.0)	<b>15.4</b> (12.2-18.8)	<b>17.5</b> (13.3-21.6)	<b>19.0</b> (14.2-23.8)	<b>20.6</b> (14.8-26.1)	<b>22.0</b> (15.3-28.6)	<b>23.7</b> (15.9-31.5)	<b>24.8</b> (16.2-33.6)
<b>60-day</b>	<b>13.0</b> (10.4-15.6)	<b>14.1</b> (11.3-17.0)	<b>16.0</b> (12.7-19.3)	<b>17.5</b> (13.9-21.2)	<b>19.6</b> (15.0-24.2)	<b>21.3</b> (15.9-26.5)	<b>22.9</b> (16.5-28.9)	<b>24.3</b> (17.0-31.5)	<b>25.9</b> (17.4-34.4)	<b>27.0</b> (17.7-36.3)

<sup>1</sup> 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.

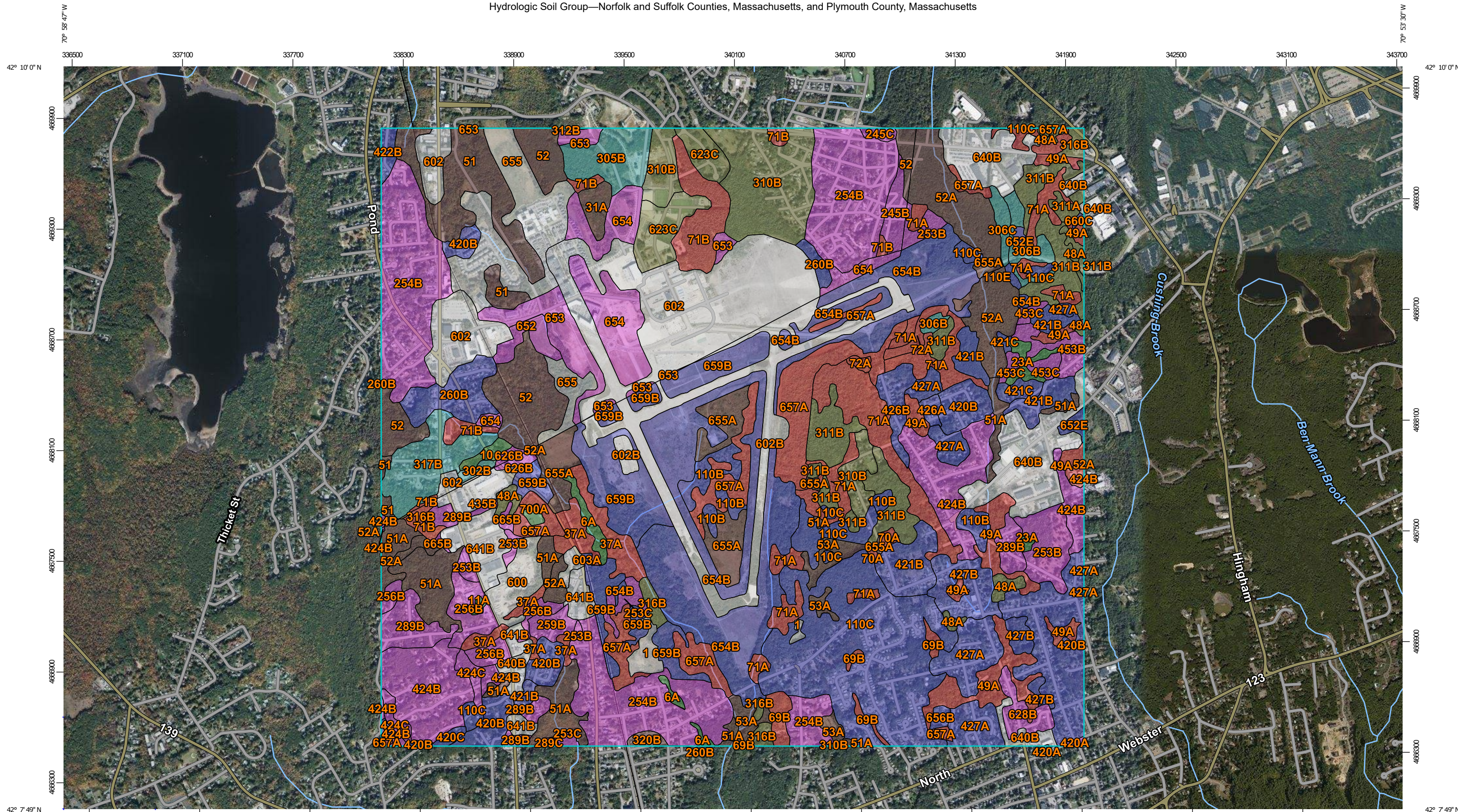
Please refer to NOAA Atlas 14 document for more information.

