Stormwater Management

Crescent

CC-

Gahanna, Ohio

Prepared By:

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March 2023

I hereby certify that the calculations contained herein are accurate to the best of my knowledge and belief.

_____ _____

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CONTENTS

Narrative

Tables

Appendices

EXECUTIVE SUMMARY (Ortho One Pond 1):

Table 1 – Critical Storm Summary Table

1Yr. Pre-Developed Storm Runoff Volume	0.304 AF
1Yr. Post-Developed Storm Runoff Volume	0.801 AF
Volume Increase	163%
Critical Storm	25 Year

Table 2 – Storm Water Runoff Summary Table

Storm Event	Pre-Dev. (CFS)	Dev. (CFS)	Allowable Release Rate (CFS)	Actual Release Rate (CFS)	Ponding Elev.
1 Yr.	**5.09**	16.56	5.09	1.01	786.62
2 Yr.	8.09	21.14	5.09	1.37	787.00
5 Yr.	12.86	27.67	5.09	1.76	787.54
10 Yr.	**17.07**	33.02	5.09	2.01	787.98
25 Yr.	23.32	40.48	**5.09**	2.31	788.57
50 Yr.	28.71	46.64	17.07	5.47	788.86
100 Yr.	34.52	53.09	**17.07**	8.40	789.17

*** Allowable release rate equals 1 Yr. Predeveloped less R/W, to the Critical Storm, limited to the 10 Yr. Predeveloped.**

Table 3 – Detention Summary Table

Water Quality Volume Required	14,318 CF
Water Quality Volume Provided	14,827 CF
Water Quantity Volume Required	67,548 CF
Water Quantity Volume Provided	74,704 CF

EXECUTIVE SUMMARY (SE Pond 2):

Table 1 – Critical Storm Summary Table

1Yr. Pre-Developed Storm Runoff Volume	0.465 AF
1Yr. Post-Developed Storm Runoff Volume	1.311 AF
Volume Increase	182%
Critical Storm	25 Year

Table 2 – Storm Water Runoff Summary Table

Storm Event	Pre-Dev. (CFS)	Dev. (CFS)	Roadway (CFS)	From Ortho One (CFS)	Allowable Release Rate (CFS)	Actual Release Rate (CFS)	Ponding Elev.
1 Yr.	**4.72**	18.68	3.71	1.01	4.72	1.10	782.50
2 Yr.	10.01	25.54	4.84	1.37	4.72	1.71	783.11
5 Yr.	19.55	35.74	6.47	1.76	4.72	2.26	784.05
10 Yr.	**28.54**	44.33	7.81	2.01	4.72	2.63	784.85
25 Yr.	42.43	56.55	9.70	2.31	**4.72**	4.68	785.58
50 Yr.	54.82	66.77	11.26	5.47	28.54	11.92	785.72
100 Yr.	68.49	77.56	12.90	8.40	**28.54**	26.89	785.98

*** Allowable release rate equals 1 Yr. Predeveloped less un-detained, to the Critical Storm, limited to the 10 Yr. Predeveloped.**

Table 3 – Detention Summary Table

Water Quality Volume Required	37,644 CF
Water Quality Volume Provided	37,950 CF
Water Quantity Volume Required	157,455 CF
Water Quantity Volume Provided	158,025 CF

EXECUTIVE SUMMARY (SW Pond 3):

Table 1 – Critical Storm Summary Table

1Yr. Pre-Developed Storm Runoff Volume	0.531 AF
1Yr. Post-Developed Storm Runoff Volume	1.559 AF
Volume Increase	194%
Critical Storm	25 Year

Table 2 – Storm Water Runoff Summary Table

Storm Event	Pre-Dev. (CFS)	Dev. (CFS)	Allowable Release Rate (CFS)	Actual Release Rate (CFS)	Ponding Elev.
1 Yr.	**5.96**	24.02	5.96	0.71	784.37
2 Yr.	9.68	30.48	5.96	1.15	784.75
5 Yr.	15.65	39.66	5.96	1.90	785.25
10 Yr.	**20.98**	47.18	5.96	2.32	785.69
25 Yr.	28.91	57.65	**5.96**	5.93	786.13
50 Yr.	35.77	66.29	20.98	10.73	786.42
100 Yr.	43.20	75.34	**20.98**	18.59	786.69

*** Allowable release rate equals 1 Yr. Predeveloped less un-detained, to the Critical Storm, limited to the 10 Yr. Predeveloped.**

Table 3 – Detention Summary Table

Water Quality Volume Required	35,393 CF
Water Quality Volume Provided	37,237 CF
Water Quantity Volume Required	122,529 CF
Water Quantity Volume Provided	133,635 CF

INTRODUCTION:

The following report presents the storm water management plan for a development located at the northeast intersection of Hamilton Road and Tech Center Drive in Gahanna, Ohio. The analysis will include new commercial layout, an orthopedic building, roadway, and residential apartments. The storage shall be governed by the release rates set forth in the Franklin County Storm Water Manual guidelines.

The area to the north adds a new orthopedic development (7.55 Ac.), to the east a new road and residential apartment complex (1.57 Ac. and 16.66 Ac.) respectively. A commercial development to the southwest is approximately (13.20 Ac.). The total area considered disturbed in this report is approximately (38.98 Ac.). Tributary areas offsite were considered negligible.

Three ponds will provide water quality and quantity as required. A separate pond (Pond 1) for the orthopedic area will be analyzed and drain to the road and the pond to the southeast (Pond 2). The commercial site will have its own pond (Pond 3) which will drain to an existing storm sewer.

HYDROLOGIC ANALYSIS:

All hydrologic parameters were determined using methodology described in the Franklin County Storm Water Manual guidelines. Both Pre-Development and Post-Development runoff and peak discharge amounts were calculated through HydroCAD version 10.2 software.

All proposed drainage (after storage) will be directed to the existing storm sewer system along Hamilton Road for the commercial site (southwest) and to a ditch on the residential, road and orthopedic portion. The storage shall be governed by the release of the 1 year predeveloped release rate to the critical storm and limited to the 10 year predeveloped rate.

PRE-DEVELOPED CONDITIONS (Ortho One Pond 1):

The pre-developed condition of the site consists of a row crops in good condition.

A pre-developed curve number (CN) of 75 Hydrologic Soil Group (HSG B) was used for the site. The time of concentration used was 10 minutes.

POST-DEVELOPED CONDITIONS (Ortho One Pond 1):

The post developed condition for the site will consist of a new buildings and paved parking. The developed curve number, with a (CN) of 91 (HSG D) was used for the site, including 4.62 Ac. paved at CN 98 and 2.93 Ac. at CN 80. The time of concentration used was 8 minutes.

PRE-DEVELOPED CONDITIONS (SE Pond 2):

The pre-developed condition of the site consists of the road area 1.57 Ac, the residential area 16.66 Ac. and the orthopedic area 7.55 Ac. with approximately 7.40 Ac. of row crops and 18.38 Ac. of woods/grass (HSG B).

A pre-developed curve number (CN) of 68 Hydrologic Soil Group (HSG B) was used for the site. The time of concentration used was 18.8 minutes.

POST-DEVELOPED CONDITIONS (SE Pond 2):

The post developed condition for the site will consist of a new road, new parking and apartment buildings with some grass. The developed curve number, with a (CN) of 85 (HSG B) was used for the site with 10.74 Ac. paved at CN 98 and 5.92 Ac. of grass CN 61. The time of concentration used was 17.5 minutes.

PRE-DEVELOPED CONDITIONS (SW Pond 3):

The pre-developed condition of the site consists of a row crops in good condition.

A pre-developed curve number (CN) of 75 Hydrologic Soil Group (HSG B) was used for the 13.20 Ac. site. The time of concentration used was 20.3 minutes.

POST-DEVELOPED CONDITIONS (SW Pond 3):

The post developed condition for the site will consist of a new buildings and paved parking. The developed curve number, with a (CN) of 91 (HSG D) was used for the site, including 4.62 Ac. paved at CN 98 and 2.93 Ac. at CN 80. The time of concentration used was 8 minutes.

Critical Storm Calculation (Ortho One Pond 1):

The critical storm is determined by comparing the increase in runoff volume of the 1-year 24-hour rainfall event from the pre-developed condition to that of the post-developed.

Pre-Development 1-Year Storm Event: 0.304 af
Post-Development 1-Year Storm Event: 0.801 af
((0.801 af–0.304 af) / 0.304 af) x 100% = 163% **(25-year critical storm)**

Critical Storm Calculation (SE Pond 2):

The critical storm is determined by comparing the increase in runoff volume of the 1-year 24-hour rainfall event from the pre-developed condition to that of the post-developed.

Pre-Development 1-Year Storm Event: 0.465 af
Post-Development 1-Year Storm Event: 1.311 af
((1.311 af–0.465 af) / 0.465 af) x 100% = 182% **(25-year critical storm)**

Critical Storm Calculation (SW Pond 3):

The critical storm is determined by comparing the increase in runoff volume of the 1-year 24-hour rainfall event from the pre-developed condition to that of the post-developed.

Pre-Development 1-Year Storm Event: 0.531 af
Post-Development 1-Year Storm Event: 1.559 af
((1.559 af–0.531 af) / 0.531 af) x 100% = 194% **(25-year critical storm)**

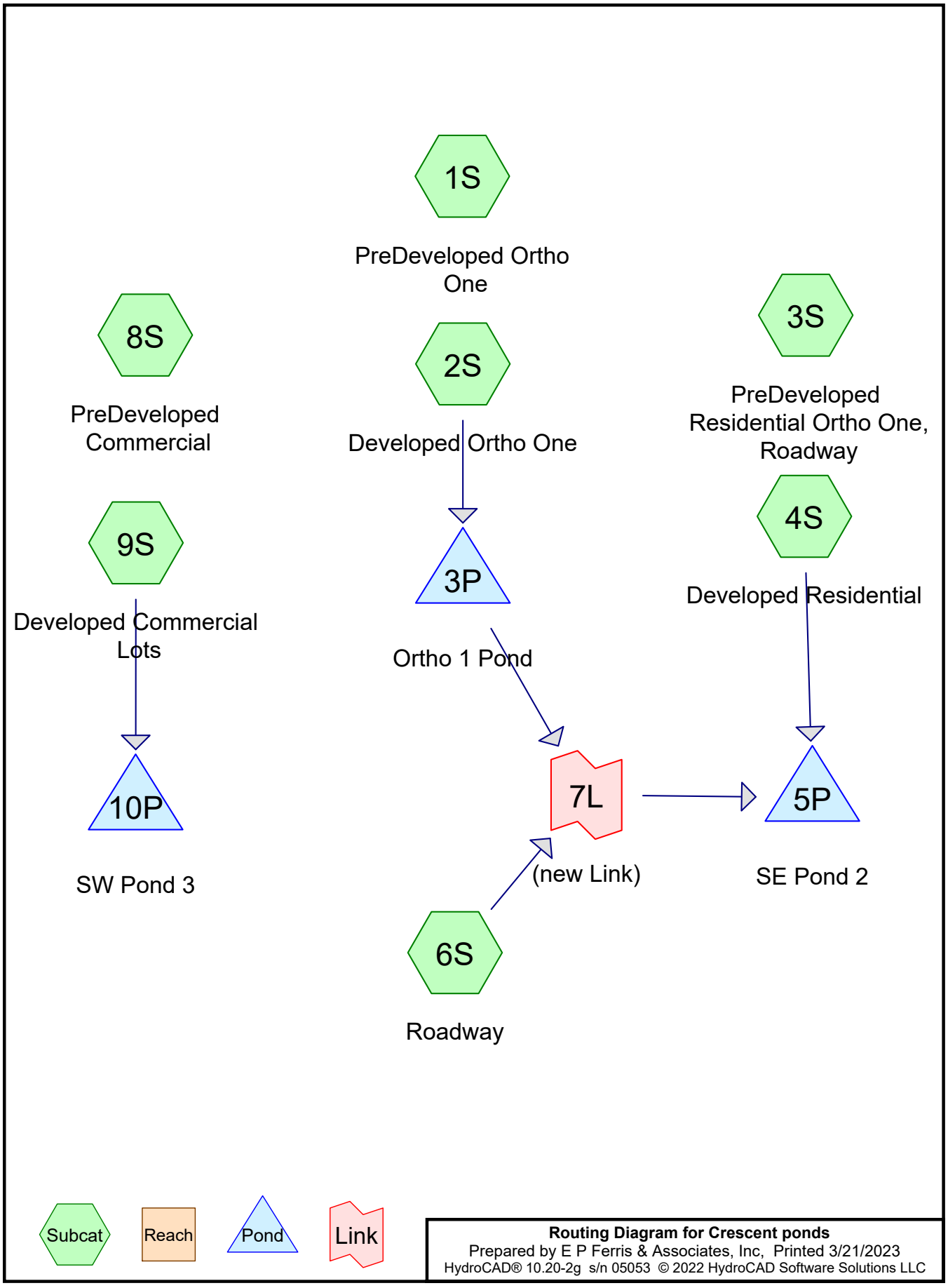
WATER QUALITY:

Water quality for the entire tributary area will be provided in the three proposed ponds. Water Quality calculations with drawdown can be found in Appendix C.

SUMMARY:

The 1 yr. pre-developed rate will not be exceeded to the critical storm. The site will use retention ponds to provide the necessary storage volume to achieve the required release rates from the site. Tributary Maps can be found in Appendix B Water Quality in Appendix C, a Soil Report found in Appendix D and Storm Pipe Calcs. in Appendix E.

APPENDIX A
HydroCAD REPORT



Routing Diagram for Crescent ponds
Prepared by E P Ferris & Associates, Inc, Printed 3/21/2023

Summary for Subcatchment 1S: PreDeveloped Ortho One

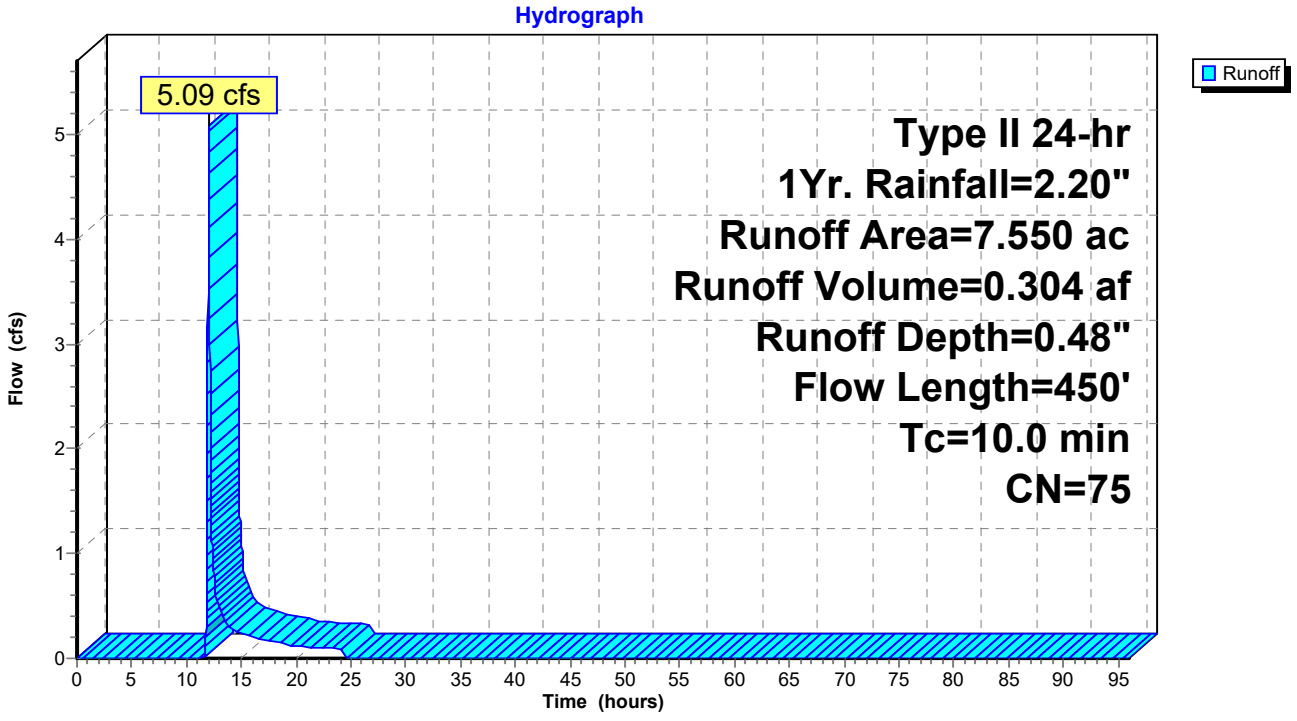
Runoff = 5.09 cfs @ 12.03 hrs, Volume= 0.304 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

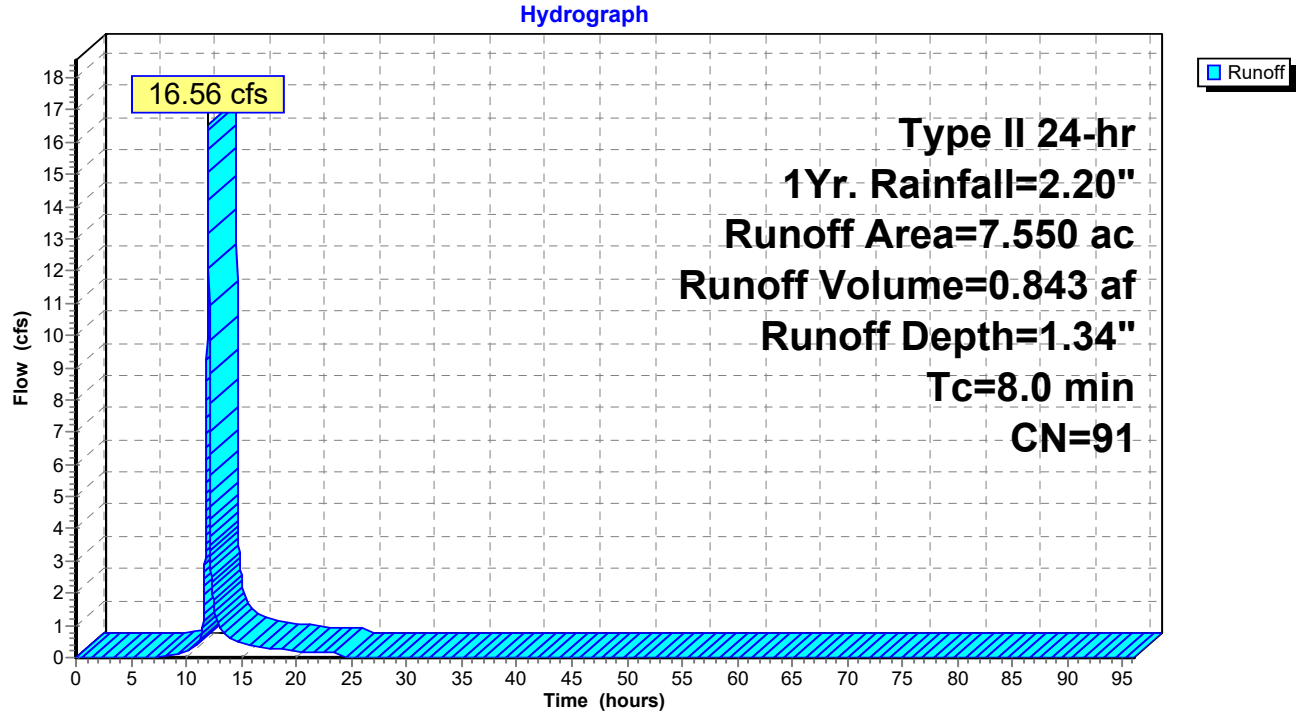
Runoff = 16.56 cfs @ 11.99 hrs, Volume= 0.843 af, Depth= 1.34"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

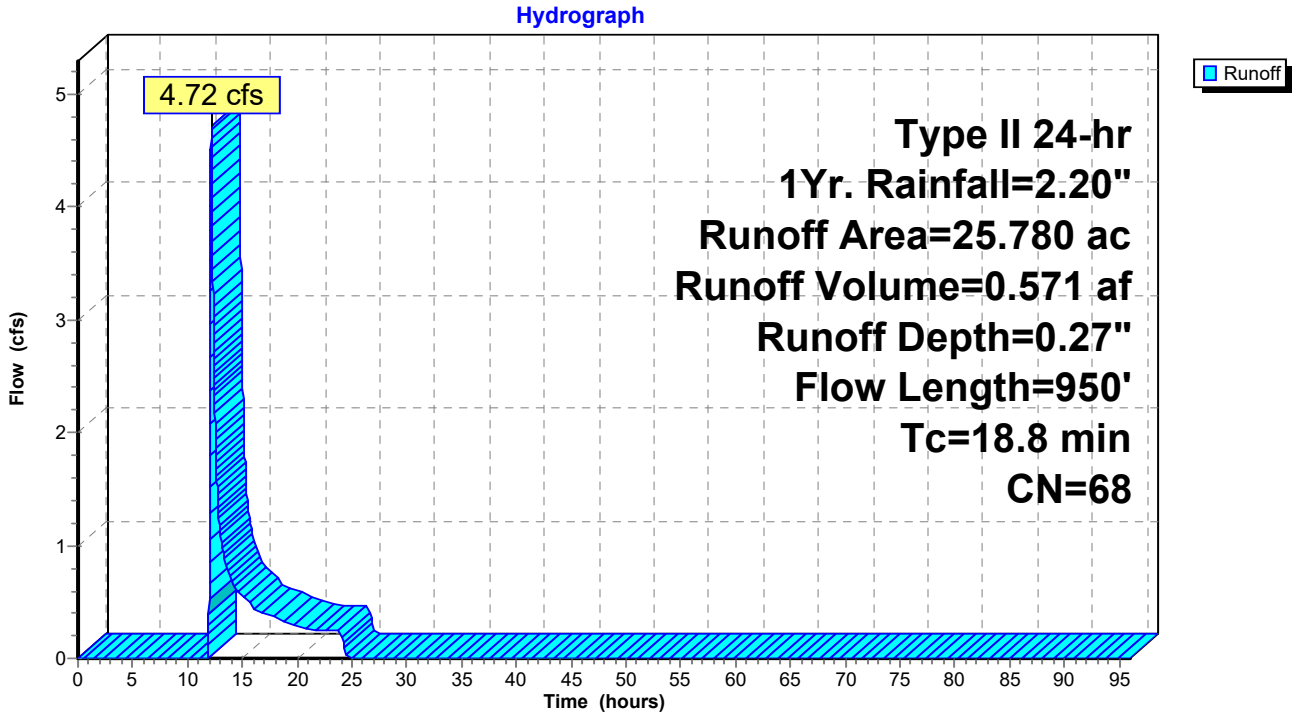
Runoff = 4.72 cfs @ 12.17 hrs, Volume= 0.571 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

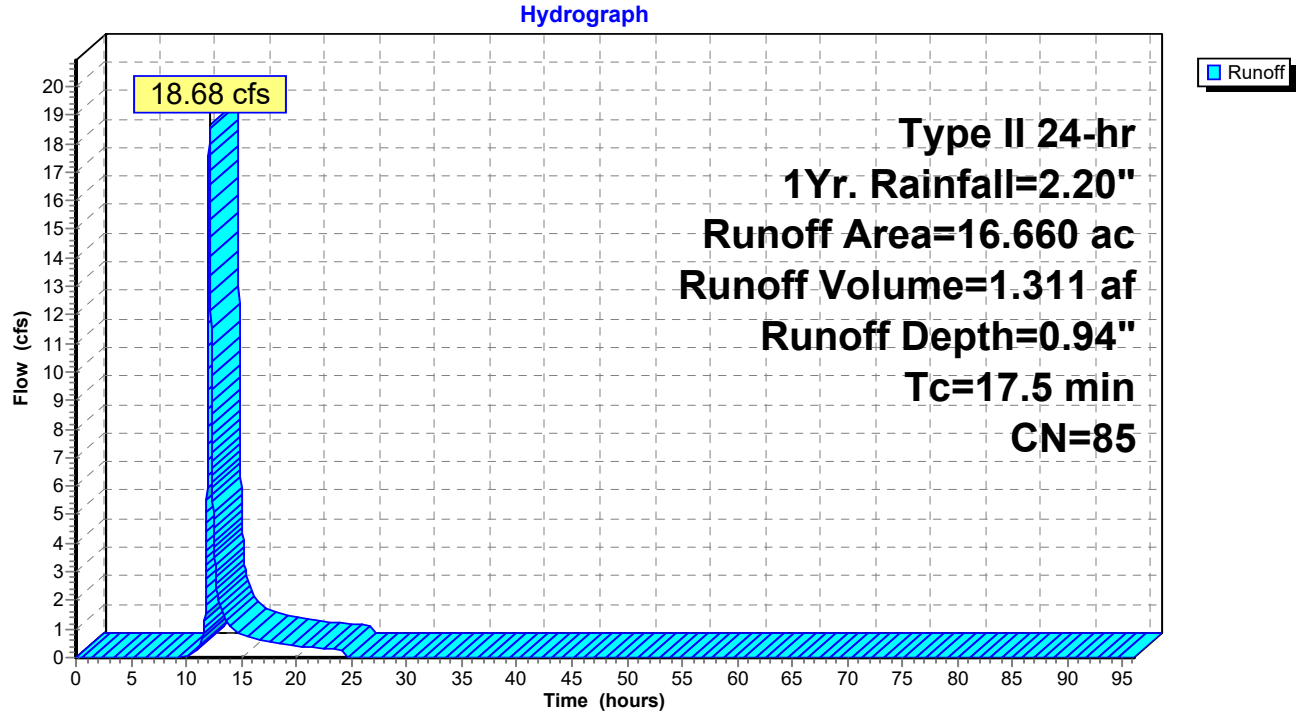
Runoff = 18.68 cfs @ 12.11 hrs, Volume= 1.311 af, Depth= 0.94"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

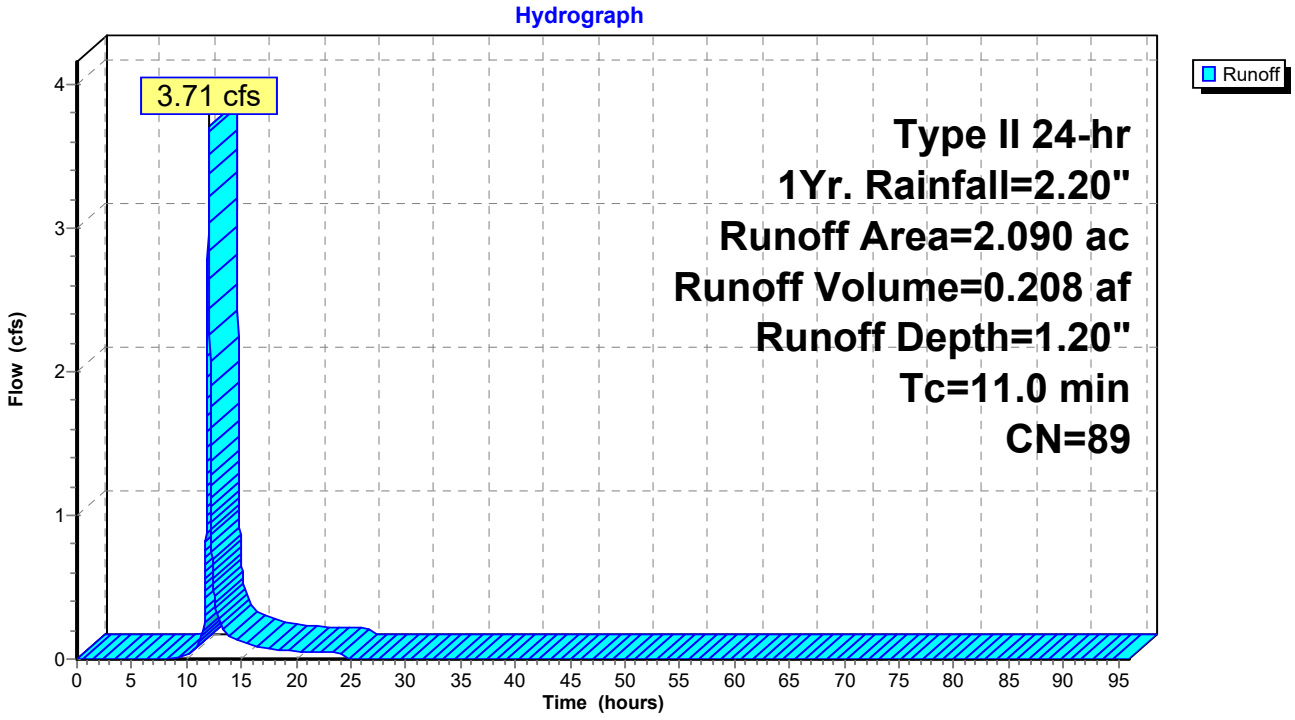
Runoff = 3.71 cfs @ 12.03 hrs, Volume= 0.208 af, Depth= 1.20"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

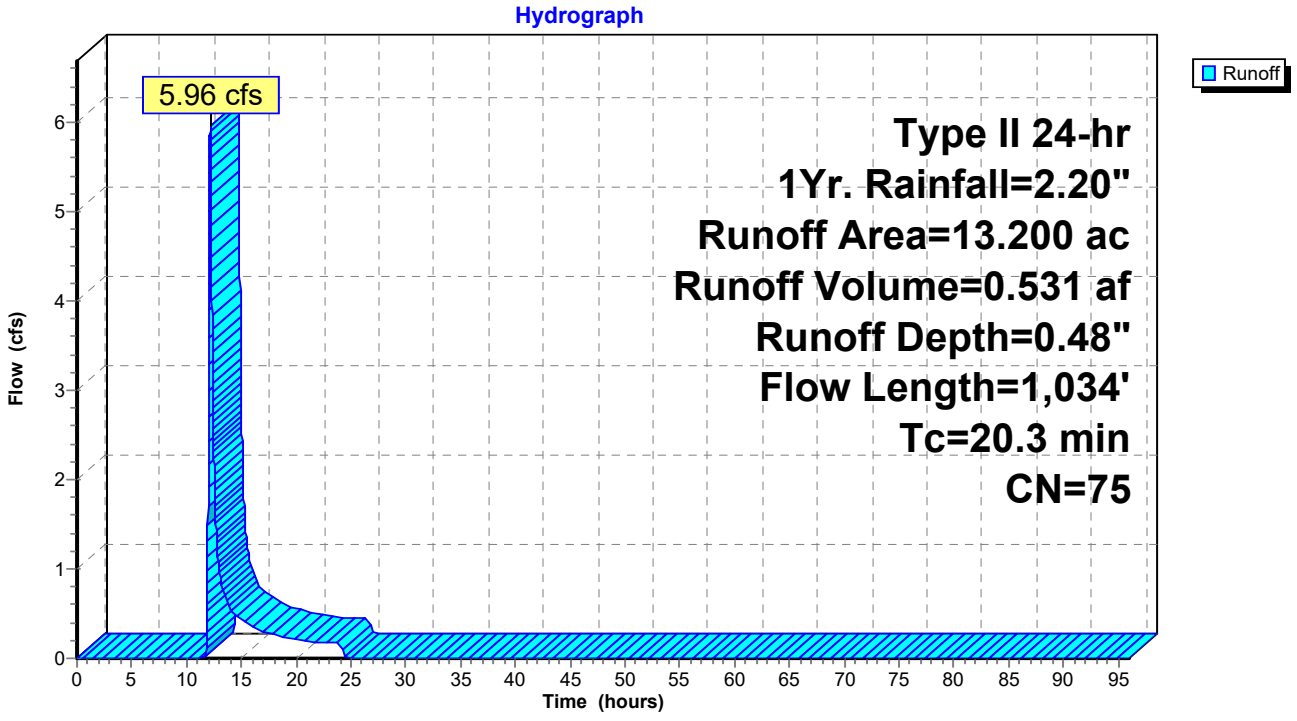
Runoff = 5.96 cfs @ 12.16 hrs, Volume= 0.531 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

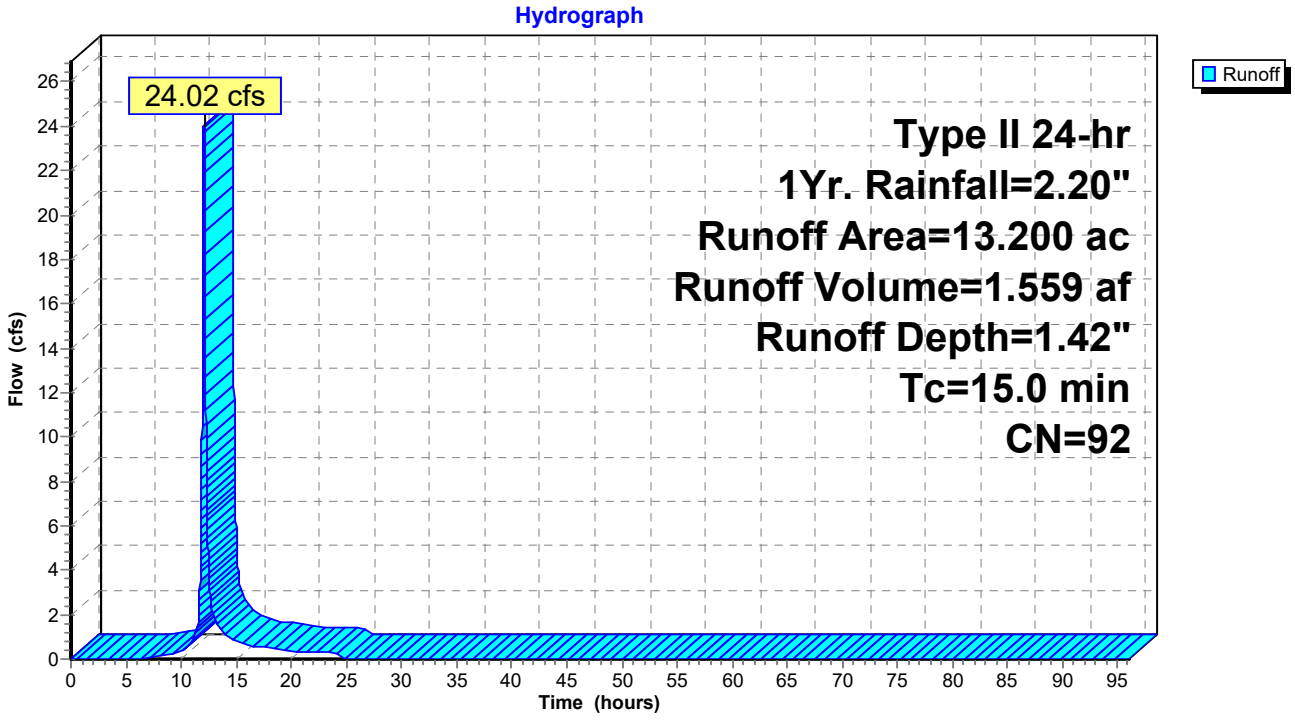
Runoff = 24.02 cfs @ 12.07 hrs, Volume= 1.559 af, Depth= 1.42"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 1.34" for 1Yr. event
Inflow = 16.56 cfs @ 11.99 hrs, Volume= 0.843 af
Outflow = 1.01 cfs @ 12.92 hrs, Volume= 0.840 af, Atten= 94%, Lag= 55.4 min
Primary = 1.01 cfs @ 12.92 hrs, Volume= 0.840 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 786.62' @ 12.92 hrs Surf.Area= 15,296 sf Storage= 20,631 cf

Plug-Flow detention time= 596.9 min calculated for 0.839 af (100% of inflow)
Center-of-Mass det. time= 594.6 min (1,410.6 - 816.1)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

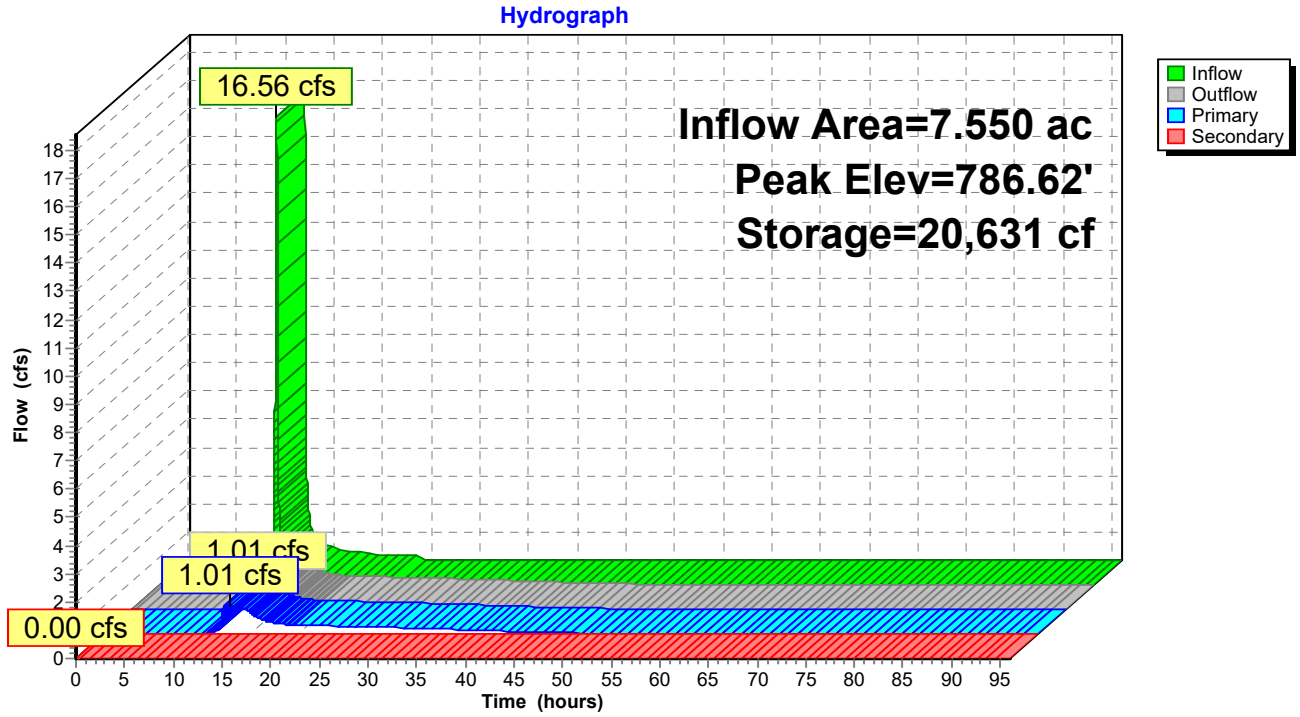
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

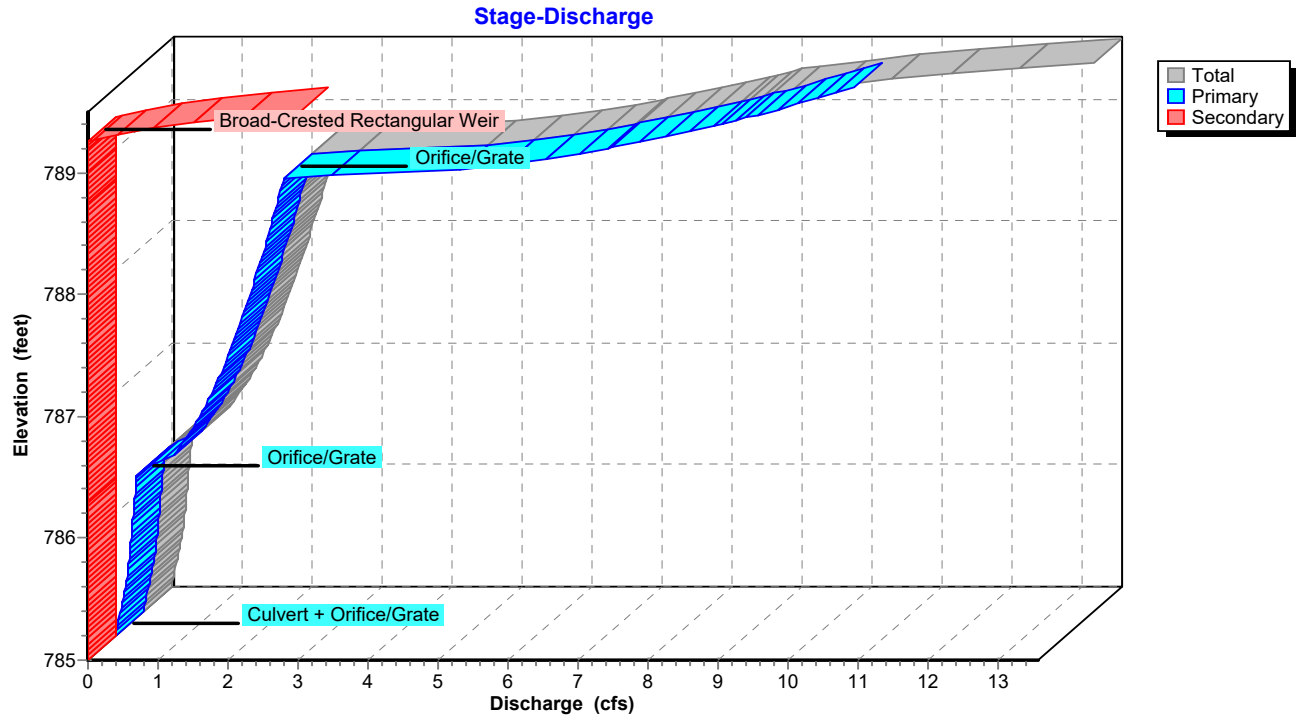
Primary OutFlow Max=1.01 cfs @ 12.92 hrs HW=786.62' (Free Discharge)
└**1=Culvert** (Passes 1.01 cfs of 5.89 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 5.87 fps)
├**3=Orifice/Grate** (Orifice Controls 0.68 cfs @ 2.72 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

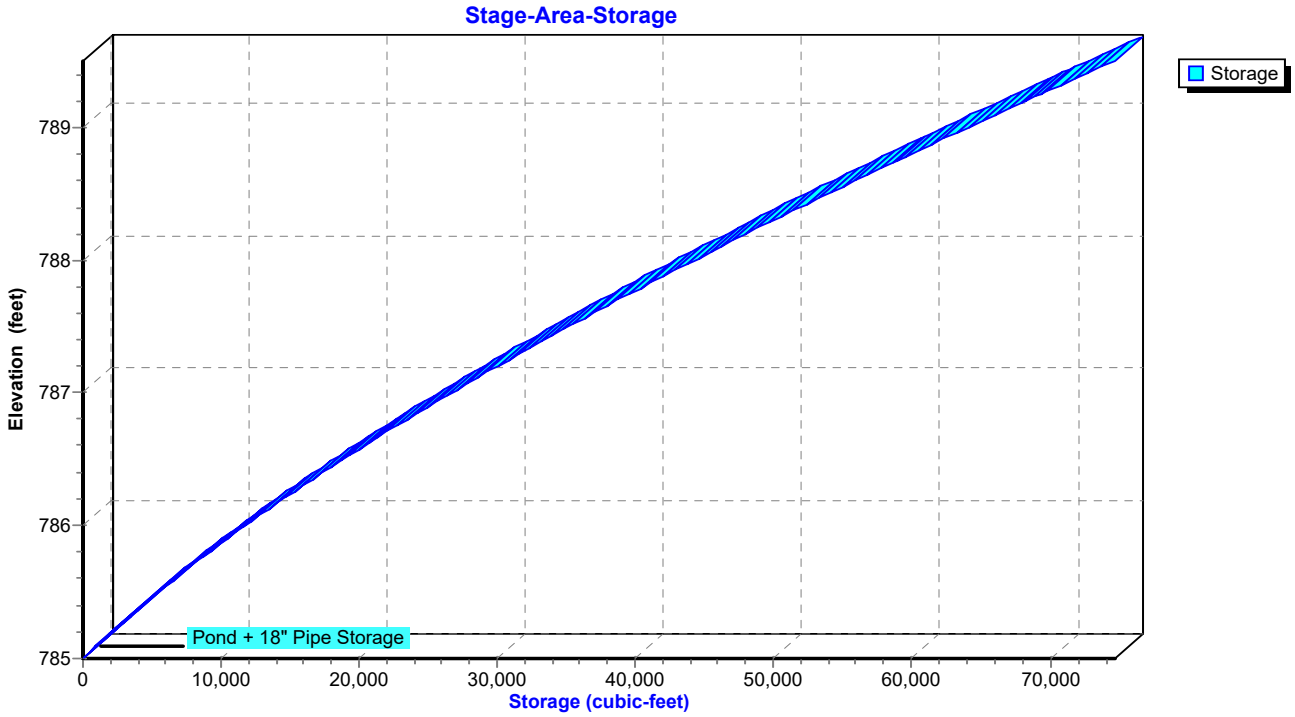
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 1.08" for 1Yr. event
Inflow = 22.05 cfs @ 12.09 hrs, Volume= 2.359 af
Outflow = 1.10 cfs @ 16.83 hrs, Volume= 2.345 af, Atten= 95%, Lag= 284.4 min
Primary = 1.10 cfs @ 16.83 hrs, Volume= 2.345 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 782.50' @ 16.83 hrs Surf.Area= 26,469 sf Storage= 52,526 cf

Plug-Flow detention time= 783.9 min calculated for 2.345 af (99% of inflow)
Center-of-Mass det. time= 764.8 min (1,813.2 - 1,048.4)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

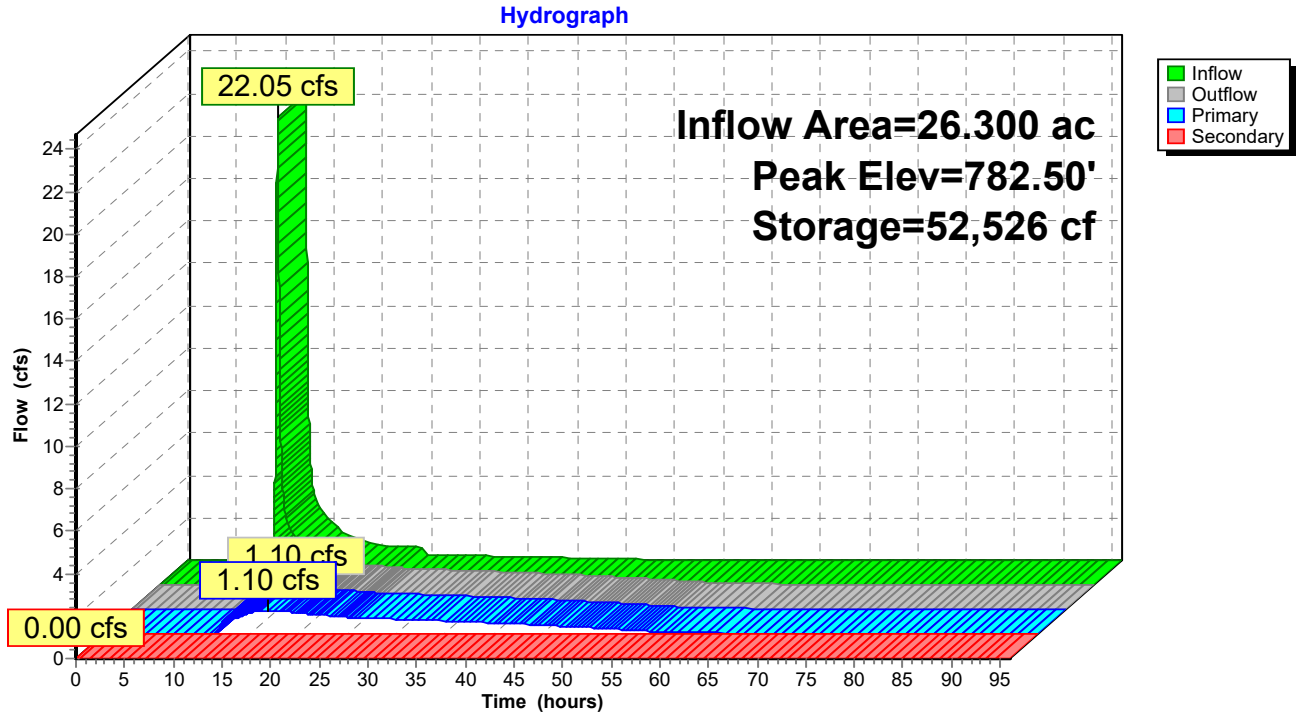
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

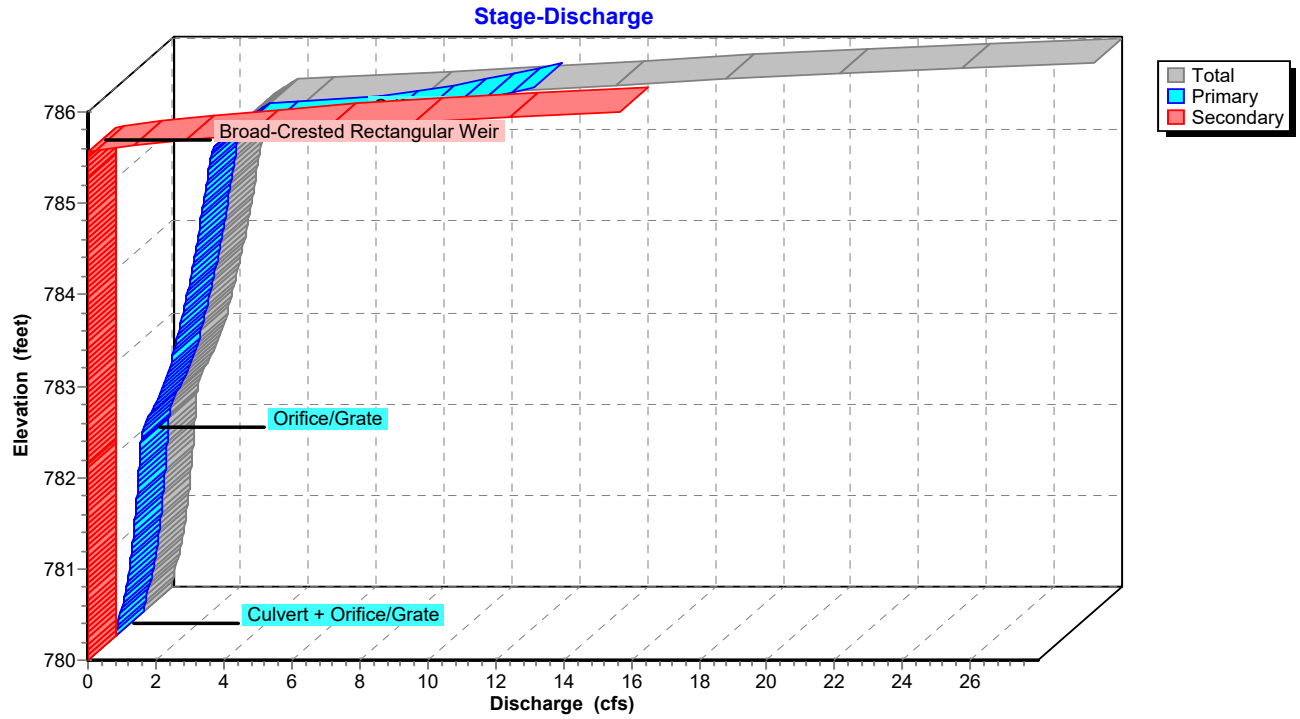
Primary OutFlow Max=1.10 cfs @ 16.83 hrs HW=782.50' (Free Discharge)
└**1=Culvert** (Passes 1.10 cfs of 13.44 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 7.32 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.30 cfs @ 2.01 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

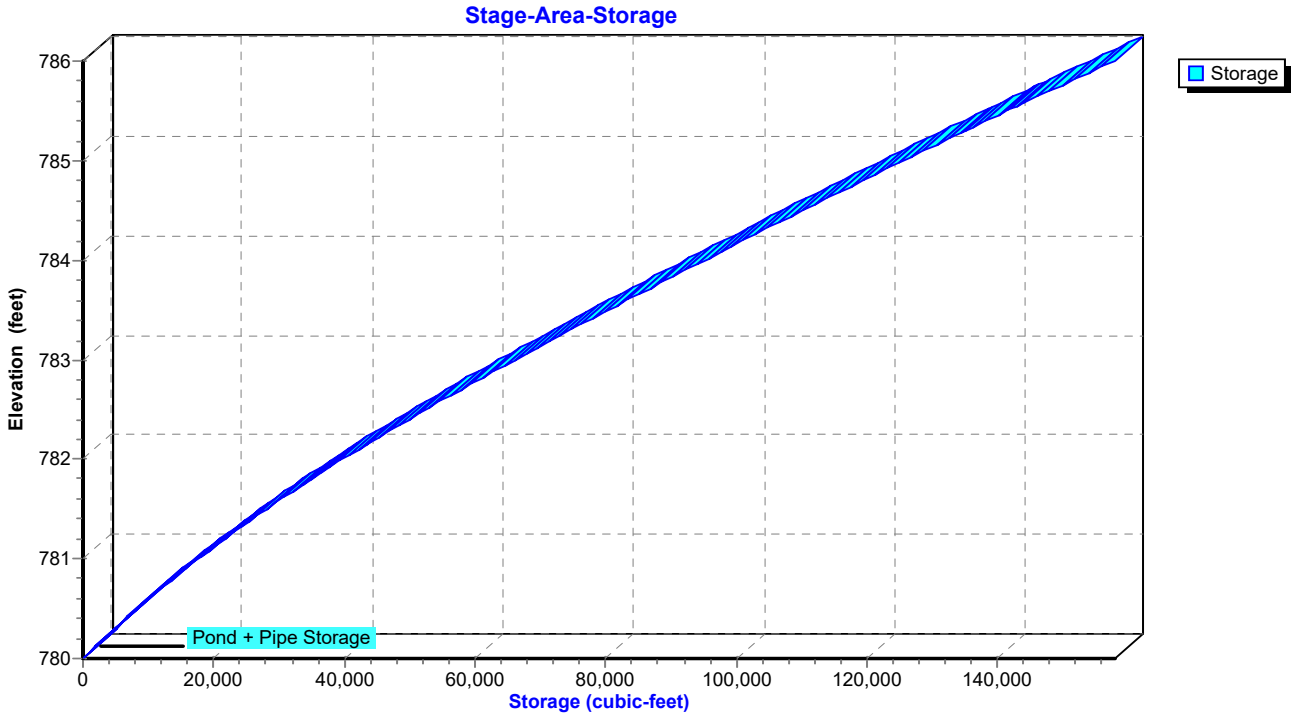
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 1.42" for 1Yr. event
Inflow = 24.02 cfs @ 12.07 hrs, Volume= 1.559 af
Outflow = 0.71 cfs @ 15.62 hrs, Volume= 1.413 af, Atten= 97%, Lag= 213.2 min
Primary = 0.71 cfs @ 15.62 hrs, Volume= 1.413 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 784.37' @ 15.62 hrs Surf.Area= 30,959 sf Storage= 46,205 cf

Plug-Flow detention time= 882.1 min calculated for 1.413 af (91% of inflow)
Center-of-Mass det. time= 833.9 min (1,651.2 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

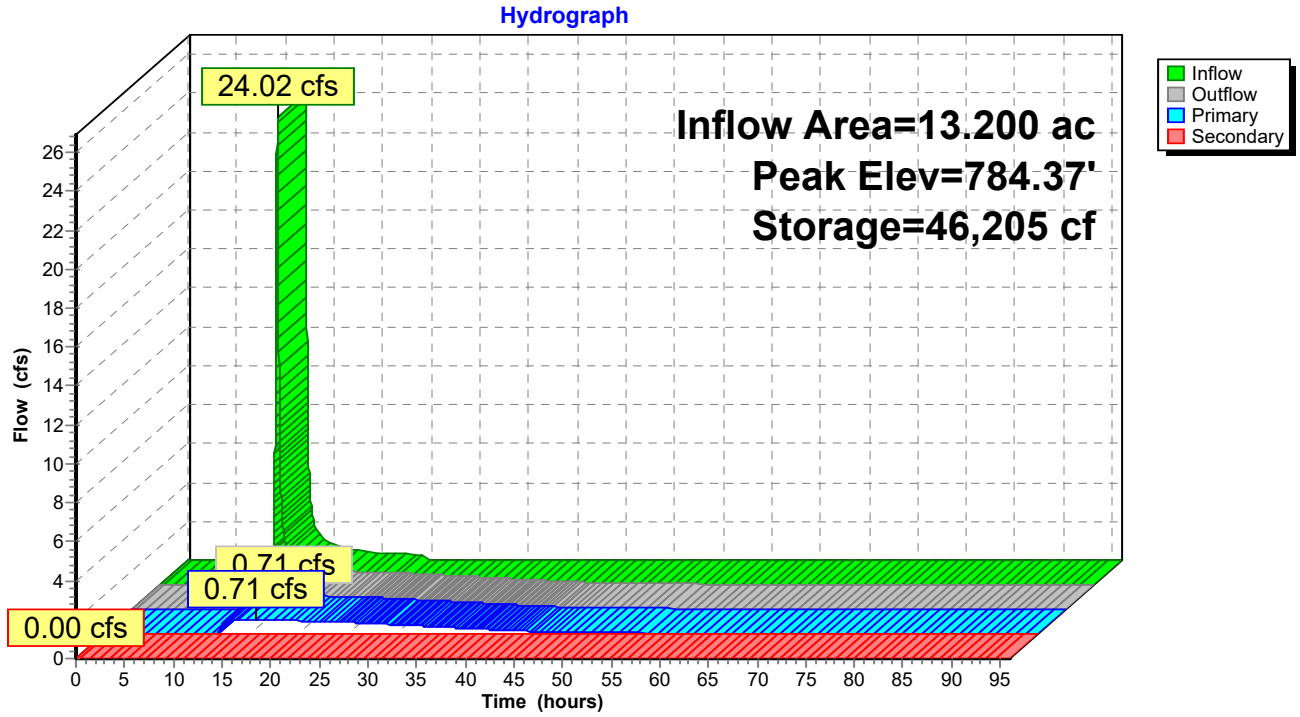
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.71 cfs @ 15.62 hrs HW=784.37' (Free Discharge)
└**1=Culvert** (Passes 0.71 cfs of 5.35 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 5.20 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=780.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: SW Pond 3



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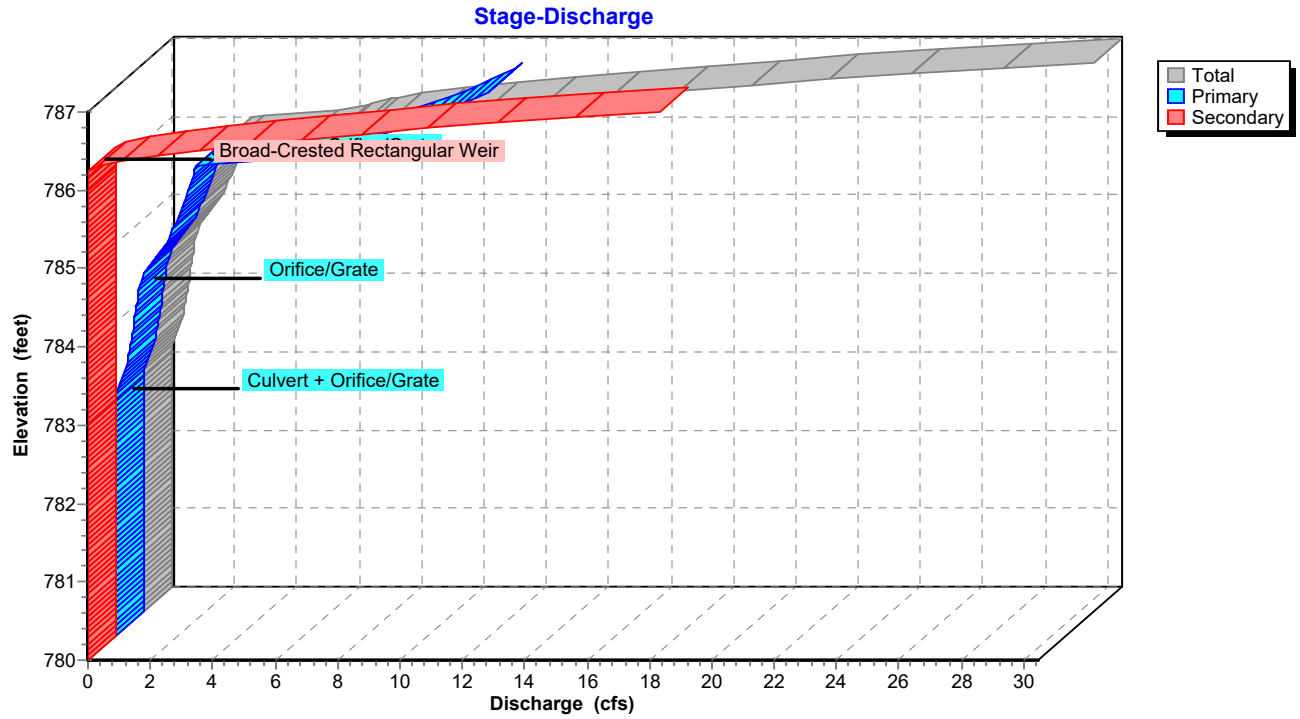

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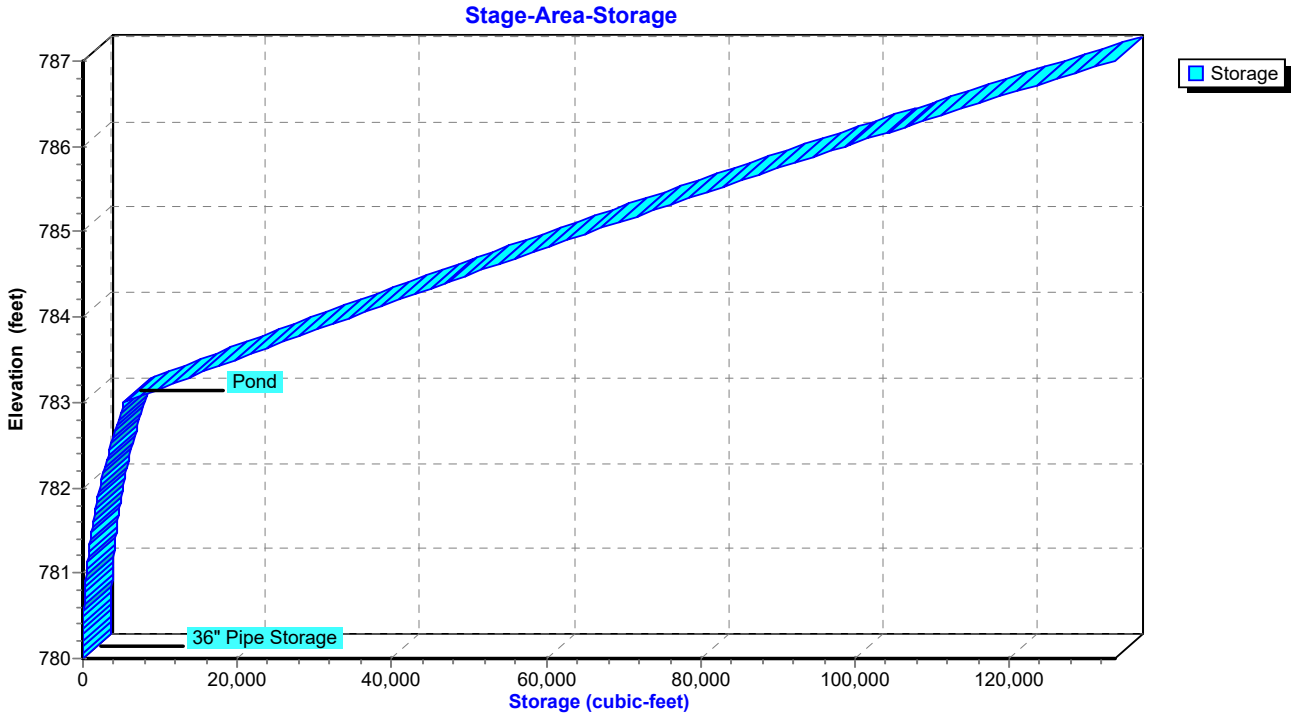
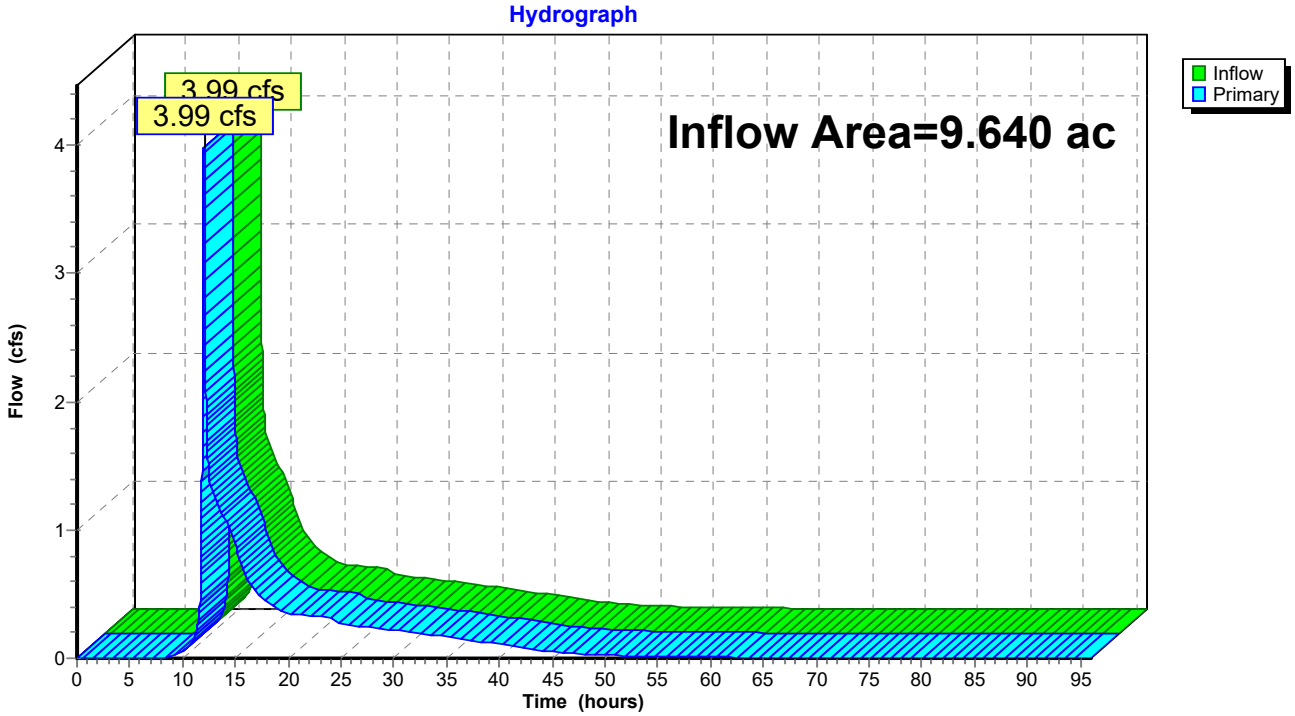


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 1.30" for 1Yr. event
Inflow = 3.99 cfs @ 12.03 hrs, Volume= 1.048 af
Primary = 3.99 cfs @ 12.03 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

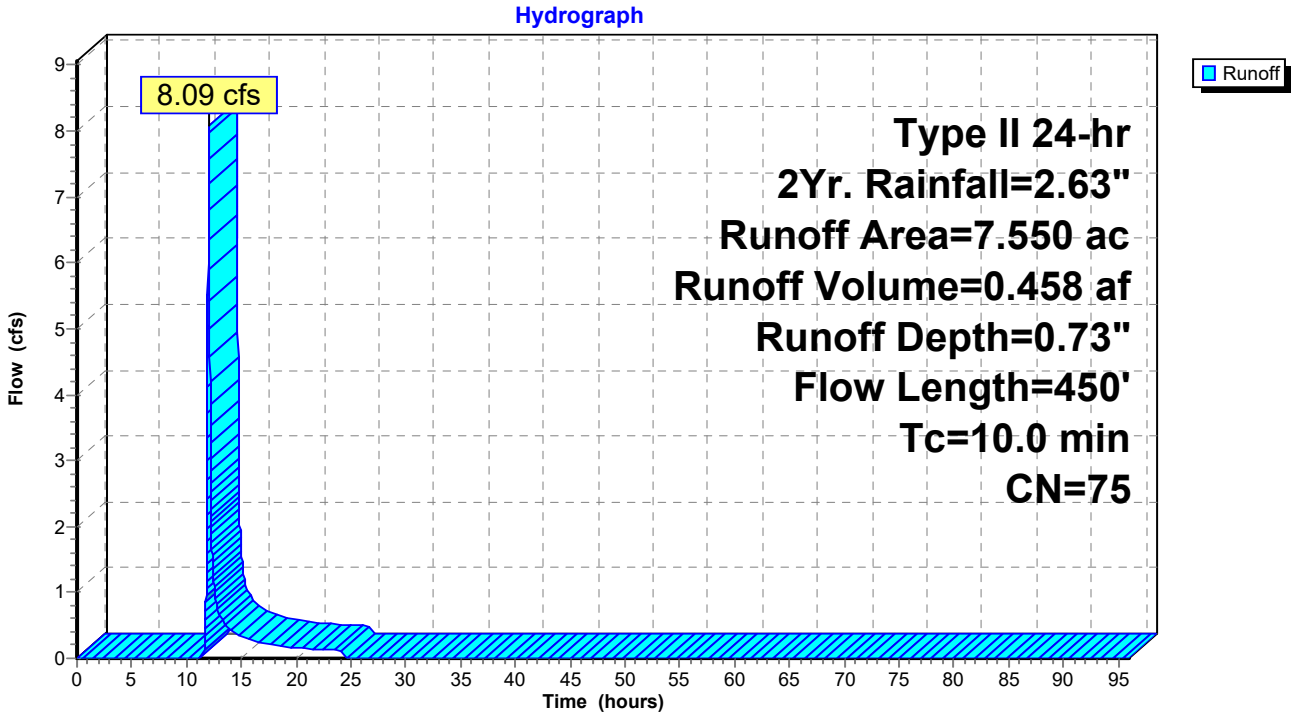
Runoff = 8.09 cfs @ 12.03 hrs, Volume= 0.458 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

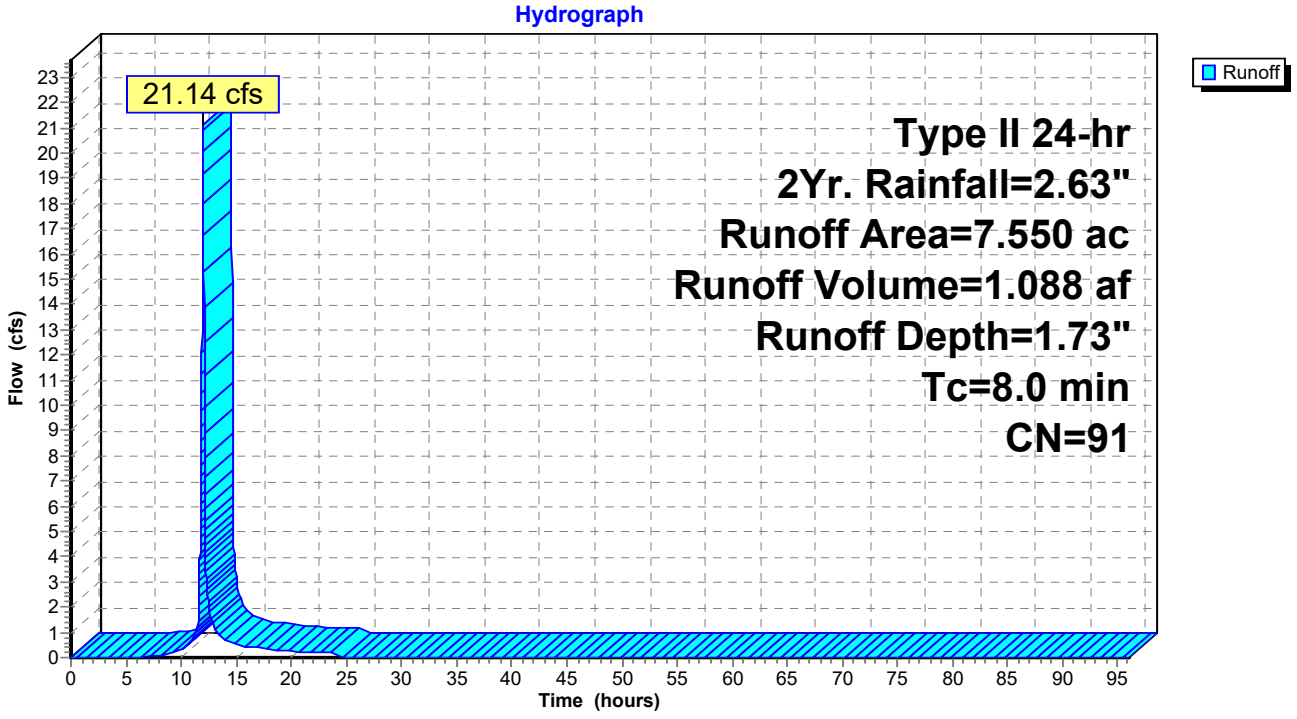
Runoff = 21.14 cfs @ 11.99 hrs, Volume= 1.088 af, Depth= 1.73"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

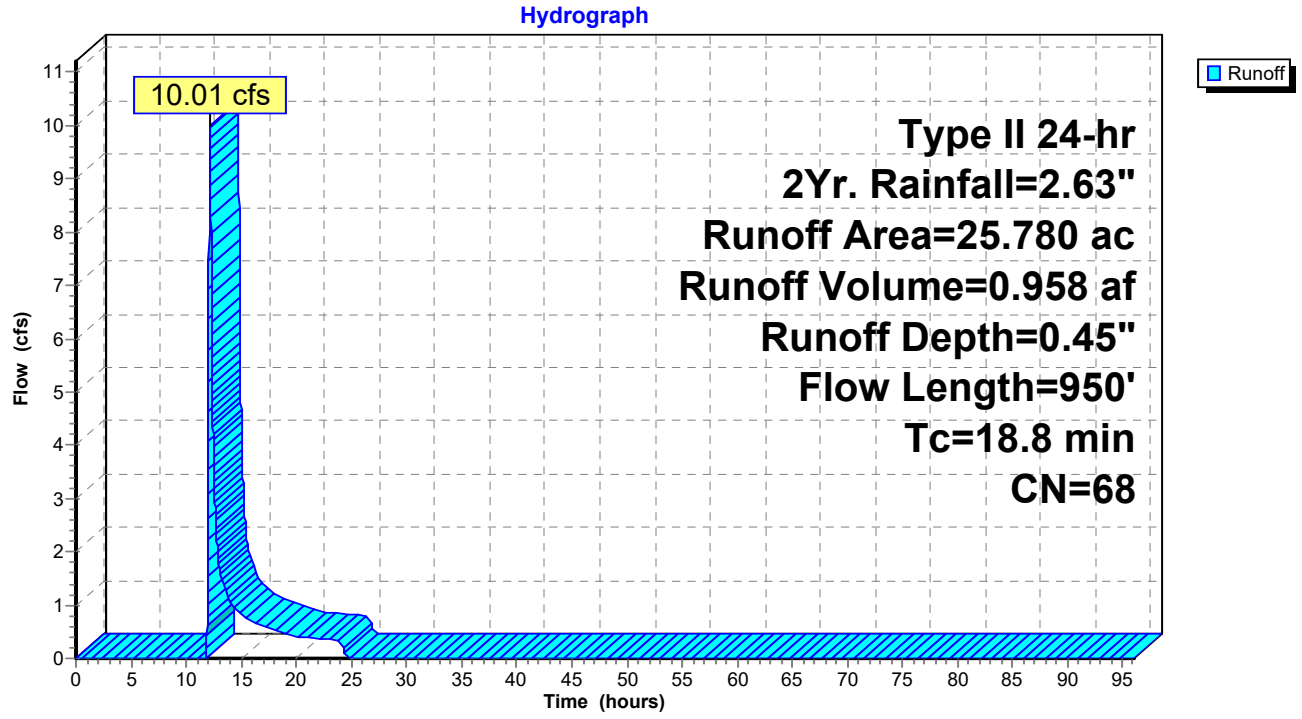
Runoff = 10.01 cfs @ 12.14 hrs, Volume= 0.958 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

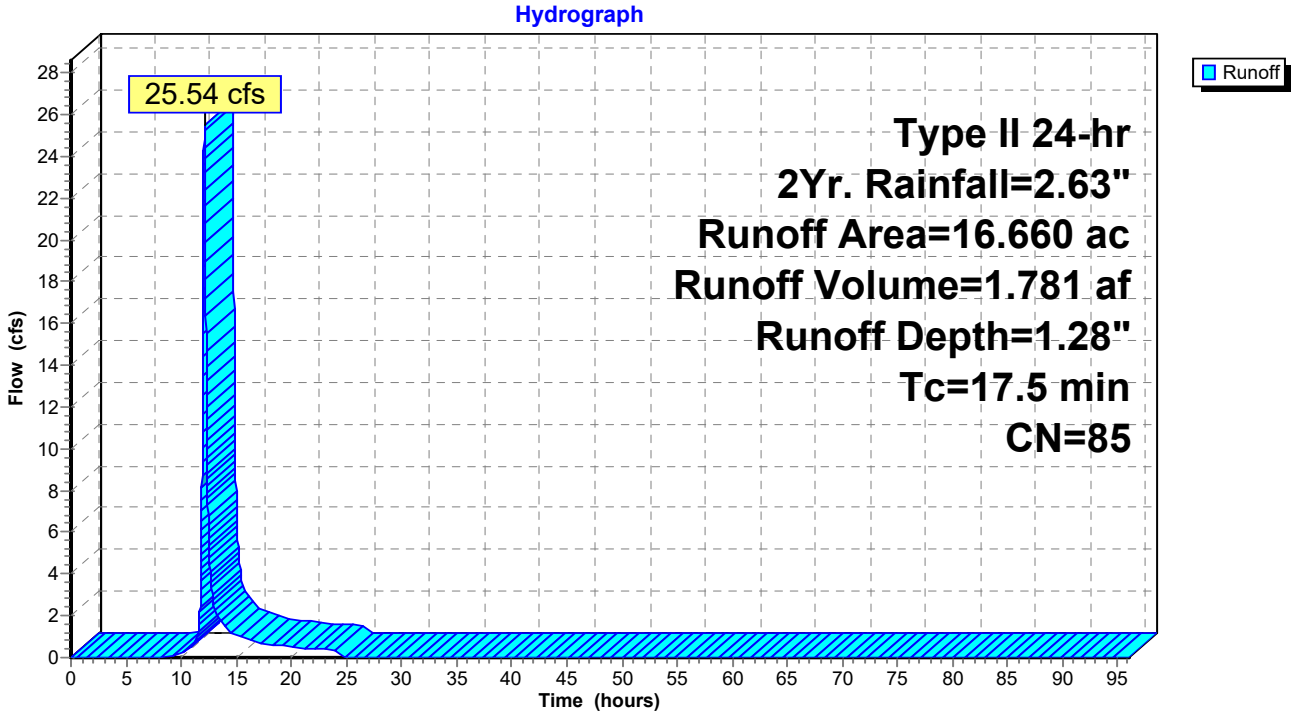
Runoff = 25.54 cfs @ 12.10 hrs, Volume= 1.781 af, Depth= 1.28"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

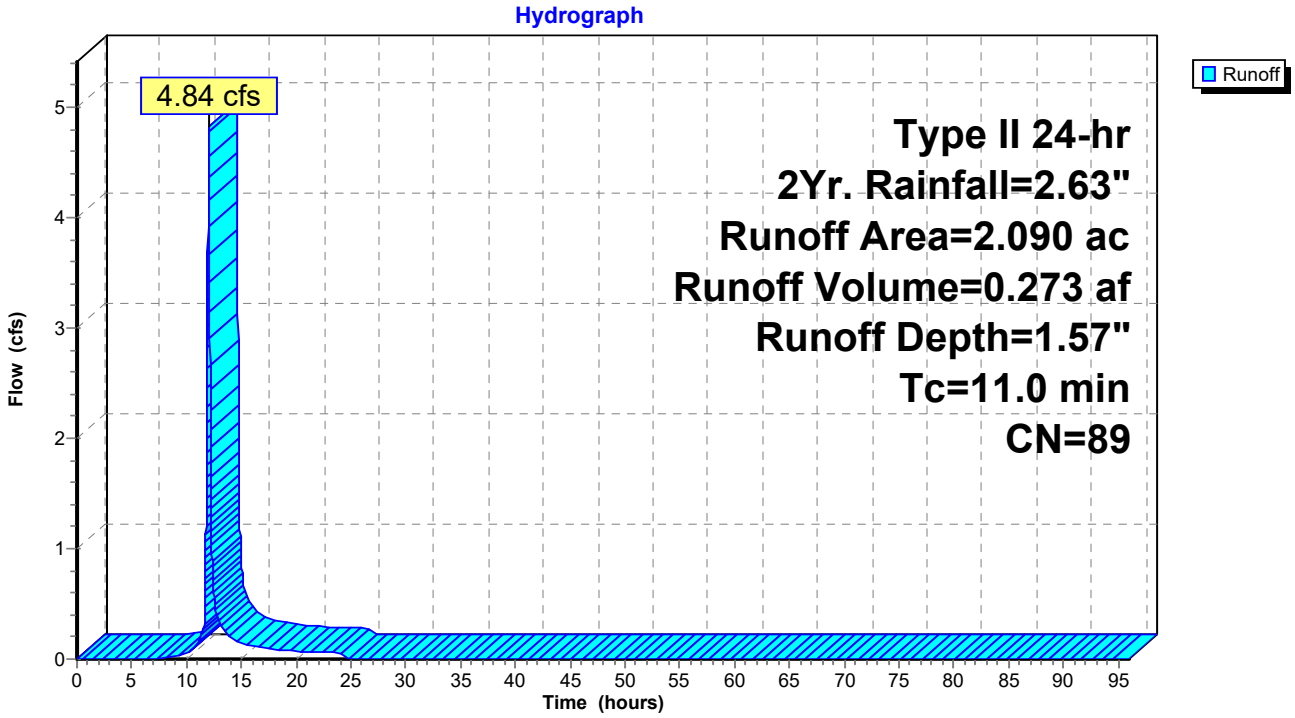
Runoff = 4.84 cfs @ 12.03 hrs, Volume= 0.273 af, Depth= 1.57"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

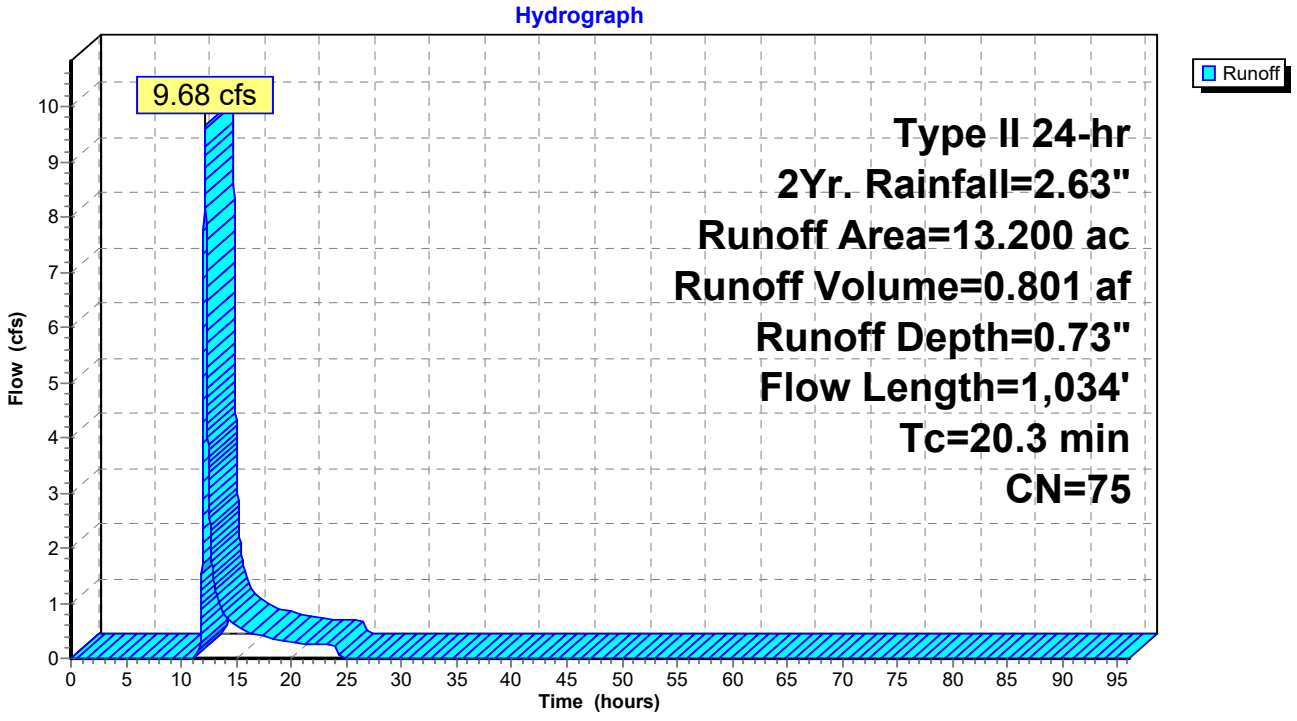
Runoff = 9.68 cfs @ 12.15 hrs, Volume= 0.801 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

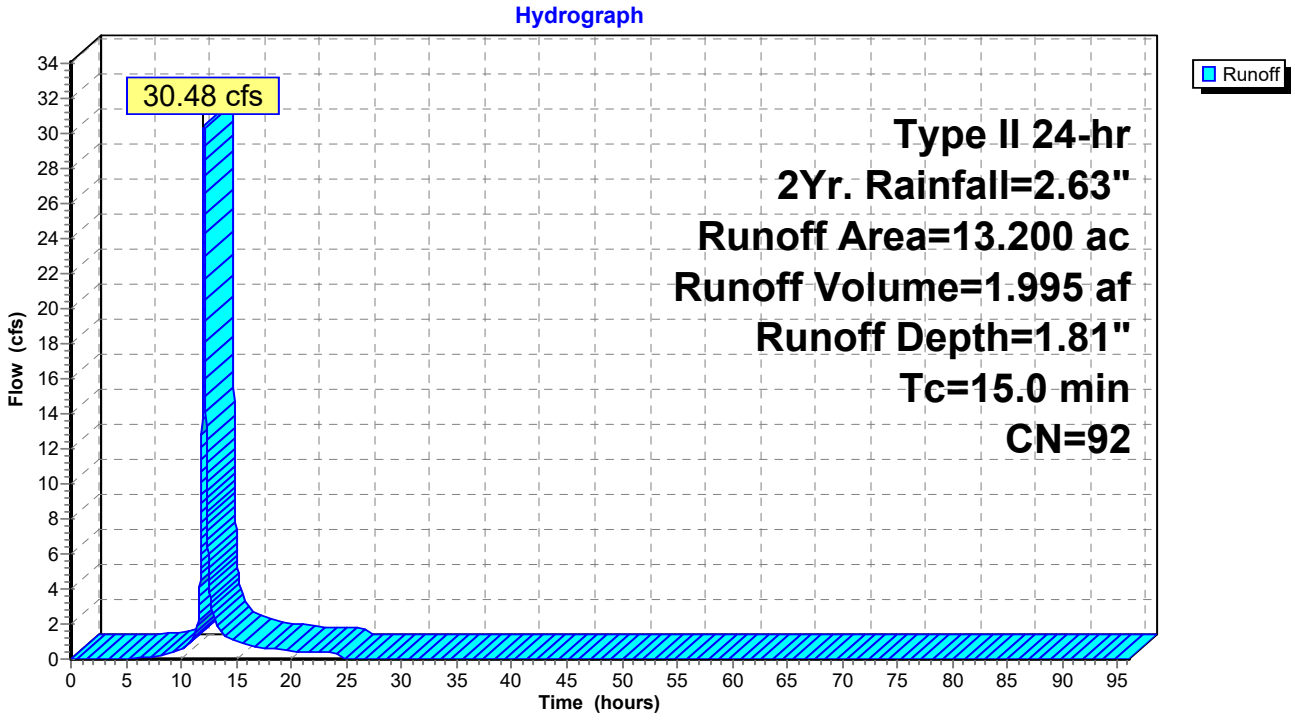
Runoff = 30.48 cfs @ 12.07 hrs, Volume= 1.995 af, Depth= 1.81"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 1.73" for 2Yr. event
Inflow = 21.14 cfs @ 11.99 hrs, Volume= 1.088 af
Outflow = 1.37 cfs @ 12.79 hrs, Volume= 1.084 af, Atten= 94%, Lag= 47.8 min
Primary = 1.37 cfs @ 12.79 hrs, Volume= 1.084 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 787.00' @ 12.79 hrs Surf.Area= 16,294 sf Storage= 26,581 cf

Plug-Flow detention time= 519.9 min calculated for 1.084 af (100% of inflow)
Center-of-Mass det. time= 517.7 min (1,326.5 - 808.8)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

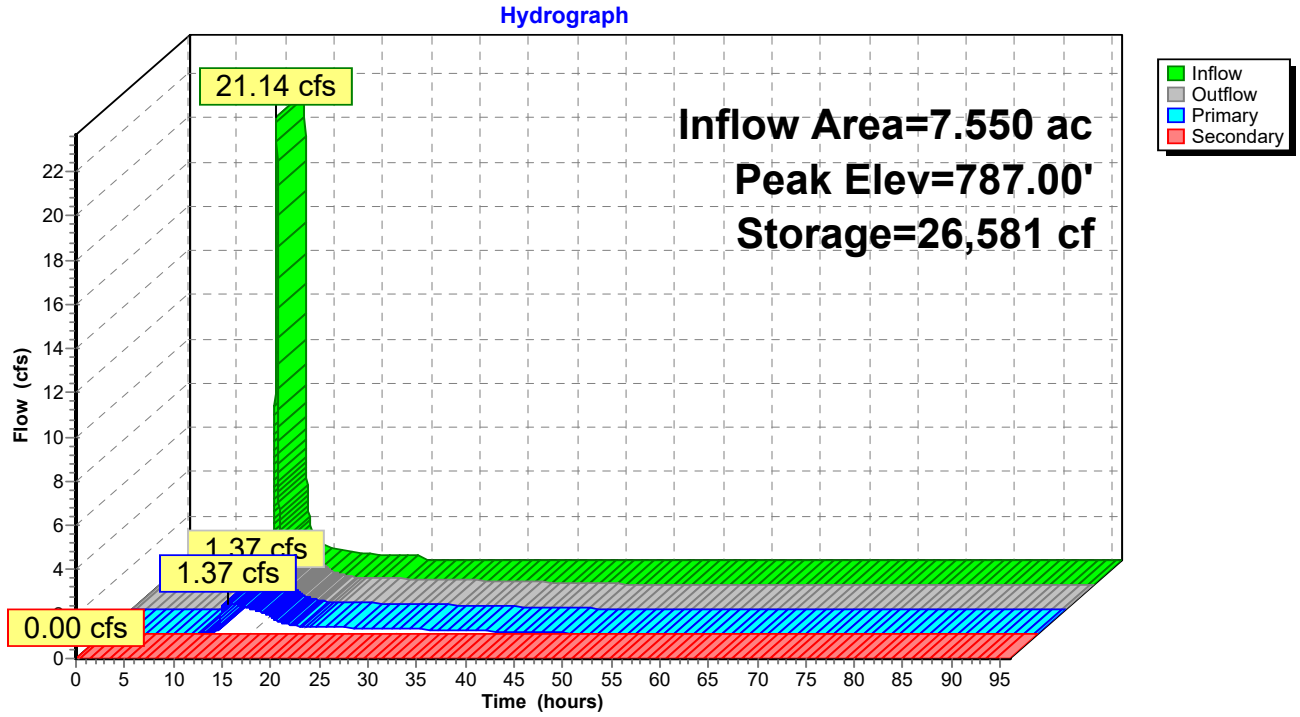
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

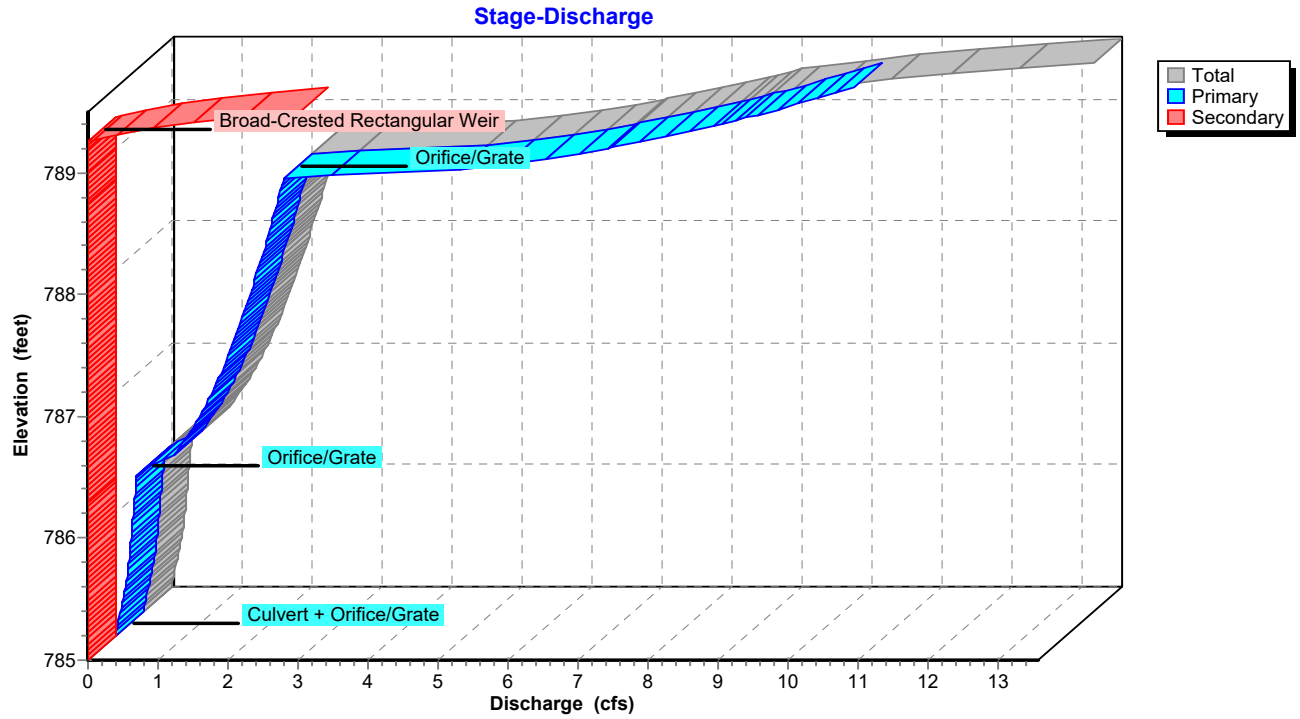
Primary OutFlow Max=1.37 cfs @ 12.79 hrs HW=787.00' (Free Discharge)
└**1=Culvert** (Passes 1.37 cfs of 6.92 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 6.57 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.00 cfs @ 4.02 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

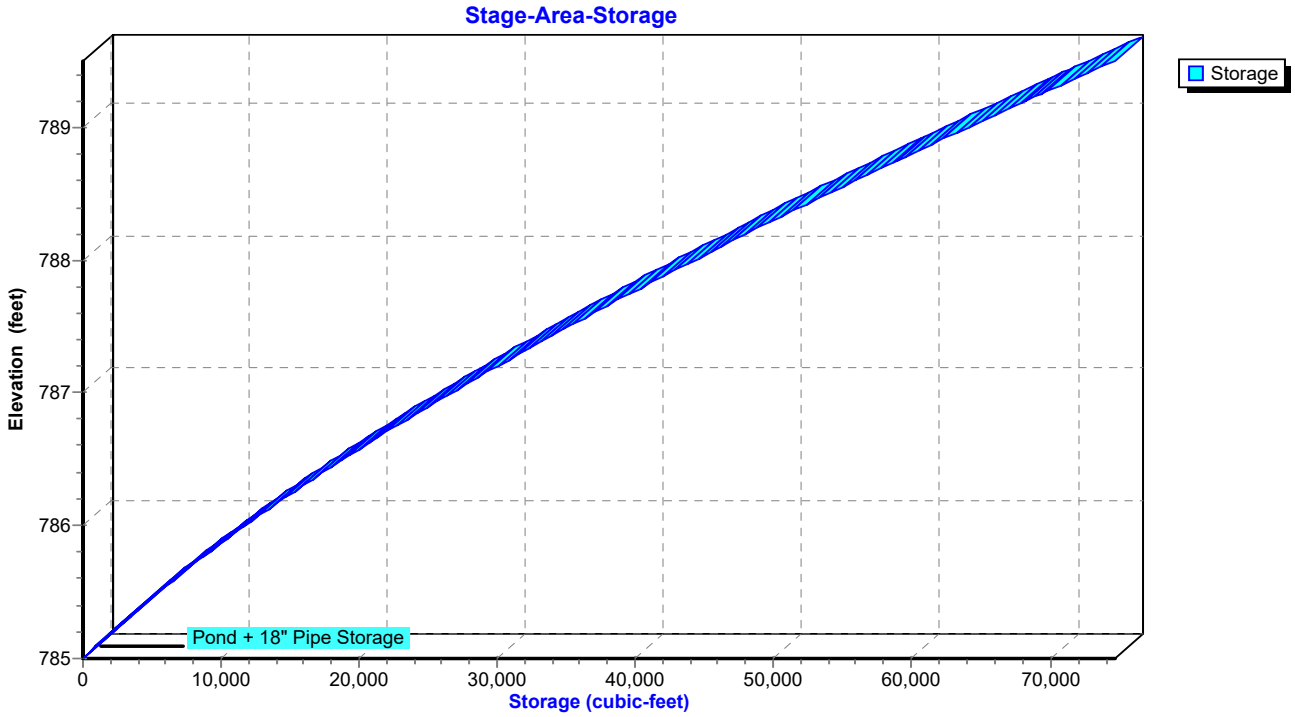
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 1.43" for 2Yr. event
Inflow = 30.52 cfs @ 12.09 hrs, Volume= 3.138 af
Outflow = 1.71 cfs @ 16.86 hrs, Volume= 3.123 af, Atten= 94%, Lag= 286.7 min
Primary = 1.71 cfs @ 16.86 hrs, Volume= 3.123 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 783.11' @ 16.86 hrs Surf.Area= 28,285 sf Storage= 69,373 cf

Plug-Flow detention time= 721.0 min calculated for 3.123 af (100% of inflow)
Center-of-Mass det. time= 705.9 min (1,713.7 - 1,007.9)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

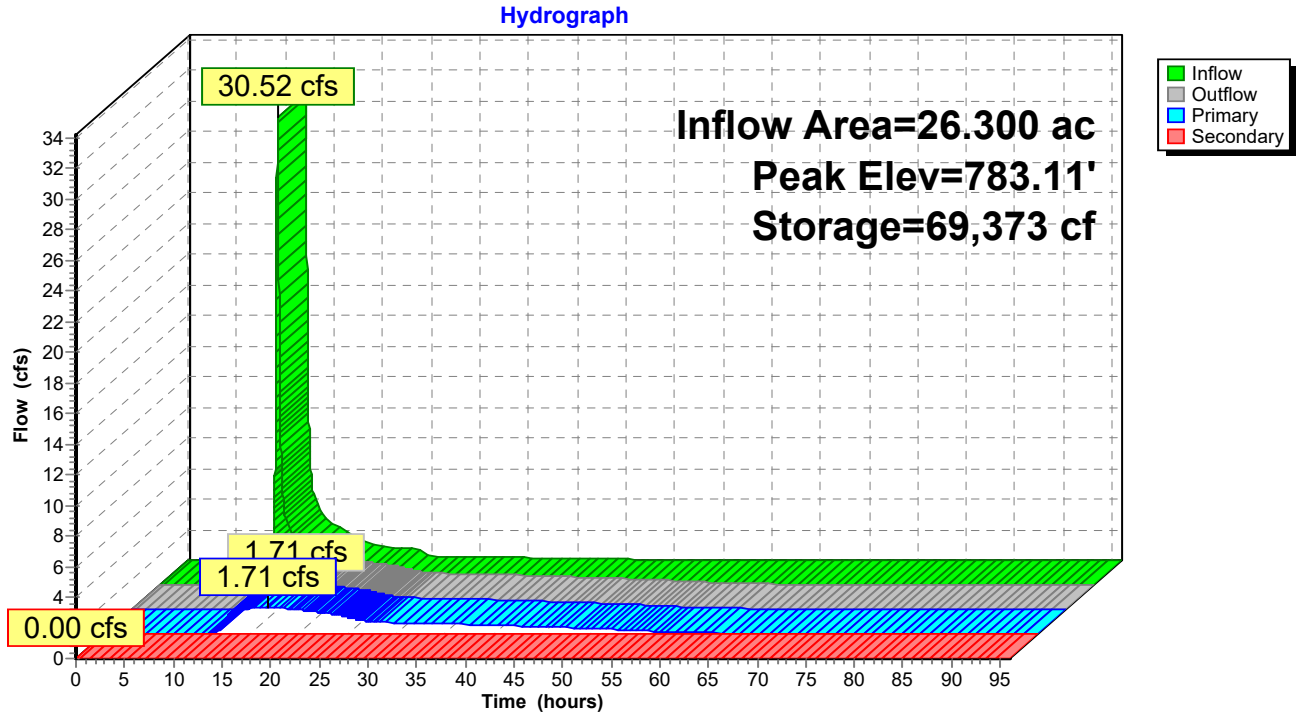
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

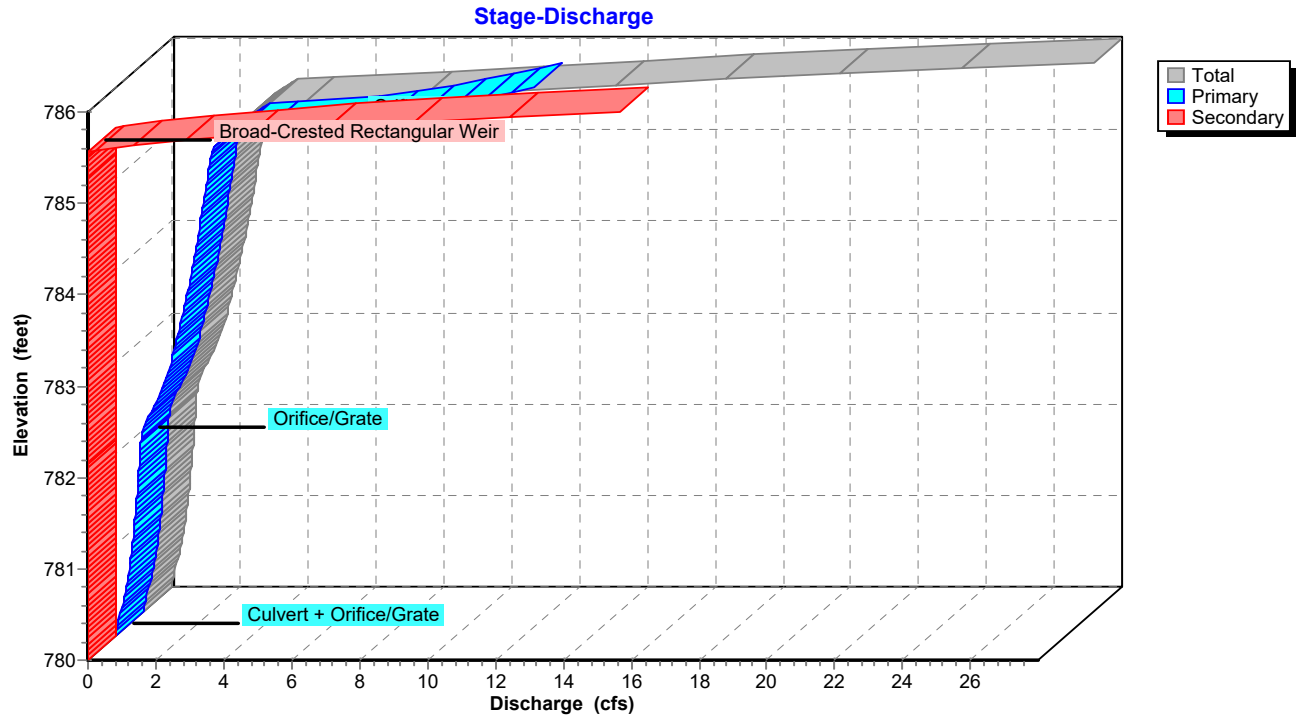
Primary OutFlow Max=1.71 cfs @ 16.86 hrs HW=783.11' (Free Discharge)
└**1=Culvert** (Passes 1.71 cfs of 16.60 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.91 cfs @ 8.24 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.80 cfs @ 4.07 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

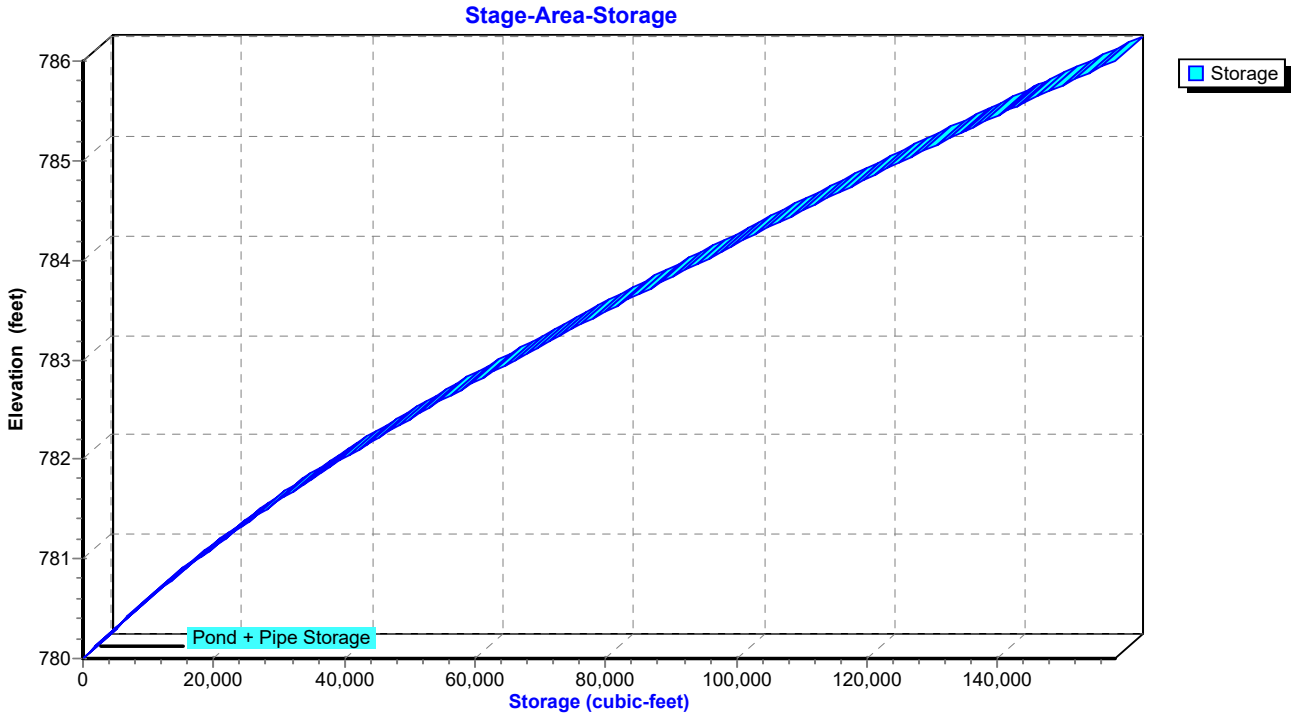
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 1.81" for 2Yr. event
Inflow = 30.48 cfs @ 12.07 hrs, Volume= 1.995 af
Outflow = 1.15 cfs @ 14.36 hrs, Volume= 1.847 af, Atten= 96%, Lag= 137.8 min
Primary = 1.15 cfs @ 14.36 hrs, Volume= 1.847 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 784.75' @ 14.36 hrs Surf.Area= 31,511 sf Storage= 57,898 cf

Plug-Flow detention time= 856.3 min calculated for 1.847 af (93% of inflow)
Center-of-Mass det. time= 816.3 min (1,626.6 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

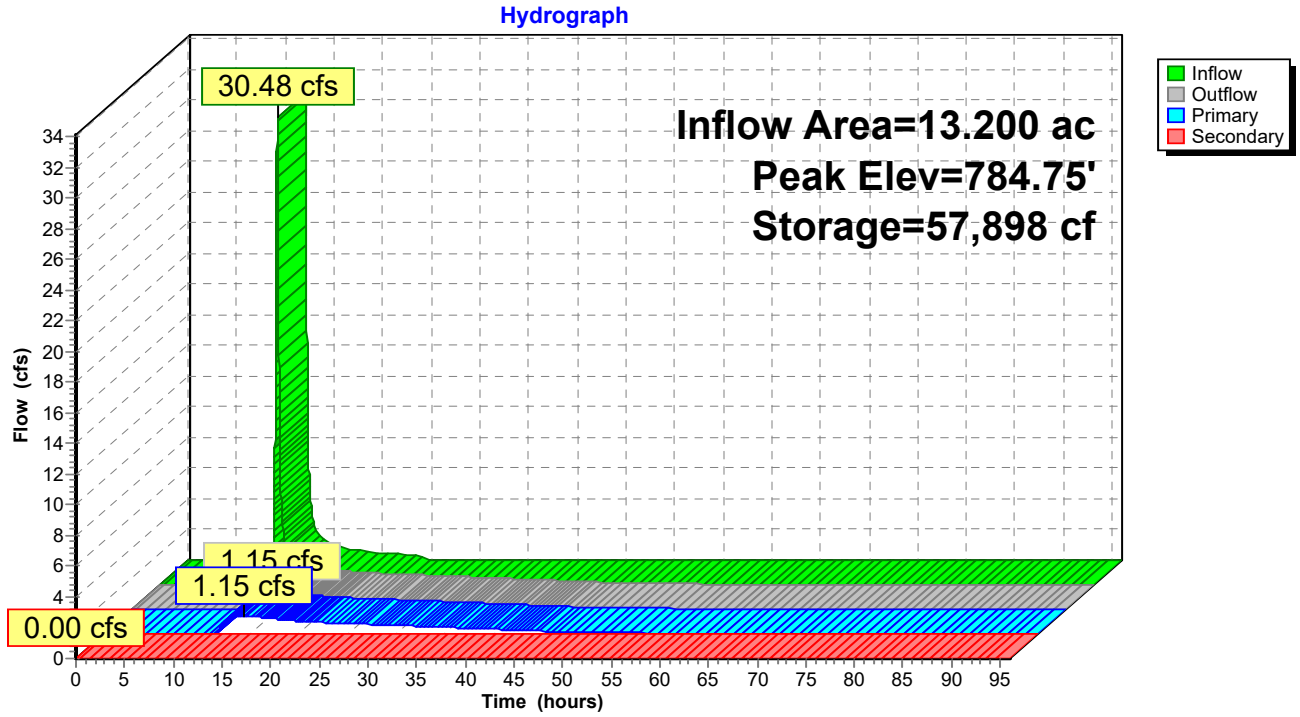
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

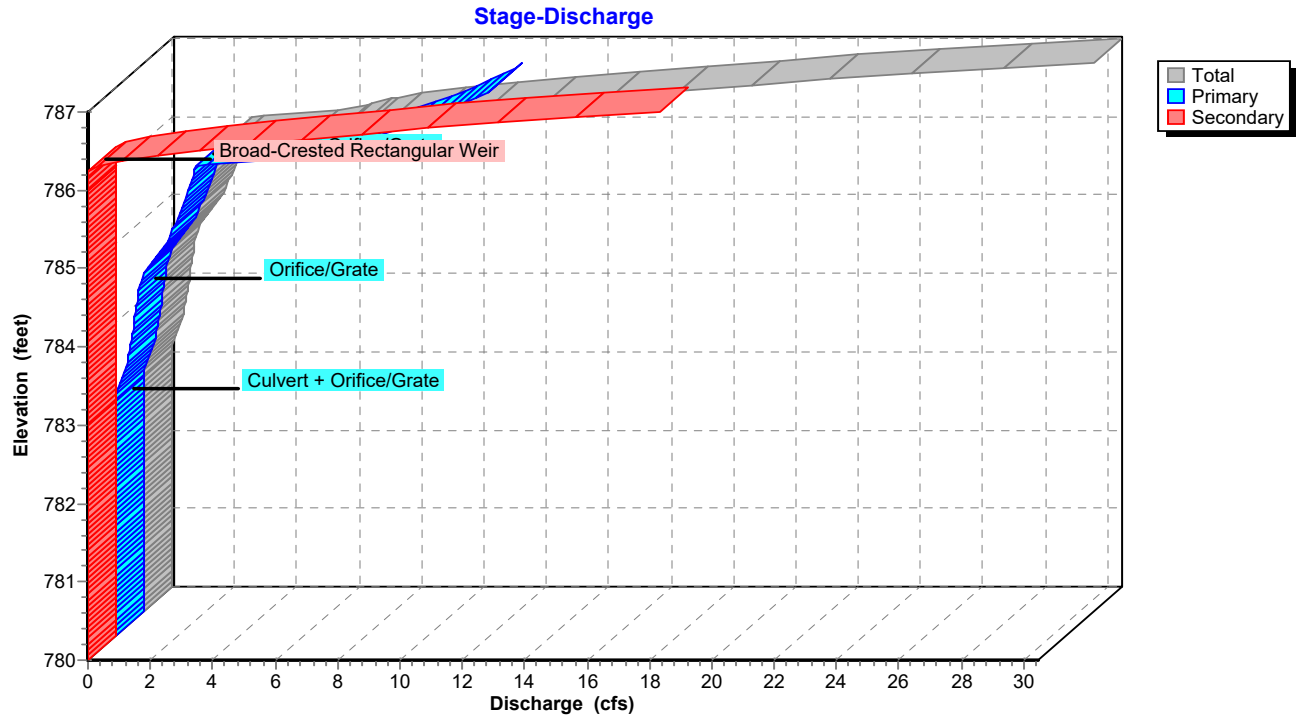
Primary OutFlow Max=1.15 cfs @ 14.36 hrs HW=784.75' (Free Discharge)
└**1=Culvert** (Passes 1.15 cfs of 6.71 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 5.98 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.34 cfs @ 2.01 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

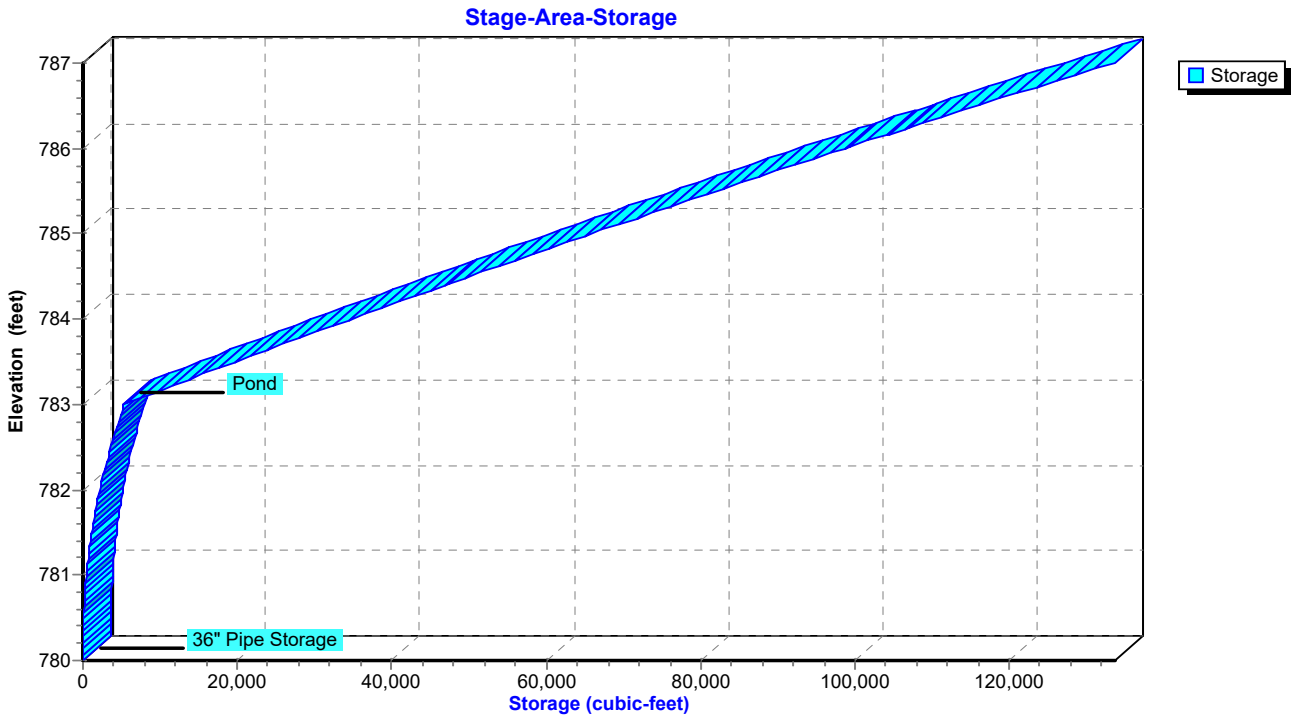
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

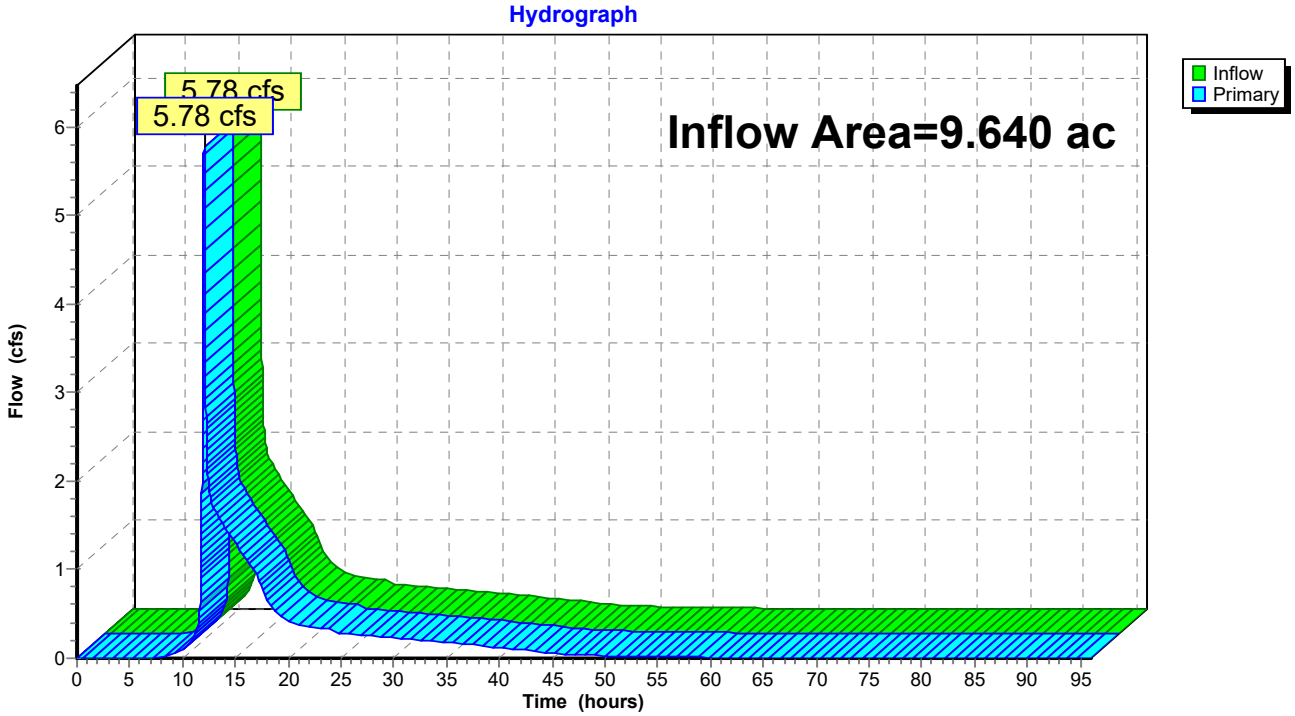


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 1.69" for 2Yr. event
Inflow = 5.78 cfs @ 12.04 hrs, Volume= 1.357 af
Primary = 5.78 cfs @ 12.04 hrs, Volume= 1.357 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

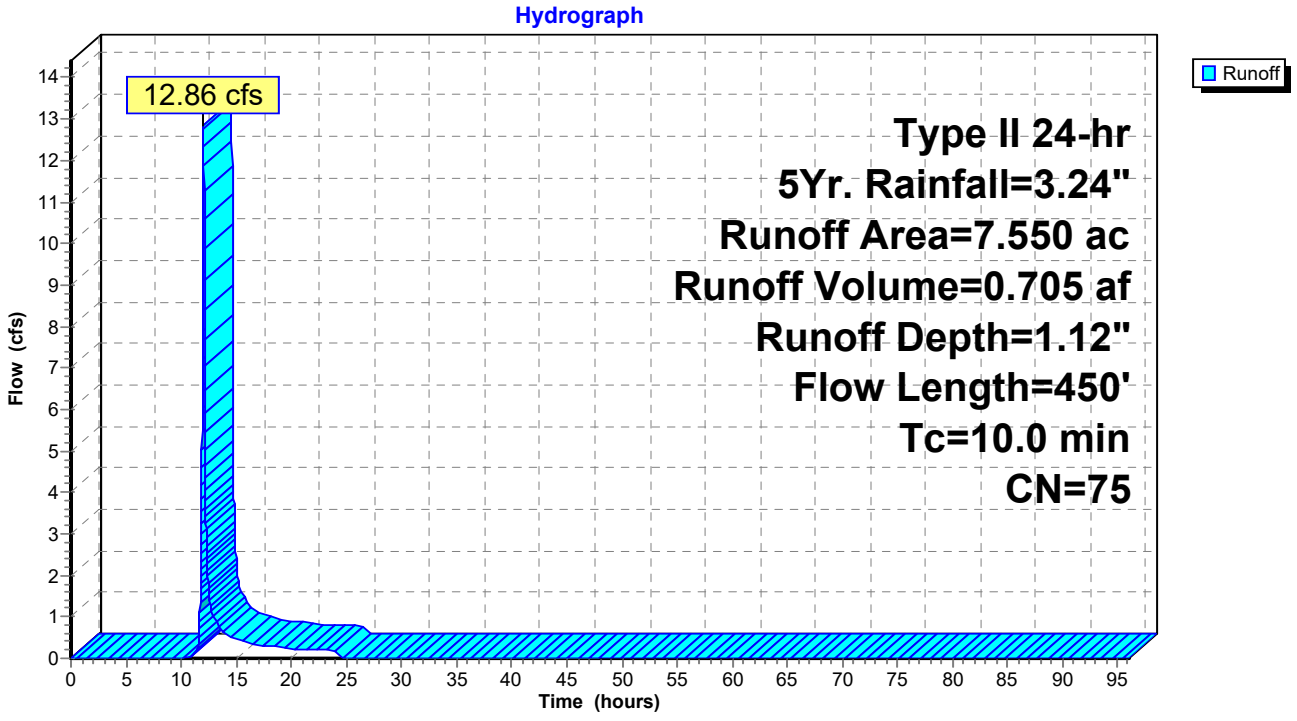
Runoff = 12.86 cfs @ 12.03 hrs, Volume= 0.705 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

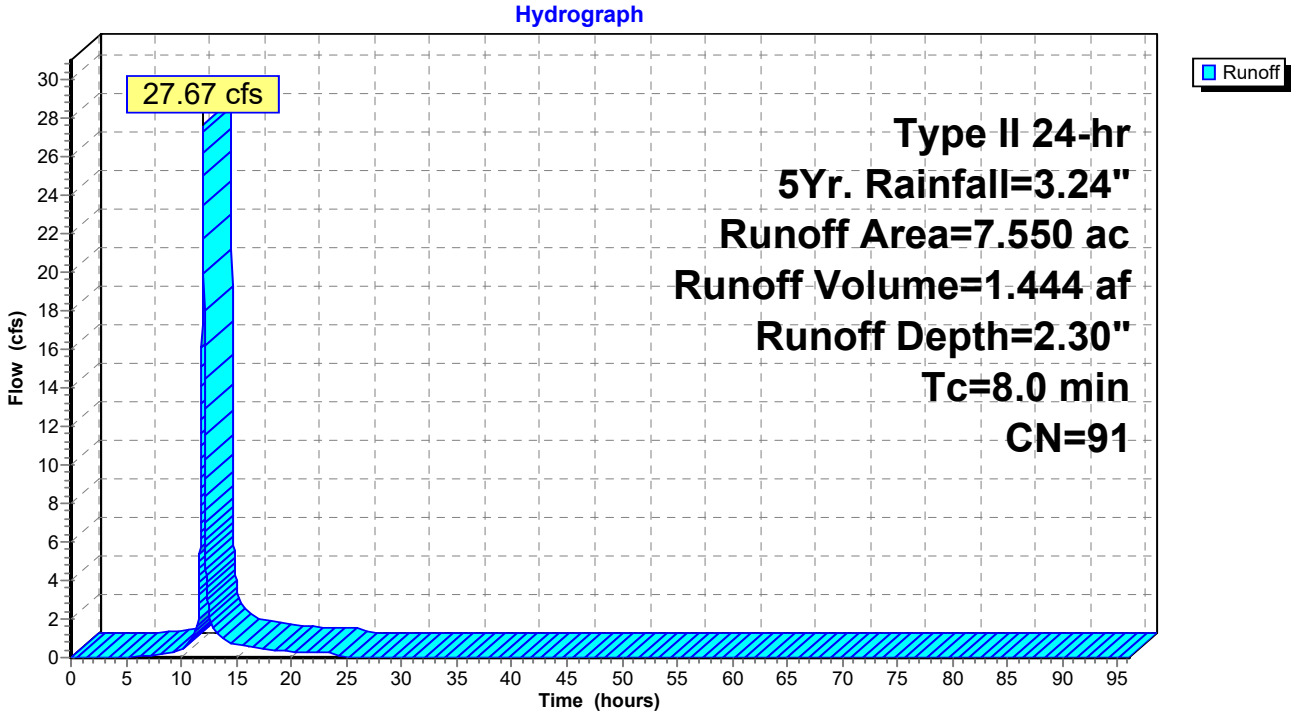
Runoff = 27.67 cfs @ 11.99 hrs, Volume= 1.444 af, Depth= 2.30"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

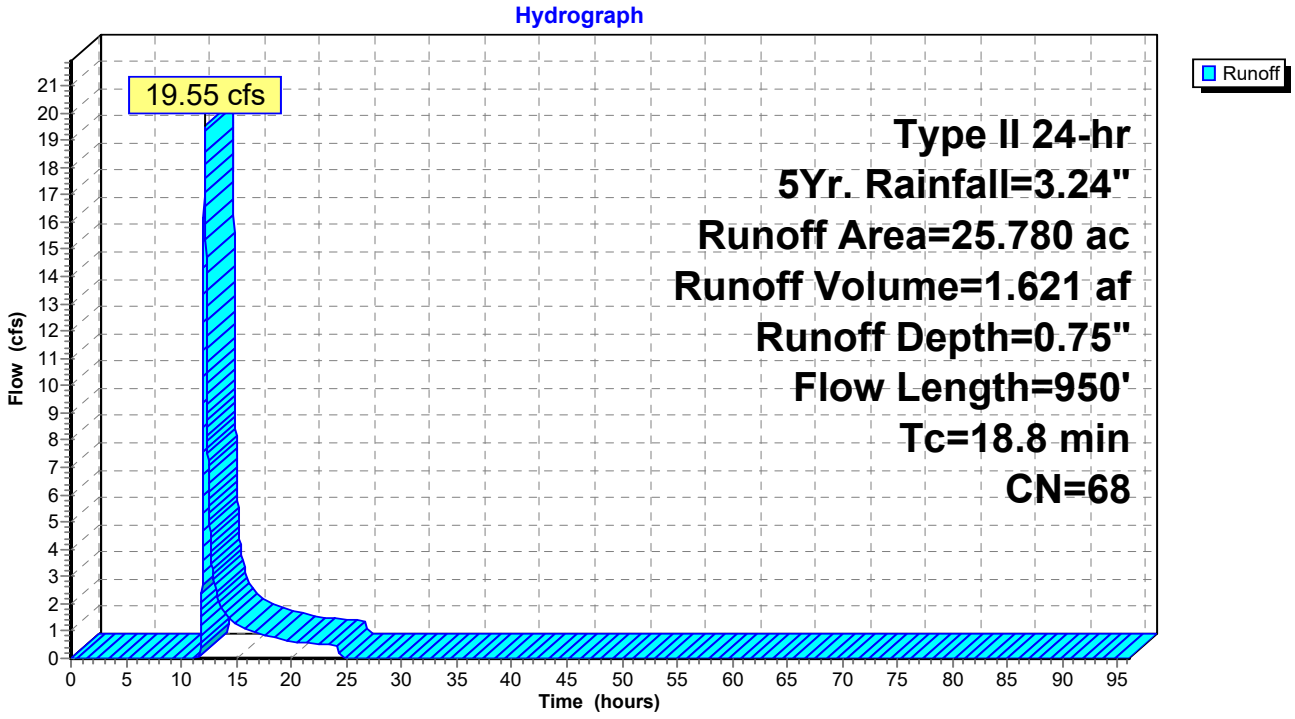
Runoff = 19.55 cfs @ 12.14 hrs, Volume= 1.621 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

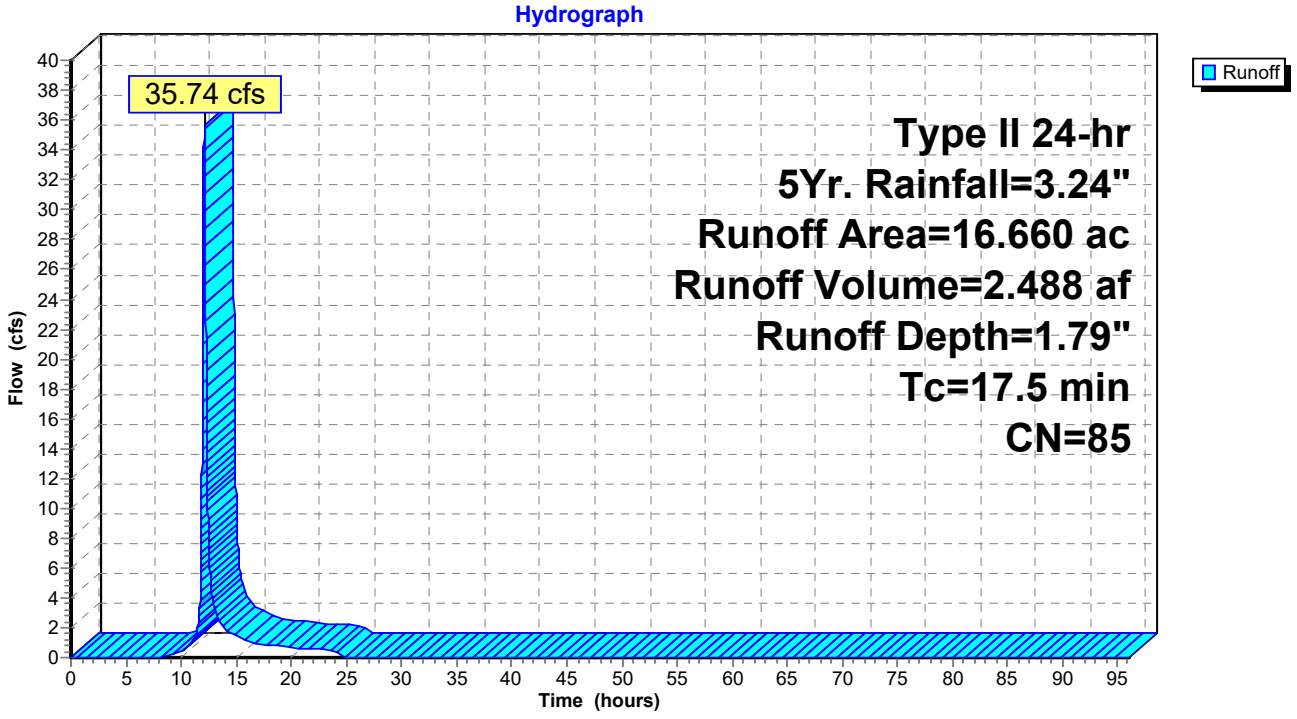
Runoff = 35.74 cfs @ 12.10 hrs, Volume= 2.488 af, Depth= 1.79"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

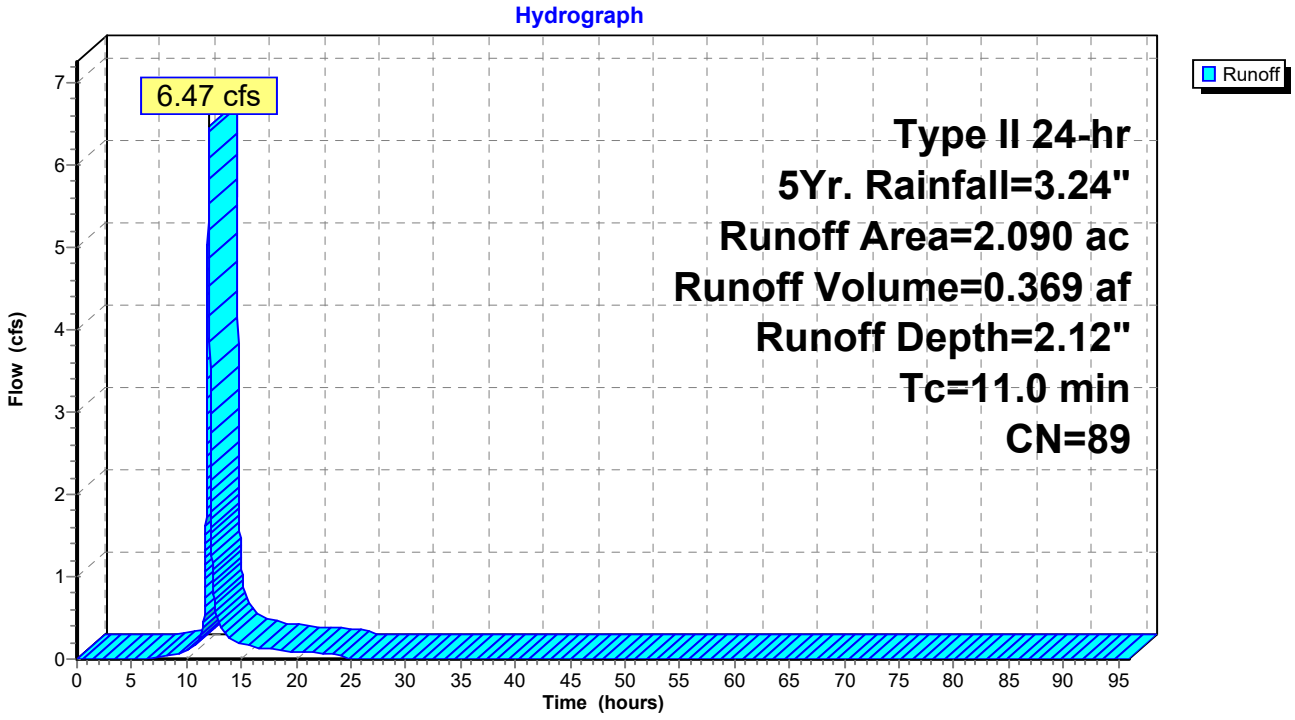
Runoff = 6.47 cfs @ 12.02 hrs, Volume= 0.369 af, Depth= 2.12"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

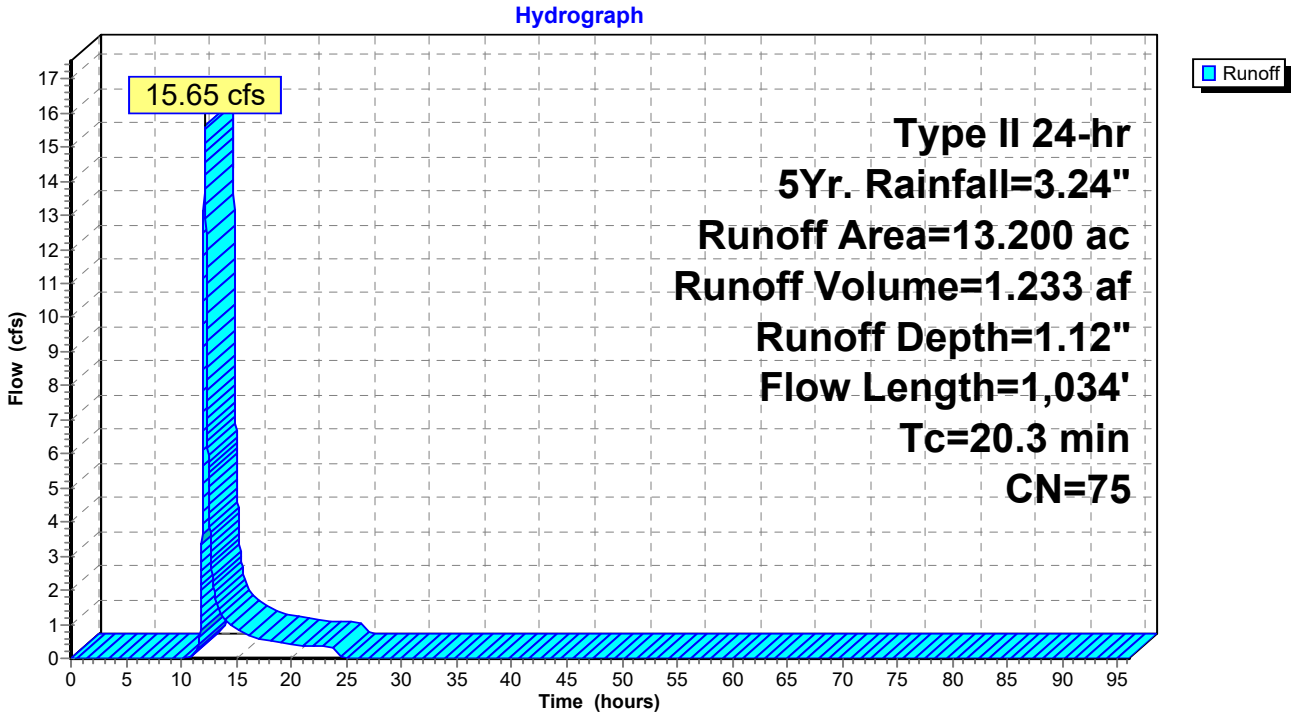
Runoff = 15.65 cfs @ 12.14 hrs, Volume= 1.233 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

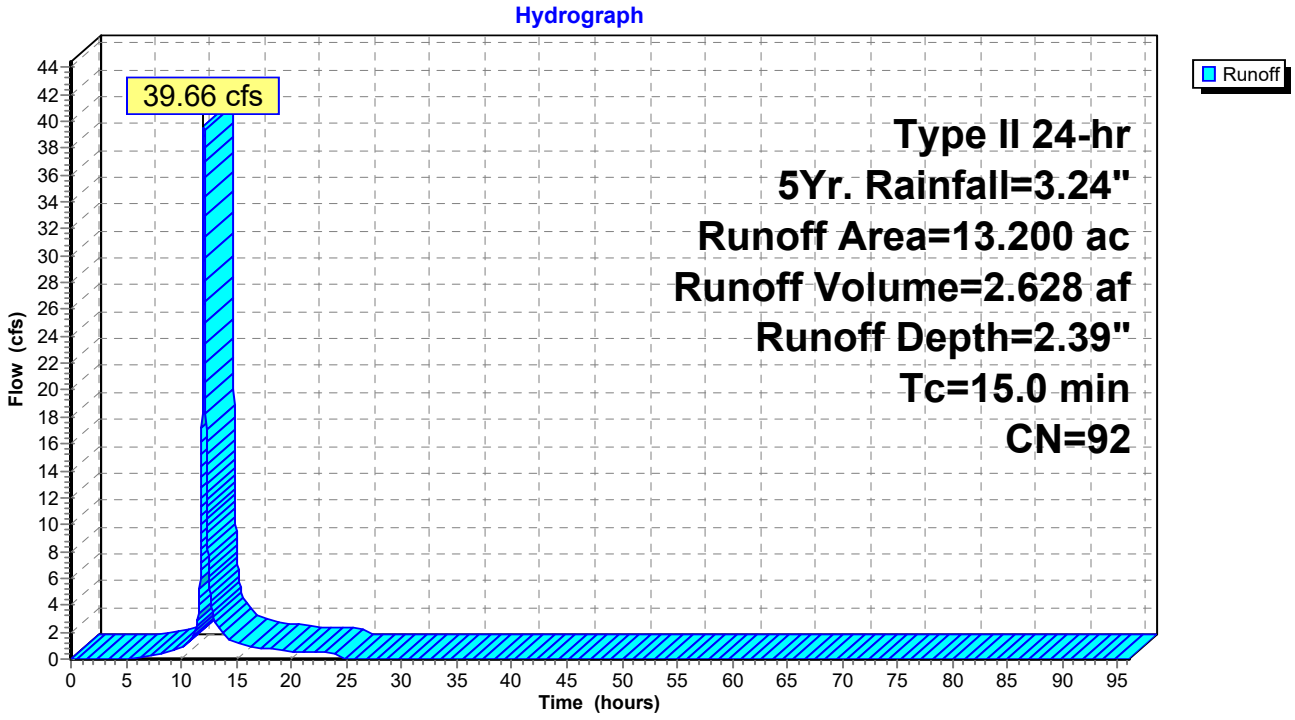
Runoff = 39.66 cfs @ 12.07 hrs, Volume= 2.628 af, Depth= 2.39"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 2.30" for 5Yr. event
Inflow = 27.67 cfs @ 11.99 hrs, Volume= 1.444 af
Outflow = 1.76 cfs @ 12.79 hrs, Volume= 1.441 af, Atten= 94%, Lag= 47.7 min
Primary = 1.76 cfs @ 12.79 hrs, Volume= 1.441 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 787.54' @ 12.79 hrs Surf.Area= 17,736 sf Storage= 35,849 cf

Plug-Flow detention time= 459.9 min calculated for 1.440 af (100% of inflow)
Center-of-Mass det. time= 458.5 min (1,259.3 - 800.8)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

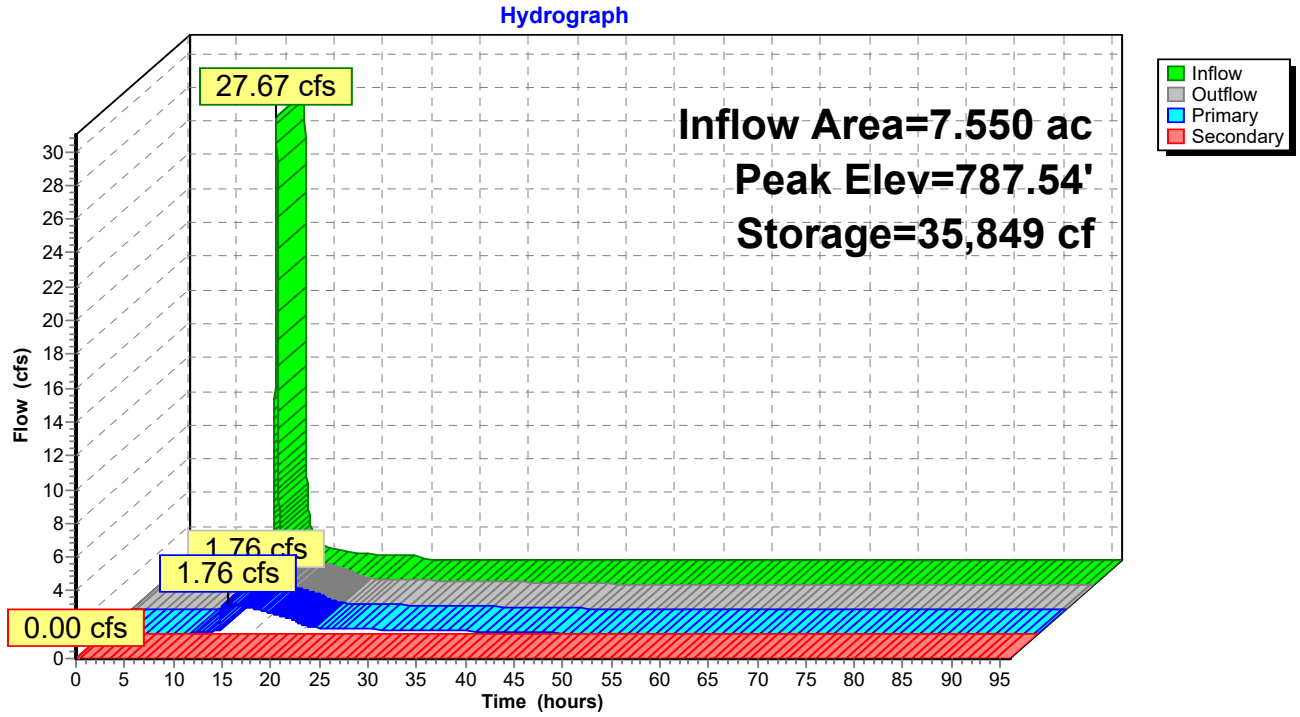
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

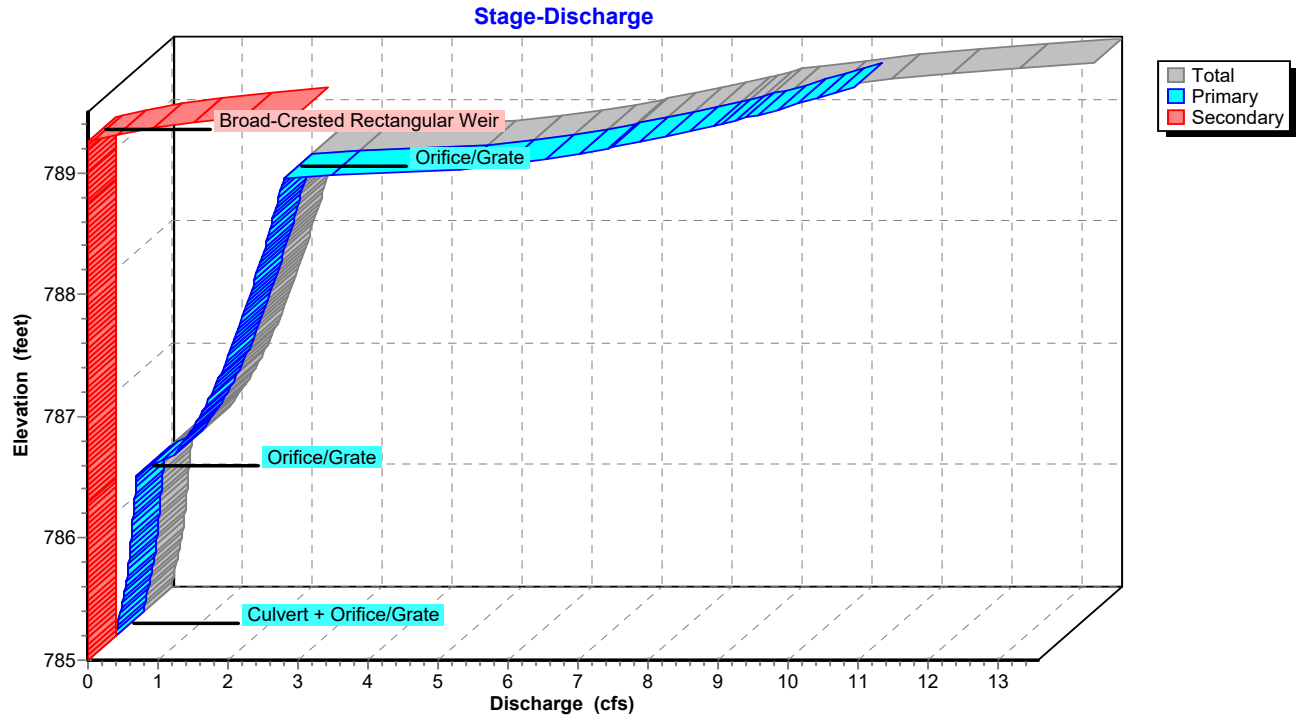
Primary OutFlow Max=1.76 cfs @ 12.79 hrs HW=787.54' (Free Discharge)
└**1=Culvert** (Passes 1.76 cfs of 8.18 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 7.47 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.34 cfs @ 5.36 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

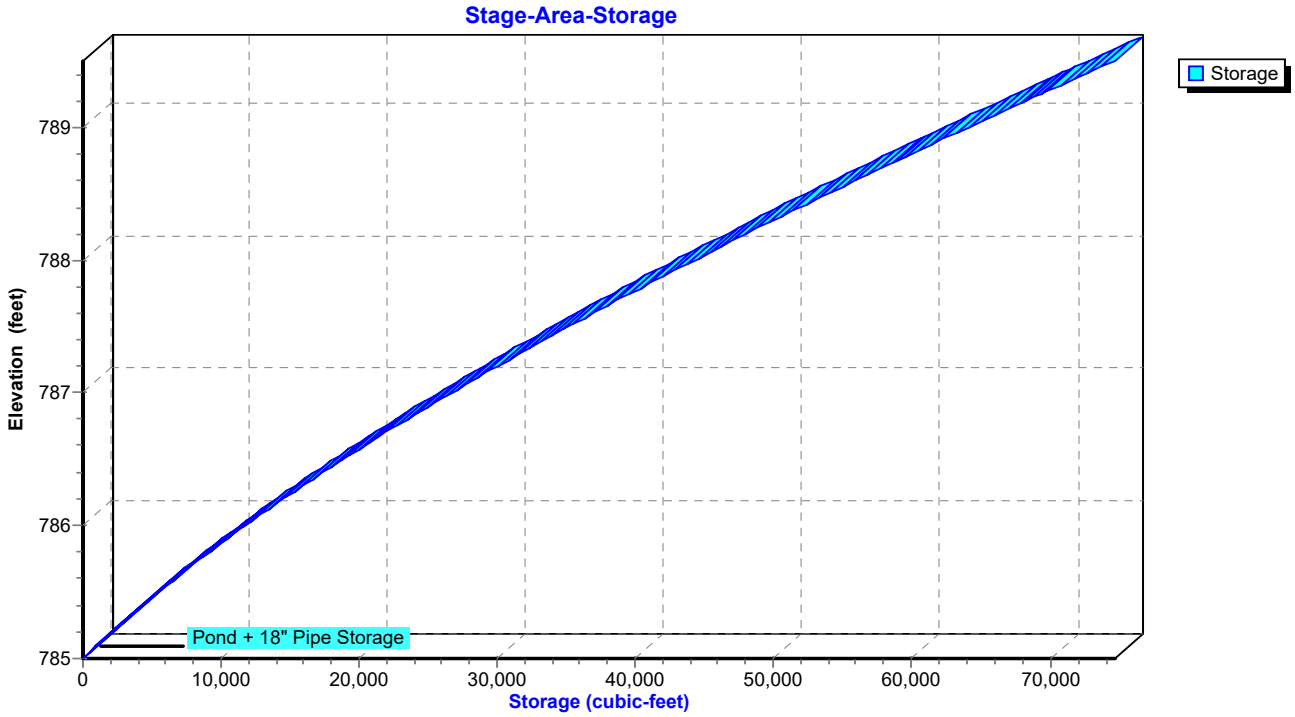
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 1.96" for 5Yr. event
Inflow = 42.50 cfs @ 12.08 hrs, Volume= 4.297 af
Outflow = 2.26 cfs @ 17.33 hrs, Volume= 4.281 af, Atten= 95%, Lag= 314.5 min
Primary = 2.26 cfs @ 17.33 hrs, Volume= 4.281 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 784.05' @ 17.33 hrs Surf.Area= 29,808 sf Storage= 96,660 cf

Plug-Flow detention time= 712.9 min calculated for 4.280 af (100% of inflow)
Center-of-Mass det. time= 701.2 min (1,675.3 - 974.2)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

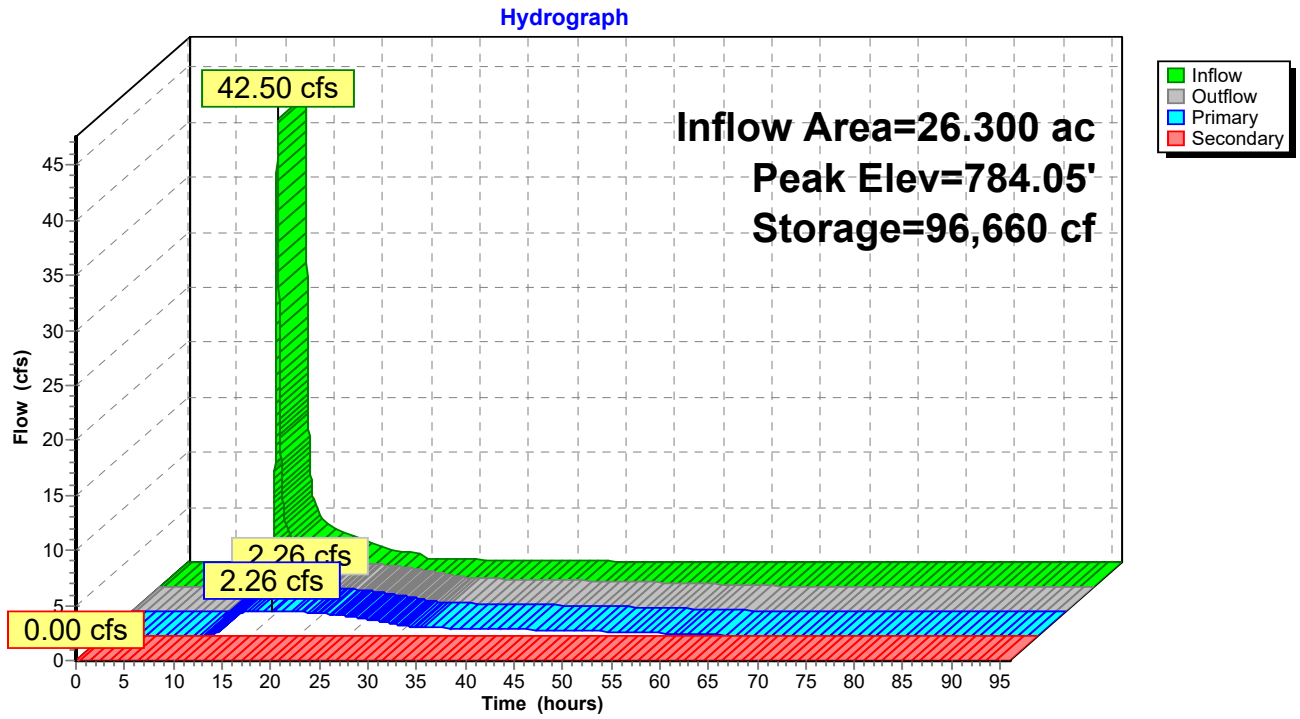
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

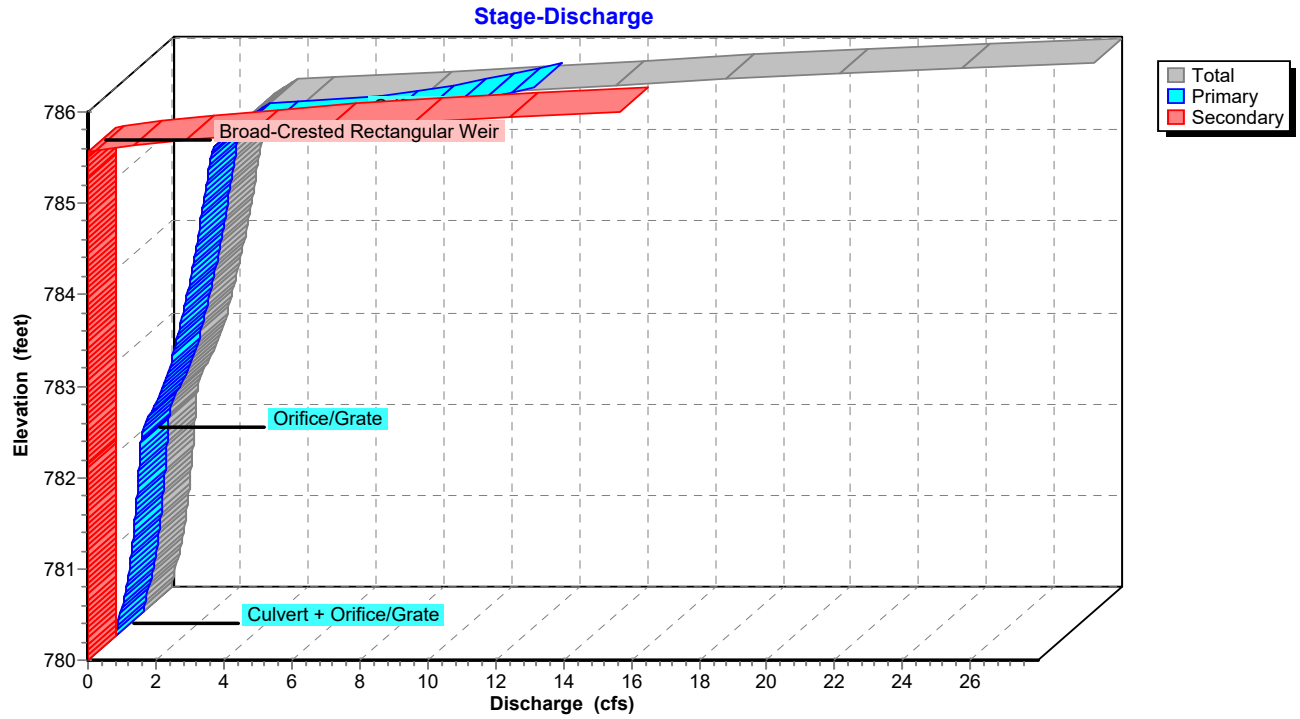
Primary OutFlow Max=2.26 cfs @ 17.33 hrs HW=784.05' (Free Discharge)
└**1=Culvert** (Passes 2.26 cfs of 20.86 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.05 cfs @ 9.46 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.21 cfs @ 6.19 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

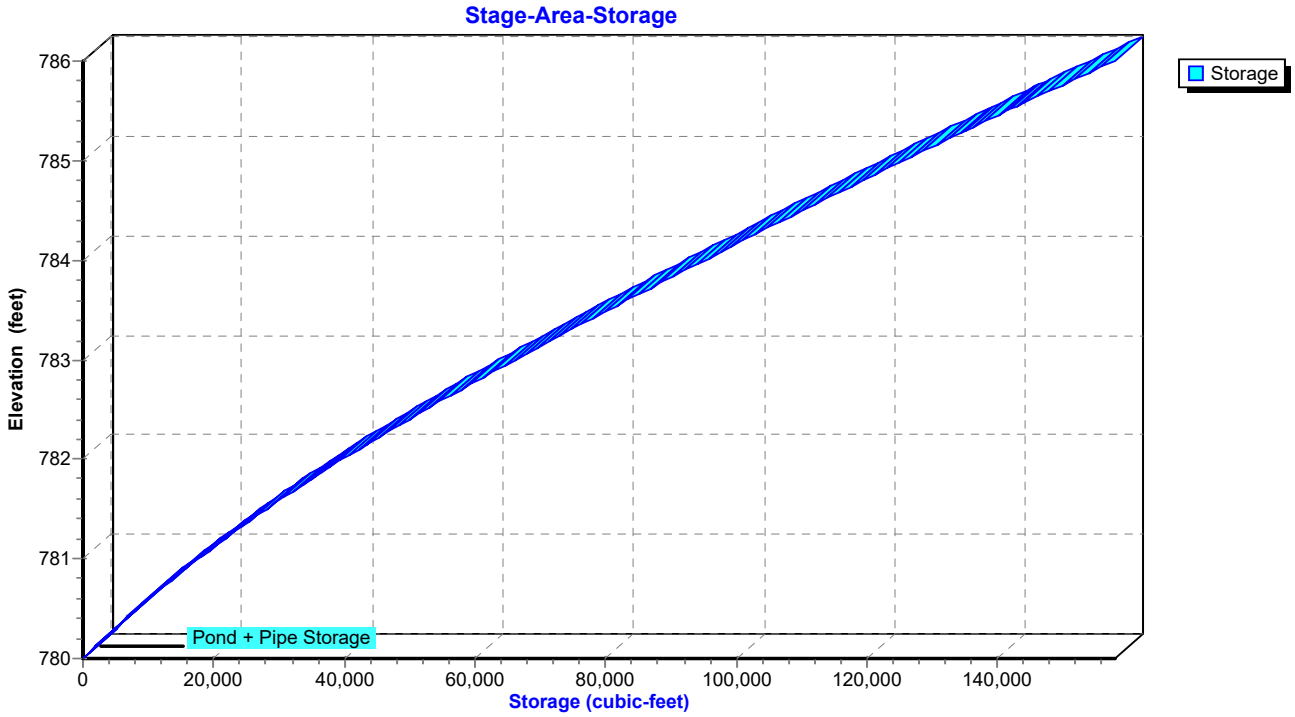
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 2.39" for 5Yr. event
Inflow = 39.66 cfs @ 12.07 hrs, Volume= 2.628 af
Outflow = 1.90 cfs @ 13.73 hrs, Volume= 2.478 af, Atten= 95%, Lag= 100.0 min
Primary = 1.90 cfs @ 13.73 hrs, Volume= 2.478 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 785.25' @ 13.73 hrs Surf.Area= 32,264 sf Storage= 73,793 cf

Plug-Flow detention time= 760.0 min calculated for 2.477 af (94% of inflow)
Center-of-Mass det. time= 727.9 min (1,530.4 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

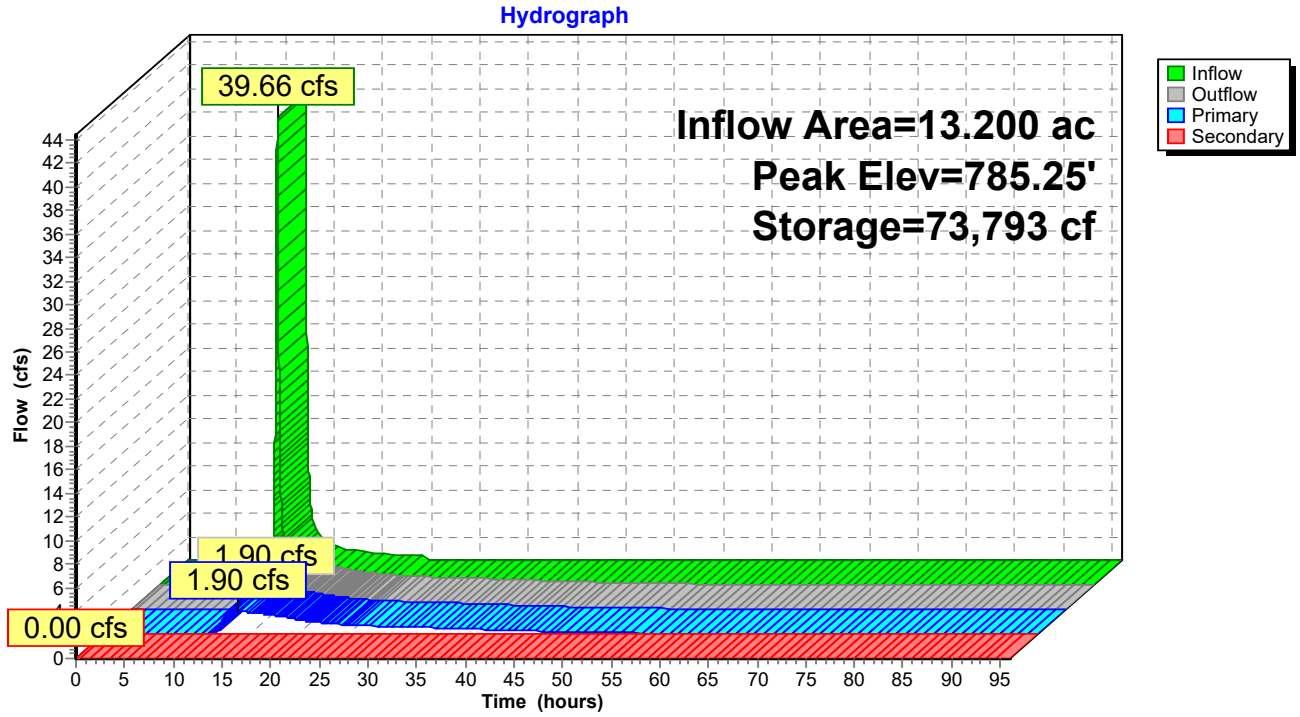
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

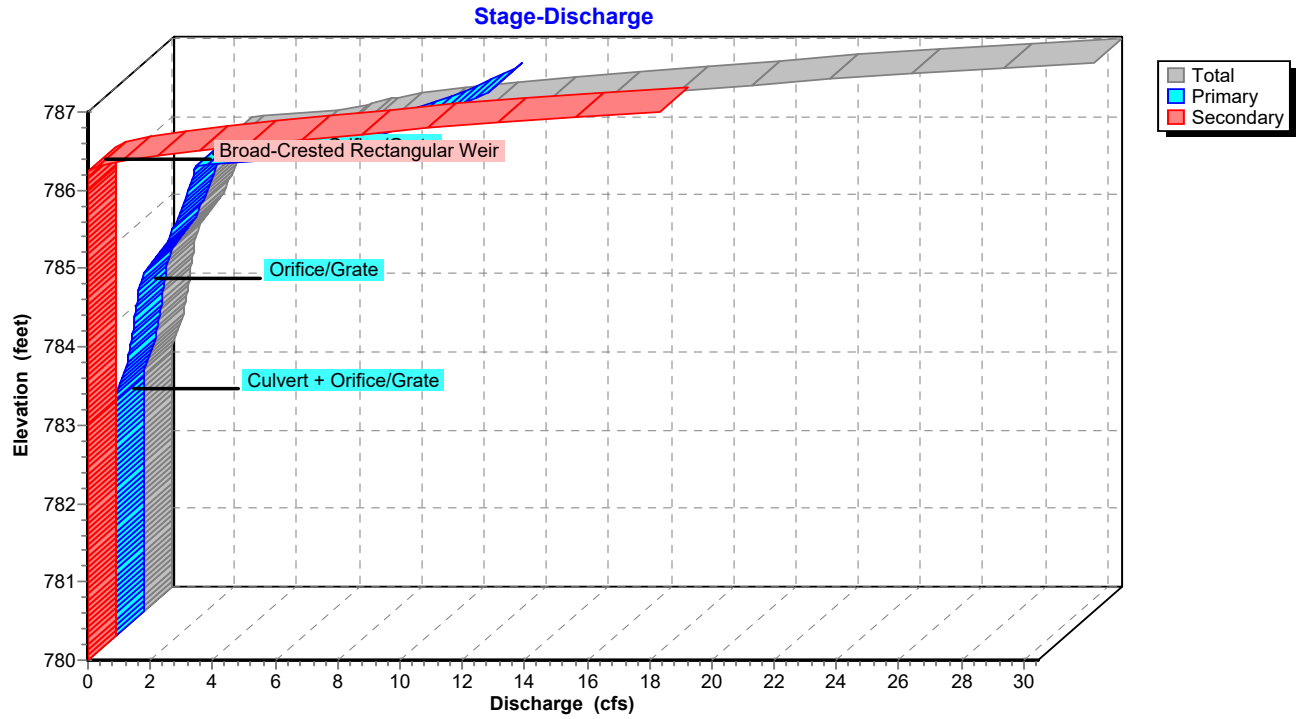
Primary OutFlow Max=1.90 cfs @ 13.73 hrs HW=785.25' (Free Discharge)
└**1=Culvert** (Passes 1.90 cfs of 8.22 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.94 cfs @ 6.88 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.96 cfs @ 3.59 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

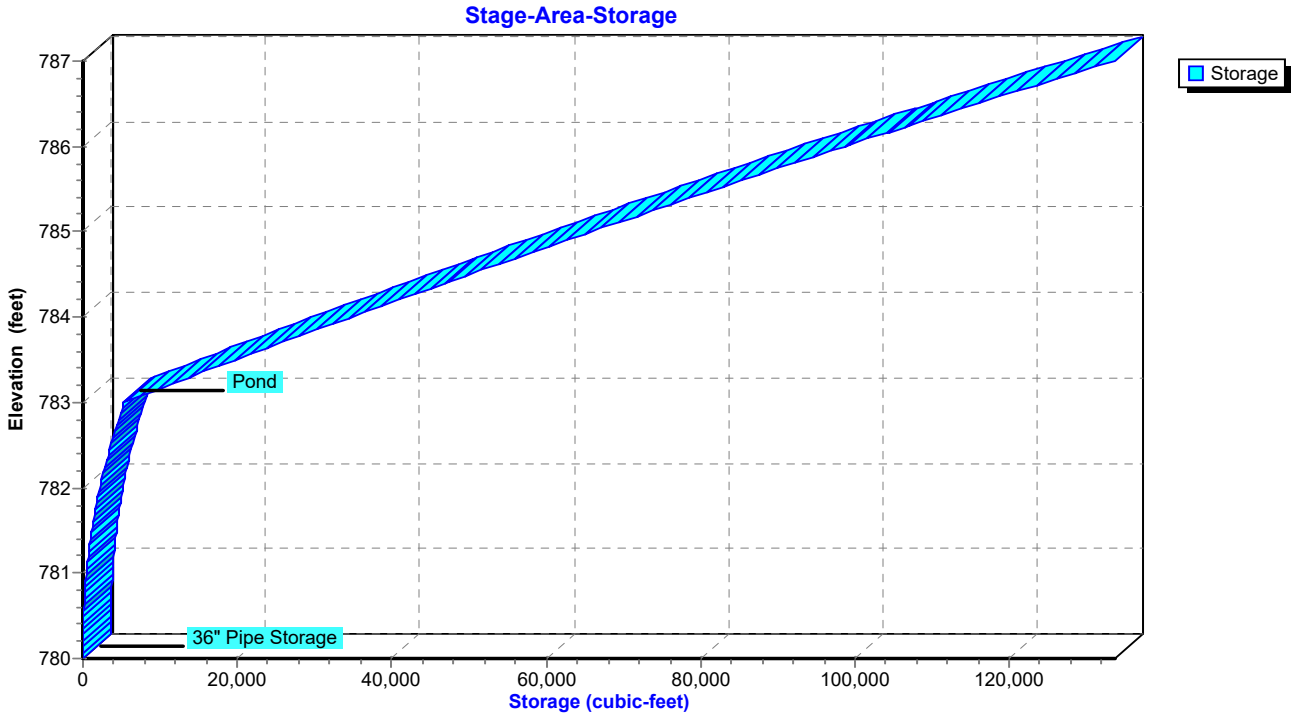
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

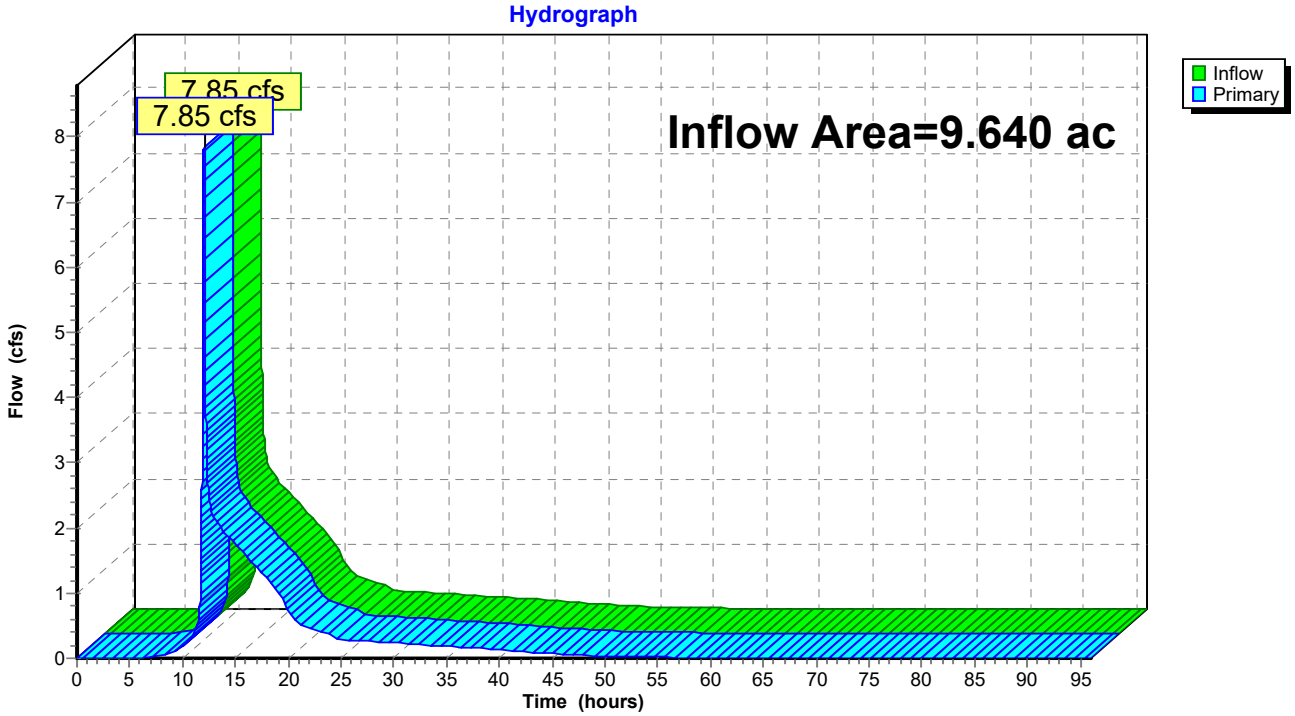


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 2.25" for 5Yr. event
Inflow = 7.85 cfs @ 12.03 hrs, Volume= 1.809 af
Primary = 7.85 cfs @ 12.03 hrs, Volume= 1.809 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

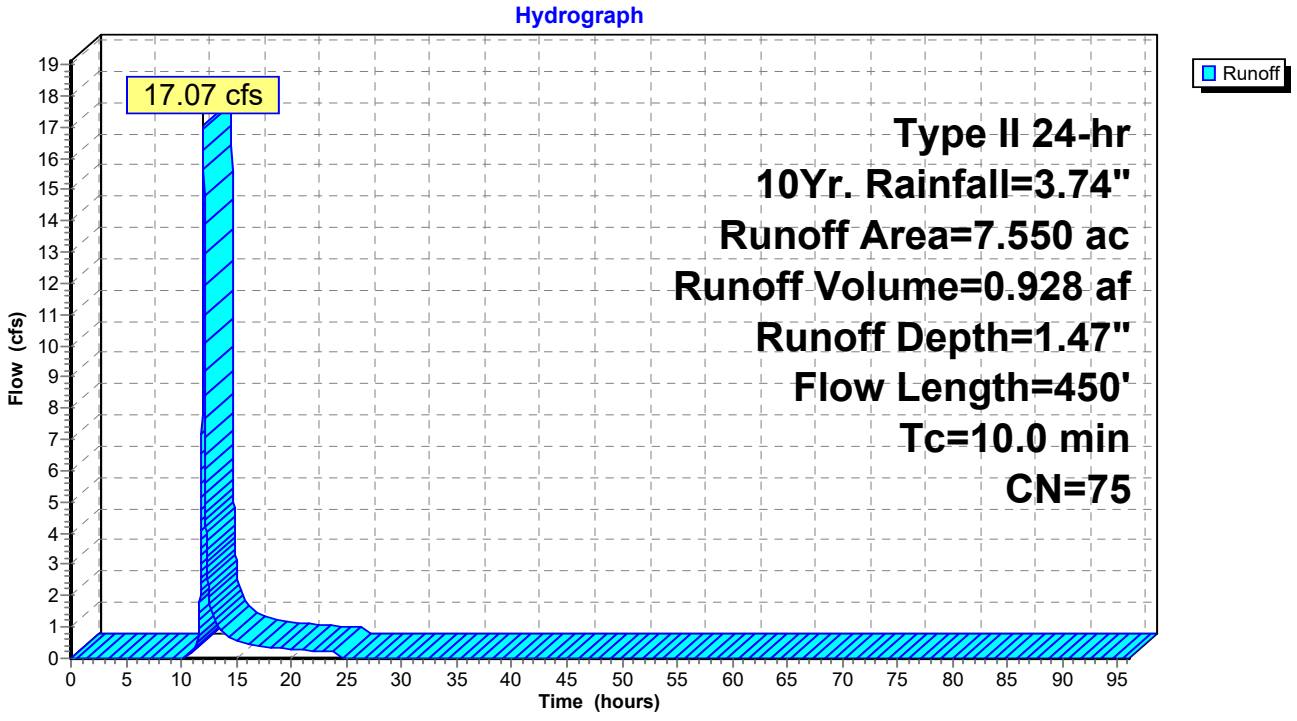
Runoff = 17.07 cfs @ 12.02 hrs, Volume= 0.928 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

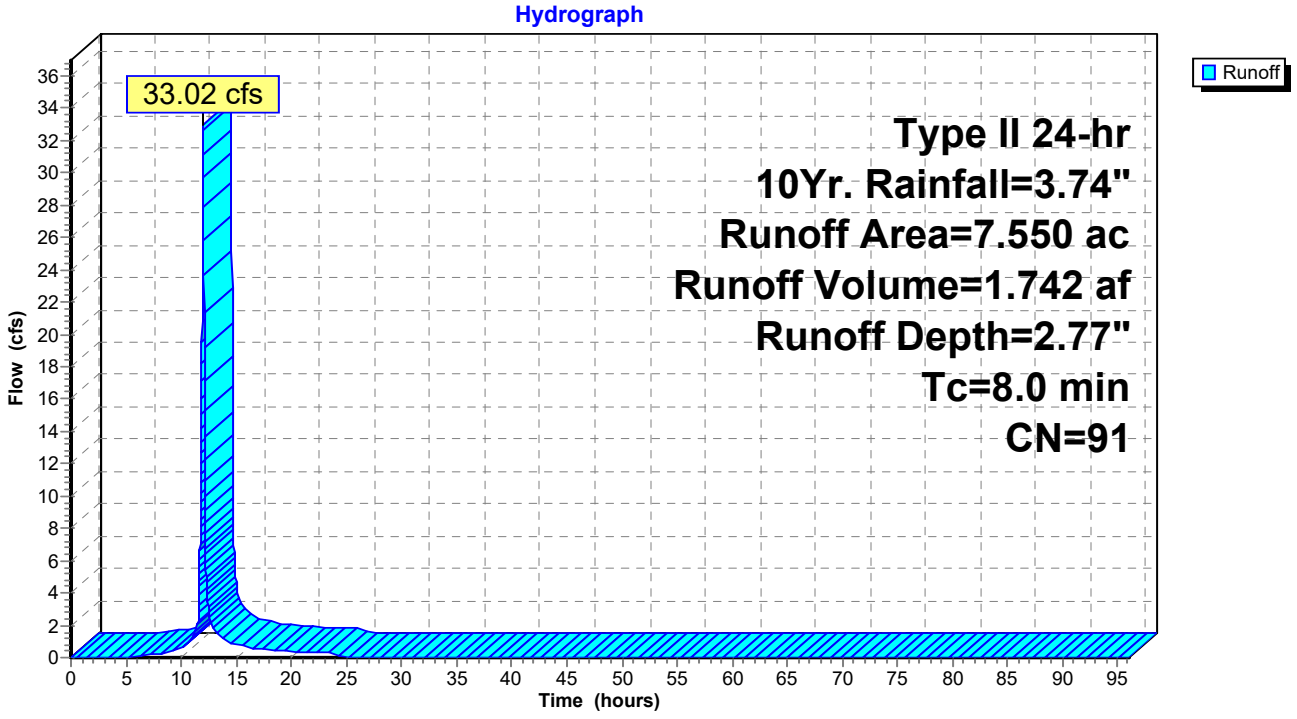
Runoff = 33.02 cfs @ 11.99 hrs, Volume= 1.742 af, Depth= 2.77"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

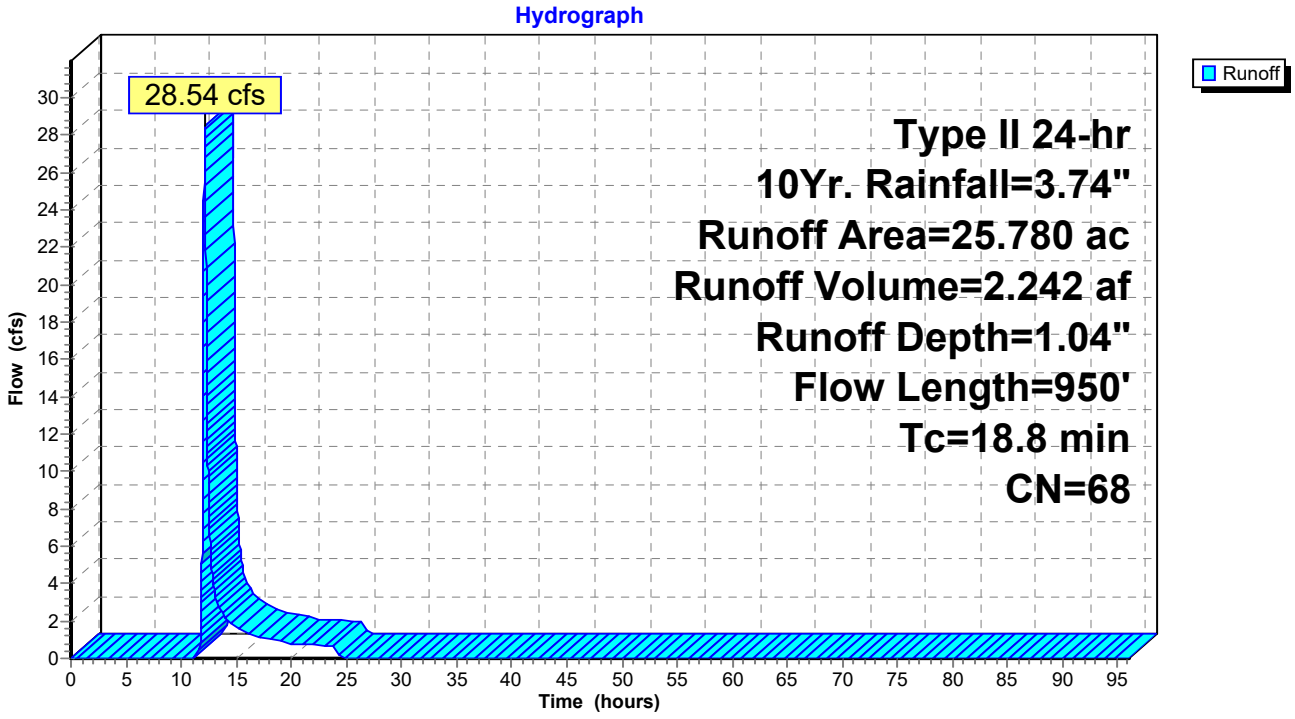
Runoff = 28.54 cfs @ 12.13 hrs, Volume= 2.242 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

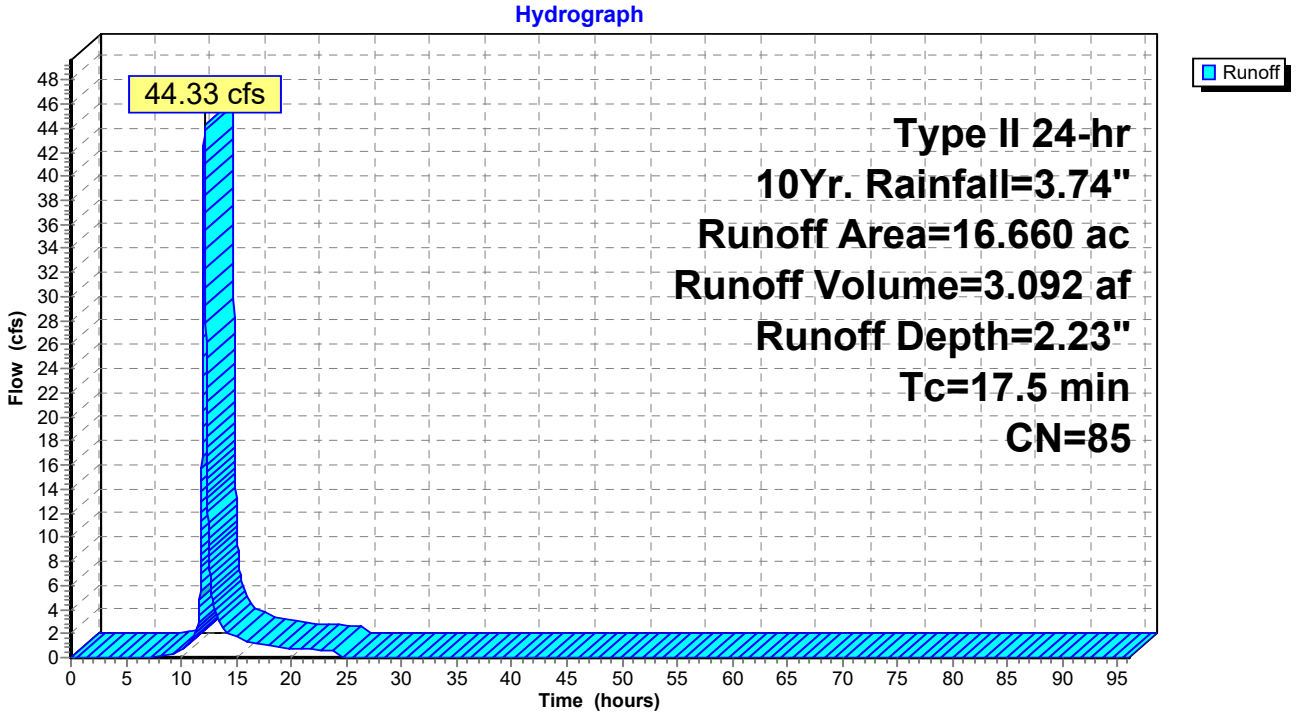
Runoff = 44.33 cfs @ 12.10 hrs, Volume= 3.092 af, Depth= 2.23"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

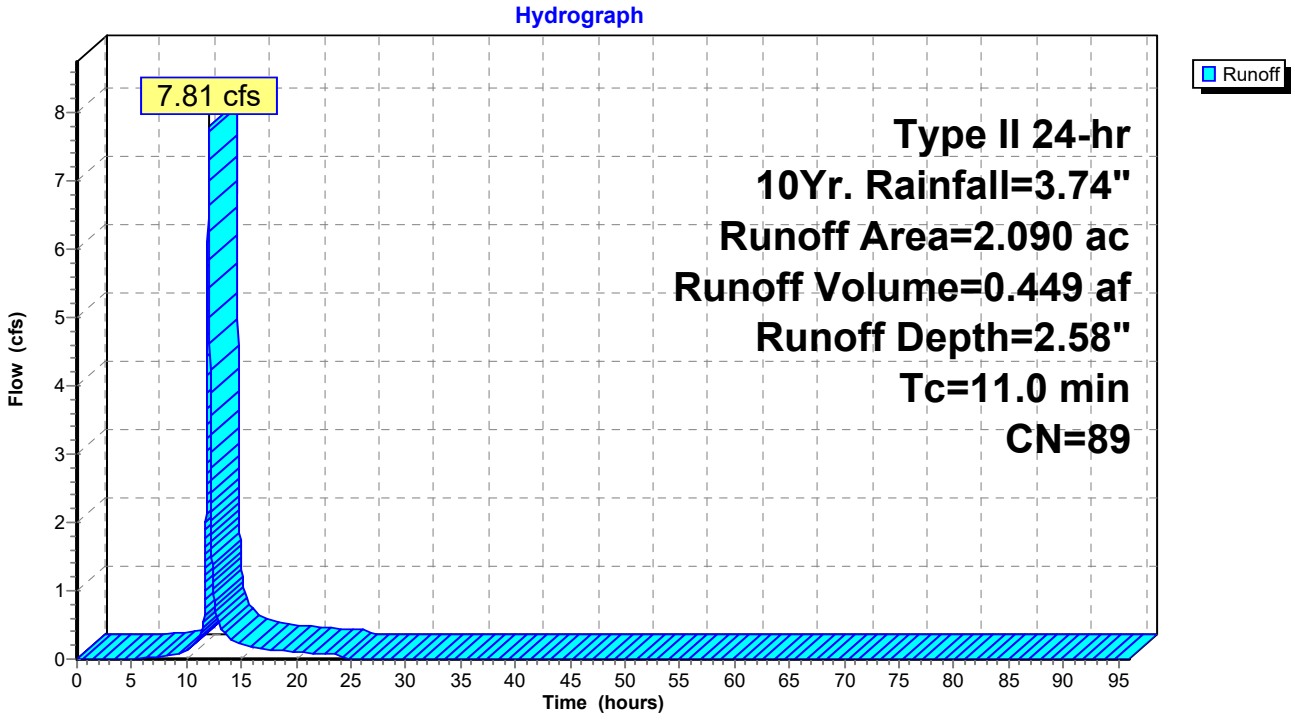
Runoff = 7.81 cfs @ 12.02 hrs, Volume= 0.449 af, Depth= 2.58"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

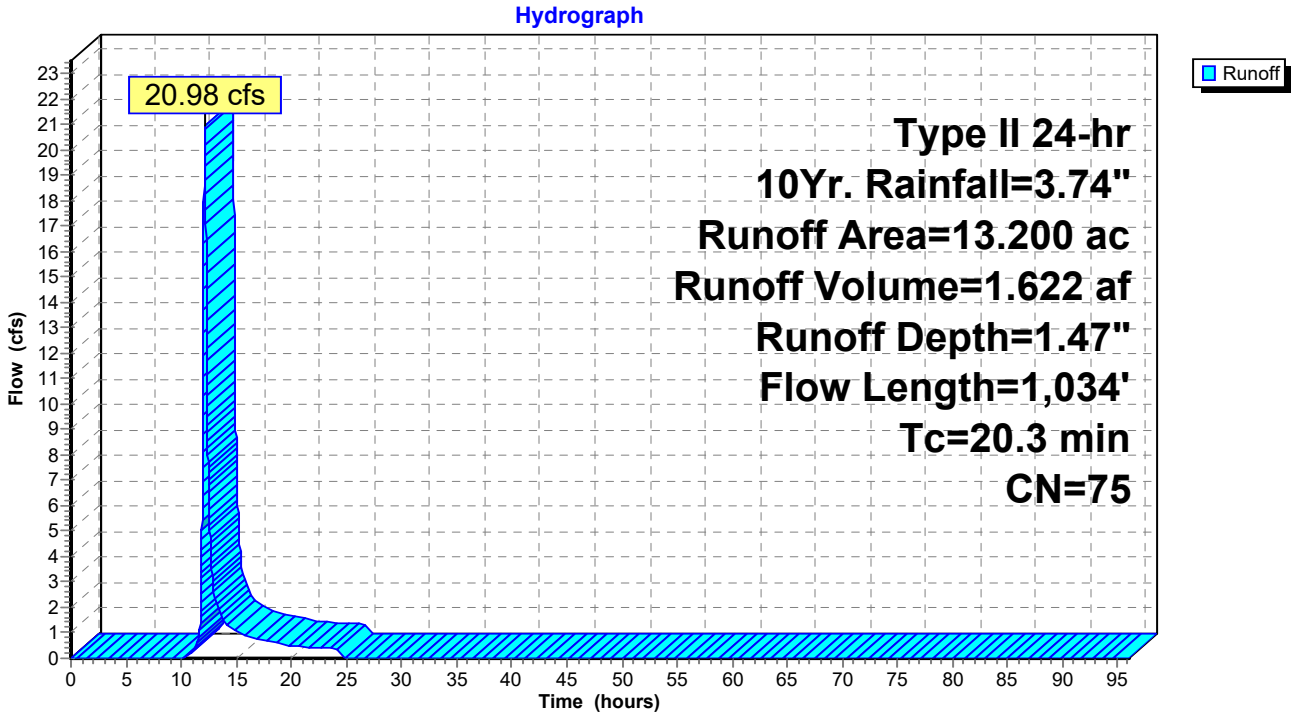
Runoff = 20.98 cfs @ 12.14 hrs, Volume= 1.622 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

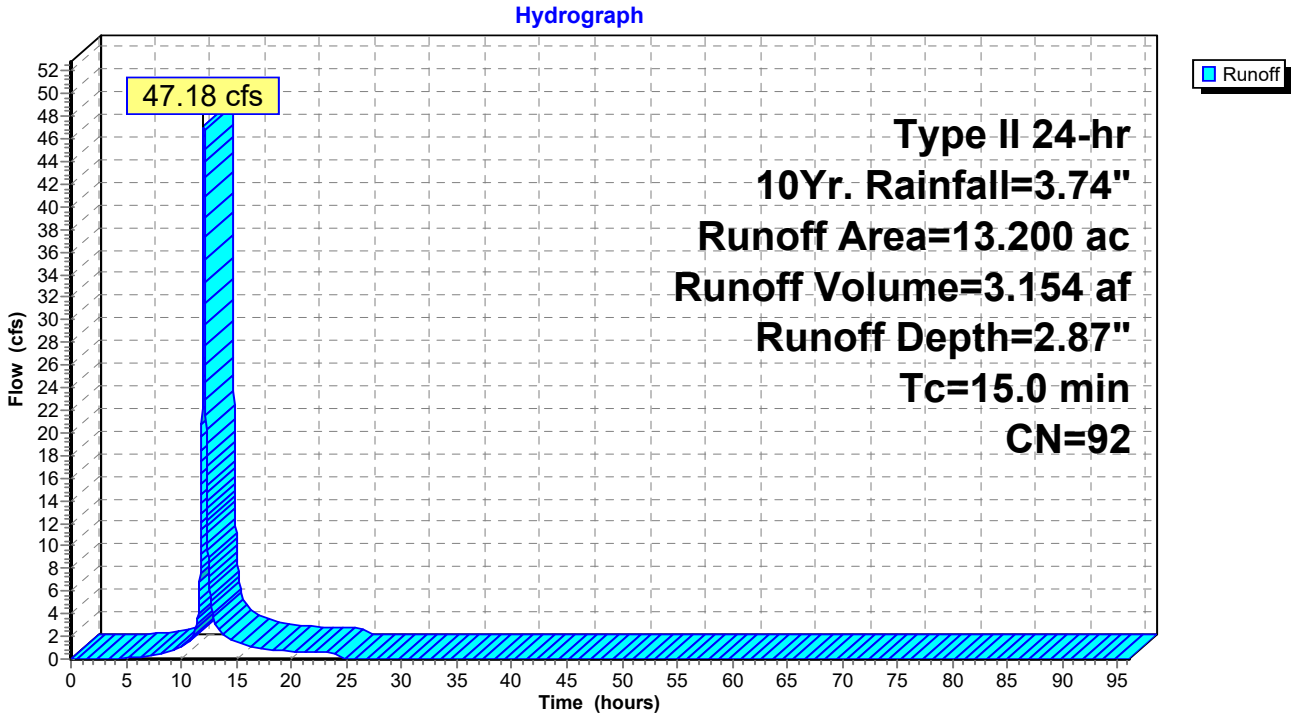
Runoff = 47.18 cfs @ 12.07 hrs, Volume= 3.154 af, Depth= 2.87"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 2.77" for 10Yr. event
Inflow = 33.02 cfs @ 11.99 hrs, Volume= 1.742 af
Outflow = 2.01 cfs @ 12.83 hrs, Volume= 1.738 af, Atten= 94%, Lag= 50.2 min
Primary = 2.01 cfs @ 12.83 hrs, Volume= 1.738 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 787.98' @ 12.83 hrs Surf.Area= 18,780 sf Storage= 43,837 cf

Plug-Flow detention time= 436.1 min calculated for 1.738 af (100% of inflow)
Center-of-Mass det. time= 434.7 min (1,230.2 - 795.5)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

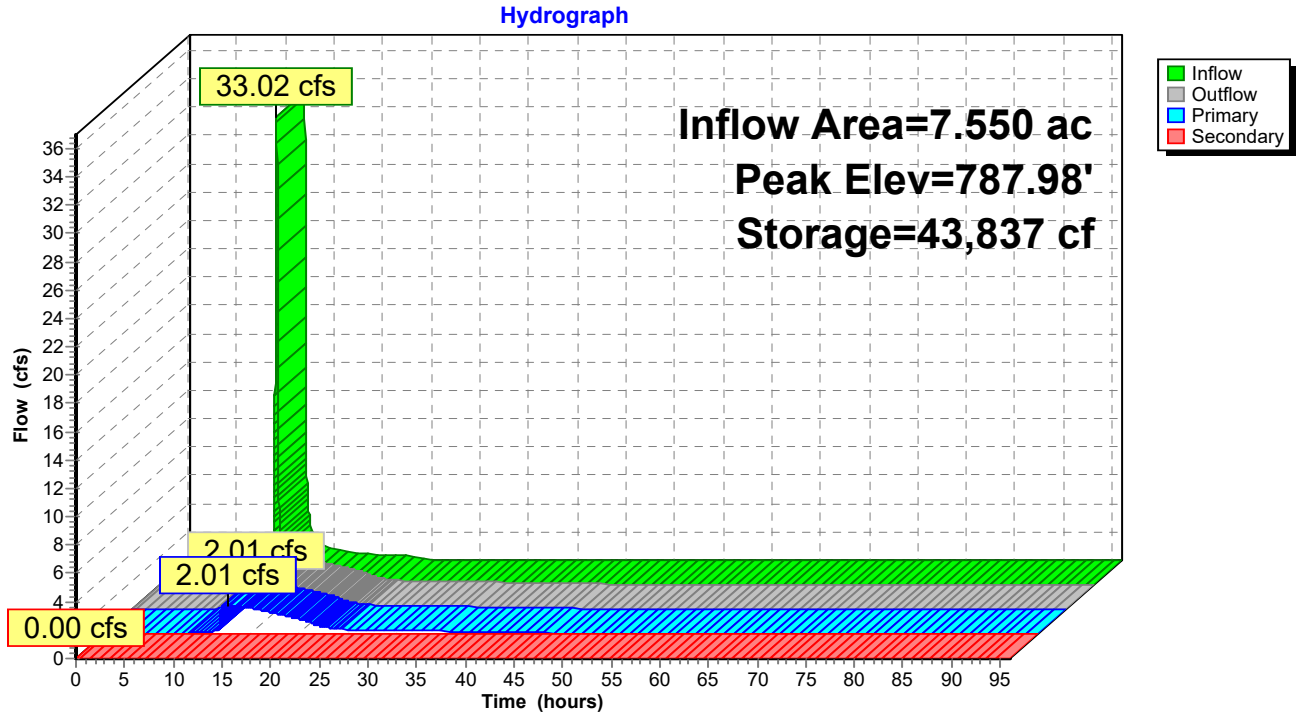
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

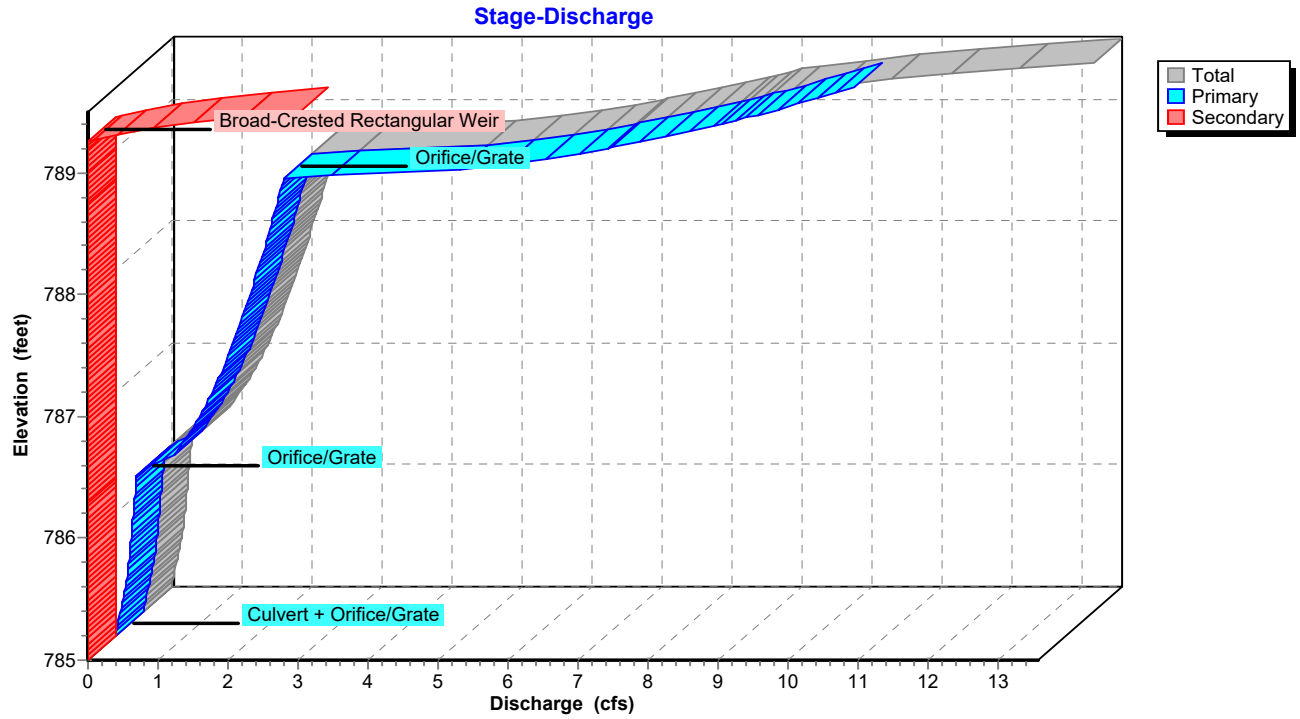
Primary OutFlow Max=2.01 cfs @ 12.83 hrs HW=787.98' (Free Discharge)
└**1=Culvert** (Passes 2.01 cfs of 9.06 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.45 cfs @ 8.12 fps)
├**3=Orifice/Grate** (Orifice Controls 1.56 cfs @ 6.24 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

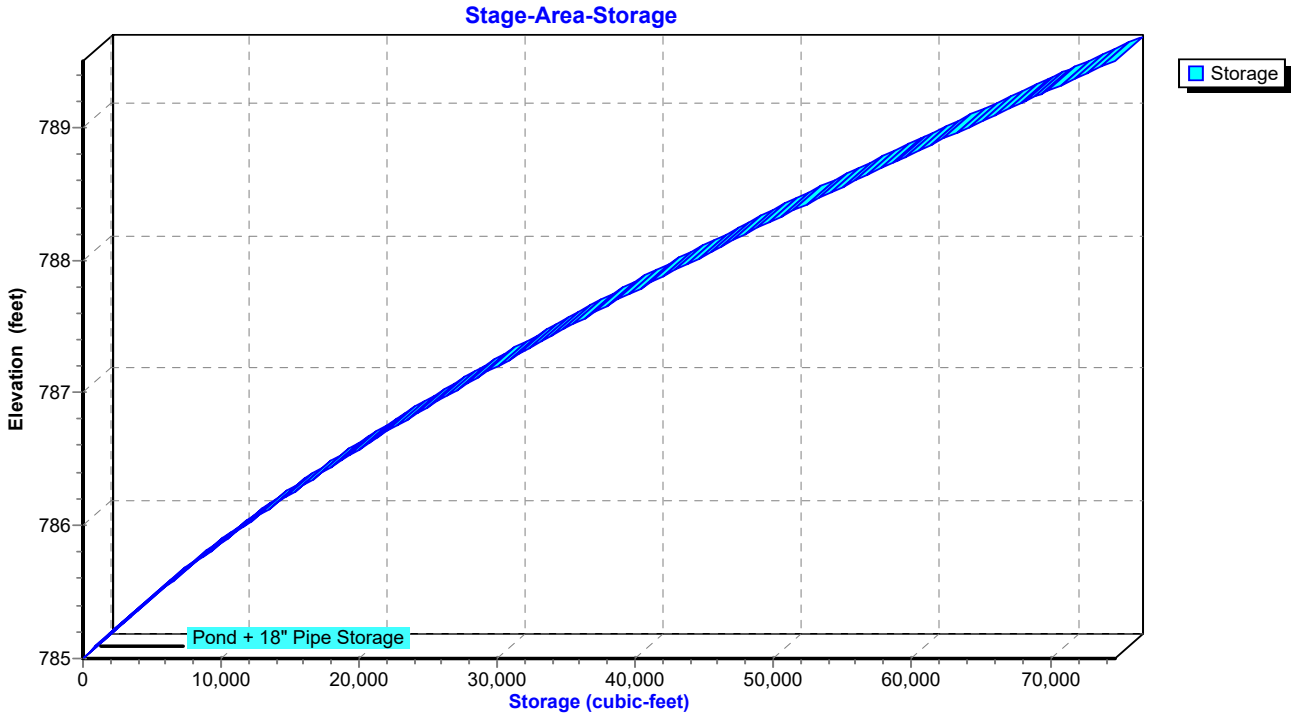
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 2.41" for 10Yr. event
Inflow = 52.47 cfs @ 12.08 hrs, Volume= 5.279 af
Outflow = 2.63 cfs @ 17.74 hrs, Volume= 5.262 af, Atten= 95%, Lag= 339.3 min
Primary = 2.63 cfs @ 17.74 hrs, Volume= 5.262 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 784.85' @ 17.74 hrs Surf.Area= 30,980 sf Storage= 121,090 cf

Plug-Flow detention time= 731.7 min calculated for 5.262 af (100% of inflow)
Center-of-Mass det. time= 721.6 min (1,679.5 - 957.9)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

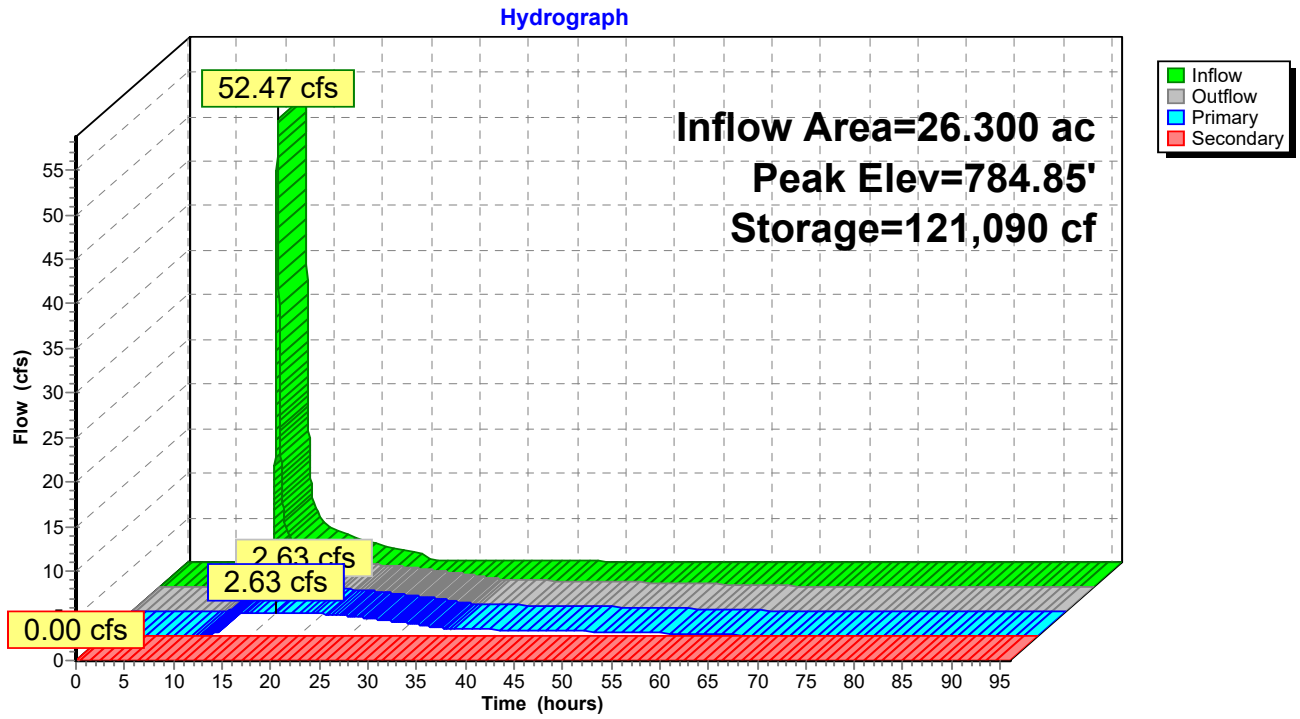
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

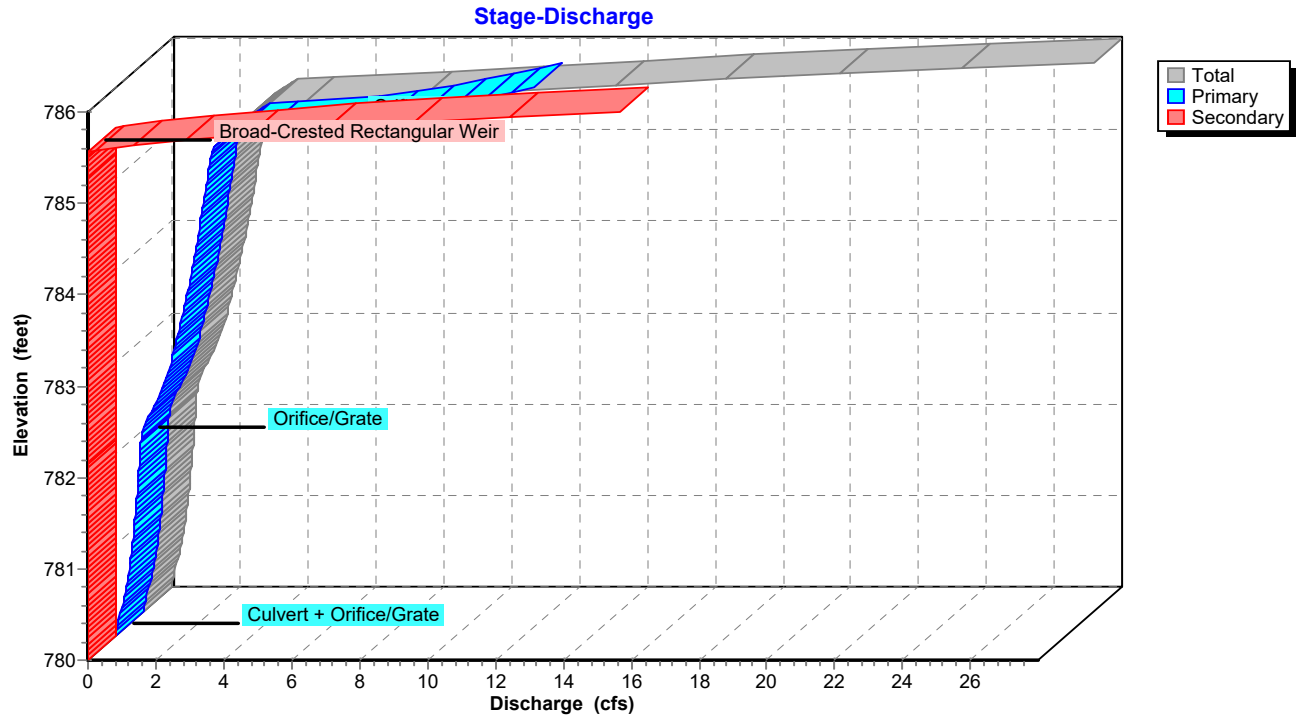
Primary OutFlow Max=2.63 cfs @ 17.74 hrs HW=784.85' (Free Discharge)
└**1=Culvert** (Passes 2.63 cfs of 23.45 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.15 cfs @ 10.40 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.48 cfs @ 7.54 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

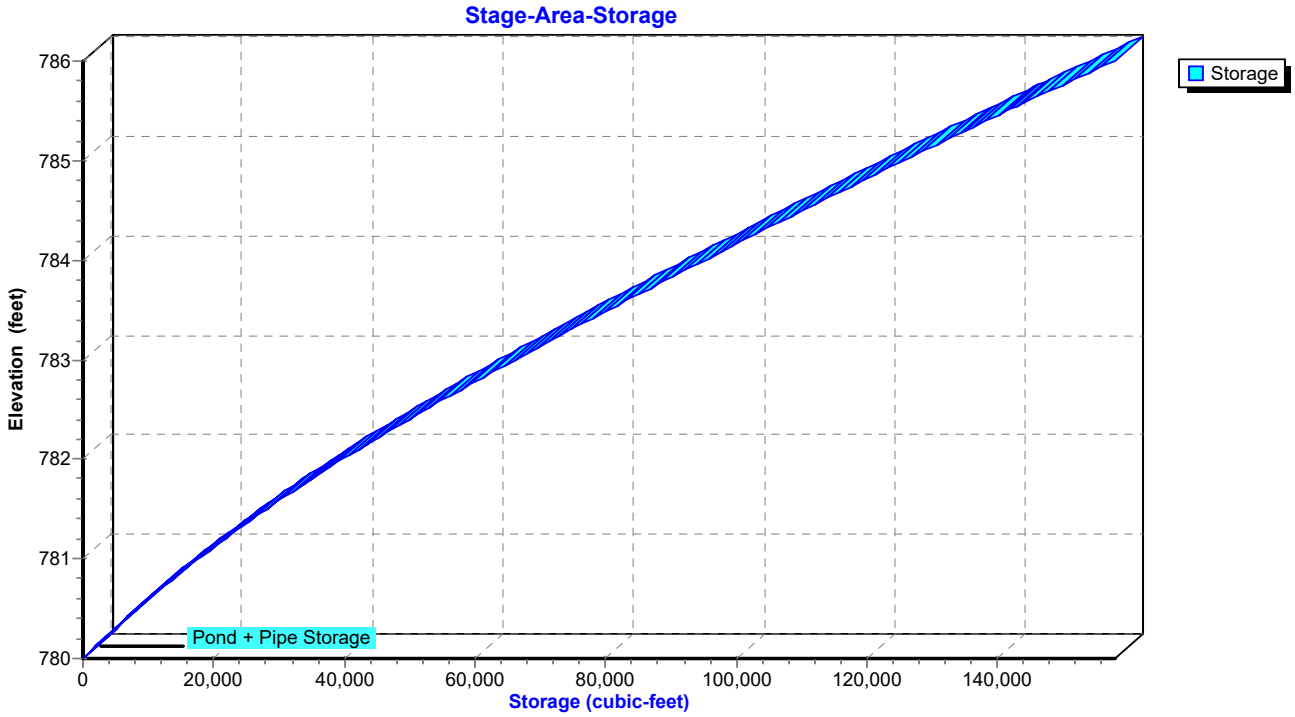
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 2.87" for 10Yr. event
Inflow = 47.18 cfs @ 12.07 hrs, Volume= 3.154 af
Outflow = 2.32 cfs @ 13.65 hrs, Volume= 3.003 af, Atten= 95%, Lag= 94.9 min
Primary = 2.32 cfs @ 13.65 hrs, Volume= 3.003 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 785.69' @ 13.65 hrs Surf.Area= 33,026 sf Storage= 88,359 cf

Plug-Flow detention time= 718.9 min calculated for 3.002 af (95% of inflow)
Center-of-Mass det. time= 691.3 min (1,488.7 - 797.4)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

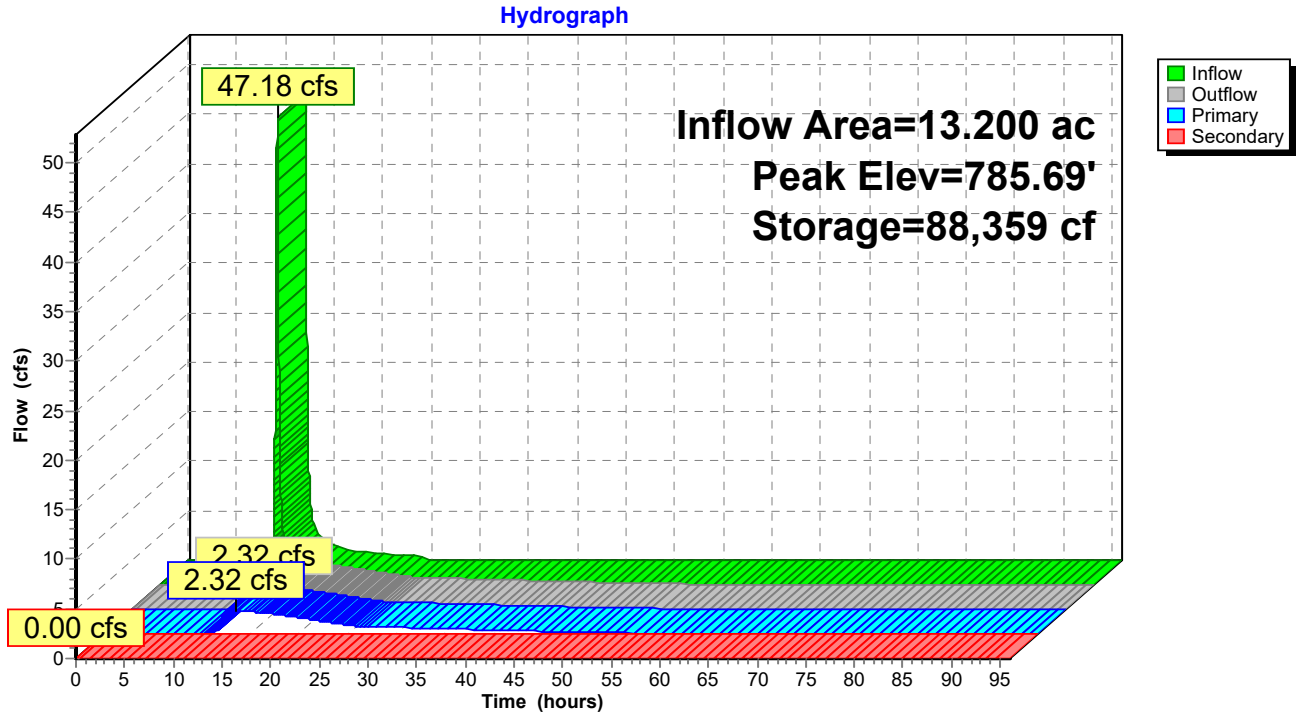
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

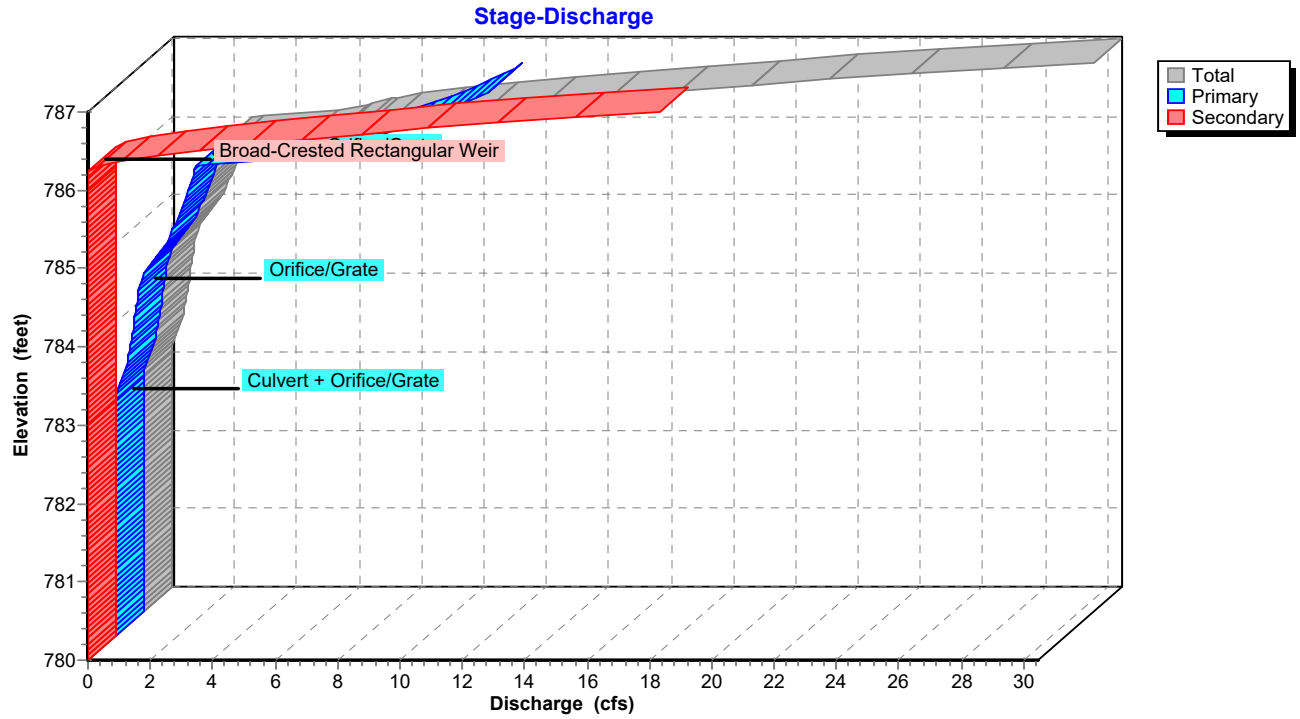
Primary OutFlow Max=2.32 cfs @ 13.65 hrs HW=785.69' (Free Discharge)
└**1=Culvert** (Passes 2.32 cfs of 9.37 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.04 cfs @ 7.59 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.29 cfs @ 4.82 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

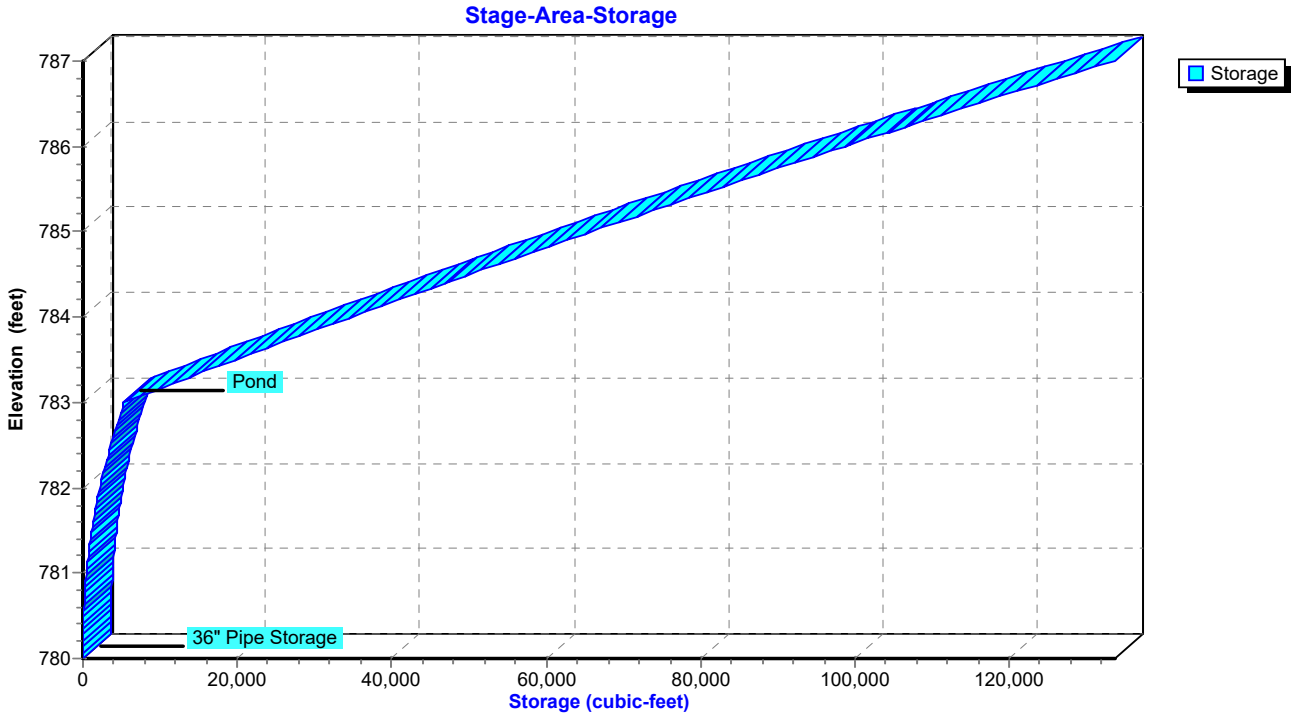
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

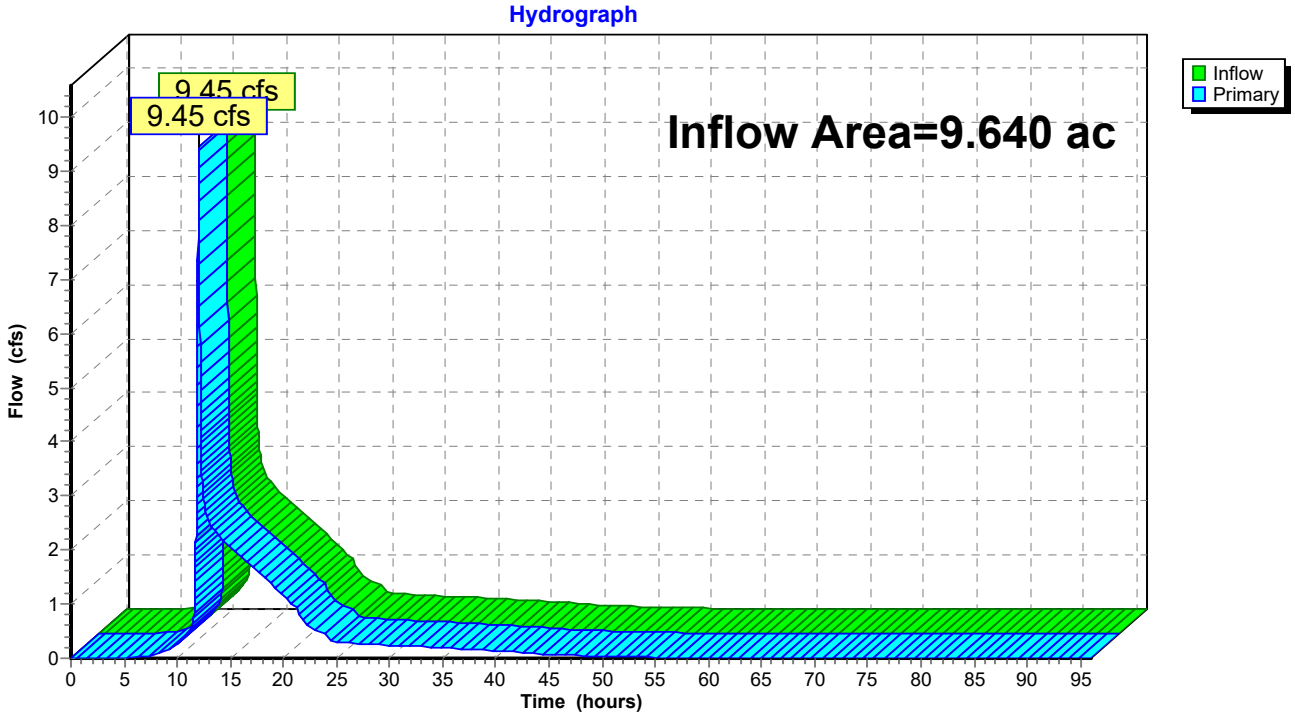


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 2.72" for 10Yr. event
Inflow = 9.45 cfs @ 12.03 hrs, Volume= 2.188 af
Primary = 9.45 cfs @ 12.03 hrs, Volume= 2.188 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

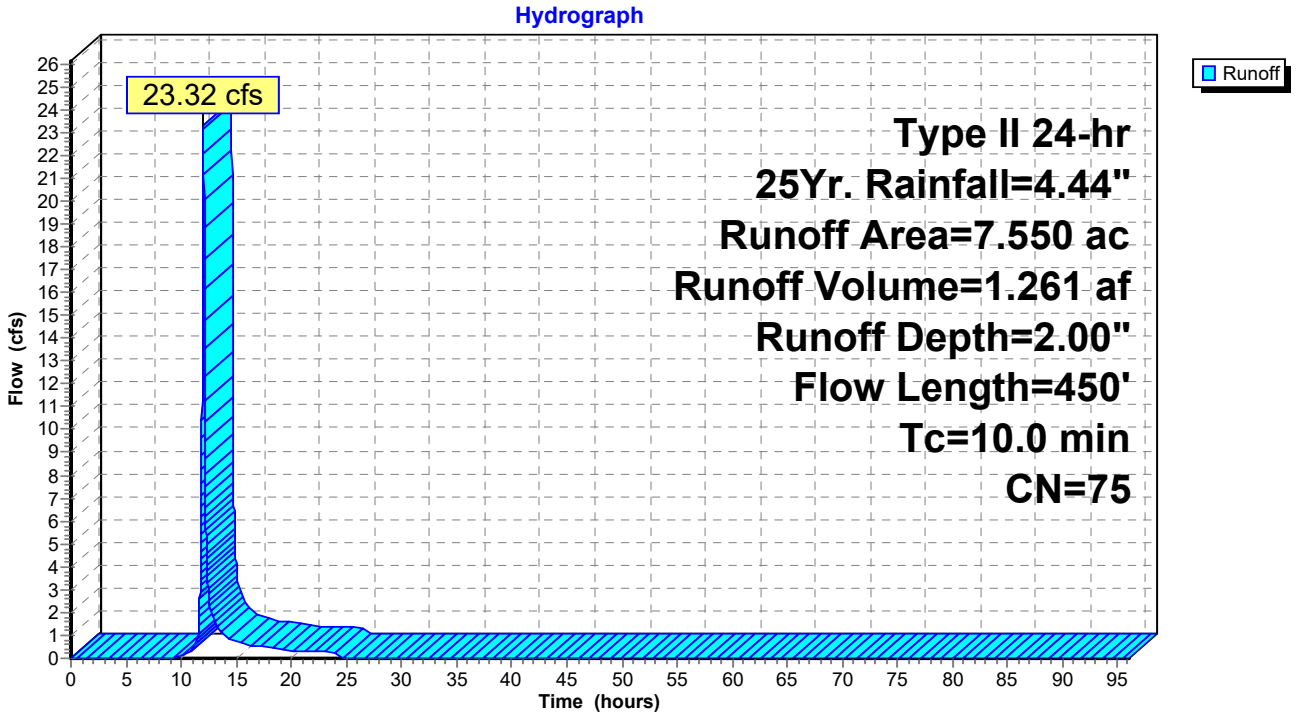
Runoff = 23.32 cfs @ 12.02 hrs, Volume= 1.261 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

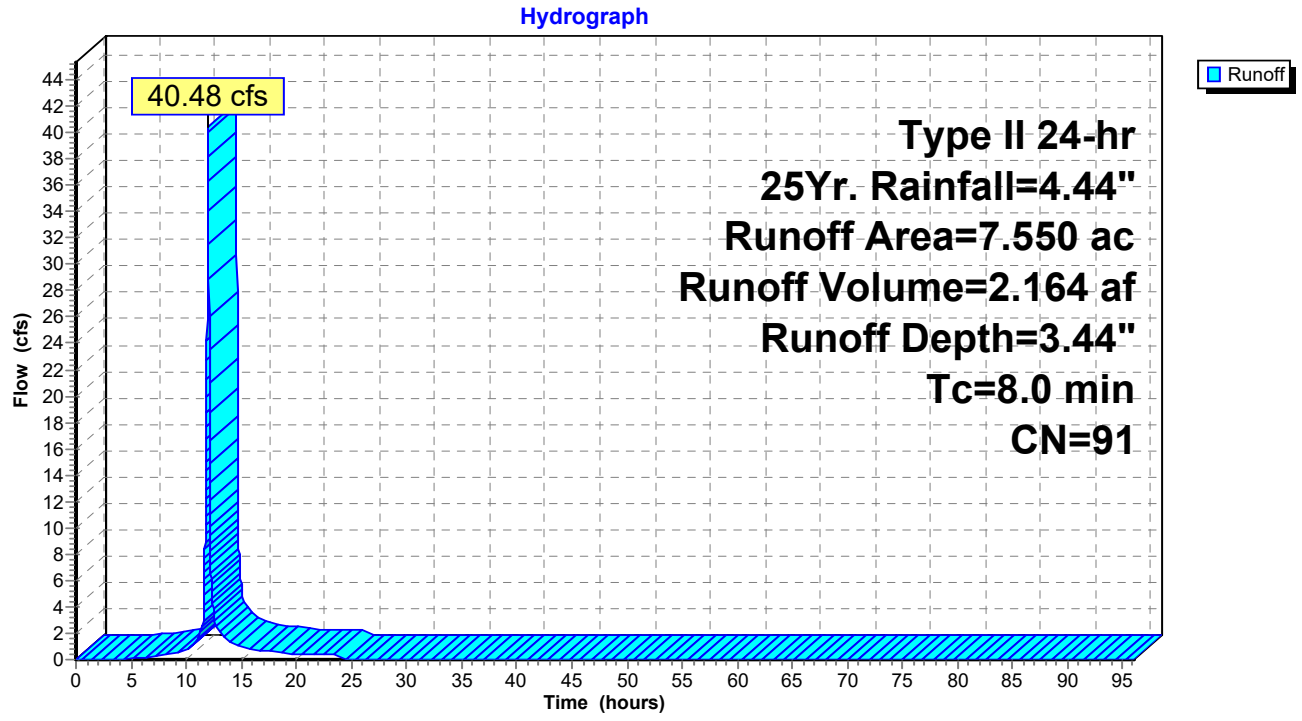
Runoff = 40.48 cfs @ 11.99 hrs, Volume= 2.164 af, Depth= 3.44"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

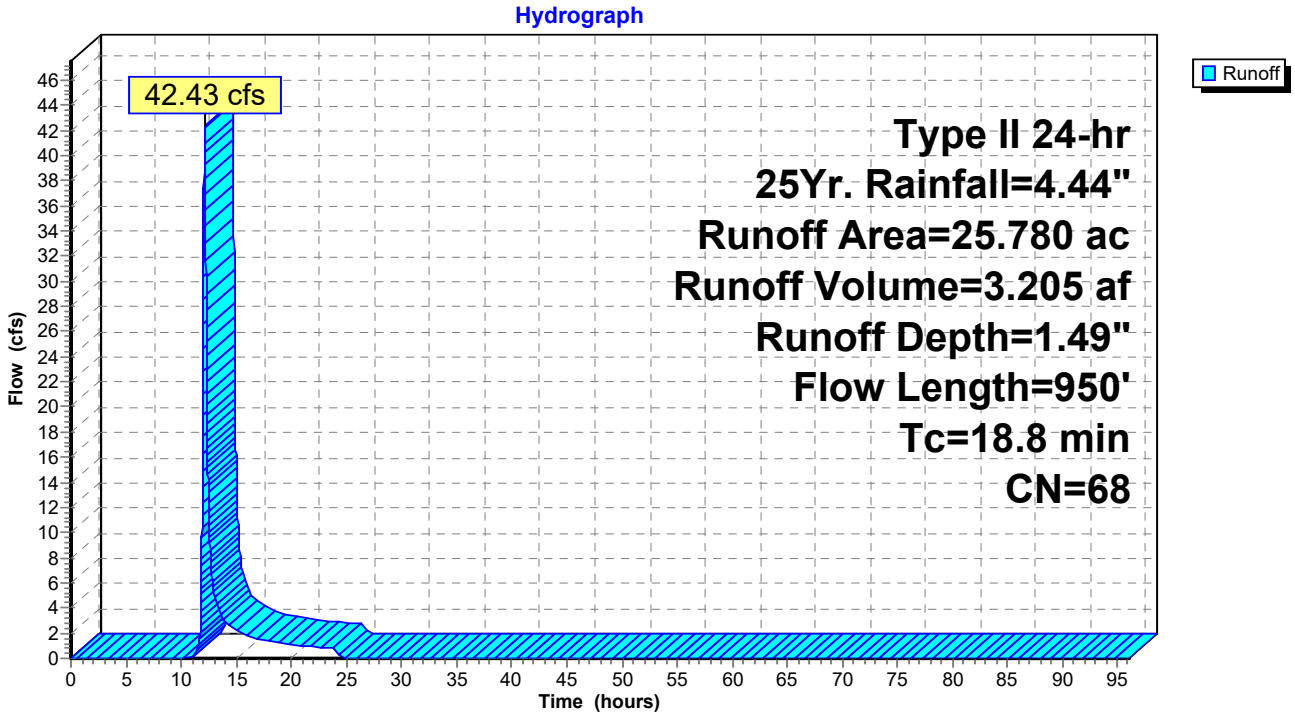
Runoff = 42.43 cfs @ 12.13 hrs, Volume= 3.205 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

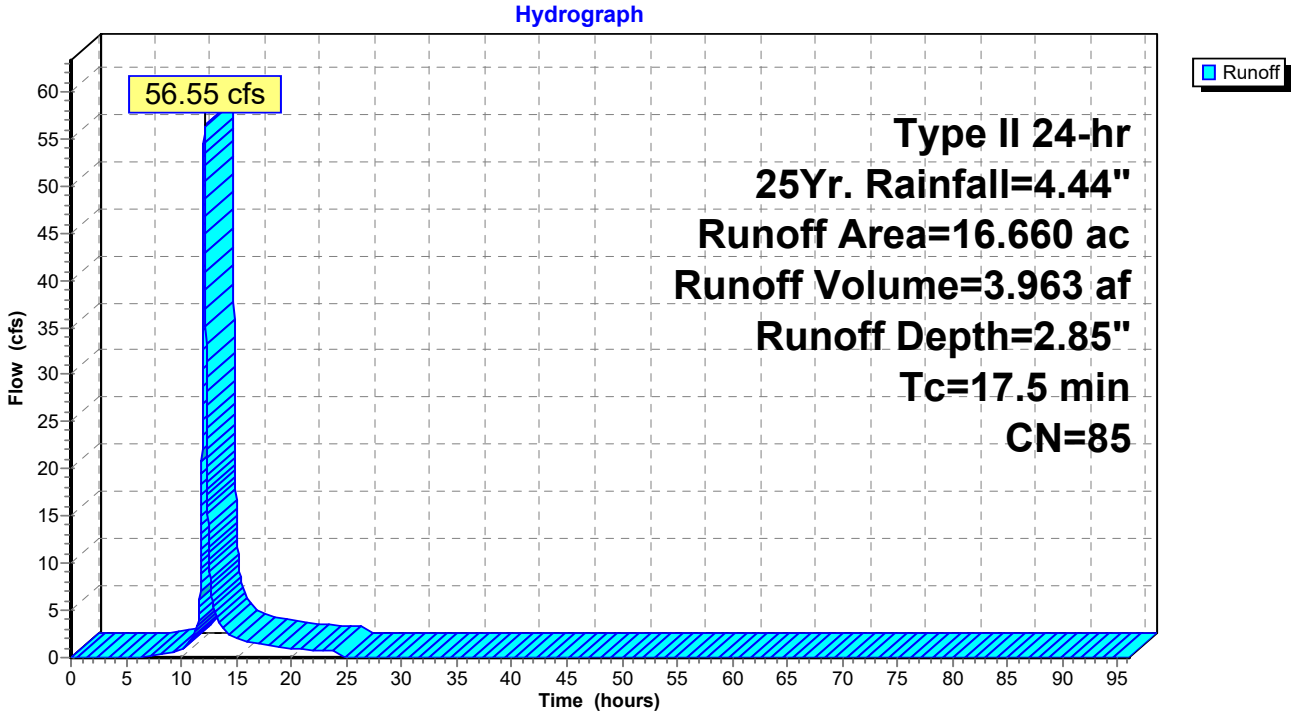
Runoff = 56.55 cfs @ 12.10 hrs, Volume= 3.963 af, Depth= 2.85"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

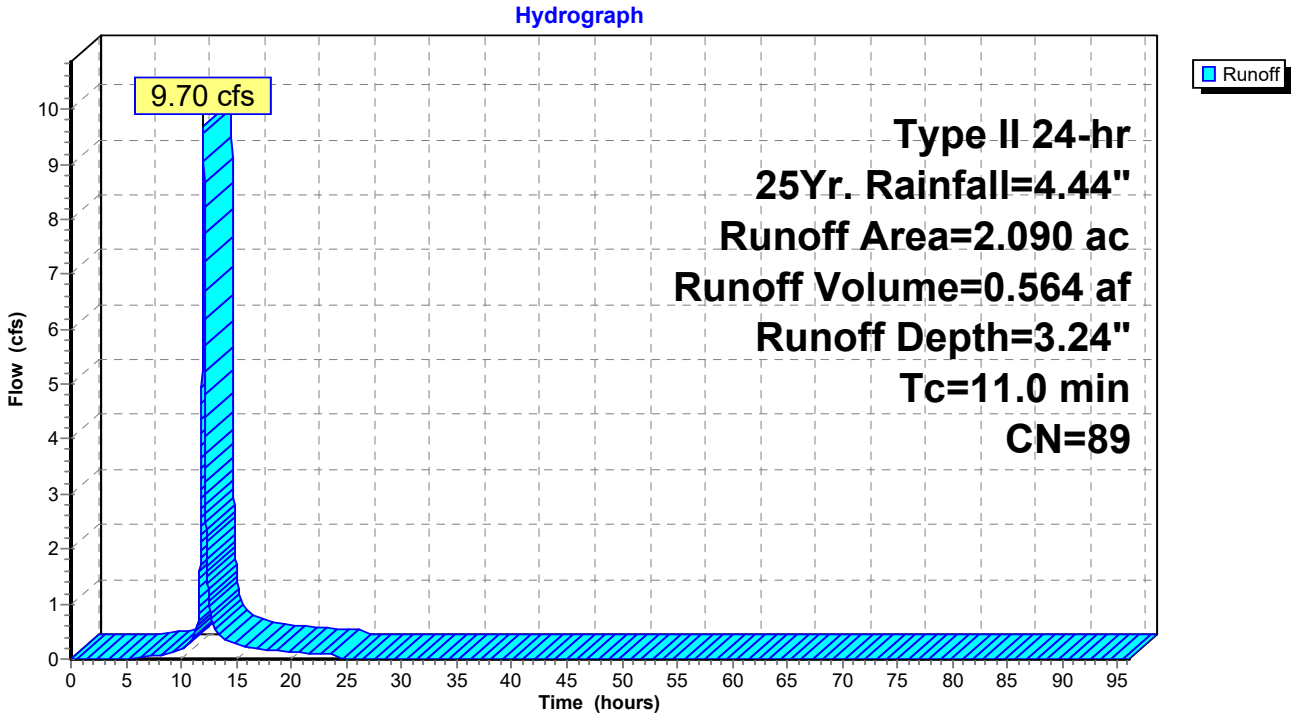
Runoff = 9.70 cfs @ 12.02 hrs, Volume= 0.564 af, Depth= 3.24"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

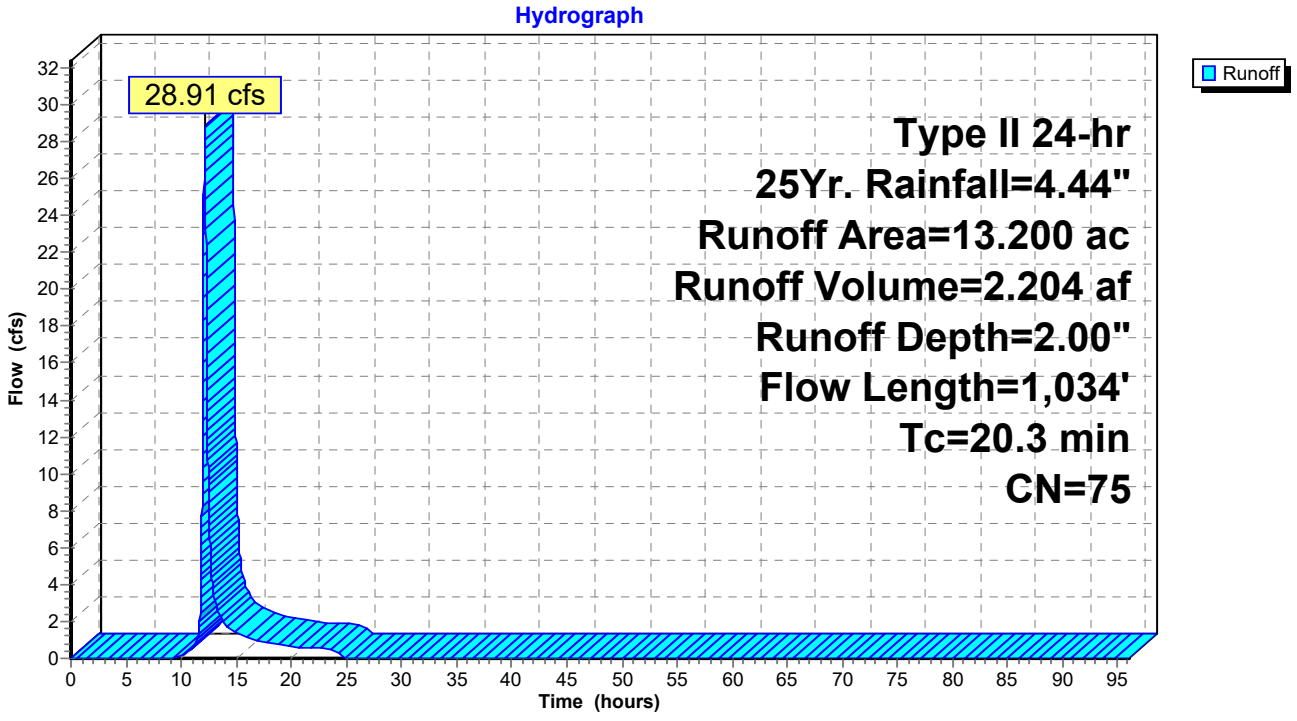
Runoff = 28.91 cfs @ 12.14 hrs, Volume= 2.204 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

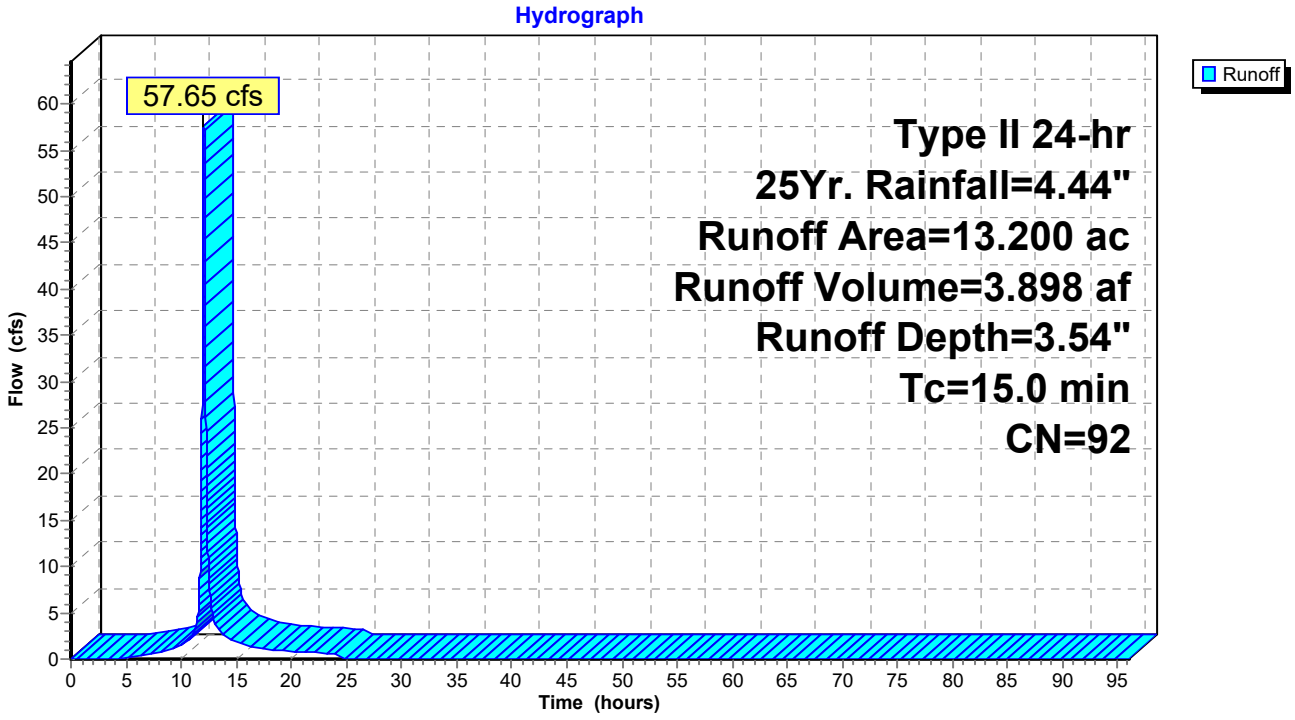
Runoff = 57.65 cfs @ 12.06 hrs, Volume= 3.898 af, Depth= 3.54"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 3.44" for 25Yr. event
Inflow = 40.48 cfs @ 11.99 hrs, Volume= 2.164 af
Outflow = 2.31 cfs @ 12.90 hrs, Volume= 2.160 af, Atten= 94%, Lag= 54.6 min
Primary = 2.31 cfs @ 12.90 hrs, Volume= 2.160 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 788.57' @ 12.90 hrs Surf.Area= 19,939 sf Storage= 55,403 cf

Plug-Flow detention time= 424.9 min calculated for 2.160 af (100% of inflow)
Center-of-Mass det. time= 424.1 min (1,213.5 - 789.4)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

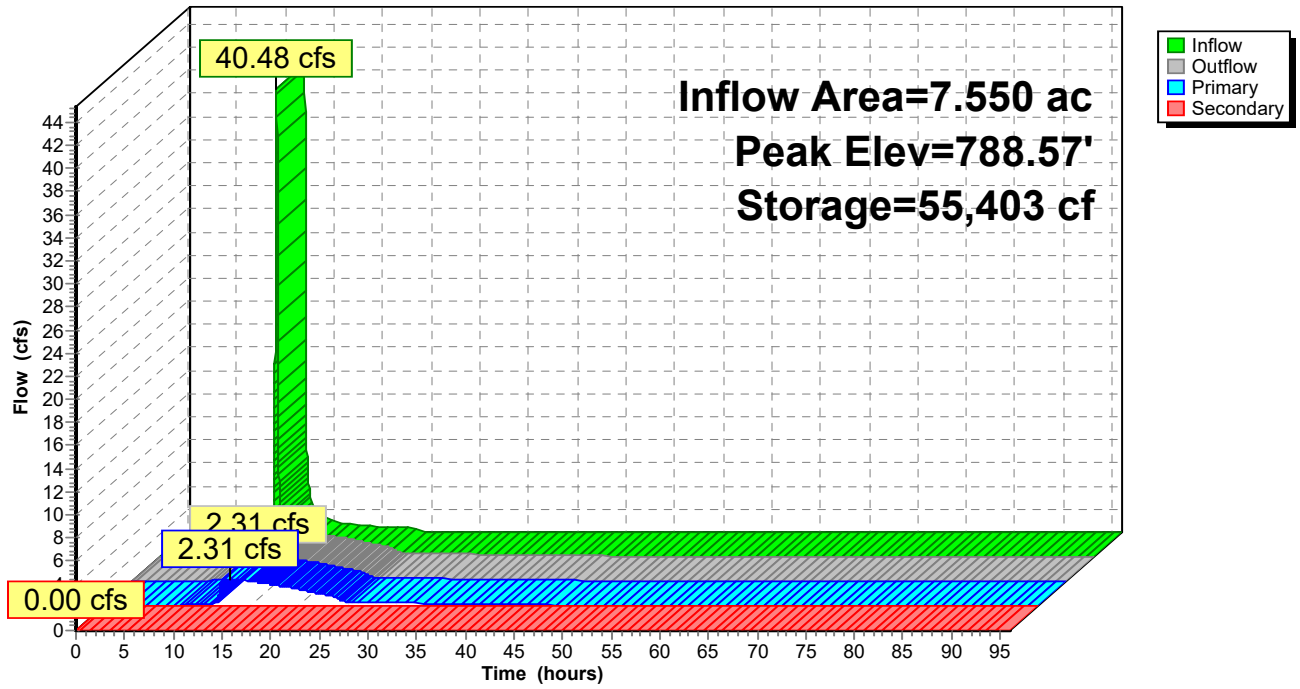
Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.31 cfs @ 12.90 hrs HW=788.57' (Free Discharge)
└**1=Culvert** (Passes 2.31 cfs of 10.15 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.50 cfs @ 8.93 fps)
├**3=Orifice/Grate** (Orifice Controls 1.82 cfs @ 7.26 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

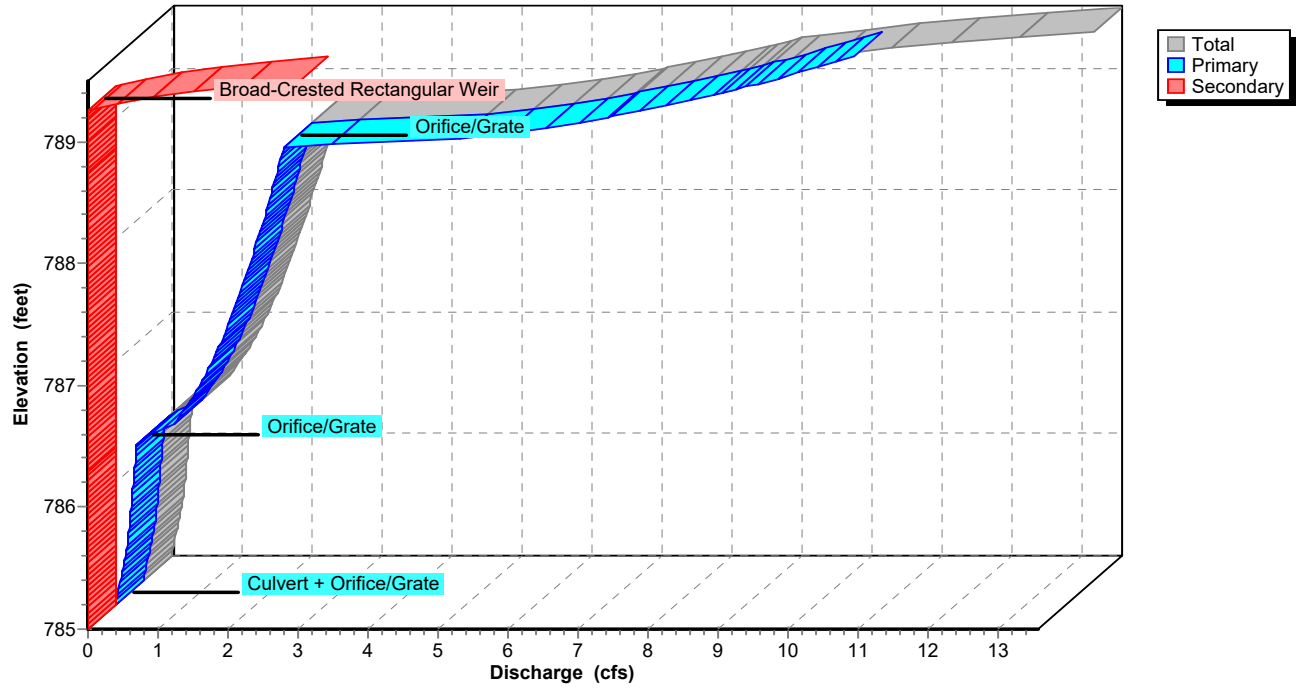
Pond 3P: Ortho 1 Pond

Hydrograph

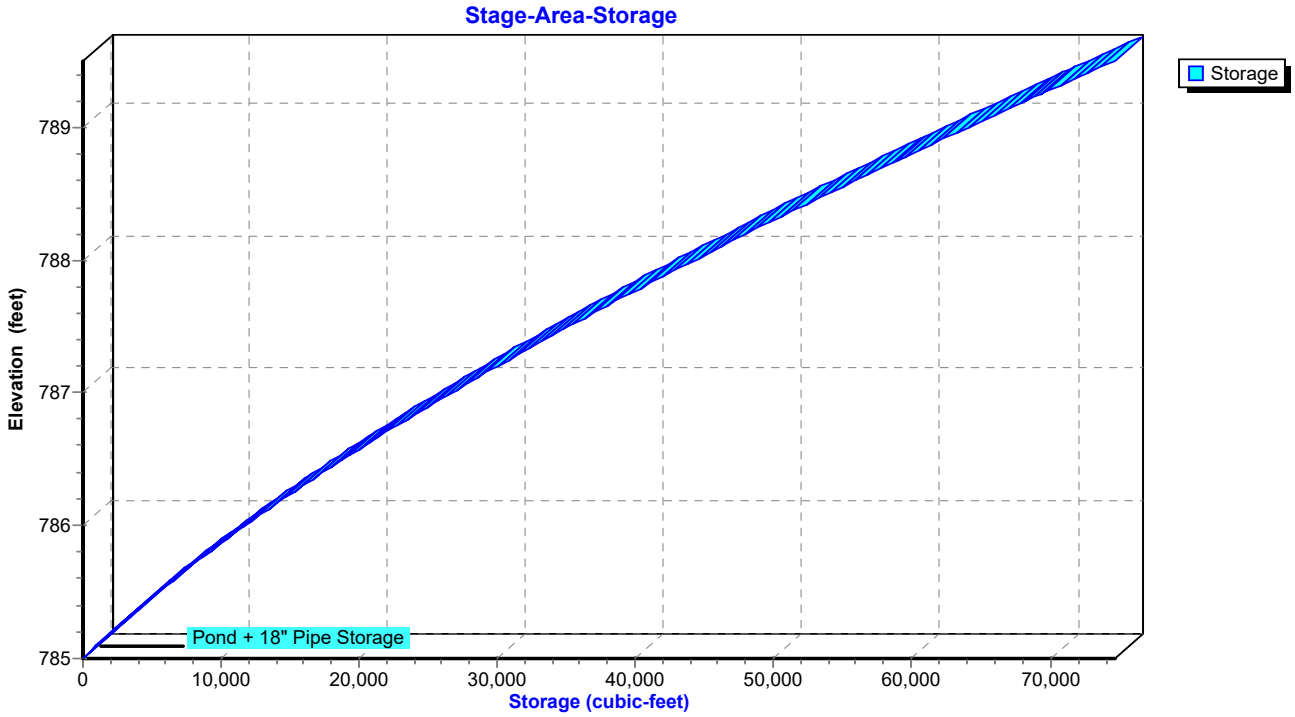


Pond 3P: Ortho 1 Pond

Stage-Discharge



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 3.05" for 25Yr. event
Inflow = 66.55 cfs @ 12.08 hrs, Volume= 6.687 af
Outflow = 4.69 cfs @ 14.74 hrs, Volume= 6.669 af, Atten= 93%, Lag= 159.7 min
Primary = 4.45 cfs @ 14.74 hrs, Volume= 6.641 af
Secondary = 0.23 cfs @ 14.74 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 785.58' @ 14.74 hrs Surf.Area= 32,565 sf Storage= 143,981 cf

Plug-Flow detention time= 704.4 min calculated for 6.668 af (100% of inflow)
Center-of-Mass det. time= 696.1 min (1,641.5 - 945.4)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

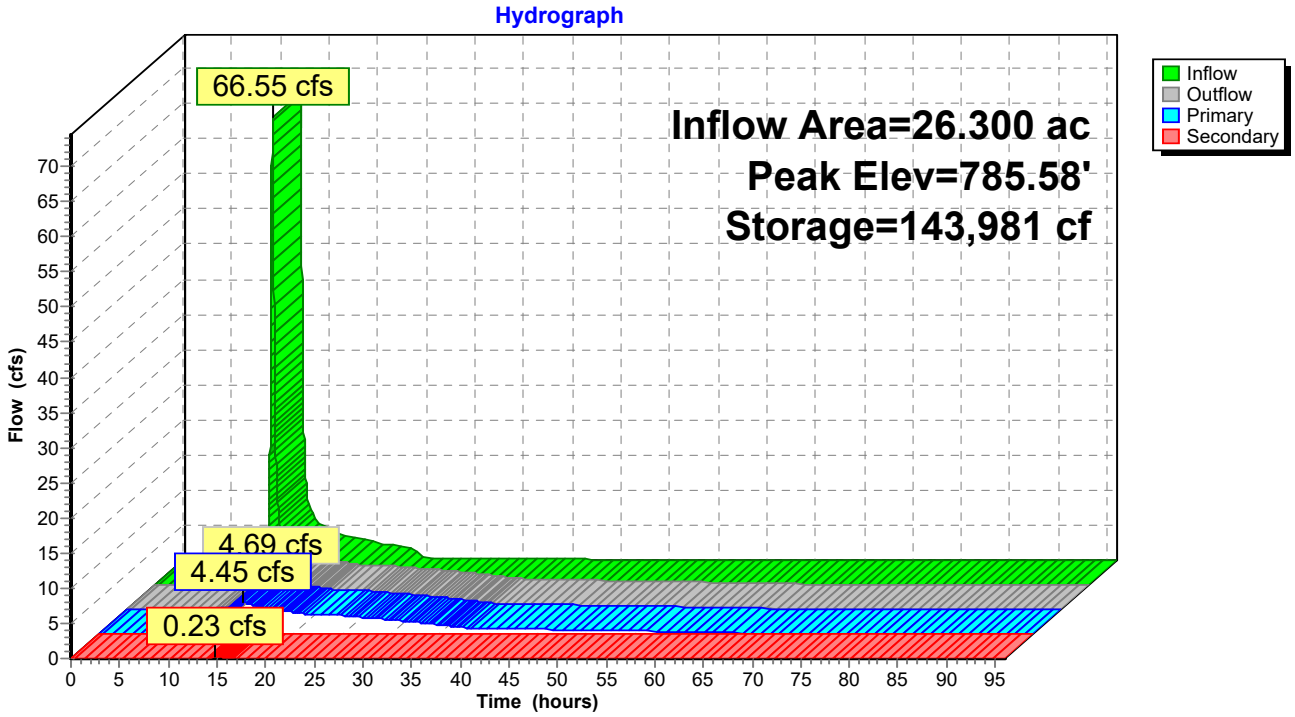
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

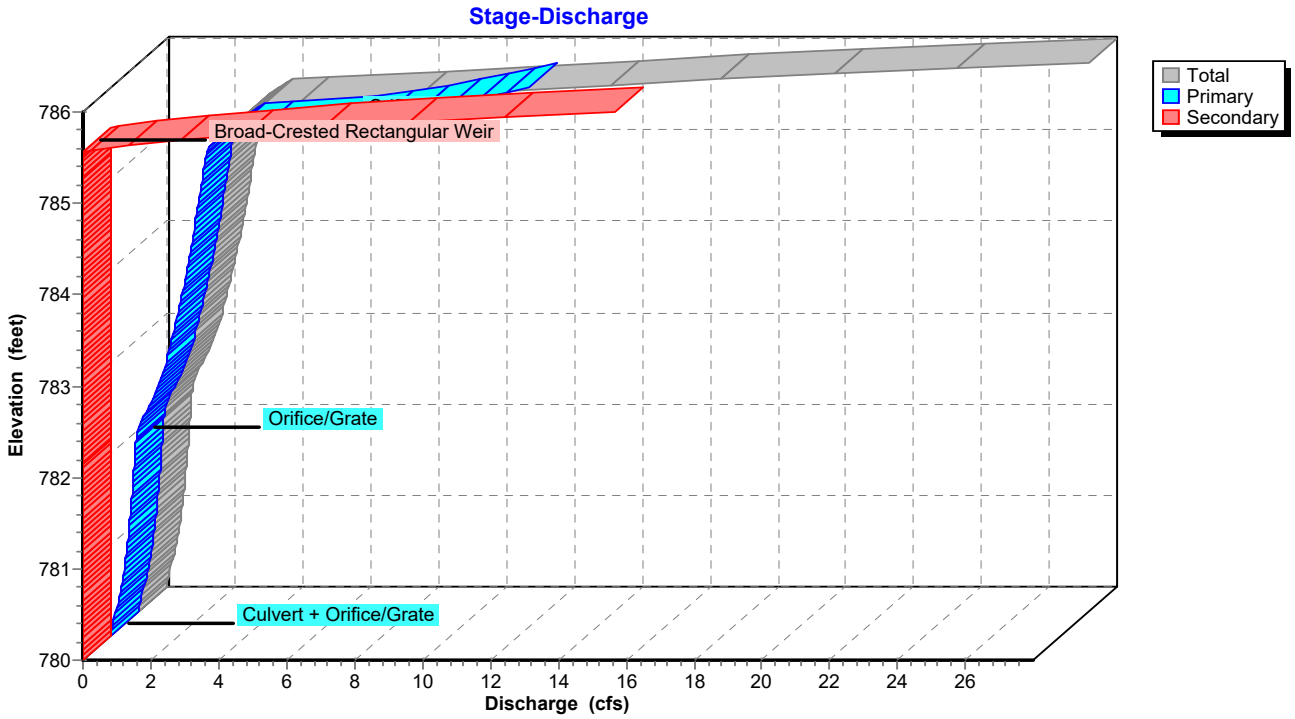
Primary OutFlow Max=4.42 cfs @ 14.74 hrs HW=785.58' (Free Discharge)
└**1=Culvert** (Passes 4.42 cfs of 25.55 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.23 cfs @ 11.18 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.69 cfs @ 8.58 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.94 cfs @ 1.69 fps)
  └**5=Orifice/Grate** (Weir Controls 0.57 cfs @ 0.54 fps)

Secondary OutFlow Max=0.22 cfs @ 14.74 hrs HW=785.58' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 0.41 fps)

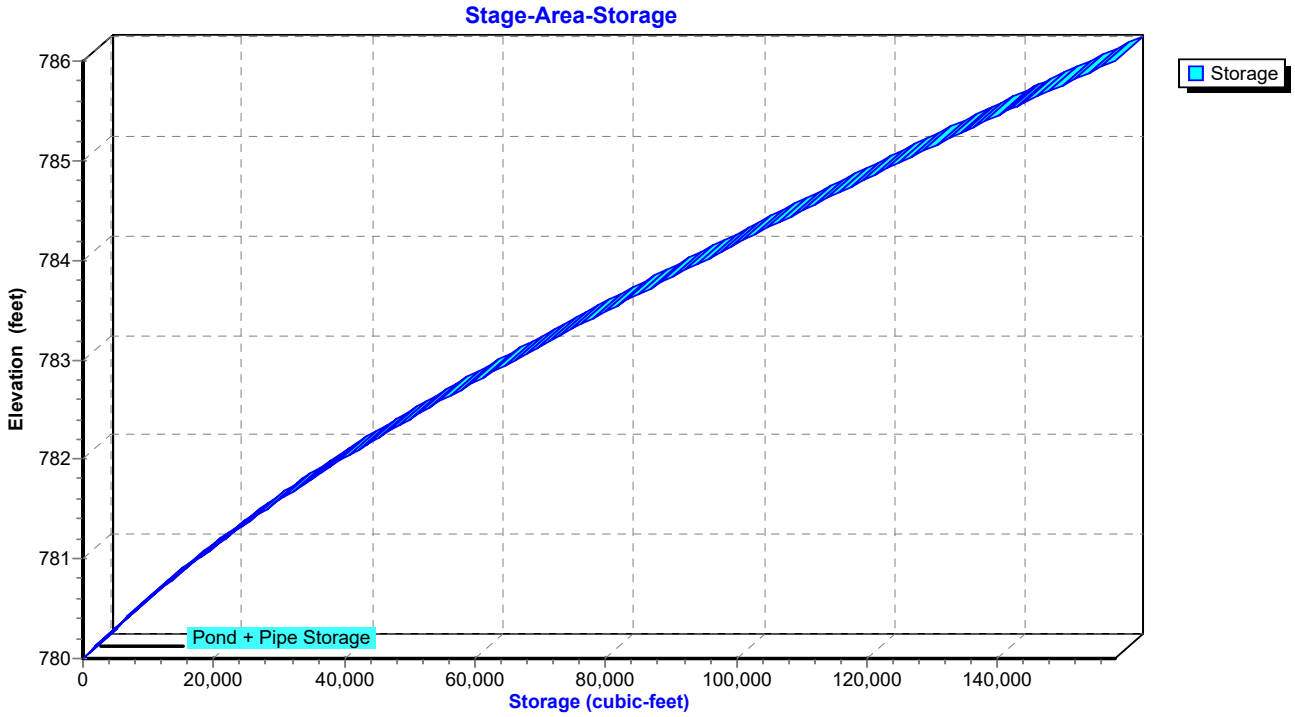
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 3.54" for 25Yr. event
Inflow = 57.65 cfs @ 12.06 hrs, Volume= 3.898 af
Outflow = 5.93 cfs @ 12.68 hrs, Volume= 3.746 af, Atten= 90%, Lag= 36.8 min
Primary = 5.93 cfs @ 12.68 hrs, Volume= 3.746 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 786.13' @ 12.68 hrs Surf.Area= 33,977 sf Storage= 103,054 cf

Plug-Flow detention time= 652.8 min calculated for 3.746 af (96% of inflow)
Center-of-Mass det. time= 629.4 min (1,420.9 - 791.6)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

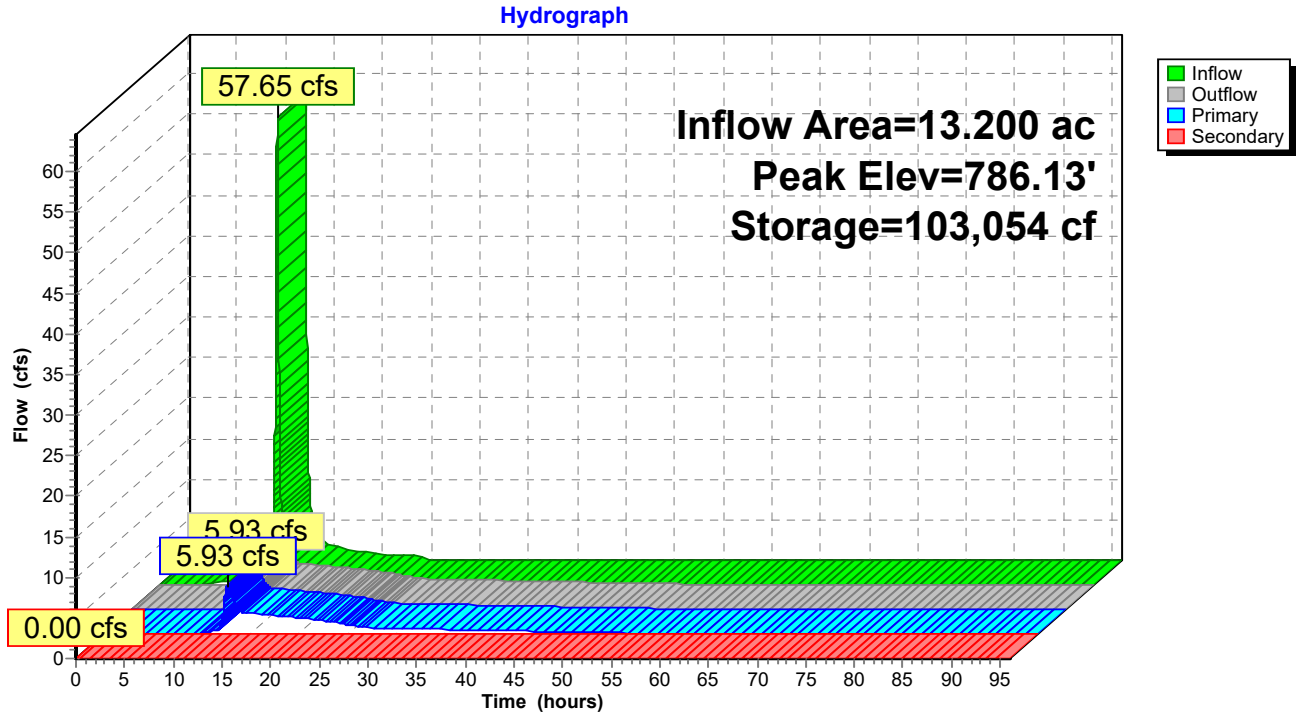
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

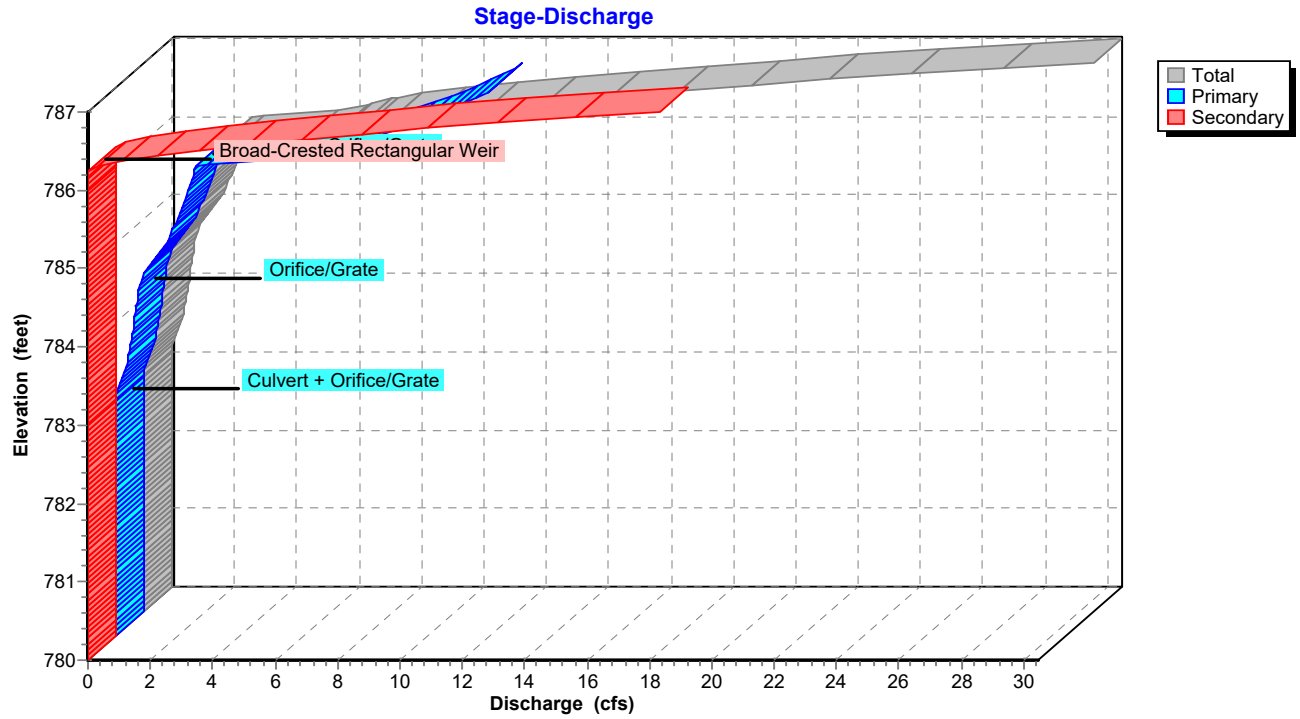
Primary OutFlow Max=5.95 cfs @ 12.68 hrs HW=786.13' (Free Discharge)
└**1=Culvert** (Passes 5.95 cfs of 10.37 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.12 cfs @ 8.23 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.54 cfs @ 5.78 fps)
  └**4=Orifice/Grate** (Orifice Controls 3.29 cfs @ 1.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=780.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

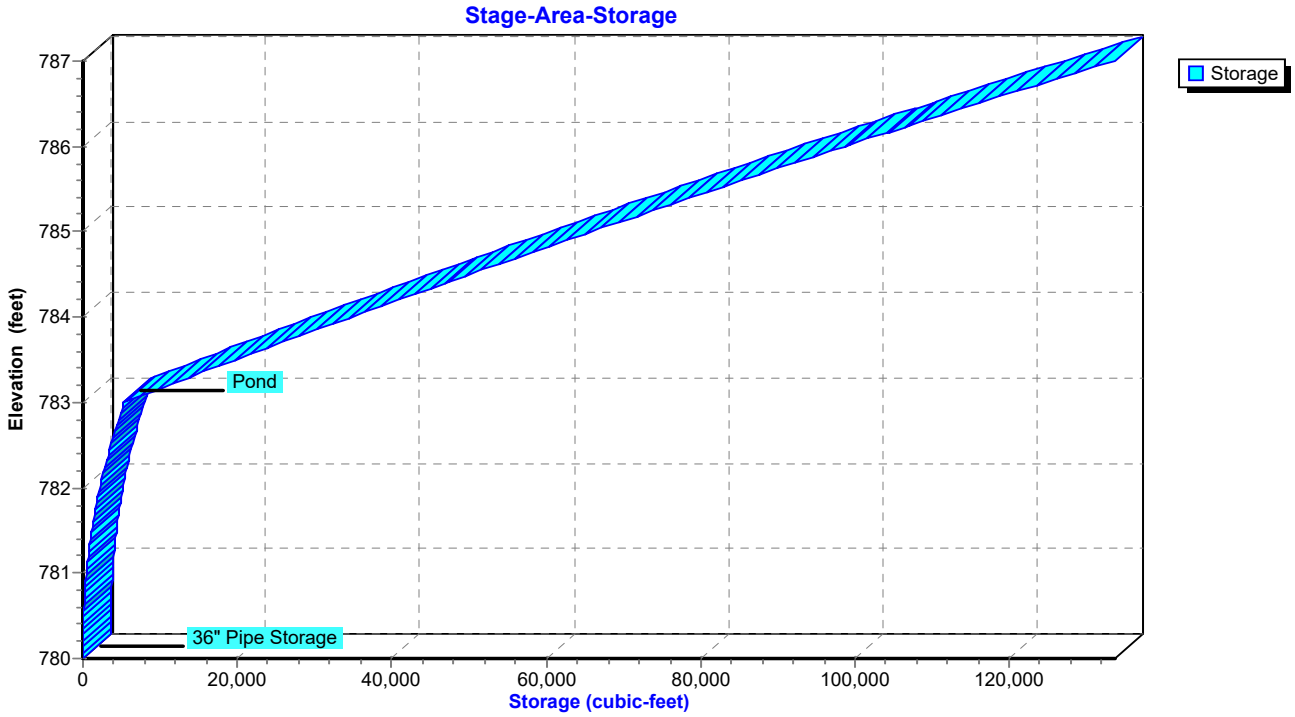
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

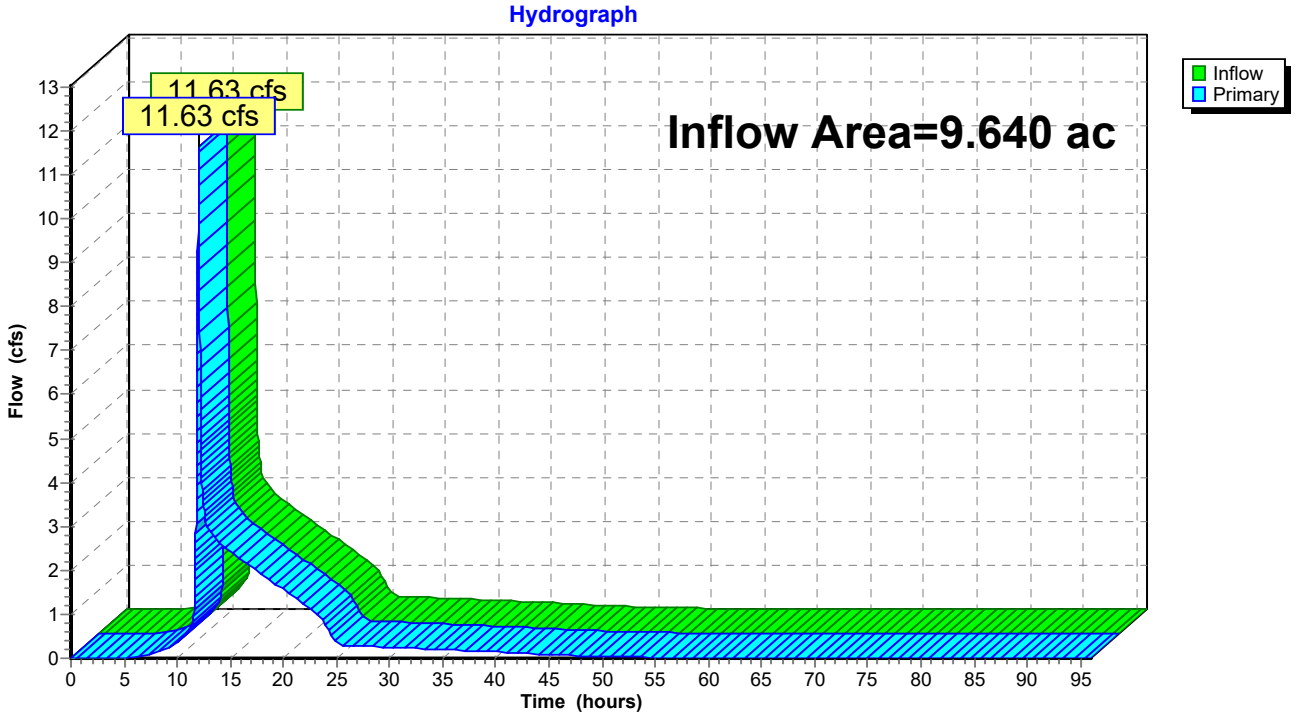


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 3.39" for 25Yr. event
Inflow = 11.63 cfs @ 12.03 hrs, Volume= 2.724 af
Primary = 11.63 cfs @ 12.03 hrs, Volume= 2.724 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

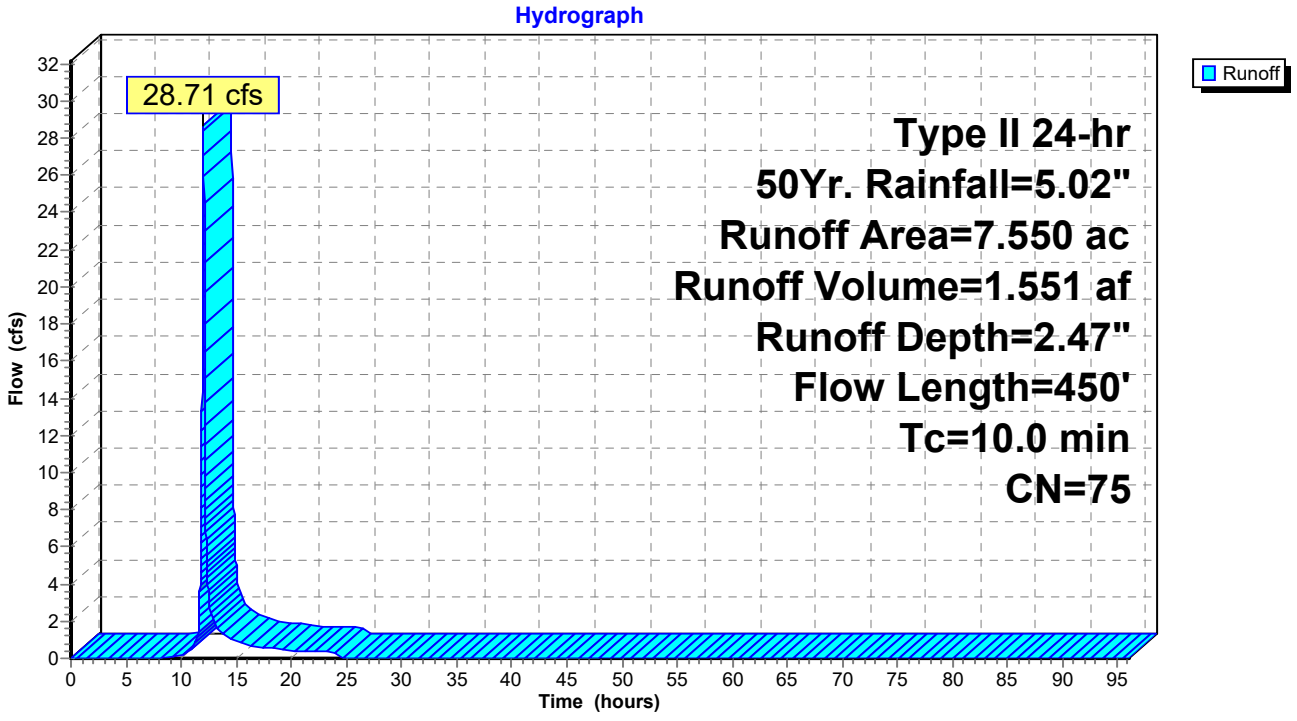
Runoff = 28.71 cfs @ 12.02 hrs, Volume= 1.551 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

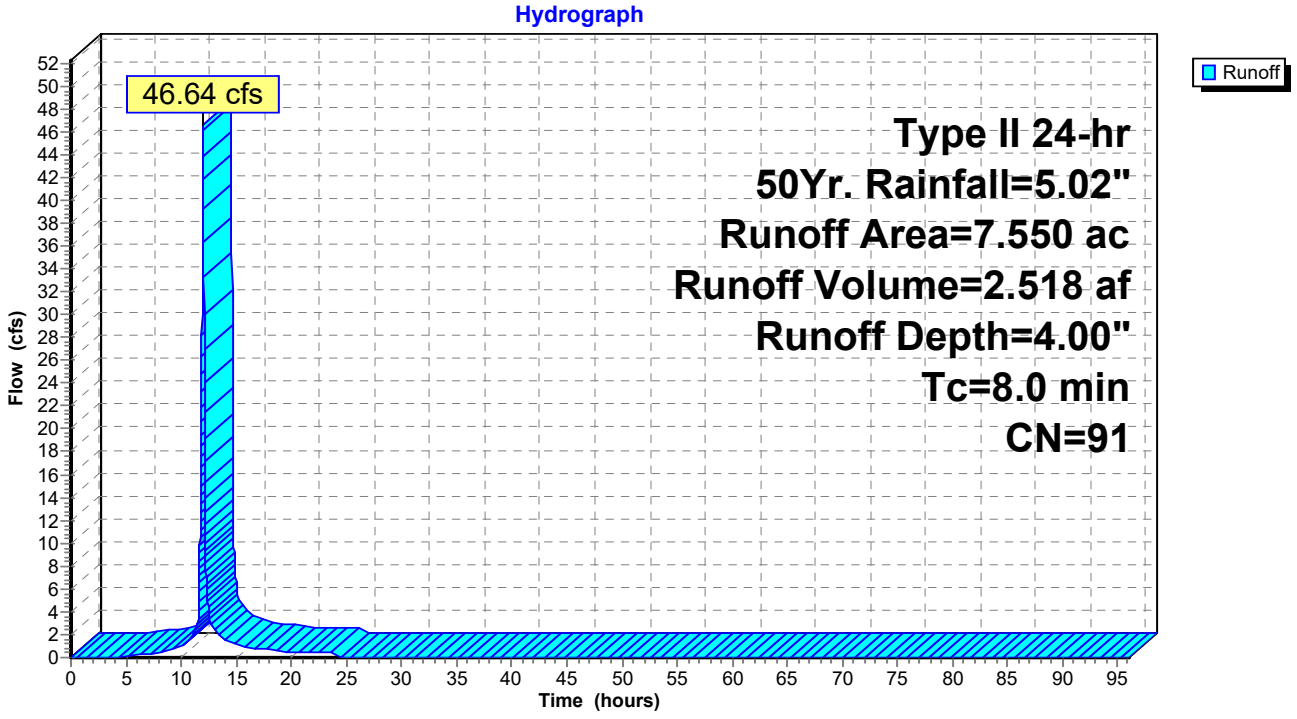
Runoff = 46.64 cfs @ 11.99 hrs, Volume= 2.518 af, Depth= 4.00"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

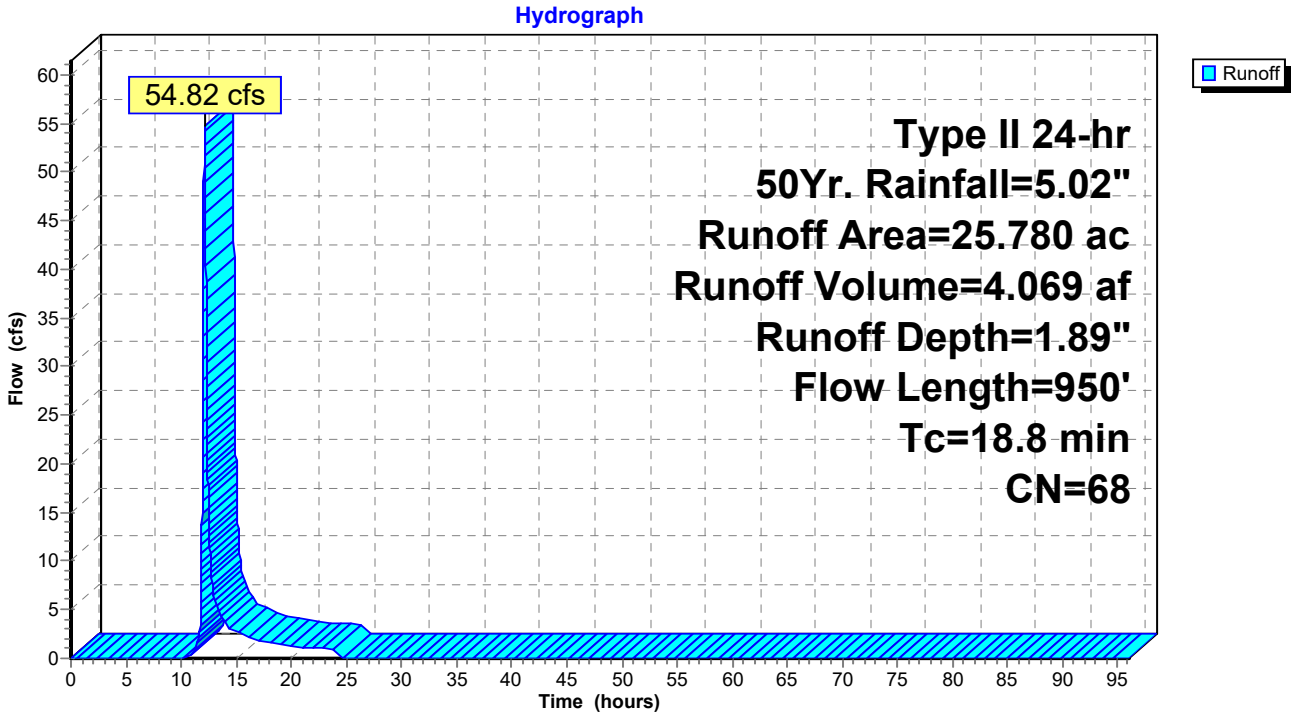
Runoff = 54.82 cfs @ 12.12 hrs, Volume= 4.069 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

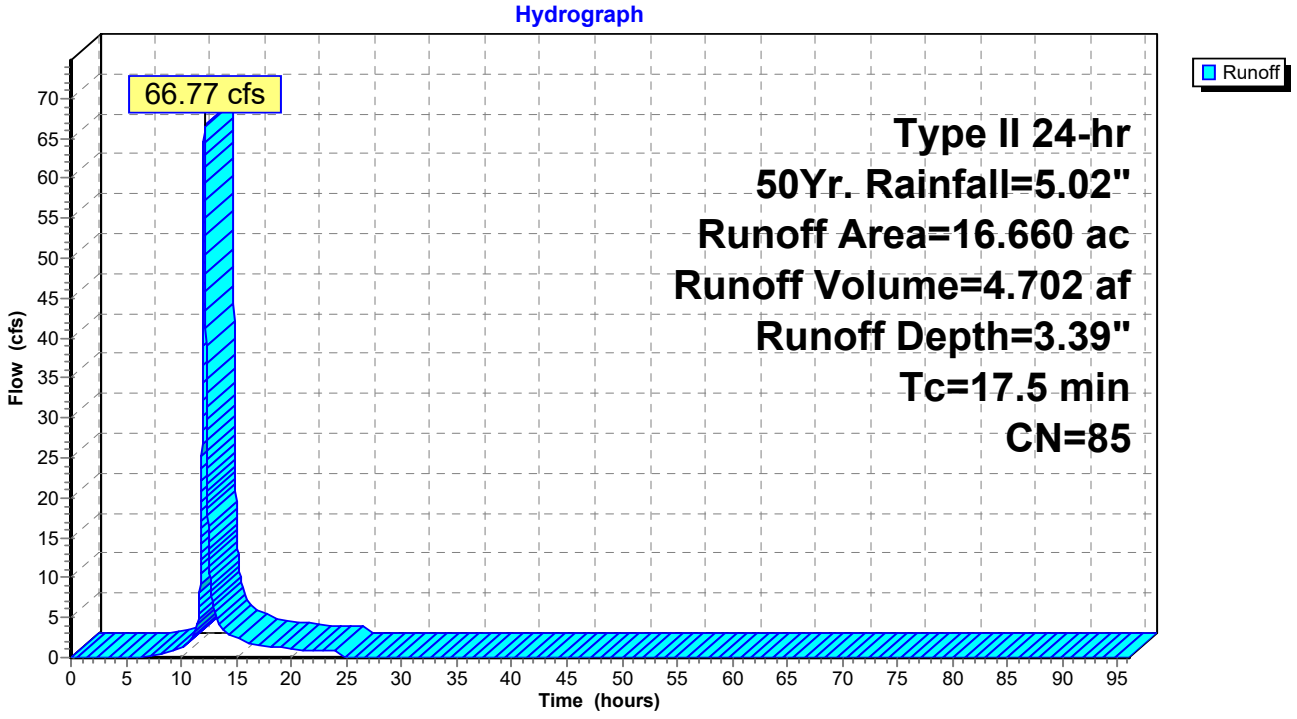
Runoff = 66.77 cfs @ 12.09 hrs, Volume= 4.702 af, Depth= 3.39"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

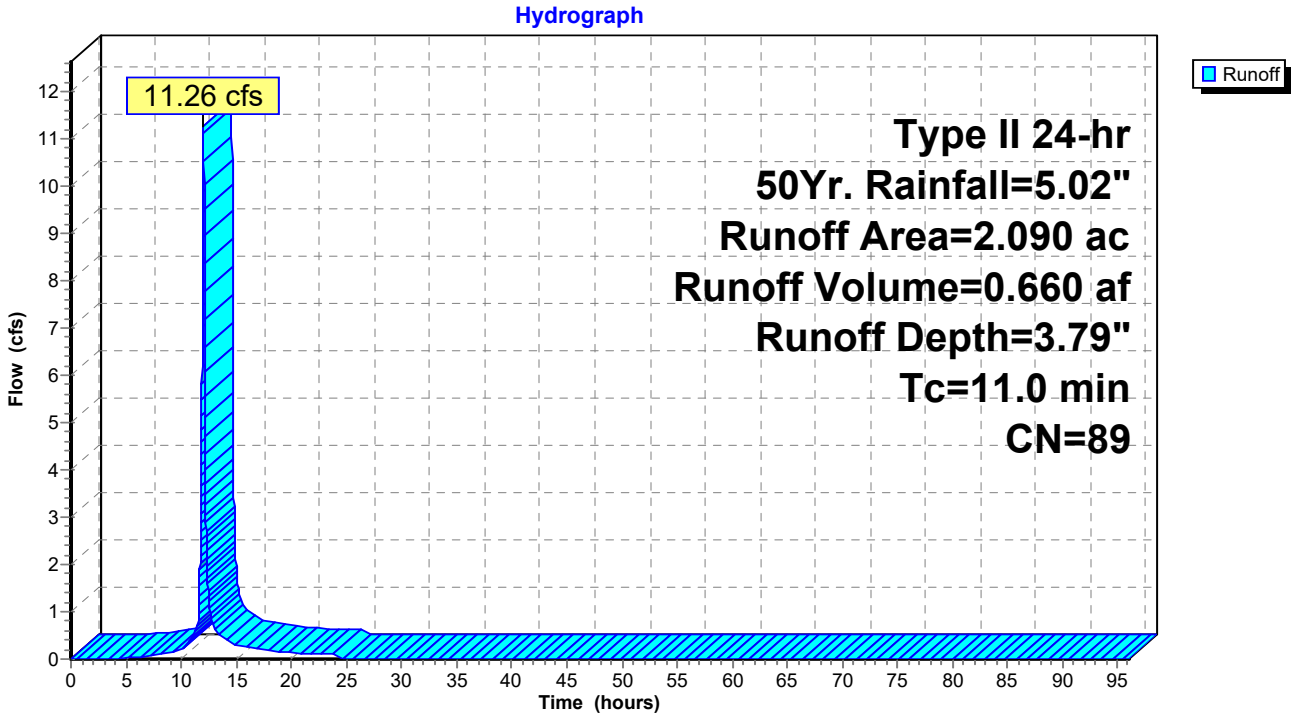
Runoff = 11.26 cfs @ 12.02 hrs, Volume= 0.660 af, Depth= 3.79"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

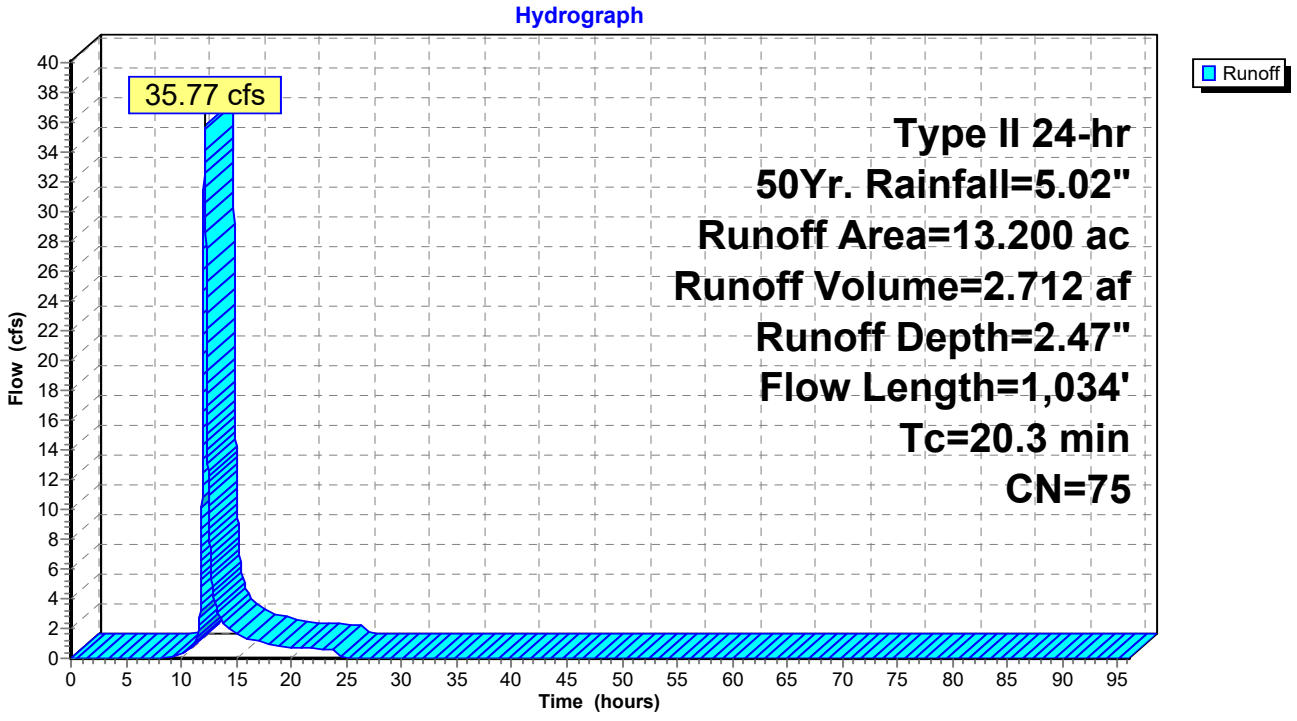
Runoff = 35.77 cfs @ 12.13 hrs, Volume= 2.712 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

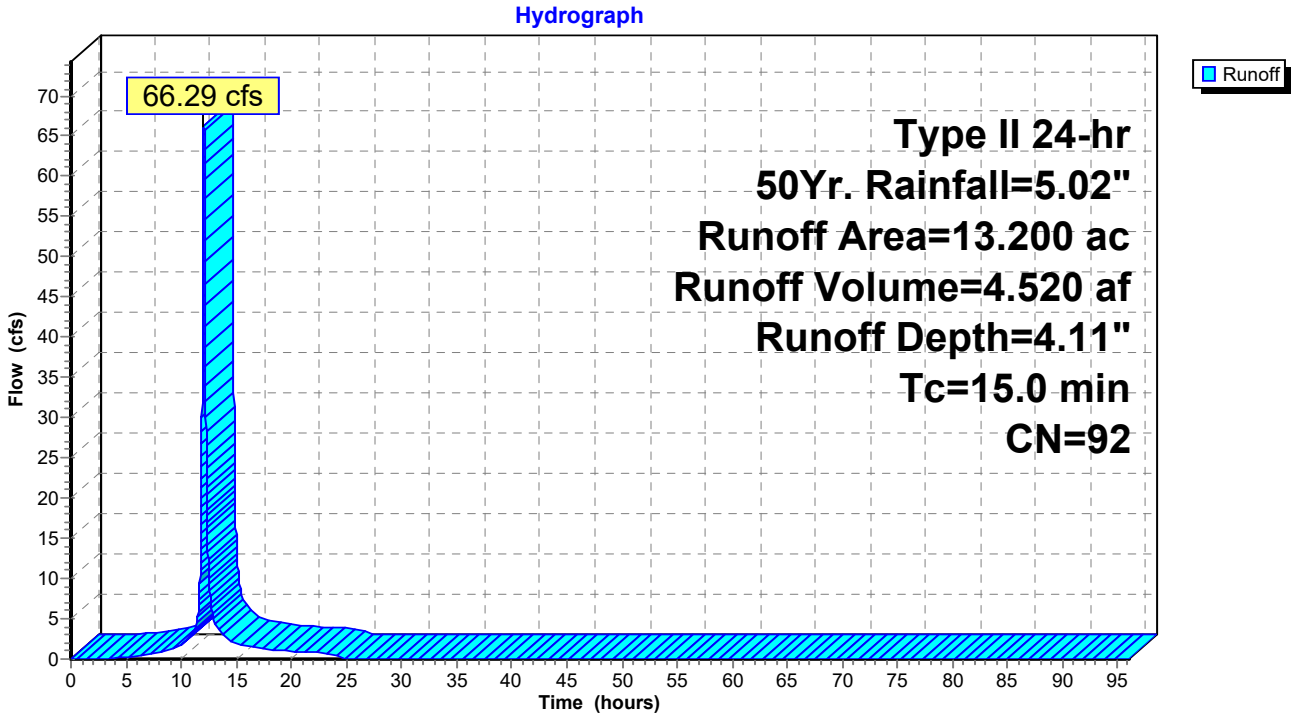
Runoff = 66.29 cfs @ 12.06 hrs, Volume= 4.520 af, Depth= 4.11"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 4.00" for 50Yr. event
Inflow = 46.64 cfs @ 11.99 hrs, Volume= 2.518 af
Outflow = 5.47 cfs @ 12.35 hrs, Volume= 2.513 af, Atten= 88%, Lag= 21.8 min
Primary = 5.47 cfs @ 12.35 hrs, Volume= 2.513 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 788.86' @ 12.35 hrs Surf.Area= 20,503 sf Storage= 61,231 cf

Plug-Flow detention time= 401.4 min calculated for 2.513 af (100% of inflow)
Center-of-Mass det. time= 400.8 min (1,186.0 - 785.3)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

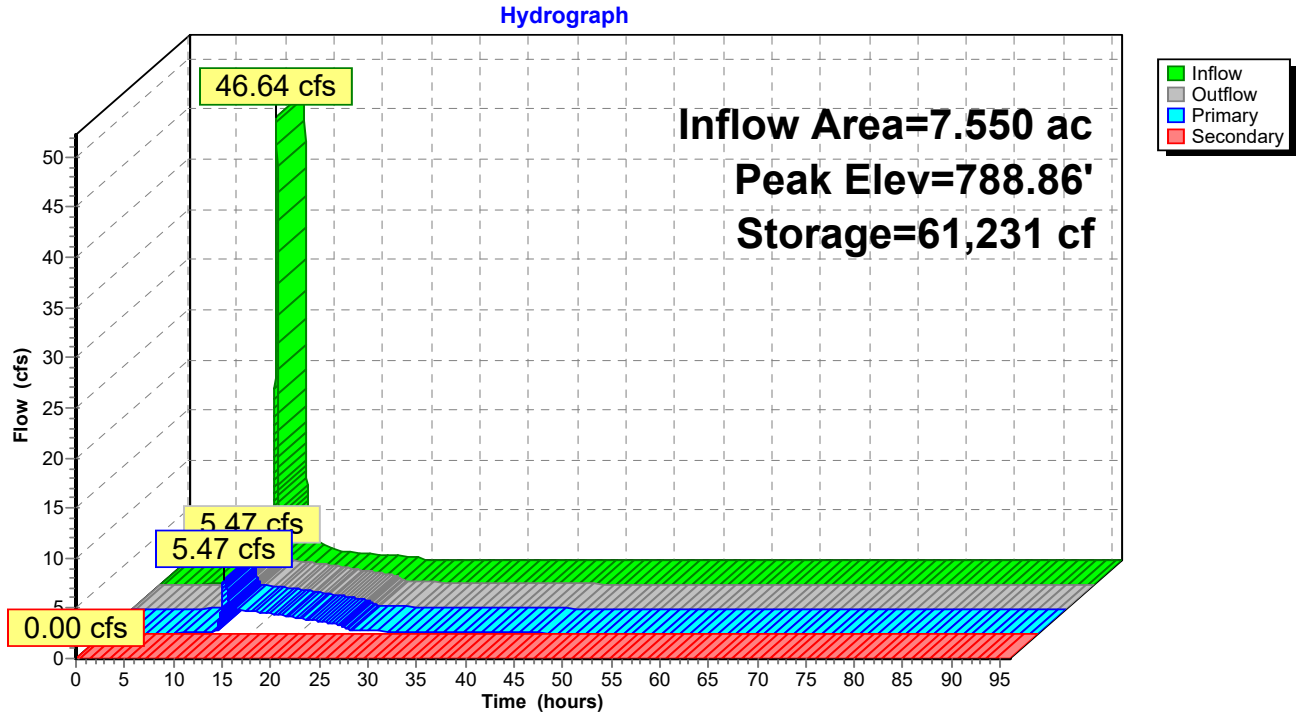
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

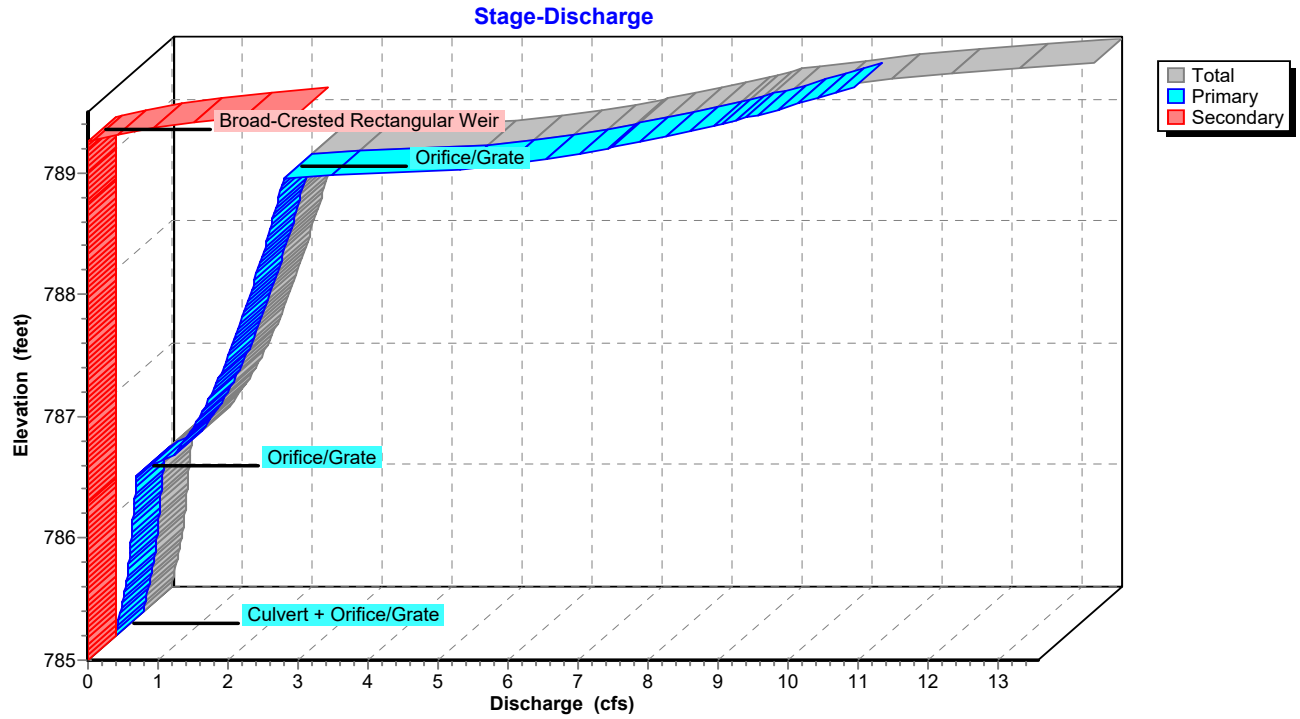
Primary OutFlow Max=5.48 cfs @ 12.35 hrs HW=788.86' (Free Discharge)
└**1=Culvert** (Passes 5.48 cfs of 10.63 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.52 cfs @ 9.30 fps)
├**3=Orifice/Grate** (Orifice Controls 1.93 cfs @ 7.71 fps)
└**4=Orifice/Grate** (Orifice Controls 3.03 cfs @ 1.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

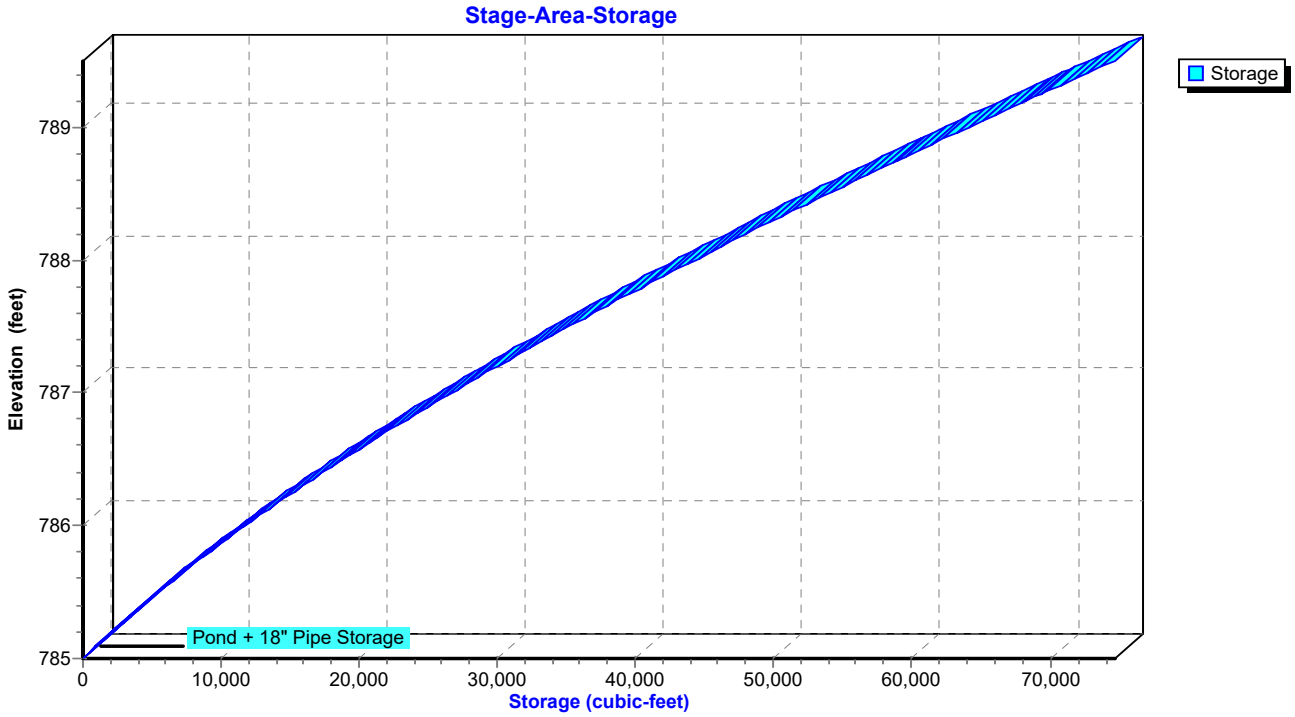
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 3.59" for 50Yr. event
Inflow = 78.28 cfs @ 12.08 hrs, Volume= 7.875 af
Outflow = 11.92 cfs @ 12.76 hrs, Volume= 7.857 af, Atten= 85%, Lag= 41.0 min
Primary = 8.42 cfs @ 12.76 hrs, Volume= 7.557 af
Secondary = 3.50 cfs @ 12.76 hrs, Volume= 0.299 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 785.72' @ 12.76 hrs Surf.Area= 32,997 sf Storage= 148,638 cf

Plug-Flow detention time= 624.2 min calculated for 7.857 af (100% of inflow)
Center-of-Mass det. time= 616.8 min (1,548.6 - 931.8)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

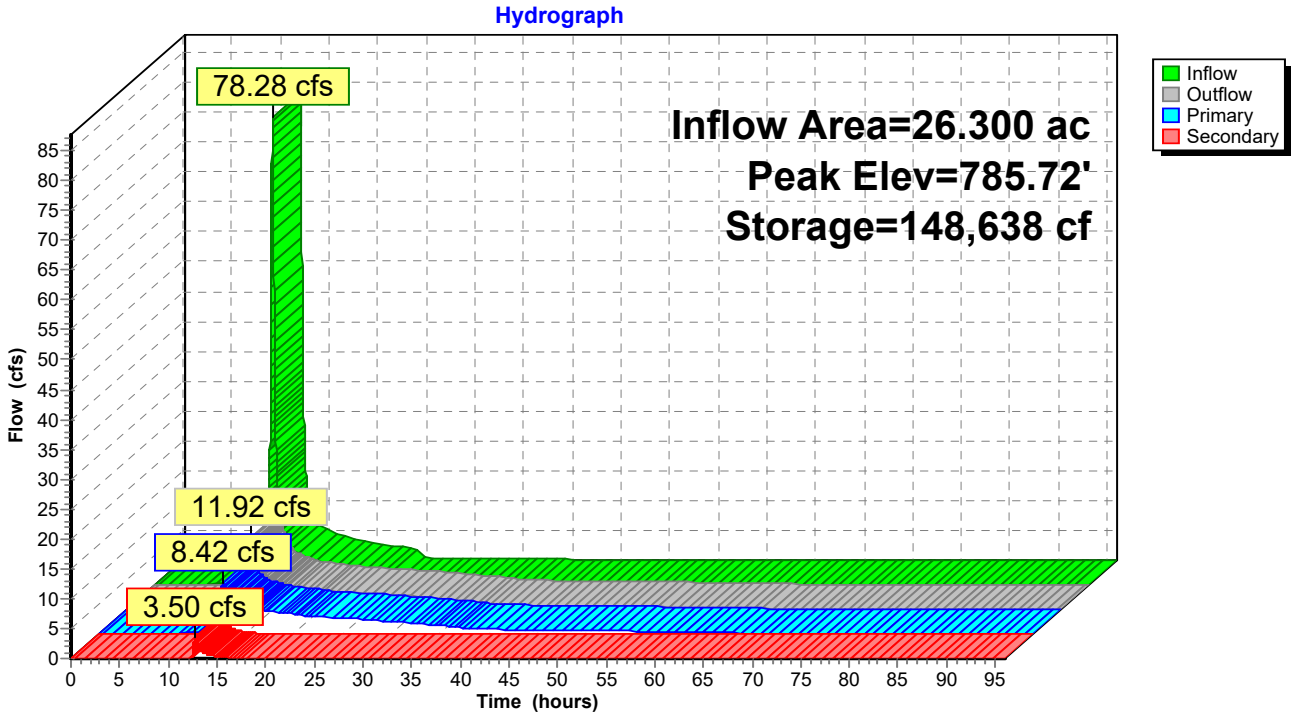
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

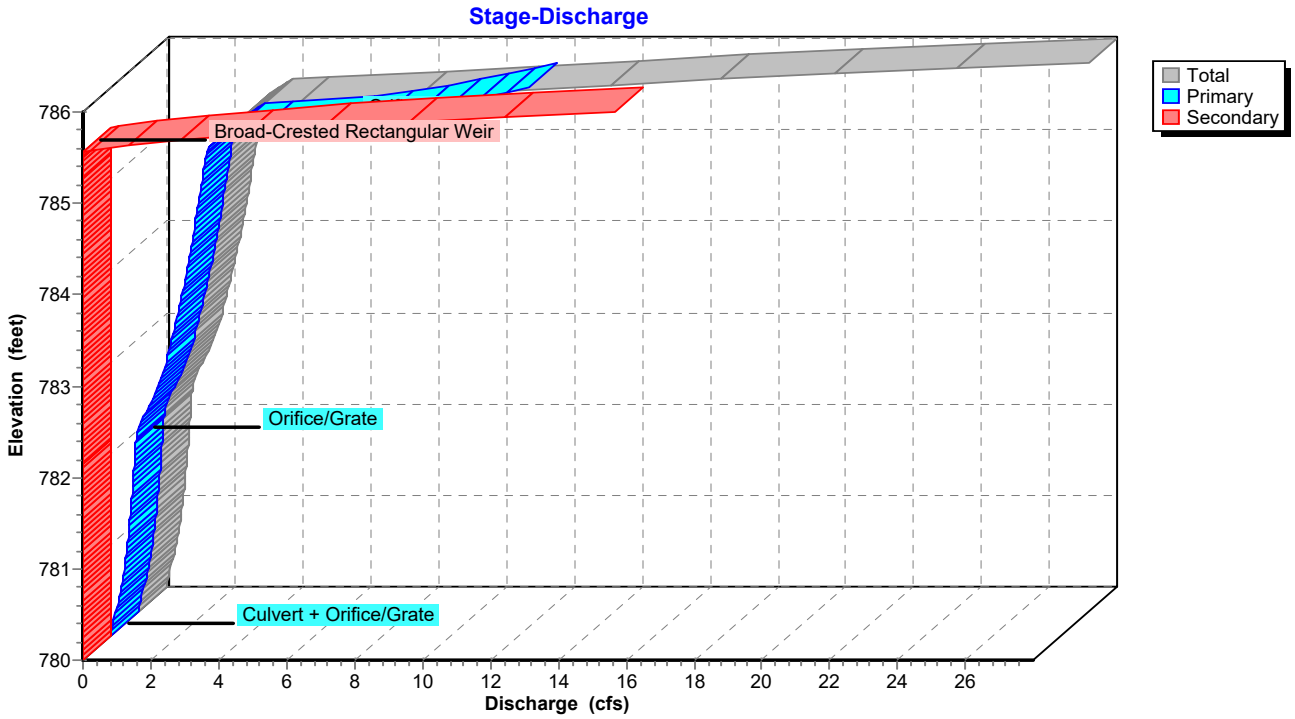
Primary OutFlow Max=8.43 cfs @ 12.76 hrs HW=785.72' (Free Discharge)
└**1=Culvert** (Passes 8.43 cfs of 25.94 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.25 cfs @ 11.32 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.72 cfs @ 8.77 fps)
  ├**4=Orifice/Grate** (Orifice Controls 1.74 cfs @ 2.08 fps)
  └**5=Orifice/Grate** (Orifice Controls 3.71 cfs @ 1.98 fps)

Secondary OutFlow Max=3.46 cfs @ 12.76 hrs HW=785.72' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Weir Controls 3.46 cfs @ 1.02 fps)

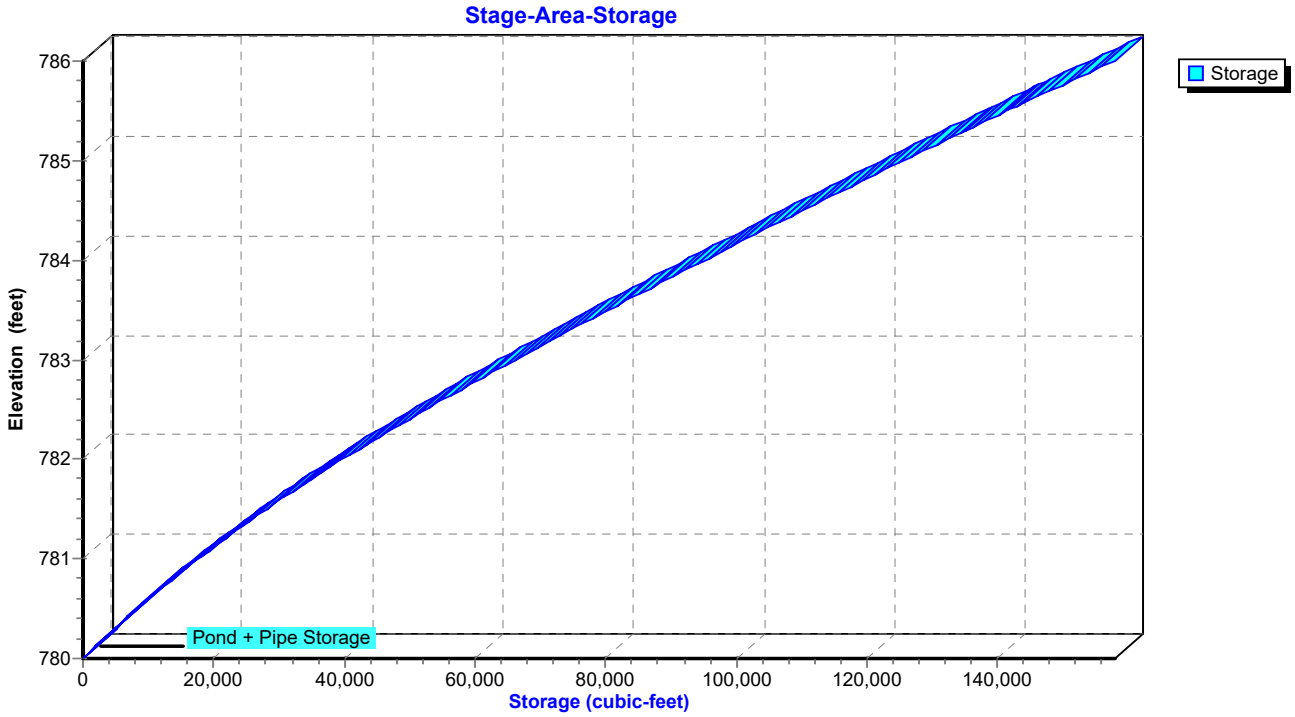
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 4.11" for 50Yr. event
Inflow = 66.29 cfs @ 12.06 hrs, Volume= 4.520 af
Outflow = 10.73 cfs @ 12.49 hrs, Volume= 4.367 af, Atten= 84%, Lag= 25.3 min
Primary = 8.75 cfs @ 12.49 hrs, Volume= 4.295 af
Secondary = 1.98 cfs @ 12.49 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 786.42' @ 12.49 hrs Surf.Area= 34,834 sf Storage= 113,090 cf

Plug-Flow detention time= 585.9 min calculated for 4.367 af (97% of inflow)
Center-of-Mass det. time= 565.3 min (1,352.9 - 787.6)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

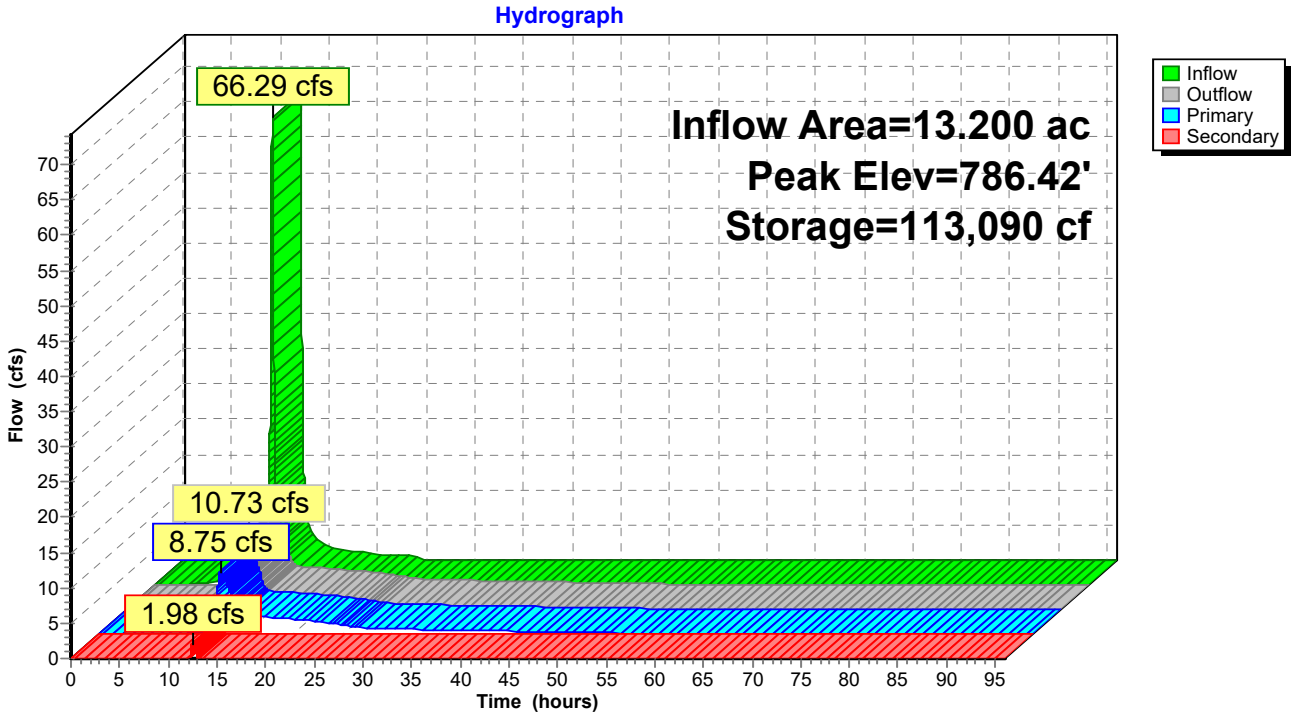
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

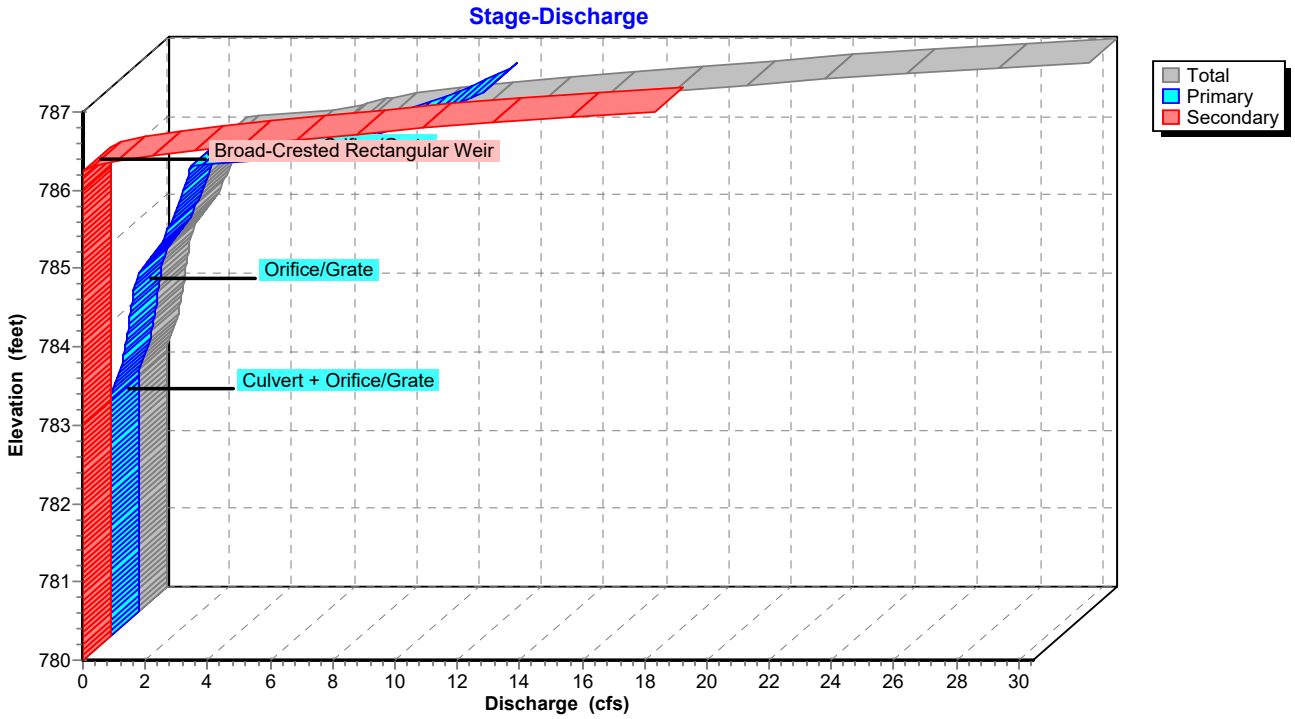
Primary OutFlow Max=8.75 cfs @ 12.49 hrs HW=786.42' (Free Discharge)
└**1=Culvert** (Passes 8.75 cfs of 10.99 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.18 cfs @ 8.63 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.69 cfs @ 6.34 fps)
  └**4=Orifice/Grate** (Orifice Controls 5.88 cfs @ 3.14 fps)

Secondary OutFlow Max=1.96 cfs @ 12.49 hrs HW=786.42' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 1.96 cfs @ 1.12 fps)

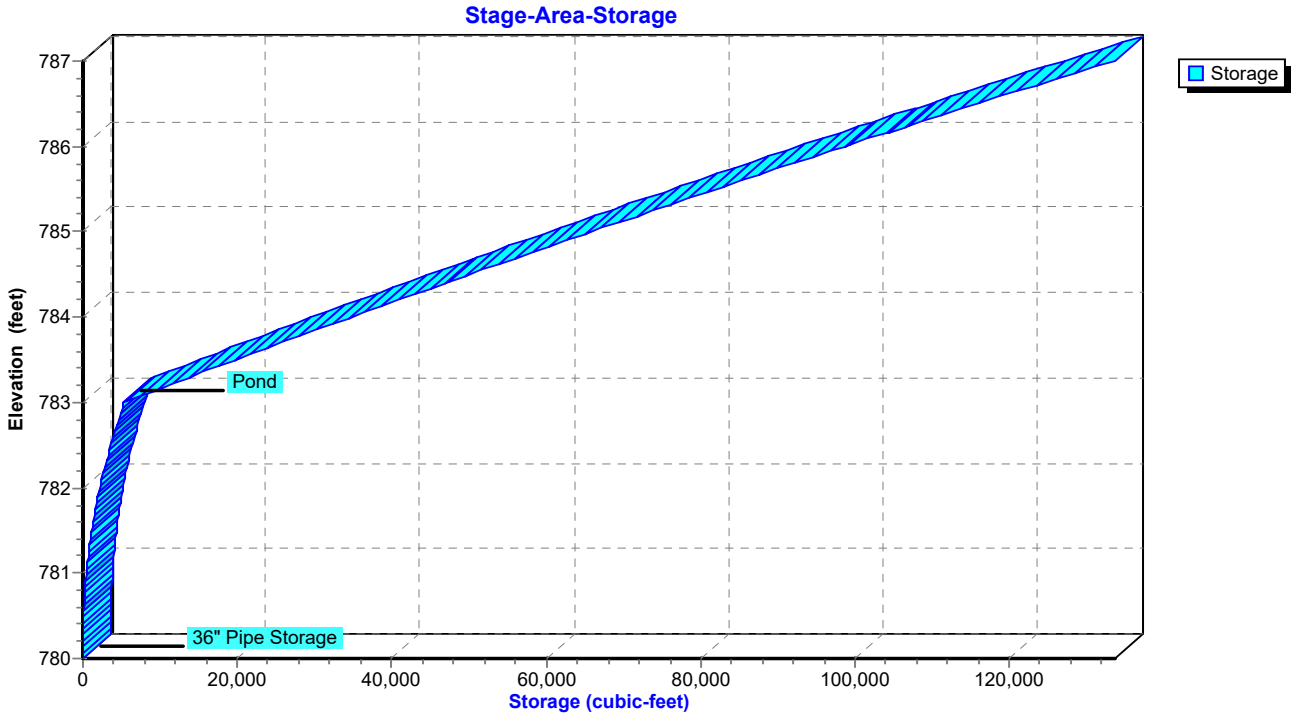
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

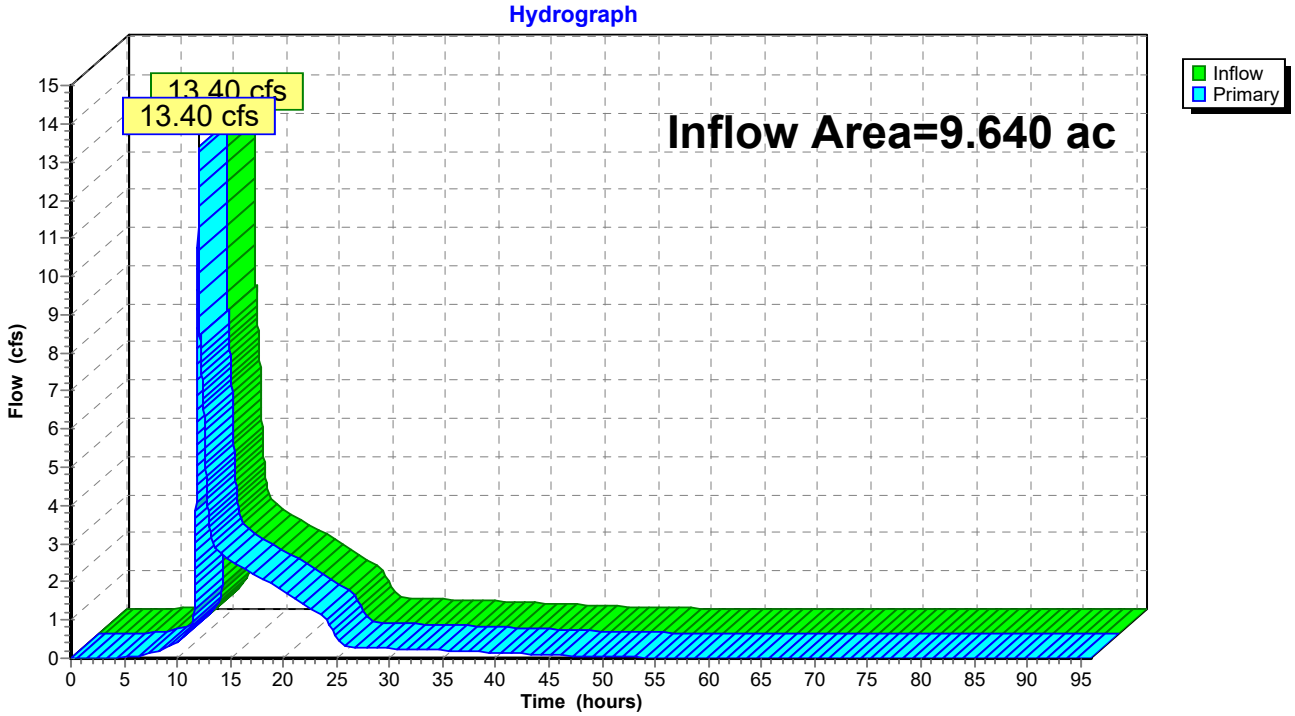


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 3.95" for 50Yr. event
Inflow = 13.40 cfs @ 12.03 hrs, Volume= 3.174 af
Primary = 13.40 cfs @ 12.03 hrs, Volume= 3.174 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



Summary for Subcatchment 1S: PreDeveloped Ortho One

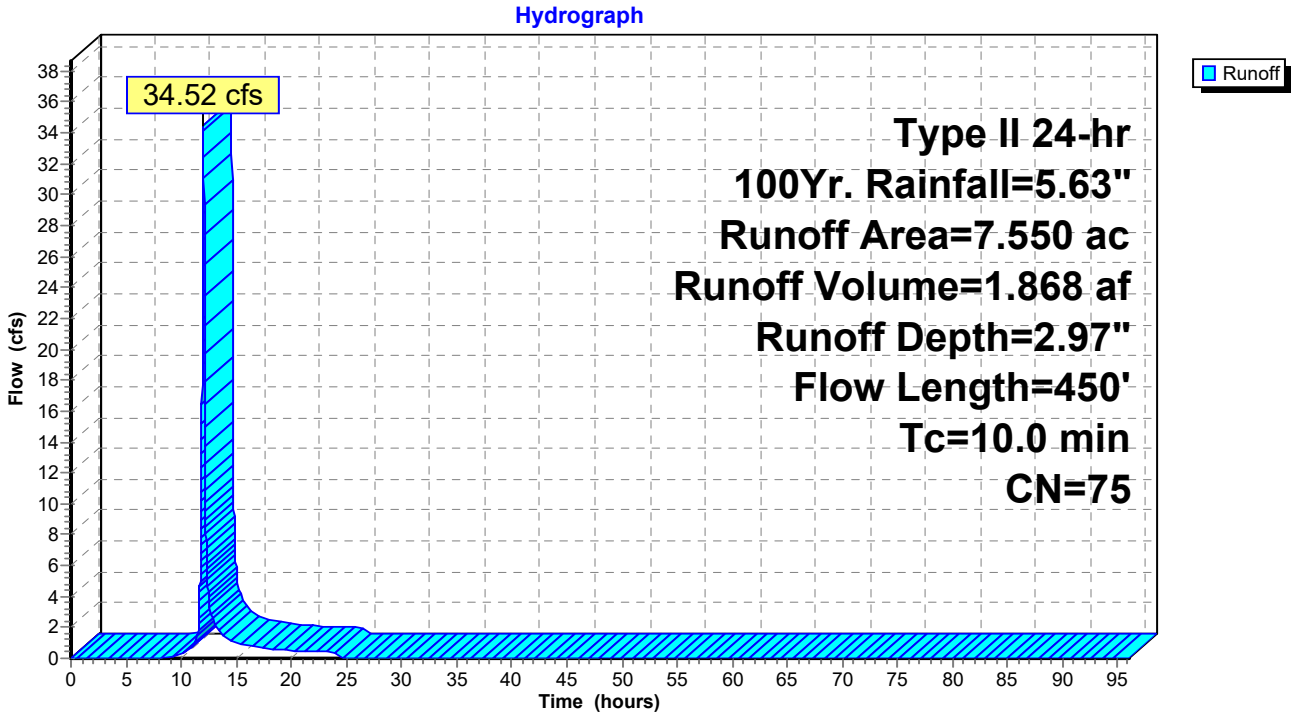
Runoff = 34.52 cfs @ 12.02 hrs, Volume= 1.868 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
7.550	75	Row crops, SR + CR, Good, HSG B
7.550		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
6.2	350	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
10.0	450	Total			

Subcatchment 1S: PreDeveloped Ortho One



Summary for Subcatchment 2S: Developed Ortho One

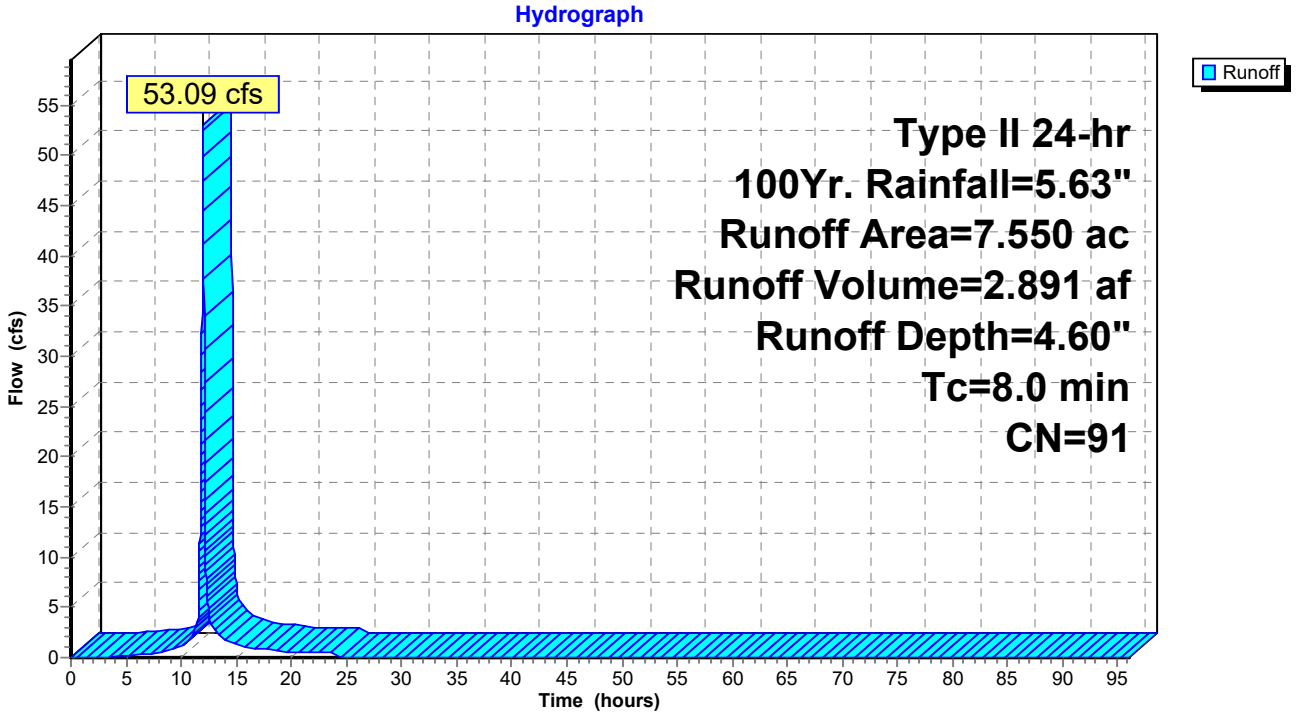
Runoff = 53.09 cfs @ 11.99 hrs, Volume= 2.891 af, Depth= 4.60"
Routed to Pond 3P : Ortho 1 Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
4.620	98	Unconnected pavement, HSG D
2.930	80	>75% Grass cover, Good, HSG D
7.550	91	Weighted Average
2.930		38.81% Pervious Area
4.620		61.19% Impervious Area
4.620		100.00% Unconnected

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

Subcatchment 2S: Developed Ortho One



Summary for Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway

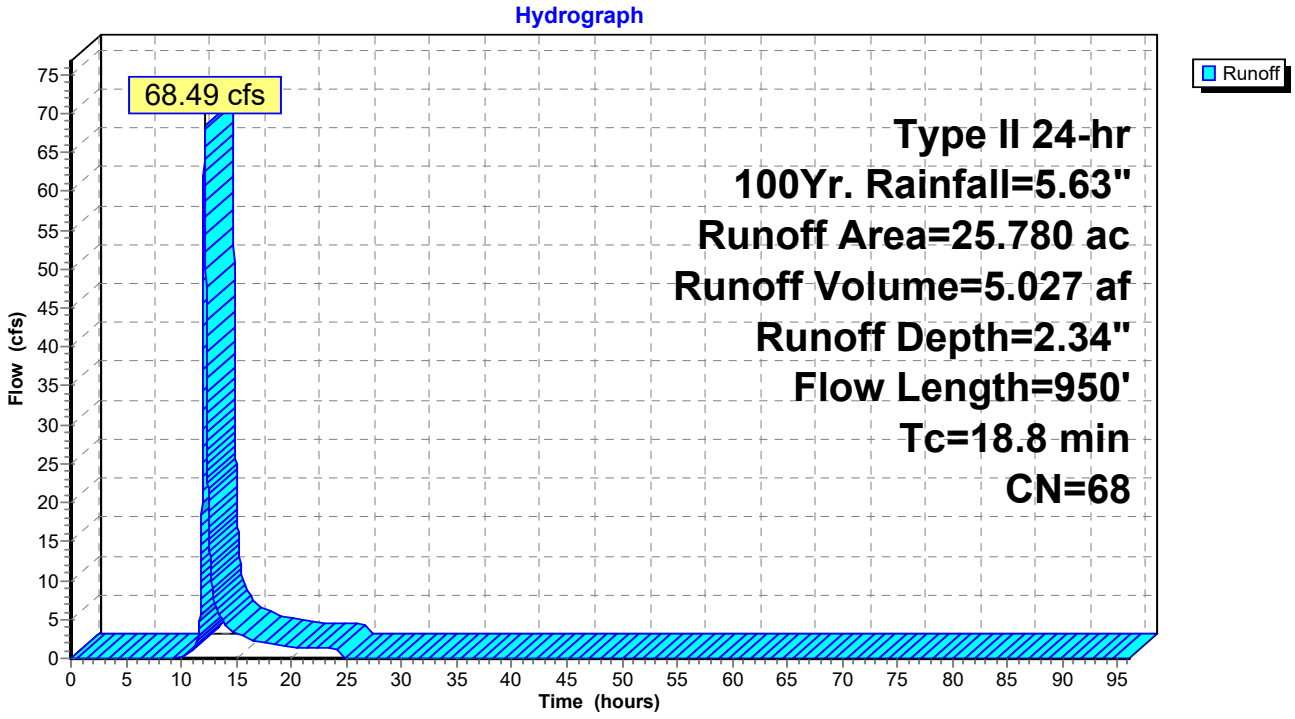
Runoff = 68.49 cfs @ 12.12 hrs, Volume= 5.027 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
7.400	75	Row crops, SR + CR, Good, HSG B
18.380	65	Woods/grass comb., Fair, HSG B
25.780	68	Weighted Average
25.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0300	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.63"
8.6	850	0.0120	1.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.8	950	Total			

Subcatchment 3S: PreDeveloped Residential Ortho One, Roadway



Summary for Subcatchment 4S: Developed Residential

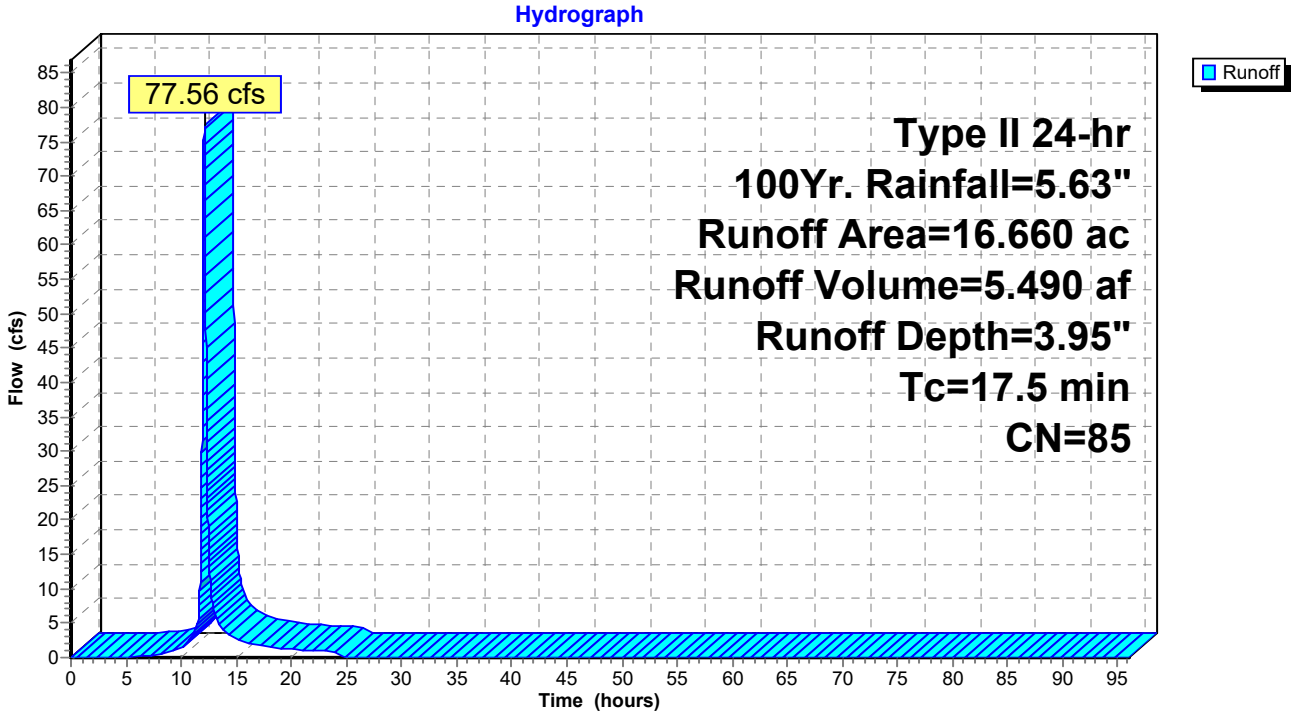
Runoff = 77.56 cfs @ 12.09 hrs, Volume= 5.490 af, Depth= 3.95"
Routed to Pond 5P : SE Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
10.740	98	Unconnected pavement, HSG B
5.920	61	>75% Grass cover, Good, HSG B
16.660	85	Weighted Average
5.920		35.53% Pervious Area
10.740		64.47% Impervious Area
10.740		100.00% Unconnected

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

Subcatchment 4S: Developed Residential



Summary for Subcatchment 6S: Roadway

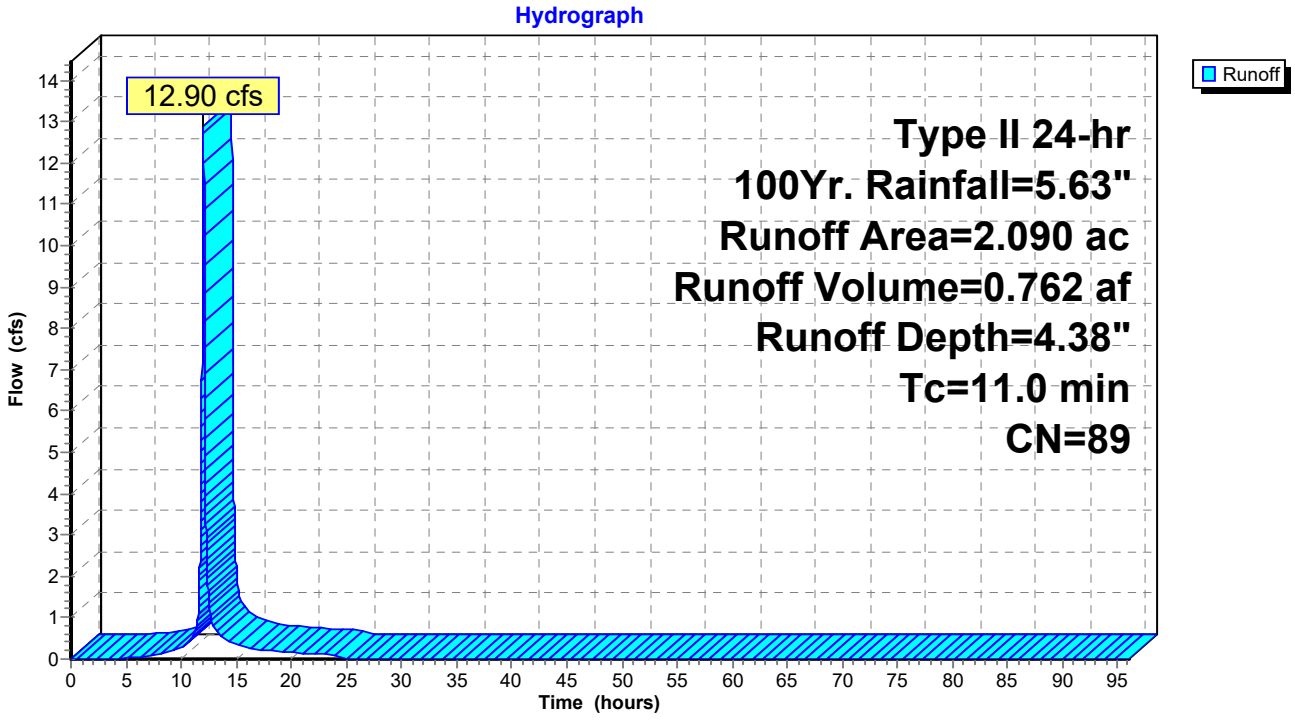
Runoff = 12.90 cfs @ 12.02 hrs, Volume= 0.762 af, Depth= 4.38"
Routed to Link 7L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
1.570	98	Paved roads w/curbs & sewers, HSG B
0.520	61	>75% Grass cover, Good, HSG B
2.090	89	Weighted Average
0.520		24.88% Pervious Area
1.570		75.12% Impervious Area

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

Subcatchment 6S: Roadway



Summary for Subcatchment 8S: PreDeveloped Commercial

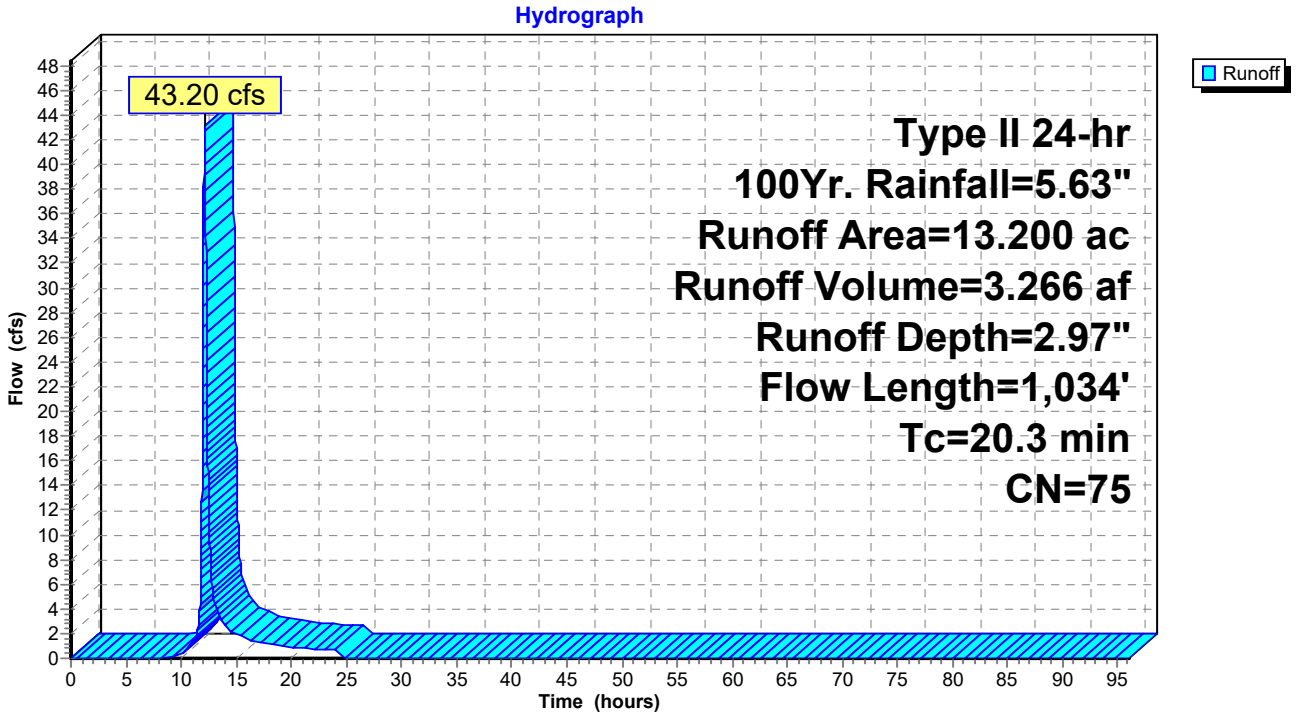
Runoff = 43.20 cfs @ 12.13 hrs, Volume= 3.266 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
13.200	75	Row crops, SR + CR, Good, HSG B
13.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.0300	0.44		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
16.5	934	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.3	1,034	Total			

Subcatchment 8S: PreDeveloped Commercial



Summary for Subcatchment 9S: Developed Commercial Lots

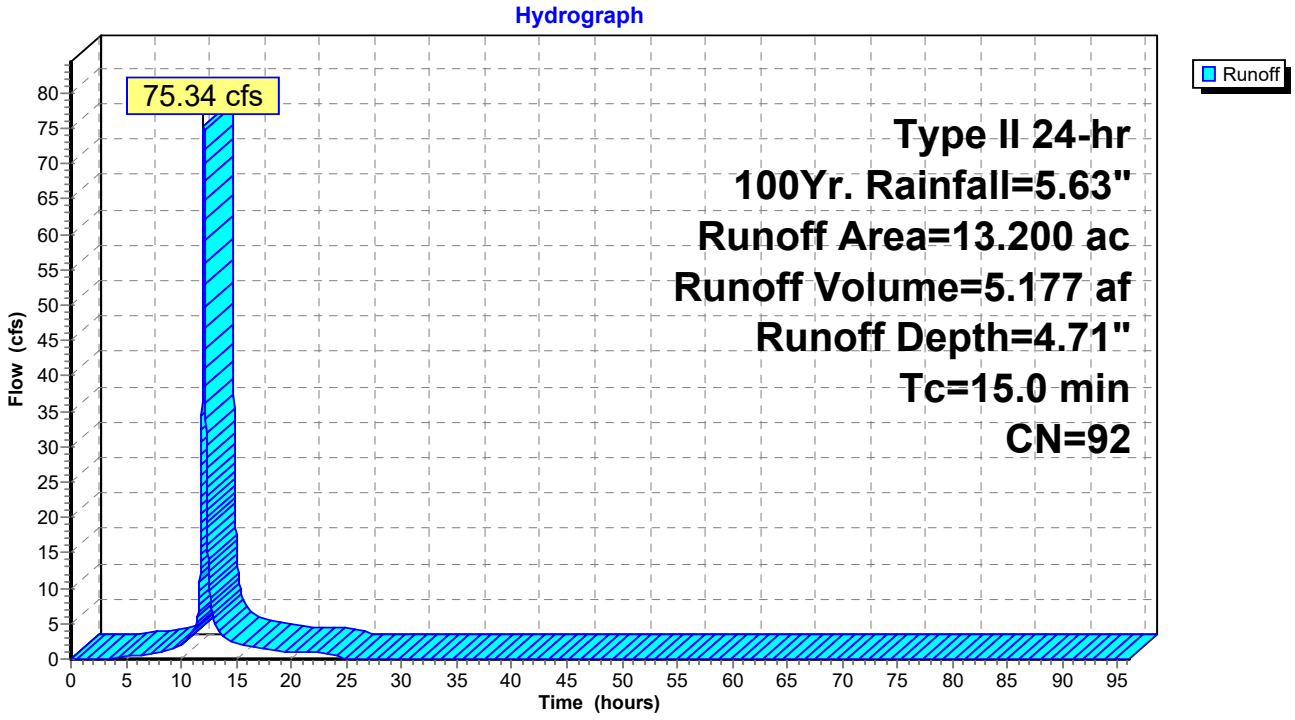
Runoff = 75.34 cfs @ 12.06 hrs, Volume= 5.177 af, Depth= 4.71"
Routed to Pond 10P : SW Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
12.640	92	Urban commercial, 85% imp, HSG B
0.560	98	Water Surface, HSG B
13.200	92	Weighted Average
1.896		14.36% Pervious Area
11.304		85.64% Impervious Area

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

Subcatchment 9S: Developed Commercial Lots



Summary for Pond 3P: Ortho 1 Pond

Inflow Area = 7.550 ac, 61.19% Impervious, Inflow Depth = 4.60" for 100Yr. event
Inflow = 53.09 cfs @ 11.99 hrs, Volume= 2.891 af
Outflow = 8.40 cfs @ 12.24 hrs, Volume= 2.887 af, Atten= 84%, Lag= 14.9 min
Primary = 8.40 cfs @ 12.24 hrs, Volume= 2.887 af
Routed to Link 7L : (new Link)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 789.17' @ 12.24 hrs Surf.Area= 21,089 sf Storage= 67,548 cf

Plug-Flow detention time= 368.3 min calculated for 2.887 af (100% of inflow)
Center-of-Mass det. time= 367.8 min (1,149.3 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	785.00'	72,318 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	785.00'	2,386 cf	**18.0" Round 18" Pipe Storage** L= 1,350.0' S= 0.0020 '/'
		74,704 cf	Total Available Storage

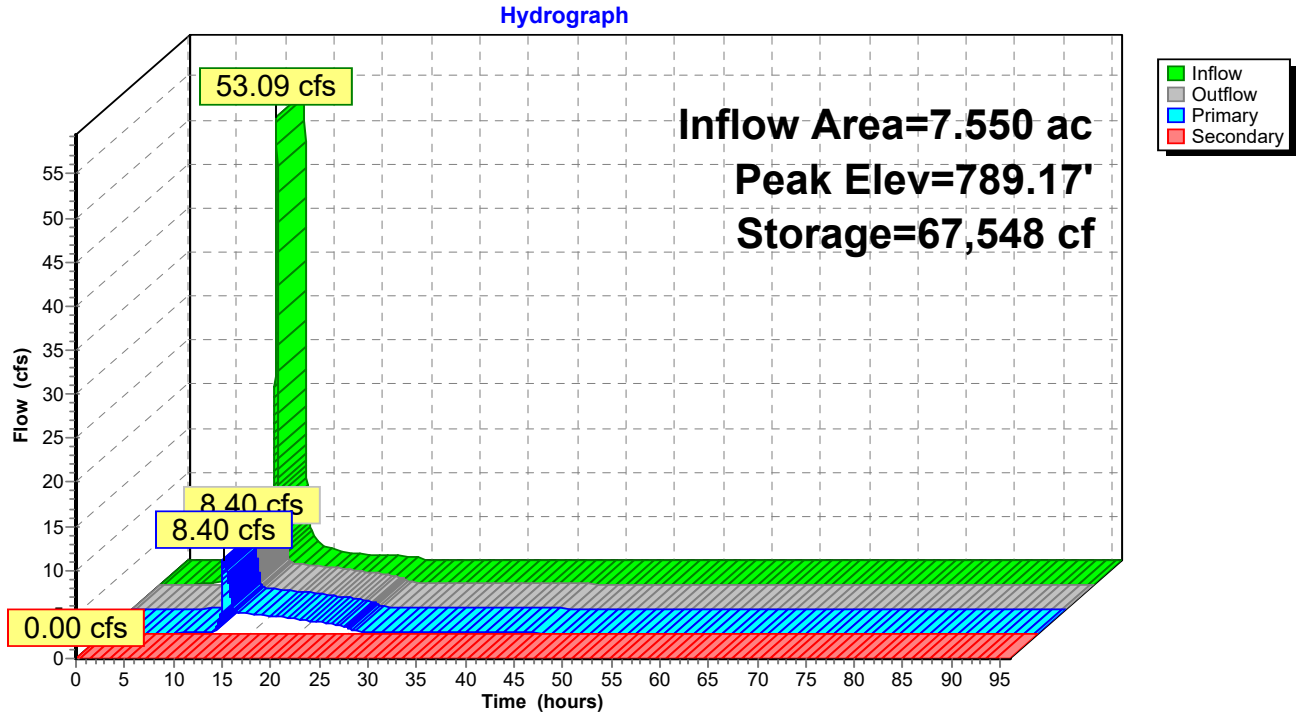
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
785.00	10,125	0	0
789.00	20,717	61,684	61,684
789.50	21,819	10,634	72,318

Device	Routing	Invert	Outlet Devices
#1	Primary	785.00'	**15.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 785.00' / 784.00' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	785.00'	**3.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	786.30'	**6.0" x 6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	788.75'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	789.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

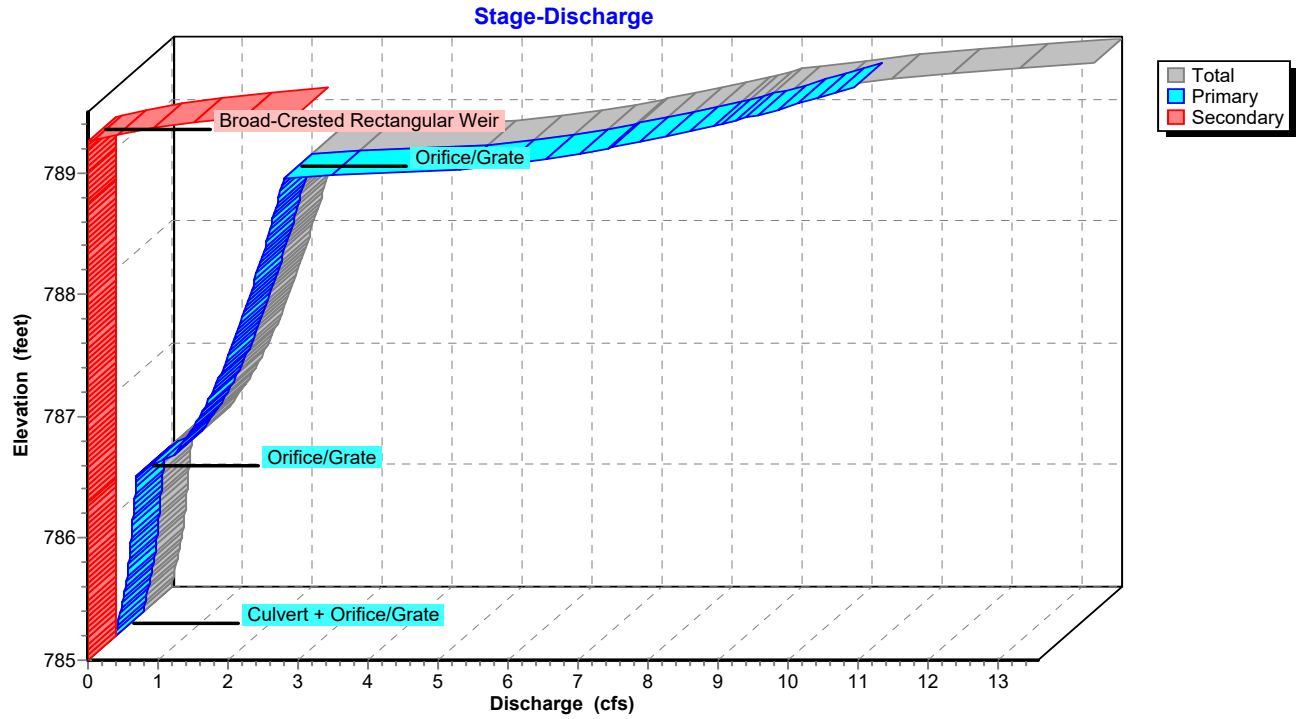
Primary OutFlow Max=8.40 cfs @ 12.24 hrs HW=789.17' (Free Discharge)
└**1=Culvert** (Passes 8.40 cfs of 11.12 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 9.67 fps)
├**3=Orifice/Grate** (Orifice Controls 2.04 cfs @ 8.15 fps)
└**4=Orifice/Grate** (Orifice Controls 5.83 cfs @ 3.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=785.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

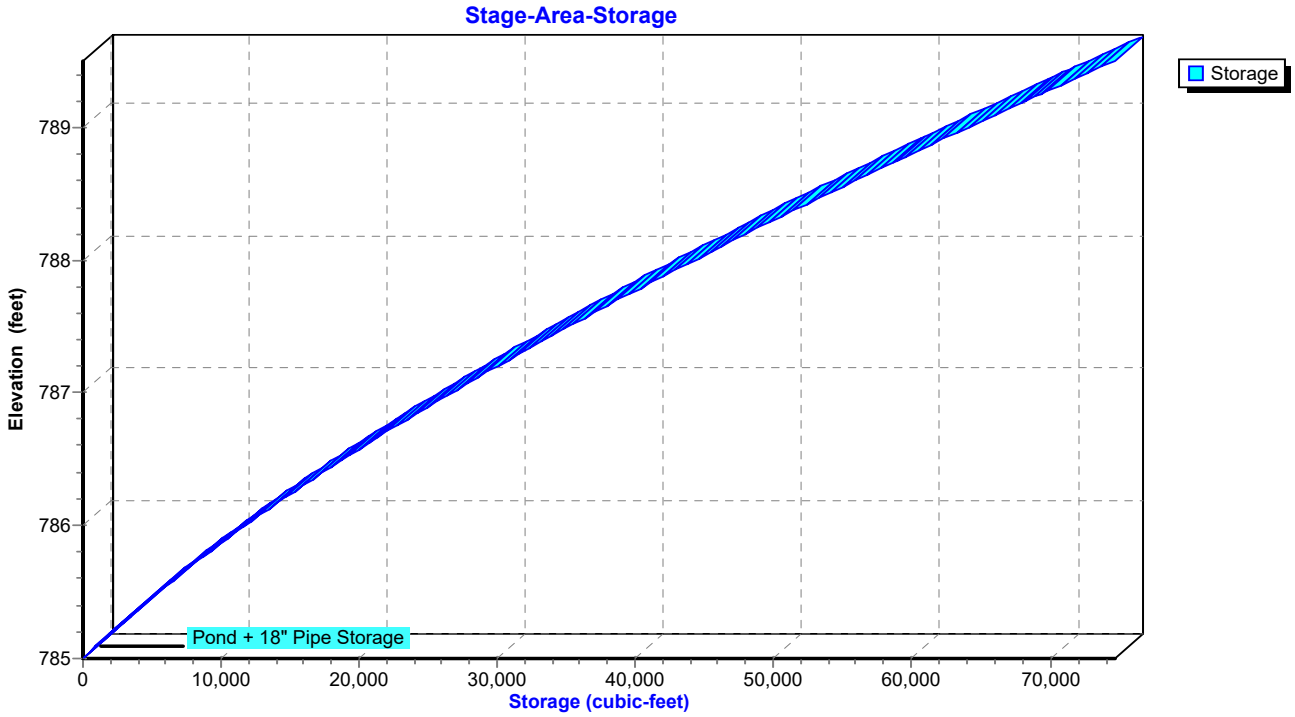
Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Pond 3P: Ortho 1 Pond



Summary for Pond 5P: SE Pond 2

Inflow Area = 26.300 ac, 64.37% Impervious, Inflow Depth = 4.17" for 100Yr. event
Inflow = 94.89 cfs @ 12.09 hrs, Volume= 9.140 af
Outflow = 26.89 cfs @ 12.47 hrs, Volume= 9.121 af, Atten= 72%, Lag= 23.0 min
Primary = 12.13 cfs @ 12.47 hrs, Volume= 8.204 af
Secondary = 14.76 cfs @ 12.47 hrs, Volume= 0.917 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 785.98' @ 12.47 hrs Surf.Area= 33,799 sf Storage= 157,455 cf

Plug-Flow detention time= 552.5 min calculated for 9.121 af (100% of inflow)
Center-of-Mass det. time= 546.0 min (1,462.0 - 916.0)

Volume	Invert	Avail.Storage	Storage Description
#1	780.00'	148,404 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	9,621 cf	**42.0" Round Pipe Storage** L= 1,000.0' S= 0.0020 '/'
		158,025 cf	Total Available Storage

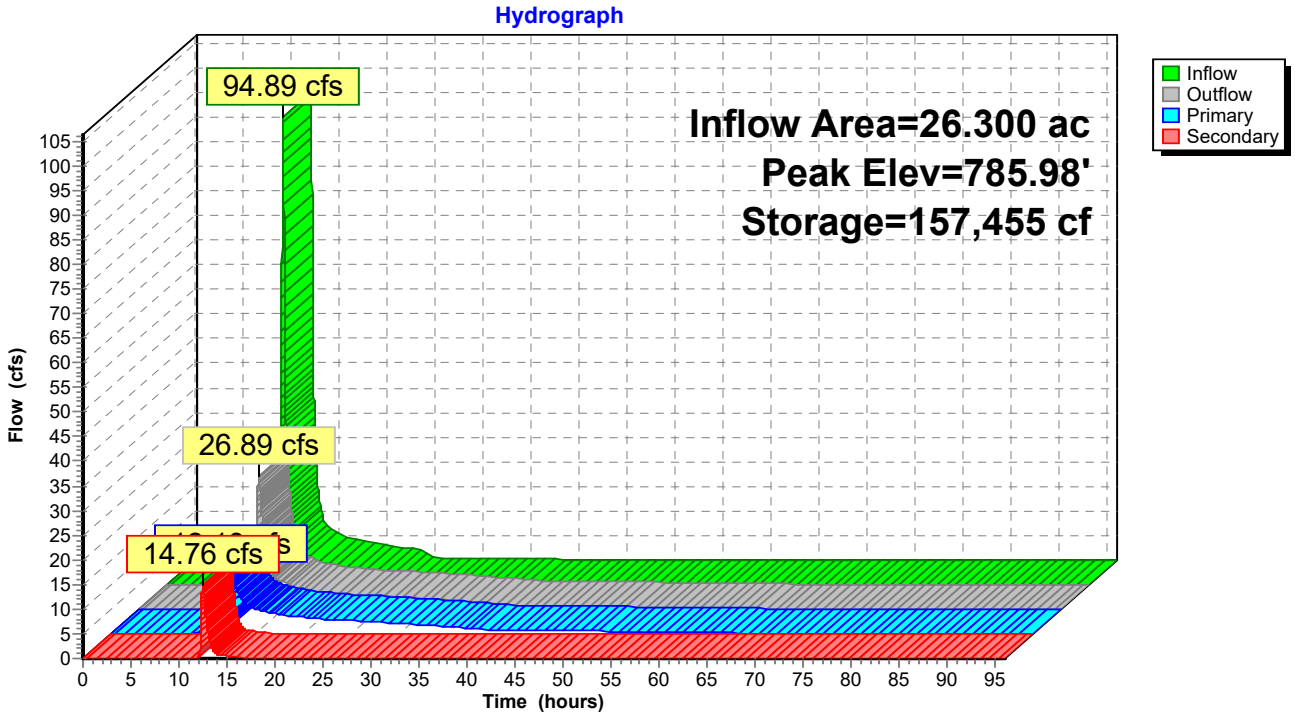
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
780.00	15,618	0	0
786.00	33,850	148,404	148,404

Device	Routing	Invert	Outlet Devices
#1	Primary	780.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 780.00' / 779.75' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	780.00'	**4.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	782.15'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	785.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	785.55'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#6	Secondary	785.55'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

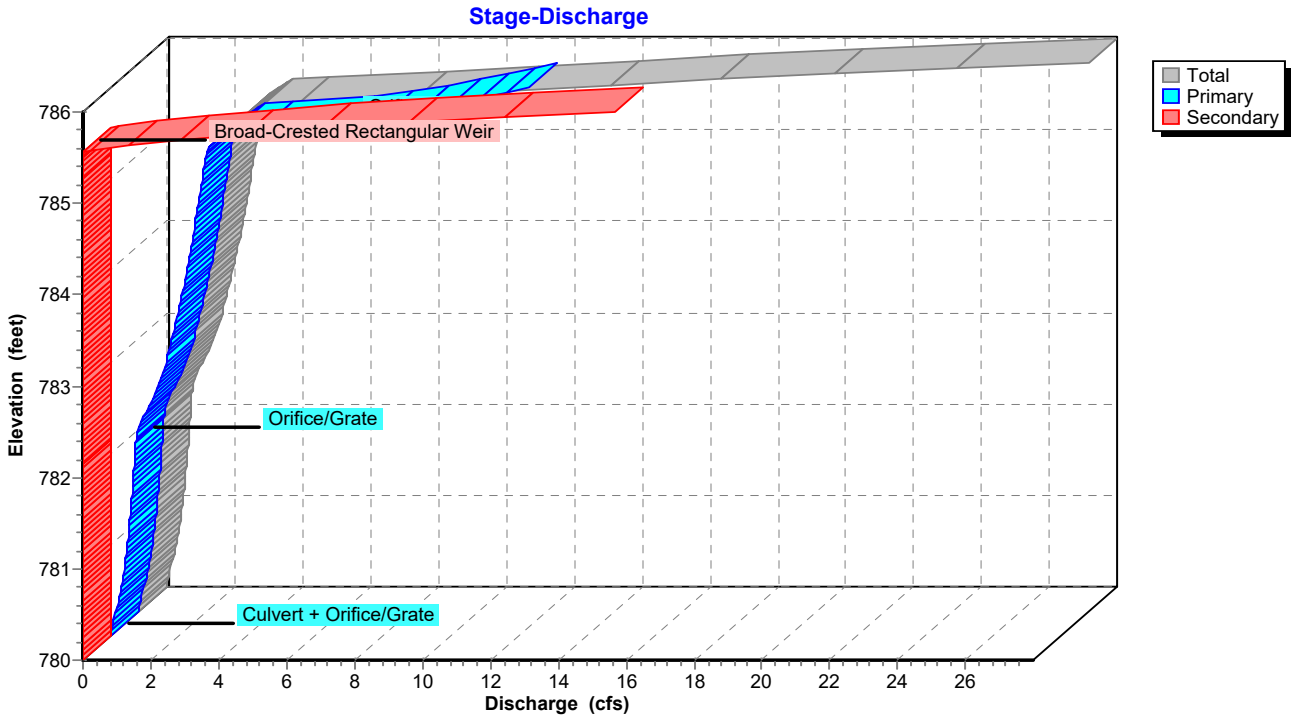
Primary OutFlow Max=12.13 cfs @ 12.47 hrs HW=785.98' (Free Discharge)
└**1=Culvert** (Passes 12.13 cfs of 26.66 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.28 cfs @ 11.59 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.79 cfs @ 9.11 fps)
  ├**4=Orifice/Grate** (Orifice Controls 3.12 cfs @ 3.12 fps)
  └**5=Orifice/Grate** (Orifice Controls 5.94 cfs @ 3.17 fps)

Secondary OutFlow Max=14.73 cfs @ 12.47 hrs HW=785.98' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Weir Controls 14.73 cfs @ 1.70 fps)

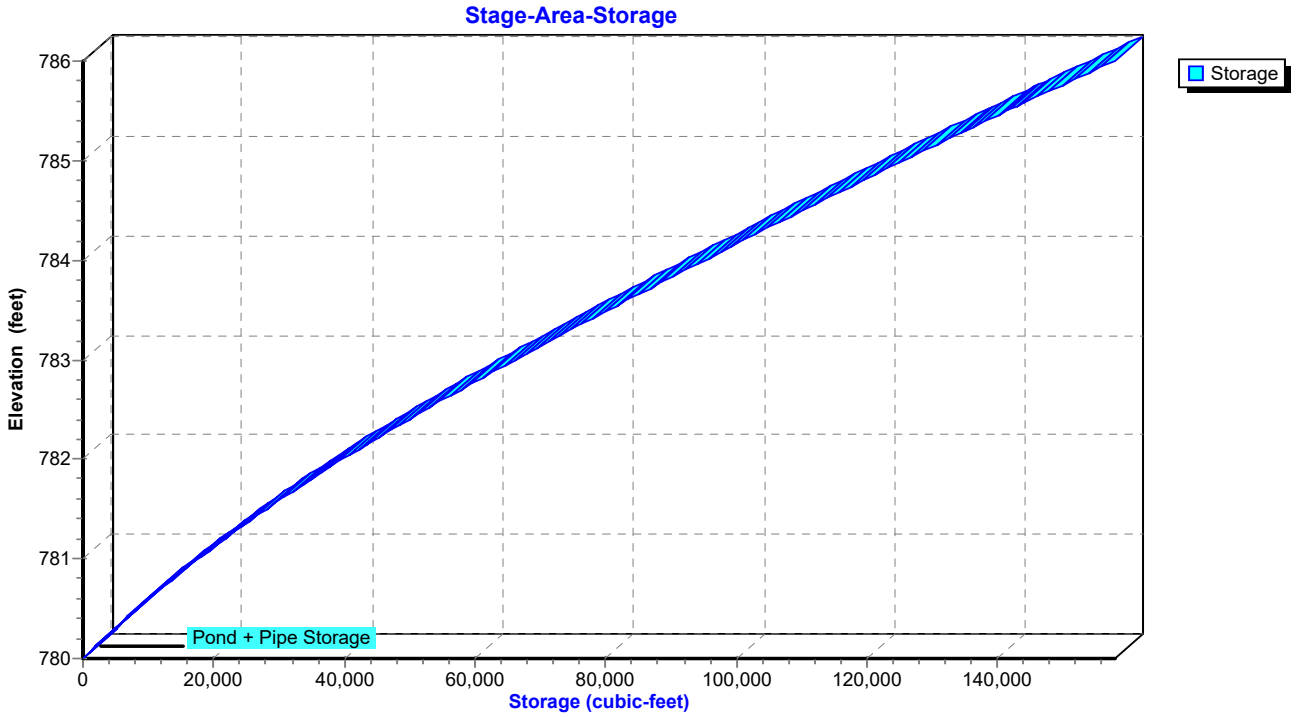
Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Pond 5P: SE Pond 2



Summary for Pond 10P: SW Pond 3

Inflow Area = 13.200 ac, 85.64% Impervious, Inflow Depth = 4.71" for 100Yr. event
Inflow = 75.34 cfs @ 12.06 hrs, Volume= 5.177 af
Outflow = 18.59 cfs @ 12.36 hrs, Volume= 5.024 af, Atten= 75%, Lag= 17.8 min
Primary = 10.55 cfs @ 12.36 hrs, Volume= 4.685 af
Secondary = 8.04 cfs @ 12.36 hrs, Volume= 0.339 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 786.69' @ 12.36 hrs Surf.Area= 35,629 sf Storage= 122,529 cf

Plug-Flow detention time= 530.5 min calculated for 5.024 af (97% of inflow)
Center-of-Mass det. time= 512.6 min (1,296.6 - 784.0)

Volume	Invert	Avail.Storage	Storage Description
#1	783.00'	122,438 cf	**Pond (Prismatic)** Listed below (Recalc)
#2	780.00'	11,197 cf	**36.0" Round 36" Pipe Storage** L= 1,584.0' S= 0.0020 '/'
		133,635 cf	Total Available Storage

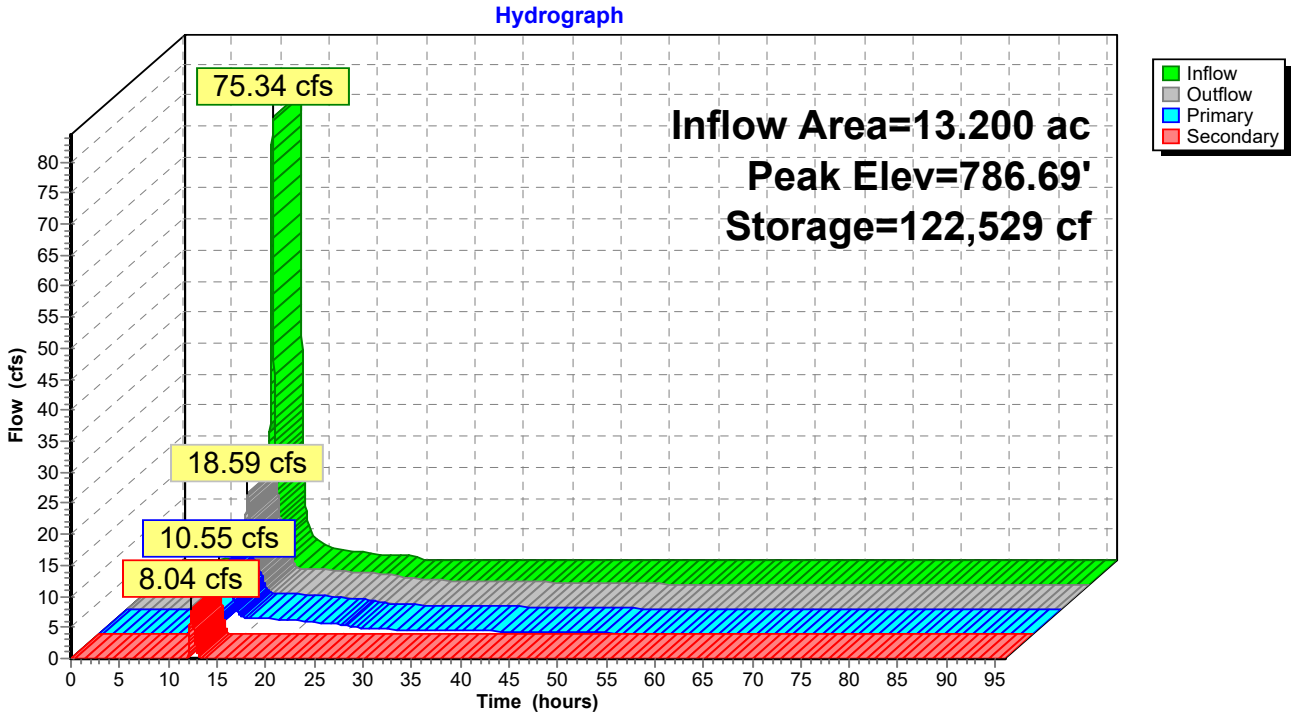
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
783.00	24,677	0	0
787.00	36,542	122,438	122,438

Device	Routing	Invert	Outlet Devices
#1	Primary	783.00'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 783.00' / 782.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	783.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	784.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	786.00'	**1.5" x 5.0" Horiz. Orifice/Grate X 9.00 columns** X 4 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	786.25'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

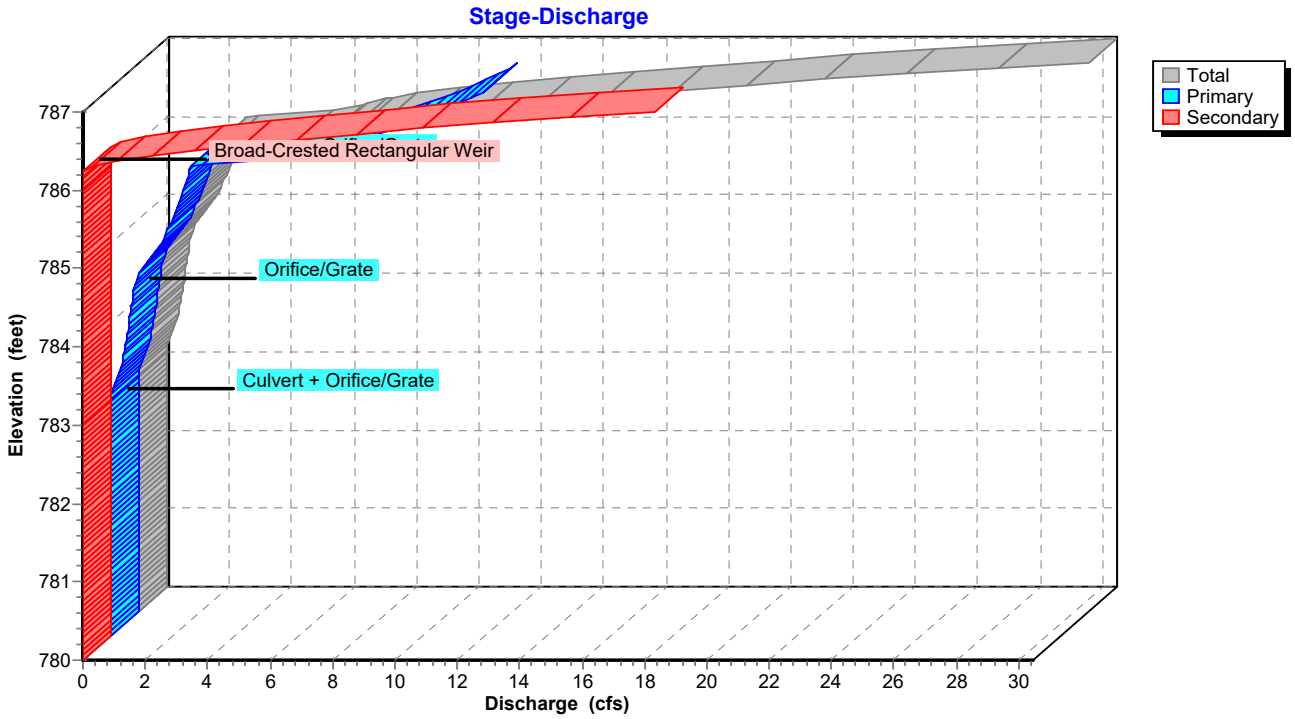
Primary OutFlow Max=10.56 cfs @ 12.36 hrs HW=786.69' (Free Discharge)
└**1=Culvert** (Passes 10.56 cfs of 11.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.23 cfs @ 8.99 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.82 cfs @ 6.81 fps)
  └**4=Orifice/Grate** (Orifice Controls 7.51 cfs @ 4.01 fps)

Secondary OutFlow Max=8.02 cfs @ 12.36 hrs HW=786.69' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 8.02 cfs @ 1.81 fps)

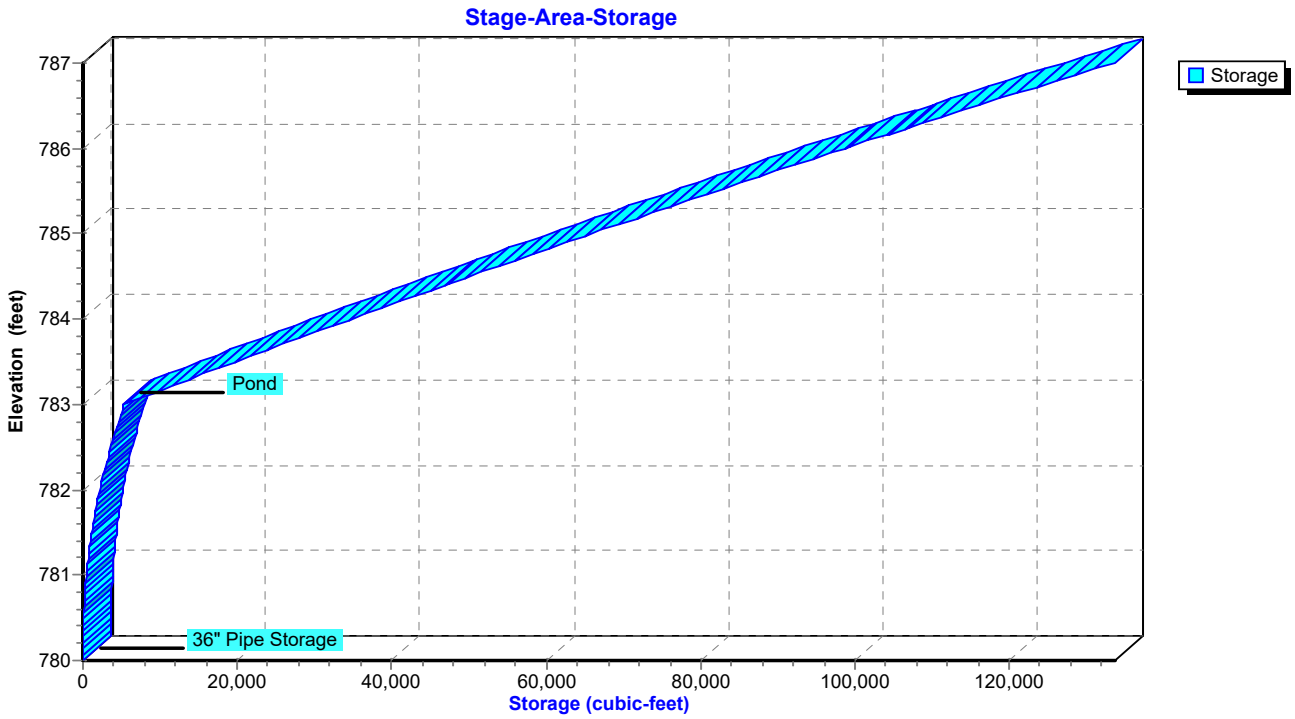
Pond 10P: SW Pond 3



Pond 10P: SW Pond 3



Pond 10P: SW Pond 3

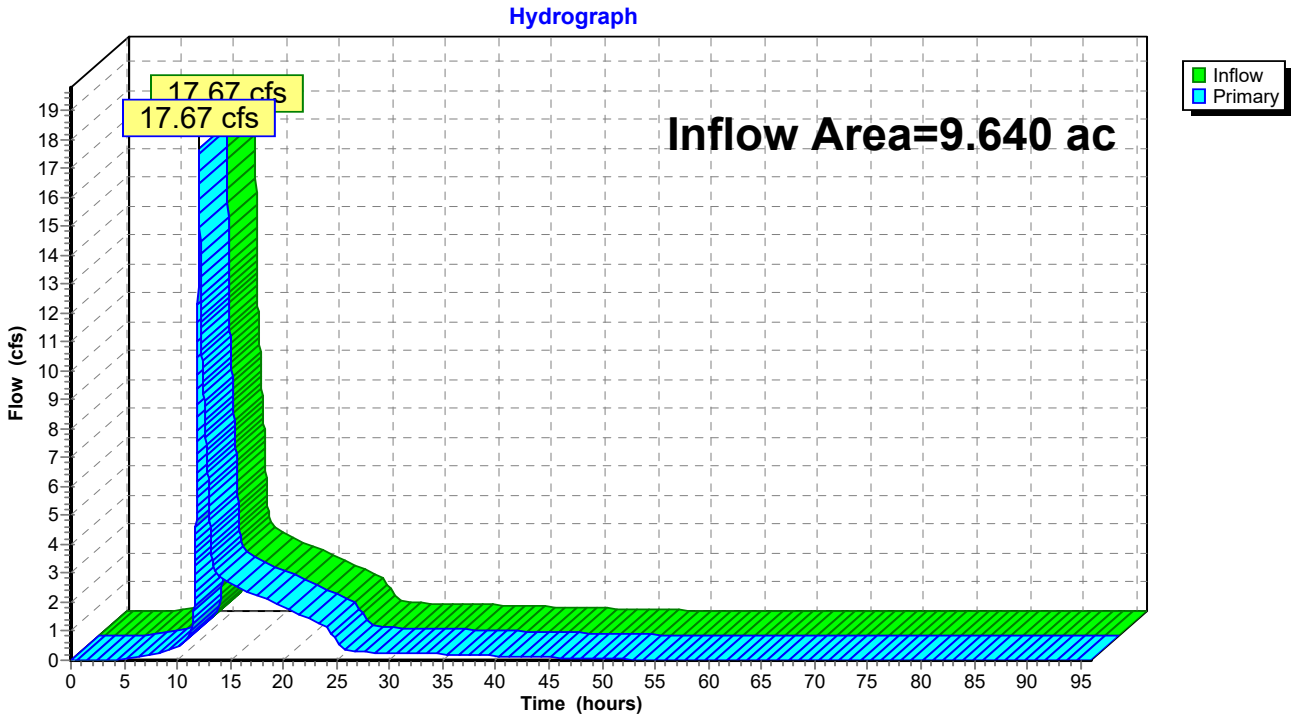


Summary for Link 7L: (new Link)

Inflow Area = 9.640 ac, 64.21% Impervious, Inflow Depth > 4.54" for 100Yr. event
Inflow = 17.67 cfs @ 12.07 hrs, Volume= 3.650 af
Primary = 17.67 cfs @ 12.07 hrs, Volume= 3.650 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : SE Pond 2

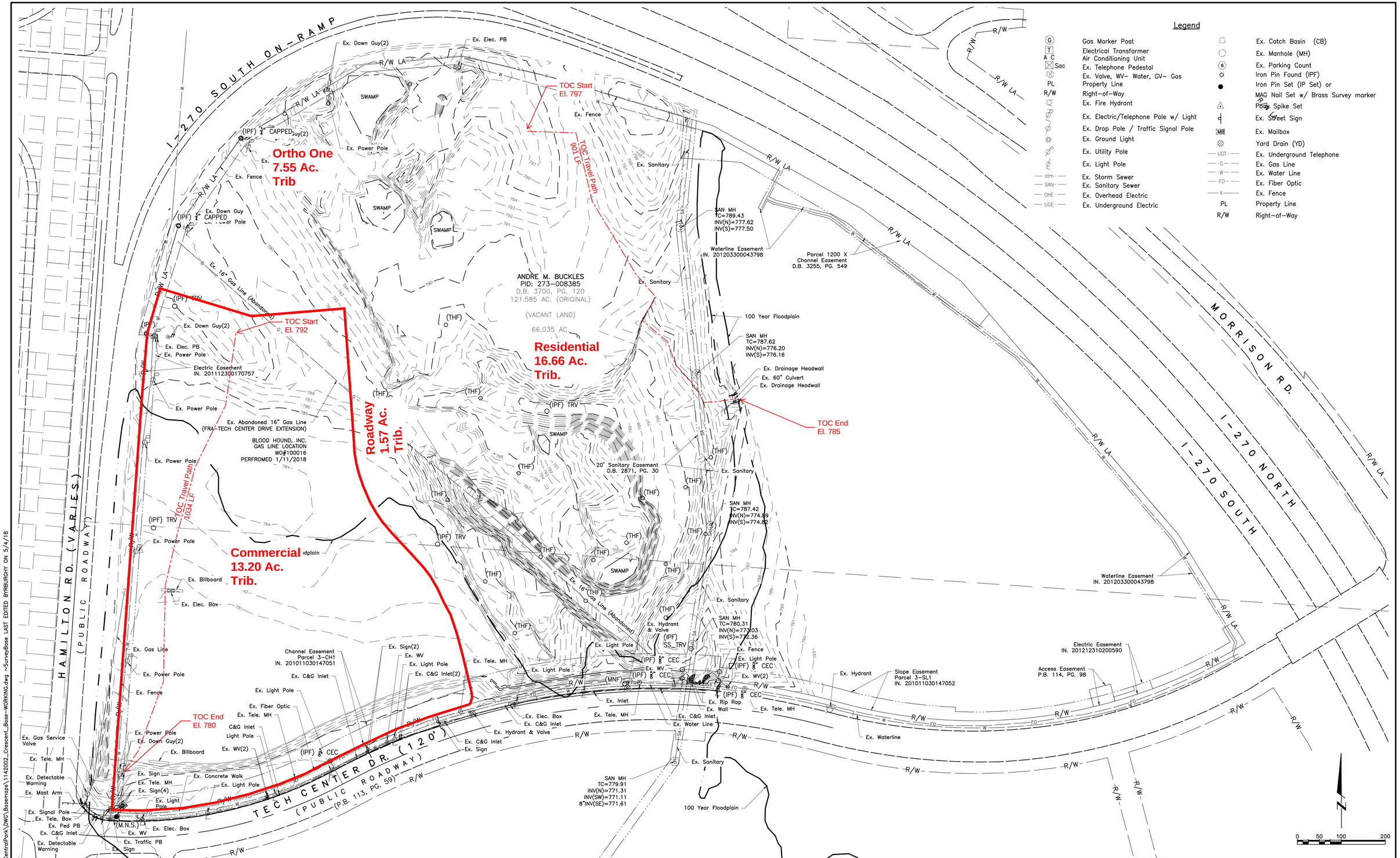
Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 7L: (new Link)



APPENDIX B

(Tributary Maps)



REVISIONS	DATE	BY	CHK.

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880 KING AVENUE
COLUMBUS, OHIO 43212
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(614) 299-2992 (Fax)
www.EPFERRIS.com

CITY OF GAHANNA, OHIO

CRESCENT AT CENTRAL PARK

CRESCENT AT CENTRAL PARK, LLC

JOB NO.	_____-___
DESIGNED BY:	CRK
DRAWN BY:	RJB
CHECKED BY:	____
APPROVED BY:	____
DATE:	05/5/18

TOPOGRAPHIC SURVEY

SCALE: 1" = 100'

SHEET NO.	OF
1	1

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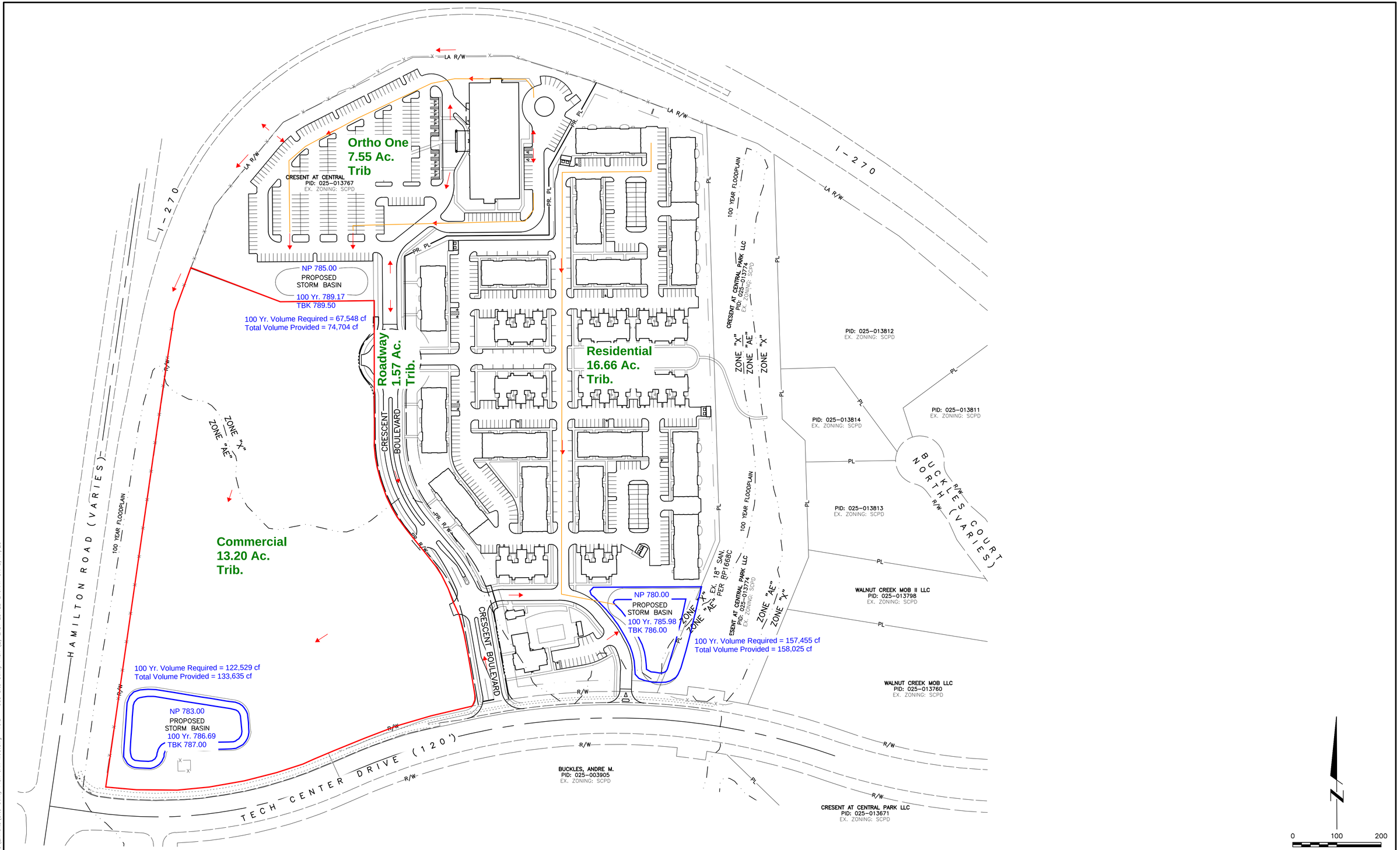

M:\3598011_CrescentPark\DWG\Exhibits\Site Utility Plan JAR MOD.dwg -VOID - Gas Site Utility Plan (2) LAST EDITED BY:RAY ON 3/17/23

REVISIONS	DATE	BY	CHK.

E. P. FERRIS AND ASSOCIATES INC
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CITY OF GAHANNA, OHIO

ORTHOPEDIC ONE

CRESCENT AT CENTRAL PARK LLC

JOB NO.	1267.001
DESIGNED BY:	JAR
DRAWN BY:	JAR
CHECKED BY:	CLP
APPROVED BY:	CLP
DATE:	03/17/23

PRELIMINARY SITE PLAN

SCALE: 1" = 100'

SHEET NO. 1 OF 1

APPENDIX C

(Water Quality)

Wet Extended Detention Basin WQv Compliance Tool

version 3.2 2020-07-07

Project Summary

Project Name:	Crescent Ortho One
Subwatershed ID/Label:	
Submitted by:	EP Ferris
Date:	3/17/2023

Subwatershed Drainage Area, A_{total} =	7.55	acres	=	328,878	ft2
Subwatershed Impervious Area, A_{imp} =	4.45	acres	=	193,842	ft2
Imperviousness fraction, i =	0.59			59	%
Water Quality Volume, WQv =	14,318	ft^3	=	0.33	ac-ft

Step 1 - Soil Suitability

Soil Series	BeA	HSG	D

Step 2 - Wet ED Basin Volume Requirements

Extended Detention Volume, EDv =	14318	ft^3
Minimum Sediment Storage Volume, $V_{sediment}$ =	2864	ft^3
Minimum Permanent Pool Volume, PPv =	17181	ft^3

Step 3 - Basin Stage-Storage Relationship

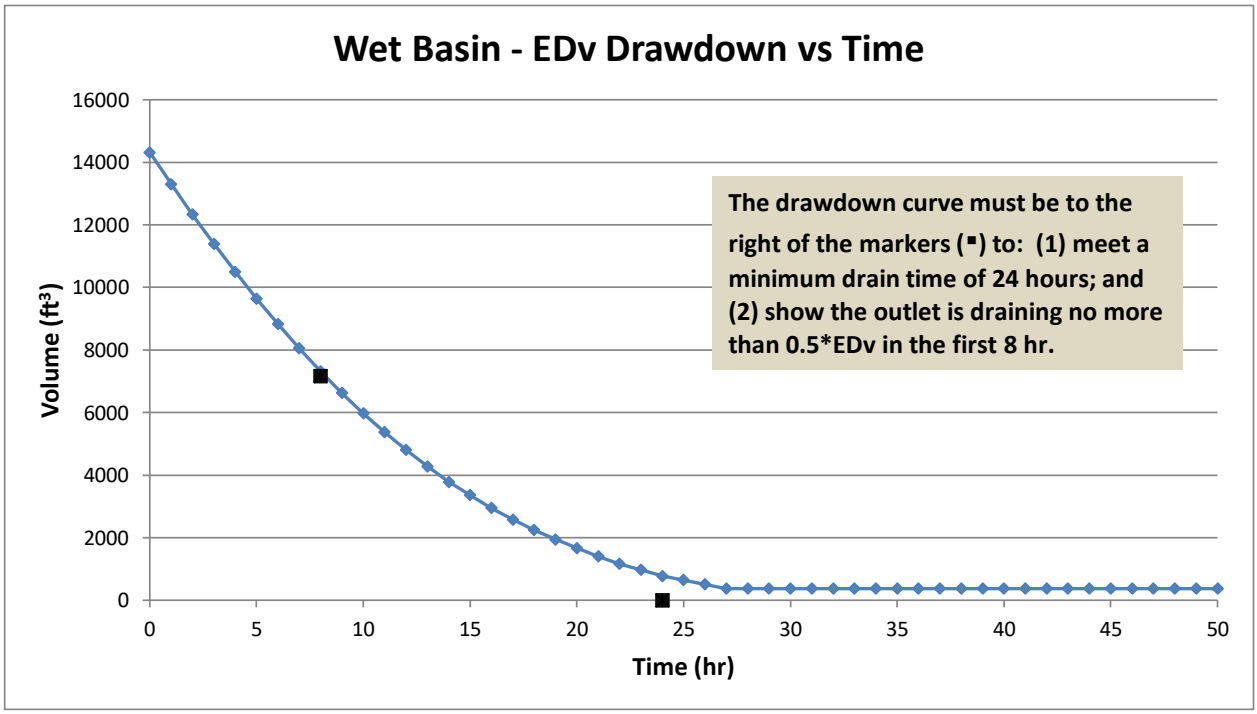
	Elevation ft	Area ft^2		Incremental Volume ft^3	Cumulative Volume ft^3
Bottom of Permanent Micropool =	782.00	3700			
	785.00	10125		19,946	19,946
	789.00	20717		60,433	80,379
	789.50	21819		10,633	91,012

Step 4 - Outlet Elevations and Storage Volumes

WQ Orifice Invert Elevation =	785.00				
Elevation of Top of EDv =	786.25				
Secondary Outlet Invert Elevation =	786.30				OKAY
WQ Treatment Volume Provided, $V_{treatment}$ =	14,827	ft^3			
Treatment Vol Provided Relative to EDv, $V_{treatment}/EDv$ =	1.04		=	104%	OKAY
Permanent Pool Volume Provided, PPv =	19,946	ft^3			
Ratio PPv Provided to PPv Required =	1.16		=	116%	OKAY

Step 5 - Outlet (Orifice) Sizing

Maximum Hydraulic Head, Hmax =	1.25	ft			
Orifice Coefficient, C =	0.6				
Target (Minimum) Draw-down Time, T_d =	24	hr			
Target Average Discharge, Q_{avg} =	0.17	cfs			
Average Hydraulic Head, H_{avg} =	0.63	ft			
Estimated Orifice Area, $A_{orifice}$ =	6.27	in^2	=	0.044	ft^2
Estimated Orifice Diameter, $D_{orifice}$ =	2.83	in	=	0.24	ft
Design Orifice Diameter, $D_{orifice}$ =	3.20	in	=	0.27	ft
Design Orifice Area, $A_{orifice}$ =	7.99	in^2	=	0.055	ft^2
Time to Completely Drain EDv, T_d =	>72	hr	must be ≥ 24 hr		OKAY
Volume Drained in First 8 hr =	7,002	ft^3			
% of EDv =	48.9	%	must be ≤ 50%		OKAY



Wet Extended Detention Basin WQv Compliance Tool

version 3.2 2020-07-07

Project Summary

Project Name: Crescent
Subwatershed ID/Label: Retention Pond SE
Submitted by: EP Ferris
Date: 3.17.23

Subwatershed Drainage Area, A_{total} =	18.23	acres	=	794,099	ft2
Subwatershed Impervious Area, A_{imp} =	11.79	acres	=	513,572	ft2
Imperviousness fraction, i =	0.65			65	%
Water Quality Volume, WQv =	37,644	ft^3	=	0.86	ac-ft

Step 1 - Soil Suitability

Soil Series	Crd1CD2	HSG	C

Step 2 - Wet ED Basin Volume Requirements

Extended Detention Volume, EDv =	37644	ft^3
Minimum Sediment Storage Volume, $V_{sediment}$ =	7529	ft^3
Minimum Permanent Pool Volume, PPv =	45173	ft^3

Step 3 - Basin Stage-Storage Relationship

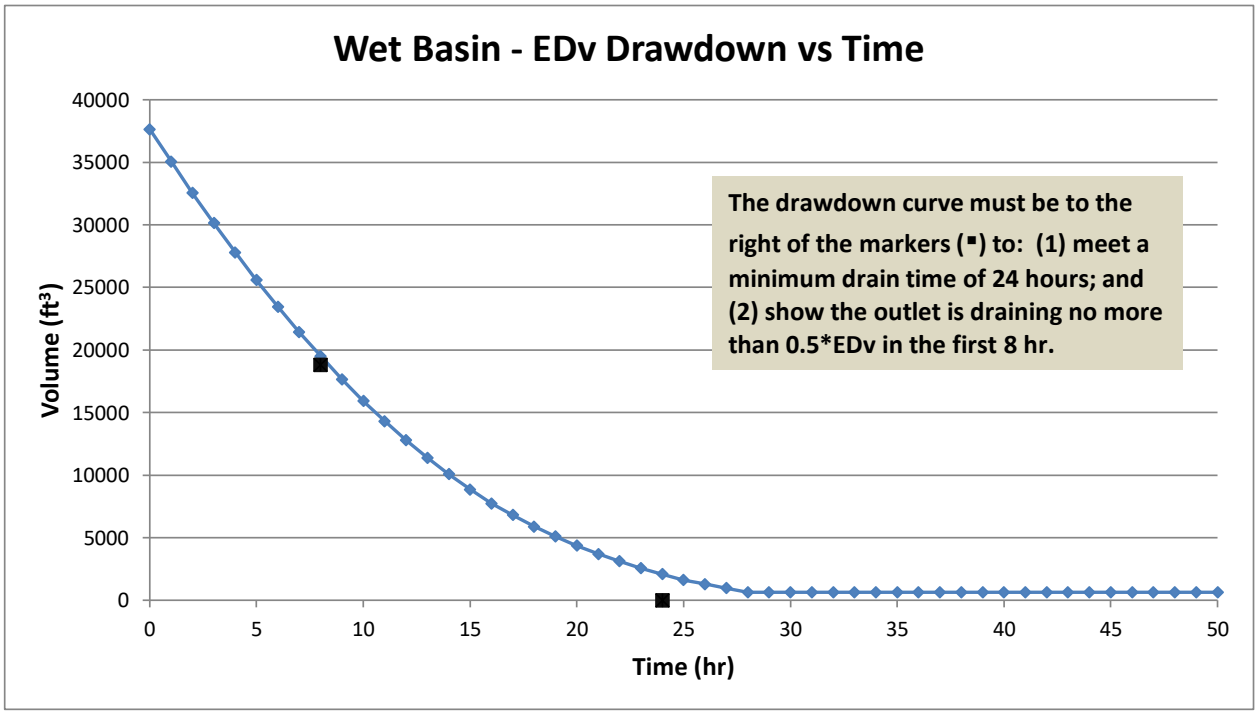
	Elevation ft	Area ft^2		Incremental Volume ft^3	Cumulative Volume ft^3
Bottom of Permanent Micropool =	772.00	5000			
	780.00	15618		78,546	78,546
	786.00	31825		139,475	218,021

Step 4 - Outlet Elevations and Storage Volumes

WQ Orifice Invert Elevation =	780.00				
Elevation of Top of EDv =	782.05				
Secondary Outlet Invert Elevation =	782.15				OKAY
WQ Treatment Volume Provided, $V_{treatment}$ =	37,950	ft^3			
Treatment Vol Provided Relative to EDv, $V_{treatment}/EDv$ =	1.01		=	101%	OKAY
Permanent Pool Volume Provided, PPv =	78,546	ft^3			
Ratio PPv Provided to PPv Required =	1.74		=	174%	OKAY

Step 5 - Outlet (Orifice) Sizing

Maximum Hydraulic Head, Hmax =	2.05	ft			
Orifice Coefficient, C =	0.6				
Target (Minimum) Draw-down Time, T_d =	24	hr			
Target Average Discharge, Q_{avg} =	0.44	cfs			
Average Hydraulic Head, H_{avg} =	1.02	ft			
Estimated Orifice Area, $A_{orifice}$ =	12.87	in^2	=	0.089	ft^2
Estimated Orifice Diameter, $D_{orifice}$ =	4.05	in	=	0.34	ft
Design Orifice Diameter, $D_{orifice}$ =	4.50	in	=	0.38	ft
Design Orifice Area, $A_{orifice}$ =	15.80	in^2	=	0.110	ft^2
Time to Completely Drain EDv, T_d =	>72	hr	must be ≥ 24 hr		OKAY
Volume Drained in First 8 hr =	18,128	ft^3			
% of EDv =	48.2	%	must be ≤ 50%		OKAY



Wet Extended Detention Basin WQv Compliance Tool

version 3.2 2020-07-07

Project Summary

Project Name: Crescent
Subwatershed ID/Label: Retention Pond SW
Submitted by: EP Ferris
Date: 3.17.23

Subwatershed Drainage Area, A_{total} =	13.20	acres	=	574,992	ft2
Subwatershed Impervious Area, A_{imp} =	11.30	acres	=	492,402	ft2
Imperviousness fraction, i =	0.86			86	%
Water Quality Volume, WQv =	35,393	ft^3	=	0.81	ac-ft

Step 1 - Soil Suitability

Soil Series	SIA	HSG	B

Step 2 - Wet ED Basin Volume Requirements

Extended Detention Volume, EDv =	35393	ft^3
Minimum Sediment Storage Volume, $V_{sediment}$ =	7079	ft^3
Minimum Permanent Pool Volume, PPv =	42472	ft^3

Step 3 - Basin Stage-Storage Relationship

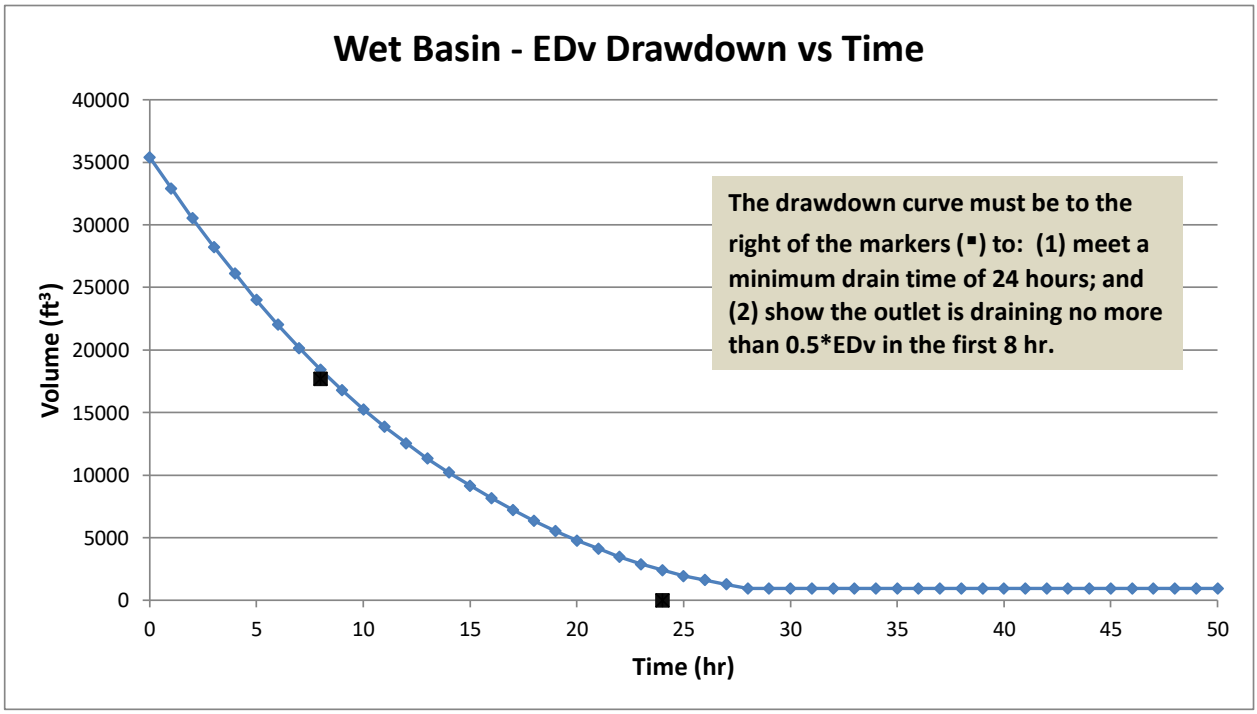
	Elevation ft	Area ft^2		Incremental Volume ft^3	Cumulative Volume ft^3
Bottom of Permanent Micropool =	775.00	5000			
	783.00	24677		108,760	108,760
	787.00	36542		121,664	230,424

Step 4 - Outlet Elevations and Storage Volumes

WQ Orifice Invert Elevation =	783.00				
Elevation of Top of EDv =	784.33				
Secondary Outlet Invert Elevation =	784.40				OKAY
WQ Treatment Volume Provided, $V_{treatment}$ =	37,237	ft^3			
Treatment Vol Provided Relative to EDv, $V_{treatment}/EDv$ =	1.05		=	105%	OKAY
Permanent Pool Volume Provided, PPv =	108,760	ft^3			
Ratio PPv Provided to PPv Required =	2.56		=	256%	OKAY

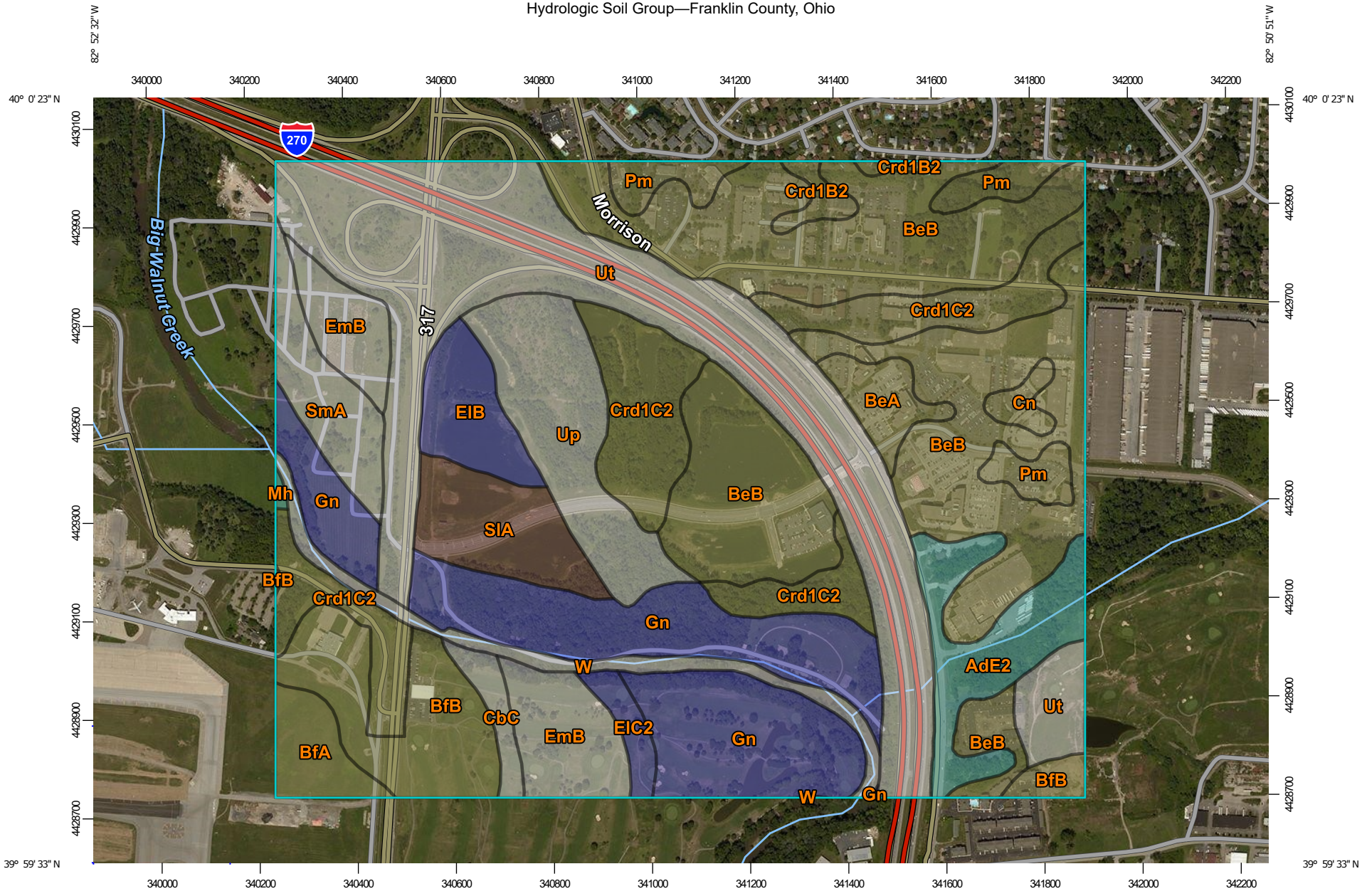
Step 5 - Outlet (Orifice) Sizing

Maximum Hydraulic Head, Hmax =	1.33	ft			
Orifice Coefficient, C =	0.6				
Target (Minimum) Draw-down Time, T_d =	24	hr			
Target Average Discharge, Q_{avg} =	0.41	cfs			
Average Hydraulic Head, H_{avg} =	0.67	ft			
Estimated Orifice Area, $A_{orifice}$ =	15.02	in^2	=	0.104	ft^2
Estimated Orifice Diameter, $D_{orifice}$ =	4.37	in	=	0.36	ft
Design Orifice Diameter, $D_{orifice}$ =	5.00	in	=	0.42	ft
Design Orifice Area, $A_{orifice}$ =	19.51	in^2	=	0.135	ft^2
Time to Completely Drain EDv, T_d =	>72	hr	must be ≥ 24 hr		OKAY
Volume Drained in First 8 hr =	16,975	ft^3			
% of EDv =	48.0	%	must be ≤ 50%		OKAY



APPENDIX D

(Soil Report)


82° 52' 32" W
82° 50' 51" W
40° 0' 23" N
39° 59' 33" N
340000
340200
340400
340600
340800
341000
341200
341400
341600
341800
342000
342200
4430100
4429900
4429700
4429500
4429300
4429100
4428900
4428700
270
Big Walnut Creek
Morrison
317
Pm
Crd1B2
BeB
Ut
Crd1C2
EmB
SmA
EIB
Up
BeA
Cn
Mh
Gn
SlA
Pm
BfB
W
AdE2
CbC
EmB
EIC2
BfA
Ut
BeB
BfB
Gn
Map Scale: 1:11,000 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Franklin County, Ohio
Survey Area Data: Version 19, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2014—Aug 27, 2014

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
AdE2	Alexandria silt loam, 18 to 25 percent slopes, eroded	C	20.1	3.8%
BeA	Bennington silt loam, 0 to 2 percent slopes	C/D	7.1	1.3%
BeB	Bennington silt loam, 2 to 6 percent slopes	C/D	124.6	23.5%
BfA	Bennington-Urban land complex, 0 to 2 percent slopes	C/D	8.2	1.6%
BfB	Bennington-Urban land complex, 0 to 6 percent slopes	C/D	26.6	5.0%
CbC	Cardington-Urban land complex, 6 to 12 percent slopes		4.2	0.8%
Cn	Condit silt loam, 0 to 1 percent slopes	C/D	2.8	0.5%
Crd1B2	Cardington silt loam, 2 to 6 percent slopes, eroded	C/D	3.7	0.7%
Crd1C2	Cardington silt loam, 6 to 12 percent slopes, eroded	C/D	48.5	9.2%
ElB	Eldean silt loam, 2 to 6 percent slopes	B	11.7	2.2%
ElC2	Eldean silt loam, 6 to 12 percent slopes, eroded	B	4.0	0.7%
EmB	Eldean-Urban land complex, 2 to 6 percent slopes		22.0	4.2%
Gn	Genesee silt loam, 0 to 2 percent slopes, occasionally flooded	B	65.9	12.5%
Mh	Medway silt loam, occasionally flooded	C	0.4	0.1%
Pm	Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes	C/D	12.5	2.4%
SlA	Sleeth silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	B/D	16.5	3.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
SmA	Sleeth-Urban land complex, 0 to 2 percent slopes		12.9	2.4%
Up	Udorthents, loamy, rolling		27.1	5.1%
Ut	Udorthents-Urban land complex, gently rolling		100.0	18.9%
W	Water		10.5	2.0%
Totals for Area of Interest			**529.3**	**100.0%**

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

APPENDIX E

(Storm Pipe Calculations)