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**PF graphical**



Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts, and Plymouth County, Massachusetts



Map Scale: 1:19,600 if printed on B landscape (17" x 11") sheet.  
0 250 500 1000 1500 Meters  
0 500 1000 2000 3000 Feet  
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84


































Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey



## MAP LEGEND

<b>Area of Interest (AOI)</b>		 C
Area of Interest (AOI)		 C/D
<b>Soils</b>		 D
<b>Soil Rating Polygons</b>		 Not rated or not available
 A		<b>Water Features</b>
 A/D		 Streams and Canals
 B		<b>Transportation</b>
 B/D		 Rails
 C		 Interstate Highways
 C/D		 US Routes
 D		 Major Roads
 Not rated or not available		 Local Roads
<b>Soil Rating Lines</b>		<b>Background</b>
 A		 Aerial Photography
 A/D		
 B		
 B/D		
 C		
 C/D		
 D		
 Not rated or not available		
<b>Soil Rating Points</b>		
 A		
 A/D		
 B		
 B/D		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:25,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts  
 Survey Area Data: Version 17, Sep 3, 2021

Soil Survey Area: Plymouth County, Massachusetts  
 Survey Area Data: Version 14, Sep 2, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 26, 2014—Oct 15, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Scarboro and Birdsall soils, 0 to 3 percent slopes	A/D	4.5	0.1%
31A	Walpole sandy loam, 0 to 3 percent slopes	B/D	8.8	0.3%
51	Swansea muck, 0 to 1 percent slopes	B/D	67.1	2.1%
52	Freetown muck, 0 to 1 percent slopes	B/D	76.2	2.4%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	41.3	1.3%
245B	Hinckley loamy sand, 3 to 8 percent slopes	A	10.6	0.3%
245C	Hinckley loamy sand, 8 to 15 percent slopes	A	2.8	0.1%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	158.0	5.0%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	B	31.6	1.0%
302B	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	C	2.7	0.1%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	29.8	0.9%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	84.5	2.7%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	C/D	0.4	0.0%
317B	Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	C	37.7	1.2%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	5.7	0.2%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B	5.0	0.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
424B	Canton fine sandy loam, 3 to 8 percent slopes, extremely bouldery	A	0.4	0.0%
602	Urban land, 0 to 15 percent slopes		202.6	6.4%
623C	Woodbridge-Urban land complex, 3 to 15 percent slopes	C/D	35.3	1.1%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.0	0.1%
652	Udorthents, refuse substratum	A	10.7	0.3%
653	Udorthents, sandy	A	38.6	1.2%
654	Udorthents, loamy	A	65.7	2.1%
655	Udorthents, wet substratum		82.0	2.6%
<b>Subtotals for Soil Survey Area</b>			<b>1,004.1</b>	<b>31.7%</b>
<b>Totals for Area of Interest</b>			<b>3,172.0</b>	<b>100.0%</b>

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		9.6	0.3%
6A	Scarboro muck, coastal lowland, 0 to 3 percent slopes	A/D	9.8	0.3%
11A	Rainberry coarse sand, 0 to 3 percent slopes	A/D	1.2	0.0%
23A	Tihonet coarse sand, 0 to 3 percent slopes	A/D	7.5	0.2%
37A	Massasoit - Mashpee complex, 0 to 3 percent slopes	D	35.4	1.1%
48A	Brockton sandy loam, 0 to 3 percent slopes, extremely stony	C/D	15.8	0.5%
49A	Norwell mucky fine sandy loam, 0 to 3 percent slopes, extremely stony	D	61.3	1.9%
49B	Norwell mucky fine sandy loam, 3 to 8 percent slopes, extremely stony	D	6.4	0.2%
51A	Swansea muck, 0 to 1 percent slopes	B/D	68.0	2.1%
52A	Freetown muck, 0 to 1 percent slopes	B/D	80.3	2.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
53A	Freetown muck, ponded, 0 to 1 percent slopes	B/D	22.0	0.7%
69B	Mattapoisett loamy sand, 3 to 8 percent slopes, extremely stony	D	12.8	0.4%
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	D	2.7	0.1%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	D	103.9	3.3%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	D	4.9	0.2%
72A	Whitman fine sandy loam, 0 to 3 percent slopes	D	7.7	0.2%
110B	Canton-Chatfield-Rock outcrop complex, 0 to 8 percent slopes, very stony	B	24.6	0.8%
110C	Canton-Chatfield-Rock outcrop complex, 8 to 15 percent slopes, very stony	B	189.0	6.0%
110E	Canton-Chatfield-Rock outcrop complex, 15 to 35 percent slopes, very stony	B	1.4	0.0%
253B	Hinckley loamy sand, 3 to 8 percent slopes	A	35.6	1.1%
253C	Hinckley loamy sand, 8 to 15 percent slopes	A	9.0	0.3%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	91.6	2.9%
256B	Deerfield loamy fine sand, 3 to 8 percent slopes	A	28.9	0.9%
259B	Carver loamy coarse sand, 3 to 8 percent slopes	A	8.4	0.3%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	A/D	0.0	0.0%
289B	Hinckley gravelly sandy loam, 3 to 8 percent slopes, bouldery	A	37.7	1.2%



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
289C	Hinckley gravelly sandy loam, 8 to 15 percent slopes, bouldery	A	1.0	0.0%
306B	Paxton fine sandy loam, 0 to 8 percent slopes, very stony	C	14.8	0.5%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	6.4	0.2%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	13.1	0.4%
311A	Woodbridge fine sandy loam, 0 to 3 percent slopes, very stony	C/D	5.1	0.2%
311B	Woodbridge fine sandy loam, 3 to 8 percent slopes, very stony	C/D	75.2	2.4%
316B	Scituate gravelly sandy loam, 3 to 8 percent slopes, very stony	C/D	13.3	0.4%
320B	Birchwood sand, 3 to 8 percent slopes	B/D	3.5	0.1%
420A	Canton very fine sandy loam, 0 to 3 percent slopes	A	0.9	0.0%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	98.7	3.1%
420C	Canton fine sandy loam, 8 to 15 percent slopes	B	2.6	0.1%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	51.0	1.6%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	B	7.1	0.2%
424B	Canton very fine sandy loam, 3 to 8 percent slopes, extremely bouldery	A	104.5	3.3%
424C	Canton very fine sandy loam, 8 to 15 percent slopes, extremely bouldery	A	9.5	0.3%
426A	Newfields fine sandy loam, 0 to 3 percent slopes	B	3.6	0.1%
426B	Newfields fine sandy loam, 3 to 8 percent slopes	B	13.5	0.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
427A	Newfields fine sandy loam, 0 to 3 percent slopes, extremely stony	B	53.3	1.7%
427B	Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony	B	30.5	1.0%
435B	Plymouth loamy coarse sand, 3 to 8 percent slopes	A	1.8	0.1%
453B	Gloucester - Canton complex, 3 to 8 percent slopes, extremely bouldery	A	12.2	0.4%
453C	Gloucester - Canton complex, 8 to 15 percent slopes, extremely bouldery	A	9.4	0.3%
600	Pits, gravel		20.3	0.6%
602B	Urban land, 0 to 8 percent slopes		87.2	2.7%
603A	Urban land, wet substratum, 0 to 3 percent slopes		3.9	0.1%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	2.9	0.1%
628B	Canton - Urban land complex, 0 to 8 percent slopes	A	11.9	0.4%
640B	Urban land, till substratum, 0 to 8 percent slopes		101.1	3.2%
641B	Urban land, outwash substratum, 0 to 8 percent slopes		51.9	1.6%
652E	Udorthents, refuse substratum, 8 to 35 percent slopes	B	4.4	0.1%
654B	Udorthents, loamy, 0 to 8 percent slopes	B	220.1	6.9%
655A	Udorthents, wet substratum, 0 to 3 percent slopes	B/D	49.9	1.6%
656B	Udorthents - Urban land complex, 0 to 8 percent slopes	B	2.7	0.1%
657A	Aquepts, 0 to 3 percent slopes	D	99.6	3.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
659B	Udorthents, 0 to 8 percent slopes, gravelly	B	99.4	3.1%
660C	Udorthents, 8 to 15 percent slopes, gravelly	B	0.8	0.0%
665B	Udipsamments, 0 to 8 percent slopes	A	3.3	0.1%
700A	Udipsamments, wet substratum, 0 to 3 percent slopes	A/D	2.3	0.1%
<b>Subtotals for Soil Survey Area</b>			<b>2,167.8</b>	<b>68.3%</b>
<b>Totals for Area of Interest</b>			<b>3,172.0</b>	<b>100.0%</b>

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher