

EQUIPMENT SERVICING FACILITY for TRUE RAIL

Mt. Pleasant, Tennessee

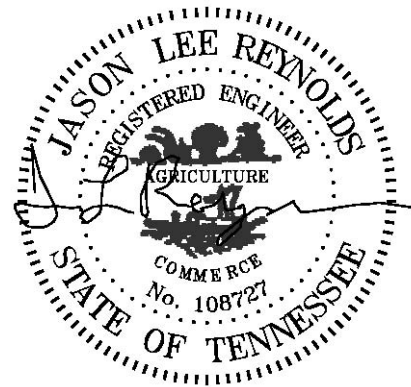
DRAINAGE CALCULATIONS WITH SITE PLAN SUBMITTAL

May 22, 2026

Prepared By:



CSR Project #: 24-040



Abstract

This report presents a detailed summary of stormwater quality and quantity treatment for an industrial 62-acre site in Mt. Pleasant, TN. In compliance with City regulations, the site will require additional quantity controls for stormwater due to the proposed site conditions having an increased rate of runoff vs. the existing conditions. The primary factor for increased runoff is the existing undeveloped property will be converted to industrial work areas and impervious areas (building and asphalt parking). Stormwater quality treatment is not provided on this development.

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Section I Site Information

The subject property consists of 62 acres, described as parcel 63.11, located Main Street, south of Town. (see Figure 1). The property is shown on Maury County Property Map 150, Parcel 11.01 (presented in Figure 2), and is currently owned by Bonafide Holdings TN, LLC. The site is currently vacant, undeveloped, predominately grass/vegetation with a gravel entrance driveway. The proposed development will consist of aligning the entrance drive with Main St. and then extending the asphalt entrance east to a proposed asphalt parking area adjacent to a proposed equipment servicing building. The servicing building will include rail cars into the structure from eastern rail spur tie ins. None of this site is within a flood hazard area according to FEMA's National Flood Hazard Map, Panel 47119C0265E with an effective date of April 16, 2007 (see Figure 3). Currently, the site drains via sheet flow generally to the northeast. There are two offsite drainage basins moving in the same direction but are relatively unaffected by the developed and remain flowing in a similar fashion after development. The site increased stormwater due to impervious and related development surfaces is routed to a detention pond to detain flows less than existing for the site. After detention the water is routed to the northeast along the existing drainage paths at amounts less than existing for the 2 through 100 year events.



Figure 1: Vicinity Map



Figure 2: Maury County Property Map 150, Parcel 63.11

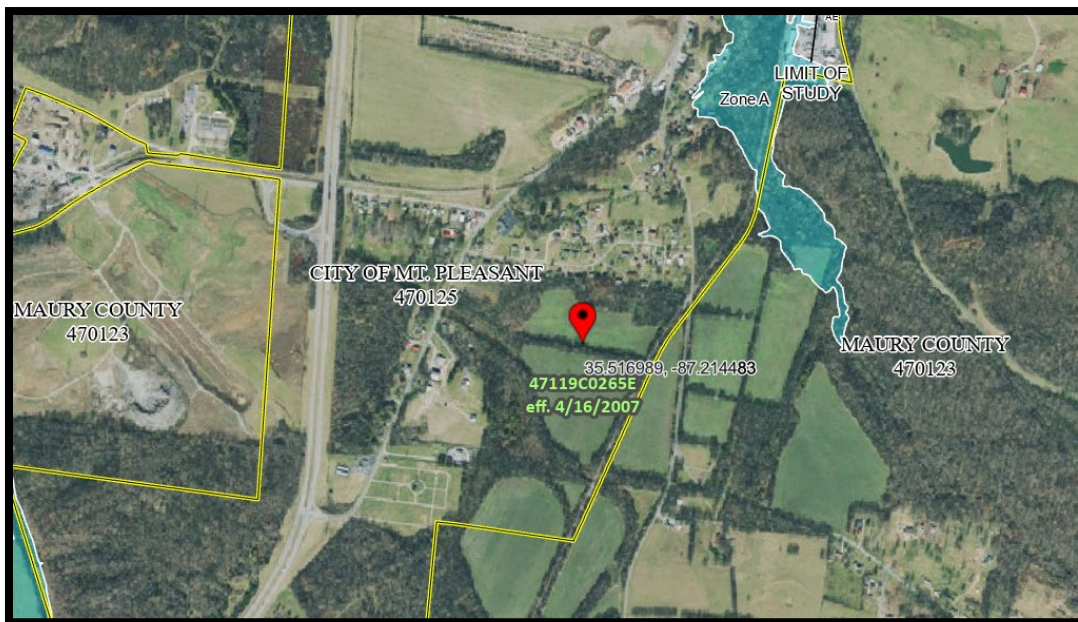


Figure 3: FEMA Map 47119C0265E

Section II Drainage Calculations

Using the existing data detailed below, analysis transpired using the SCS (TR-20) method to determine the pre-developed discharge rates for this site. A curve number varied on the grass or wooded areas and was used for all pervious areas given the site cover and condition observations coupled with the existing soil types detailed shown hereinafter.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ae	Armour silt loam, eroded gently sloping phase	17.5	27.1%
Bg	Braxton cherty silty clay loam, severely eroded sloping phase	0.9	1.4%
Bm	Burgin silt loam, phosphatic phase (Eagleville)	20.9	32.4%
Df	Donerail silt loam, gently sloping phase	6.3	9.8%
Hr	Huntington silt loam, local alluvium phosphatic phase	1.1	1.7%
Ld	Lindell silt loam, 0 to 2 percent slopes, occasionally flooded	13.4	20.8%
Mb	Maury silt loam, eroded gently sloping phase	0.1	0.2%
Mp	Mines, Pits, and Dumps	4.2	6.5%
W	Water	0.1	0.2%
Totals for Area of Interest		64.7	100.0%

Figure 4: NRCS Soil Data



Figure 5: NRCS Soil Data Map

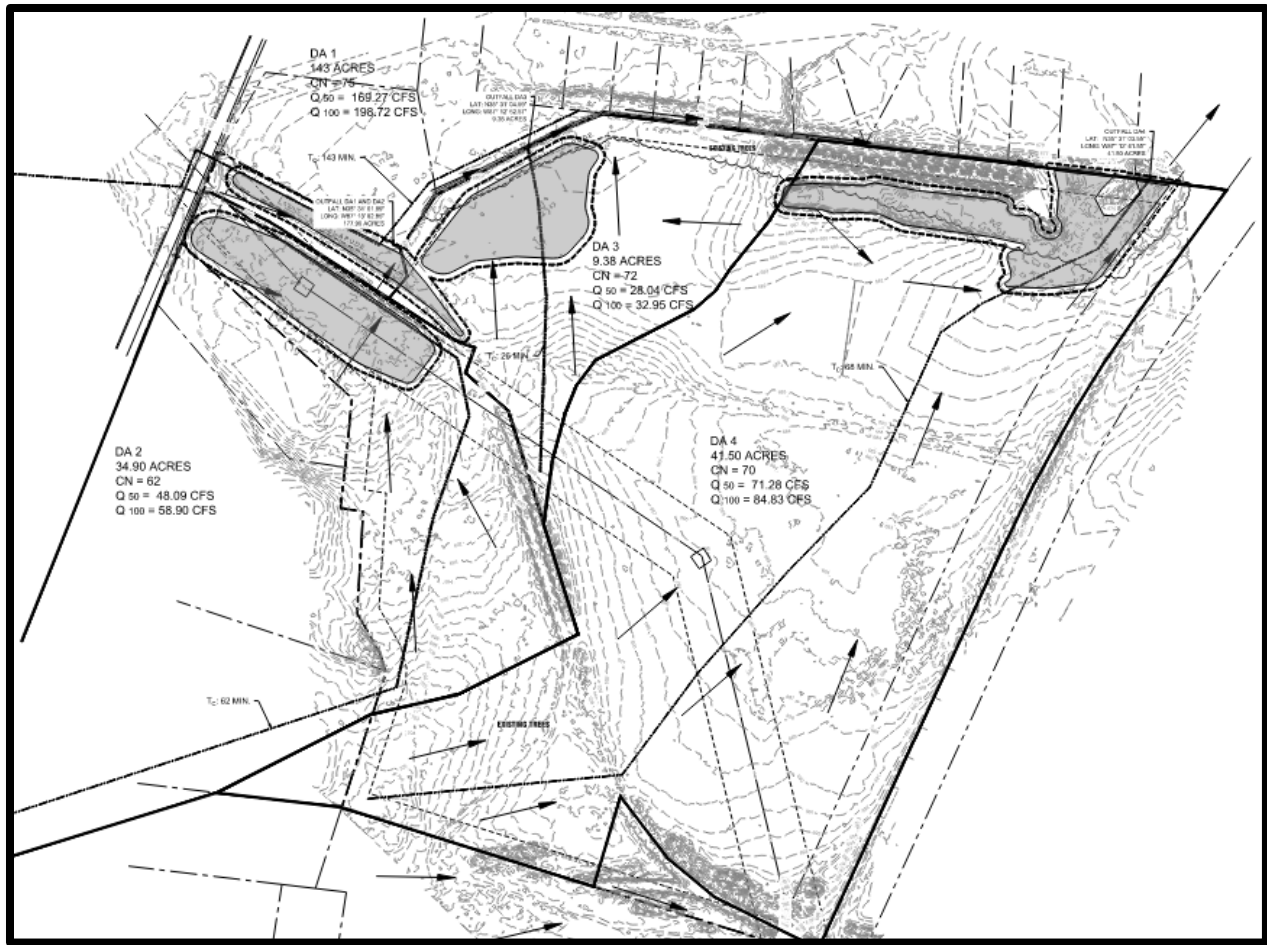


Figure 6: Existing Drainage Basin Map

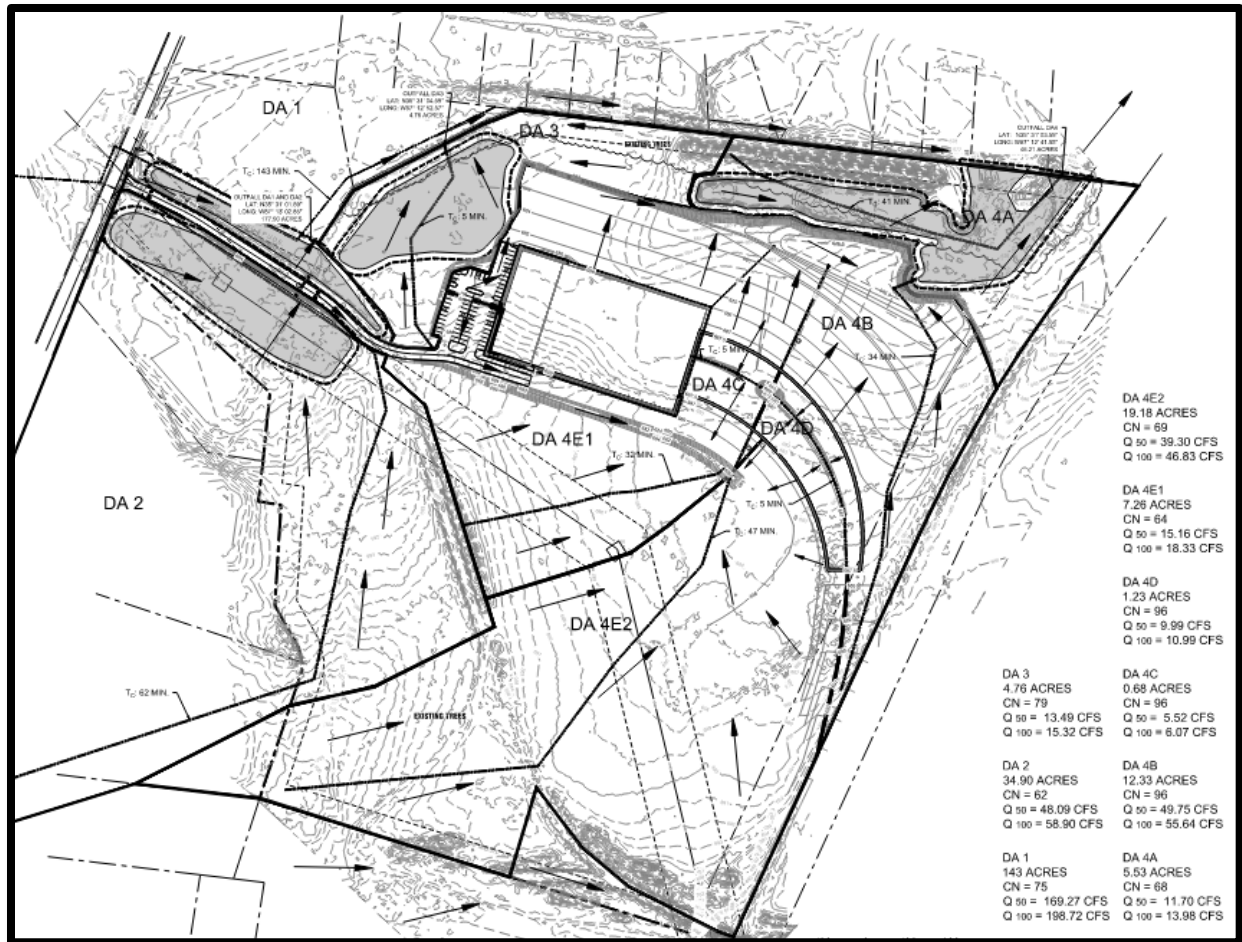


Figure 7: Proposed Drainage Basin Map

The 2, 5, 10, 25, 50 and 100-year storms were each analyzed using a 24-hour period in accordance with the original development of the SCS model. Design rainfall data from NOAA Atlas 14 for Mt Pleasant, TN was used for the intensity of all rainfall events. The resulting runoff rates for each storm can be found in Figure 9 below and as attached in detail in Appendix A.

2.1 General Plan

The site's topography and natural drainage patterns allow the site under development consideration to be analyzed as four subbasins as shown in Figure 6 above the cut into smaller, developed subbasin in the proposed site in Figure 7. The site development will meet the City regulation requirements for quantity pre vs. post measures. The detained flows from the site are then returned to existing drainage features, and the associated runoff follows natural pathways

A general schematic plan of this design is presented in Figure 8 which shows runoff being collected via sheet and shallow concentrated flow and some ditches into the detention pond. No water quality measures are provided.



Section IV Proposed Stormwater Quantity Controls

The stormwater flow control occurs with the application of an individual detention management facility. The SCS (TR-20) method utilizing HydroCAD was used to analyze all flows through the existing and proposed drainage system. The curve number for the proposed site was developed from the weighted site curve numbers in pervious areas (varies) and 98 for improved asphalt, concrete and building areas. Stone covered access and storage areas have a varied CN based upon the underlying soils composition and drainage classification. The resultant flows for the proposed site are based on the proposed development as shown on the plans and further detailed in the Appendix A report.

4.1 Storm Water Quantity Conditions

Pre vs. Post stormwater runoff results in a slight increase to site quantities as tabled below. The images below reveal the drainage areas prior to and after construction.

Storm Event	Predeveloped Flows (CFS) Areas 3&4	Proposed Flows after Detention (CFS) Areas 3/4/Pond
2-year	31.32	30.52
5-year	47.49	42.75
10-year	61.46	53.30
25-year	81.97	66.64
50-year	99.32	82.9
100-year	117.78	91.69

Figure 9: Site Pre vs. Post Runoff Summary

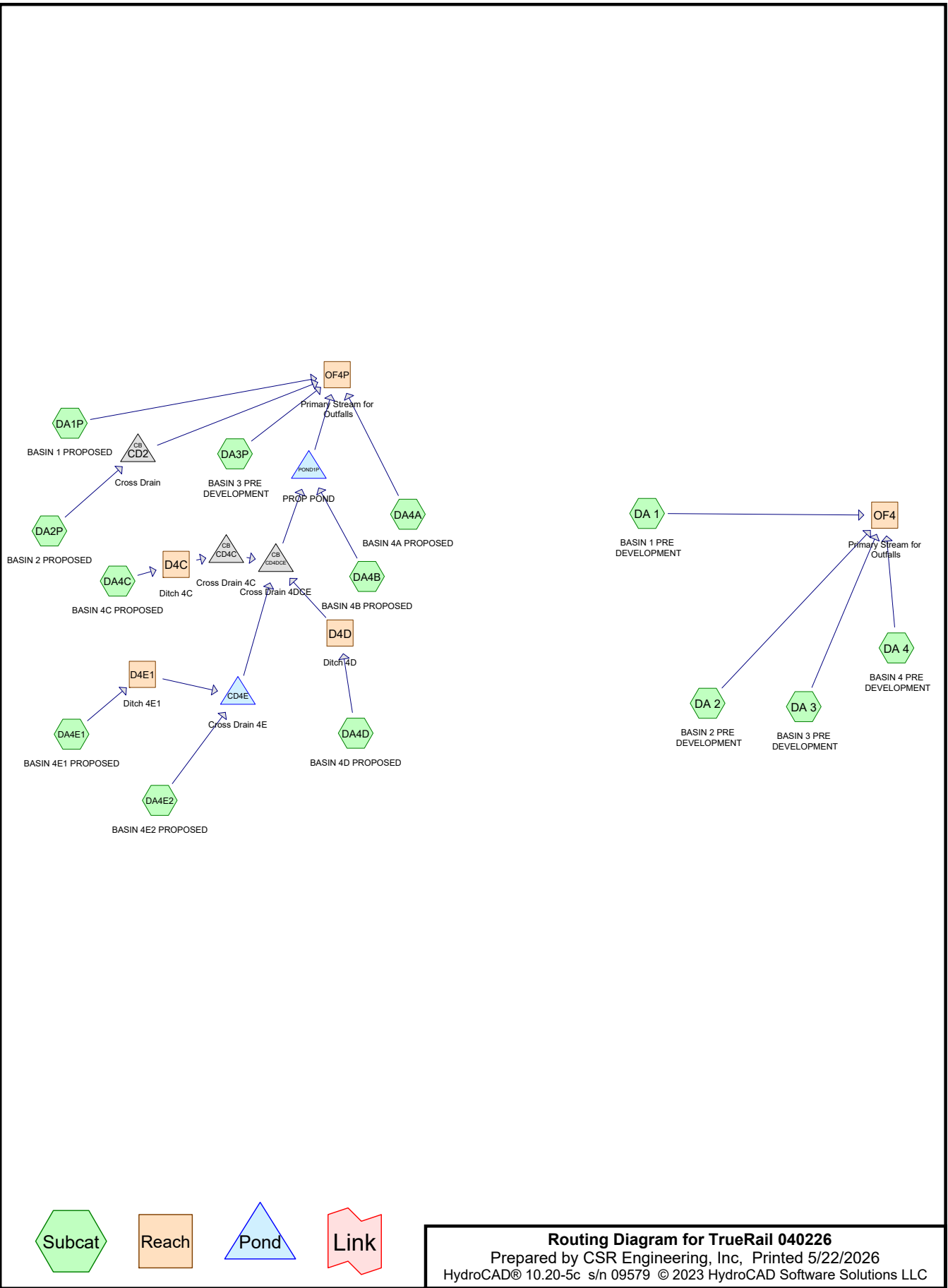
With the quantity increased due to the change in cover and added impervious areas, storm water storage is provided for by a standard detention with controlled release rates. An emergency overflow designed to pass storm events greater than the 100 year event is also included as part of this design. All peak volume calculations are based on the SCS TR-20 method.

Section V Conclusion

The proposed storm sewer system has been designed to meet the requirements of the City of Mt. Pleasant Regulations and prior recommendations of the Department Staff. The system will reduce the post-developed site discharge rate from the 2, 5, 10, 25, 50 and 100-year rainfall events to be less than the pre-developed discharge rates from the same storms.

APPENDIX A

Drainage Model Reports



Project Notes

Copied 6 events from Springfield 24-hr S1 storm

Copied 7 events from dickson 24-hr S1 storm

Copied 7 events from stockbridge 24-hr S1 storm

Copied 6 events from Tiptonville 24-hr S1 storm

Copied 7 events from Mt Pleasant 24-hr S1 storm

Copied 6 events from Tiptonville 24-hr S1 storm

Copied 7 events from Mt Pleasant 24-hr S1 storm

Copied 6 events from Tiptonville 24-hr S1 storm

Copied 7 events from Mt Pleasant 24-hr S1 storm

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Mt Pleasant 24-hr S1	2-yr	Default	24.00	1	3.90	2
2	5-yr	Mt Pleasant 24-hr S1	5-yr	Default	24.00	1	4.75	2
3	10-yr	Mt Pleasant 24-hr S1	10-yr	Default	24.00	1	5.42	2
4	25-yr	Mt Pleasant 24-hr S1	25-yr	Default	24.00	1	6.34	2
5	50-yr	Mt Pleasant 24-hr S1	50-yr	Default	24.00	1	7.08	2
6	100-yr	Mt Pleasant 24-hr S1	100-yr	Default	24.00	1	7.83	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,054,840	74	>75% Grass cover, Good, HSG C (DA 1, DA1P)
750,974	96	Gravel surface, HSG C (DA 2, DA2P, DA4B, DA4C, DA4D)
2,302,582	58	Meadow, non-grazed, HSG B (DA 2, DA 3, DA 4, DA2P, DA4E1, DA4E2)
650,351	71	Meadow, non-grazed, HSG C (DA 4)
461,736	78	Meadow, non-grazed, HSG D (DA 3, DA 4)
217,800	98	Paved parking, HSG C (DA 1, DA1P)
43,560	98	Paved parking, HSG D (DA4B)
43,560	98	Paved roads w/curbs & sewers, HSG B (DA4E1)
87,120	98	Roofs, HSG D (DA4B)
1,812,532	60	Woods, Fair, HSG B (DA 2, DA 3, DA 4, DA2P, DA4A, DA4E1, DA4E2)
488,743	73	Woods, Fair, HSG C (DA 4, DA4A)
835,916	79	Woods, Fair, HSG D (DA 3, DA 4, DA3P, DA4E2)
6,185,520	76	Woods/grass comb., Fair, HSG C (DA 1, DA1P)
19,935,234	73	TOTAL AREA

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
4,158,673	HSG B	DA 2, DA 3, DA 4, DA2P, DA4A, DA4E1, DA4E2
14,348,228	HSG C	DA 1, DA 2, DA 4, DA1P, DA2P, DA4A, DA4B, DA4C, DA4D
1,428,332	HSG D	DA 3, DA 4, DA3P, DA4B, DA4E2
0	Other	
19,935,234		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	6,054,840	0	0	6,054,840	>75% Grass cover, Good
0	0	750,974	0	0	750,974	Gravel surface
0	2,302,582	650,351	461,736	0	3,414,668	Meadow, non-grazed
0	0	217,800	43,560	0	261,360	Paved parking
0	43,560	0	0	0	43,560	Paved roads w/curbs & sewers
0	0	0	87,120	0	87,120	Roofs
0	1,812,532	488,743	835,916	0	3,137,191	Woods, Fair
0	0	6,185,520	0	0	6,185,520	Woods/grass comb., Fair
0	4,158,673	14,348,228	1,428,332	0	19,935,234	TOTAL AREA

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	CD2	680.25	680.00	50.0	0.0050	0.011	0.0	36.0	0.0	
2	CD4C	683.75	679.00	60.0	0.0792	0.011	0.0	18.0	0.0	
3	CD4DCE	678.39	676.50	360.0	0.0052	0.011	0.0	48.0	0.0	
4	CD4E	679.50	678.46	200.0	0.0052	0.011	0.0	48.0	0.0	
5	POND1P	676.25	676.00	50.0	0.0050	0.011	0.0	36.0	0.0	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=1.59"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=58.46 cfs 826,416 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=0.81"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=11.06 cfs 102,914 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=1.46"
 Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=9.84 cfs 49,580 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=1.26"
 Flow Length=2,468' Tc=68.1 min CN=70 Runoff=21.84 cfs 190,326 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=1.59"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=58.46 cfs 826,416 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=0.81"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=11.06 cfs 102,914 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=1.88"
 Tc=5.0 min CN=79 Runoff=13.13 cfs 32,530 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=1.14"
 Flow Length=945' Tc=40.9 min CN=68 Runoff=3.44 cfs 22,928 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=3.44"
 Flow Length=996' Tc=33.8 min CN=96 Runoff=26.19 cfs 154,012 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=3.44"
 Tc=5.0 min CN=96 Runoff=3.21 cfs 8,494 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=3.44"
 Tc=5.0 min CN=96 Runoff=5.81 cfs 15,364 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=0.92"
 Flow Length=640' Tc=31.5 min CN=64 Runoff=3.86 cfs 24,160 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=1.20"
 Flow Length=1,313' Tc=46.8 min CN=69 Runoff=11.82 cfs 83,694 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.52' Max Vel=2.25 fps Inflow=3.21 cfs 8,494 cf
 n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=2.96 cfs 8,494 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.65' Max Vel=3.03 fps Inflow=5.81 cfs 15,364 cf
 n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=5.49 cfs 15,364 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=0.43' Max Vel=1.22 fps Inflow=3.86 cfs 24,160 cf
 n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=2.79 cfs 24,160 cf

Reach OF4: Primary Stream for Avg. Flow Depth=1.84' Max Vel=3.38 fps Inflow=75.72 cfs 1,169,236 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=75.62 cfs 1,169,236 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=1.88' Max Vel=3.43 fps Inflow=79.43 cfs 1,270,504 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=79.29 cfs 1,270,503 cf

Pond CD2: Cross Drain Peak Elev=681.73' Inflow=11.06 cfs 102,914 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=11.06 cfs 102,914 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.56' Inflow=2.96 cfs 8,494 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=2.96 cfs 8,494 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=680.19' Inflow=15.18 cfs 131,709 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=15.18 cfs 131,709 cf

Pond CD4E: Cross Drain 4E Peak Elev=681.07' Storage=1,039 cf Inflow=14.52 cfs 107,853 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=14.40 cfs 107,852 cf

Pond POND1P: PROP POND Peak Elev=679.53' Storage=98,788 cf Inflow=38.46 cfs 285,722 cf
Outflow=17.22 cfs 285,716 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 2,439,747 cf Average Runoff Depth = 1.47"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 58.46 cfs @ 13.83 hrs, Volume= 826,416 cf, Depth= 1.59"

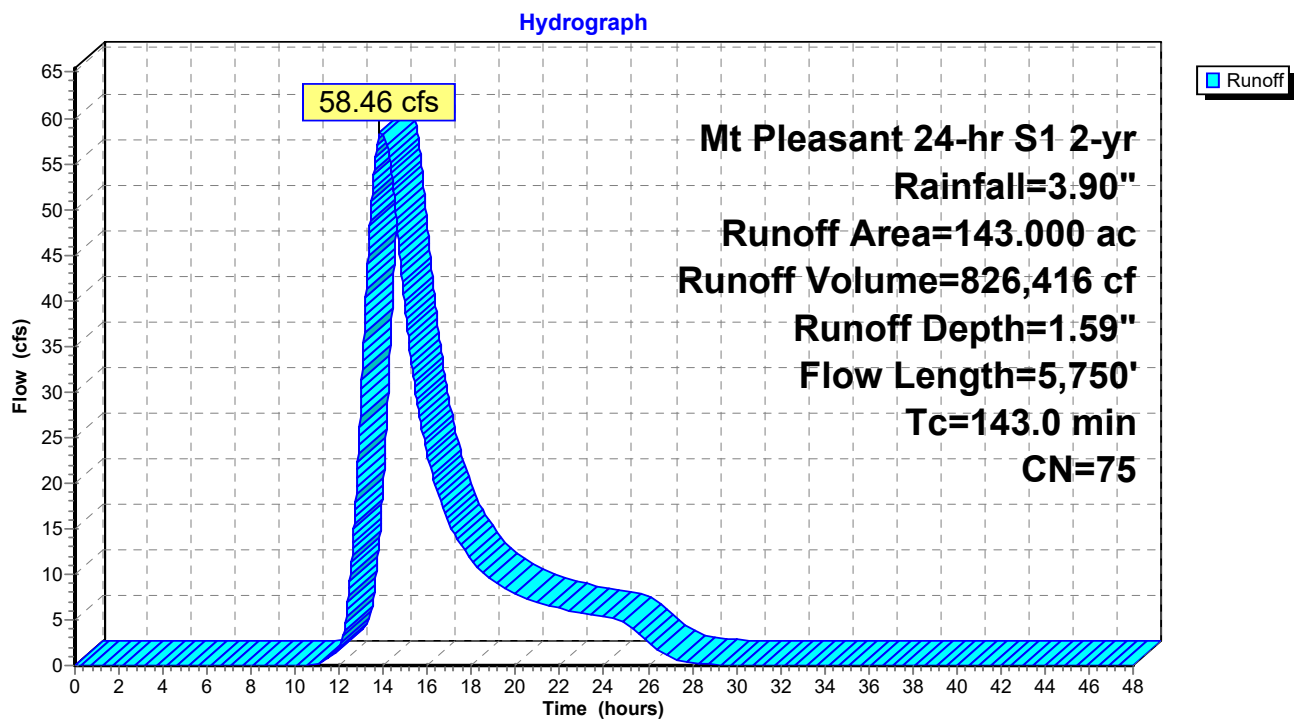
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

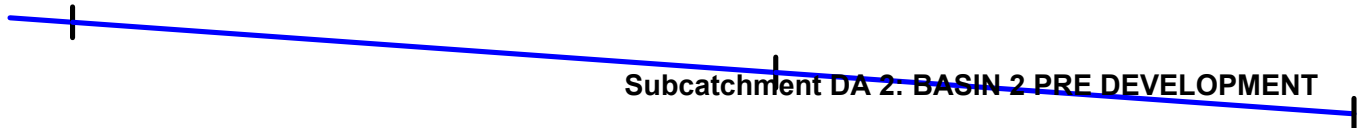
Runoff = 11.06 cfs @ 12.95 hrs, Volume= 102,914 cf, Depth= 0.81"

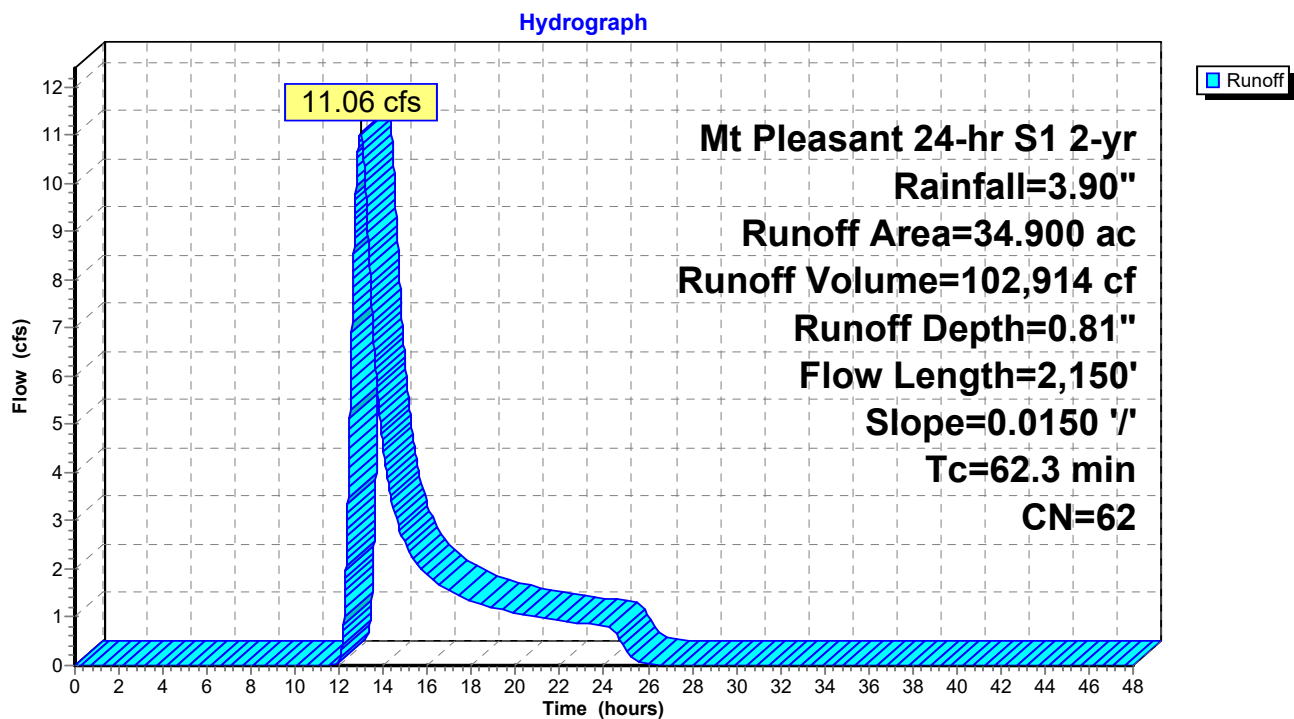
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

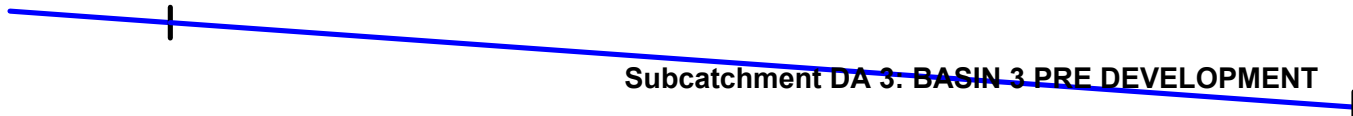
Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 9.84 cfs @ 12.34 hrs, Volume= 49,580 cf, Depth= 1.46"
 Routed to Reach OF4 : Primary Stream for Outfalls

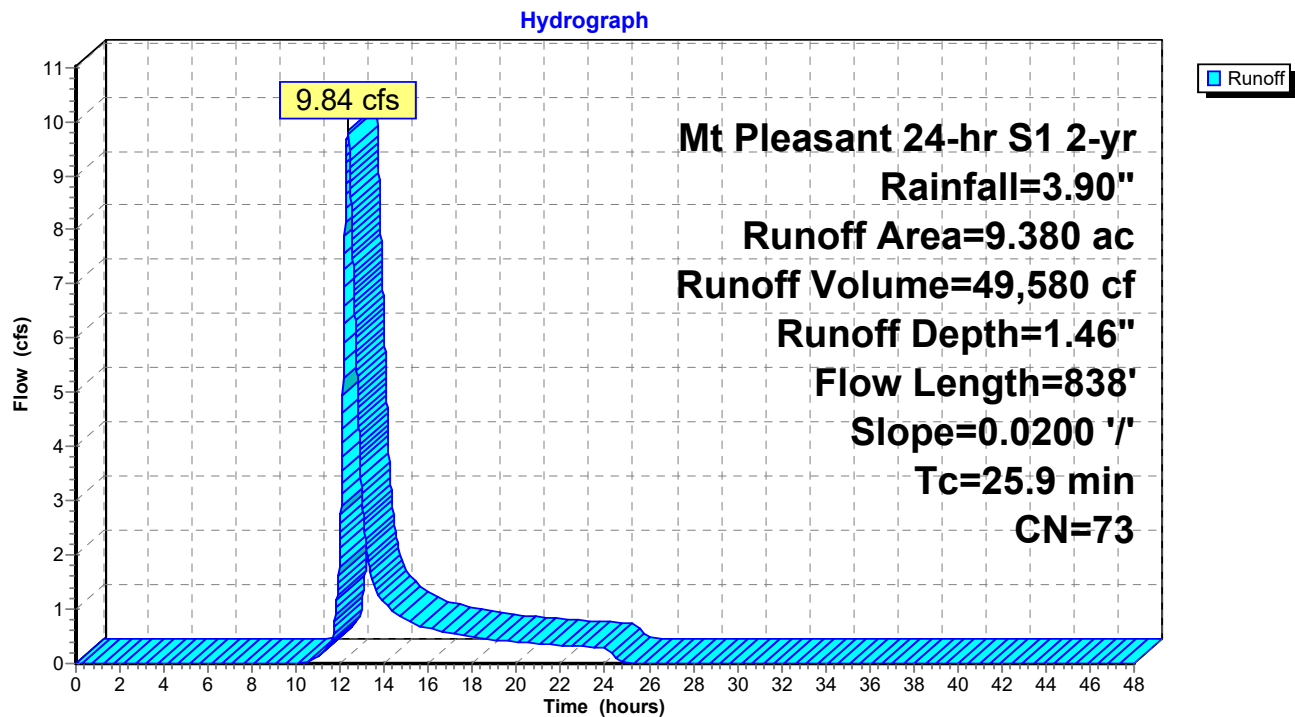
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			



Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

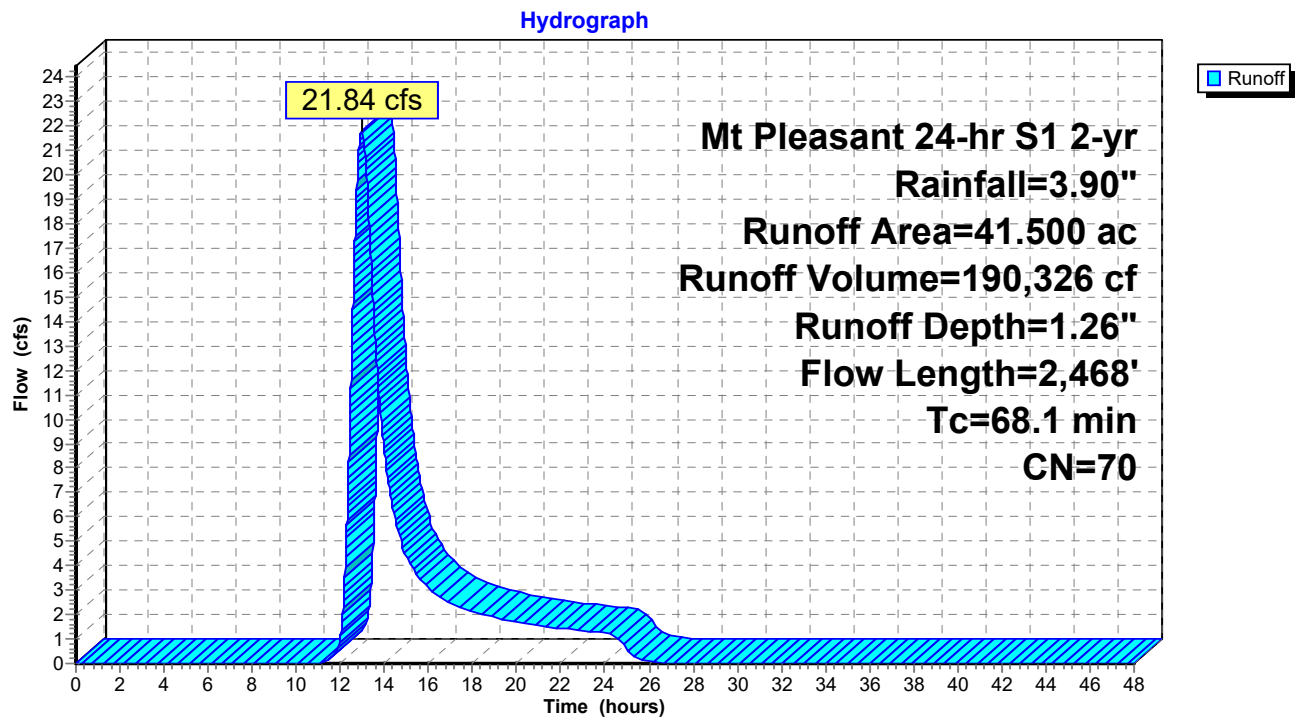
Runoff = 21.84 cfs @ 12.94 hrs, Volume= 190,326 cf, Depth= 1.26"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Summary for Subcatchment DA1P: BASIN 1 PROPOSED

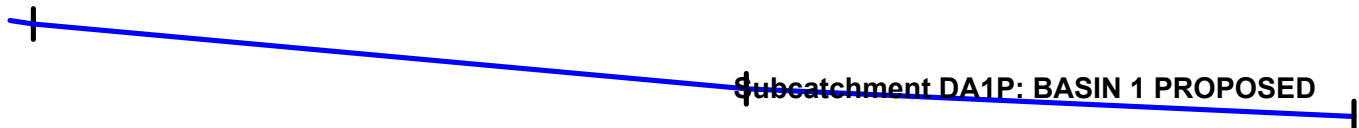
Runoff = 58.46 cfs @ 13.83 hrs, Volume= 826,416 cf, Depth= 1.59"

Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

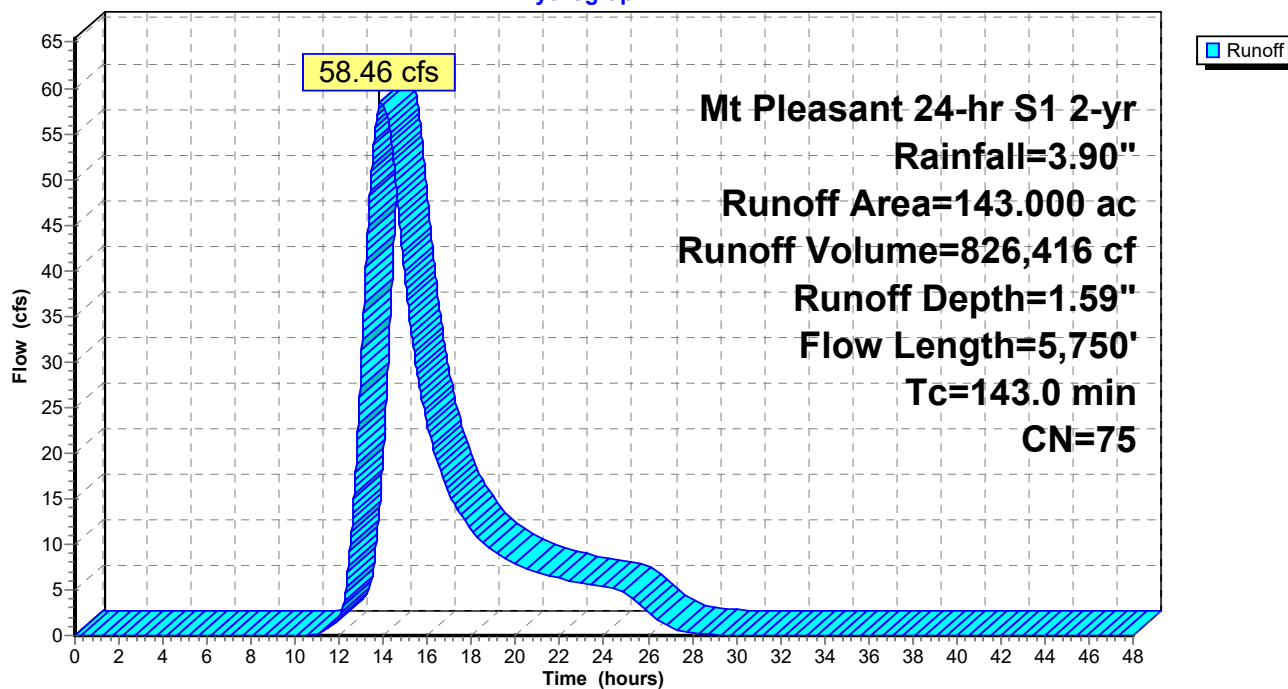
Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

Hydrograph



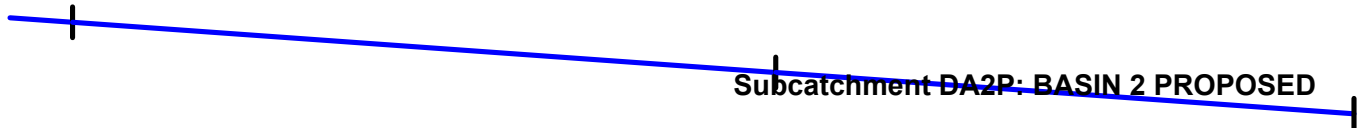
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 11.06 cfs @ 12.95 hrs, Volume= 102,914 cf, Depth= 0.81"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

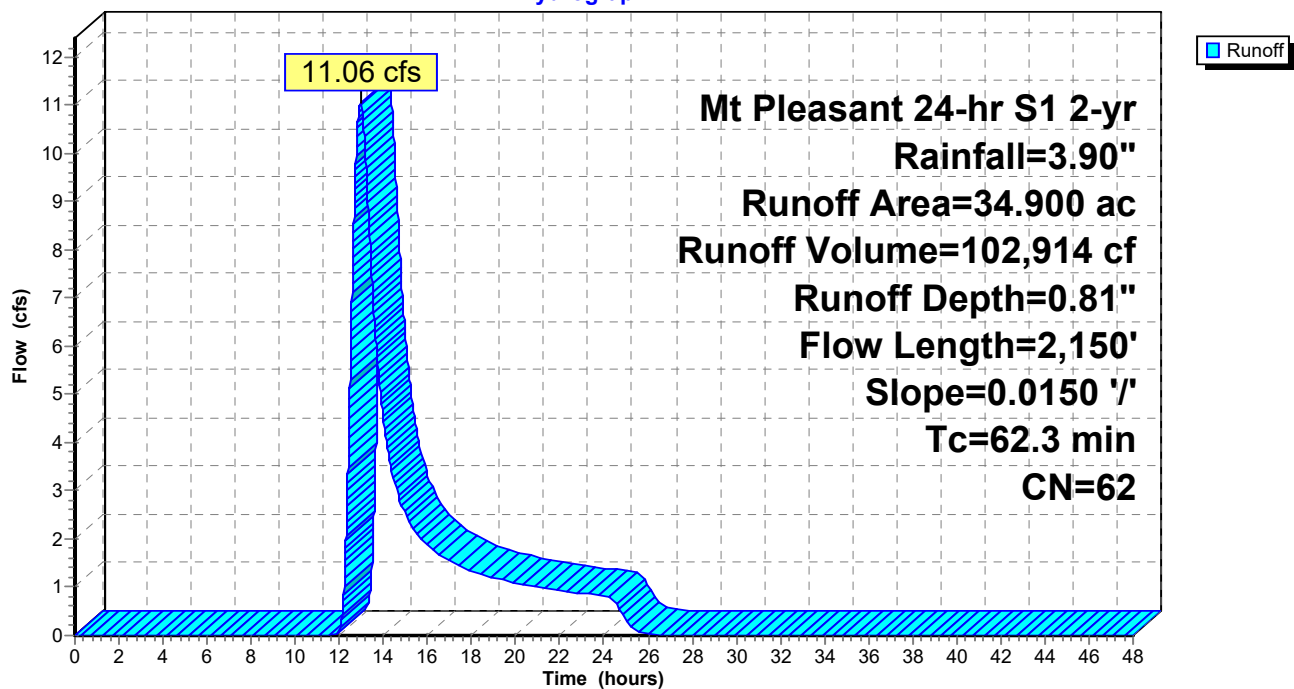
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 13.13 cfs @ 12.03 hrs, Volume= 32,530 cf, Depth= 1.88"

Routed to Reach OF4P : Primary Stream for Outfalls

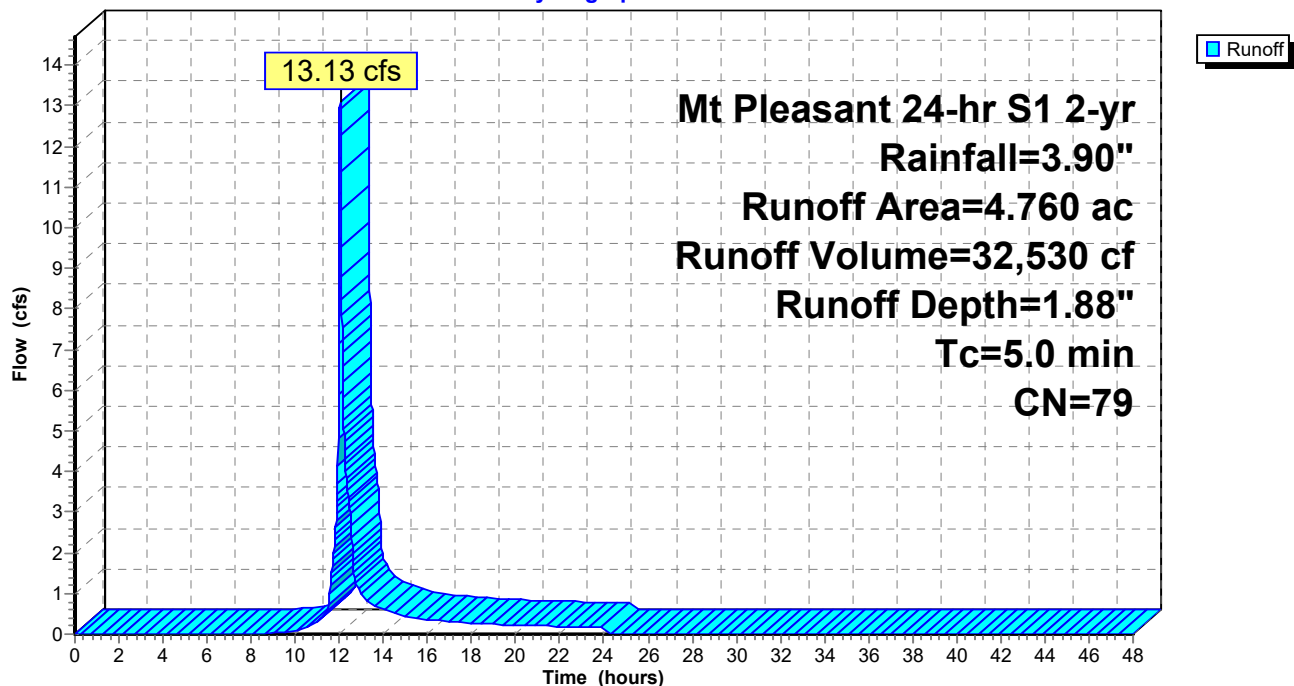
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

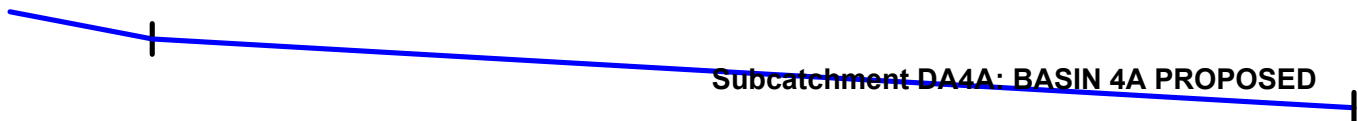
Runoff = 3.44 cfs @ 12.59 hrs, Volume= 22,928 cf, Depth= 1.14"

Routed to Reach OF4P : Primary Stream for Outfalls

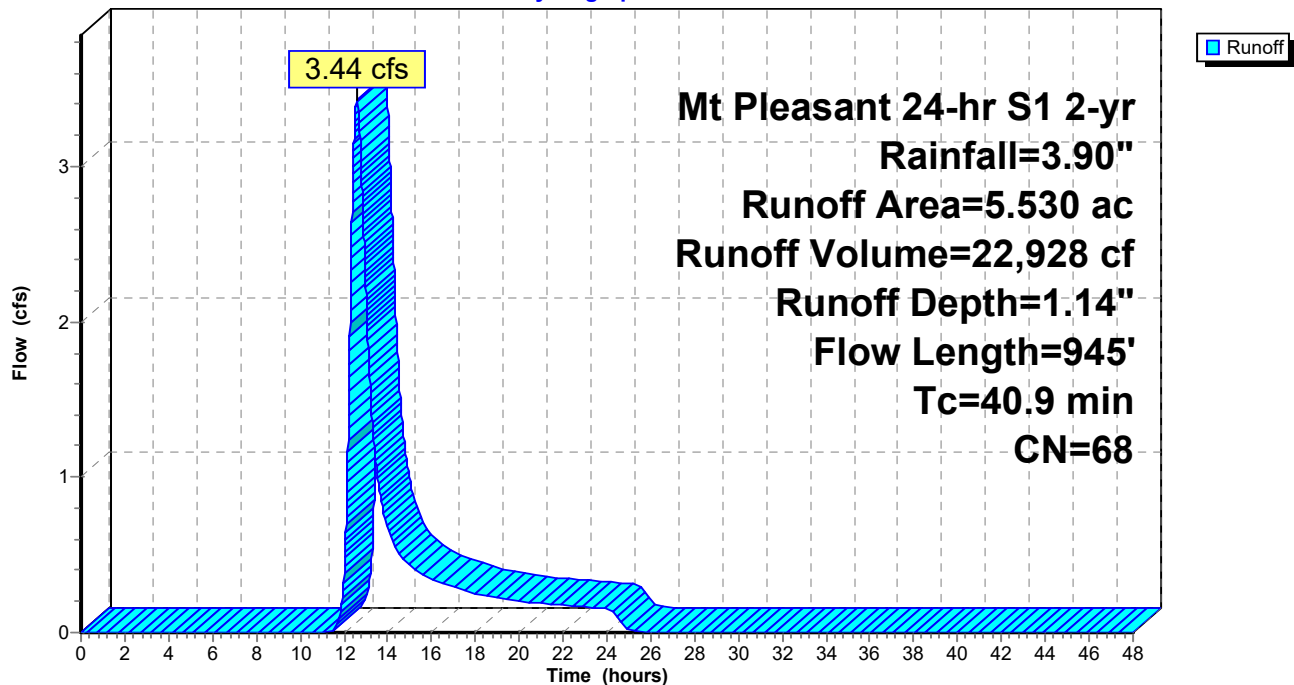
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



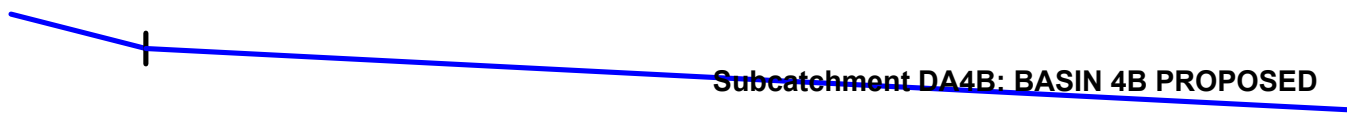
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

Runoff = 26.19 cfs @ 12.40 hrs, Volume= 154,012 cf, Depth= 3.44"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

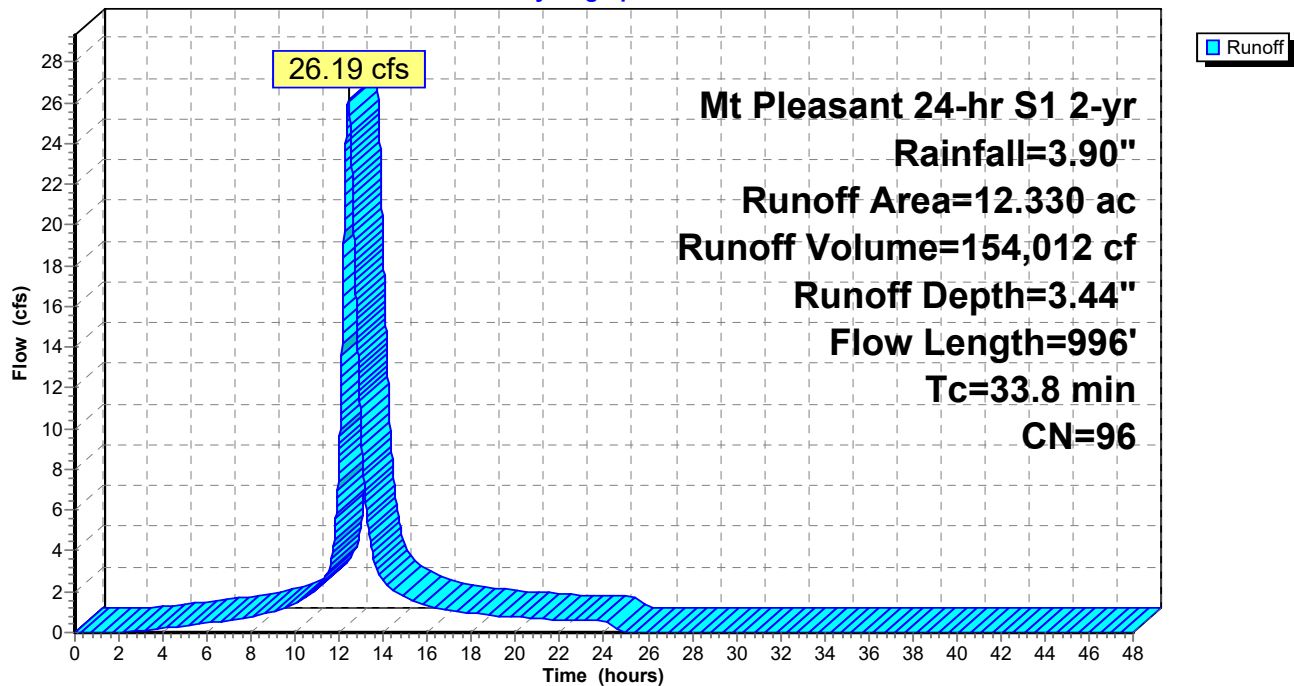
Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Hydrograph



Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 3.21 cfs @ 12.03 hrs, Volume= 8,494 cf, Depth= 3.44"
 Routed to Reach D4C : Ditch 4C

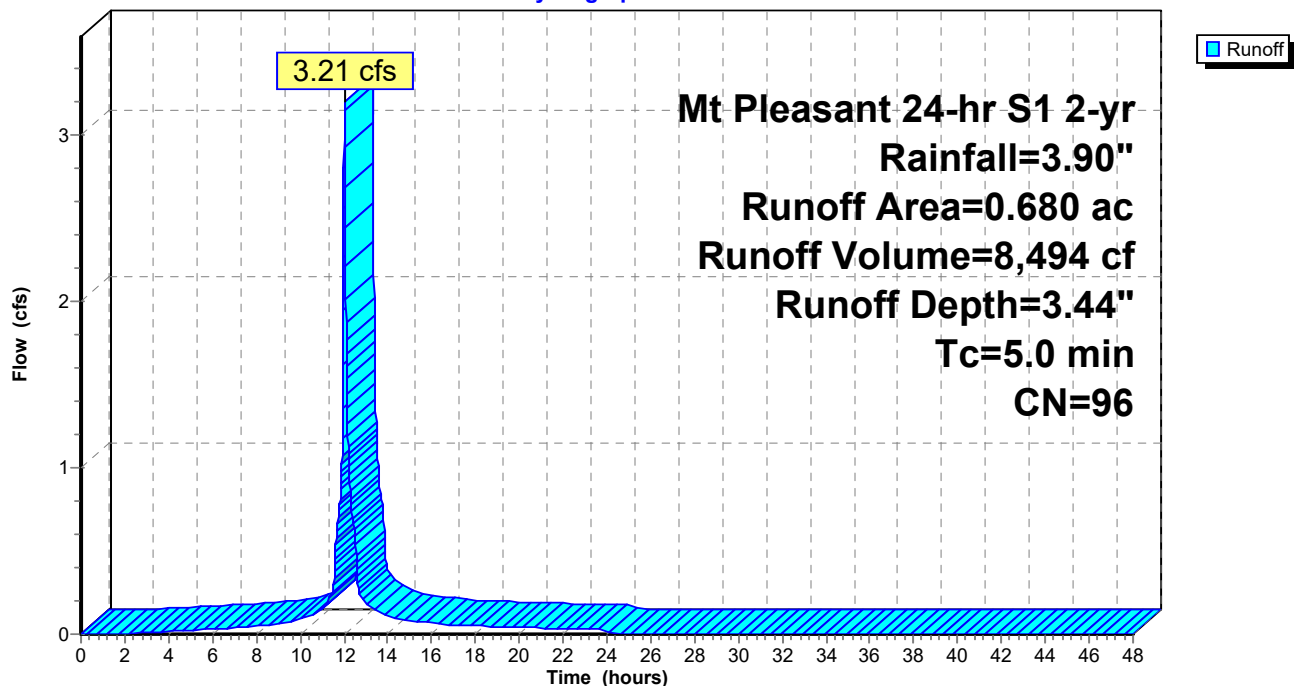
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 5.81 cfs @ 12.03 hrs, Volume= 15,364 cf, Depth= 3.44"
 Routed to Reach D4D : Ditch 4D

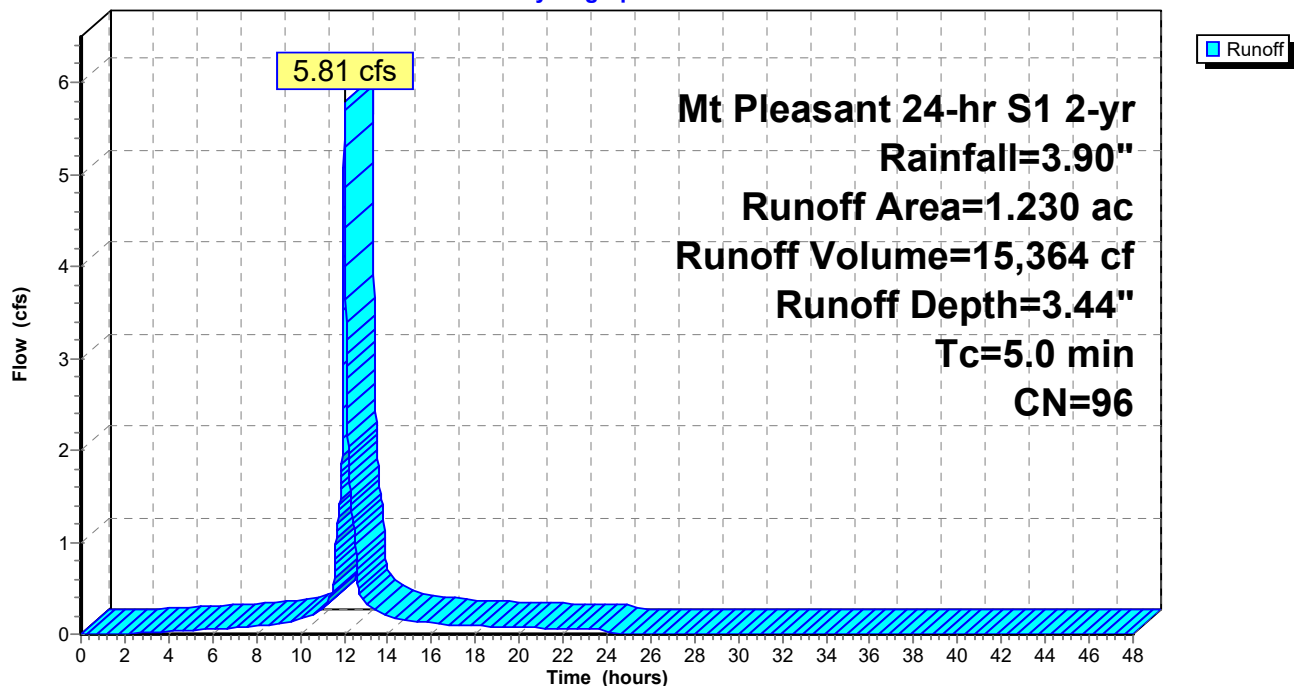
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



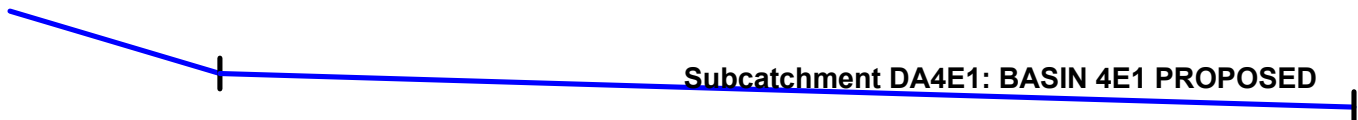
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

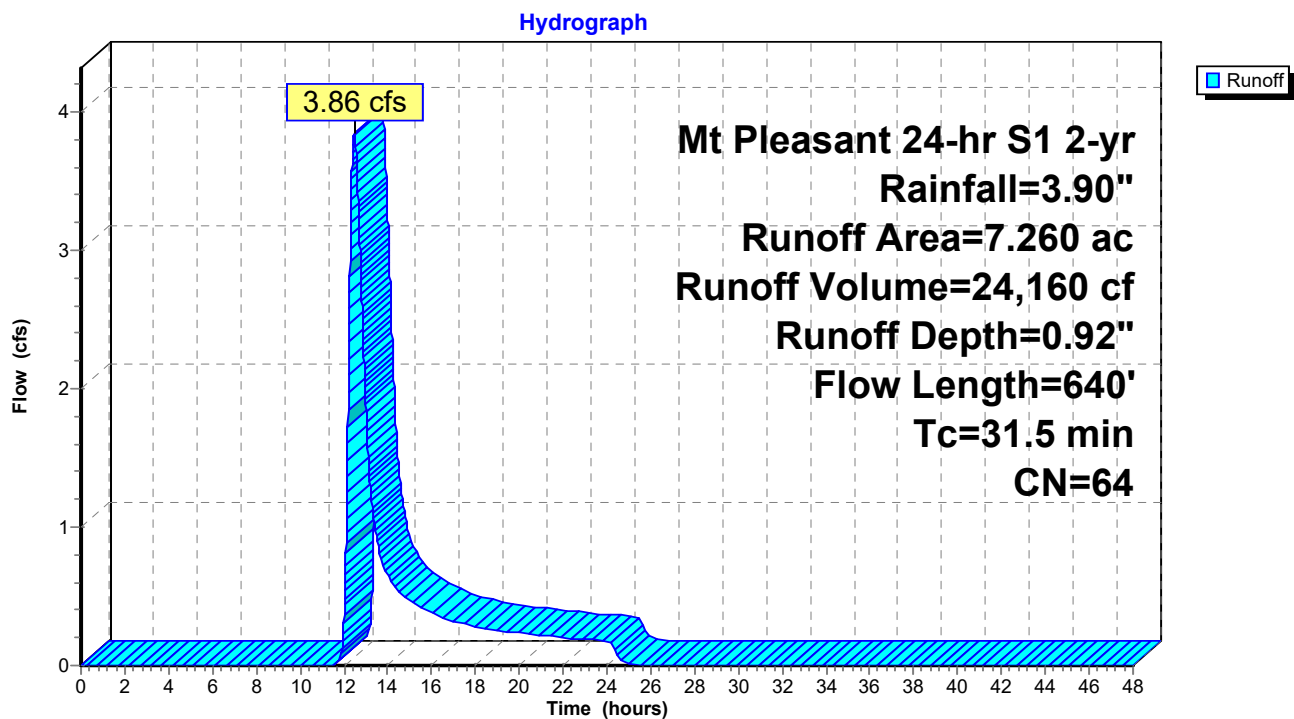
Runoff = 3.86 cfs @ 12.46 hrs, Volume= 24,160 cf, Depth= 0.92"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

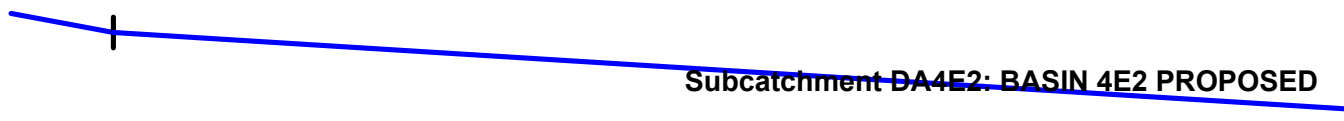
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

Runoff = 11.82 cfs @ 12.68 hrs, Volume= 83,694 cf, Depth= 1.20"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 2-yr Rainfall=3.90"

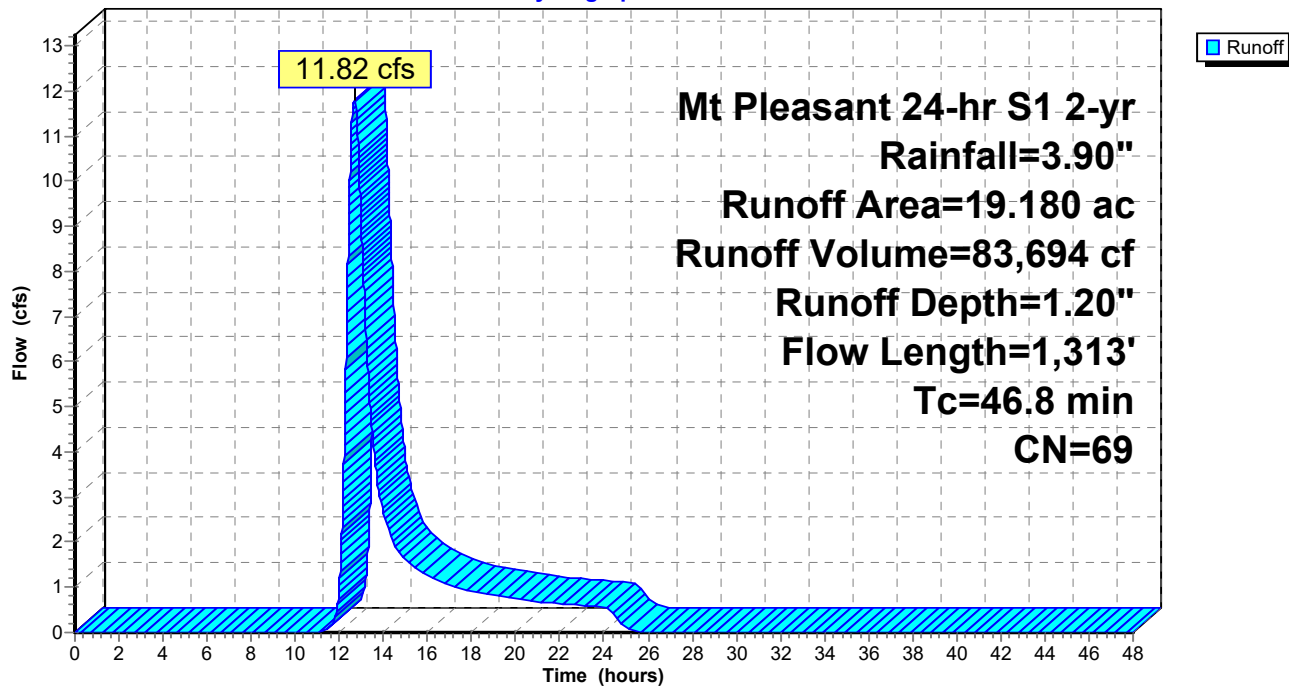
Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

Hydrograph



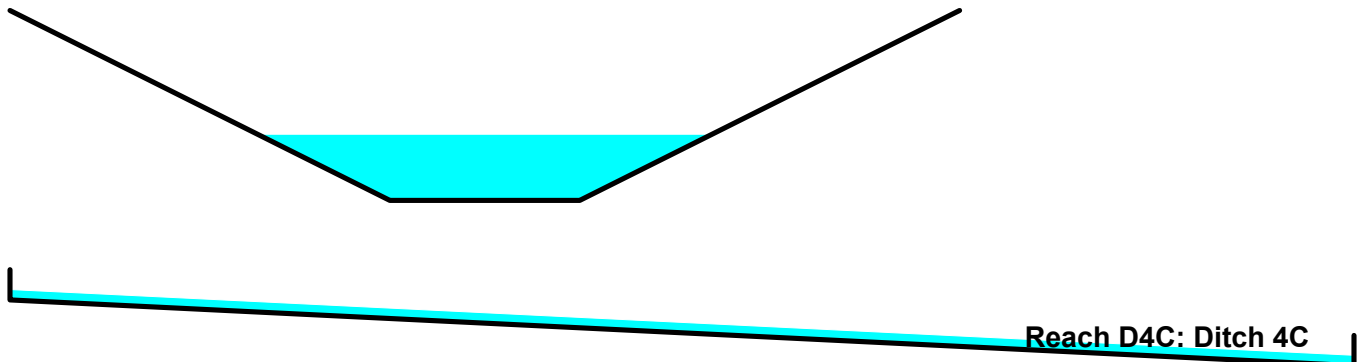
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 3.44" for 2-yr event
Inflow = 3.21 cfs @ 12.03 hrs, Volume= 8,494 cf
Outflow = 2.96 cfs @ 12.05 hrs, Volume= 8,494 cf, Atten= 8%, Lag= 1.4 min
Routed to Pond CD4C : Cross Drain 4C

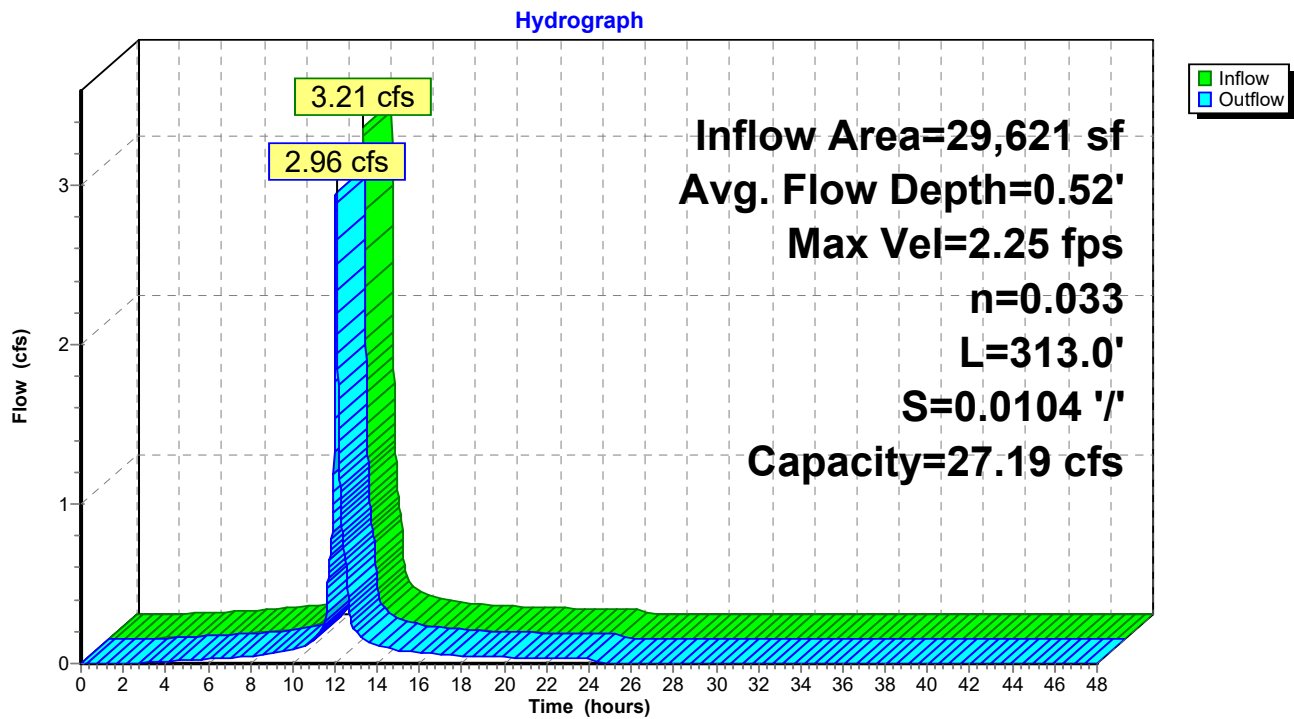
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.25 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 8.4 min

Peak Storage= 411 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.52' , Surface Width= 3.57'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

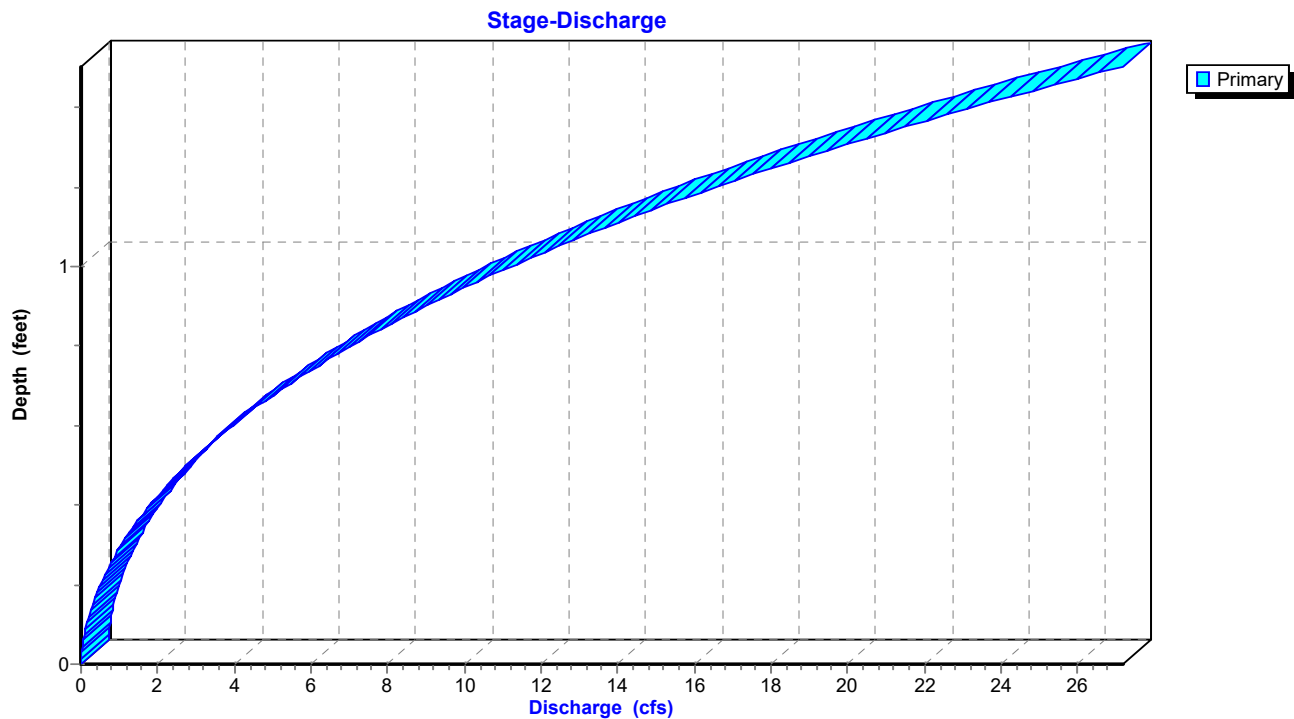
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



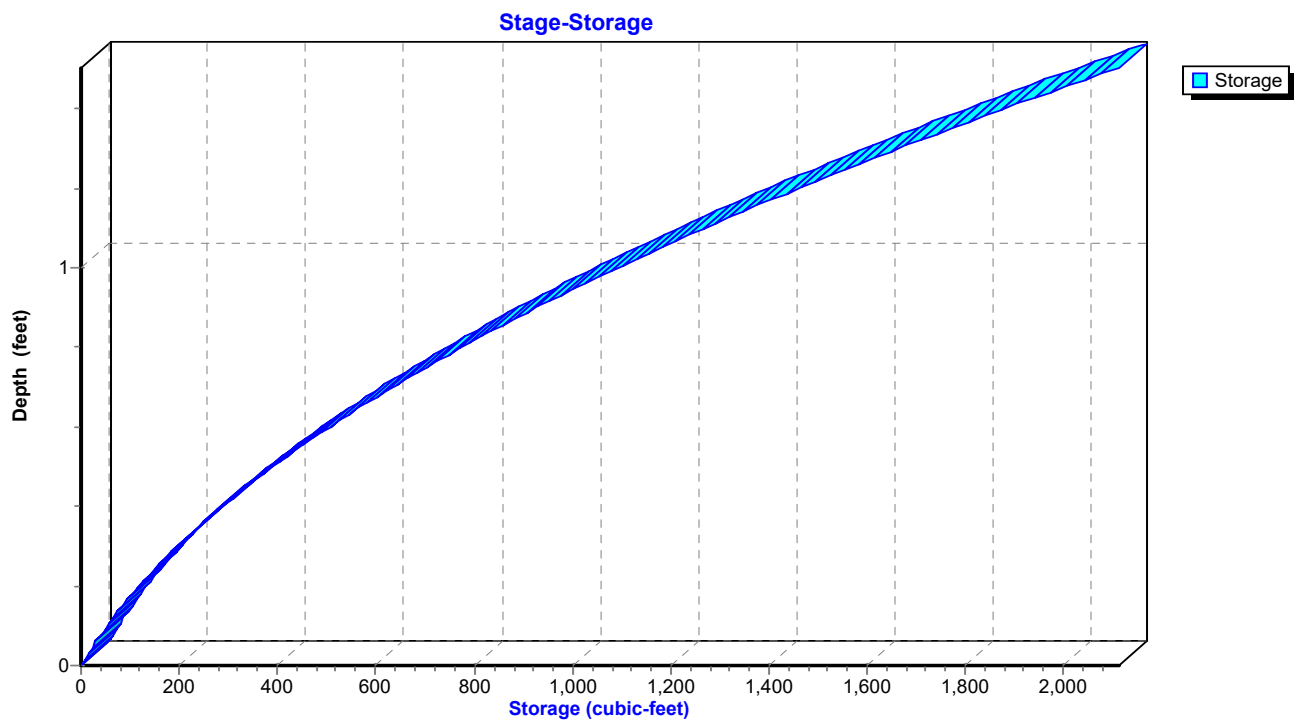
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



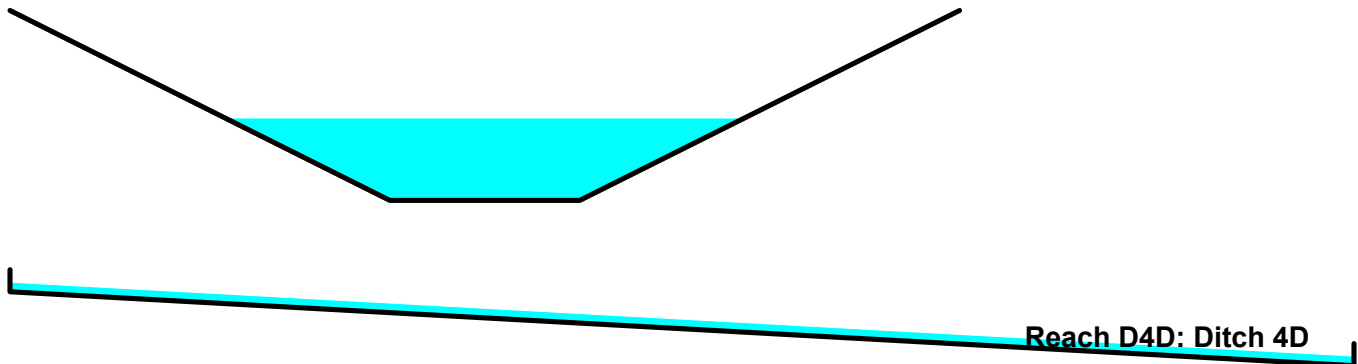
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 3.44" for 2-yr event
Inflow = 5.81 cfs @ 12.03 hrs, Volume= 15,364 cf
Outflow = 5.49 cfs @ 12.04 hrs, Volume= 15,364 cf, Atten= 5%, Lag= 1.1 min
Routed to Pond CD4DCE : Cross Drain 4DCE

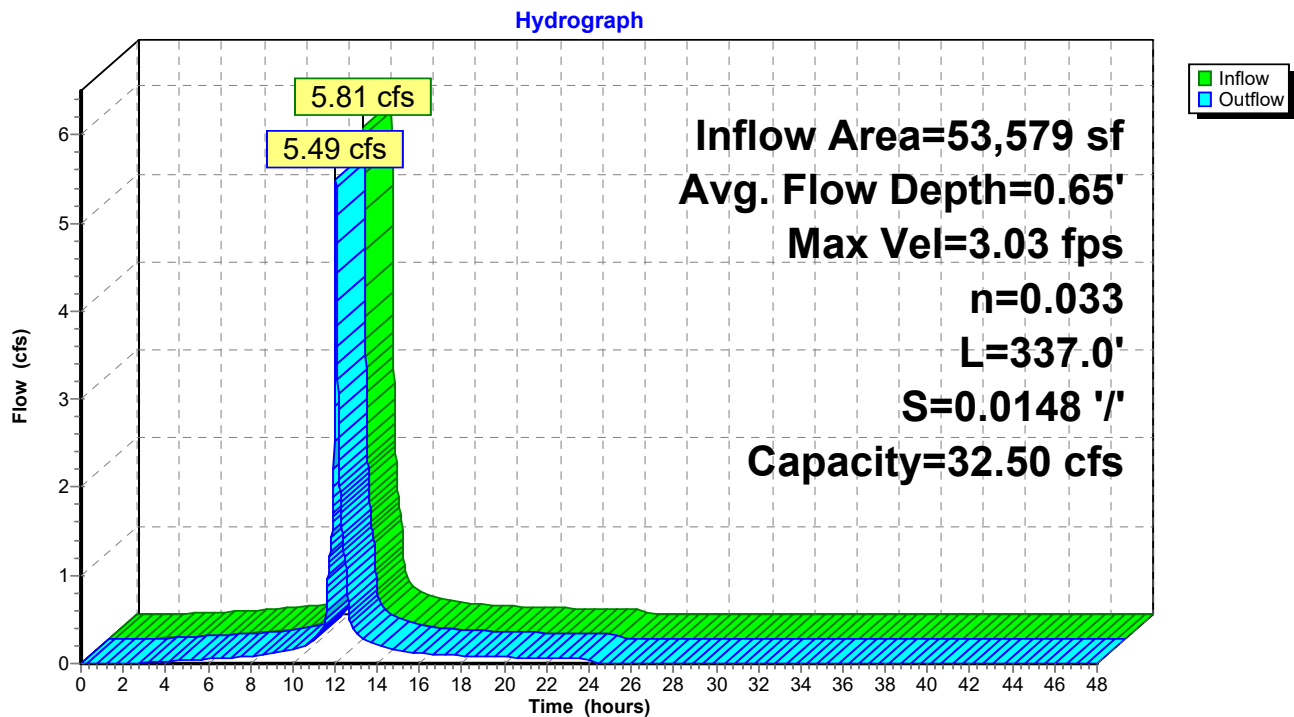
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.03 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 6.6 min

Peak Storage= 609 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 4.09'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

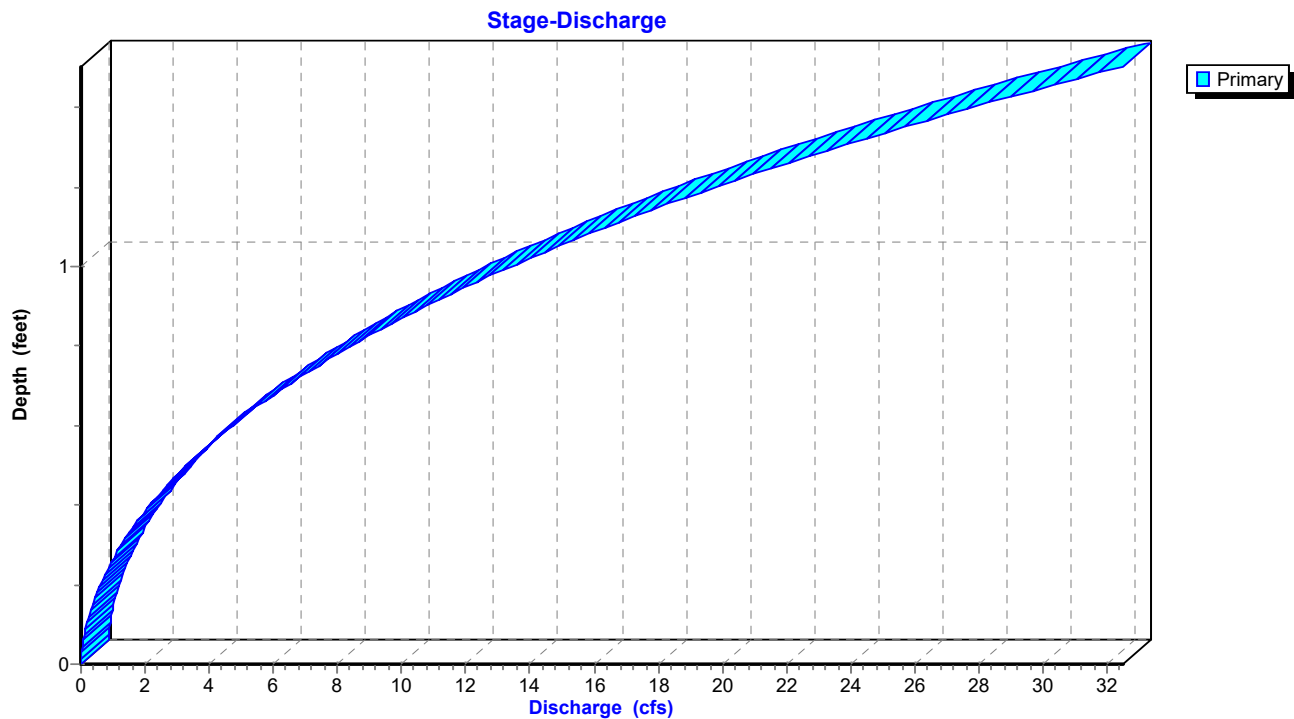
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



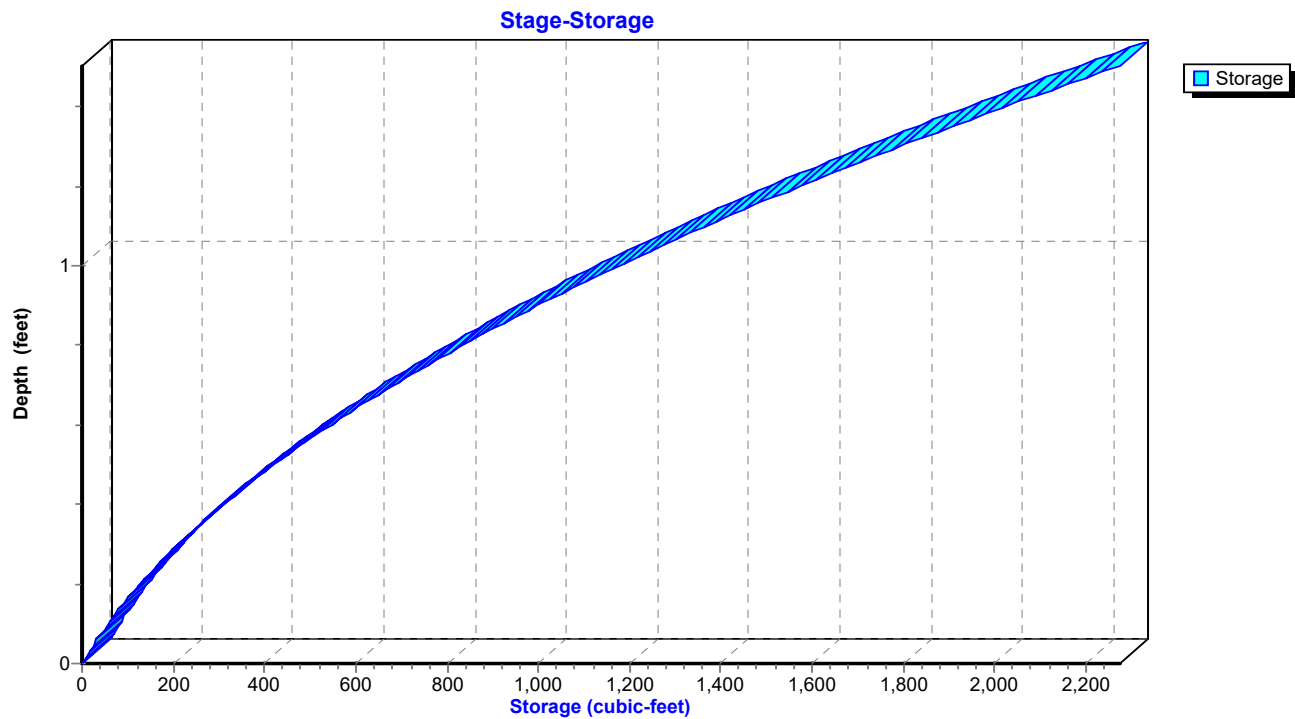
Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



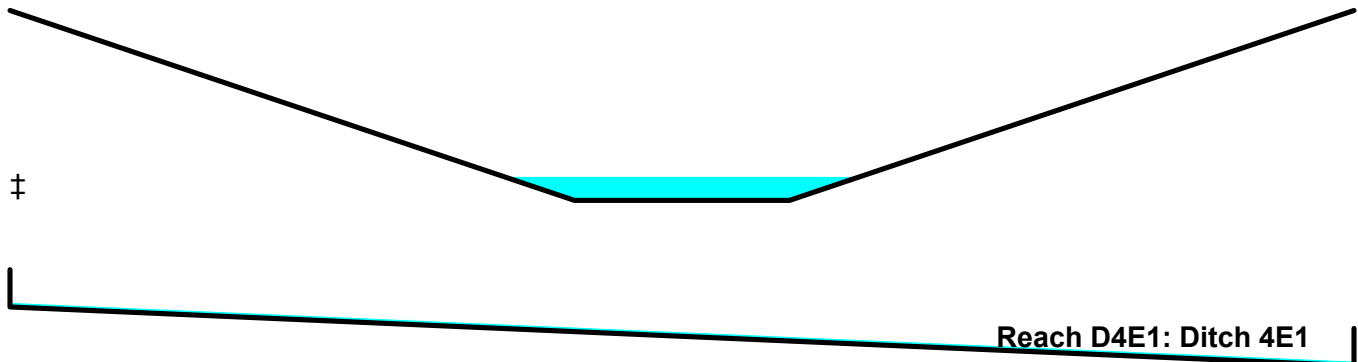
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 0.92" for 2-yr event
Inflow = 3.86 cfs @ 12.46 hrs, Volume= 24,160 cf
Outflow = 2.79 cfs @ 12.79 hrs, Volume= 24,160 cf, Atten= 28%, Lag= 19.5 min
Routed to Pond CD4E : Cross Drain 4E

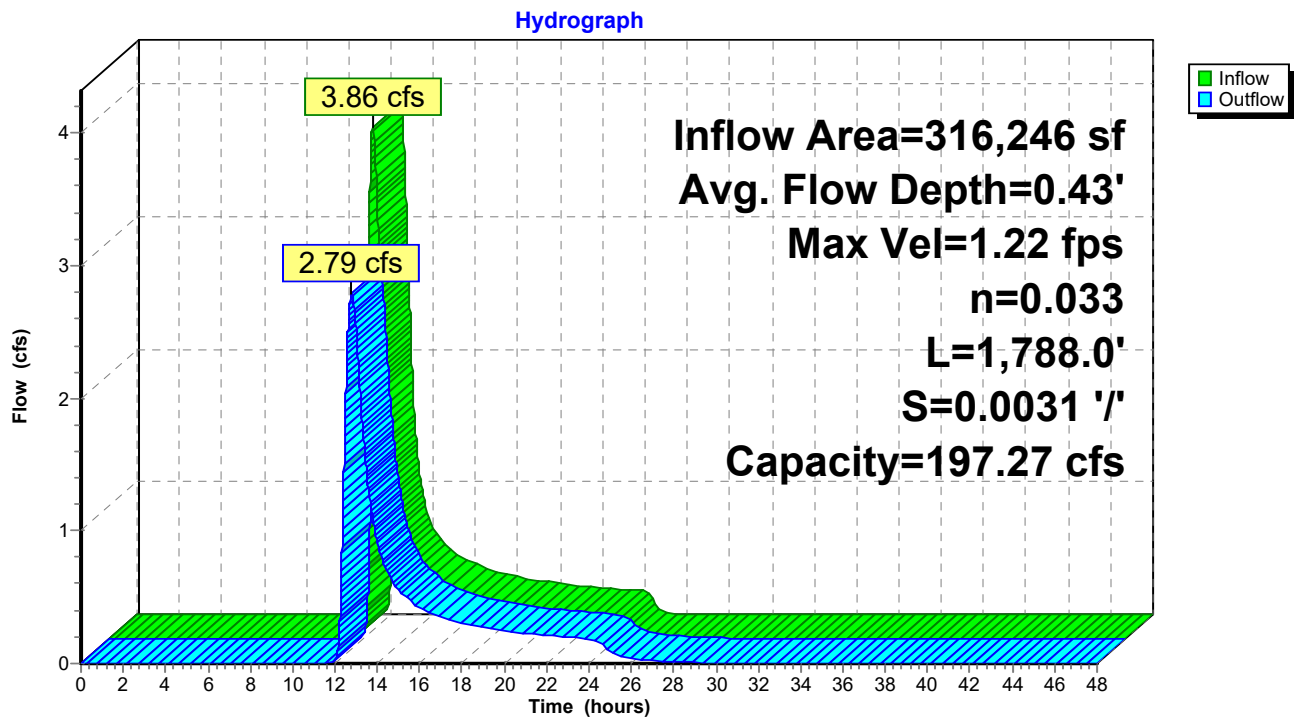
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.22 fps, Min. Travel Time= 24.5 min
Avg. Velocity= 0.43 fps, Avg. Travel Time= 68.5 min

Peak Storage= 4,096 cf @ 12.79 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 6.59'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

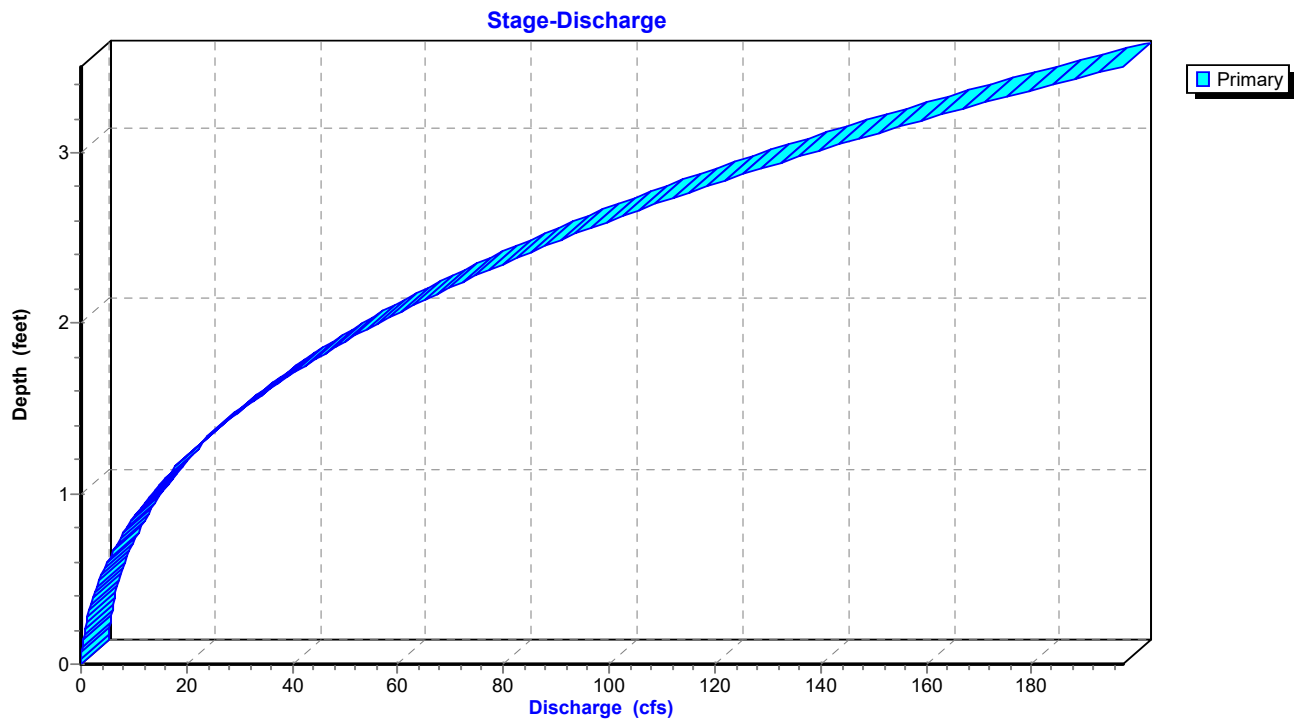
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 '/' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 '/'
Inlet Invert= 685.00', Outlet Invert= 679.50'



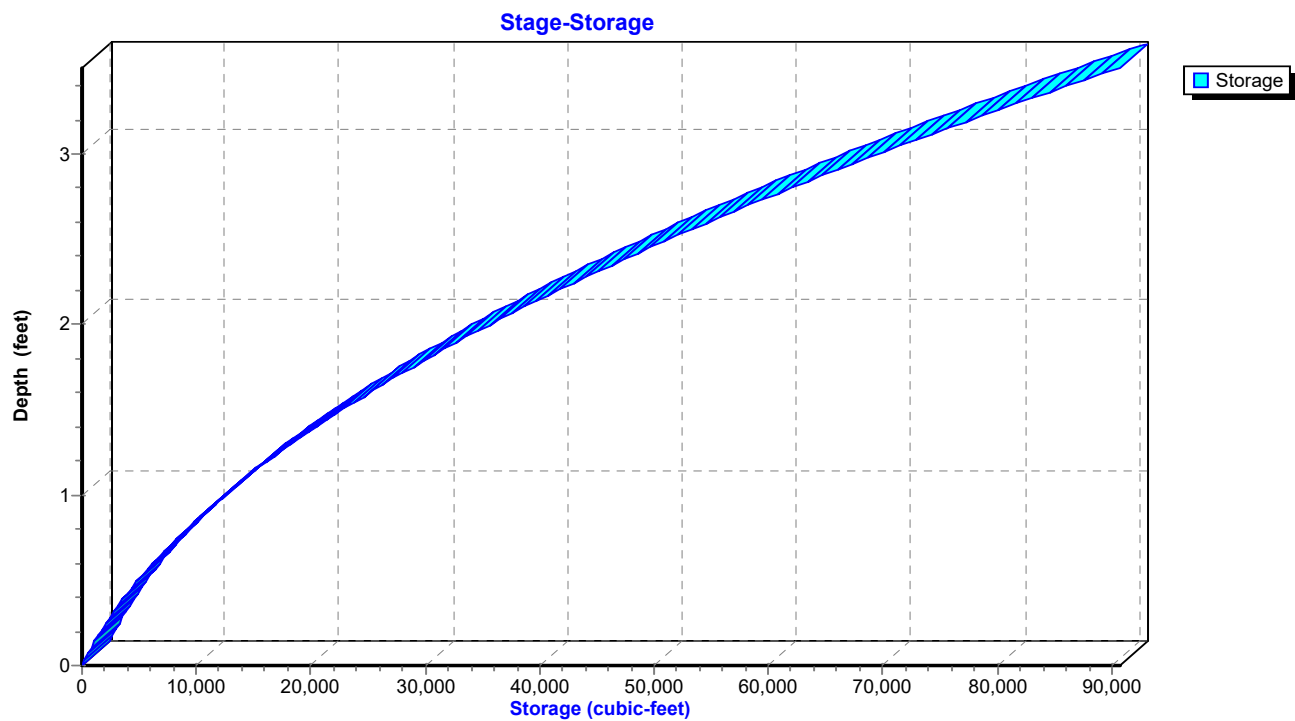
Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



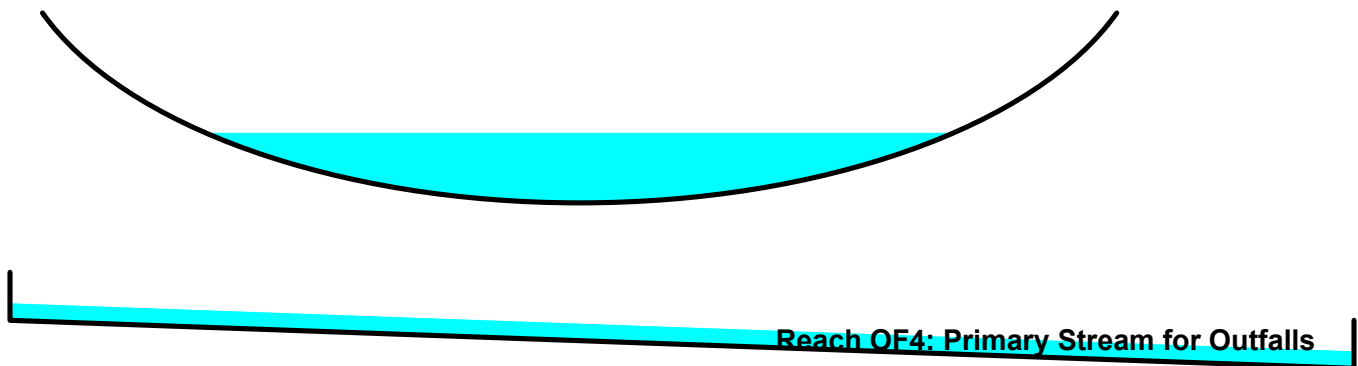
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 1.41" for 2-yr event
Inflow = 75.72 cfs @ 13.51 hrs, Volume= 1,169,236 cf
Outflow = 75.62 cfs @ 13.68 hrs, Volume= 1,169,236 cf, Atten= 0%, Lag= 9.9 min

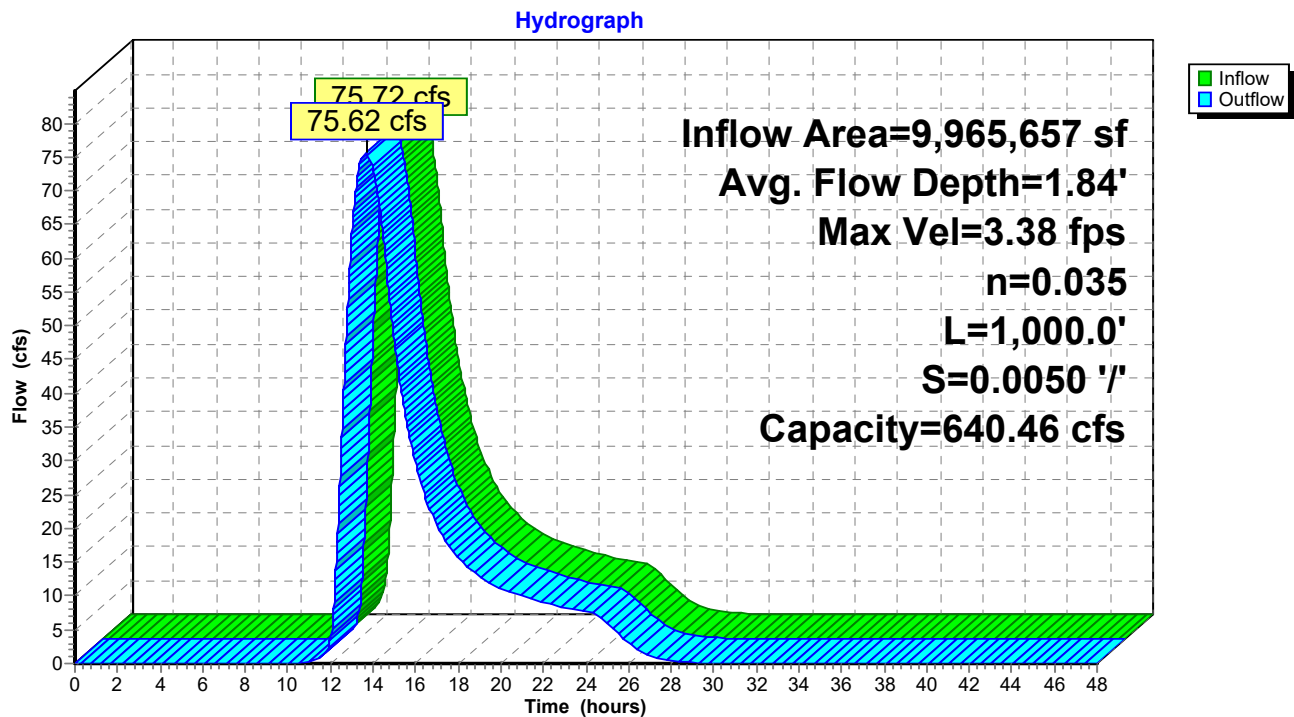
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 12.3 min

Peak Storage= 22,354 cf @ 13.68 hrs
Average Depth at Peak Storage= 1.84' , Surface Width= 18.21'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

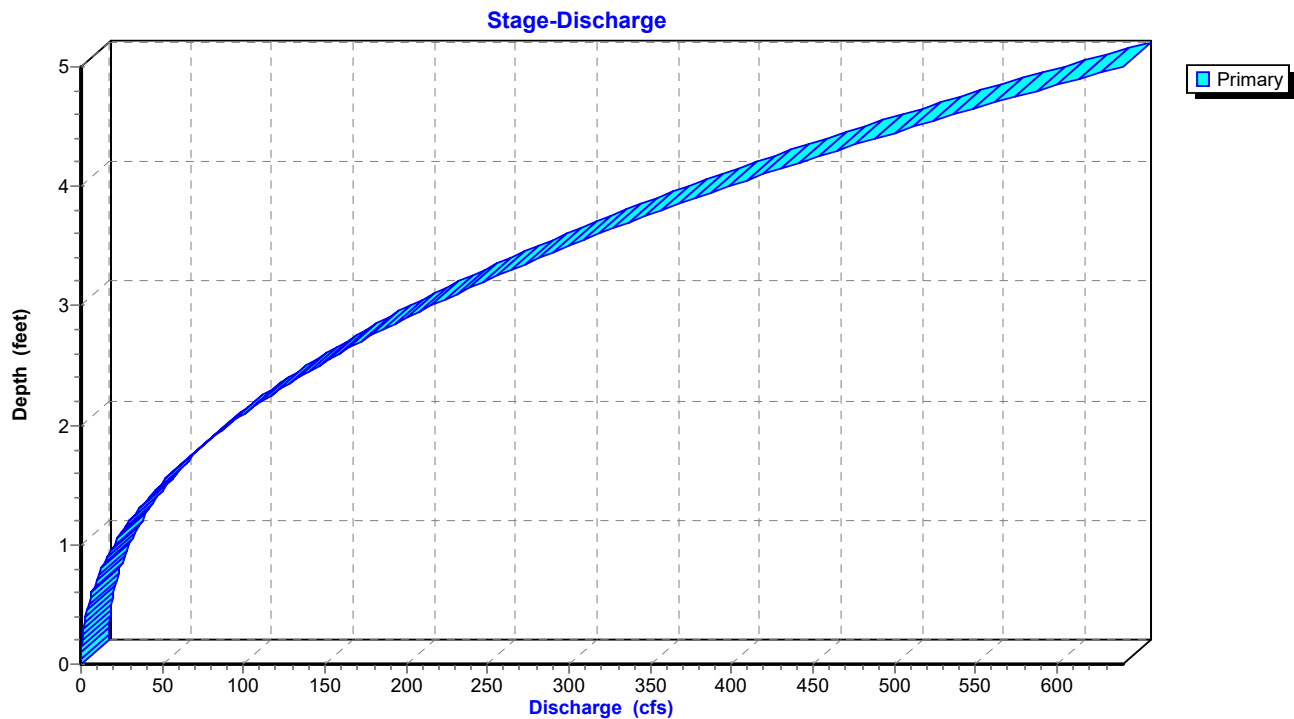
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

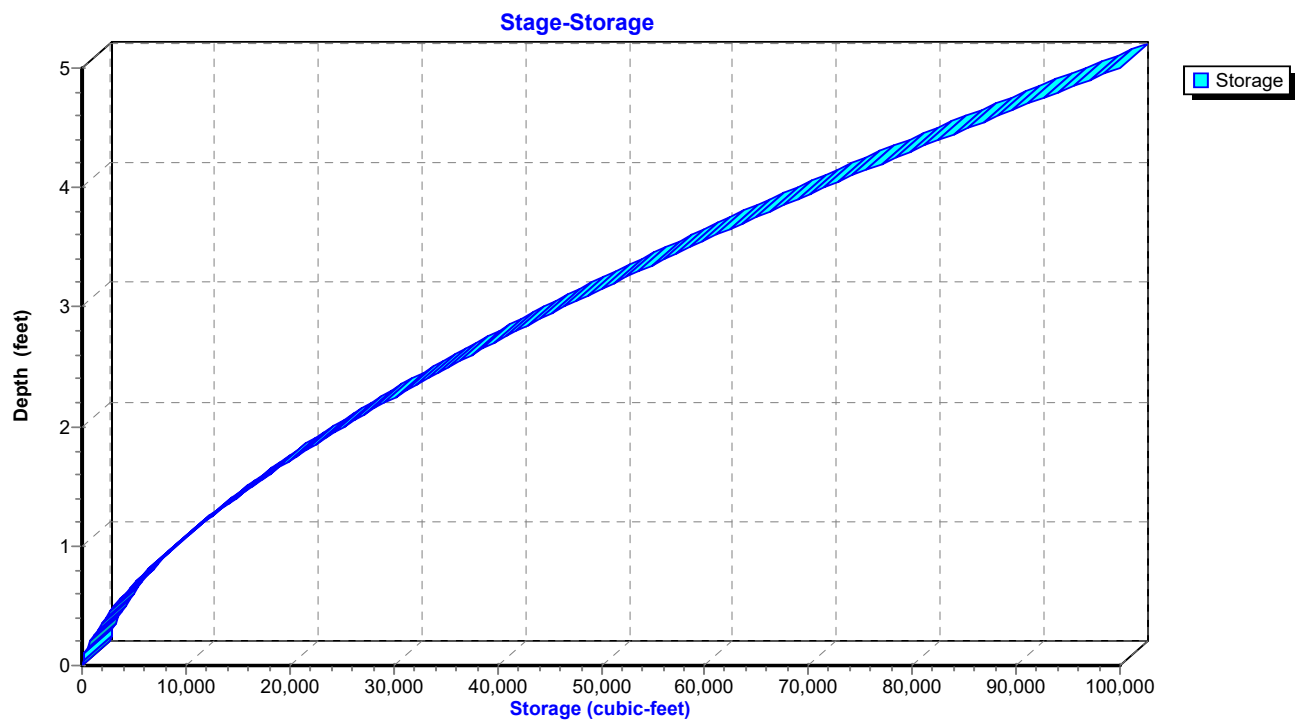


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

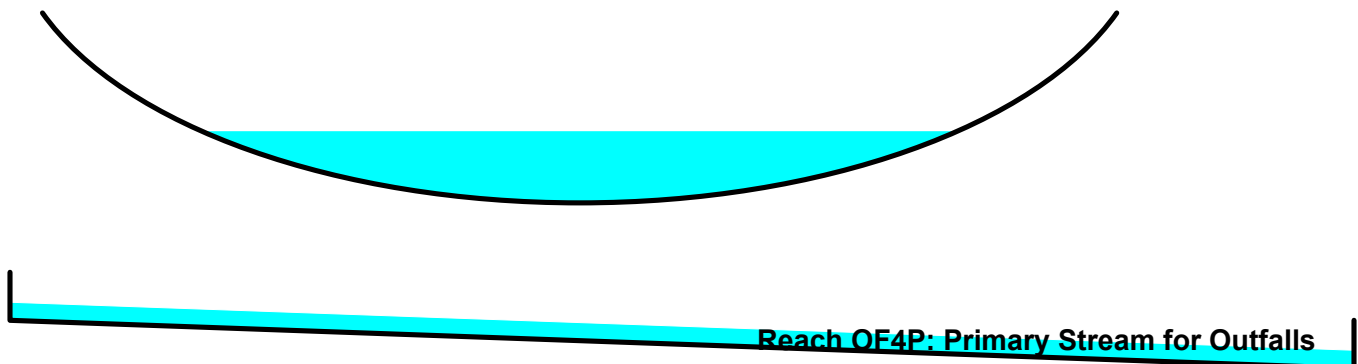
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 1.53" for 2-yr event
Inflow = 79.43 cfs @ 13.82 hrs, Volume= 1,270,504 cf
Outflow = 79.29 cfs @ 13.84 hrs, Volume= 1,270,503 cf, Atten= 0%, Lag= 1.1 min

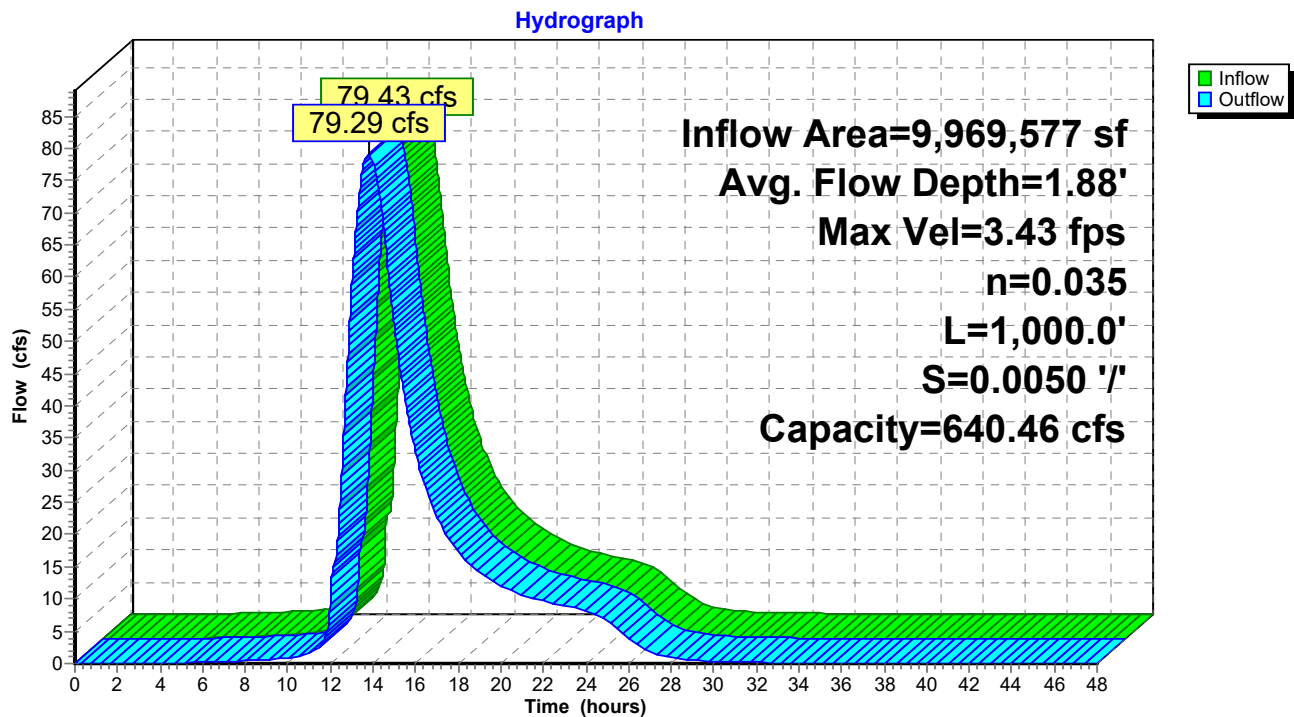
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.43 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 15.8 min

Peak Storage= 23,106 cf @ 13.84 hrs
Average Depth at Peak Storage= 1.88' , Surface Width= 18.41'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

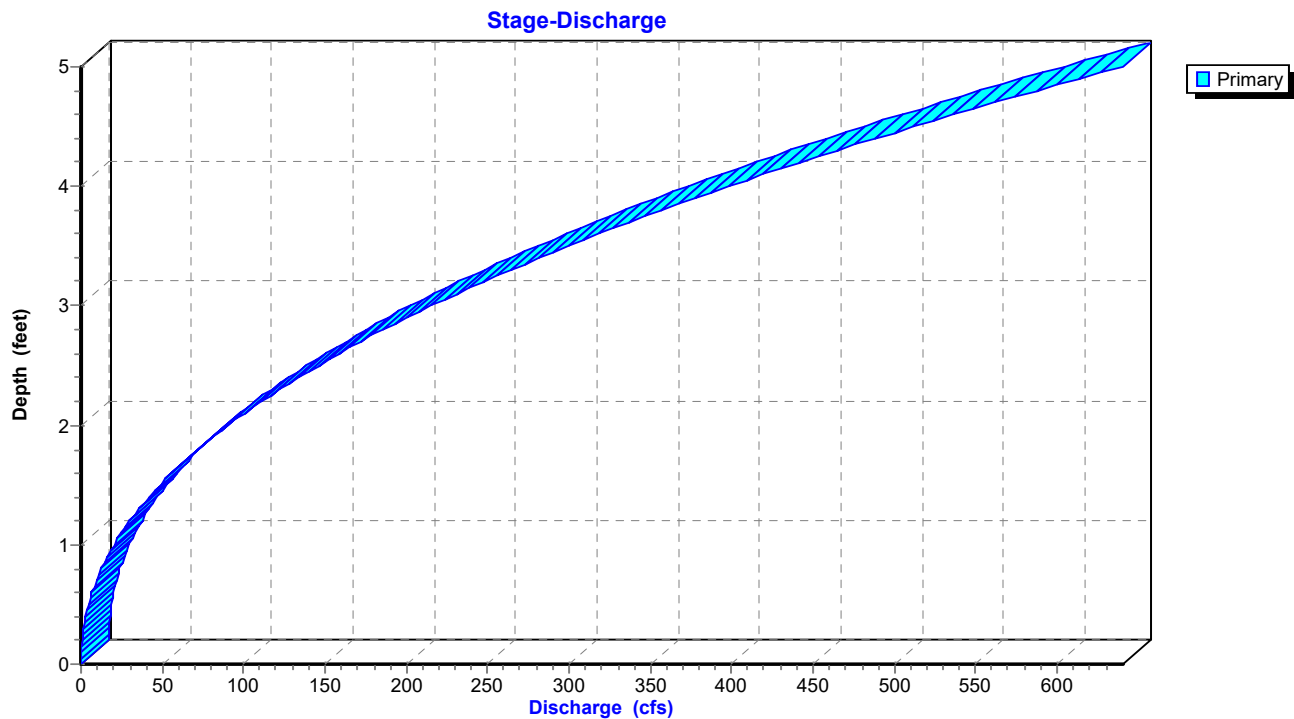
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

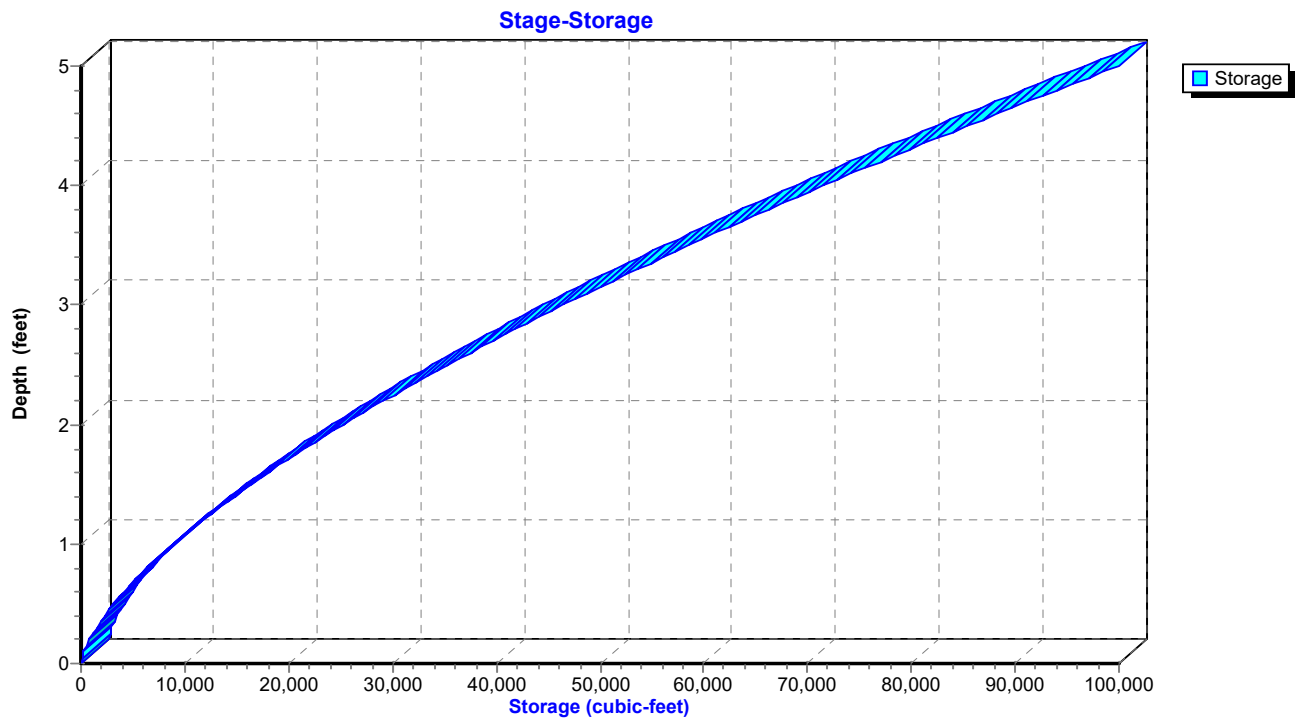


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 0.81" for 2-yr event
 Inflow = 11.06 cfs @ 12.95 hrs, Volume= 102,914 cf
 Outflow = 11.06 cfs @ 12.95 hrs, Volume= 102,914 cf, Atten= 0%, Lag= 0.0 min
 Primary = 11.06 cfs @ 12.95 hrs, Volume= 102,914 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.73' @ 12.95 hrs

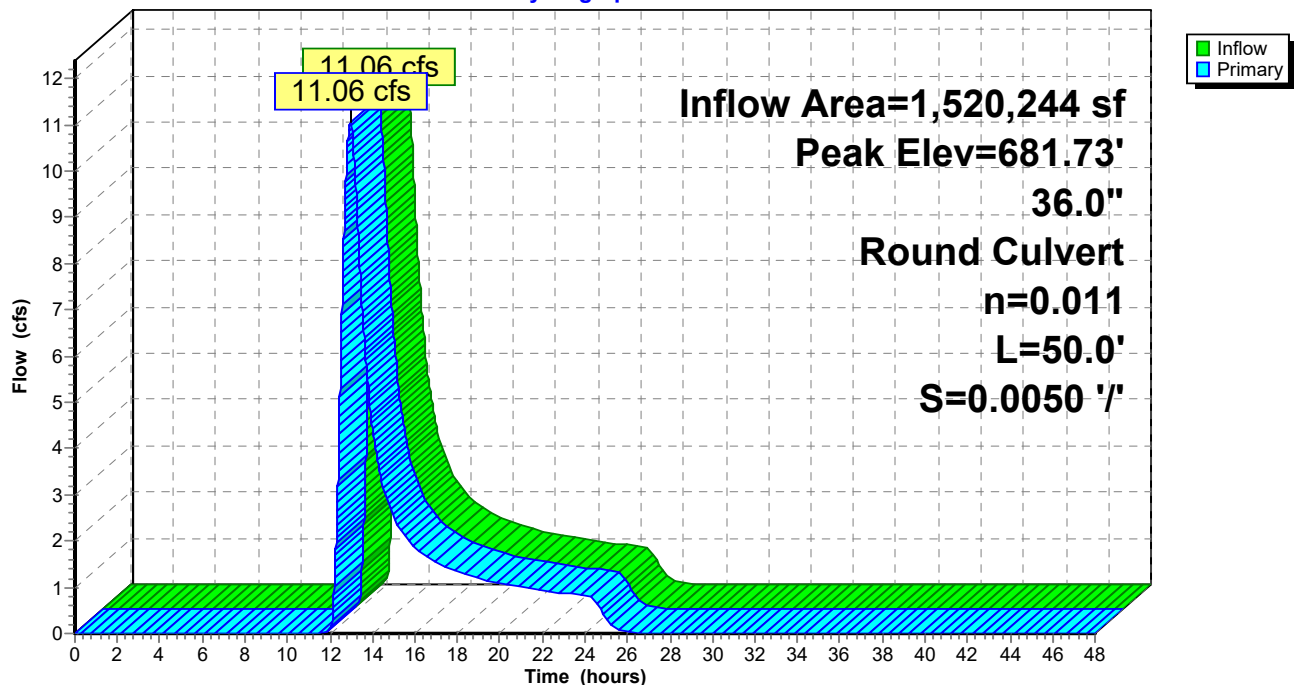
Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

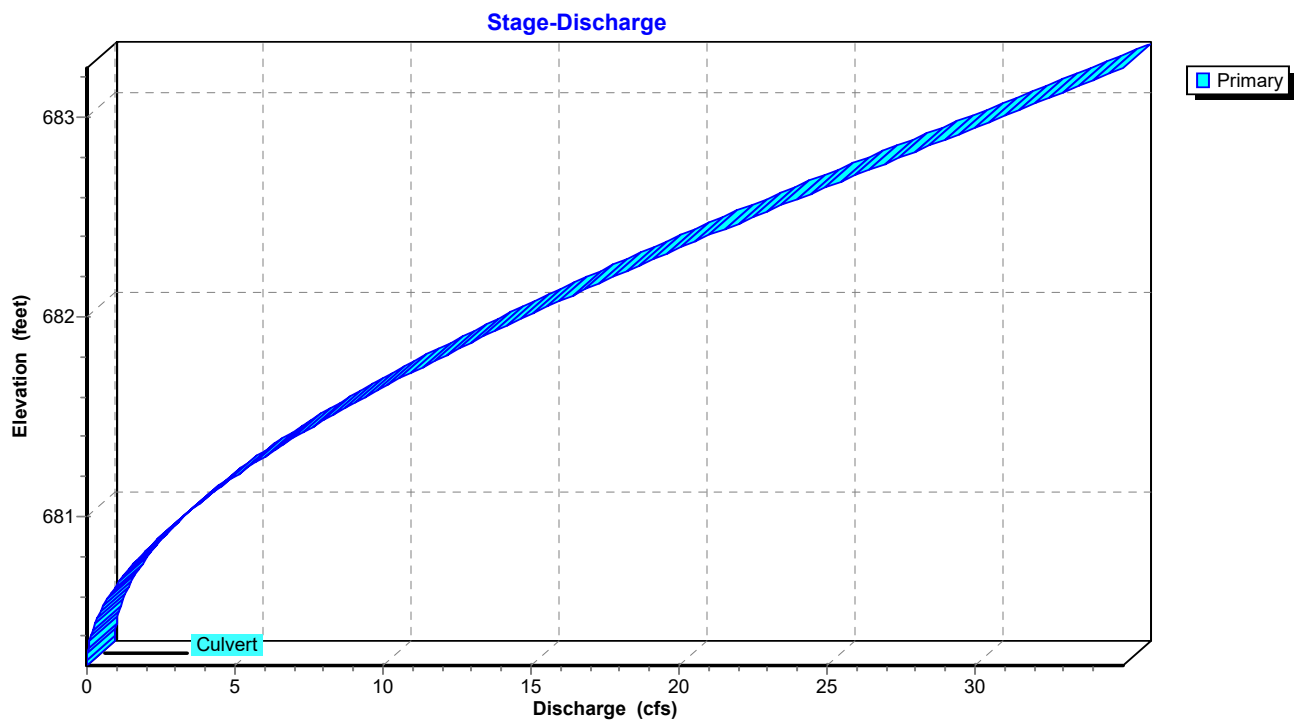
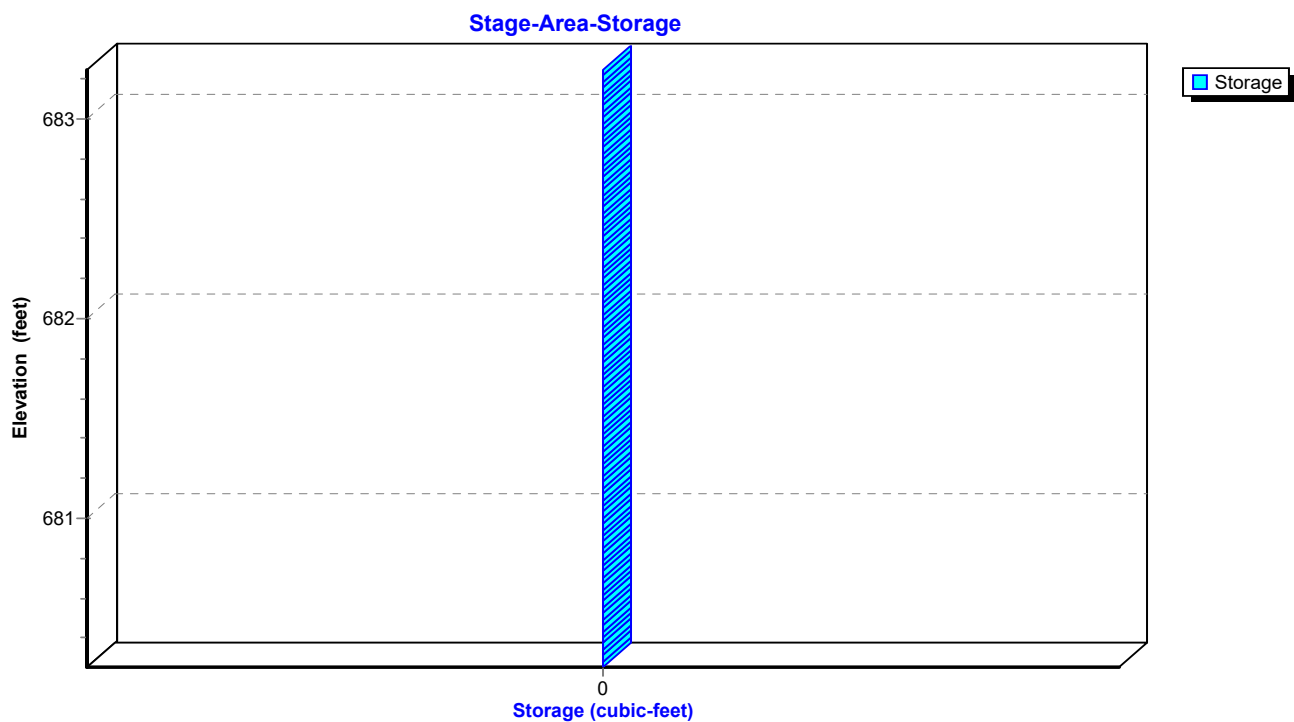
Primary OutFlow Max=11.06 cfs @ 12.95 hrs HW=681.73' TW=676.59' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 11.06 cfs @ 4.65 fps)

~~Culvert~~ **Pond CD2: Cross Drain**

Pond CD2: Cross Drain

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

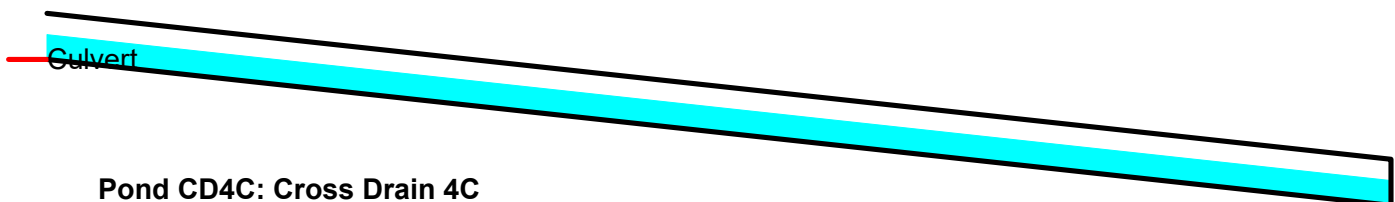
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 3.44" for 2-yr event
 Inflow = 2.96 cfs @ 12.05 hrs, Volume= 8,494 cf
 Outflow = 2.96 cfs @ 12.05 hrs, Volume= 8,494 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.96 cfs @ 12.05 hrs, Volume= 8,494 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

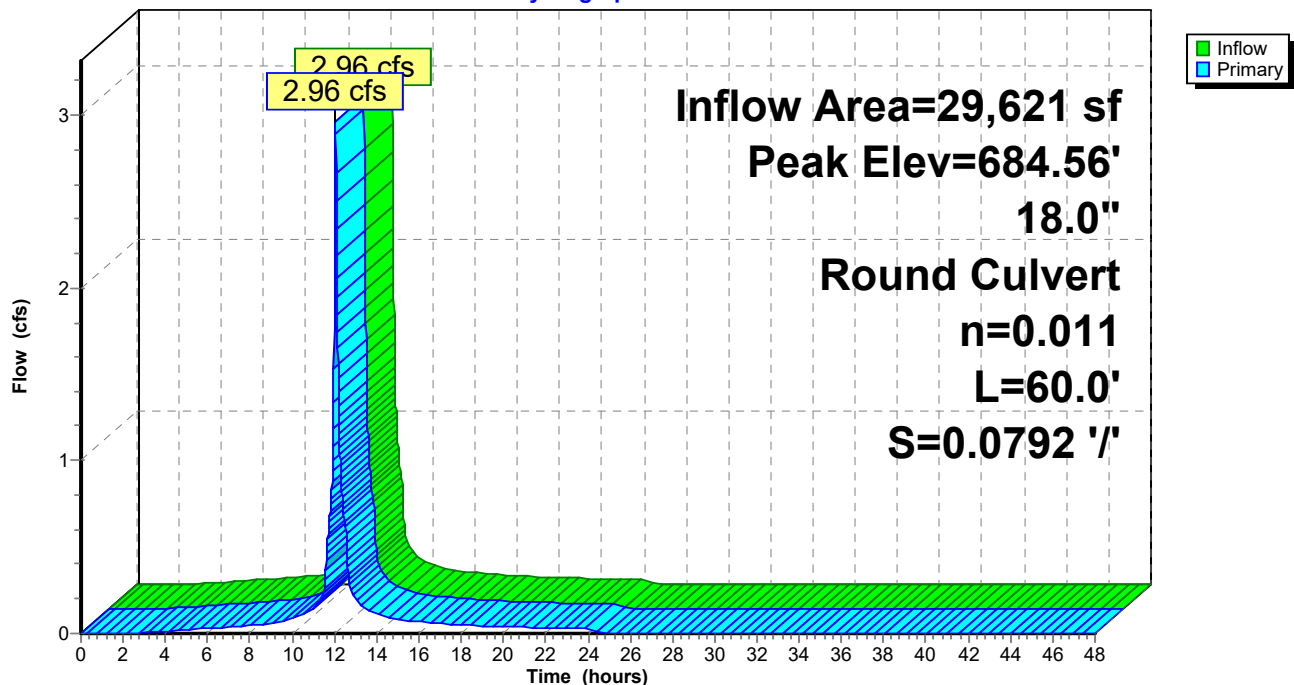
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.56' @ 12.05 hrs

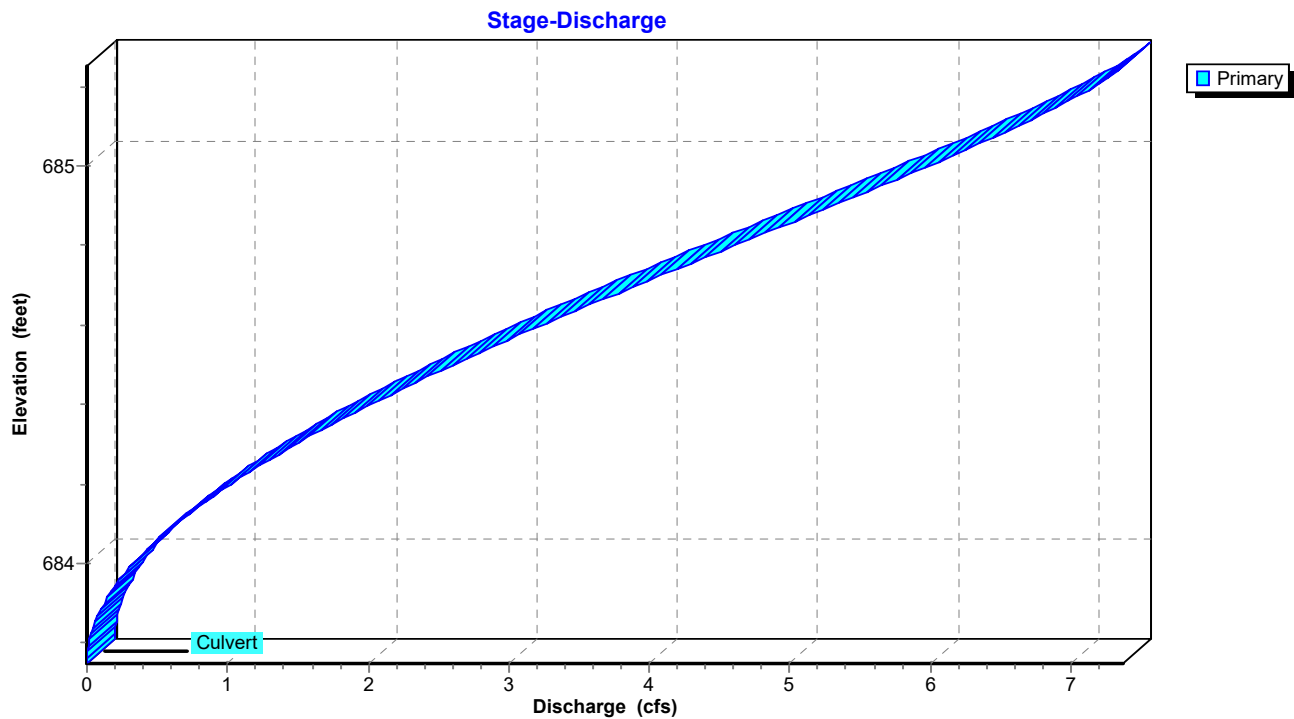
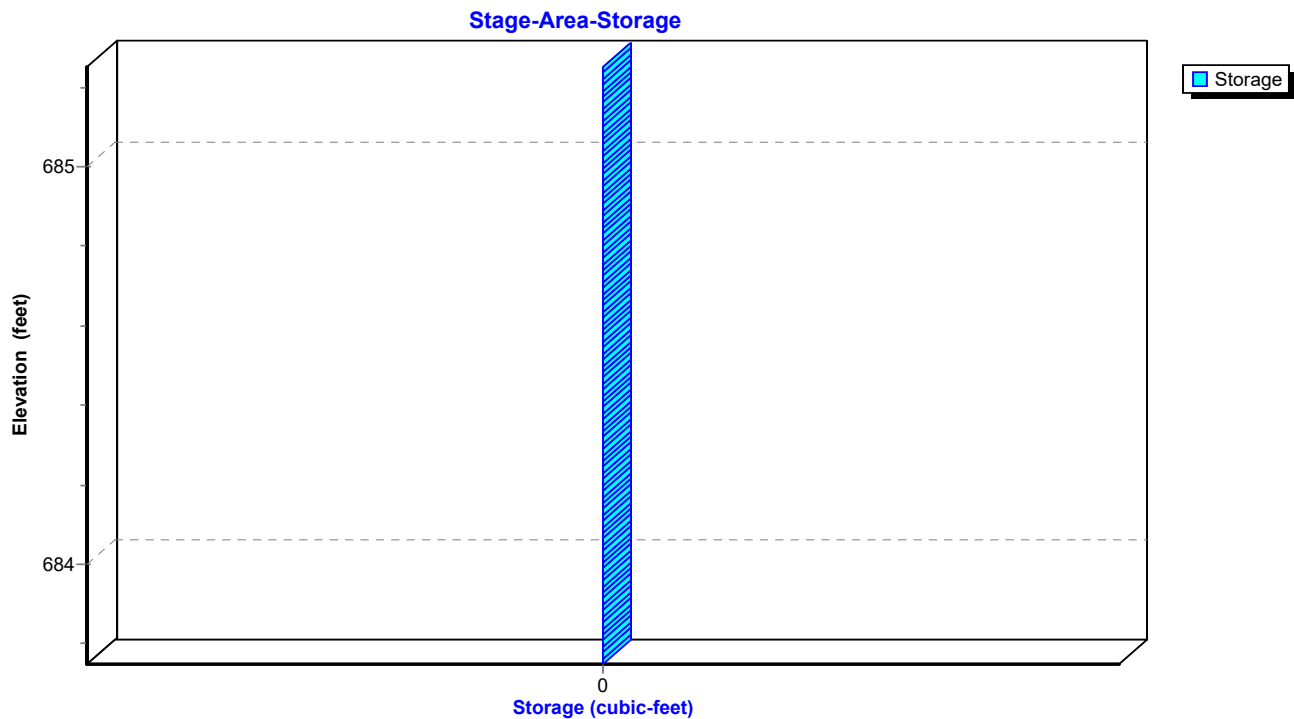
Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=2.96 cfs @ 12.05 hrs HW=684.56' TW=679.51' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 2.96 cfs @ 3.06 fps)

**Pond CD4C: Cross Drain 4C**

Hydrograph



Pond CD4C: Cross Drain 4C**Pond CD4C: Cross Drain 4C**

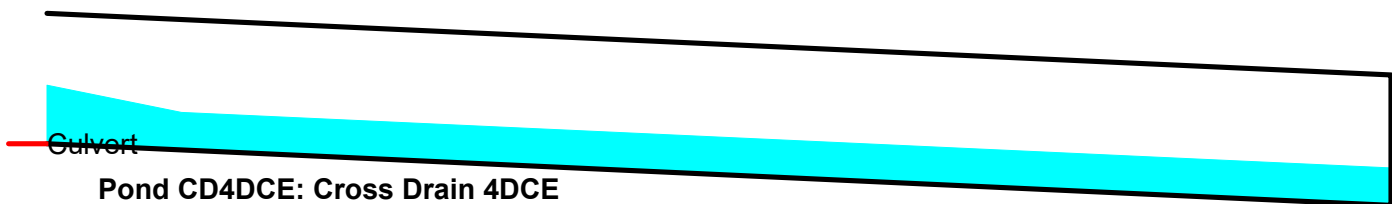
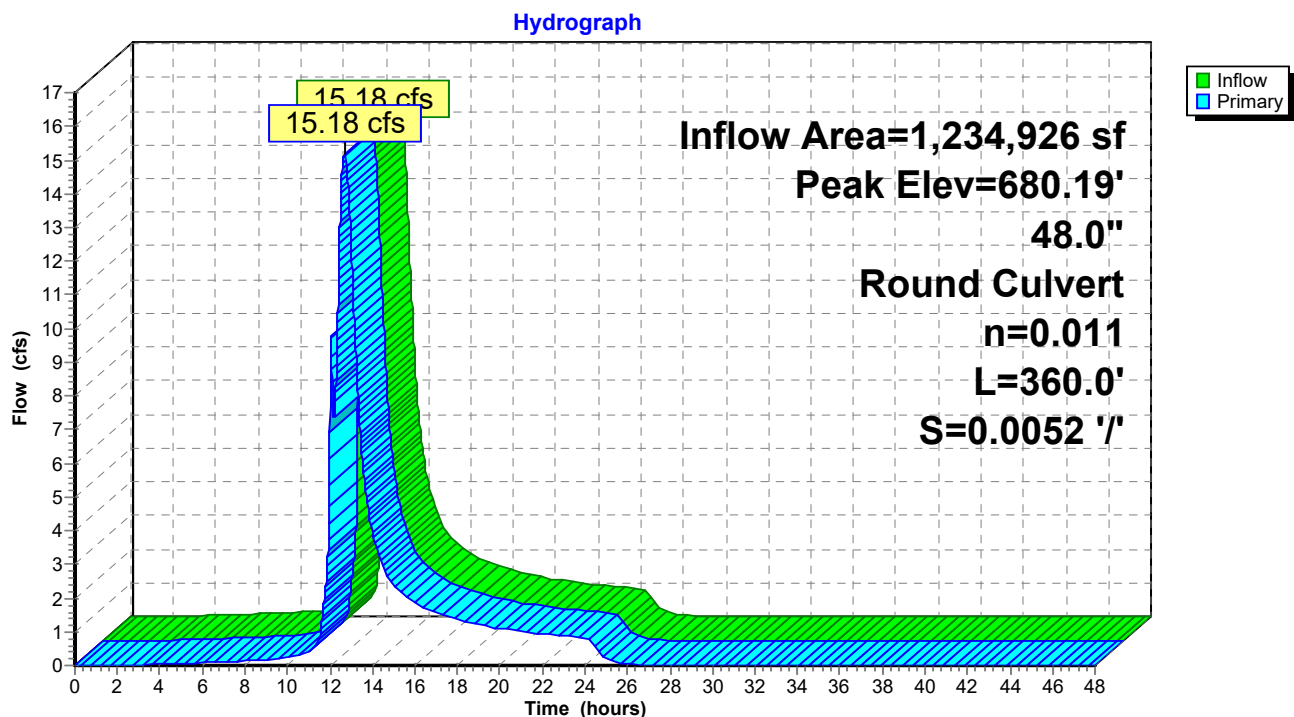
Summary for Pond CD4DCE: Cross Drain 4DCE

Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 1.28" for 2-yr event
 Inflow = 15.18 cfs @ 12.70 hrs, Volume= 131,709 cf
 Outflow = 15.18 cfs @ 12.70 hrs, Volume= 131,709 cf, Atten= 0%, Lag= 0.0 min
 Primary = 15.18 cfs @ 12.70 hrs, Volume= 131,709 cf
 Routed to Pond POND1P : PROP POND

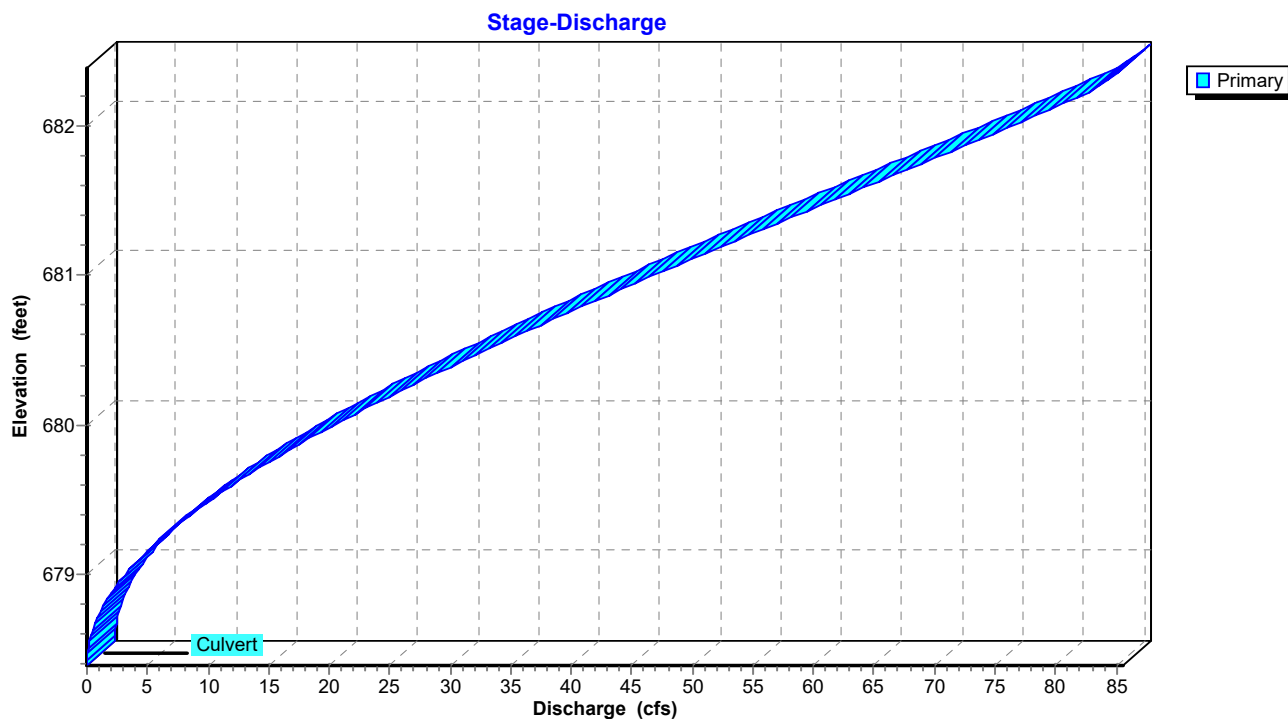
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 680.19' @ 12.83 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

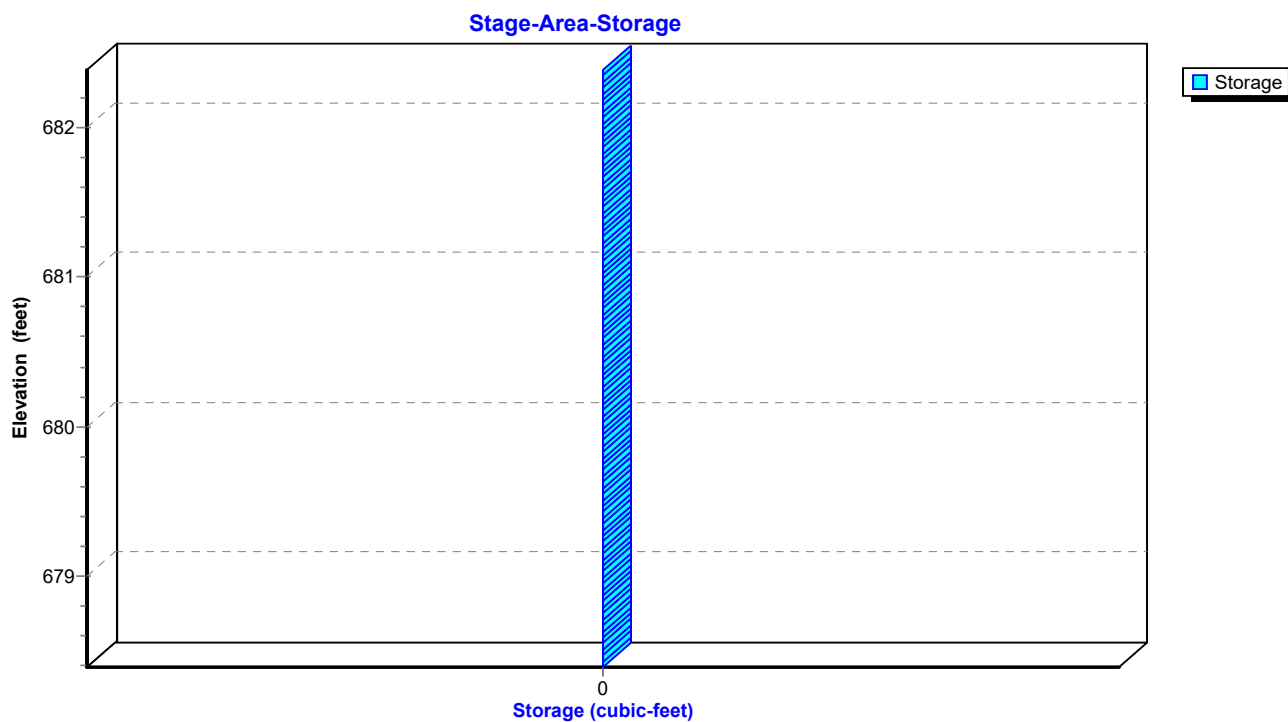
Primary OutFlow Max=15.05 cfs @ 12.70 hrs HW=680.15' TW=679.23' (Dynamic Tailwater)
 ↳ **1=Culvert** (Outlet Controls 15.05 cfs @ 4.17 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Pond CD4DCE: Cross Drain 4DCE



Pond CD4DCE: Cross Drain 4DCE



Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 1.12" for 2-yr event
 Inflow = 14.52 cfs @ 12.69 hrs, Volume= 107,853 cf
 Outflow = 14.40 cfs @ 12.73 hrs, Volume= 107,852 cf, Atten= 1%, Lag= 2.1 min
 Primary = 14.40 cfs @ 12.73 hrs, Volume= 107,852 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.07' @ 12.76 hrs Surf.Area= 1,740 sf Storage= 1,039 cf

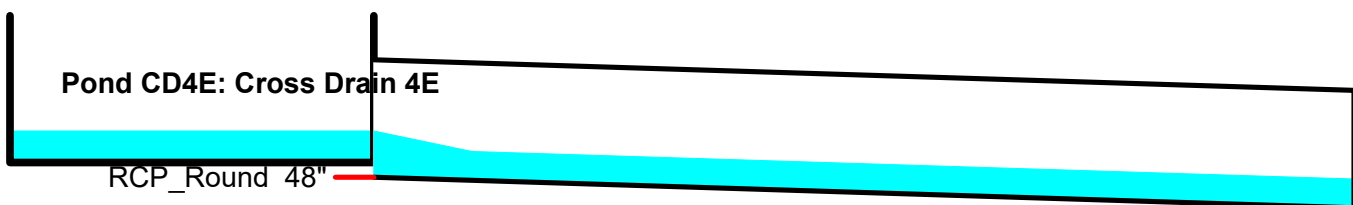
Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.6 min (920.2 - 919.6)

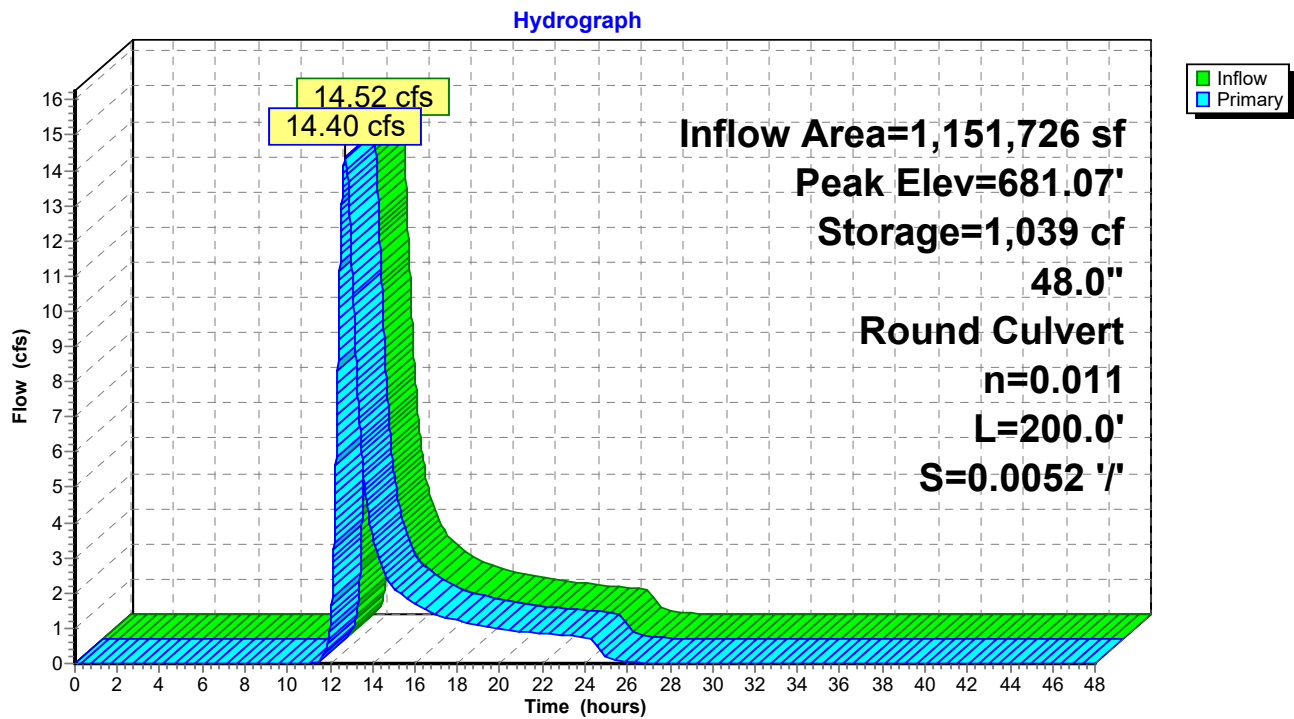
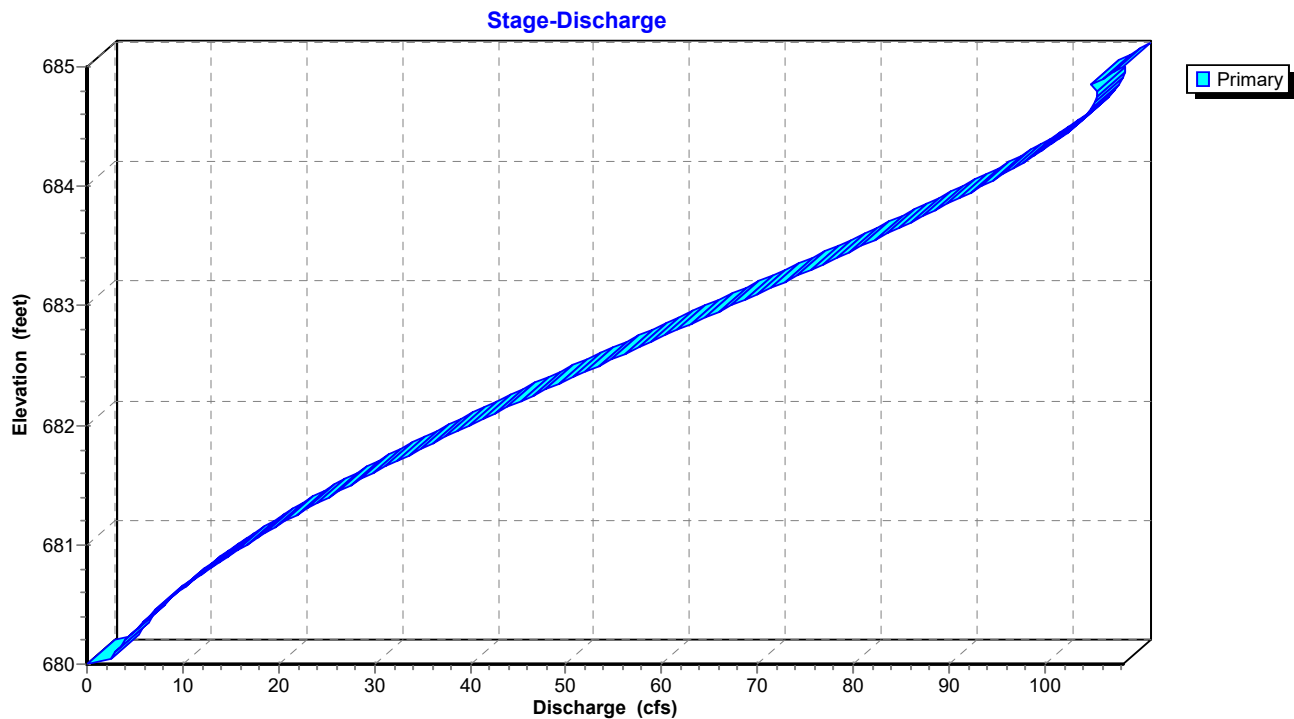
Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

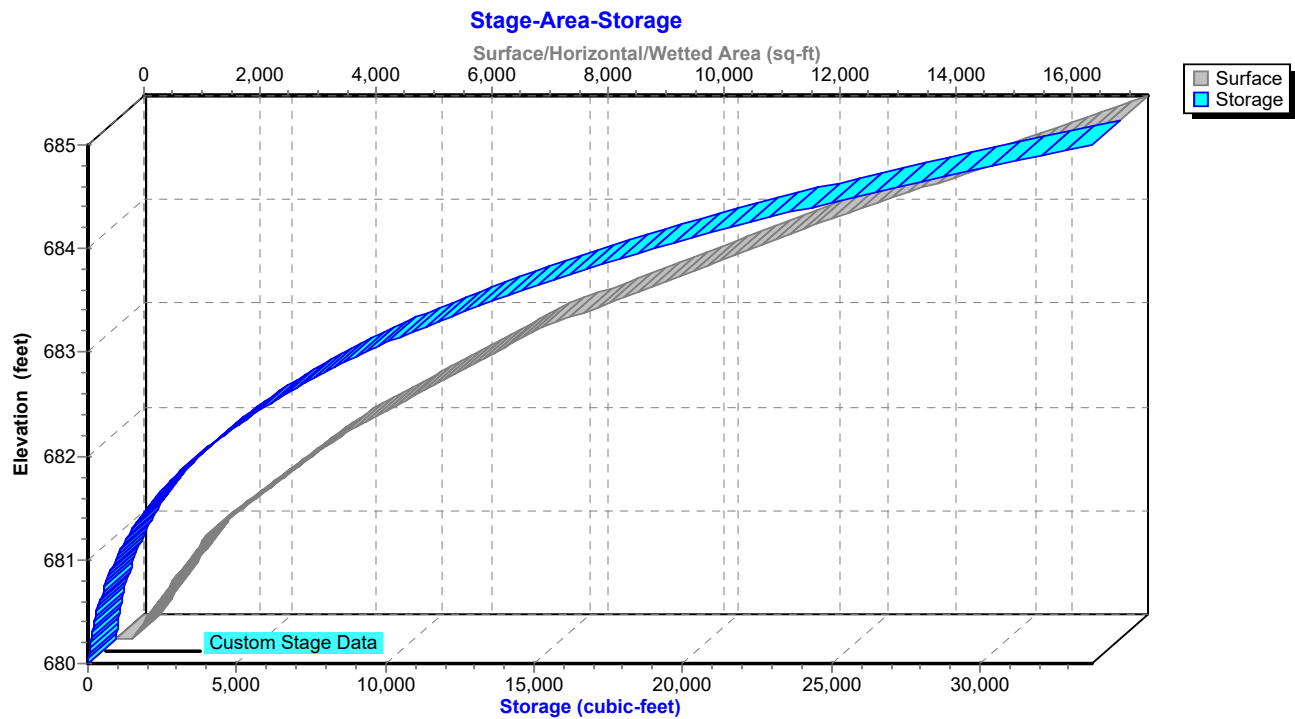
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=14.36 cfs @ 12.73 hrs HW=681.07' TW=680.17' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 14.36 cfs @ 4.65 fps)



Pond CD4E: Cross Drain 4E**Pond CD4E: Cross Drain 4E**

Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 1.93" for 2-yr event
 Inflow = 38.46 cfs @ 12.48 hrs, Volume= 285,722 cf
 Outflow = 17.22 cfs @ 13.13 hrs, Volume= 285,716 cf, Atten= 55%, Lag= 39.4 min
 Primary = 17.22 cfs @ 13.13 hrs, Volume= 285,716 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 679.53' @ 13.14 hrs Surf.Area= 48,568 sf Storage= 98,788 cf

Plug-Flow detention time= 126.6 min calculated for 285,657 cf (100% of inflow)
 Center-of-Mass det. time= 126.7 min (967.5 - 840.8)

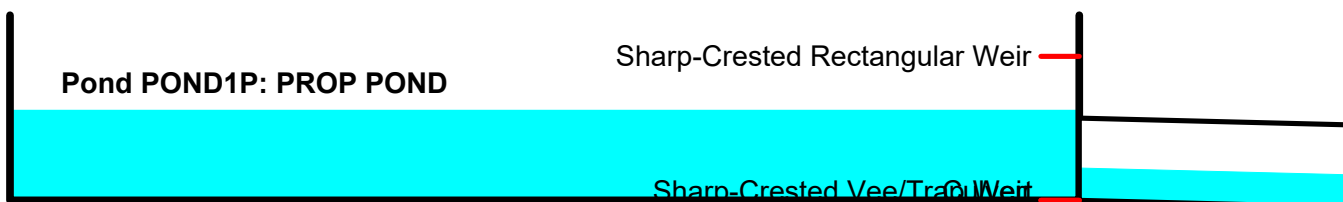
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

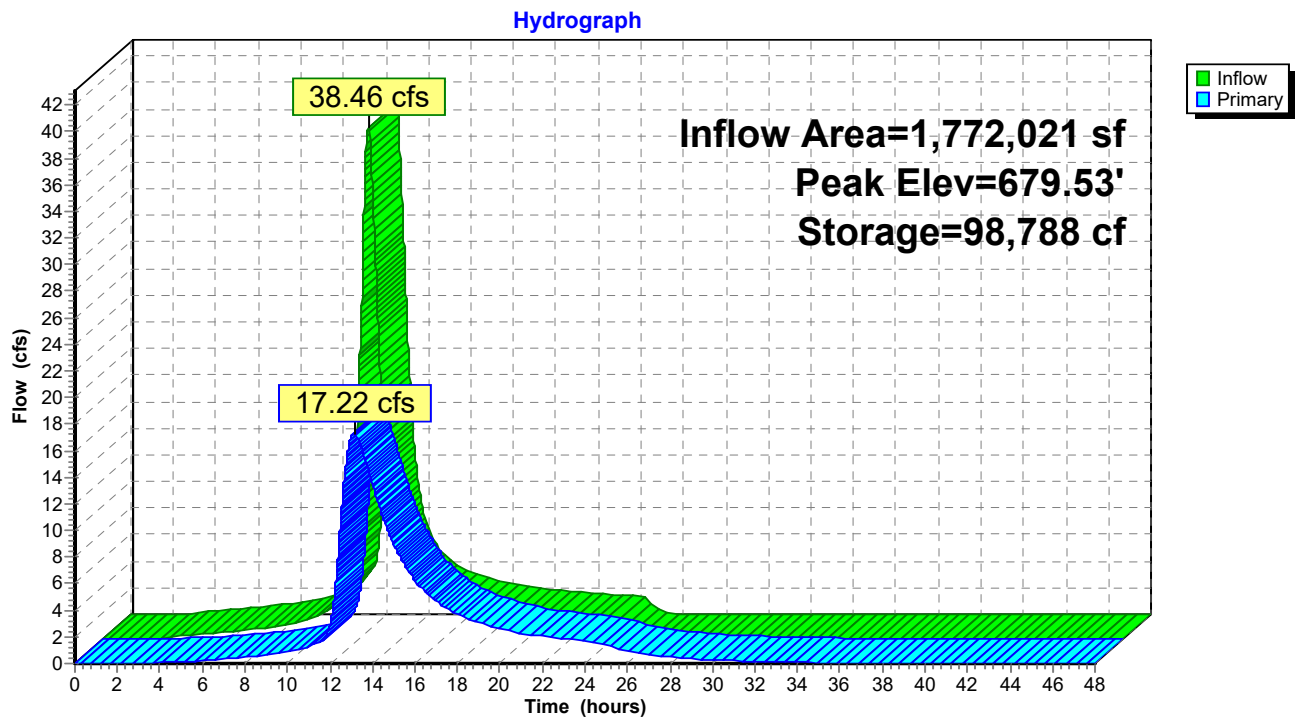
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=17.22 cfs @ 13.13 hrs HW=679.53' TW=676.72' (Dynamic Tailwater)

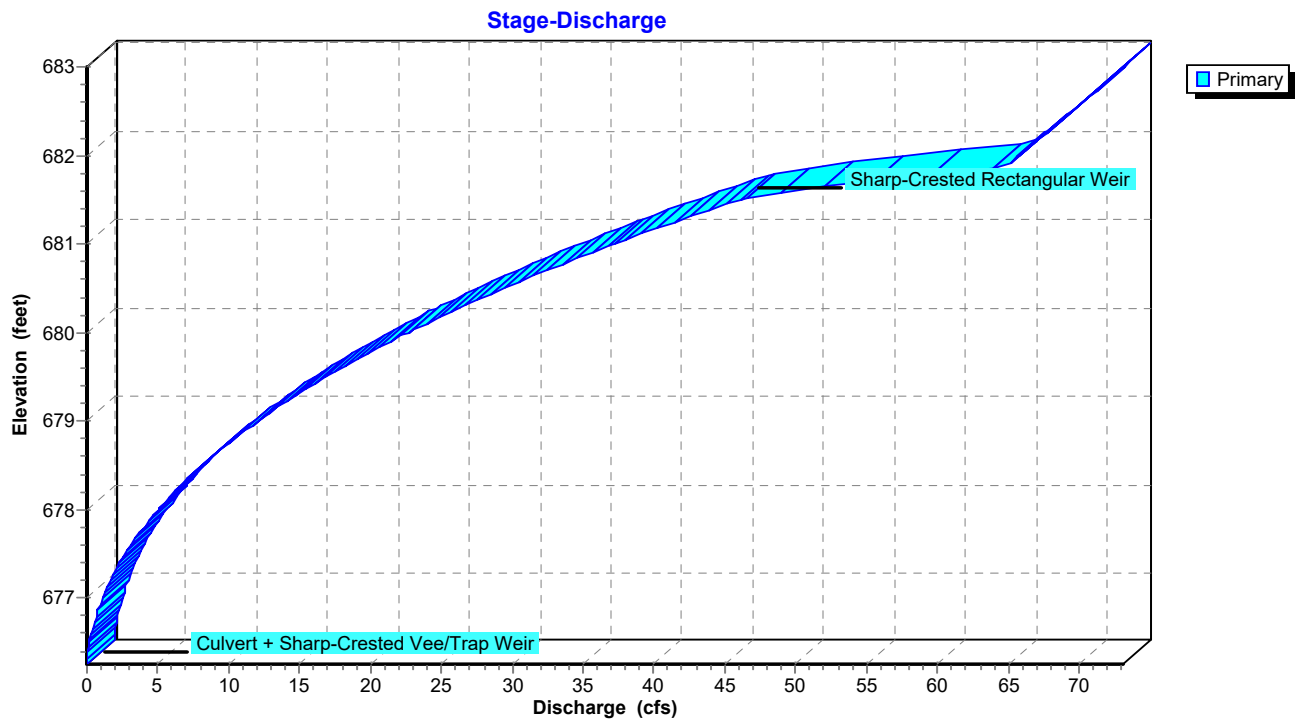
- 1=Culvert (Passes 17.22 cfs of 38.44 cfs potential flow)
- 2=Sharp-Crested Vee/Trap Weir (Weir Controls 17.22 cfs @ 5.36 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

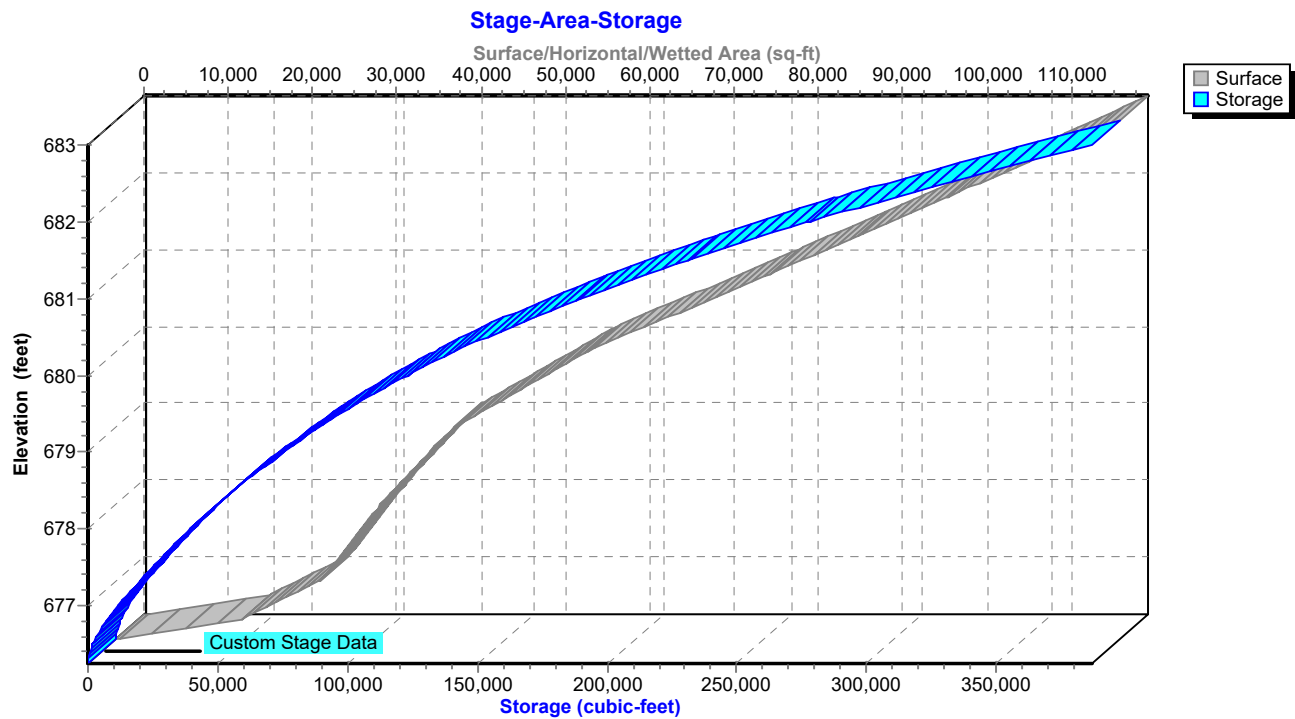


Pond POND1P: PROP POND



Pond POND1P: PROP POND



Pond POND1P: PROP POND

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=2.25"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=85.33 cfs 1,166,980 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=1.29"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=19.26 cfs 162,997 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=2.09"
 Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=14.35 cfs 71,034 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=1.85"
 Flow Length=2,468' Tc=68.1 min CN=70 Runoff=33.51 cfs 279,135 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=2.25"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=85.33 cfs 1,166,980 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=1.29"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=19.26 cfs 162,997 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=2.59"
 Tc=5.0 min CN=79 Runoff=17.54 cfs 44,712 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=1.70"
 Flow Length=945' Tc=40.9 min CN=68 Runoff=5.38 cfs 34,201 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=4.28"
 Flow Length=996' Tc=33.8 min CN=96 Runoff=32.22 cfs 191,750 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=4.28"
 Tc=5.0 min CN=96 Runoff=3.82 cfs 10,575 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=4.28"
 Tc=5.0 min CN=96 Runoff=6.90 cfs 19,128 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=1.42"
 Flow Length=640' Tc=31.5 min CN=64 Runoff=6.44 cfs 37,438 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=1.78"
 Flow Length=1,313' Tc=46.8 min CN=69 Runoff=18.28 cfs 123,771 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.57' Max Vel=2.37 fps Inflow=3.82 cfs 10,575 cf
 n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=3.55 cfs 10,575 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.71' Max Vel=3.18 fps Inflow=6.90 cfs 19,128 cf
 n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=6.57 cfs 19,128 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=0.59' Max Vel=1.45 fps Inflow=6.44 cfs 37,438 cf
 n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=4.99 cfs 37,438 cf

Reach OF4: Primary Stream for Avg. Flow Depth=2.22' Max Vel=3.81 fps Inflow=112.82 cfs 1,680,146 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=112.58 cfs 1,680,146 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=2.24' Max Vel=3.84 fps Inflow=115.76 cfs 1,791,545 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=115.59 cfs 1,791,544 cf

Pond CD2: Cross Drain Peak Elev=682.30' Inflow=19.26 cfs 162,997 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=19.26 cfs 162,997 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.65' Inflow=3.55 cfs 10,575 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=3.55 cfs 10,575 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=680.77' Inflow=23.79 cfs 190,911 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=23.79 cfs 190,911 cf

Pond CD4E: Cross Drain 4E Peak Elev=681.62' Storage=2,352 cf Inflow=23.21 cfs 161,209 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=22.81 cfs 161,207 cf

Pond POND1P: PROP POND Peak Elev=680.15' Storage=131,541 cf Inflow=52.23 cfs 382,660 cf
Outflow=24.34 cfs 382,654 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 3,471,699 cf Average Runoff Depth = 2.09"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 85.33 cfs @ 13.83 hrs, Volume= 1,166,980 cf, Depth= 2.25"

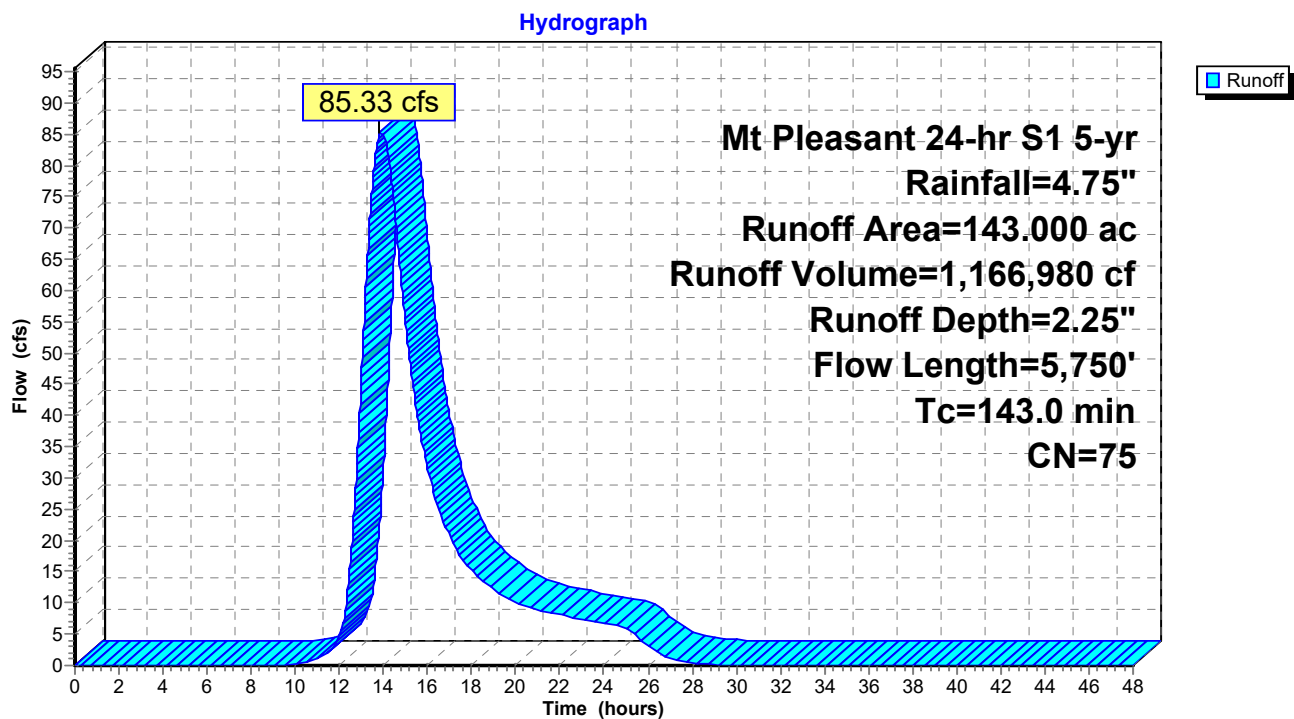
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

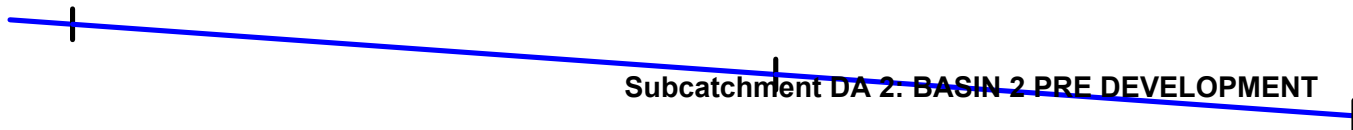
Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Runoff = 19.26 cfs @ 12.94 hrs, Volume= 162,997 cf, Depth= 1.29"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

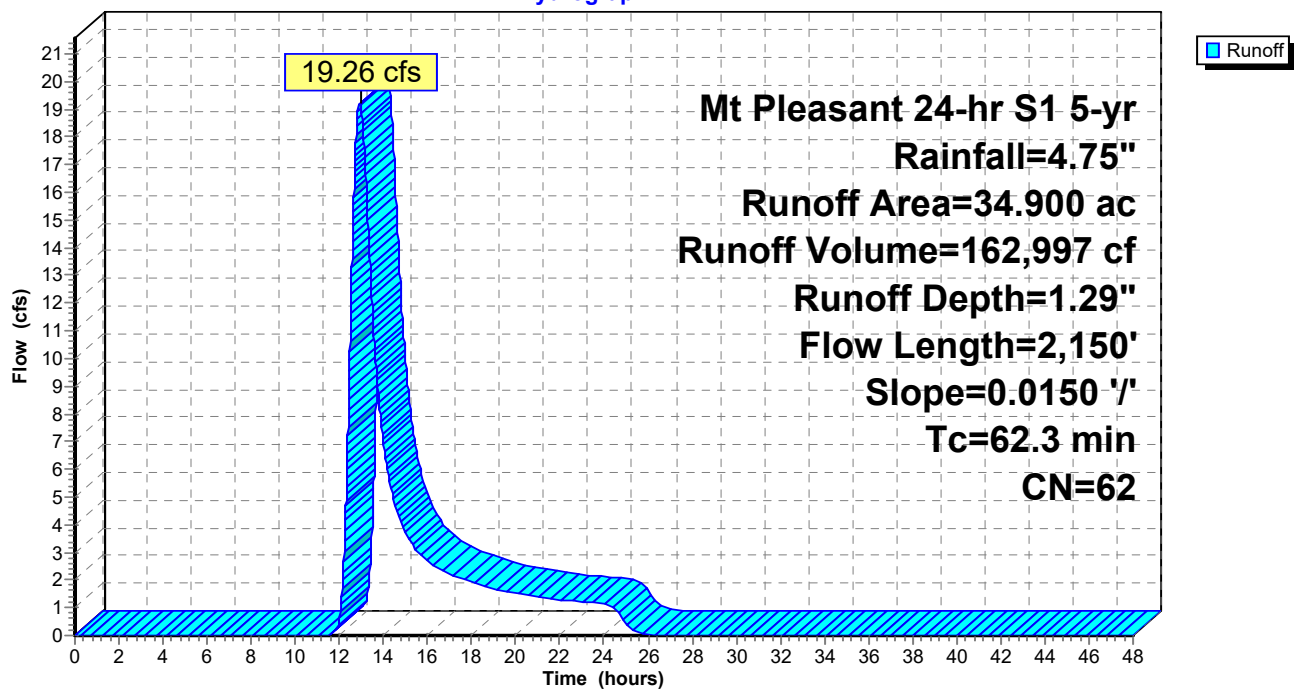
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Hydrograph



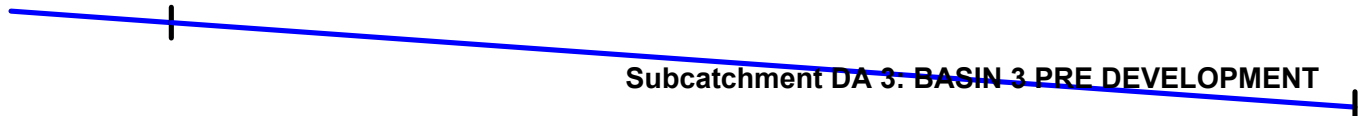
Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 14.35 cfs @ 12.34 hrs, Volume= 71,034 cf, Depth= 2.09"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

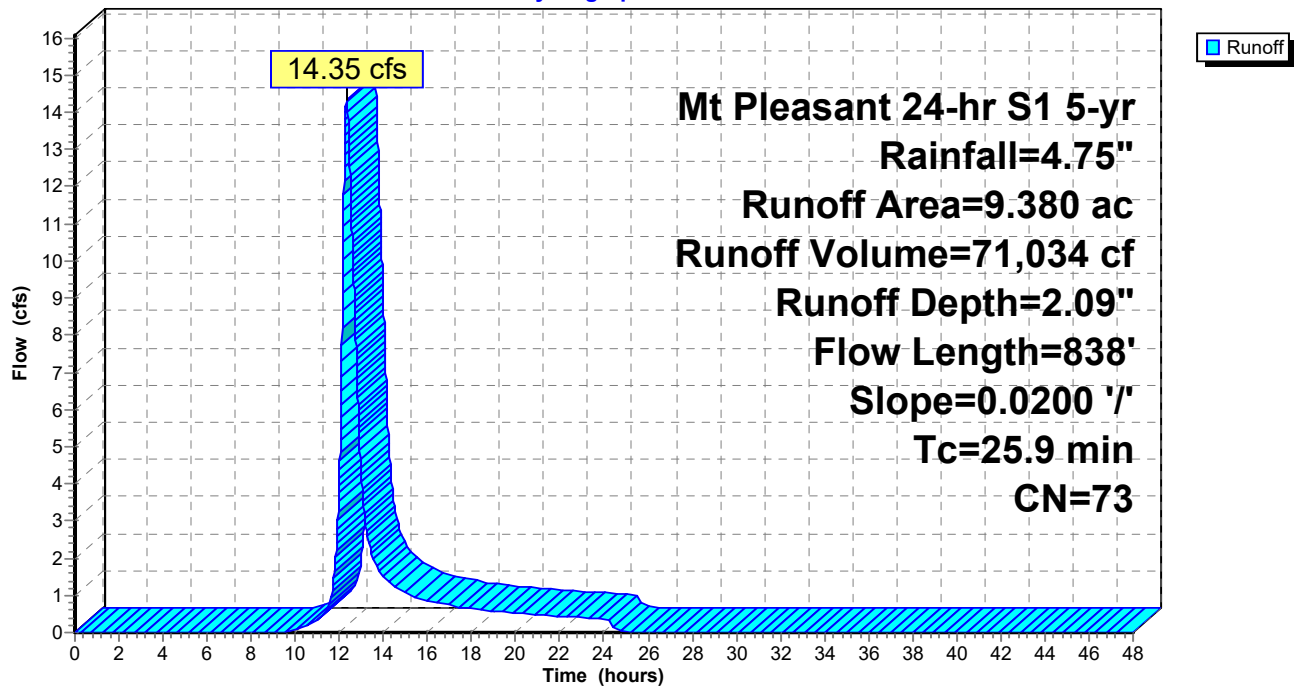
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			



Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Runoff = 33.51 cfs @ 12.94 hrs, Volume= 279,135 cf, Depth= 1.85"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

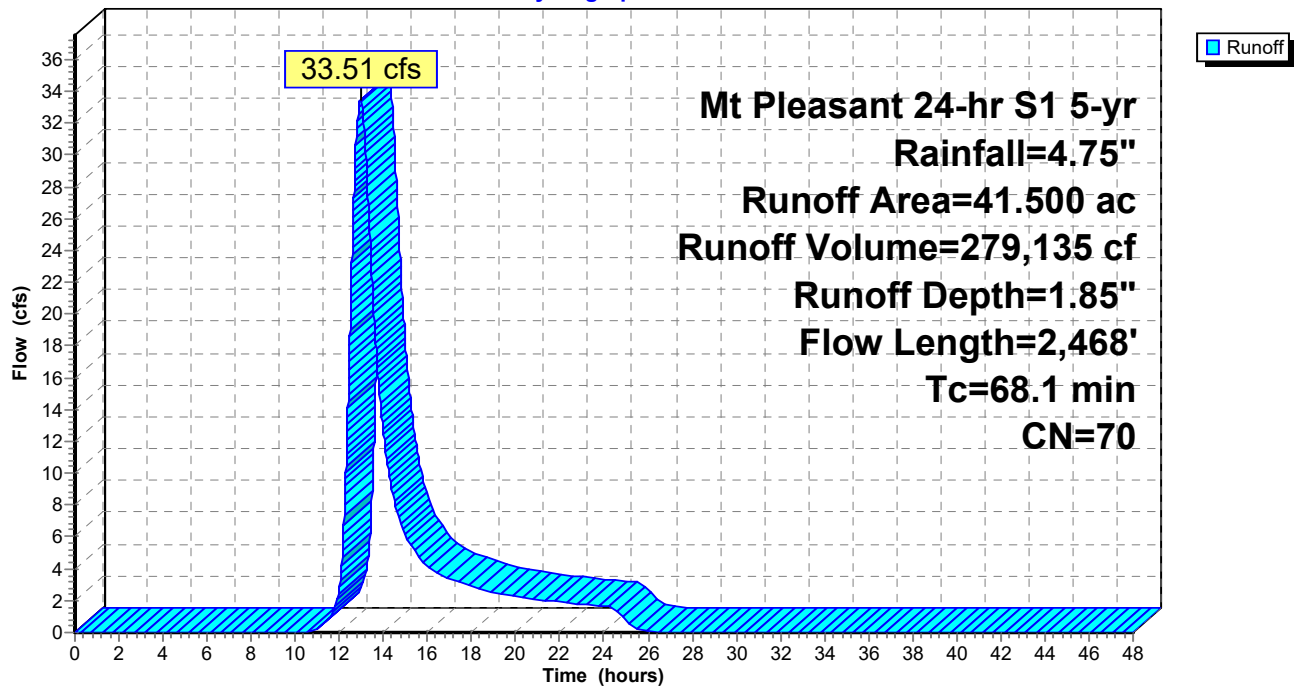
Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA1P: BASIN 1 PROPOSED

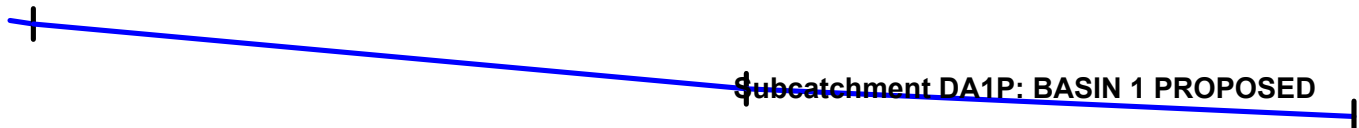
Runoff = 85.33 cfs @ 13.83 hrs, Volume= 1,166,980 cf, Depth= 2.25"

Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

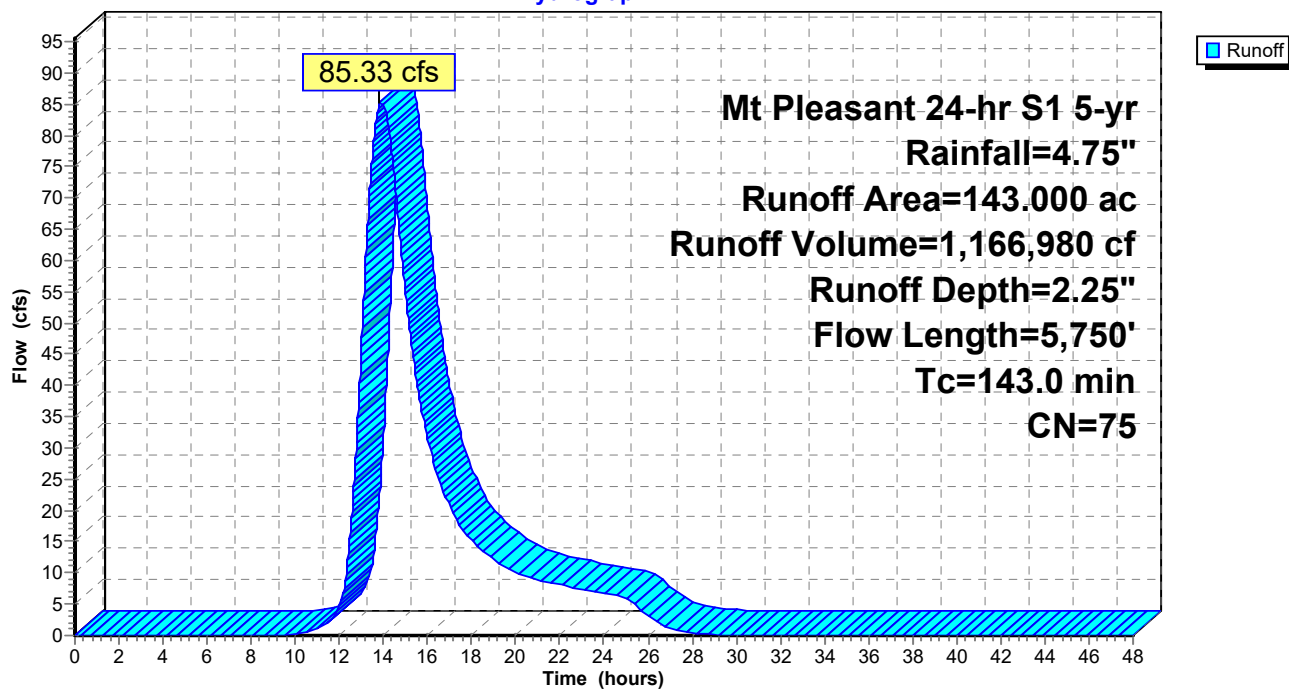
Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

Hydrograph



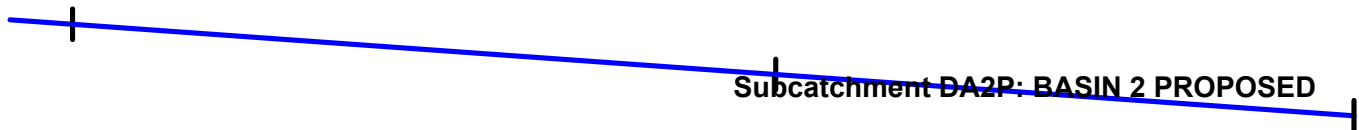
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 19.26 cfs @ 12.94 hrs, Volume= 162,997 cf, Depth= 1.29"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

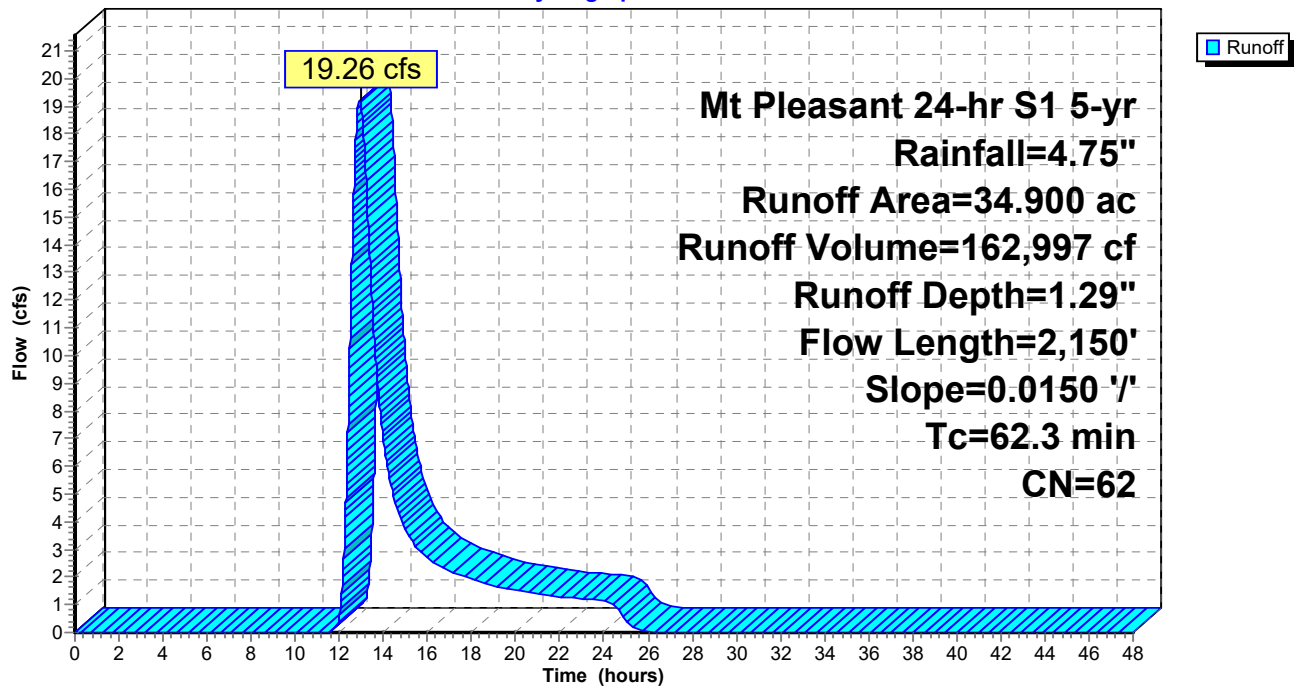
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 17.54 cfs @ 12.03 hrs, Volume= 44,712 cf, Depth= 2.59"

Routed to Reach OF4P : Primary Stream for Outfalls

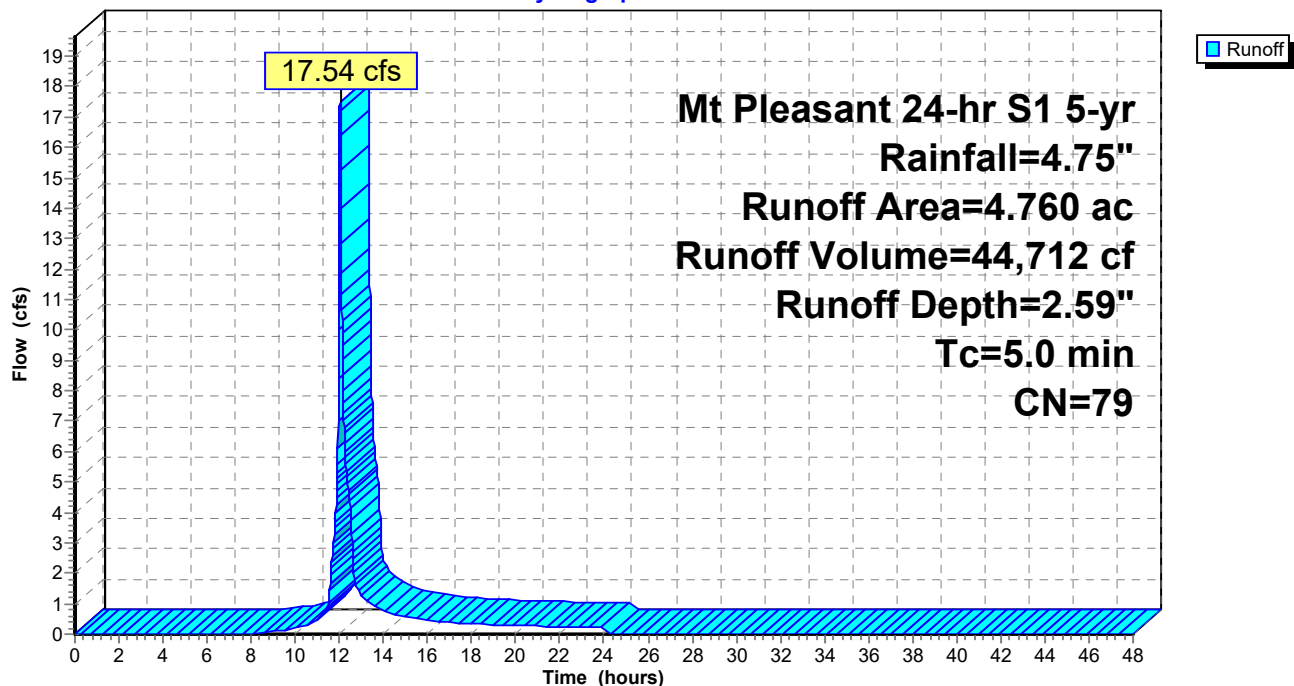
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

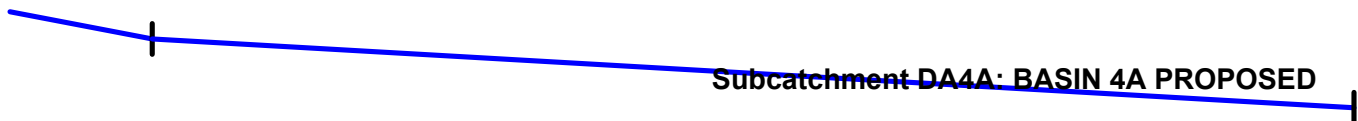
Runoff = 5.38 cfs @ 12.59 hrs, Volume= 34,201 cf, Depth= 1.70"

Routed to Reach OF4P : Primary Stream for Outfalls

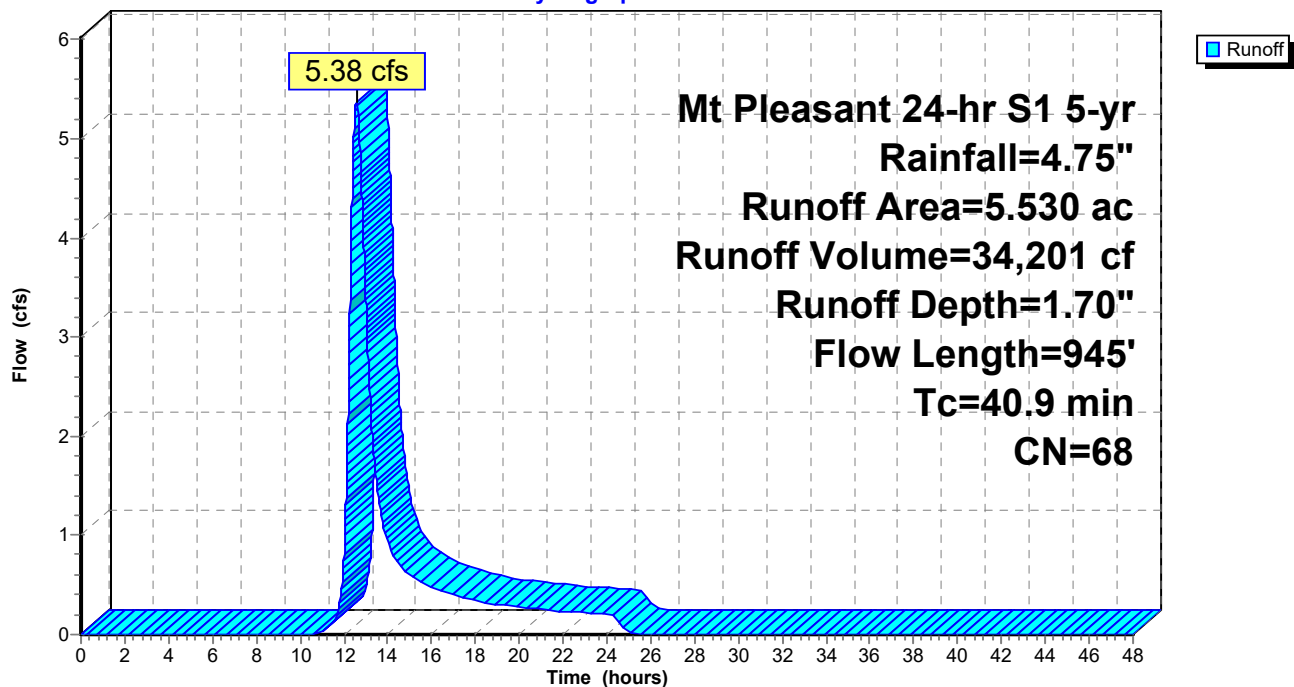
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



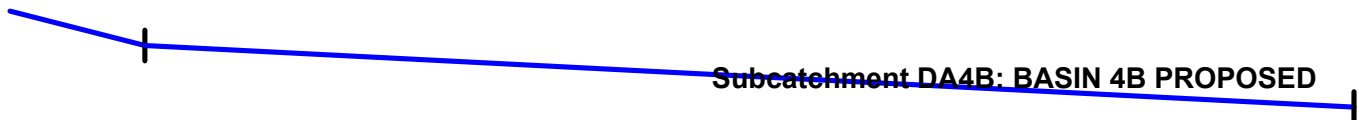
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

Runoff = 32.22 cfs @ 12.40 hrs, Volume= 191,750 cf, Depth= 4.28"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

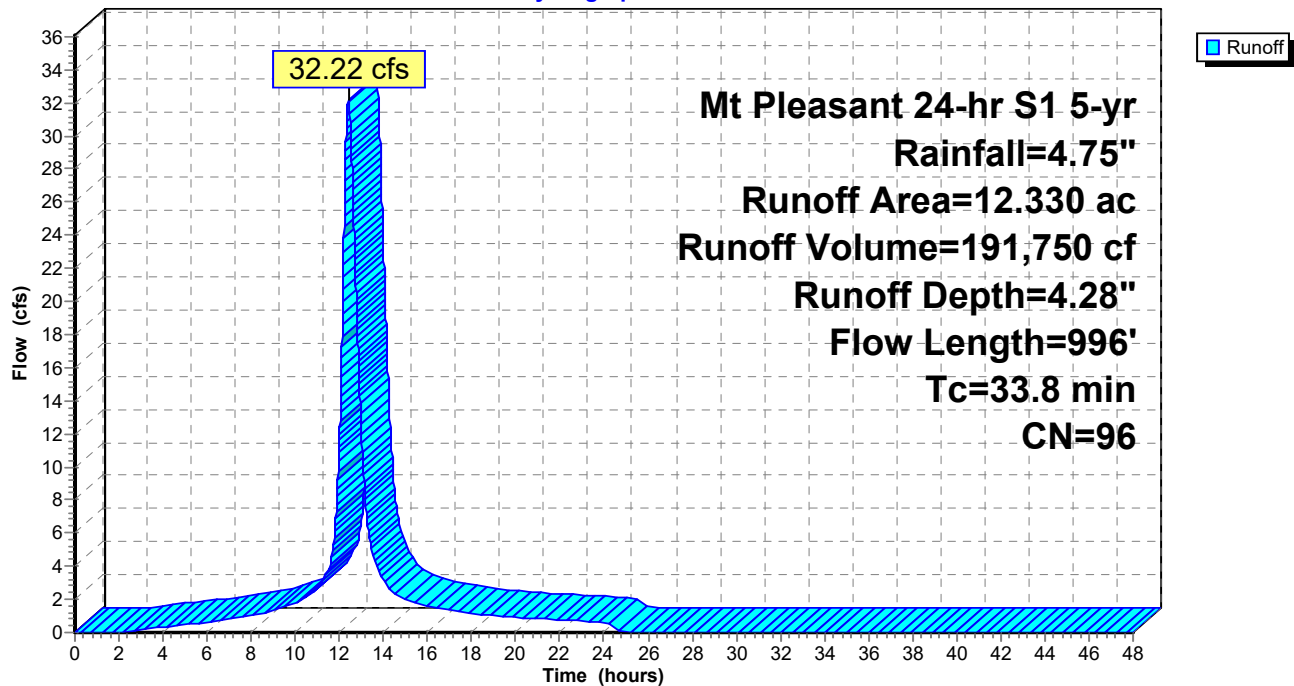
Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Hydrograph



Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 3.82 cfs @ 12.03 hrs, Volume= 10,575 cf, Depth= 4.28"
 Routed to Reach D4C : Ditch 4C

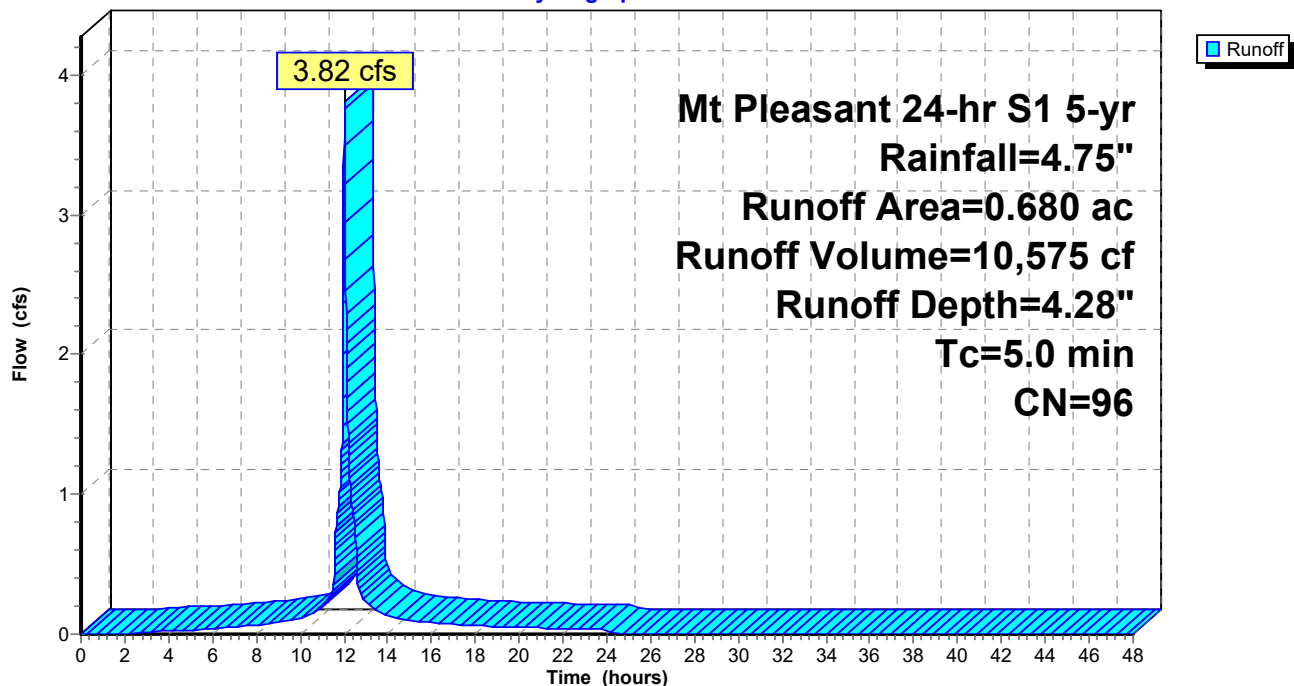
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 6.90 cfs @ 12.03 hrs, Volume= 19,128 cf, Depth= 4.28"
 Routed to Reach D4D : Ditch 4D

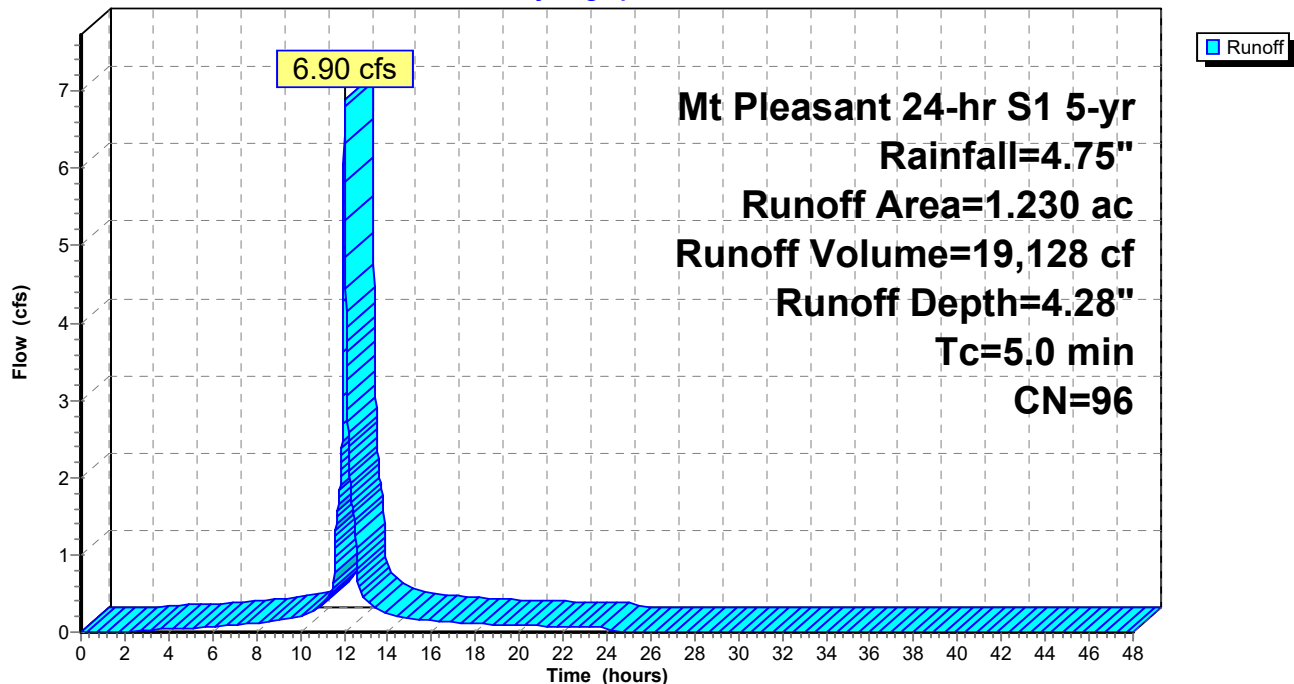
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



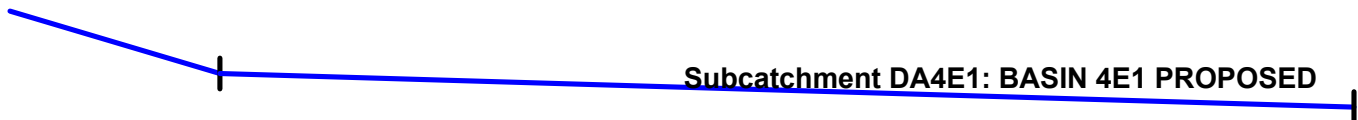
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

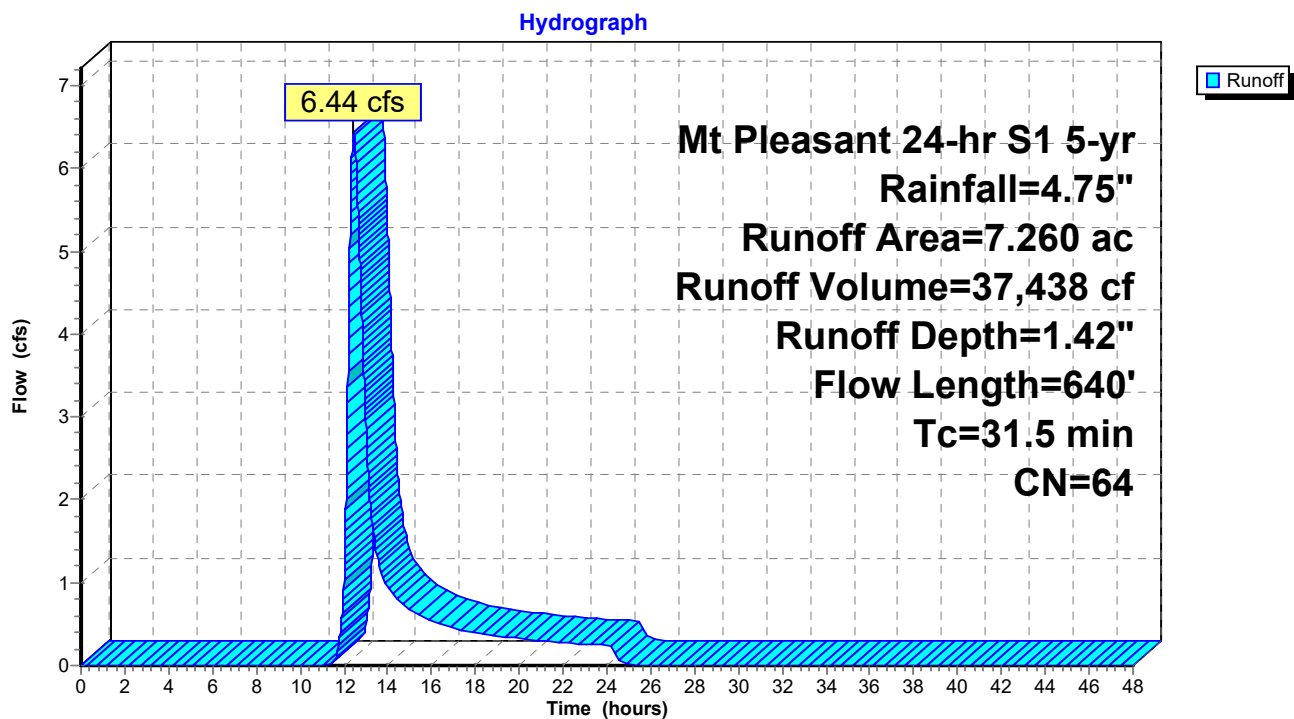
Runoff = 6.44 cfs @ 12.45 hrs, Volume= 37,438 cf, Depth= 1.42"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

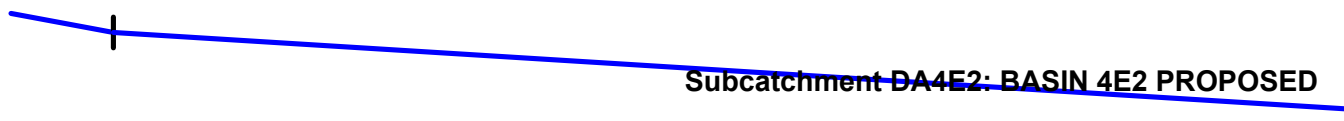
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

Runoff = 18.28 cfs @ 12.64 hrs, Volume= 123,771 cf, Depth= 1.78"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 5-yr Rainfall=4.75"

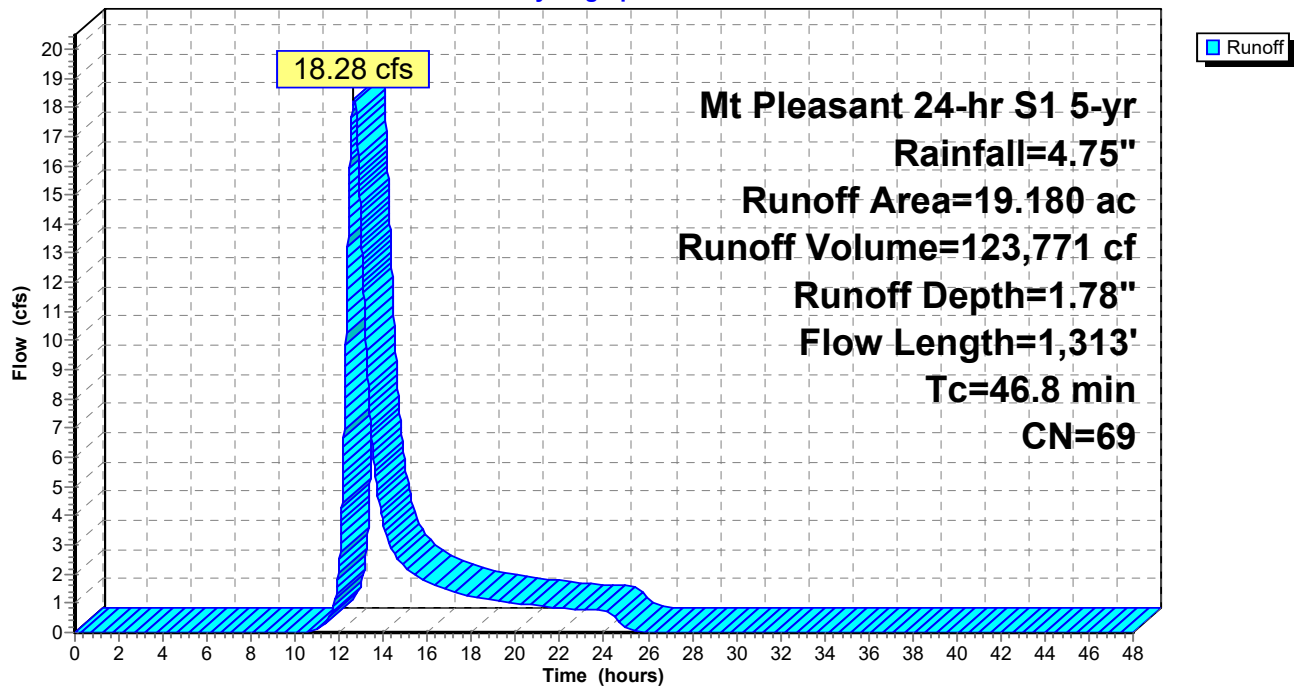
Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

Hydrograph



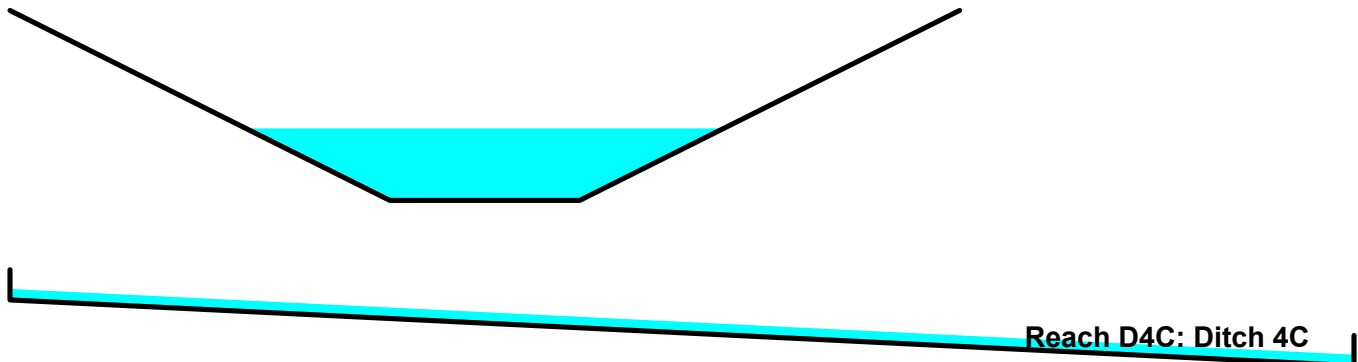
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 4.28" for 5-yr event
Inflow = 3.82 cfs @ 12.03 hrs, Volume= 10,575 cf
Outflow = 3.55 cfs @ 12.05 hrs, Volume= 10,575 cf, Atten= 7%, Lag= 1.3 min
Routed to Pond CD4C : Cross Drain 4C

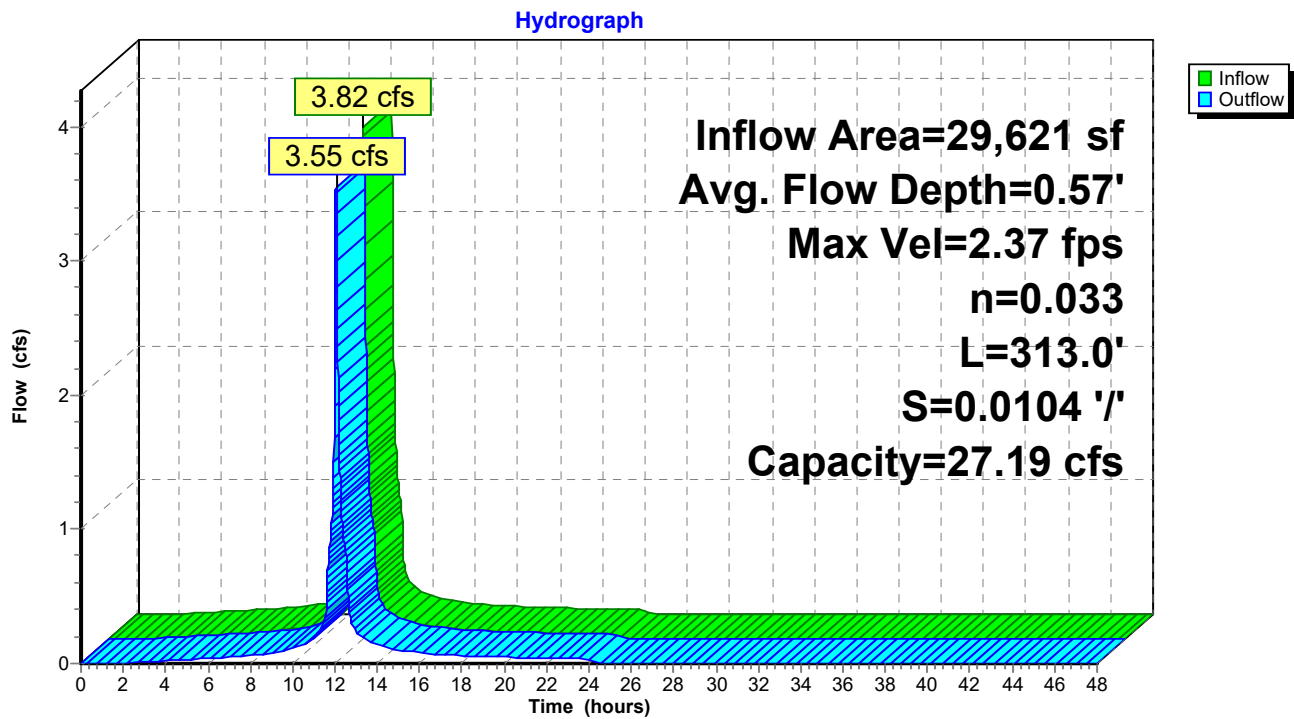
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.37 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 7.9 min

Peak Storage= 469 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 3.77'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

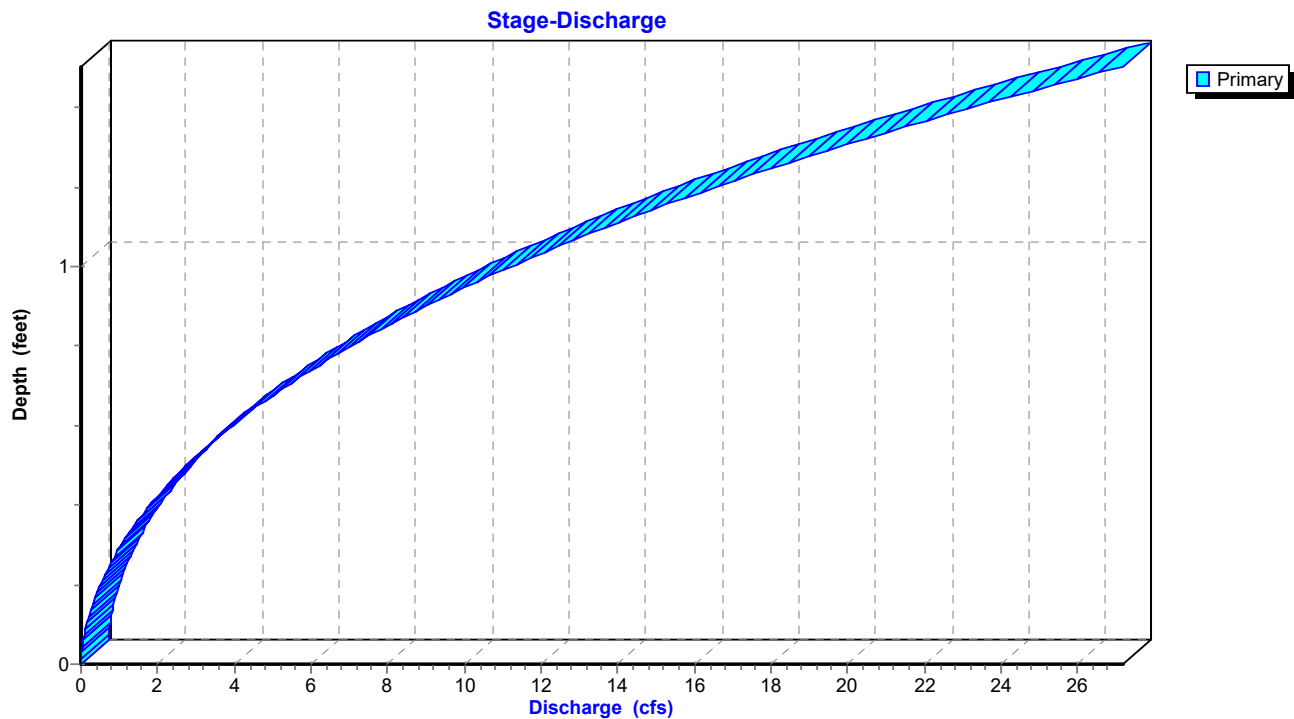
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



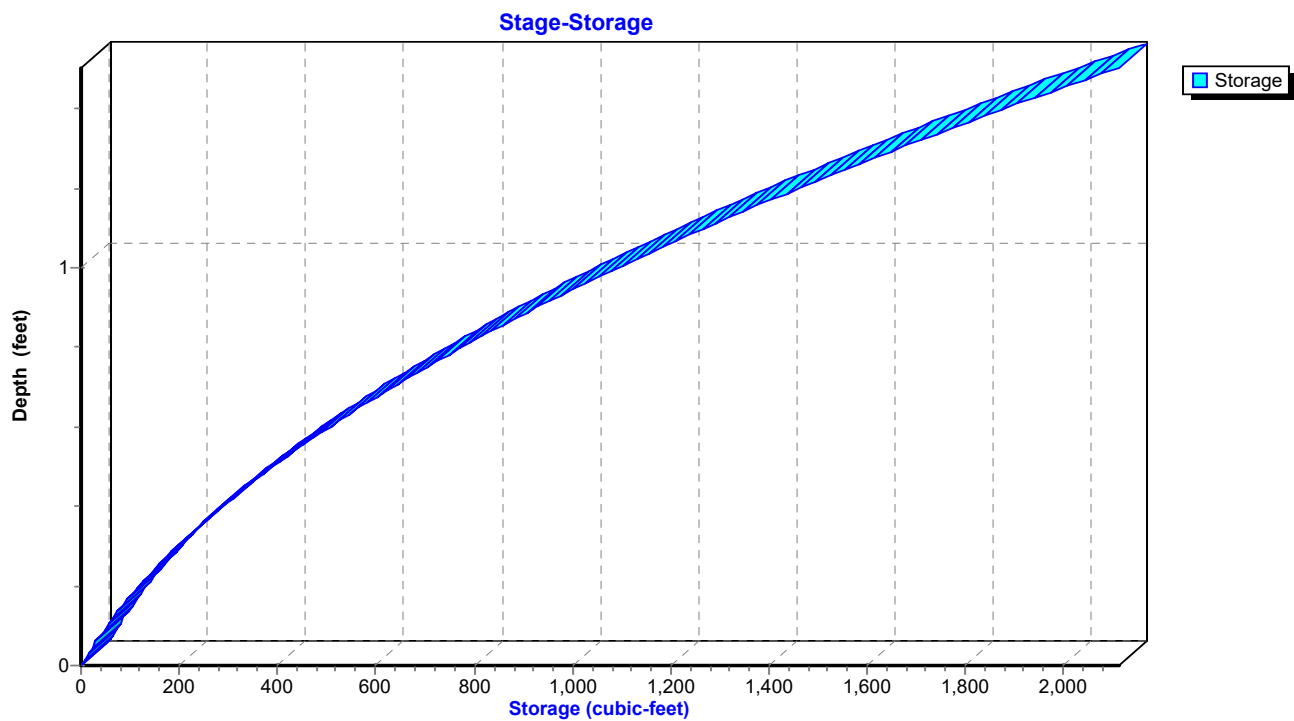
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



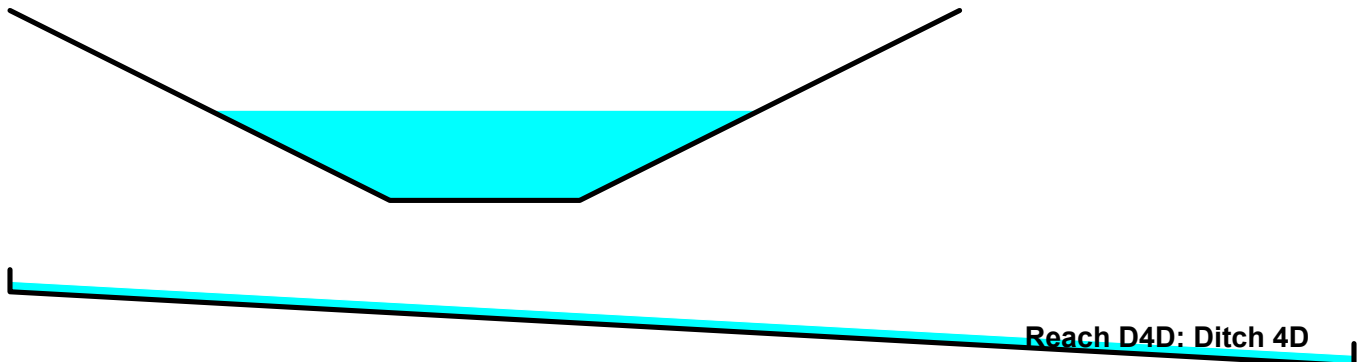
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 4.28" for 5-yr event
Inflow = 6.90 cfs @ 12.03 hrs, Volume= 19,128 cf
Outflow = 6.57 cfs @ 12.04 hrs, Volume= 19,128 cf, Atten= 5%, Lag= 1.1 min
Routed to Pond CD4DCE : Cross Drain 4DCE

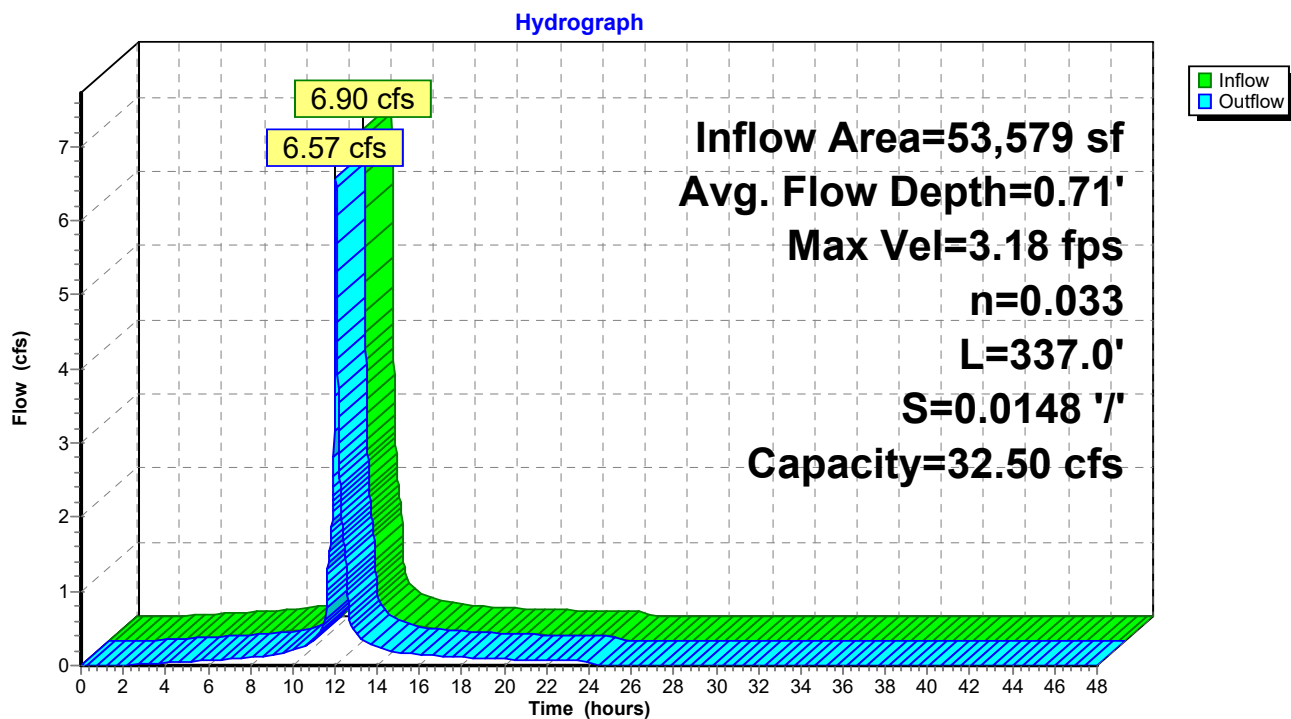
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.18 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 6.2 min

Peak Storage= 695 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 4.33'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

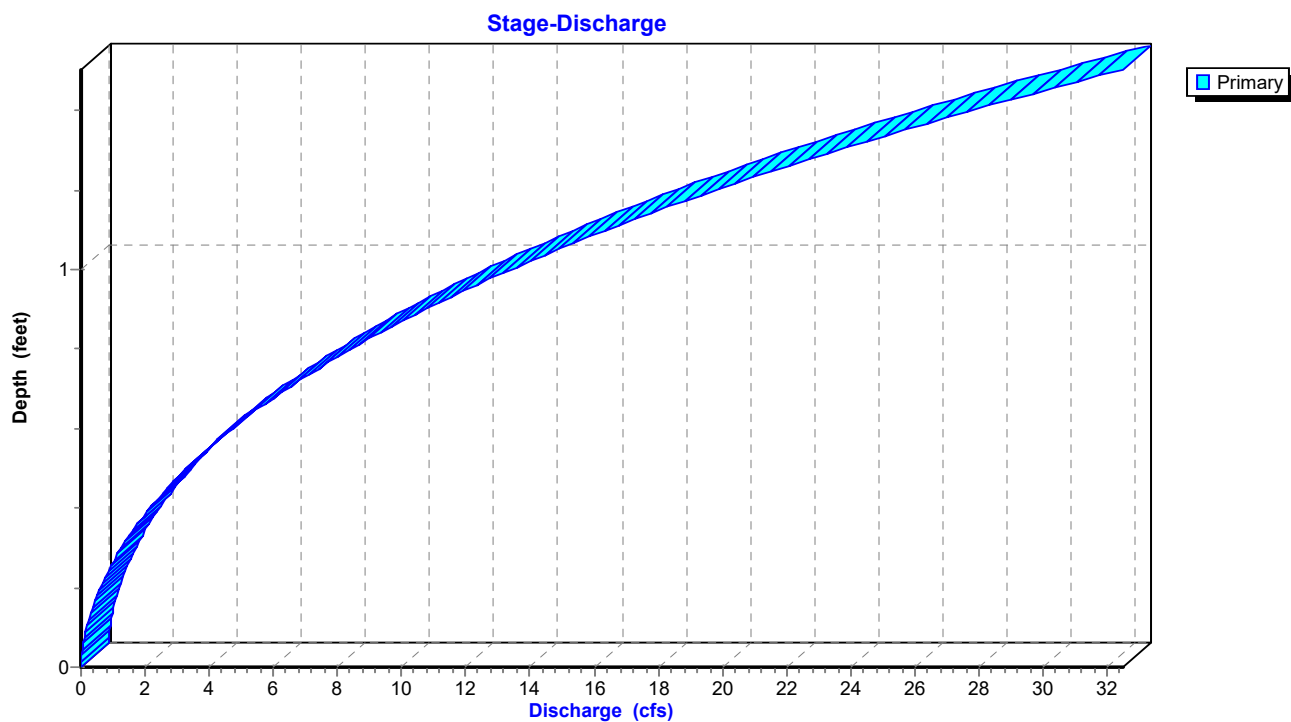
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



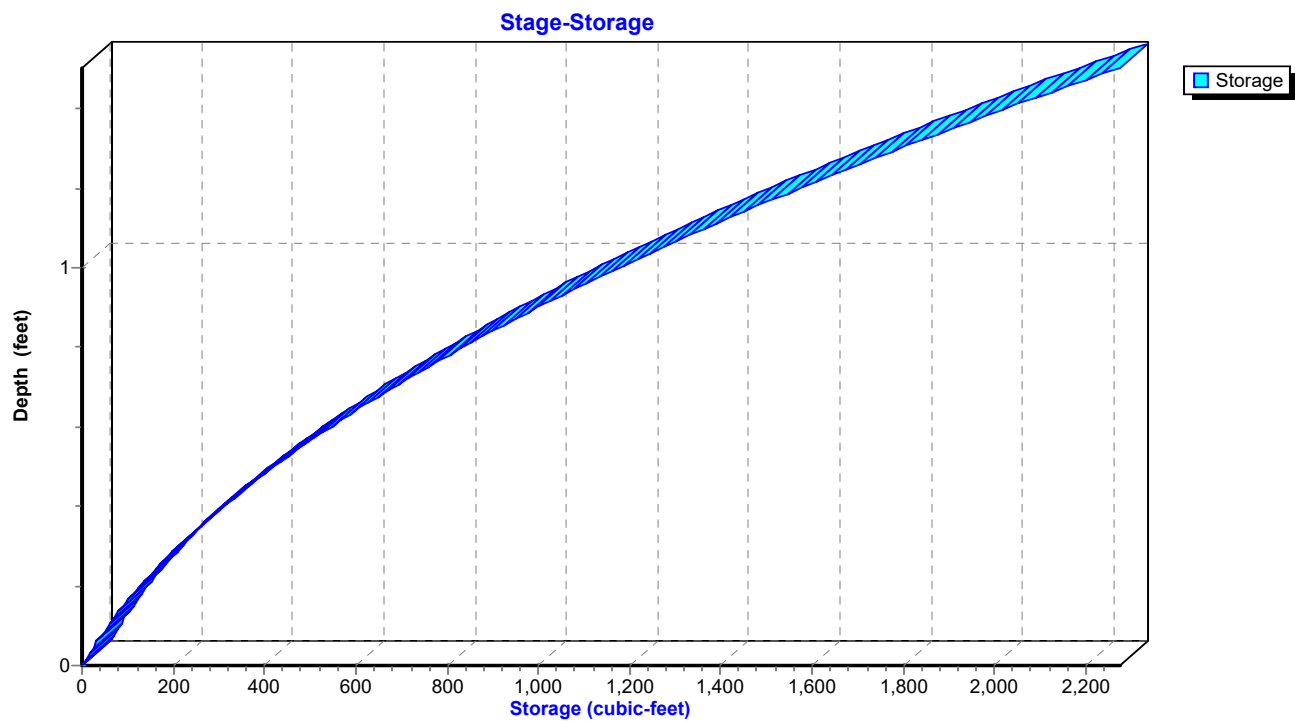
Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



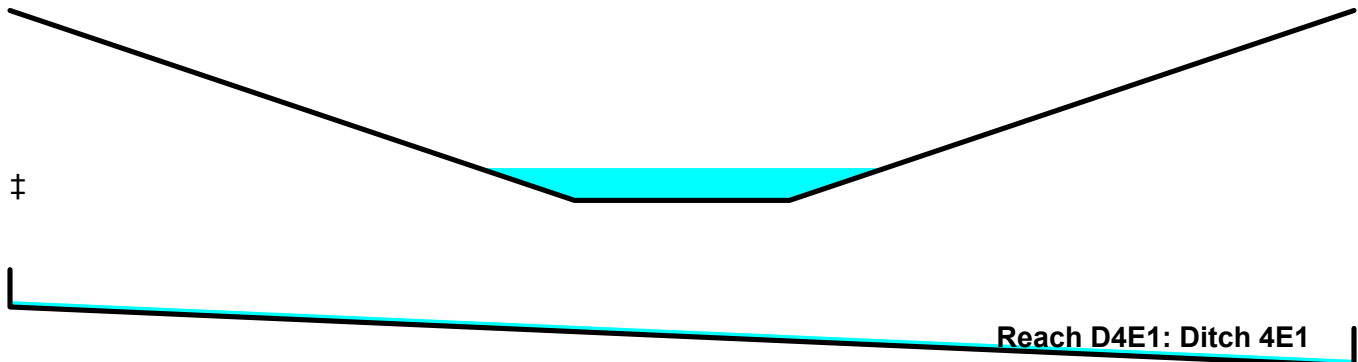
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 1.42" for 5-yr event
Inflow = 6.44 cfs @ 12.45 hrs, Volume= 37,438 cf
Outflow = 4.99 cfs @ 12.72 hrs, Volume= 37,438 cf, Atten= 23%, Lag= 16.4 min
Routed to Pond CD4E : Cross Drain 4E

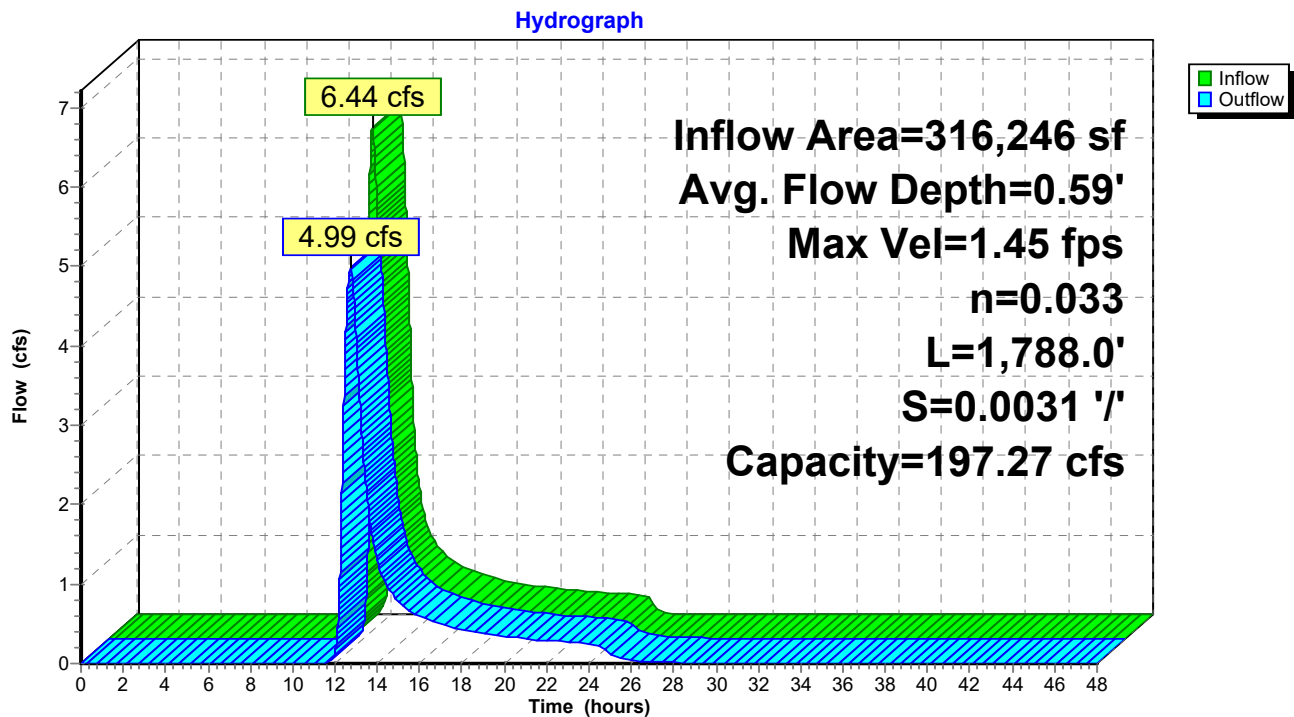
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.45 fps, Min. Travel Time= 20.5 min
Avg. Velocity= 0.47 fps, Avg. Travel Time= 63.1 min

Peak Storage= 6,143 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 7.57'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

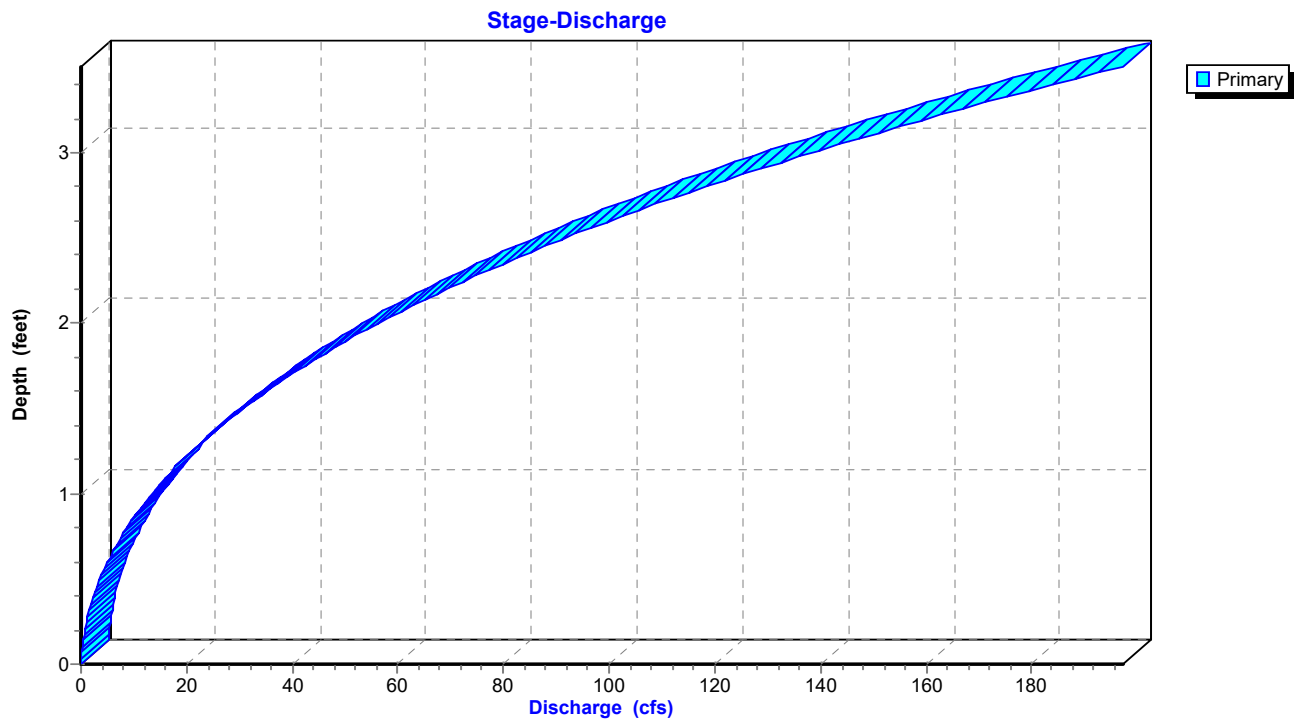
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 '/' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 '/'
Inlet Invert= 685.00', Outlet Invert= 679.50'



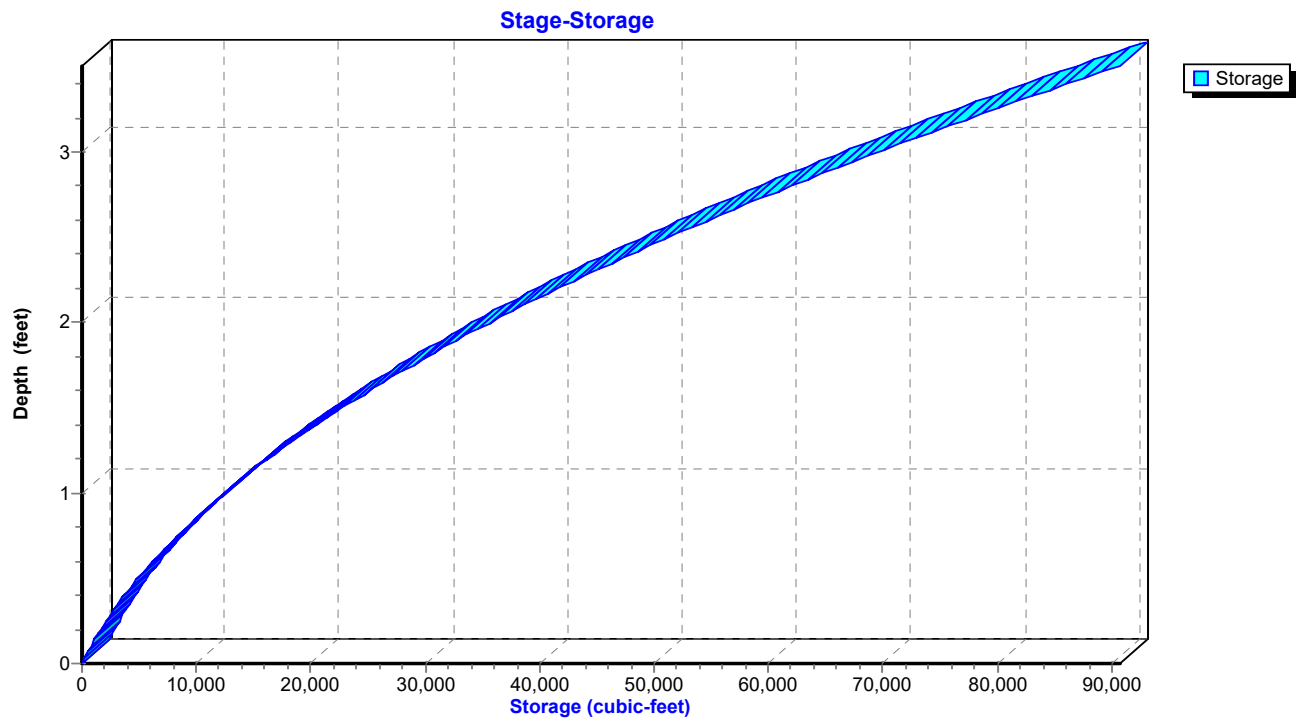
Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



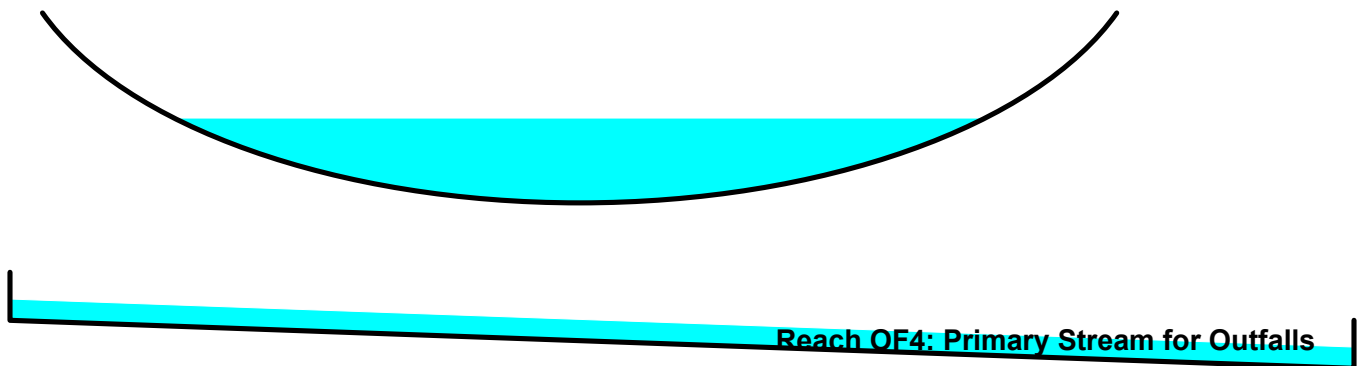
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 2.02" for 5-yr event
Inflow = 112.82 cfs @ 13.51 hrs, Volume= 1,680,146 cf
Outflow = 112.58 cfs @ 13.53 hrs, Volume= 1,680,146 cf, Atten= 0%, Lag= 1.7 min

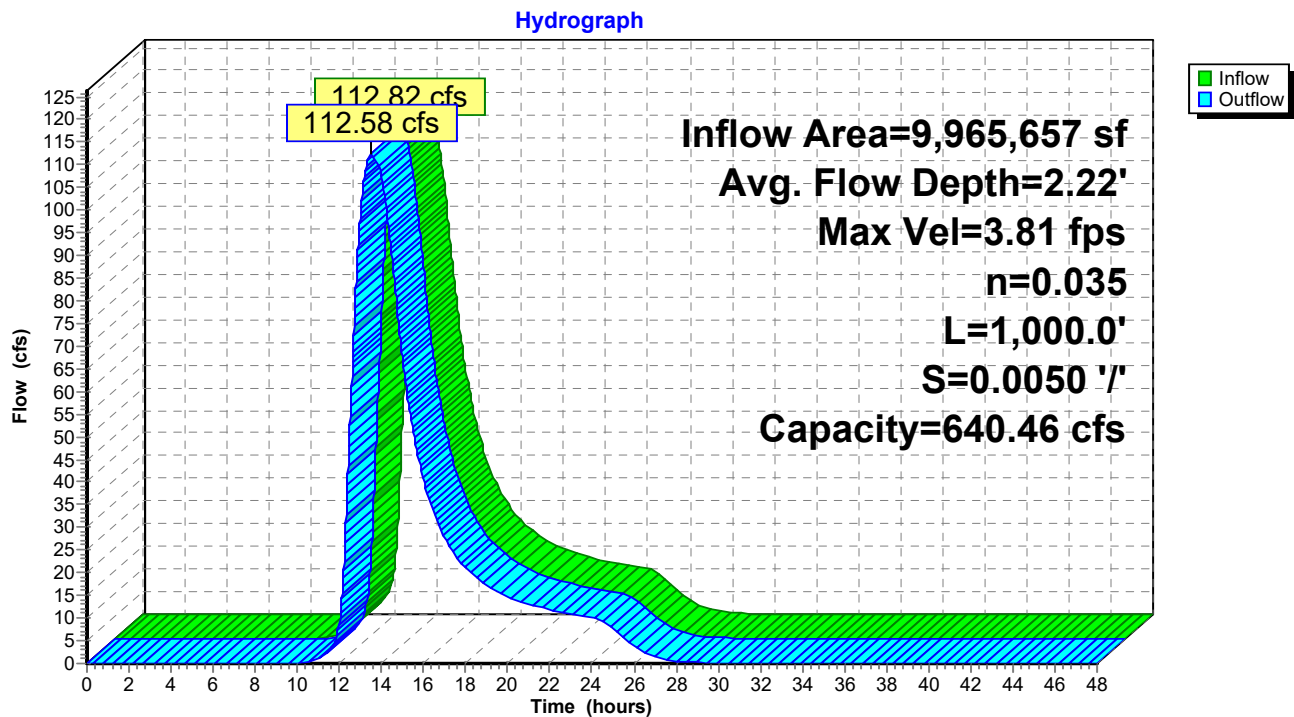
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.81 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 11.4 min

Peak Storage= 29,515 cf @ 13.53 hrs
Average Depth at Peak Storage= 2.22' , Surface Width= 19.97'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

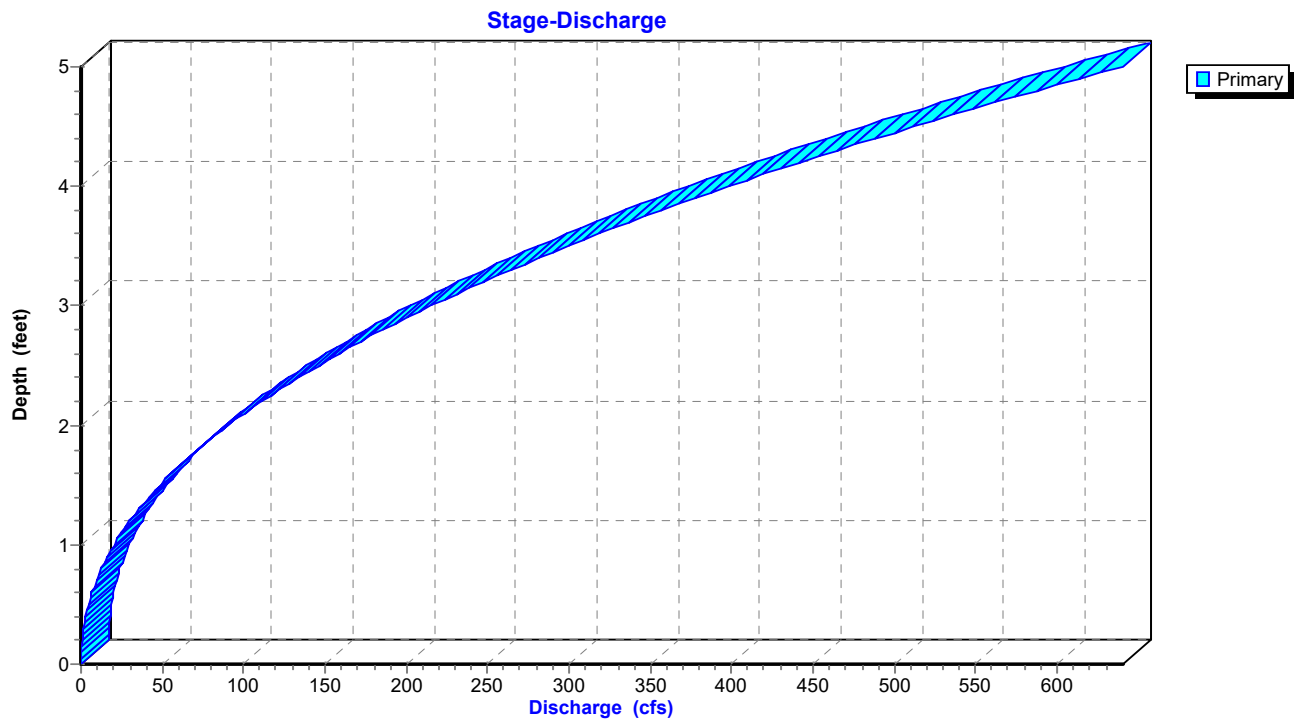
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

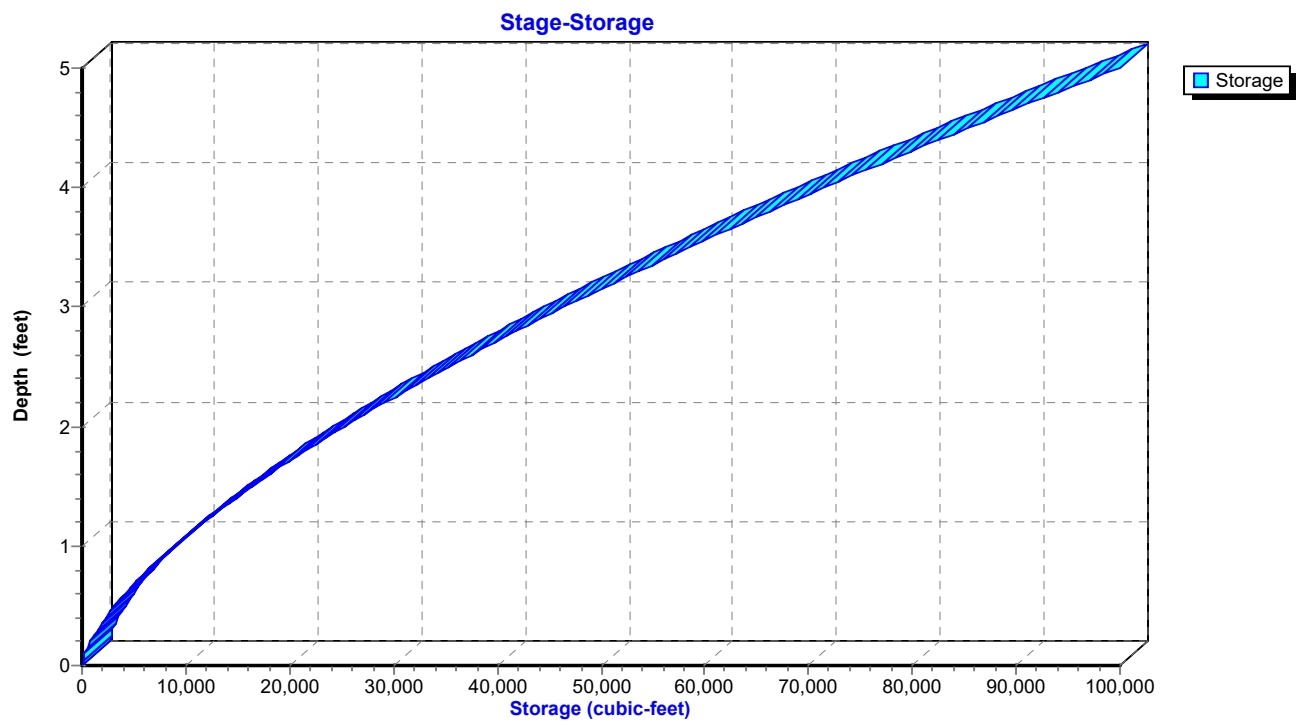


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

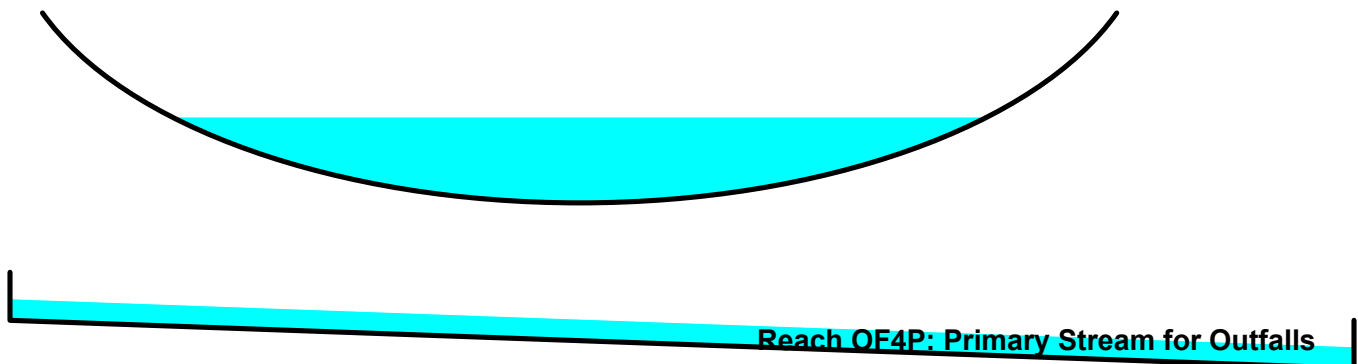
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 2.16" for 5-yr event
Inflow = 115.76 cfs @ 13.67 hrs, Volume= 1,791,545 cf
Outflow = 115.59 cfs @ 13.77 hrs, Volume= 1,791,544 cf, Atten= 0%, Lag= 5.8 min

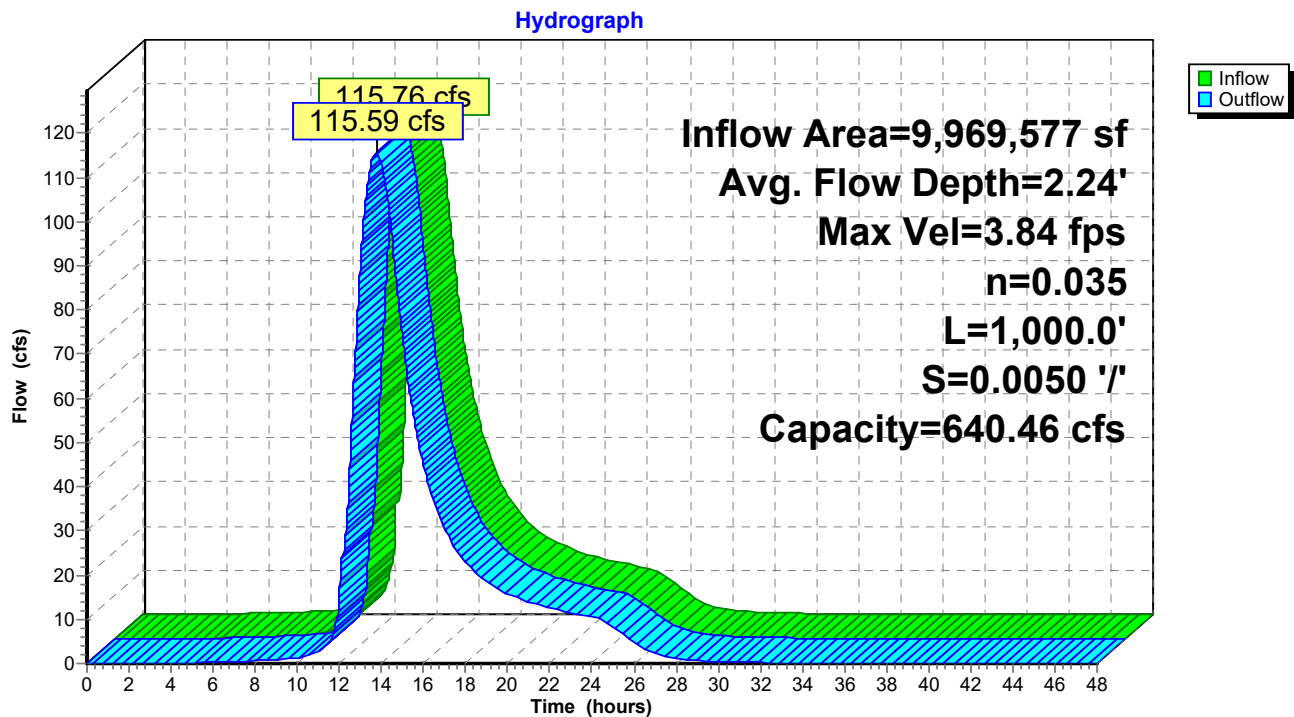
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.84 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 14.6 min

Peak Storage= 30,066 cf @ 13.77 hrs
Average Depth at Peak Storage= 2.24' , Surface Width= 20.10'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

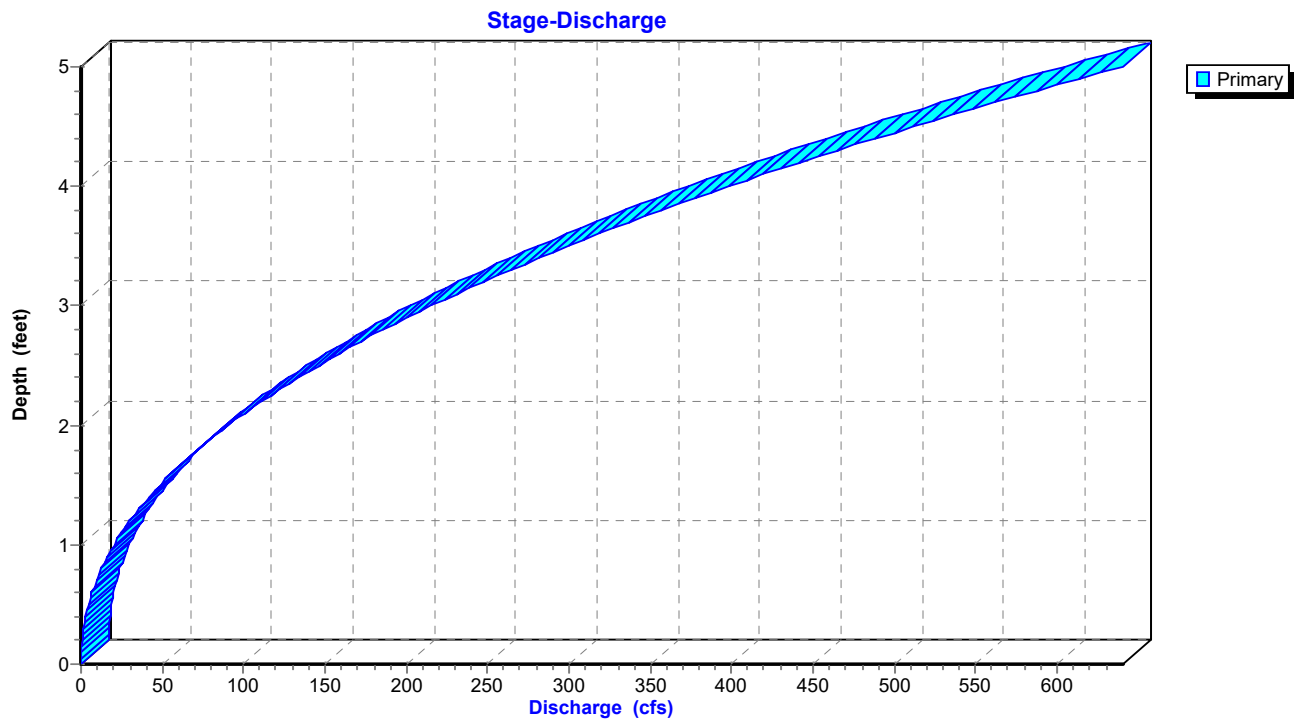
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

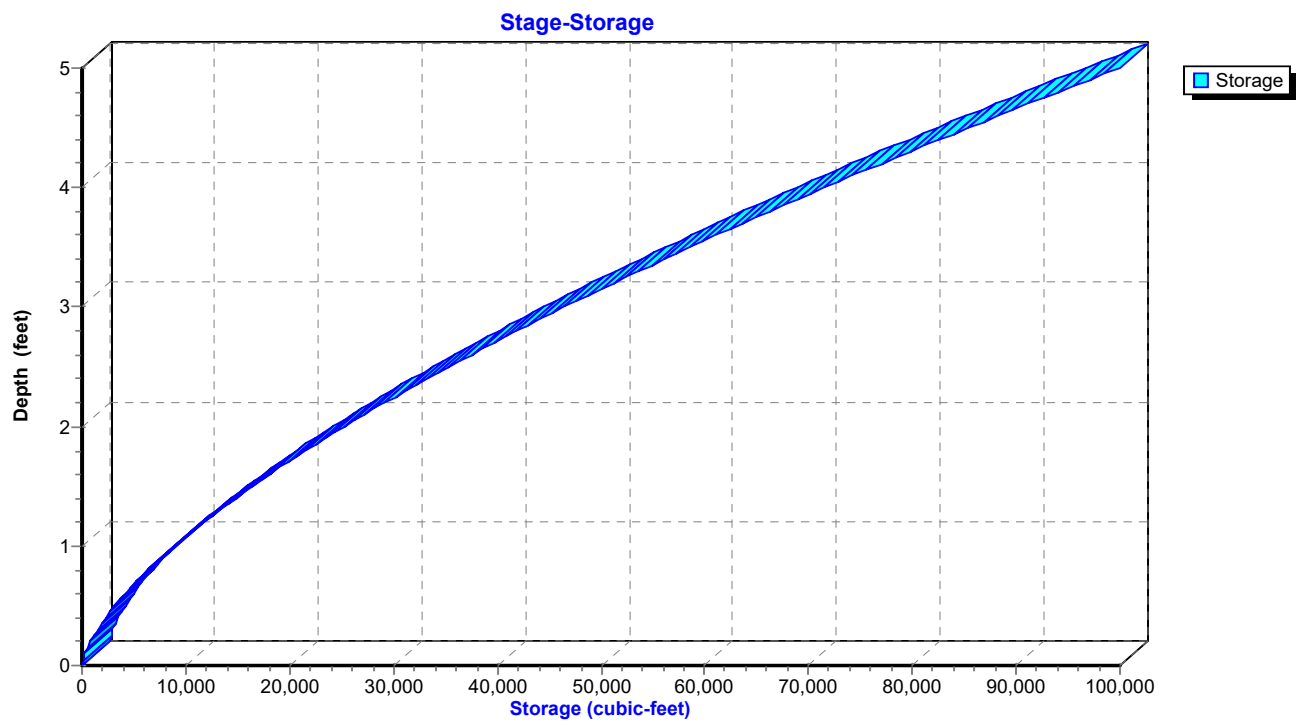


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 1.29" for 5-yr event
 Inflow = 19.26 cfs @ 12.94 hrs, Volume= 162,997 cf
 Outflow = 19.26 cfs @ 12.94 hrs, Volume= 162,997 cf, Atten= 0%, Lag= 0.0 min
 Primary = 19.26 cfs @ 12.94 hrs, Volume= 162,997 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.30' @ 12.94 hrs

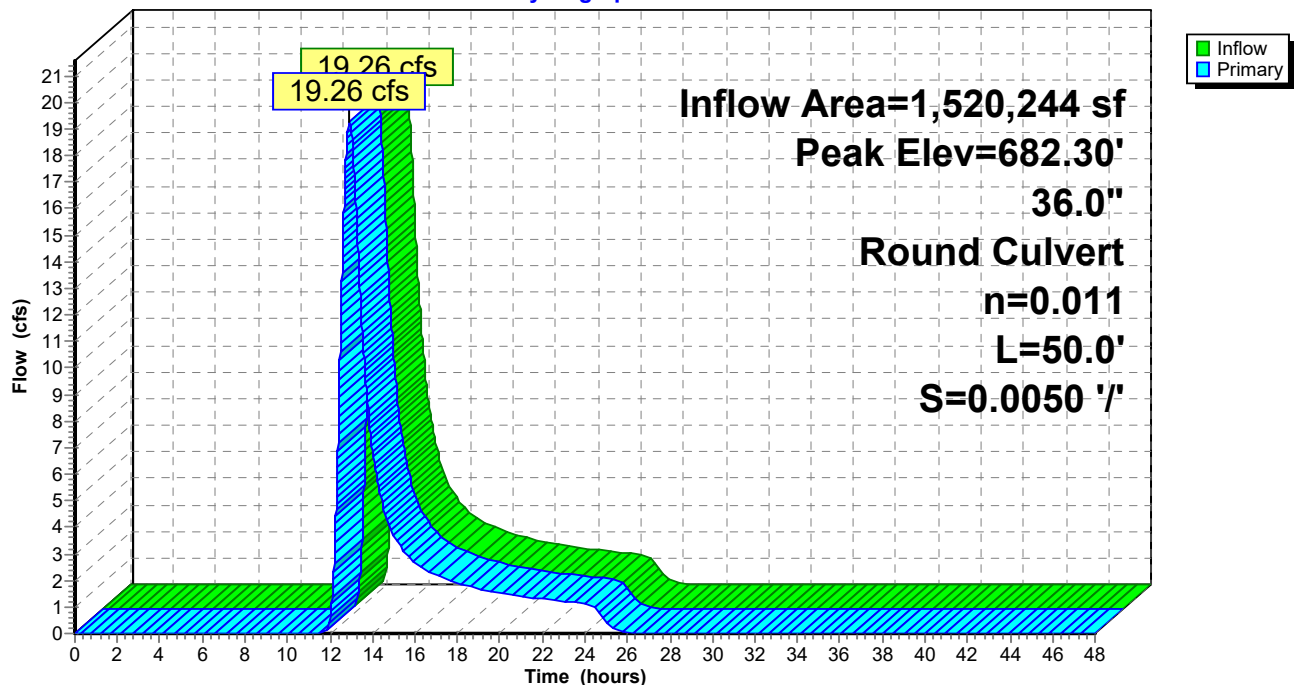
Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

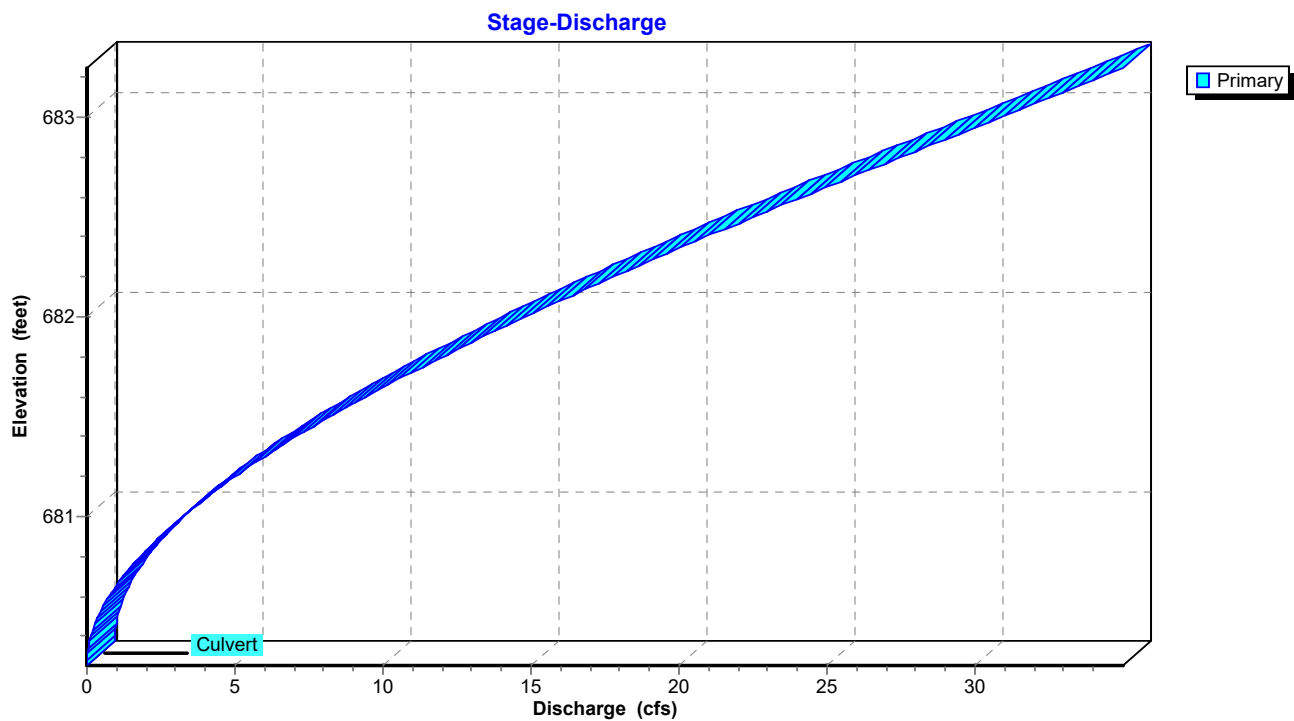
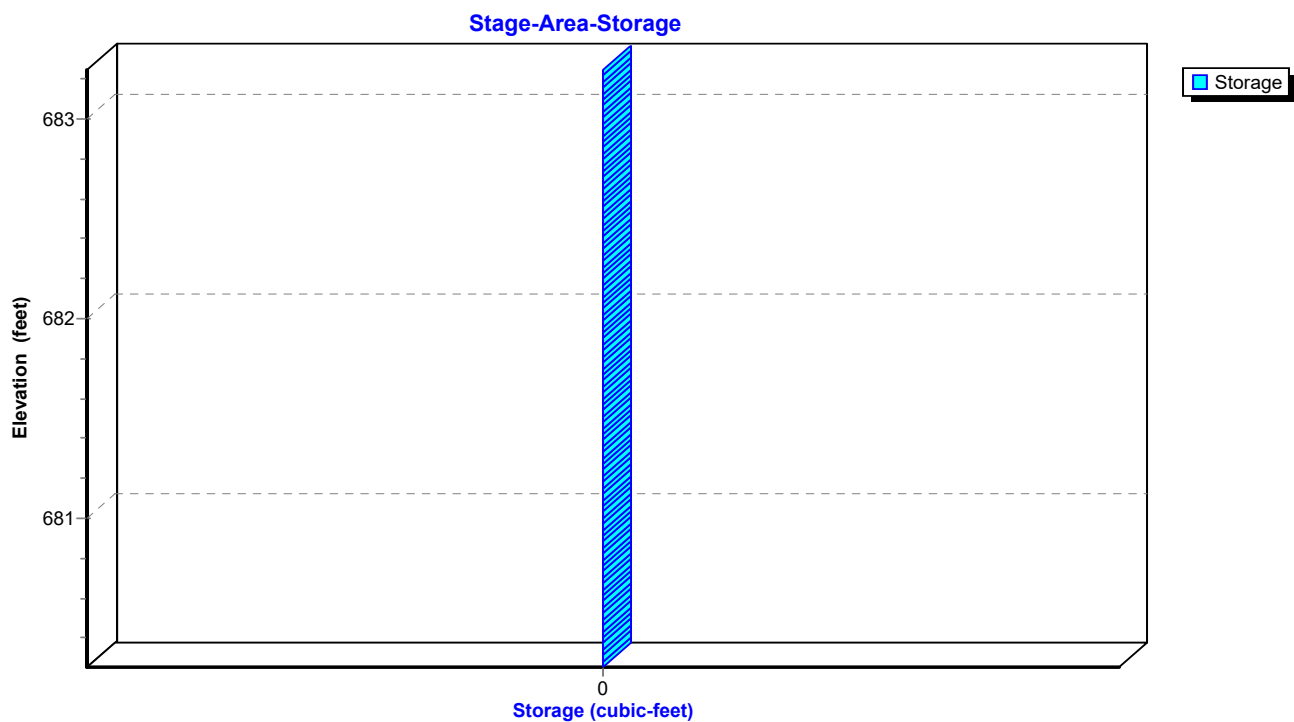
Primary OutFlow Max=19.26 cfs @ 12.94 hrs HW=682.30' TW=676.95' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 19.26 cfs @ 5.29 fps)

~~Culvert~~ **Pond CD2: Cross Drain**

Pond CD2: Cross Drain

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

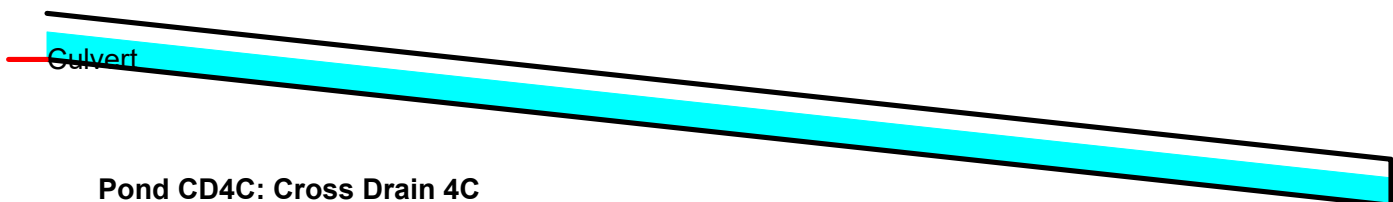
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 4.28" for 5-yr event
 Inflow = 3.55 cfs @ 12.05 hrs, Volume= 10,575 cf
 Outflow = 3.55 cfs @ 12.05 hrs, Volume= 10,575 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.55 cfs @ 12.05 hrs, Volume= 10,575 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

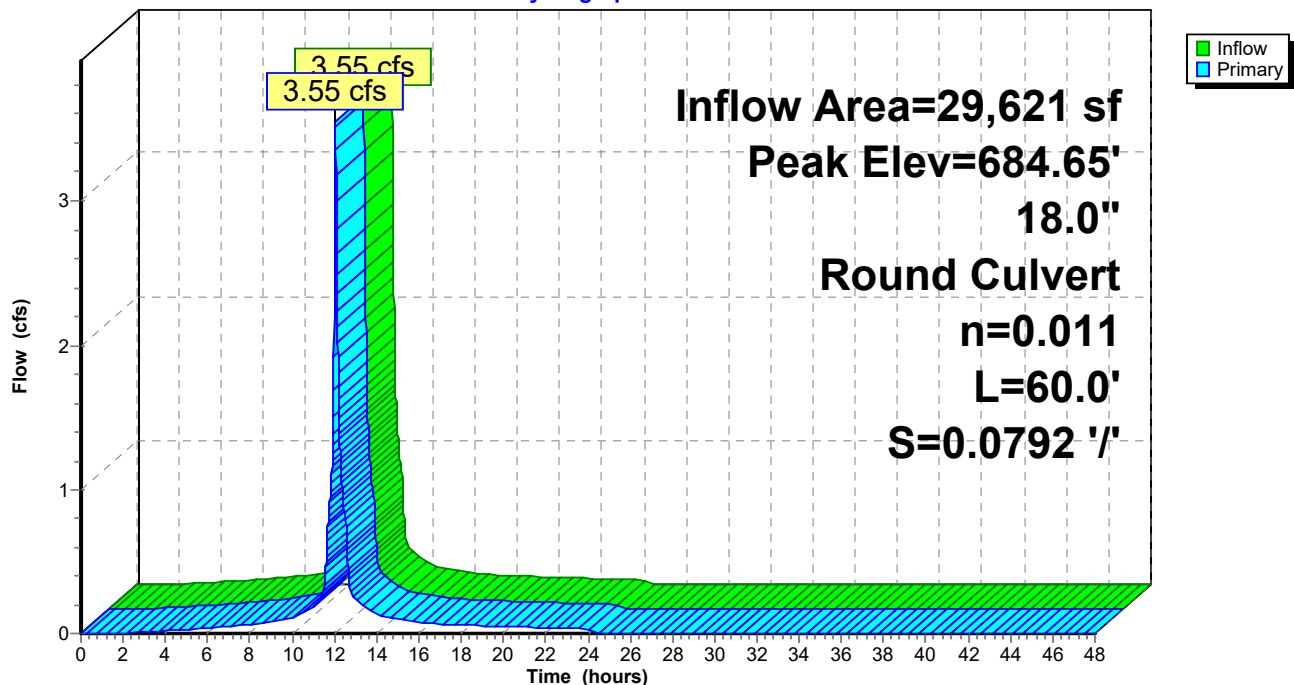
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.65' @ 12.05 hrs

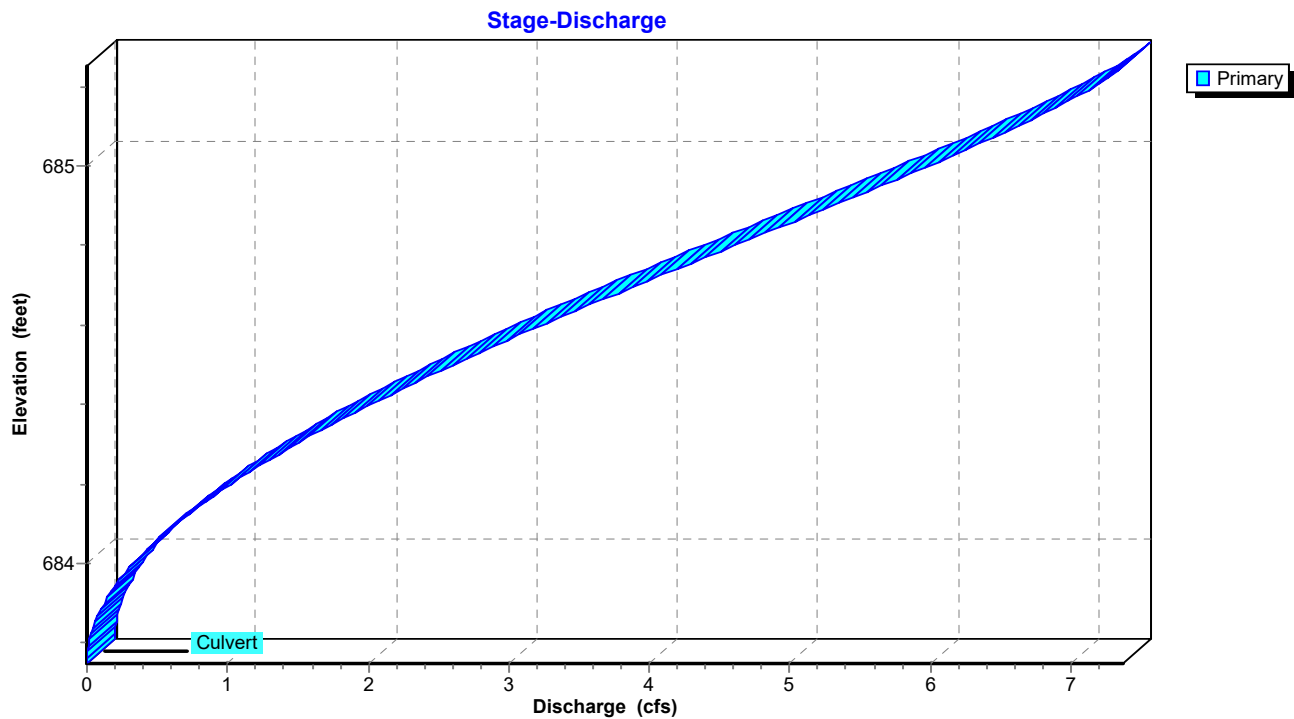
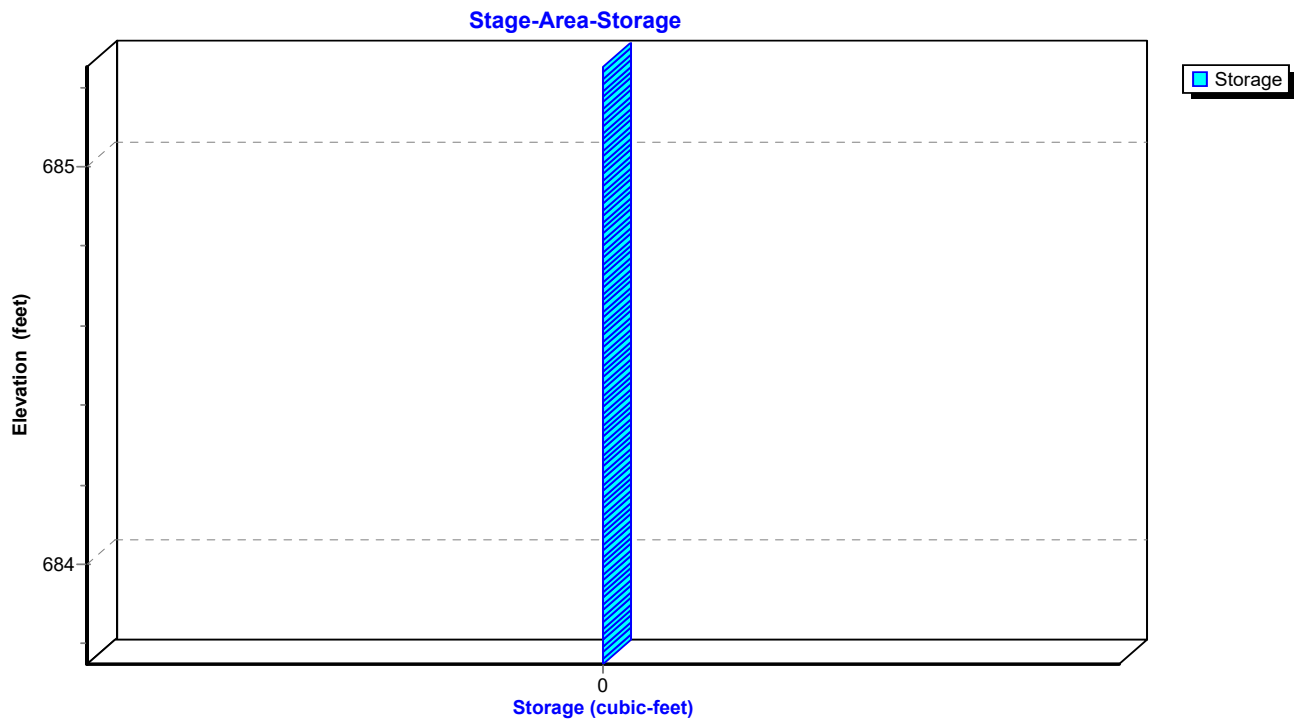
Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=3.55 cfs @ 12.05 hrs HW=684.65' TW=679.72' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 3.55 cfs @ 3.22 fps)

**Pond CD4C: Cross Drain 4C**

Hydrograph



Pond CD4C: Cross Drain 4C**Pond CD4C: Cross Drain 4C**

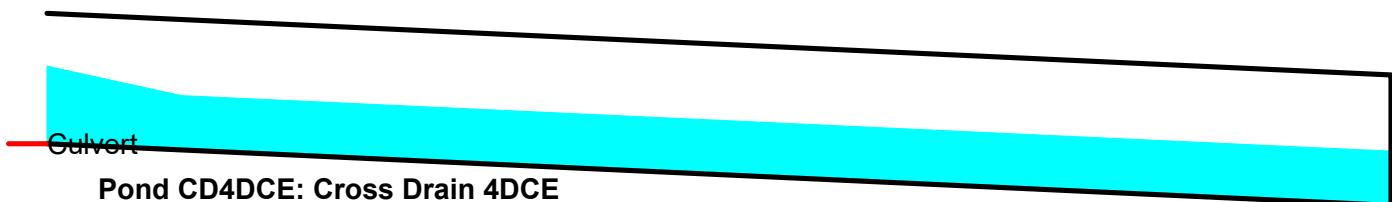
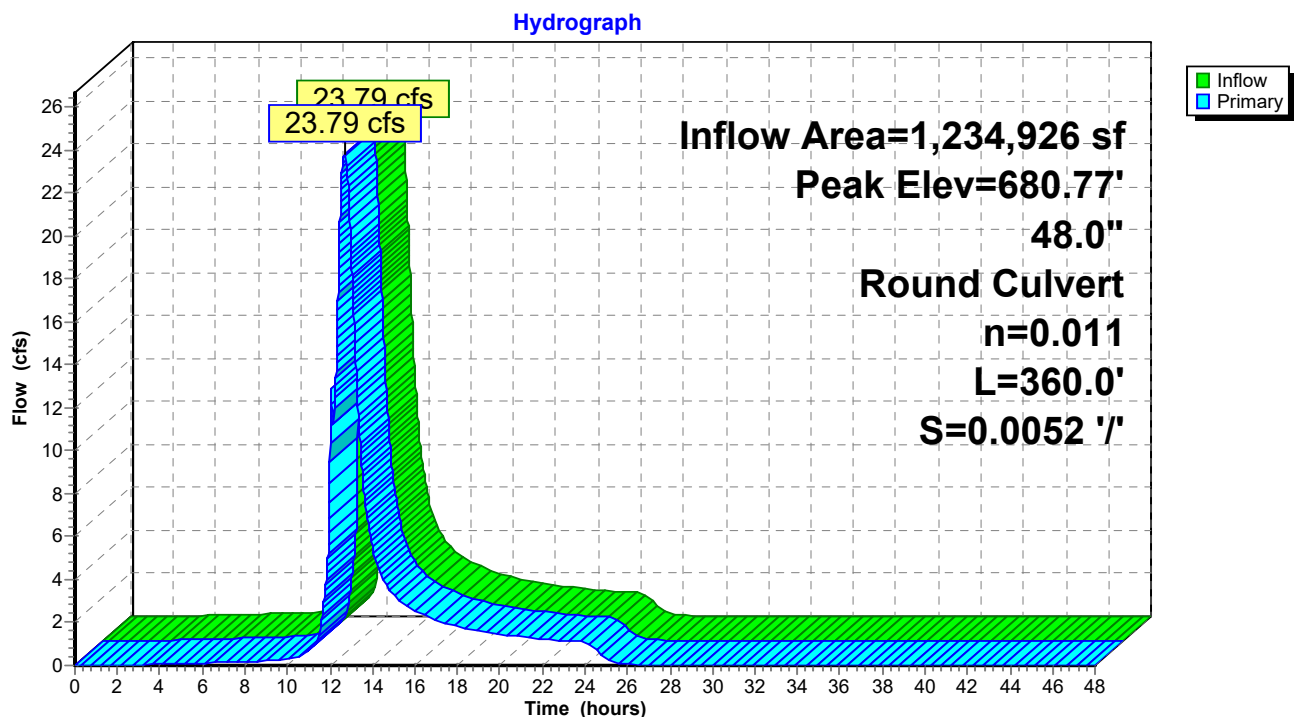
Summary for Pond CD4DCE: Cross Drain 4DCE

Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 1.86" for 5-yr event
 Inflow = 23.79 cfs @ 12.69 hrs, Volume= 190,911 cf
 Outflow = 23.79 cfs @ 12.69 hrs, Volume= 190,911 cf, Atten= 0%, Lag= 0.0 min
 Primary = 23.79 cfs @ 12.69 hrs, Volume= 190,911 cf
 Routed to Pond POND1P : PROP POND

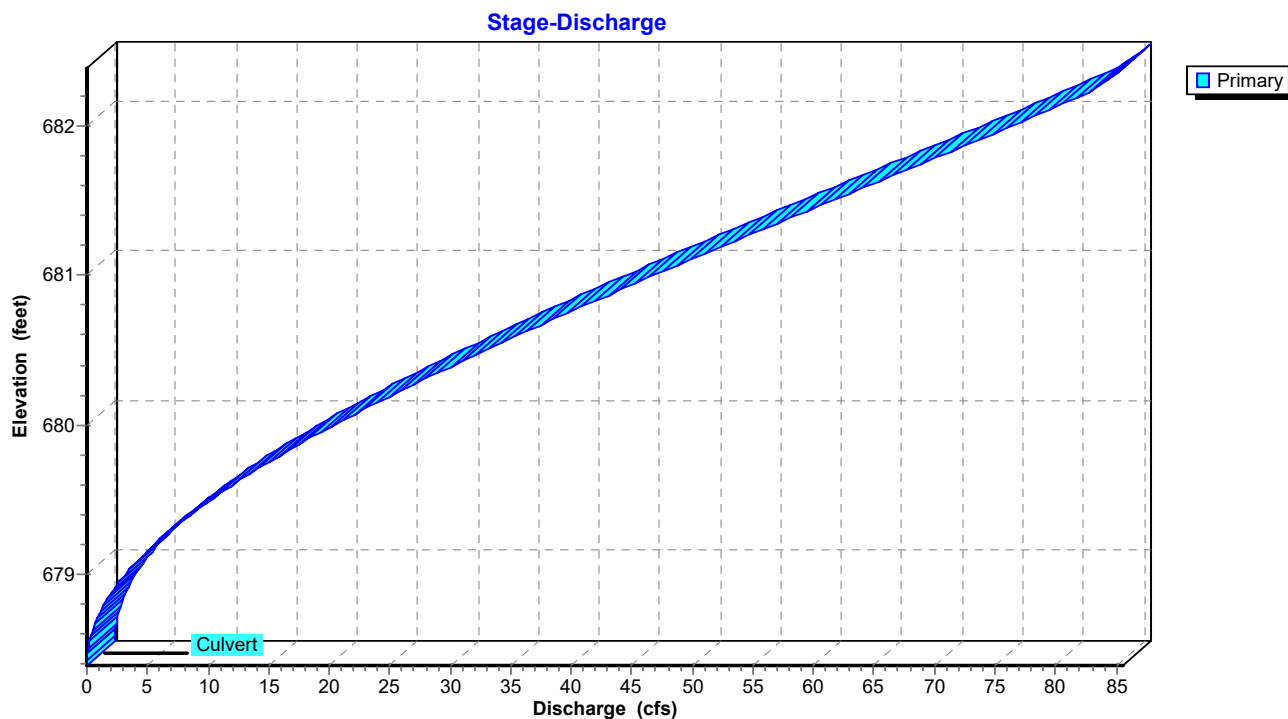
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 680.77' @ 12.85 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

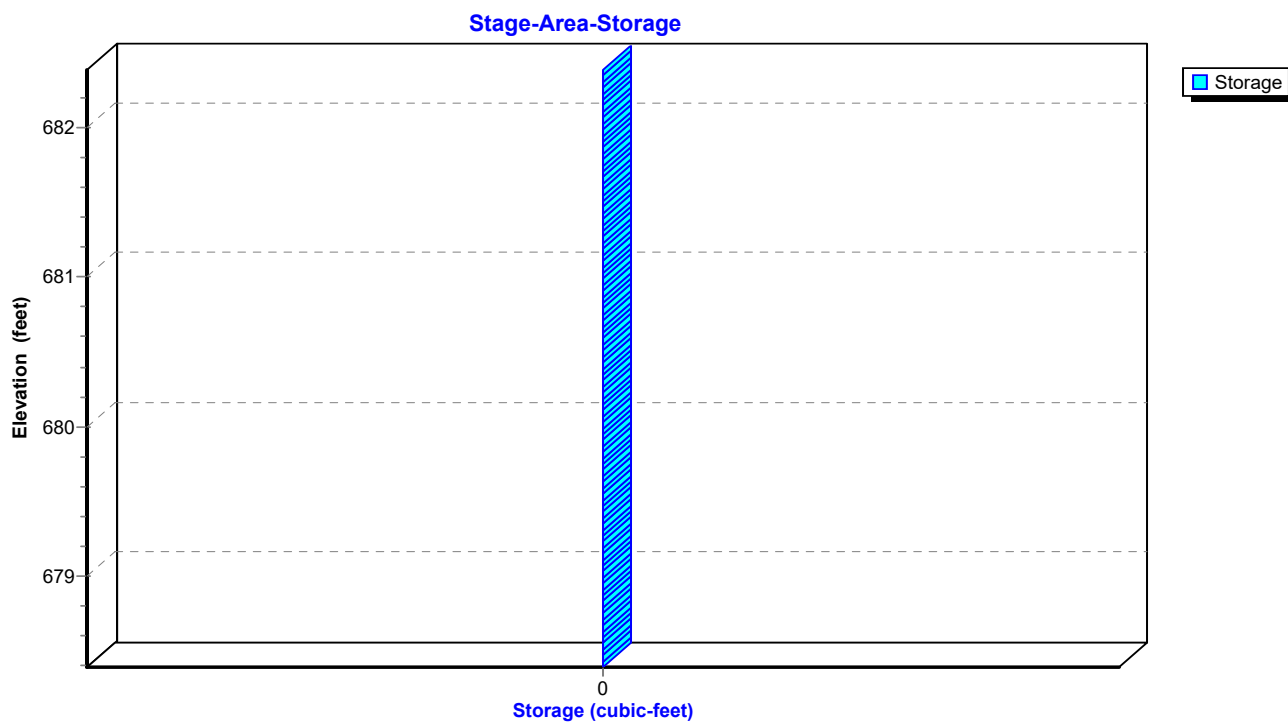
Primary OutFlow Max=23.56 cfs @ 12.69 hrs HW=680.70' TW=679.77' (Dynamic Tailwater)
 ↳ **1=Culvert** (Outlet Controls 23.56 cfs @ 4.51 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Pond CD4DCE: Cross Drain 4DCE



Pond CD4DCE: Cross Drain 4DCE



Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 1.68" for 5-yr event
 Inflow = 23.21 cfs @ 12.68 hrs, Volume= 161,209 cf
 Outflow = 22.81 cfs @ 12.71 hrs, Volume= 161,207 cf, Atten= 2%, Lag= 2.0 min
 Primary = 22.81 cfs @ 12.71 hrs, Volume= 161,207 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

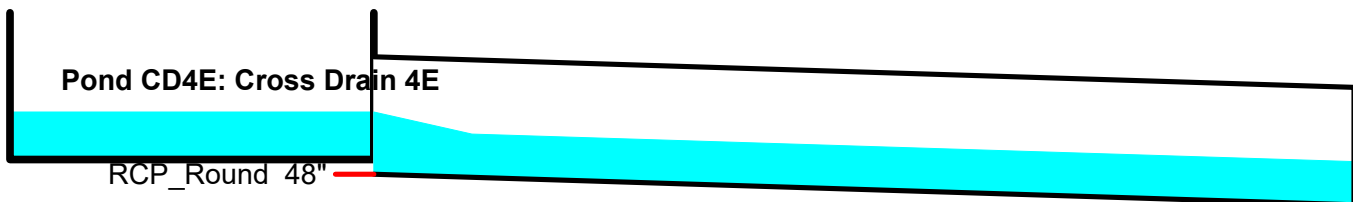
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.62' @ 12.76 hrs Surf.Area= 3,060 sf Storage= 2,352 cf

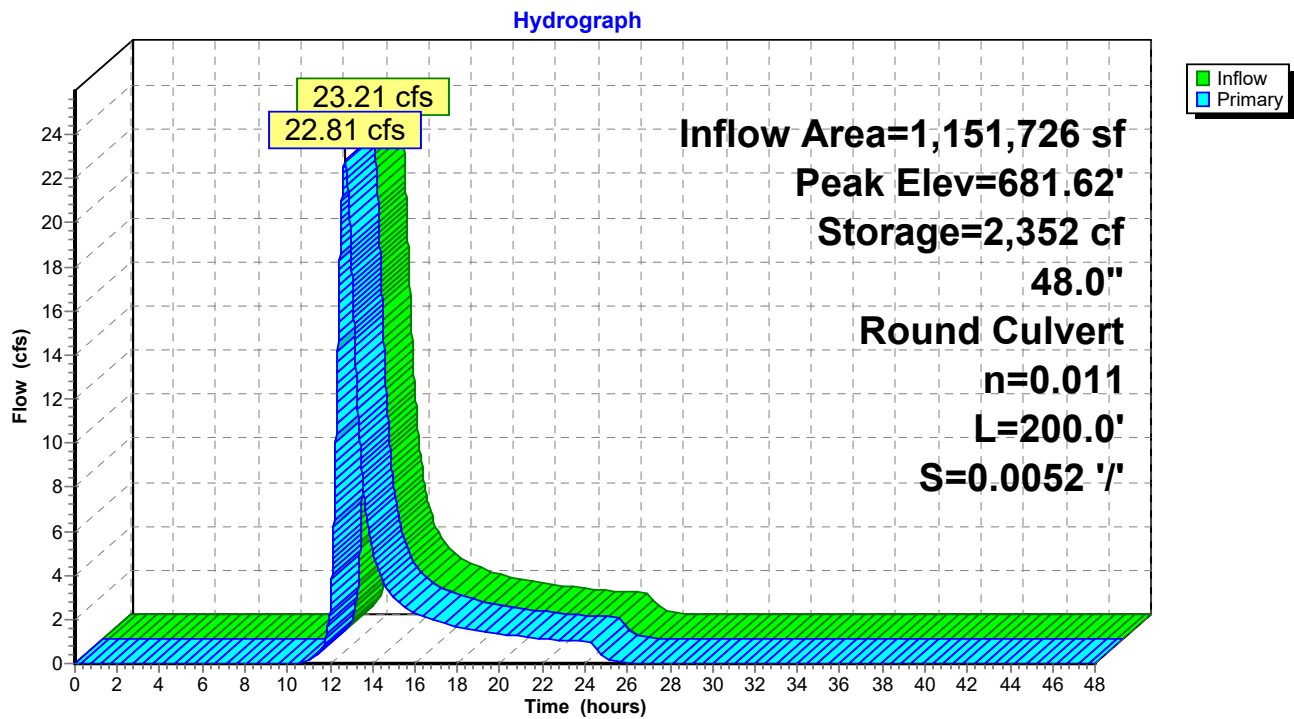
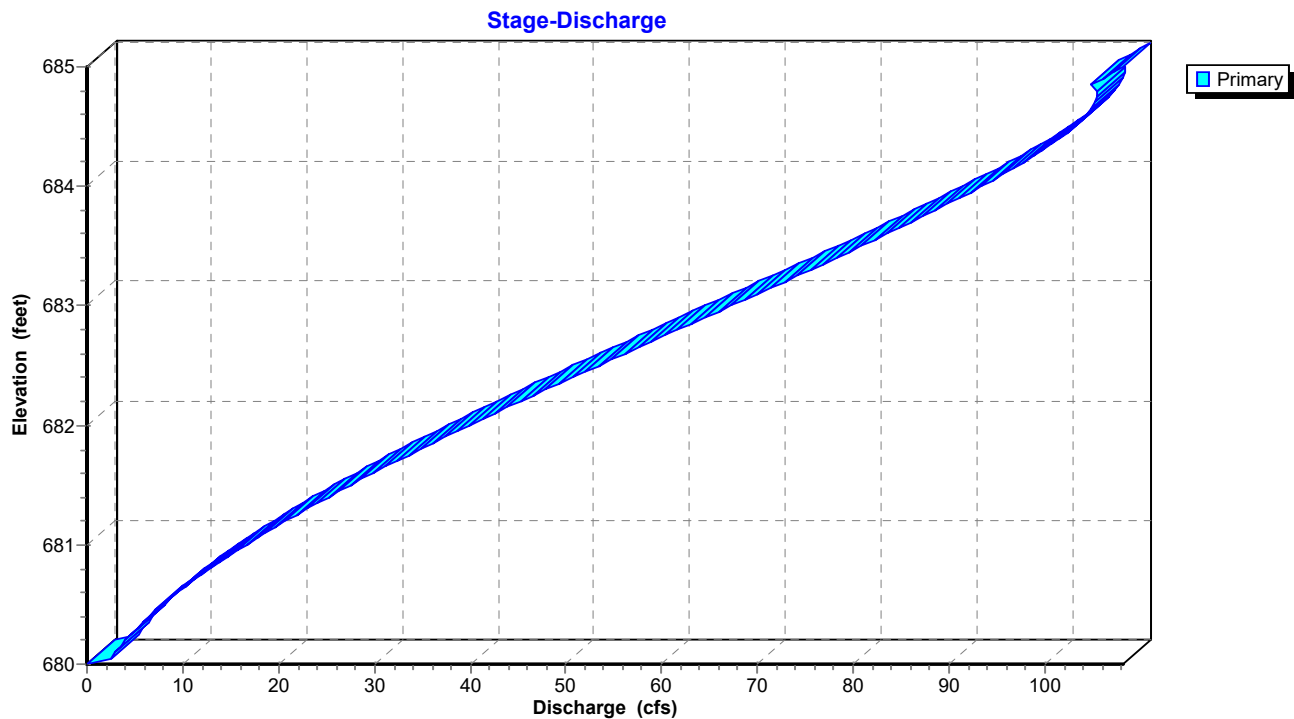
Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.9 min (904.4 - 903.5)

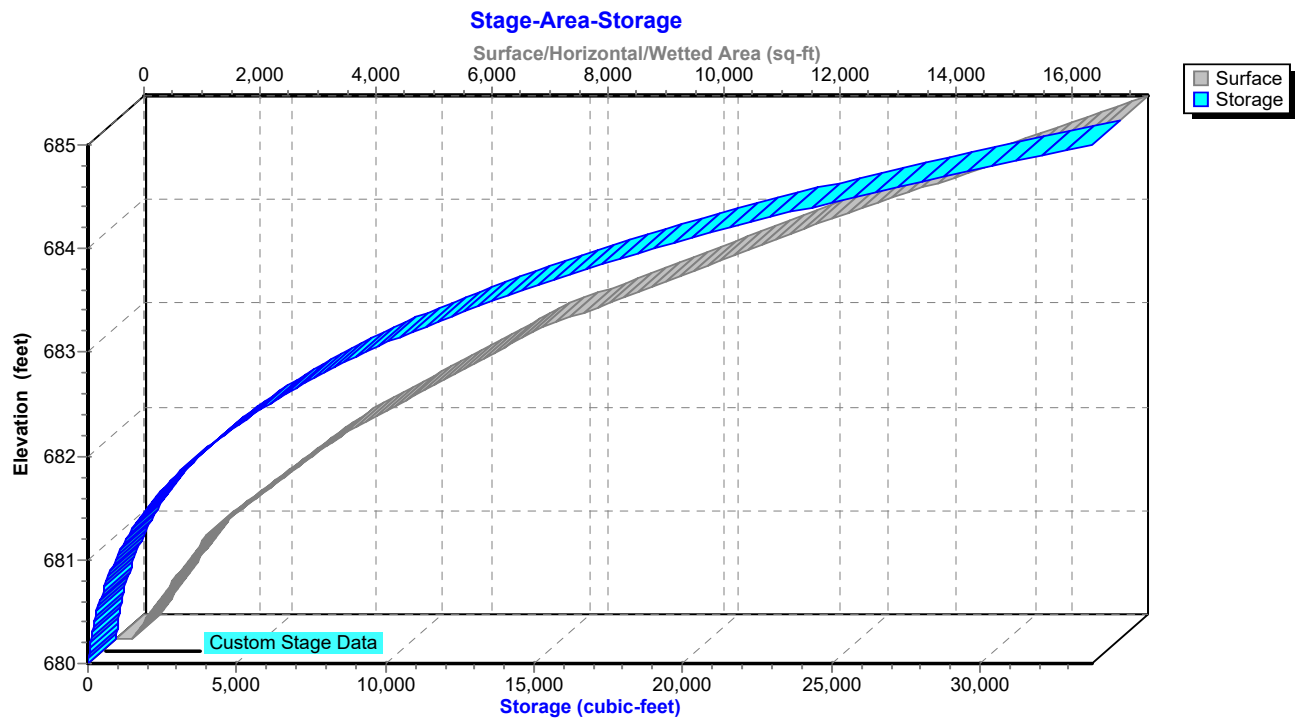
Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=22.72 cfs @ 12.71 hrs HW=681.61' TW=680.72' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 22.72 cfs @ 4.91 fps)



Pond CD4E: Cross Drain 4E**Pond CD4E: Cross Drain 4E**

Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 2.59" for 5-yr event
 Inflow = 52.23 cfs @ 12.50 hrs, Volume= 382,660 cf
 Outflow = 24.34 cfs @ 13.13 hrs, Volume= 382,654 cf, Atten= 53%, Lag= 37.8 min
 Primary = 24.34 cfs @ 13.13 hrs, Volume= 382,654 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 680.15' @ 13.14 hrs Surf.Area= 59,183 sf Storage= 131,541 cf

Plug-Flow detention time= 118.7 min calculated for 382,654 cf (100% of inflow)
 Center-of-Mass det. time= 118.6 min (955.1 - 836.5)

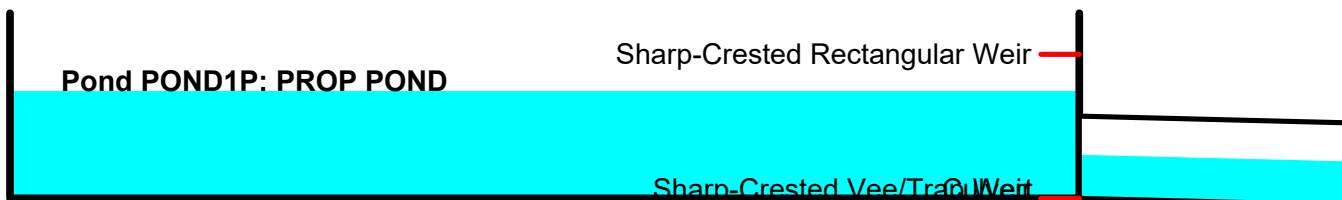
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

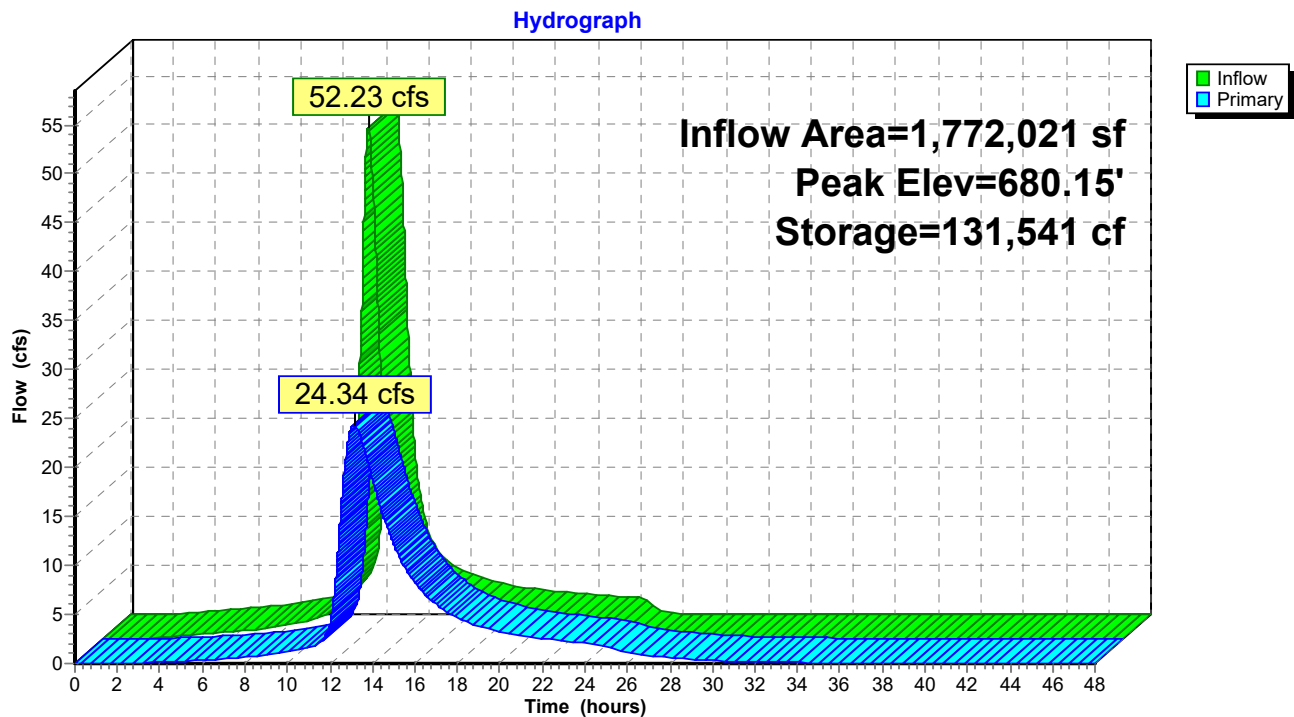
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=24.34 cfs @ 13.13 hrs HW=680.14' TW=677.09' (Dynamic Tailwater)

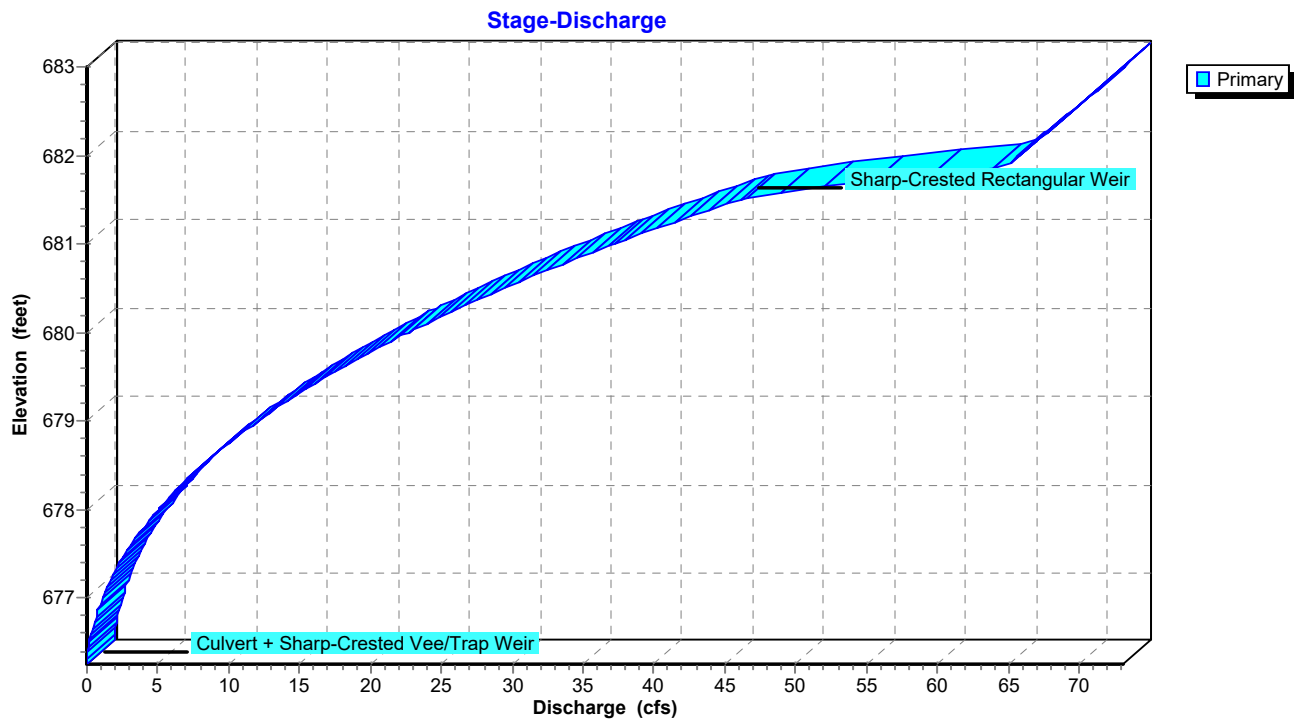
- 1=Culvert (Passes 24.34 cfs of 46.09 cfs potential flow)
- 2=Sharp-Crested Vee/Trap Weir (Weir Controls 24.34 cfs @ 5.75 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

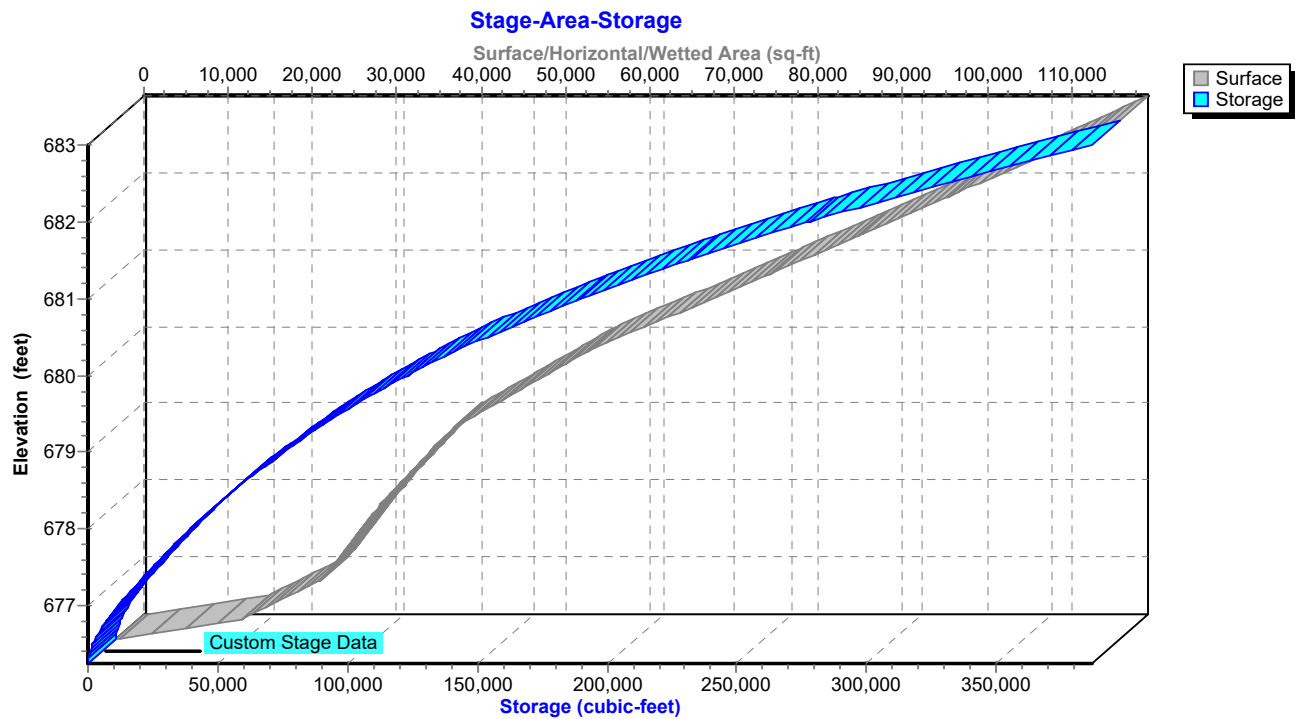


Pond POND1P: PROP POND



Pond POND1P: PROP POND



Pond POND1P: PROP POND

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=2.79"
Flow Length=5,750' Tc=143.0 min CN=75 Runoff=108.16 cfs 1,450,339 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=1.70"
Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=26.69 cfs 215,881 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=2.61"
Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=18.20 cfs 89,015 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=2.35"
Flow Length=2,468' Tc=68.1 min CN=70 Runoff=43.63 cfs 354,450 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=2.79"
Flow Length=5,750' Tc=143.0 min CN=75 Runoff=108.16 cfs 1,450,339 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=1.70"
Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=26.69 cfs 215,881 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=3.17"
Tc=5.0 min CN=79 Runoff=21.18 cfs 54,713 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=2.18"
Flow Length=945' Tc=40.9 min CN=68 Runoff=7.07 cfs 43,842 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=4.95"
Flow Length=996' Tc=33.8 min CN=96 Runoff=37.18 cfs 221,559 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=4.95"
Tc=5.0 min CN=96 Runoff=4.32 cfs 12,219 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=4.95"
Tc=5.0 min CN=96 Runoff=7.81 cfs 22,102 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=1.86"
Flow Length=640' Tc=31.5 min CN=64 Runoff=8.75 cfs 49,007 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=2.27"
Flow Length=1,313' Tc=46.8 min CN=69 Runoff=23.91 cfs 157,900 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.61' Max Vel=2.45 fps Inflow=4.32 cfs 12,219 cf
n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=4.04 cfs 12,219 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.75' Max Vel=3.29 fps Inflow=7.81 cfs 22,102 cf
n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=7.46 cfs 22,102 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=0.71' Max Vel=1.60 fps Inflow=8.75 cfs 49,007 cf
n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=7.01 cfs 49,007 cf

Reach OF4: Primary Stream for Avg. Flow Depth=2.49' Max Vel=4.11 fps Inflow=144.59 cfs 2,109,686 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=144.45 cfs 2,109,686 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=2.51' Max Vel=4.13 fps Inflow=147.00 cfs 2,227,554 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=146.78 cfs 2,227,553 cf

Pond CD2: Cross Drain Peak Elev=682.76' Inflow=26.69 cfs 215,881 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=26.69 cfs 215,881 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.72' Inflow=4.04 cfs 12,219 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=4.04 cfs 12,219 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=681.21' Inflow=31.24 cfs 241,226 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=31.24 cfs 241,226 cf

Pond CD4E: Cross Drain 4E Peak Elev=682.06' Storage=3,926 cf Inflow=30.88 cfs 206,907 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=30.12 cfs 206,905 cf

Pond POND1P: PROP POND Peak Elev=680.58' Storage=159,375 cf Inflow=63.88 cfs 462,785 cf
Outflow=30.25 cfs 462,779 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 4,337,249 cf Average Runoff Depth = 2.61"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 108.16 cfs @ 13.83 hrs, Volume= 1,450,339 cf, Depth= 2.79"

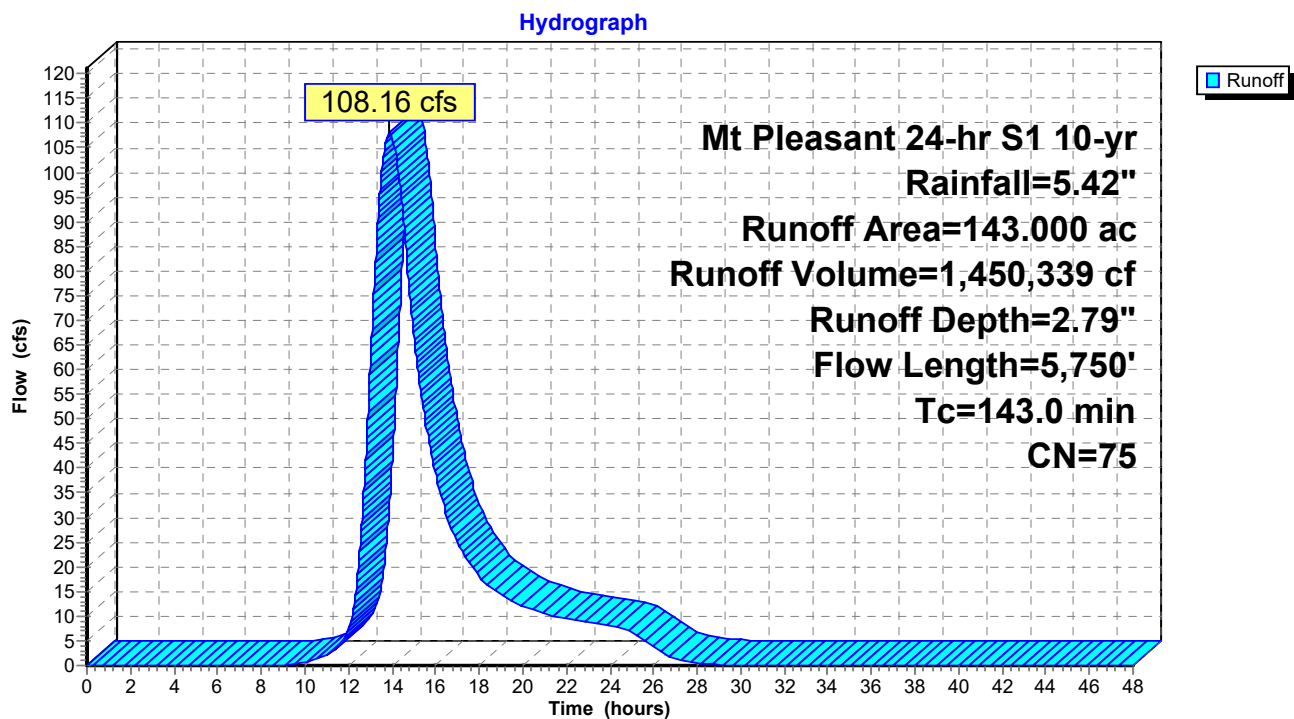
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Runoff = 26.69 cfs @ 12.94 hrs, Volume= 215,881 cf, Depth= 1.70"

Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

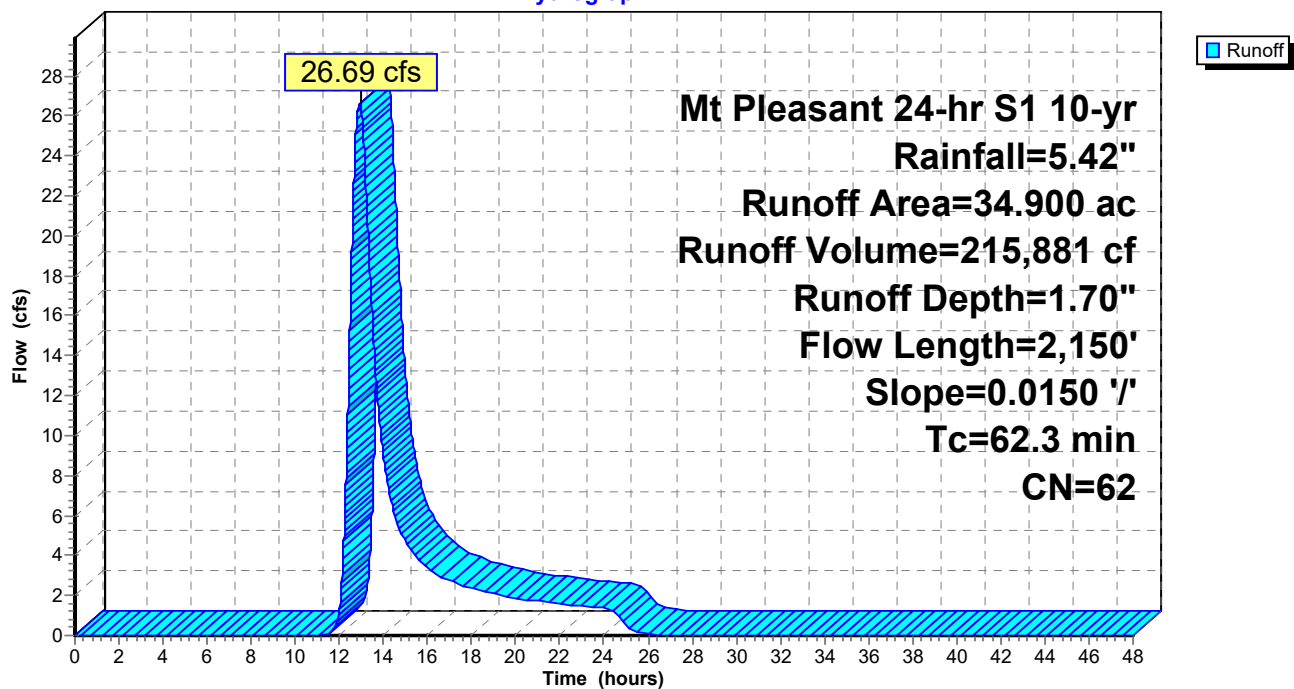
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Hydrograph



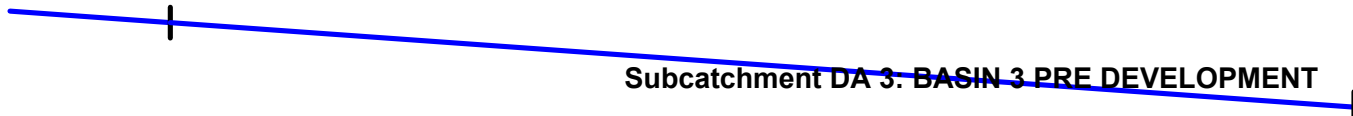
Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 18.20 cfs @ 12.34 hrs, Volume= 89,015 cf, Depth= 2.61"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

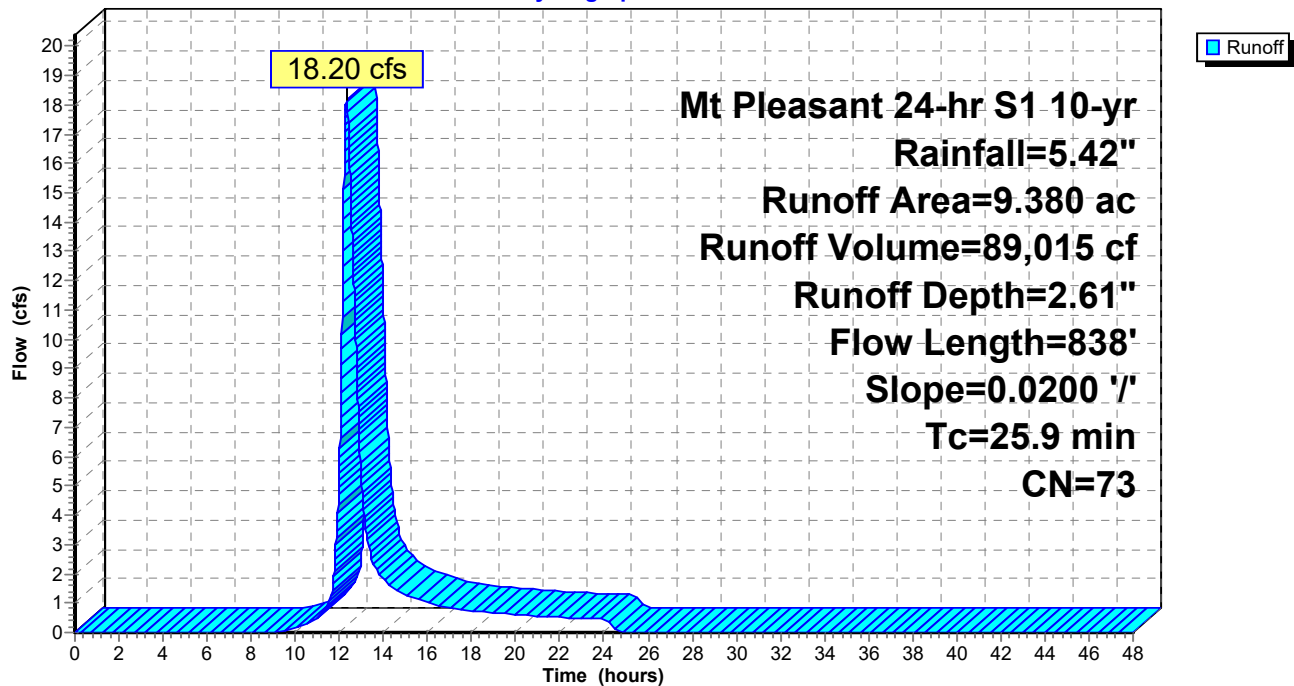
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			



Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Runoff = 43.63 cfs @ 12.94 hrs, Volume= 354,450 cf, Depth= 2.35"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

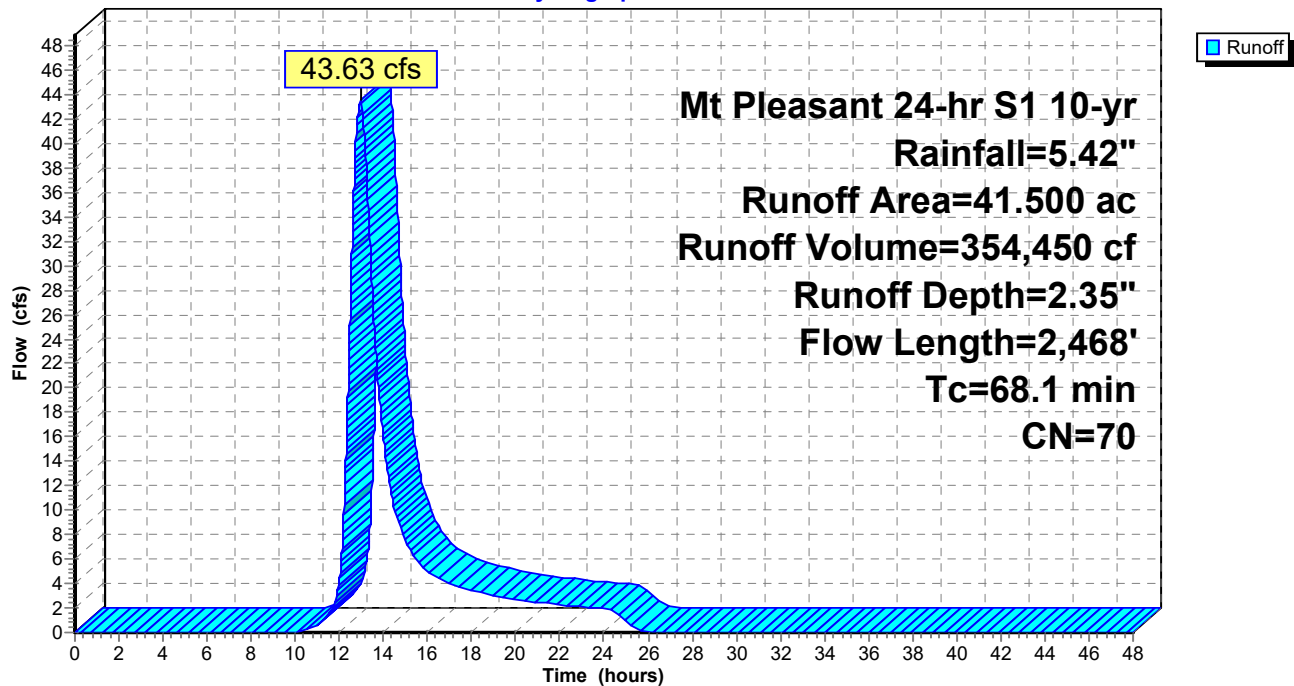
Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA1P: BASIN 1 PROPOSED

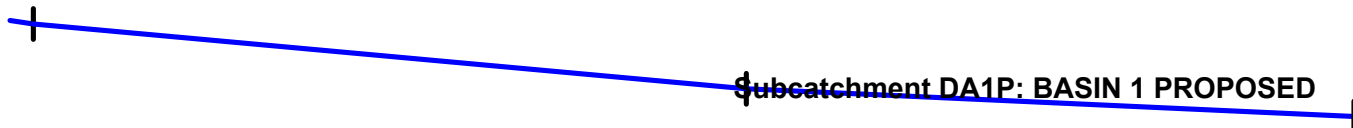
Runoff = 108.16 cfs @ 13.83 hrs, Volume= 1,450,339 cf, Depth= 2.79"

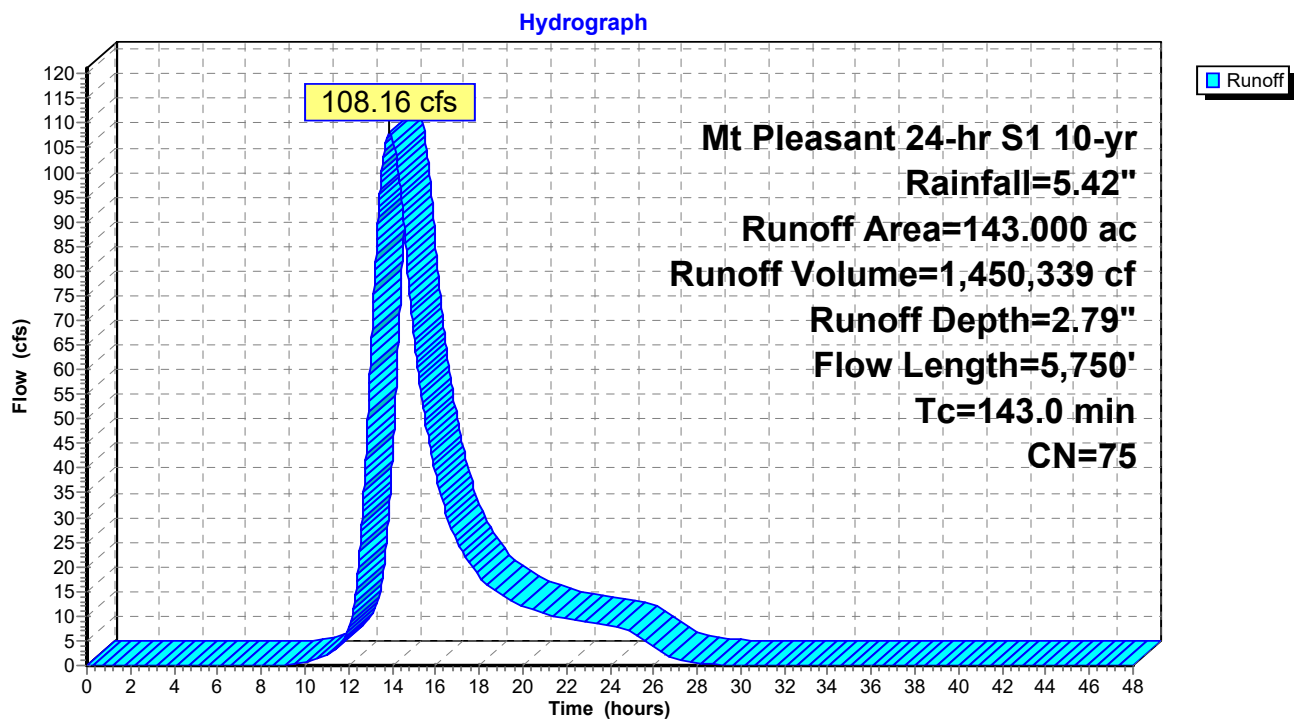
Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

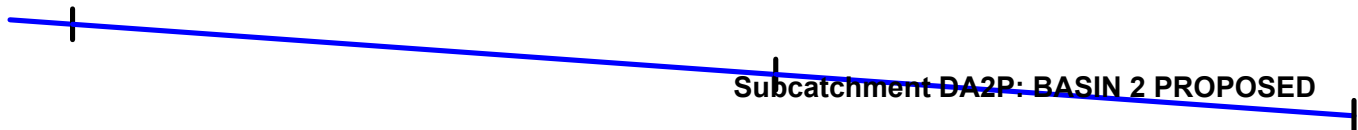
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 26.69 cfs @ 12.94 hrs, Volume= 215,881 cf, Depth= 1.70"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

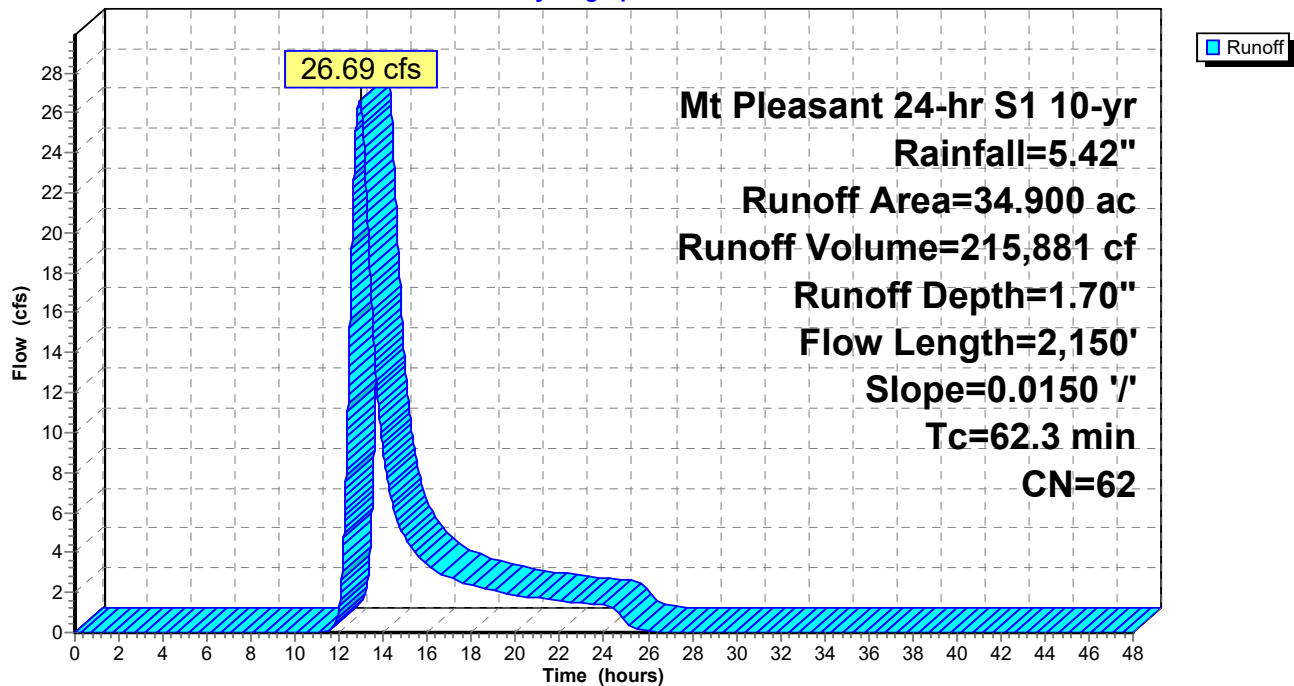
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 21.18 cfs @ 12.03 hrs, Volume= 54,713 cf, Depth= 3.17"

Routed to Reach OF4P : Primary Stream for Outfalls

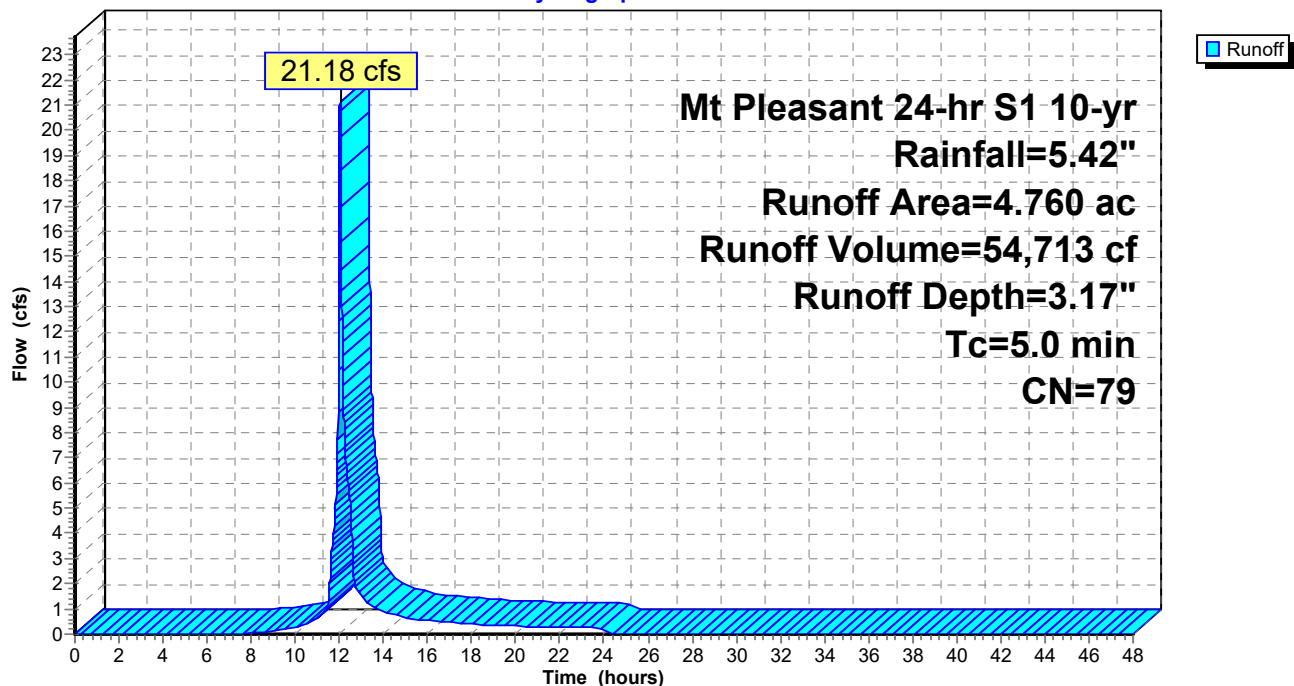
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

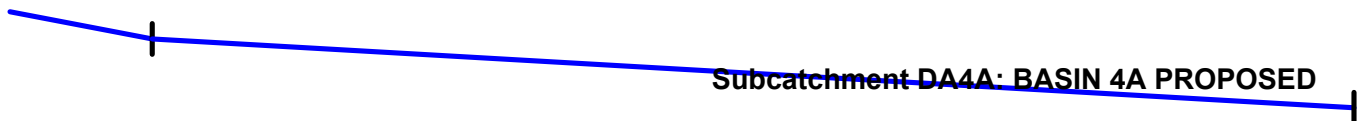
Runoff = 7.07 cfs @ 12.58 hrs, Volume= 43,842 cf, Depth= 2.18"

Routed to Reach OF4P : Primary Stream for Outfalls

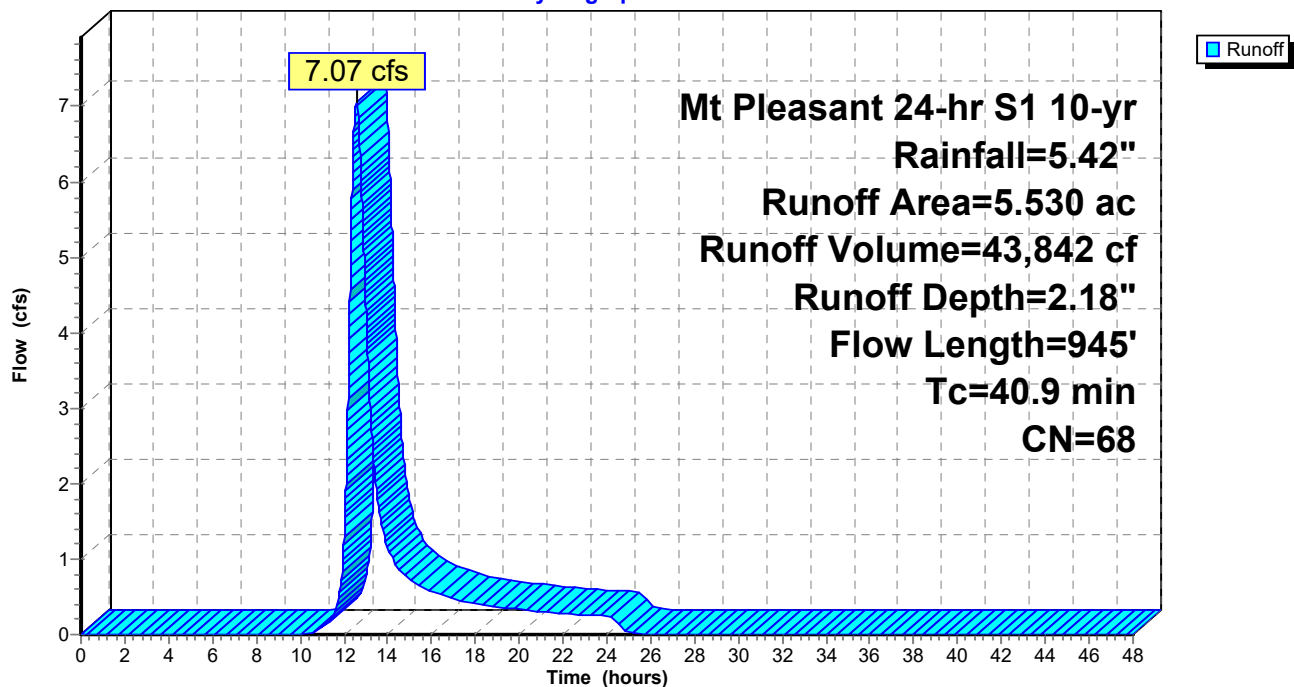
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



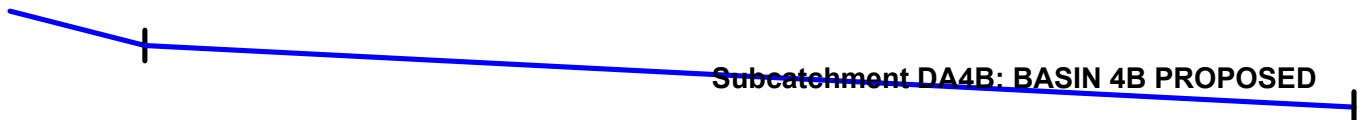
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

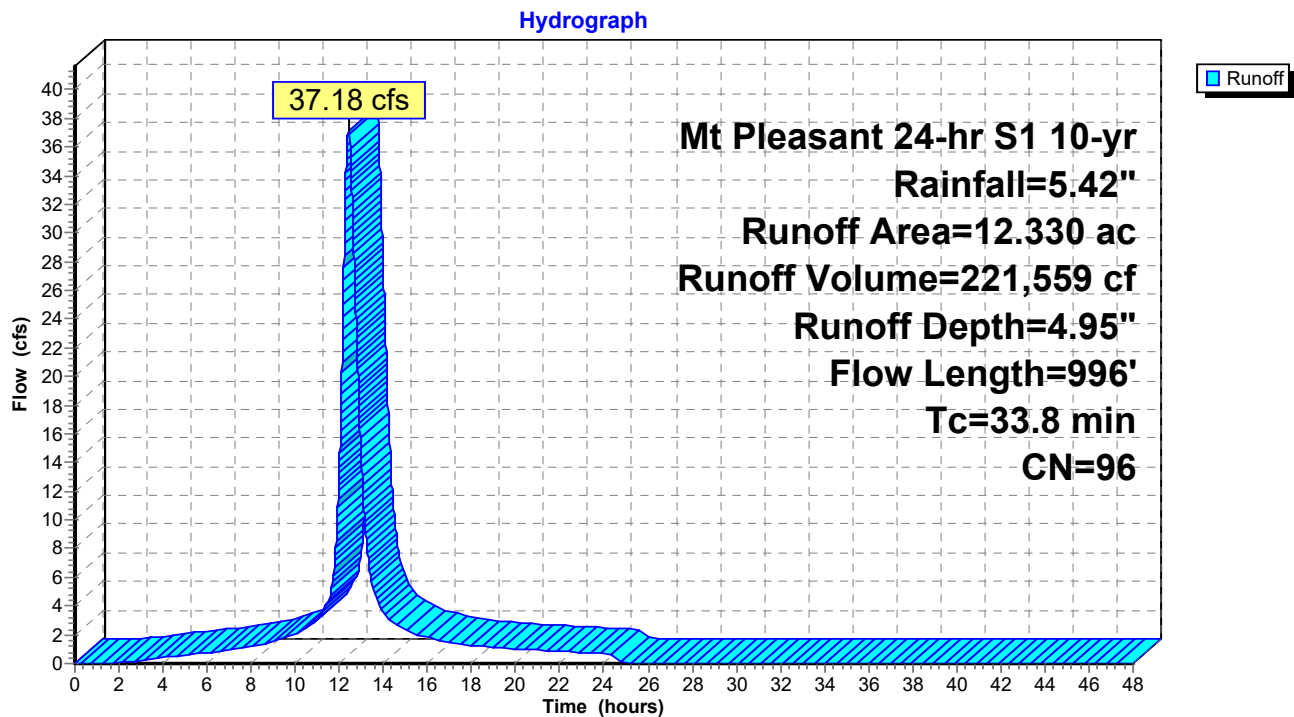
Runoff = 37.18 cfs @ 12.40 hrs, Volume= 221,559 cf, Depth= 4.95"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 4.32 cfs @ 12.03 hrs, Volume= 12,219 cf, Depth= 4.95"
 Routed to Reach D4C : Ditch 4C

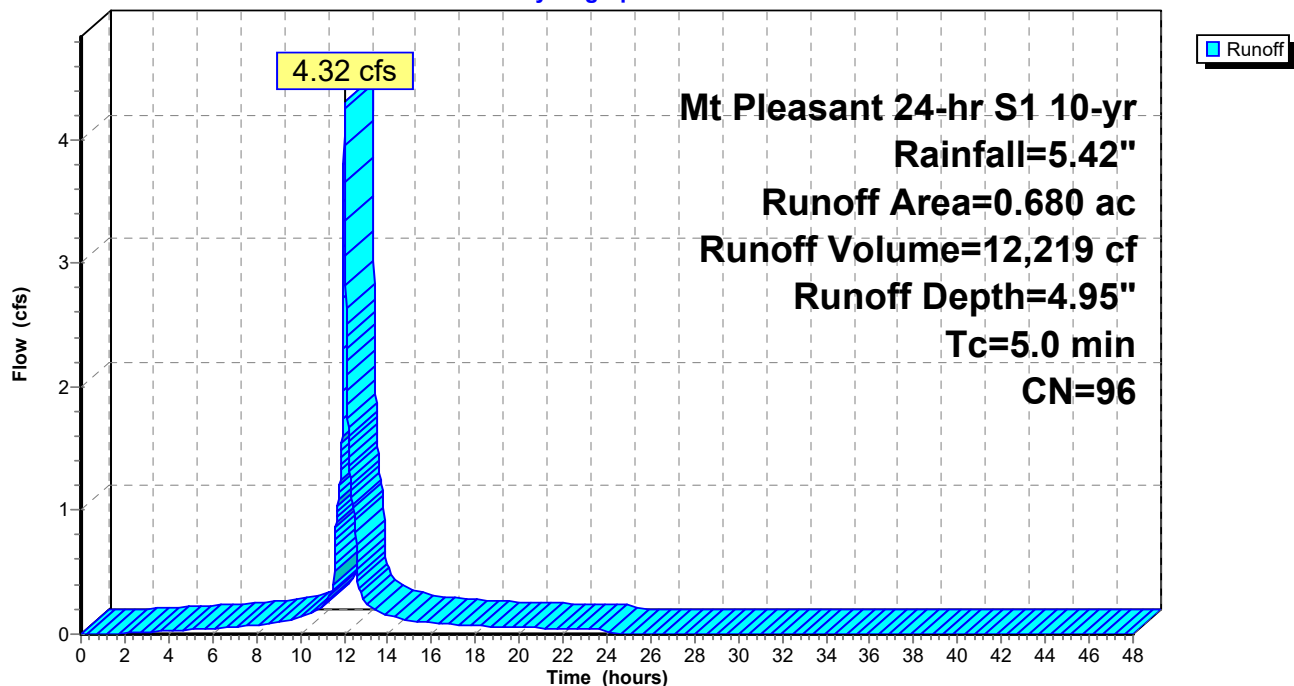
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 7.81 cfs @ 12.03 hrs, Volume= 22,102 cf, Depth= 4.95"
 Routed to Reach D4D : Ditch 4D

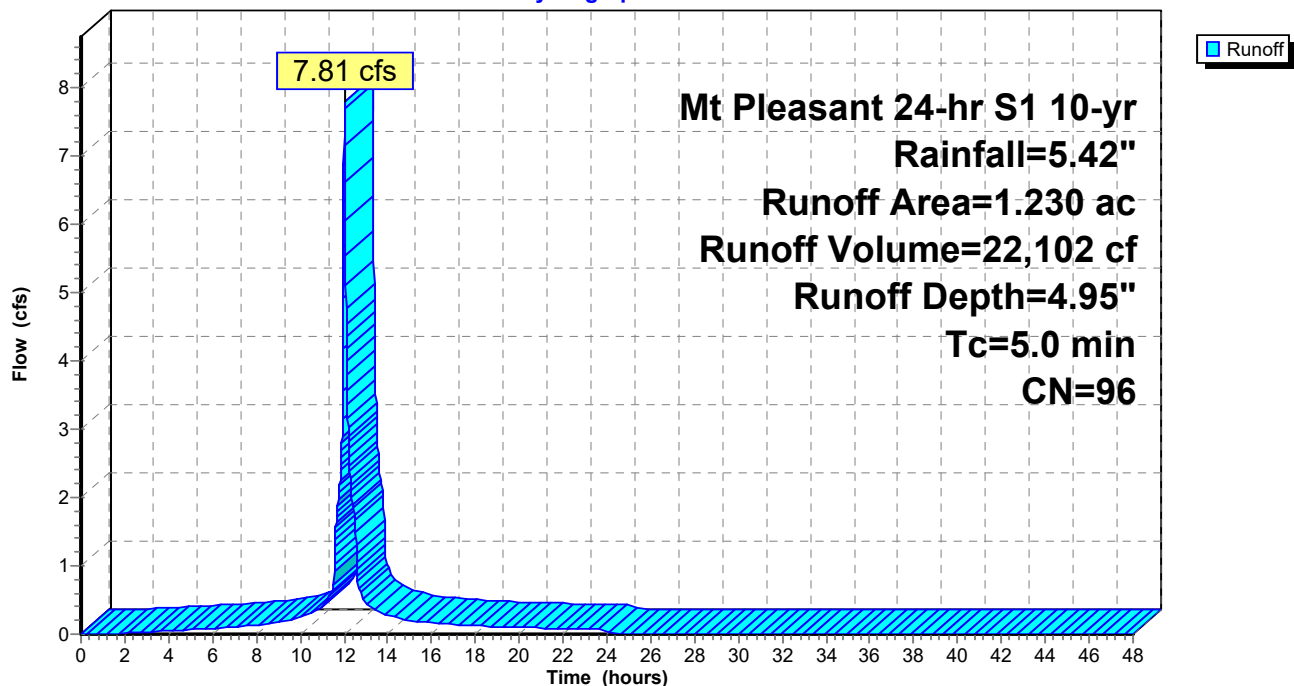
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



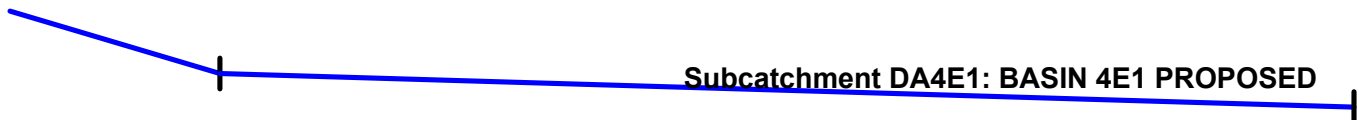
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

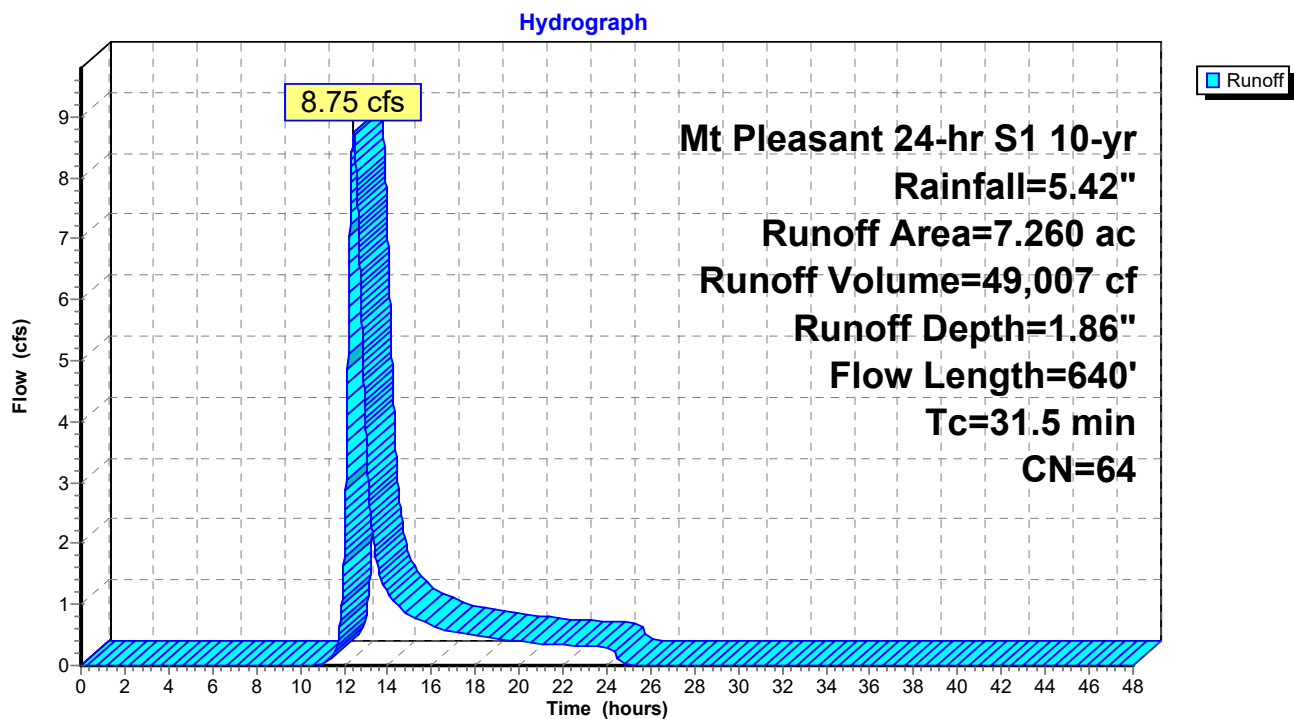
Runoff = 8.75 cfs @ 12.43 hrs, Volume= 49,007 cf, Depth= 1.86"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

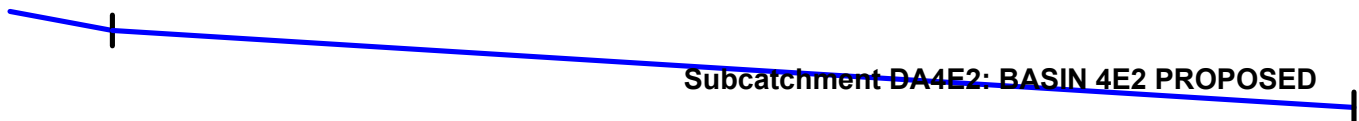
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

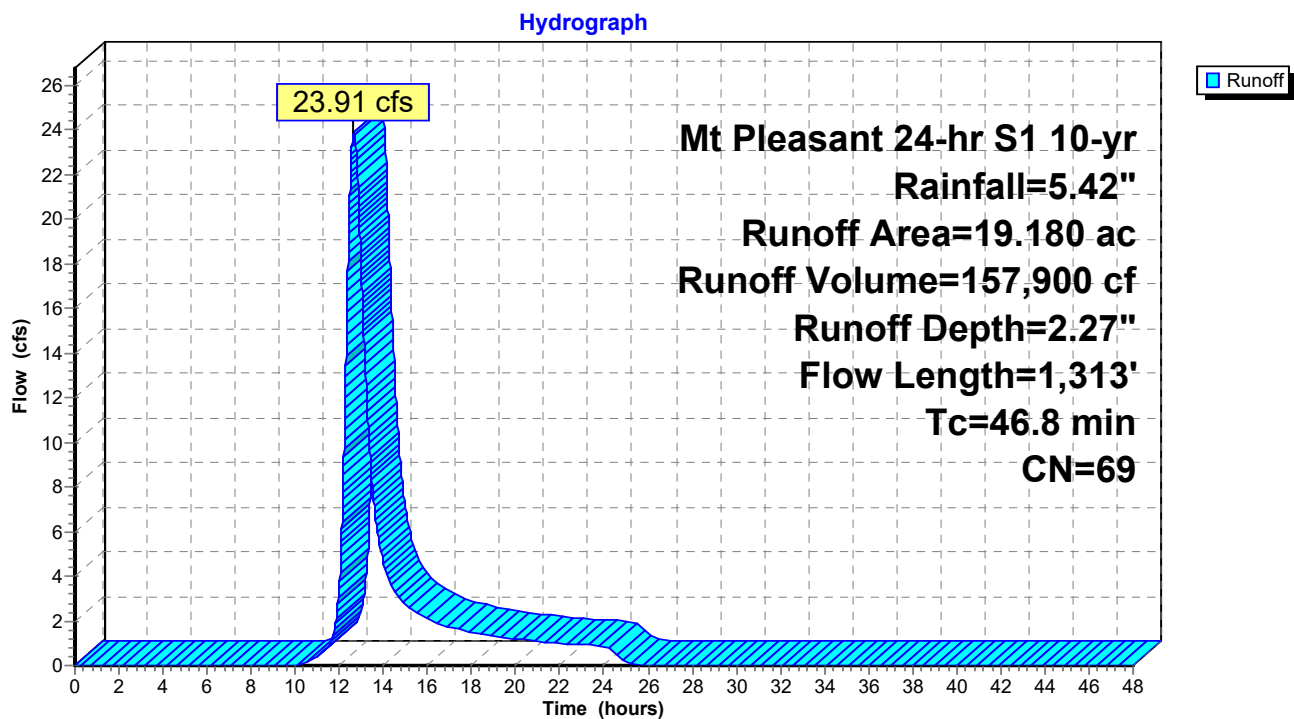
Runoff = 23.91 cfs @ 12.64 hrs, Volume= 157,900 cf, Depth= 2.27"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 10-yr Rainfall=5.42"

Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

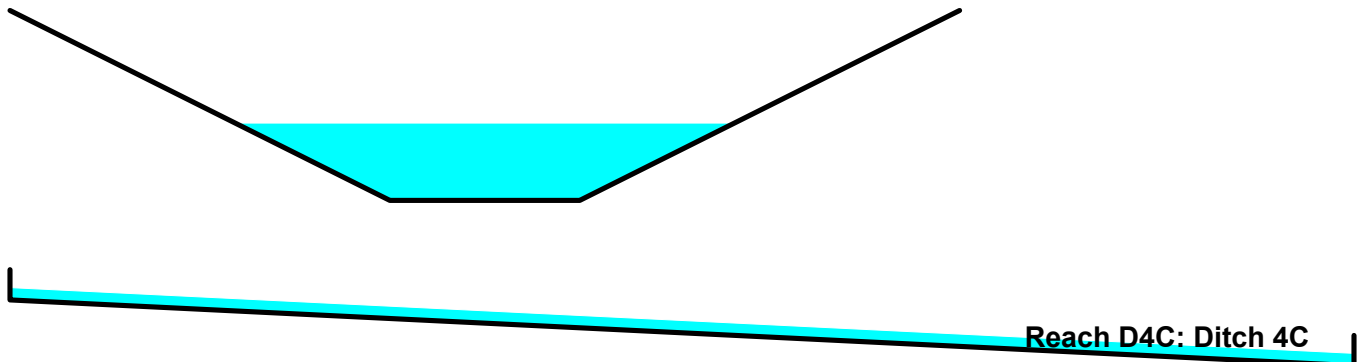
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 4.95" for 10-yr event
Inflow = 4.32 cfs @ 12.03 hrs, Volume= 12,219 cf
Outflow = 4.04 cfs @ 12.05 hrs, Volume= 12,219 cf, Atten= 6%, Lag= 1.3 min
Routed to Pond CD4C : Cross Drain 4C

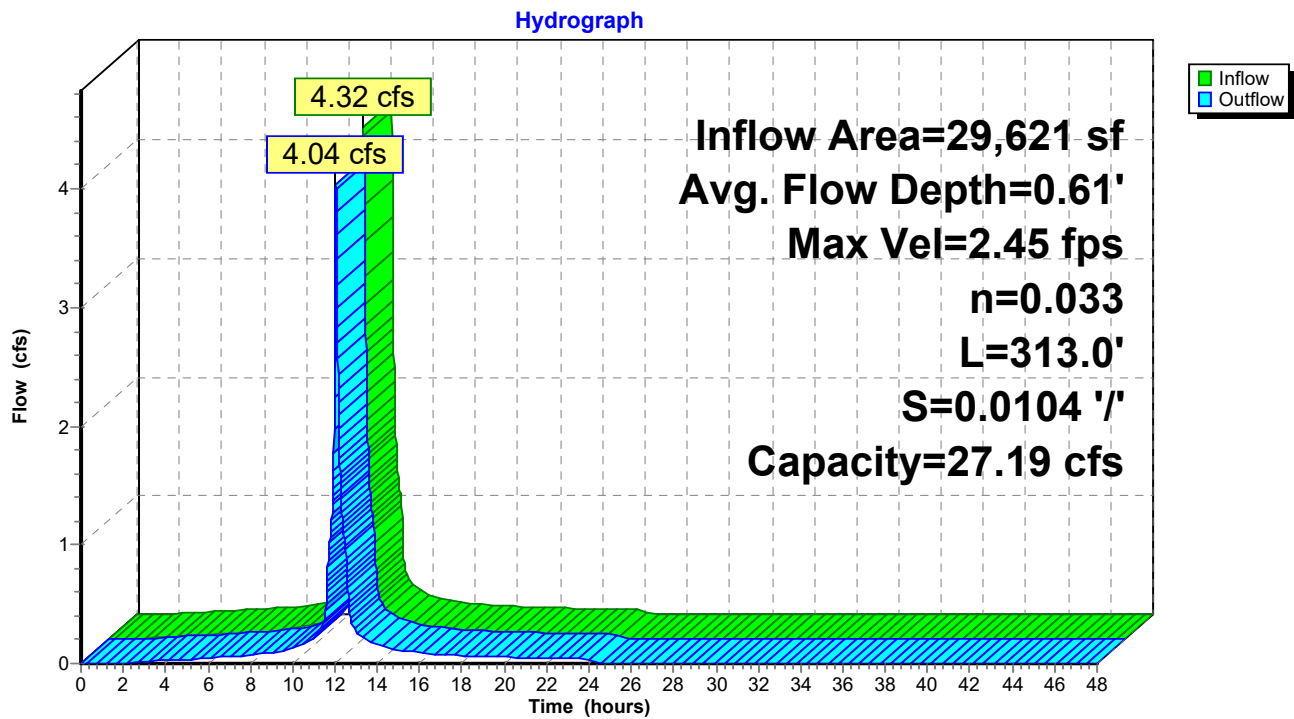
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 7.5 min

Peak Storage= 516 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 3.93'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

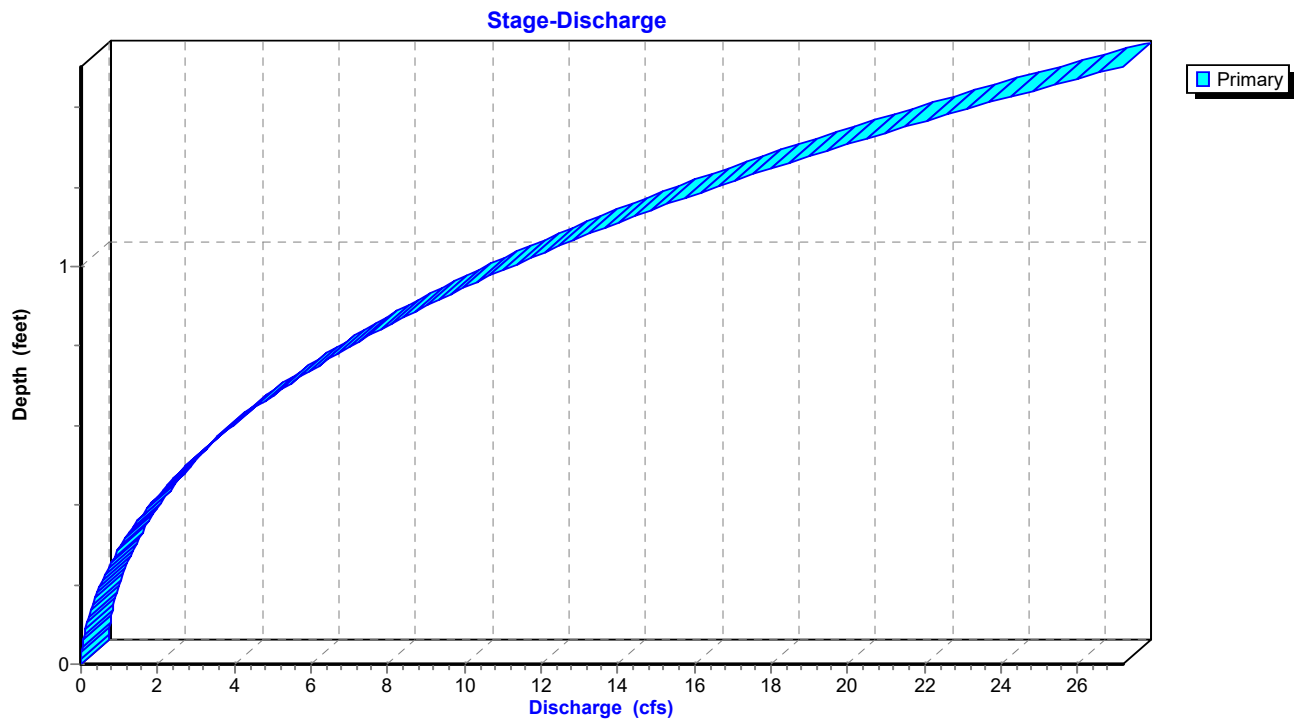
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



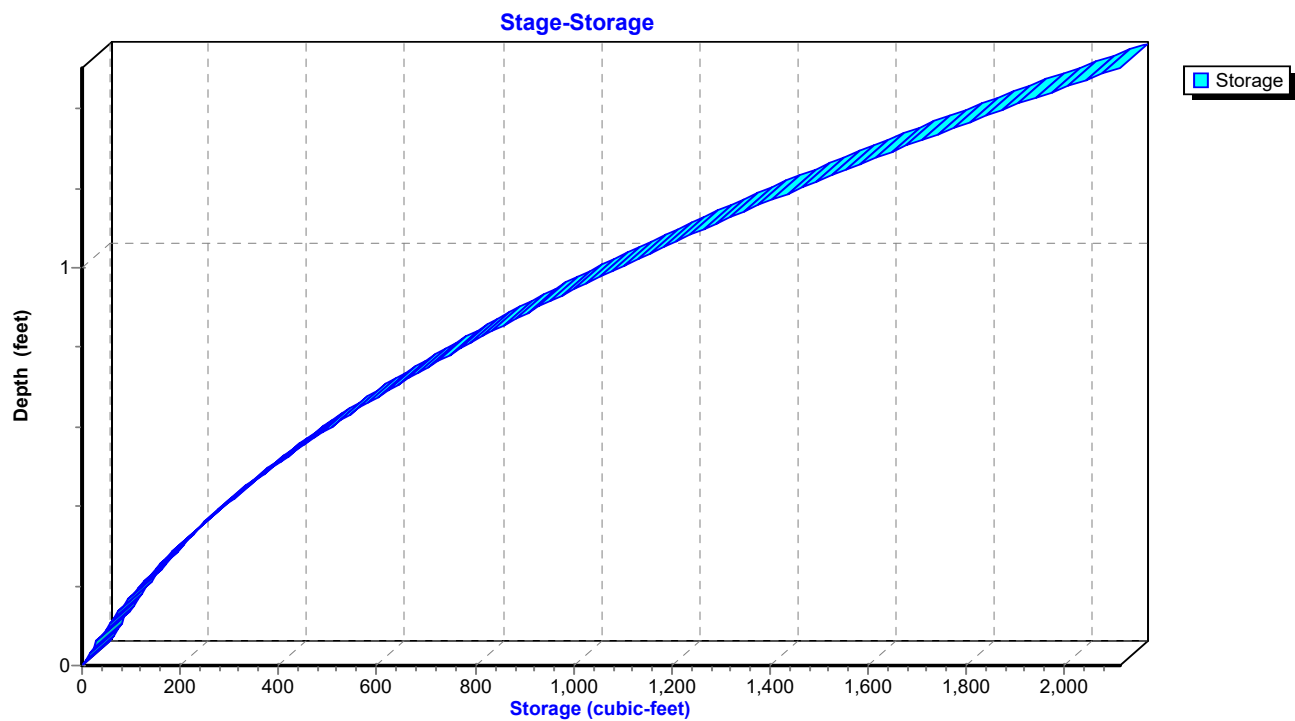
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



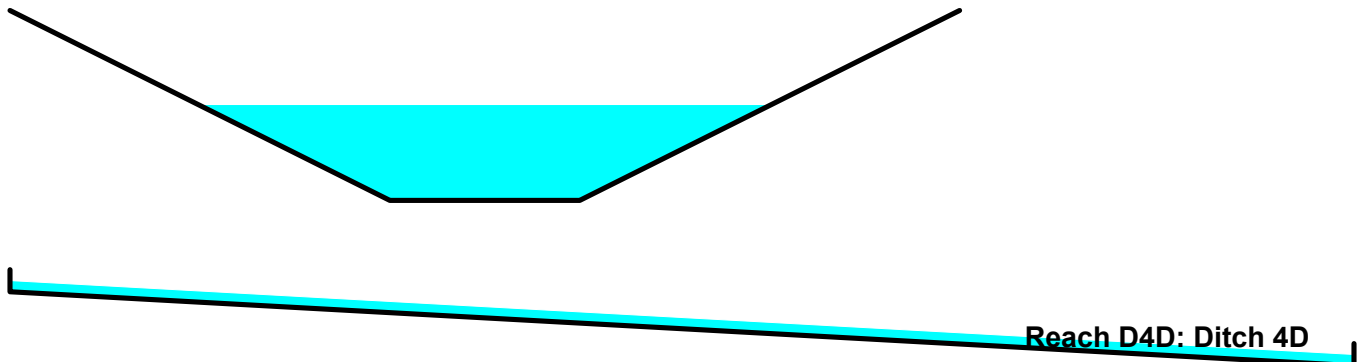
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 4.95" for 10-yr event
Inflow = 7.81 cfs @ 12.03 hrs, Volume= 22,102 cf
Outflow = 7.46 cfs @ 12.04 hrs, Volume= 22,102 cf, Atten= 4%, Lag= 1.1 min
Routed to Pond CD4DCE : Cross Drain 4DCE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 5.9 min

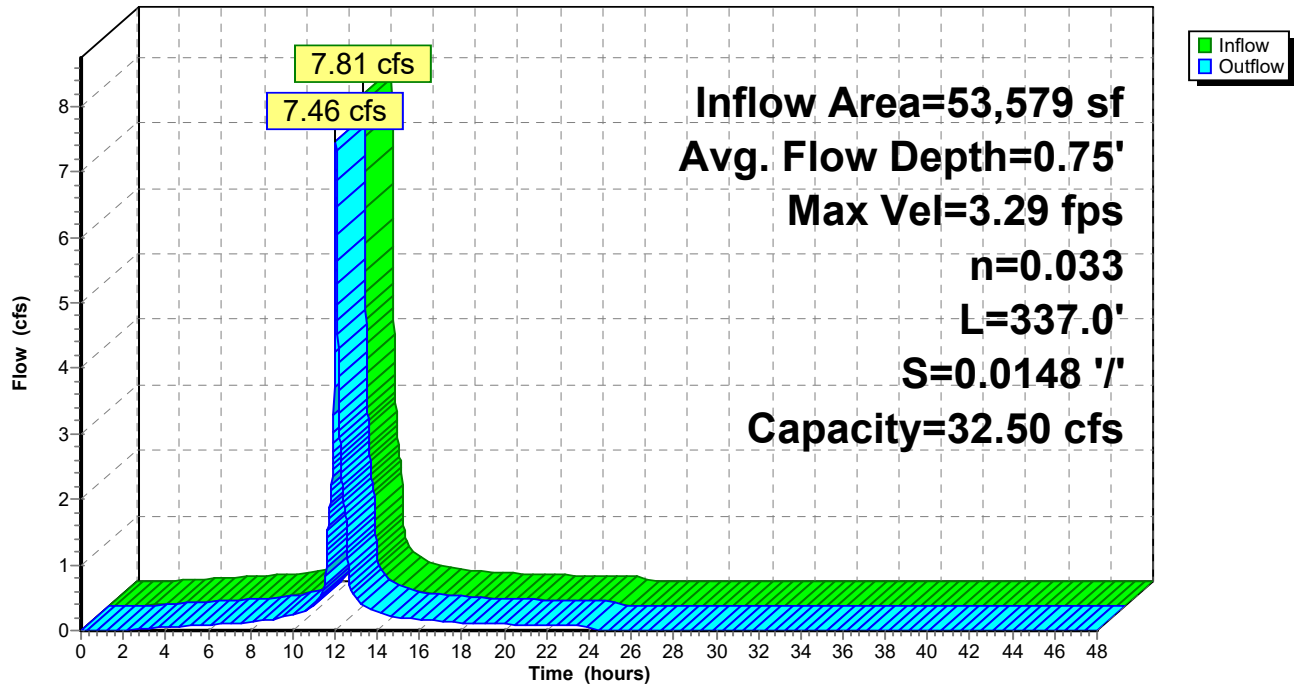
Peak Storage= 763 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.75' , Surface Width= 4.51'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



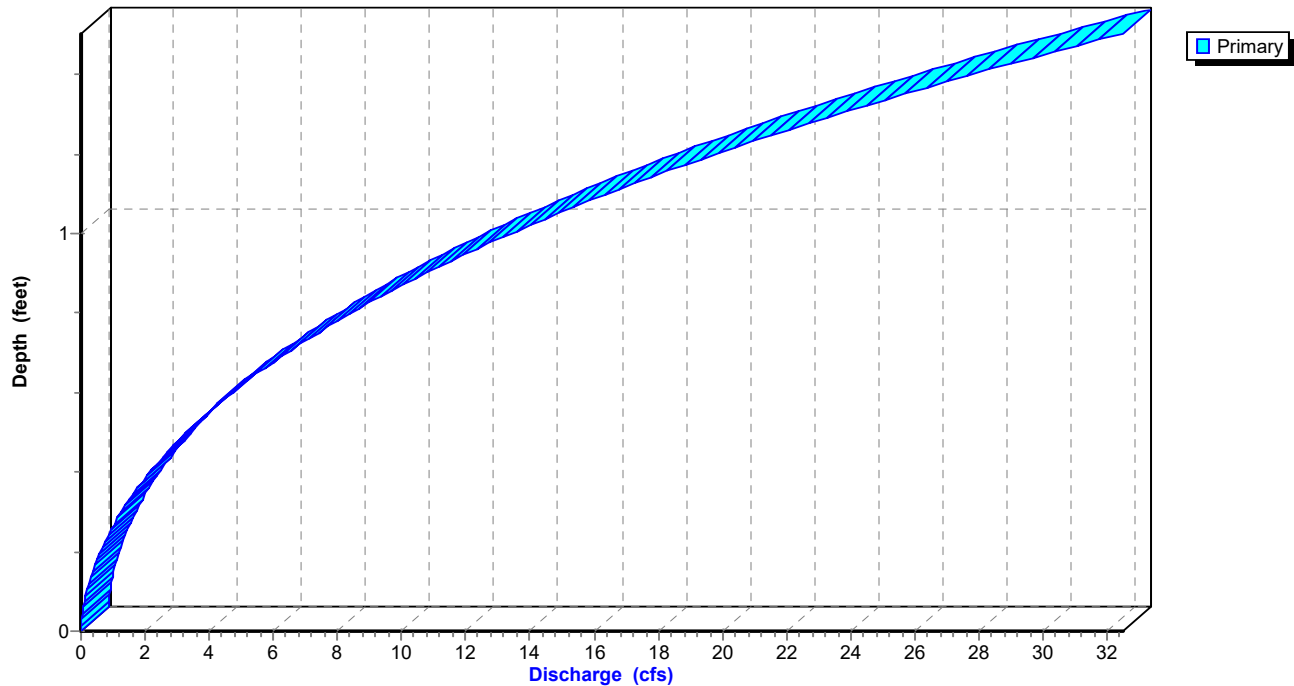
Reach D4D: Ditch 4D

Hydrograph

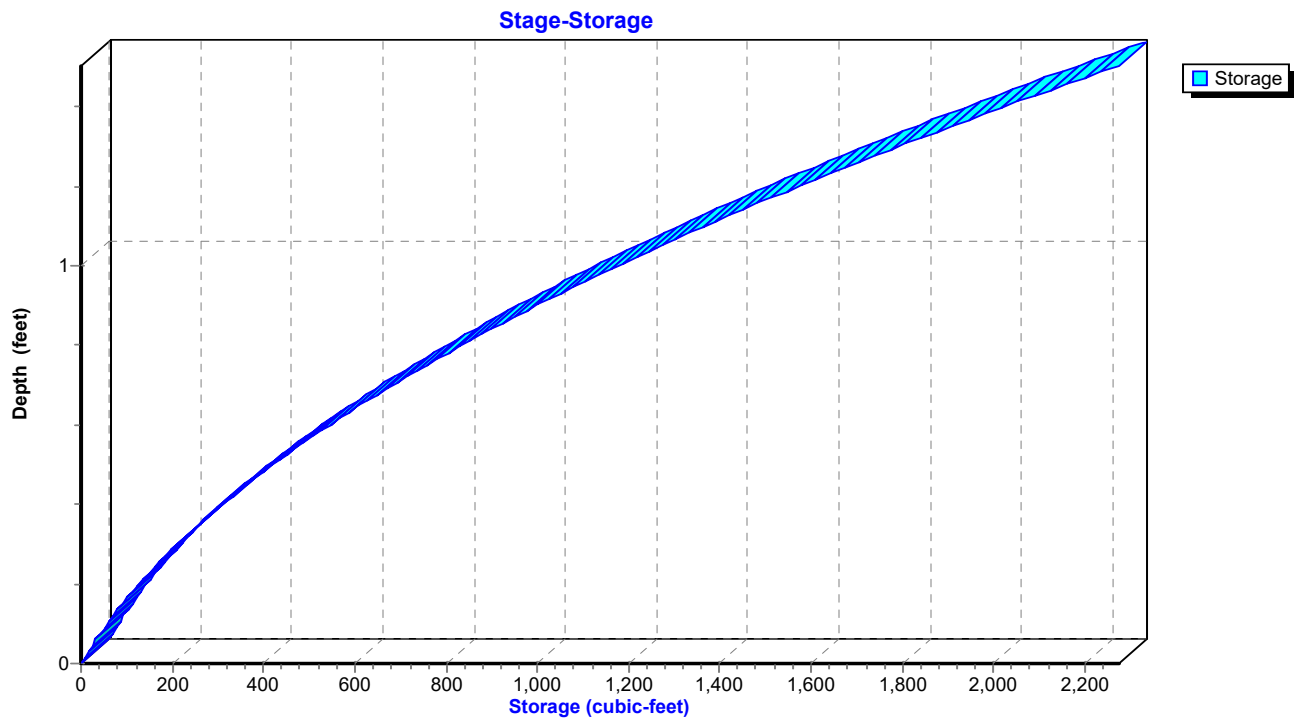


Reach D4D: Ditch 4D

Stage-Discharge



Reach D4D: Ditch 4D



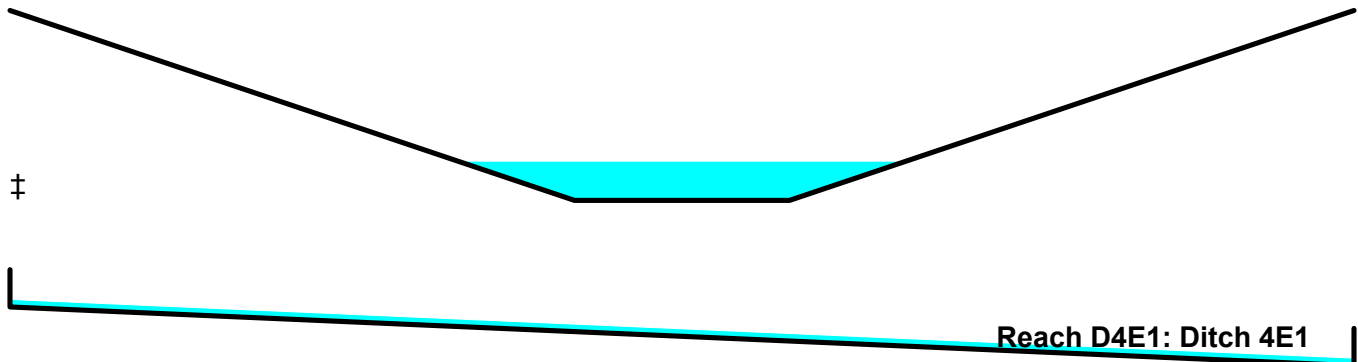
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 1.86" for 10-yr event
Inflow = 8.75 cfs @ 12.43 hrs, Volume= 49,007 cf
Outflow = 7.01 cfs @ 12.68 hrs, Volume= 49,007 cf, Atten= 20%, Lag= 15.2 min
Routed to Pond CD4E : Cross Drain 4E

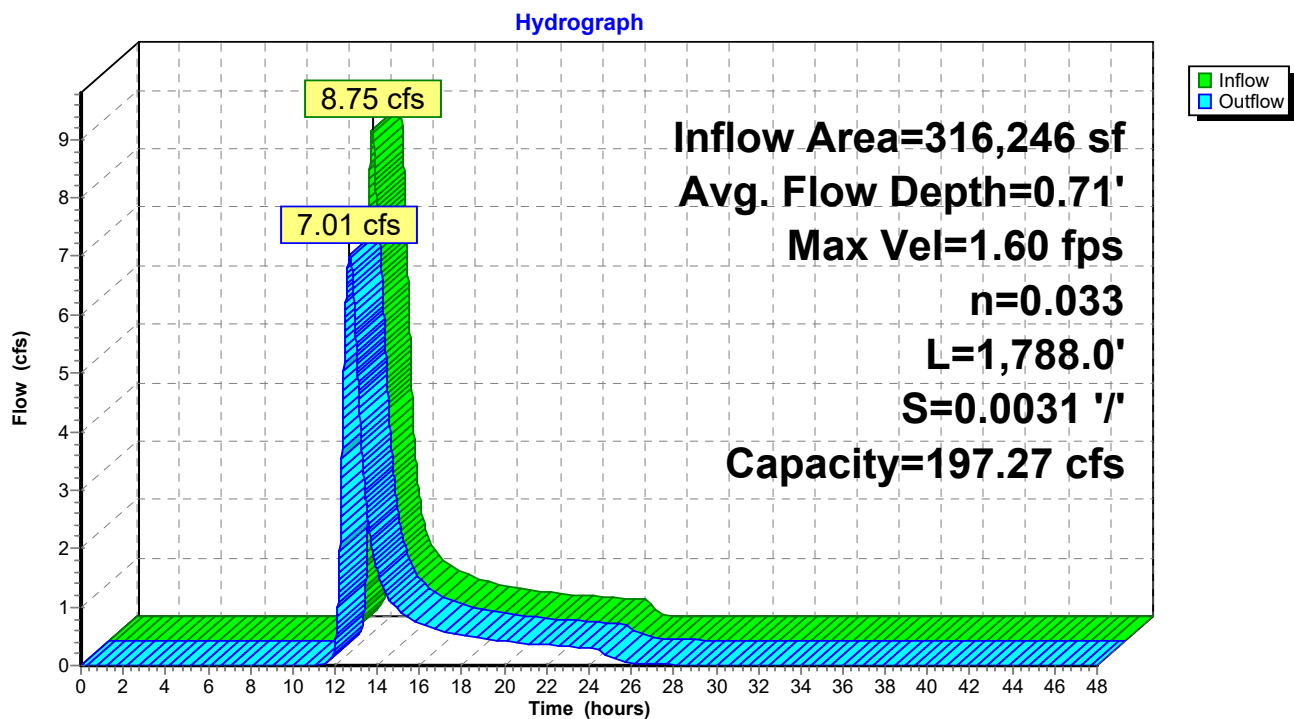
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.60 fps, Min. Travel Time= 18.6 min
Avg. Velocity= 0.50 fps, Avg. Travel Time= 60.0 min

Peak Storage= 7,819 cf @ 12.68 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 8.27'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

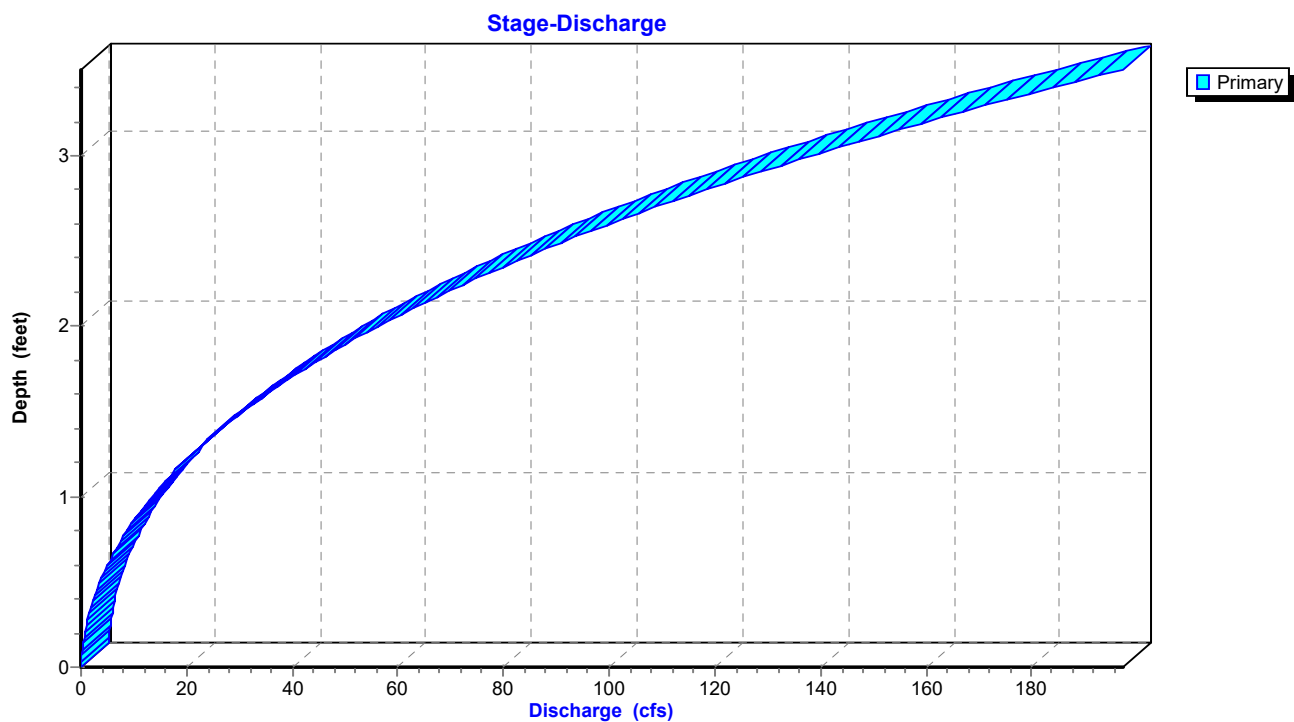
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 ' / ' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 ' / '
Inlet Invert= 685.00', Outlet Invert= 679.50'

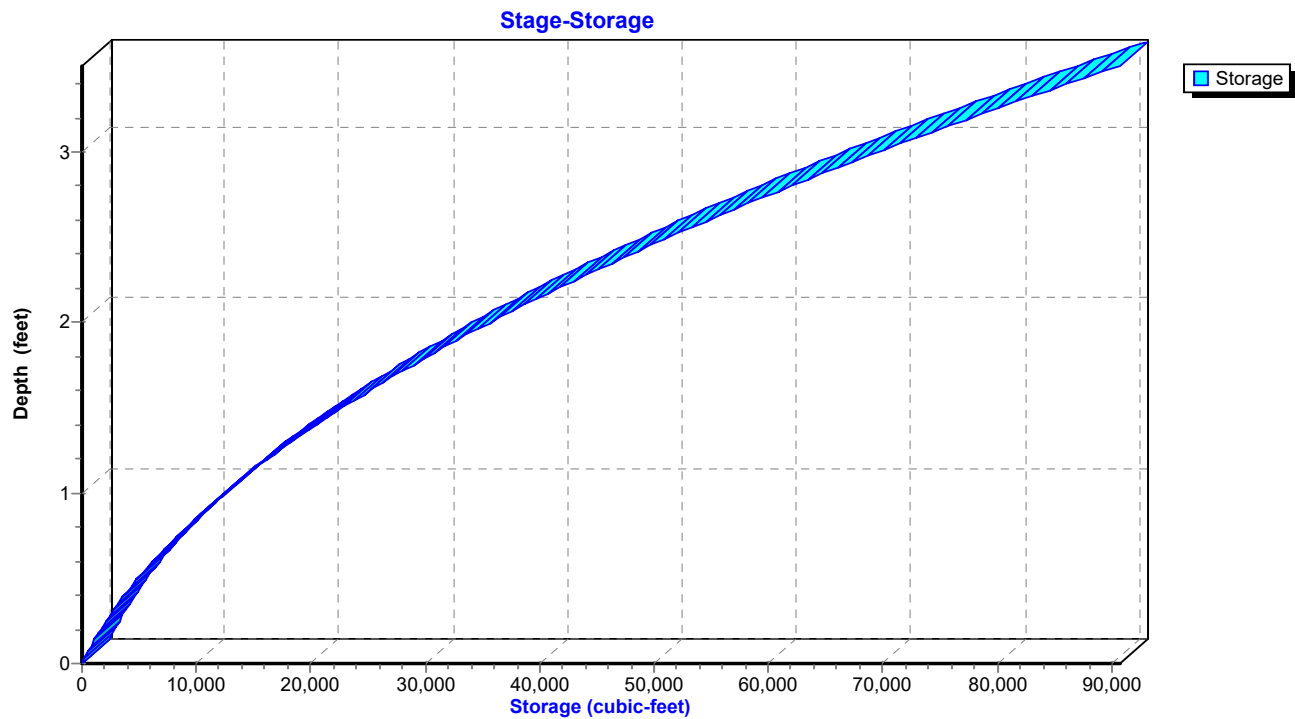


Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1

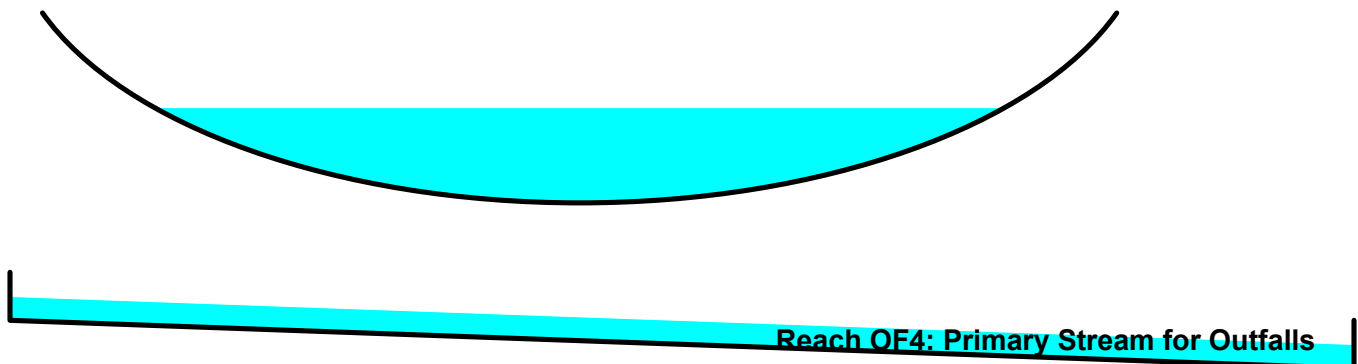
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 2.54" for 10-yr event
Inflow = 144.59 cfs @ 13.50 hrs, Volume= 2,109,686 cf
Outflow = 144.45 cfs @ 13.52 hrs, Volume= 2,109,686 cf, Atten= 0%, Lag= 0.9 min

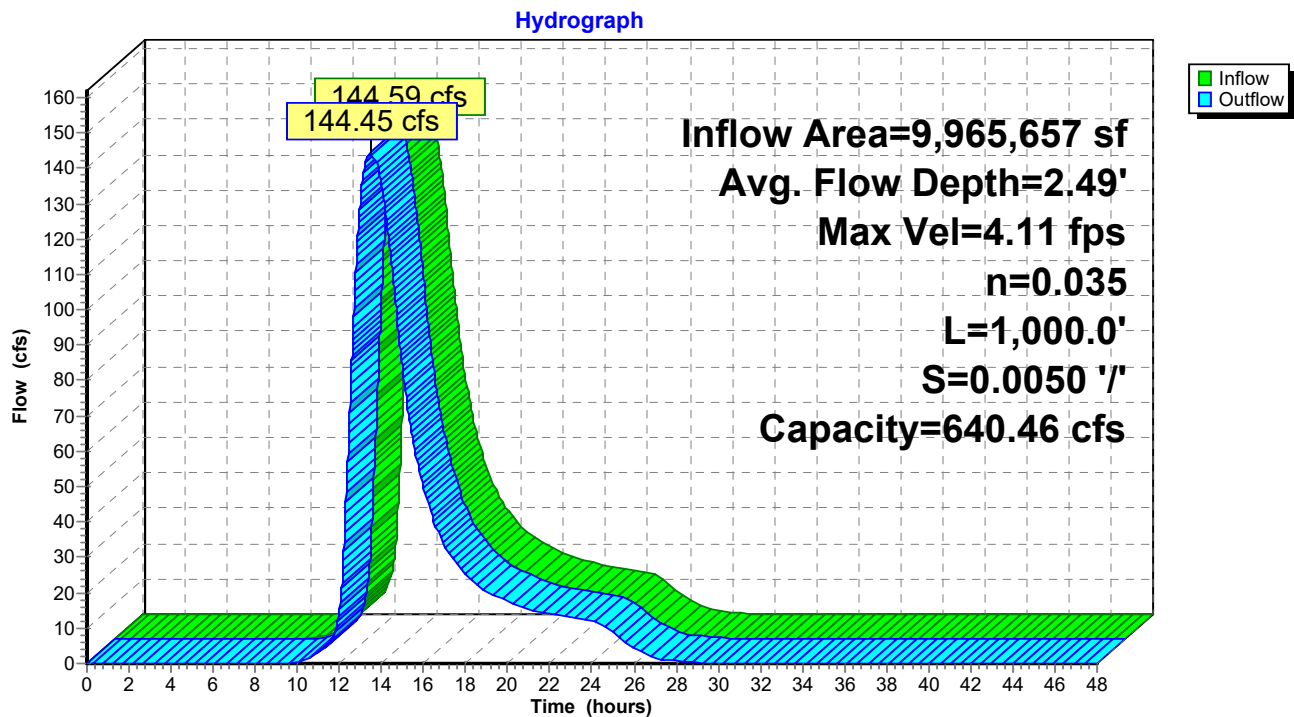
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.11 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 10.8 min

Peak Storage= 35,136 cf @ 13.52 hrs
Average Depth at Peak Storage= 2.49' , Surface Width= 21.17'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

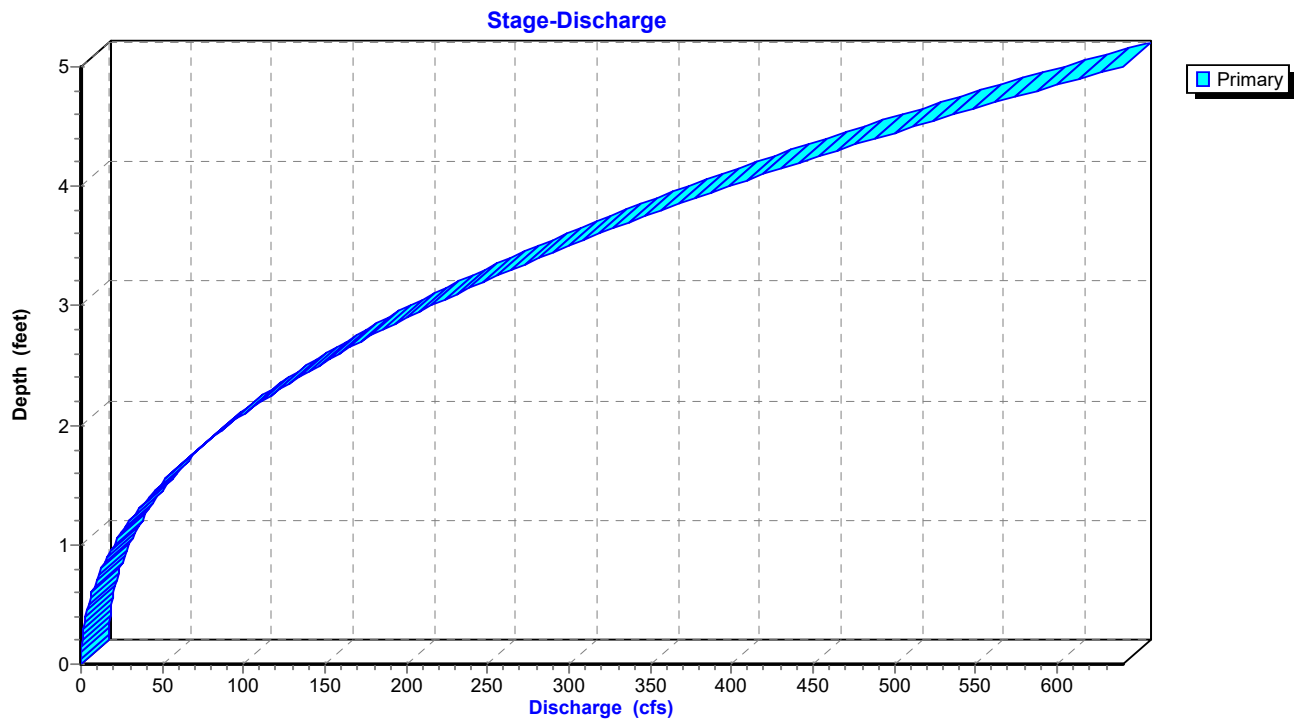
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

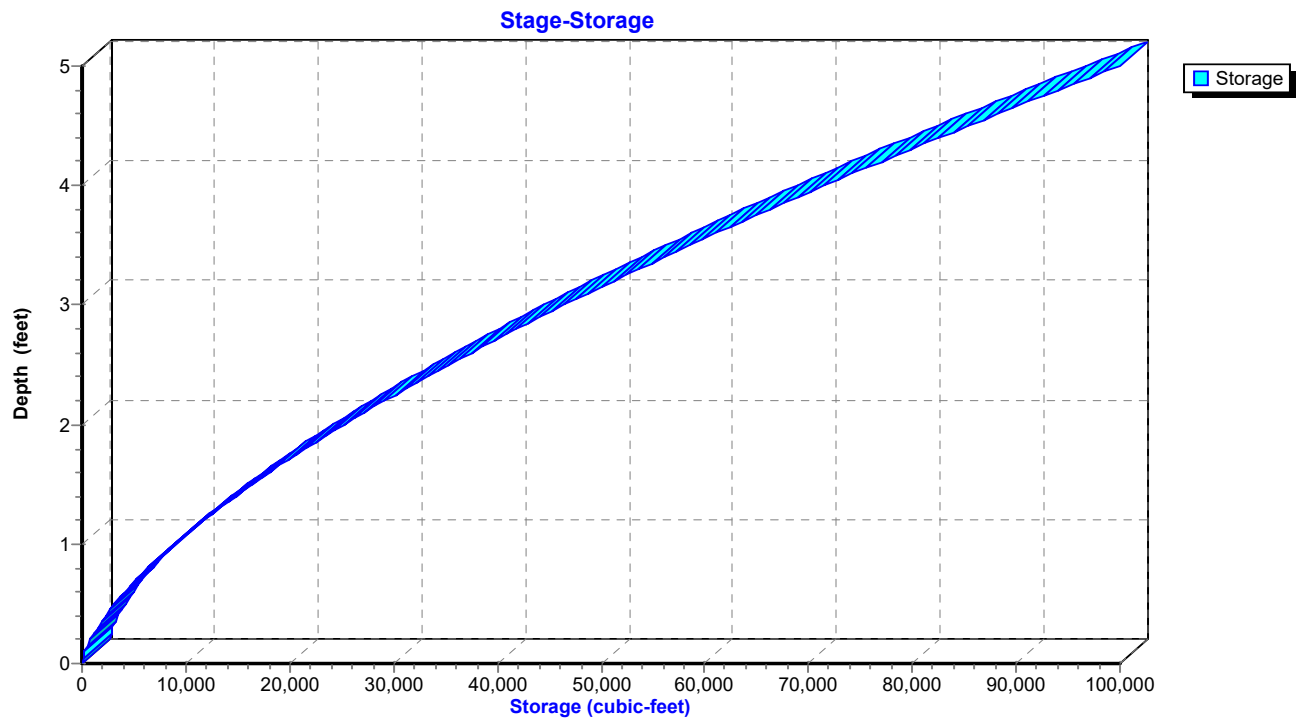


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

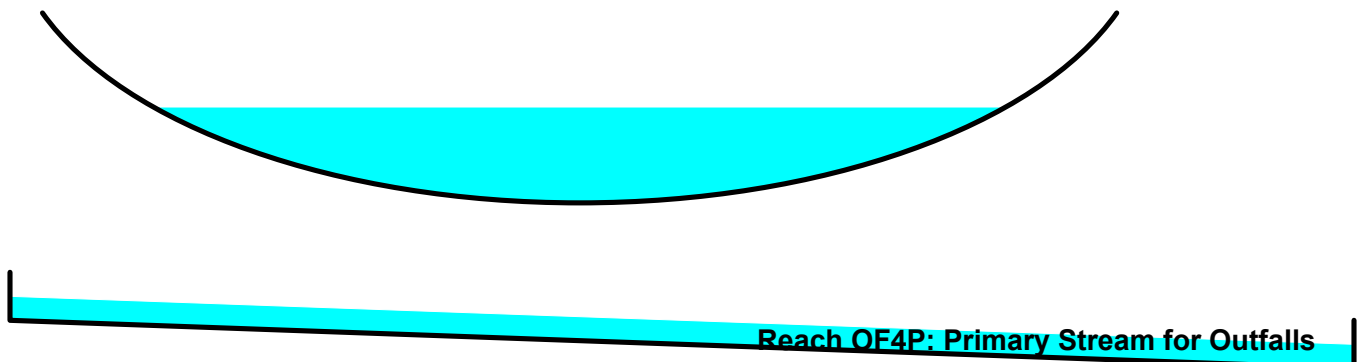
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 2.68" for 10-yr event
Inflow = 147.00 cfs @ 13.67 hrs, Volume= 2,227,554 cf
Outflow = 146.78 cfs @ 13.70 hrs, Volume= 2,227,553 cf, Atten= 0%, Lag= 2.3 min

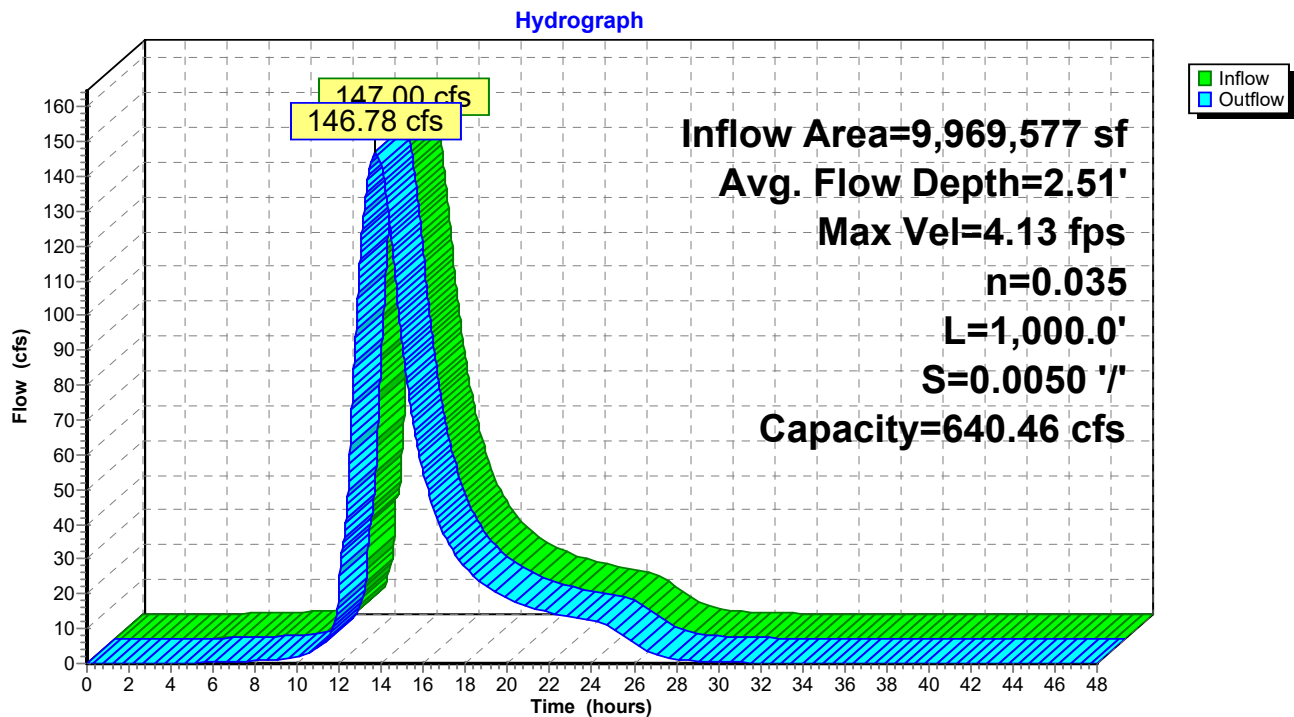
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.13 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 13.8 min

Peak Storage= 35,530 cf @ 13.70 hrs
Average Depth at Peak Storage= 2.51' , Surface Width= 21.25'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

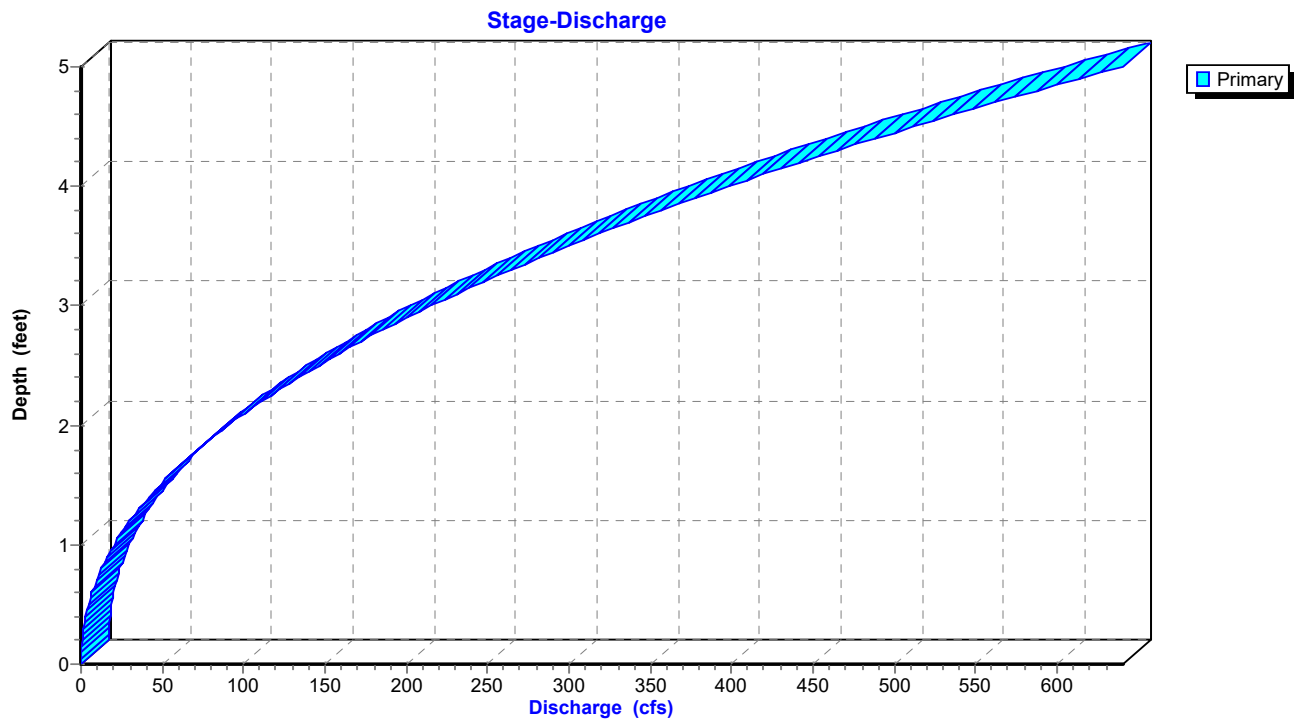
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

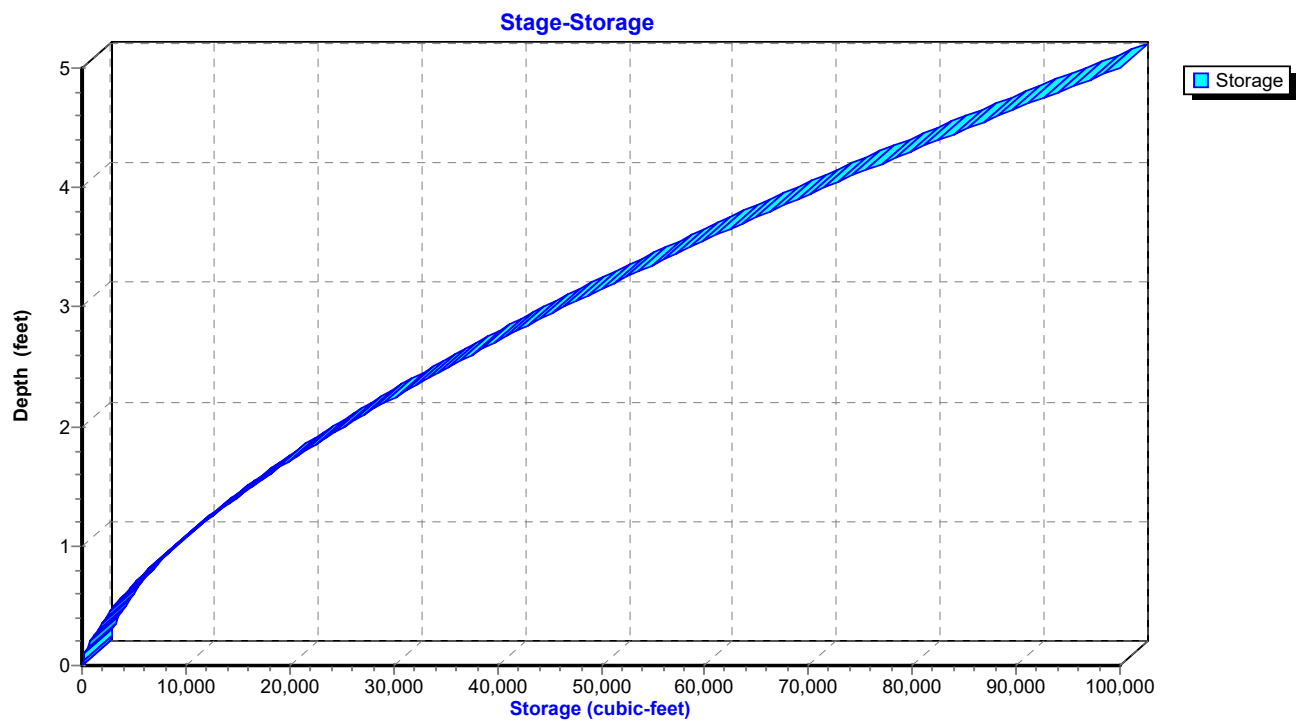


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 1.70" for 10-yr event
 Inflow = 26.69 cfs @ 12.94 hrs, Volume= 215,881 cf
 Outflow = 26.69 cfs @ 12.94 hrs, Volume= 215,881 cf, Atten= 0%, Lag= 0.0 min
 Primary = 26.69 cfs @ 12.94 hrs, Volume= 215,881 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.76' @ 12.94 hrs

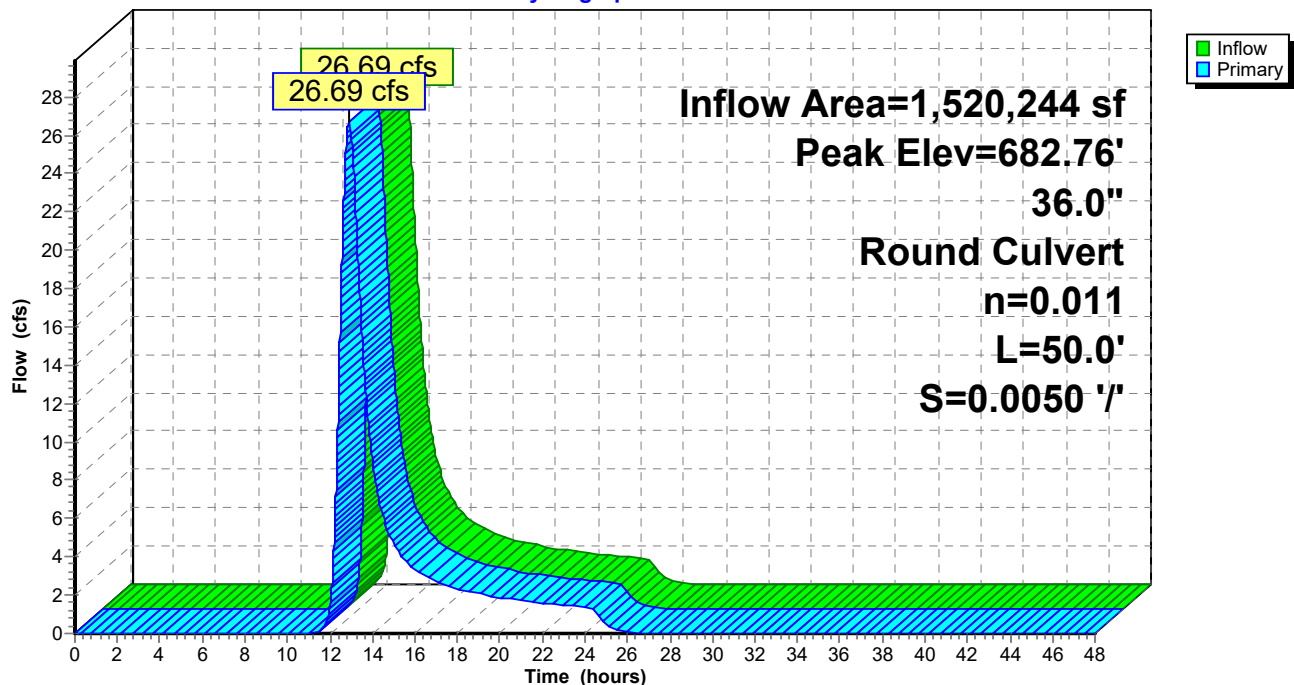
Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

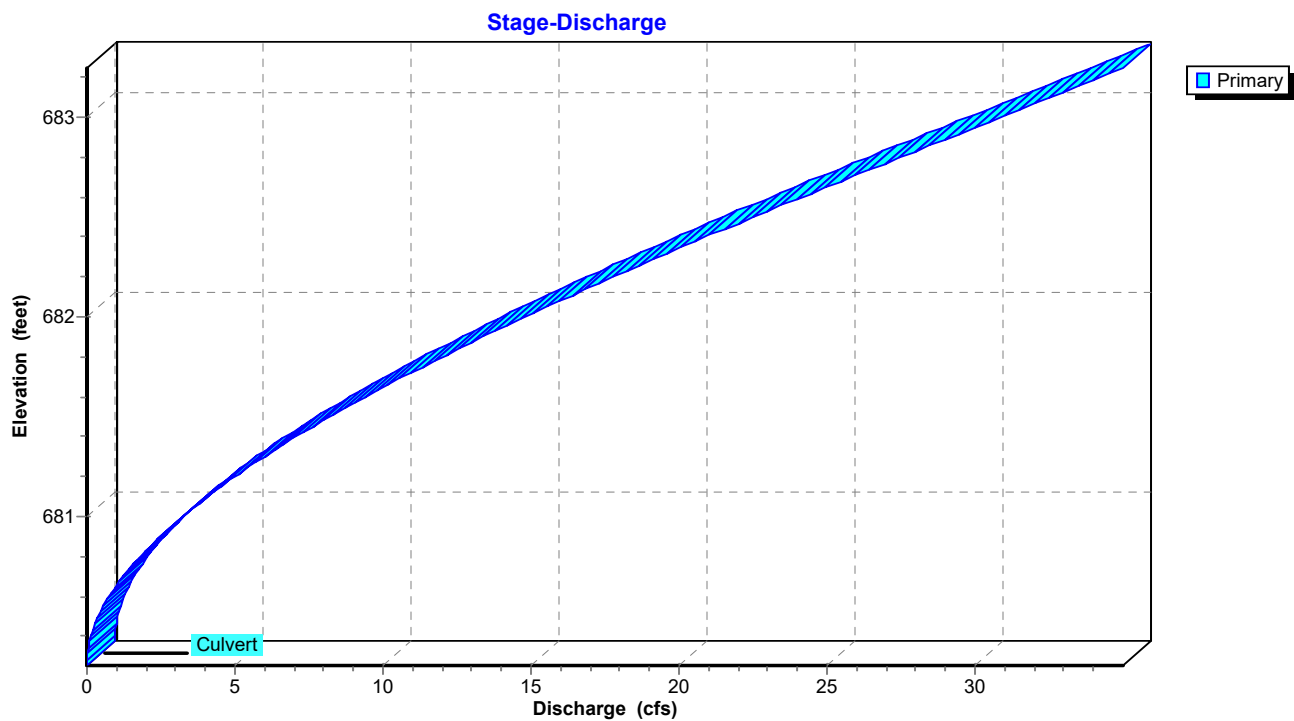
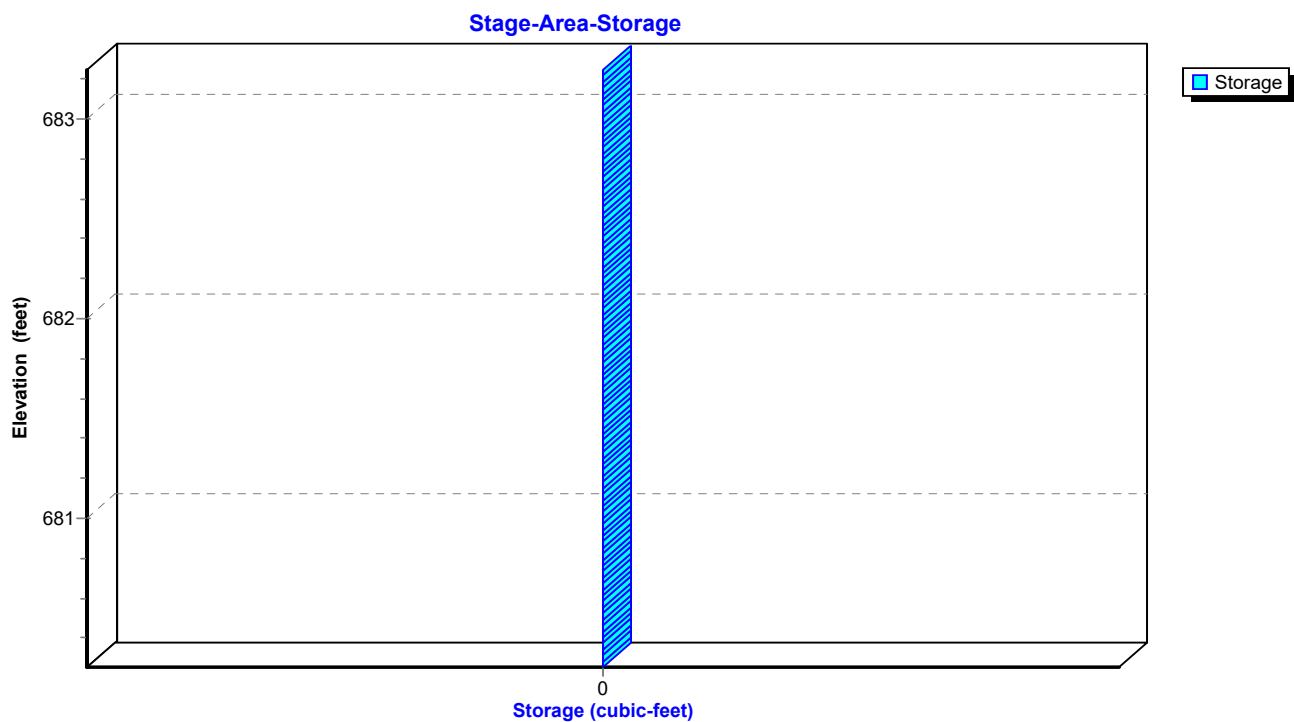
Primary OutFlow Max=26.69 cfs @ 12.94 hrs HW=682.76' TW=677.21' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 26.69 cfs @ 5.73 fps)

~~Culvert~~ **Pond CD2: Cross Drain**

Pond CD2: Cross Drain

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

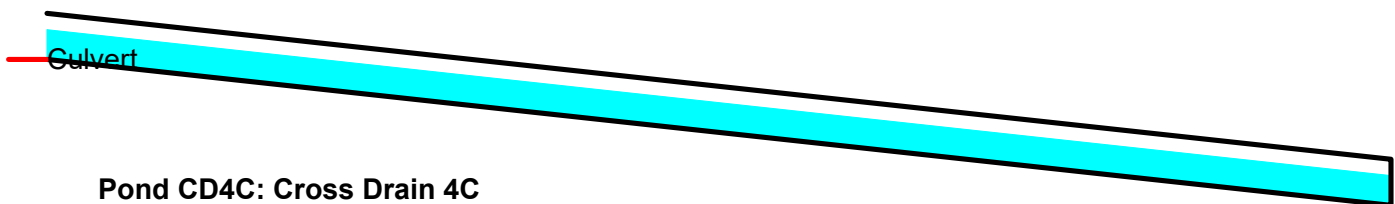
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 4.95" for 10-yr event
 Inflow = 4.04 cfs @ 12.05 hrs, Volume= 12,219 cf
 Outflow = 4.04 cfs @ 12.05 hrs, Volume= 12,219 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.04 cfs @ 12.05 hrs, Volume= 12,219 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

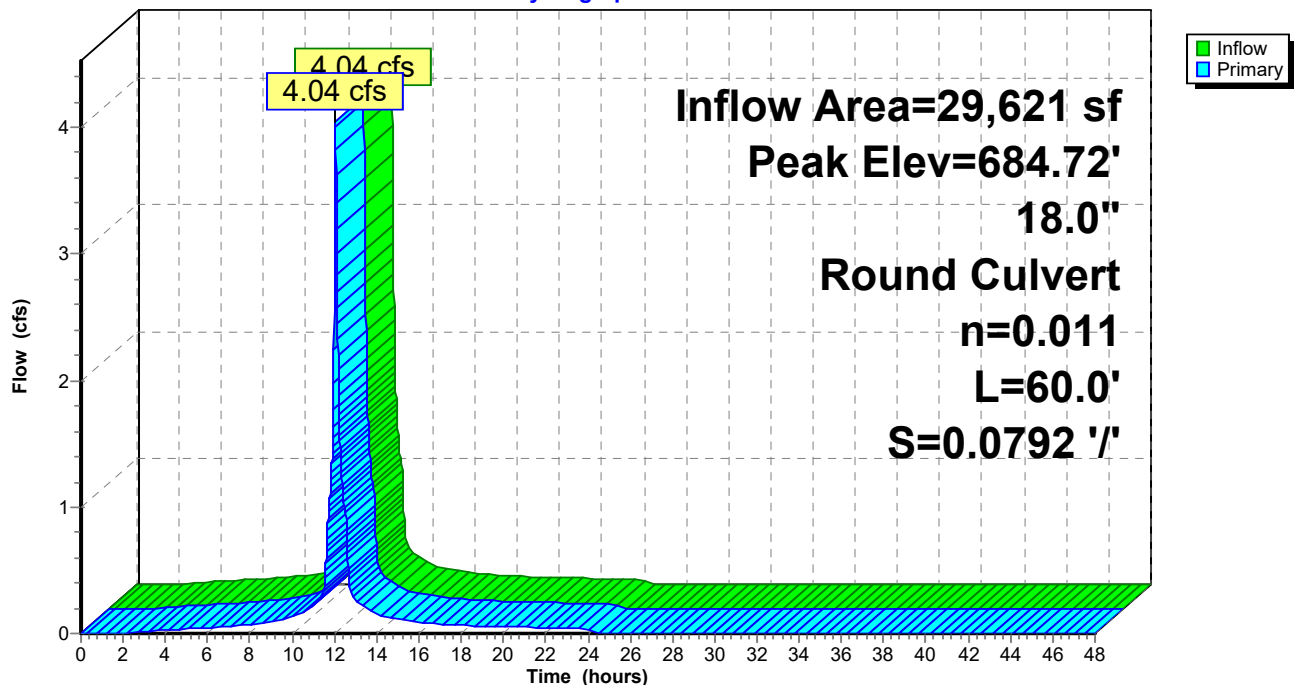
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.72' @ 12.05 hrs

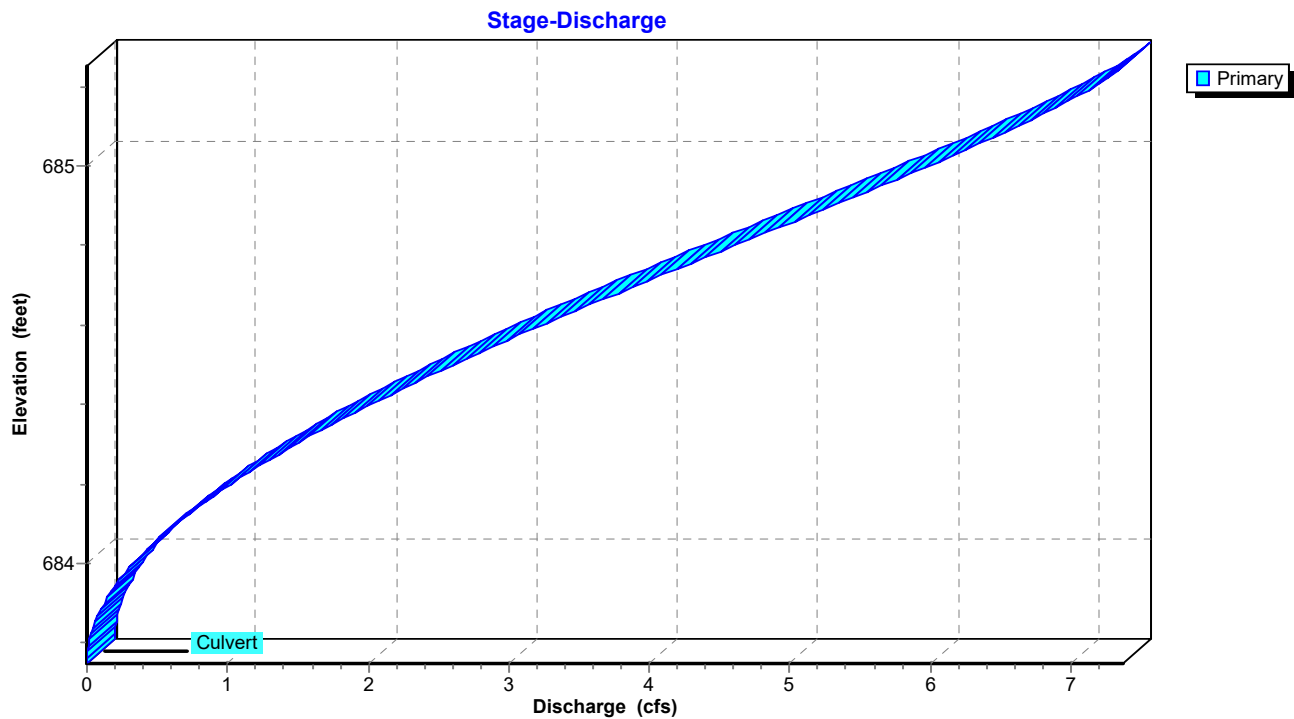
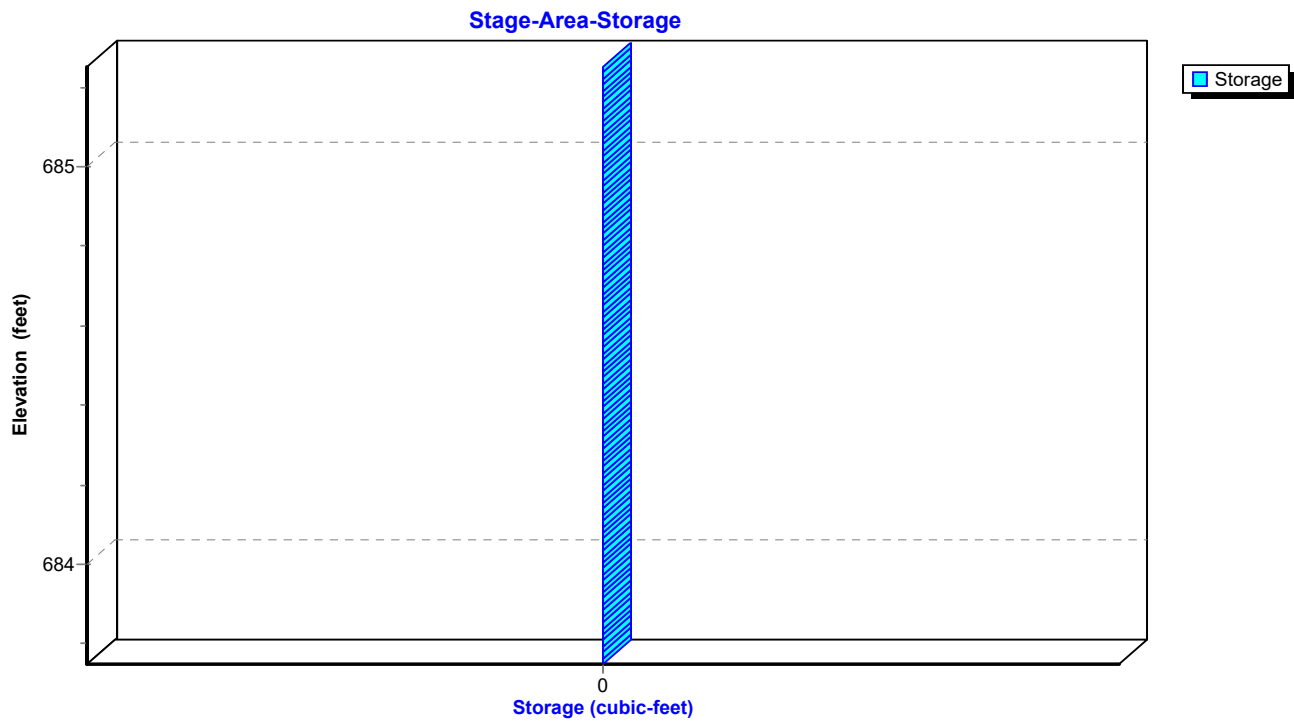
Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=4.03 cfs @ 12.05 hrs HW=684.72' TW=679.89' (Dynamic Tailwater)
 ←**1=Culvert** (Inlet Controls 4.03 cfs @ 3.35 fps)

**Pond CD4C: Cross Drain 4C**

Hydrograph



Pond CD4C: Cross Drain 4C**Pond CD4C: Cross Drain 4C**

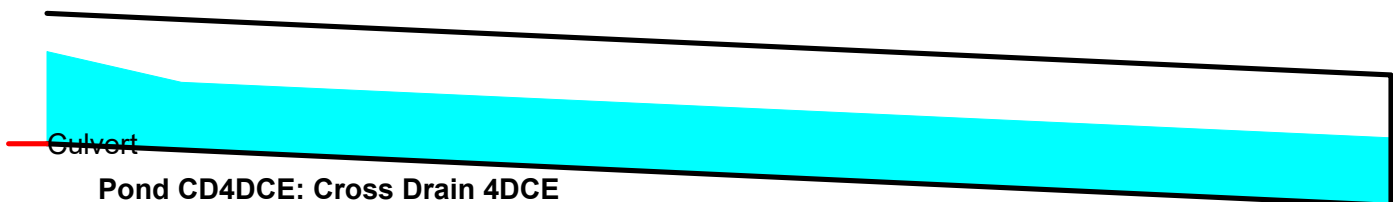
Summary for Pond CD4DCE: Cross Drain 4DCE

Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 2.34" for 10-yr event
 Inflow = 31.24 cfs @ 12.69 hrs, Volume= 241,226 cf
 Outflow = 31.24 cfs @ 12.69 hrs, Volume= 241,226 cf, Atten= 0%, Lag= 0.0 min
 Primary = 31.24 cfs @ 12.69 hrs, Volume= 241,226 cf
 Routed to Pond POND1P : PROP POND

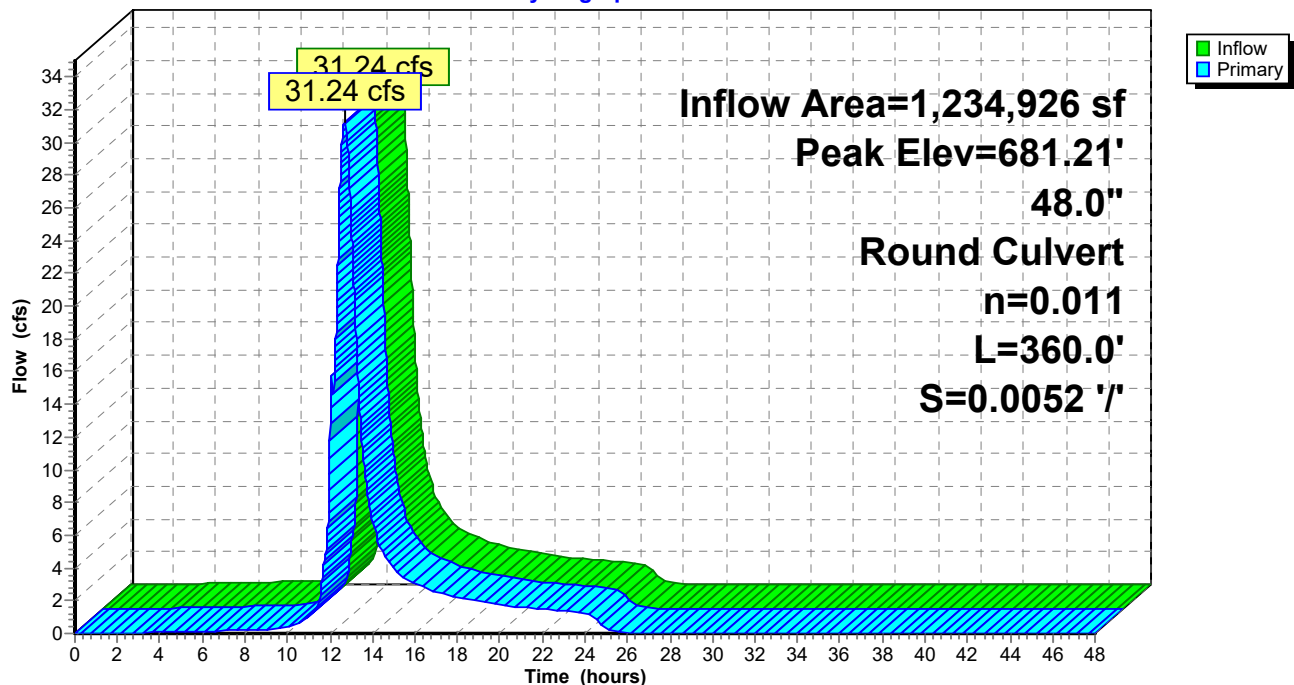
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.21' @ 12.85 hrs

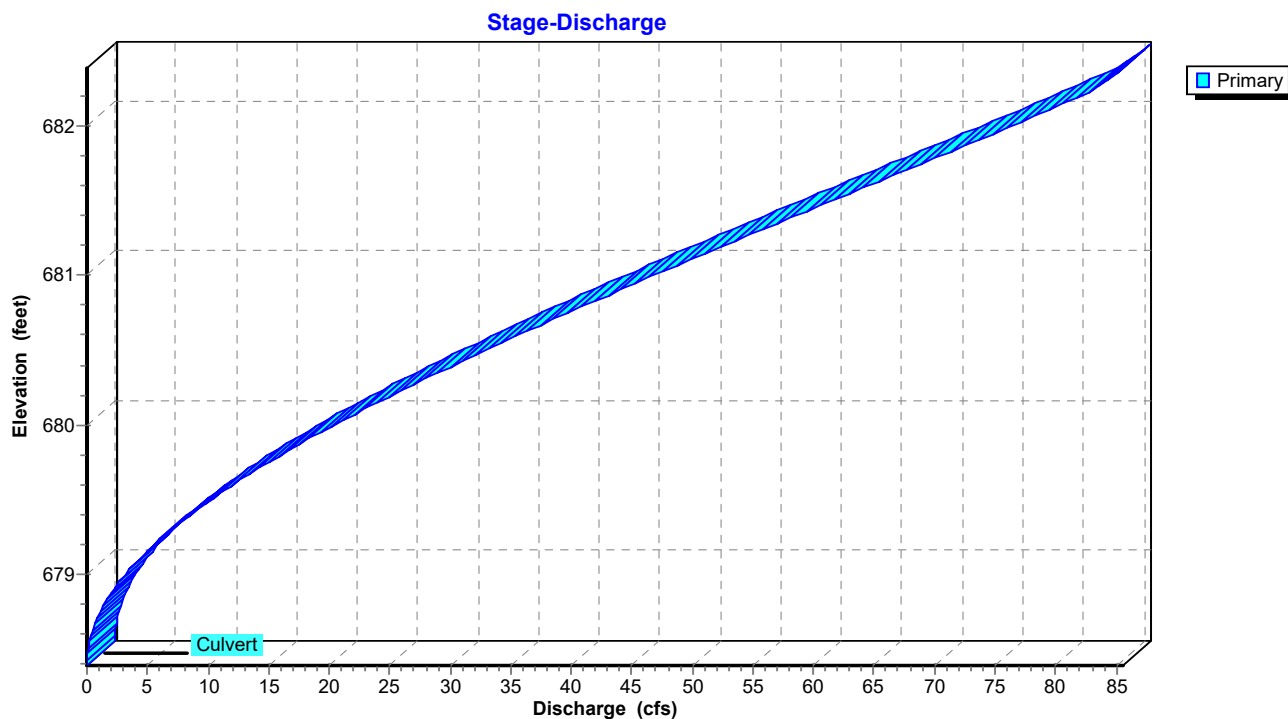
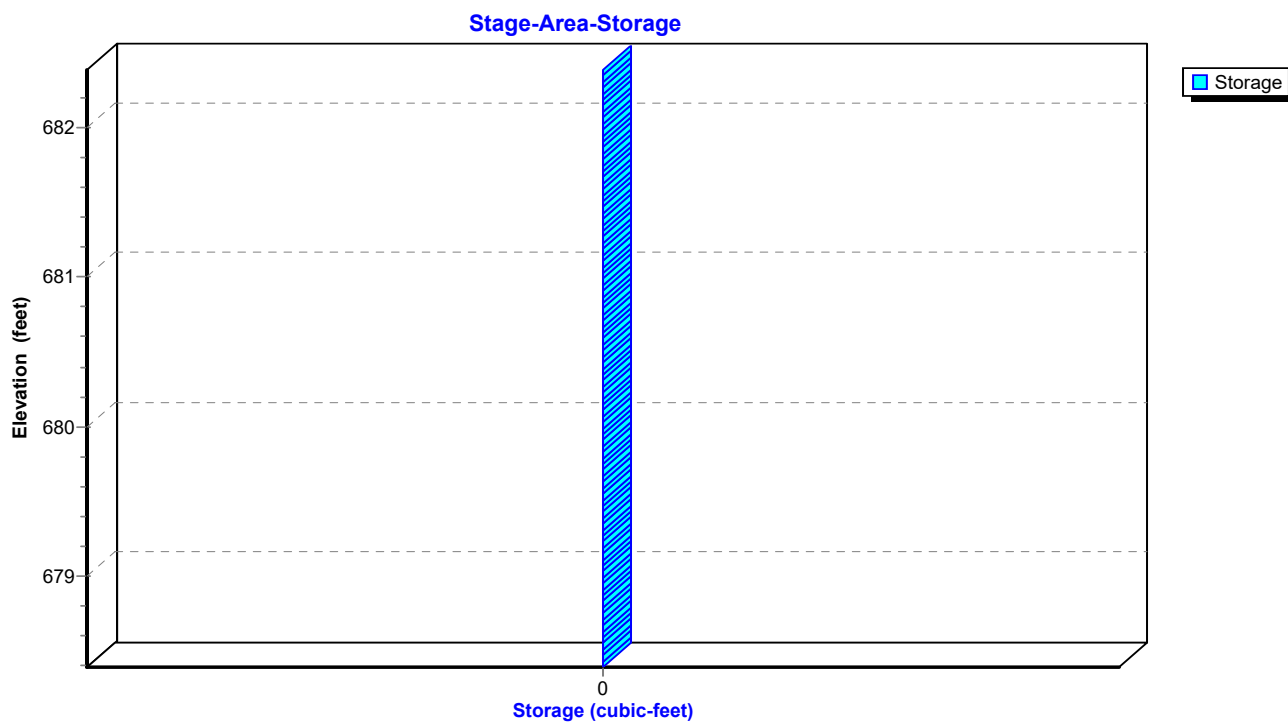
Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=30.92 cfs @ 12.69 hrs HW=681.13' TW=680.17' (Dynamic Tailwater)
 ↑ **1=Culvert** (Outlet Controls 30.92 cfs @ 4.75 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Hydrograph



Pond CD4DCE: Cross Drain 4DCE**Pond CD4DCE: Cross Drain 4DCE**

Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 2.16" for 10-yr event
 Inflow = 30.88 cfs @ 12.64 hrs, Volume= 206,907 cf
 Outflow = 30.12 cfs @ 12.71 hrs, Volume= 206,905 cf, Atten= 2%, Lag= 3.8 min
 Primary = 30.12 cfs @ 12.71 hrs, Volume= 206,905 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

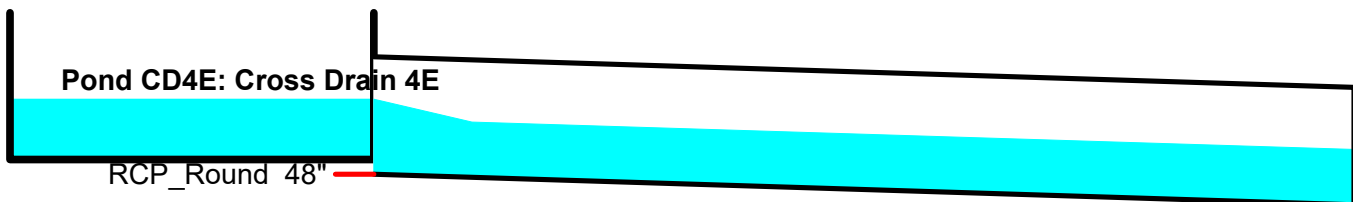
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.06' @ 12.77 hrs Surf.Area= 4,174 sf Storage= 3,926 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.2 min (894.7 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

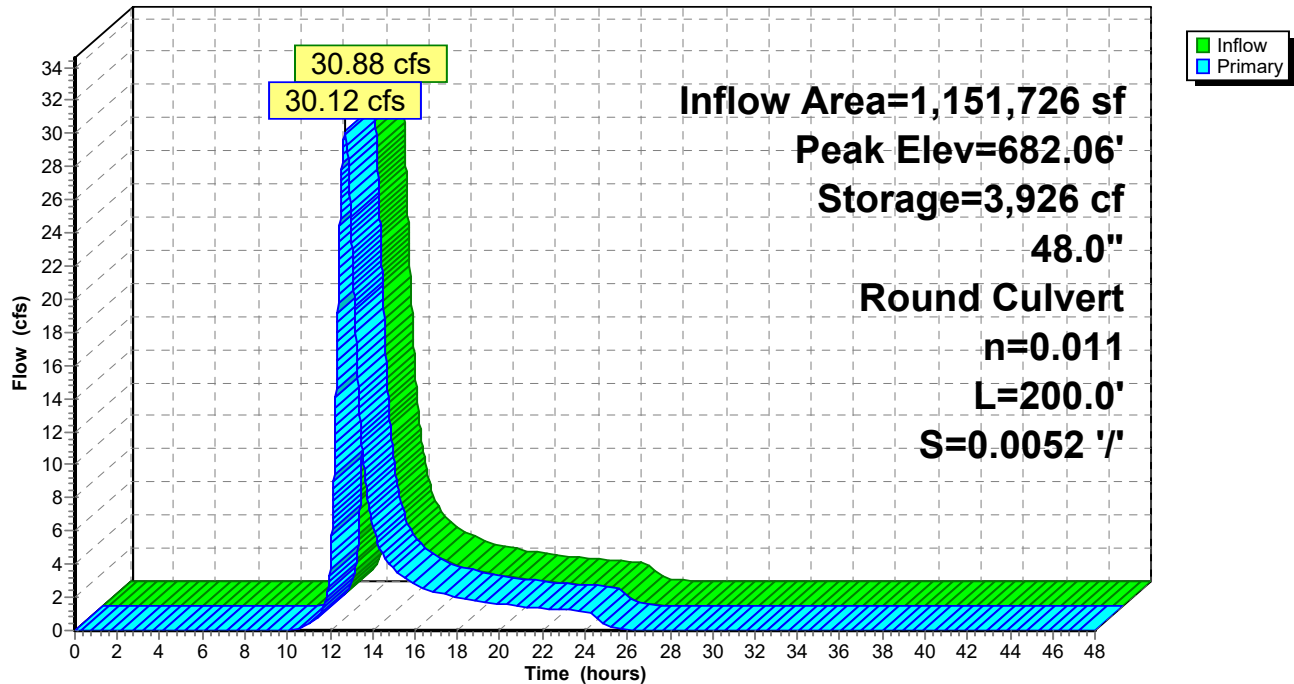
Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=29.97 cfs @ 12.71 hrs HW=682.04' TW=681.15' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 29.97 cfs @ 5.06 fps)

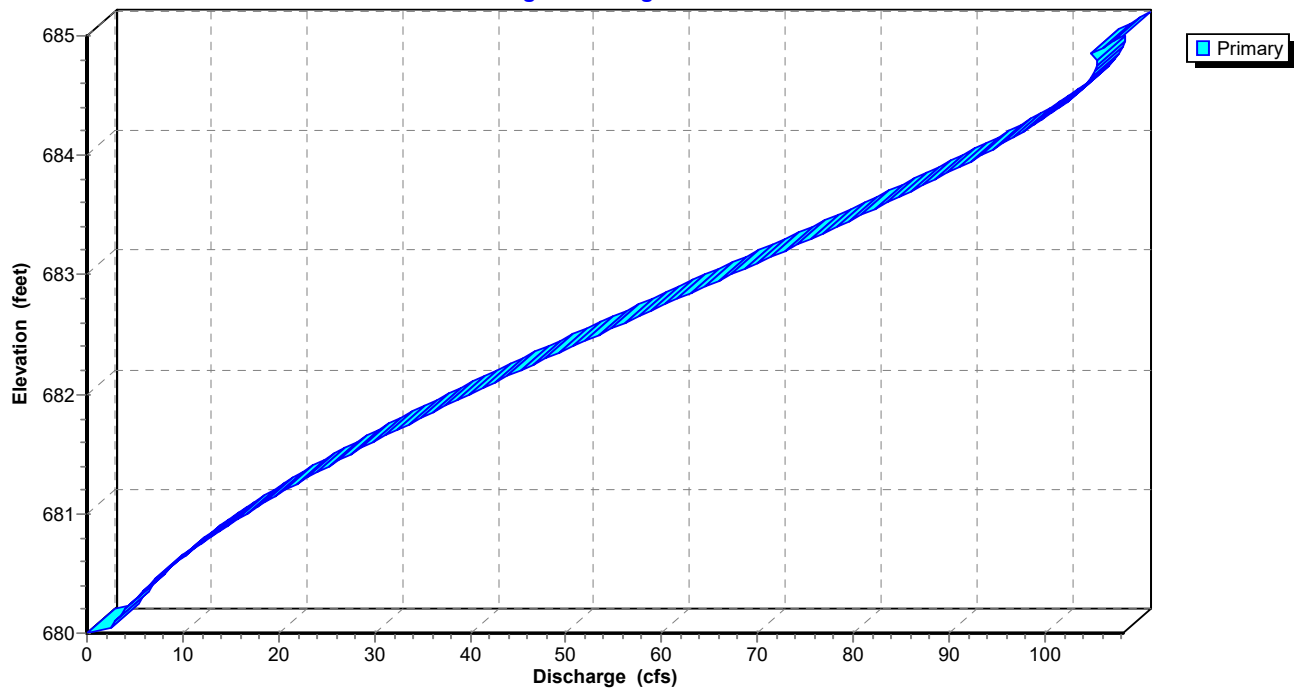


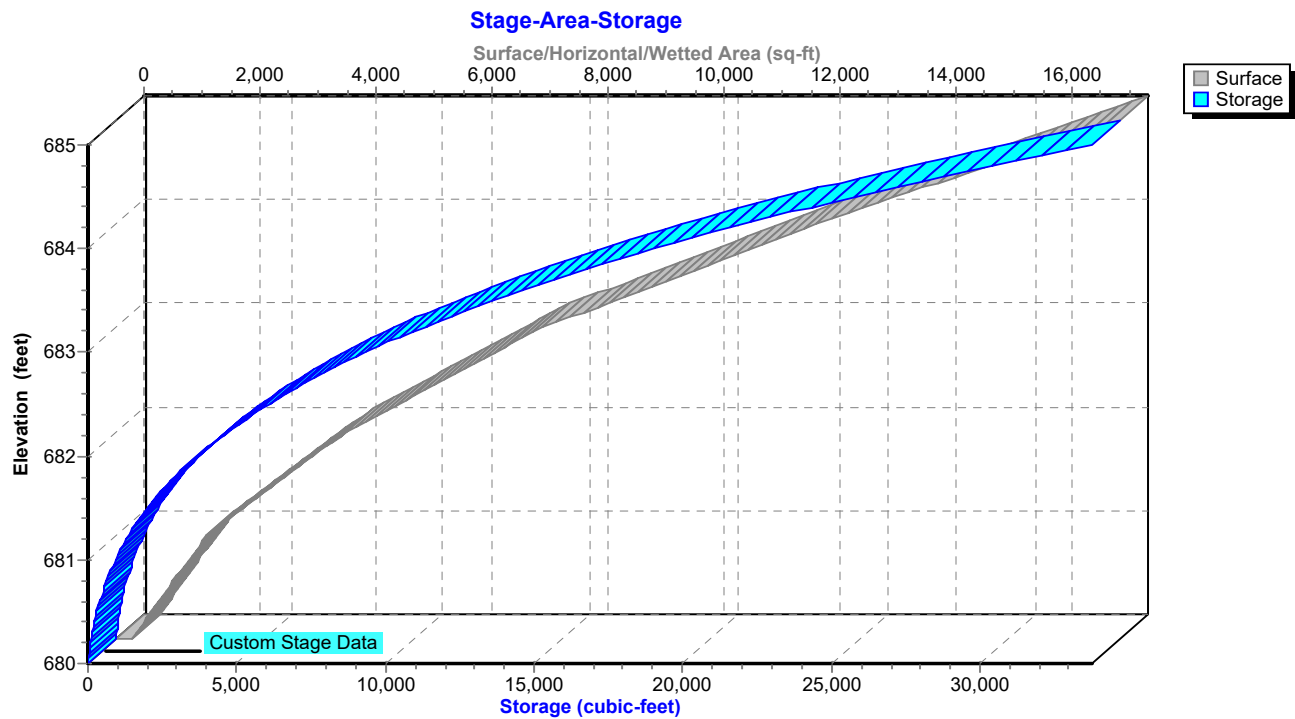
Pond CD4E: Cross Drain 4E

Hydrograph

**Pond CD4E: Cross Drain 4E**

Stage-Discharge



Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 3.13" for 10-yr event
 Inflow = 63.88 cfs @ 12.51 hrs, Volume= 462,785 cf
 Outflow = 30.25 cfs @ 13.13 hrs, Volume= 462,779 cf, Atten= 53%, Lag= 37.6 min
 Primary = 30.25 cfs @ 13.13 hrs, Volume= 462,779 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 680.58' @ 13.15 hrs Surf.Area= 68,507 sf Storage= 159,375 cf

Plug-Flow detention time= 113.8 min calculated for 462,682 cf (100% of inflow)
 Center-of-Mass det. time= 113.9 min (947.1 - 833.2)

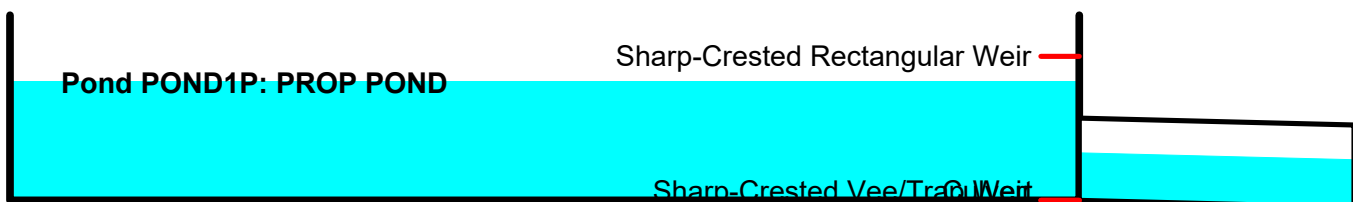
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

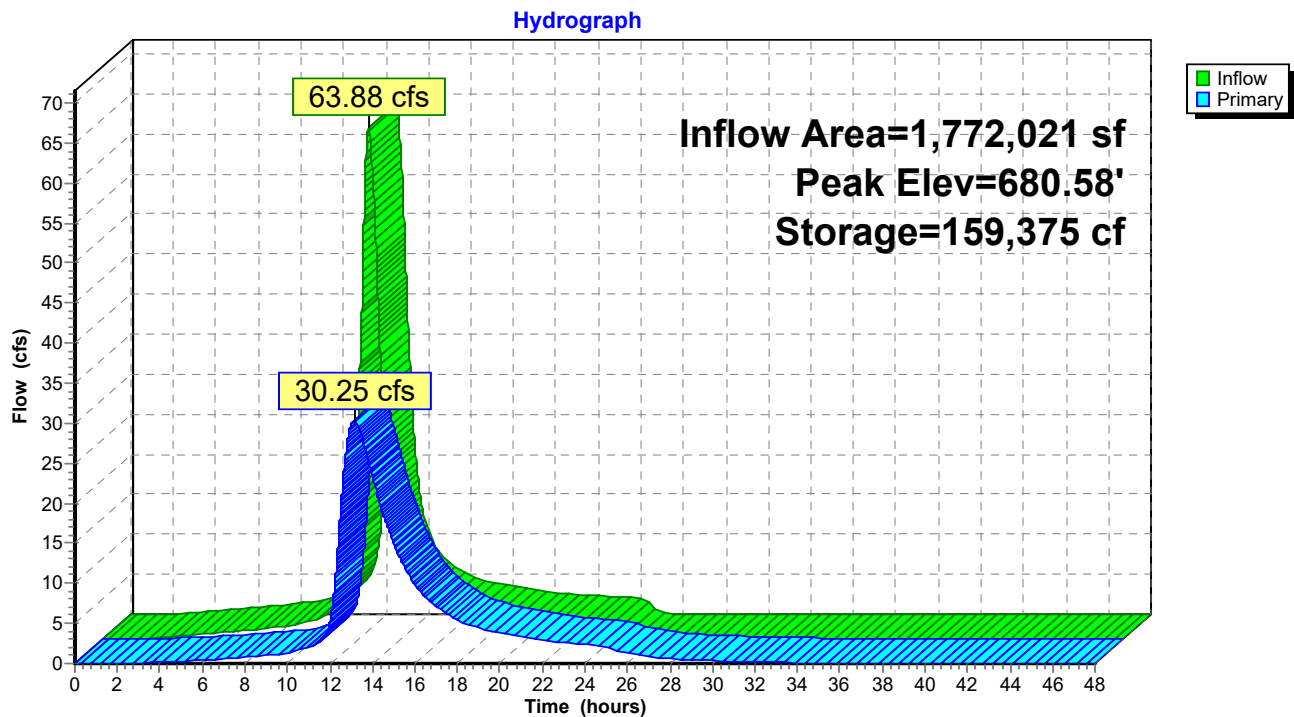
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=30.24 cfs @ 13.13 hrs HW=680.58' TW=677.36' (Dynamic Tailwater)

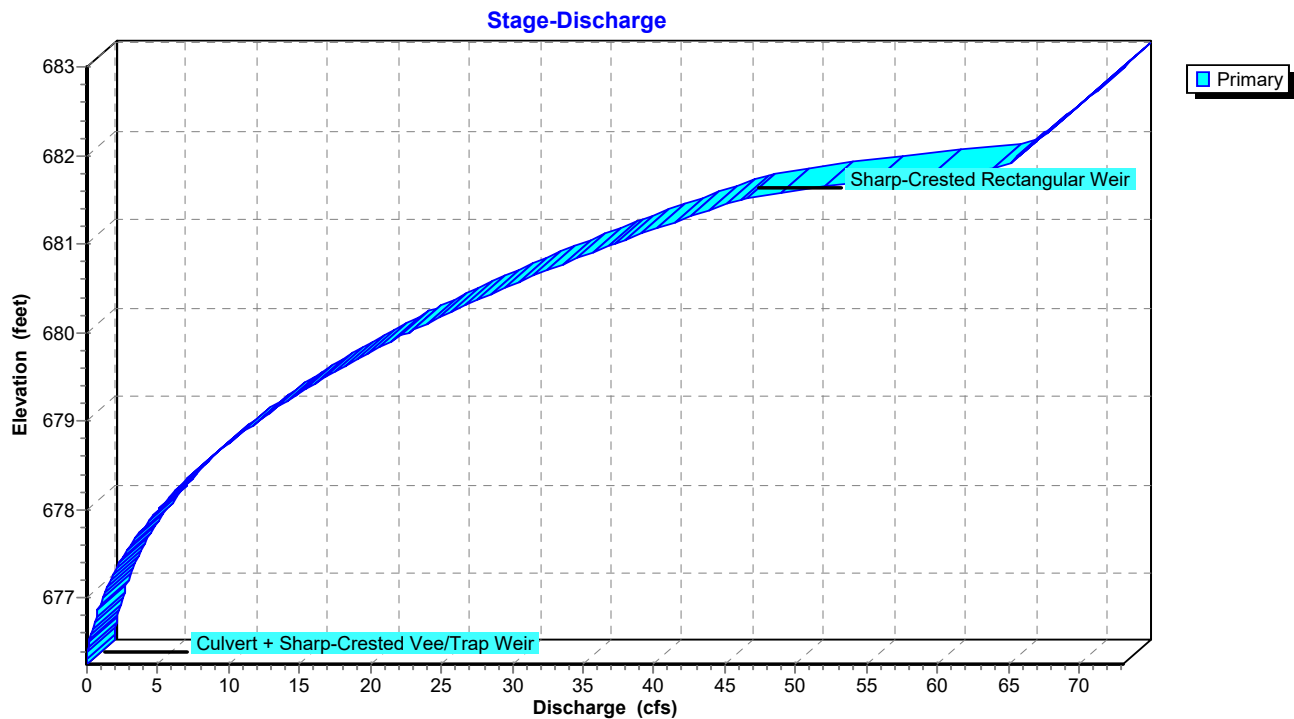
- 1=Culvert (Passes 30.24 cfs of 52.30 cfs potential flow)
- 2=Sharp-Crested Vee/Trap Weir (Weir Controls 30.24 cfs @ 6.00 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

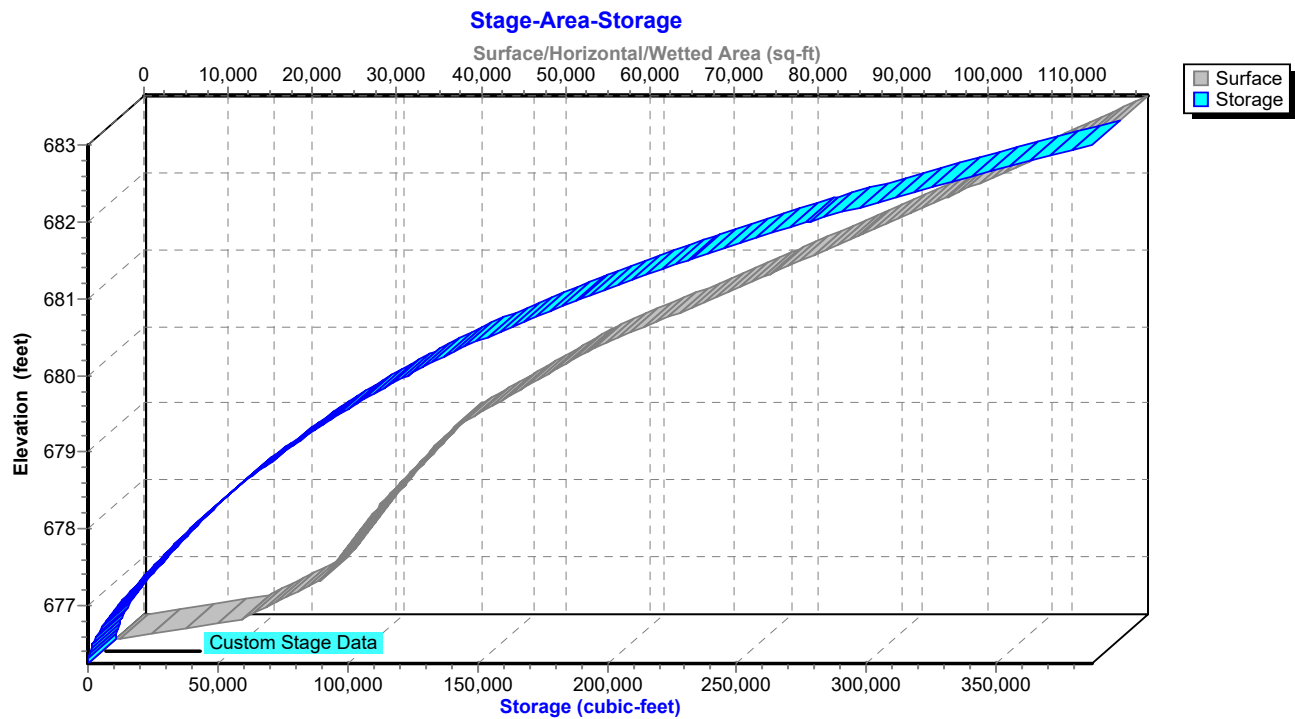


Pond POND1P: PROP POND



Pond POND1P: PROP POND



Pond POND1P: PROP POND

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=3.57"
Flow Length=5,750' Tc=143.0 min CN=75 Runoff=141.35 cfs 1,855,048 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=2.33"
Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=38.11 cfs 294,710 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=3.37"
Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=23.74 cfs 114,841 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=3.08"
Flow Length=2,468' Tc=68.1 min CN=70 Runoff=58.56 cfs 463,594 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=3.57"
Flow Length=5,750' Tc=143.0 min CN=75 Runoff=141.35 cfs 1,855,048 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=2.33"
Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=38.11 cfs 294,710 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=3.98"
Tc=5.0 min CN=79 Runoff=26.19 cfs 68,851 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=2.88"
Flow Length=945' Tc=40.9 min CN=68 Runoff=9.57 cfs 57,904 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=5.87"
Flow Length=996' Tc=33.8 min CN=96 Runoff=44.12 cfs 262,551 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=5.87"
Tc=5.0 min CN=96 Runoff=5.00 cfs 14,480 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=5.87"
Tc=5.0 min CN=96 Runoff=9.04 cfs 26,191 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=2.51"
Flow Length=640' Tc=31.5 min CN=64 Runoff=12.20 cfs 66,118 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=2.98"
Flow Length=1,313' Tc=46.8 min CN=69 Runoff=32.23 cfs 207,516 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.66' Max Vel=2.55 fps Inflow=5.00 cfs 14,480 cf
n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=4.71 cfs 14,480 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.81' Max Vel=3.43 fps Inflow=9.04 cfs 26,191 cf
n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=8.67 cfs 26,191 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=0.86' Max Vel=1.78 fps Inflow=12.20 cfs 66,118 cf
n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=10.11 cfs 66,118 cf

Reach OF4: Primary Stream for Avg. Flow Depth=2.84' Max Vel=4.48 fps Inflow=191.93 cfs 2,728,193 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=191.64 cfs 2,728,193 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=2.84' Max Vel=4.48 fps Inflow=192.43 cfs 2,853,359 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=192.23 cfs 2,853,357 cf

Pond CD2: Cross Drain Peak Elev=683.44' Inflow=38.11 cfs 294,710 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=38.11 cfs 294,710 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.81' Inflow=4.71 cfs 14,480 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=4.71 cfs 14,480 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=681.80' Inflow=41.96 cfs 314,301 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=41.96 cfs 314,301 cf

Pond CD4E: Cross Drain 4E Peak Elev=682.66' Storage=7,049 cf Inflow=42.33 cfs 273,634 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=40.67 cfs 273,631 cf

Pond POND1P: PROP POND Peak Elev=681.13' Storage=200,001 cf Inflow=80.52 cfs 576,852 cf
Outflow=38.67 cfs 576,845 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 5,581,562 cf Average Runoff Depth = 3.36"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 141.35 cfs @ 13.83 hrs, Volume= 1,855,048 cf, Depth= 3.57"

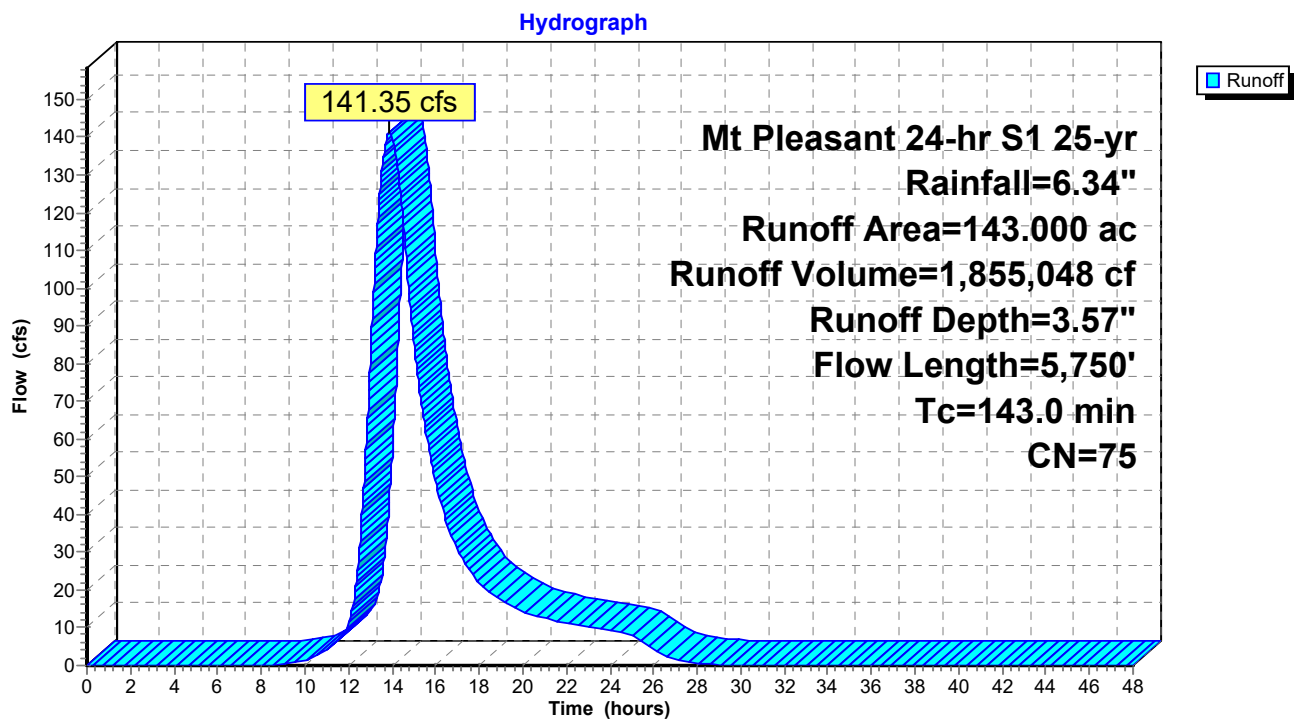
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

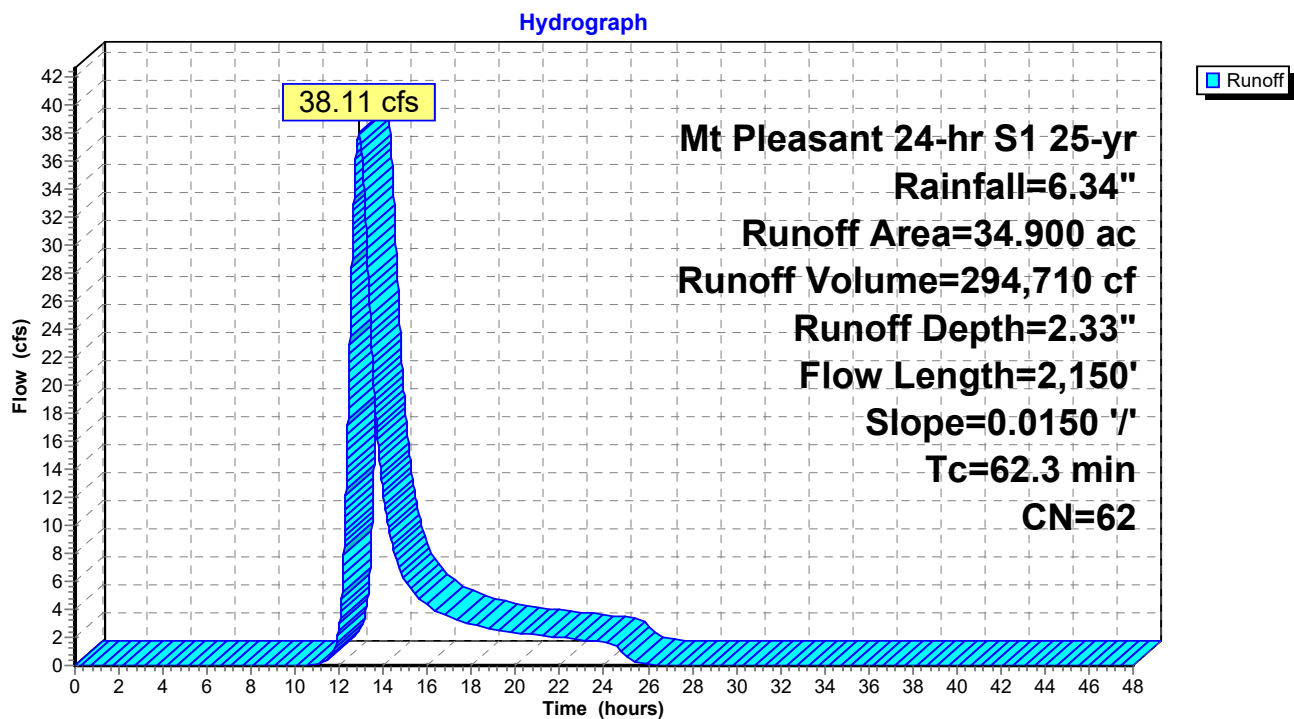
Runoff = 38.11 cfs @ 12.88 hrs, Volume= 294,710 cf, Depth= 2.33"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 23.74 cfs @ 12.33 hrs, Volume= 114,841 cf, Depth= 3.37"

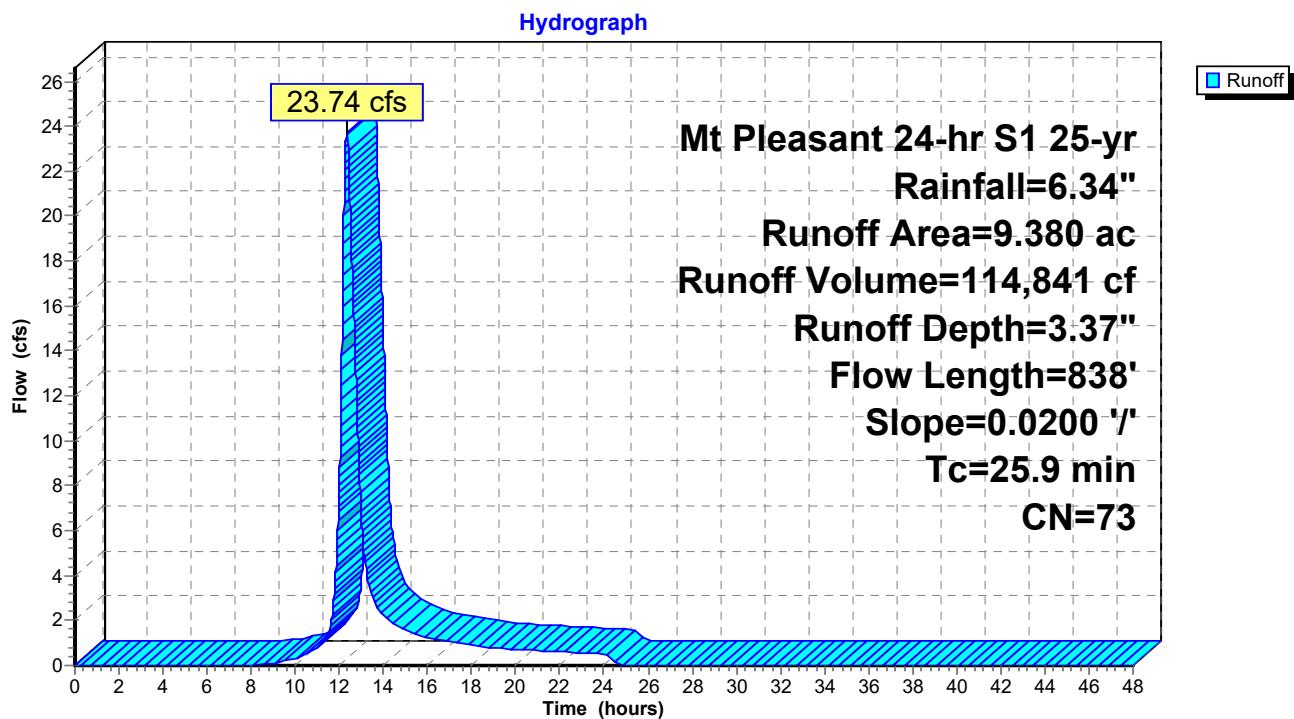
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Runoff = 58.56 cfs @ 12.94 hrs, Volume= 463,594 cf, Depth= 3.08"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

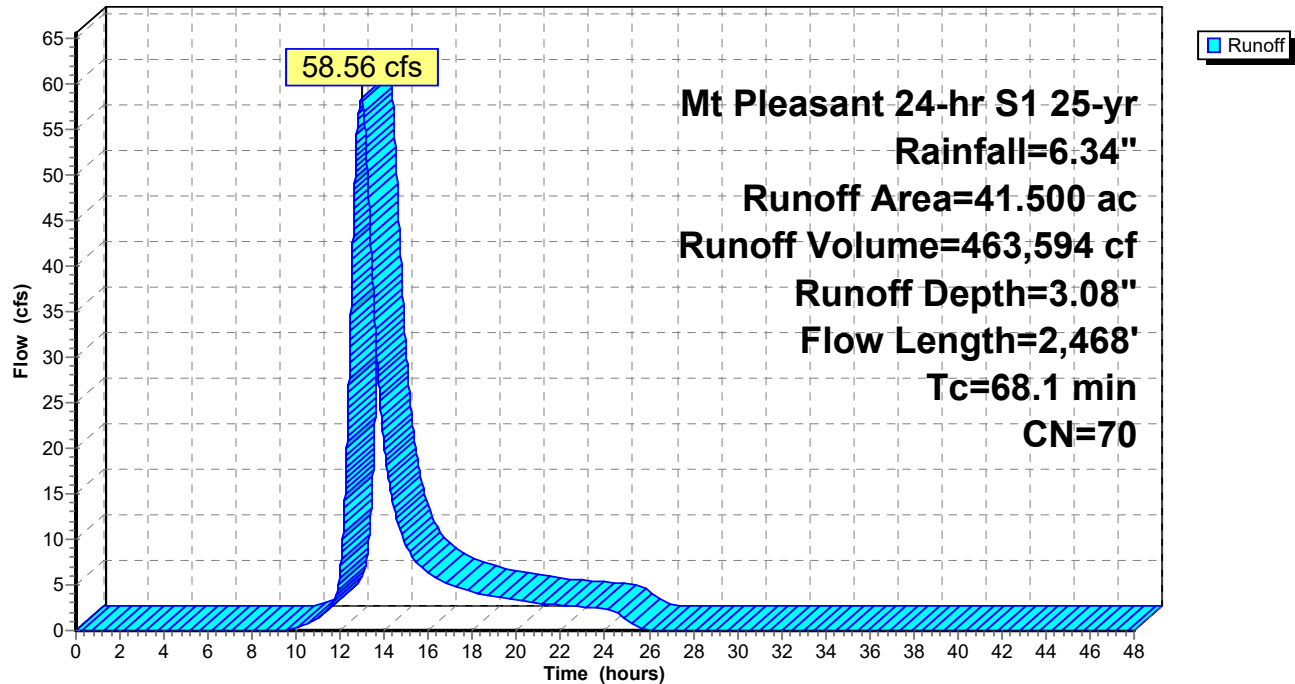
Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA1P: BASIN 1 PROPOSED

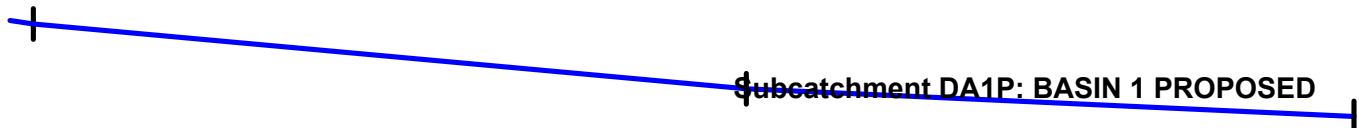
Runoff = 141.35 cfs @ 13.83 hrs, Volume= 1,855,048 cf, Depth= 3.57"

Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

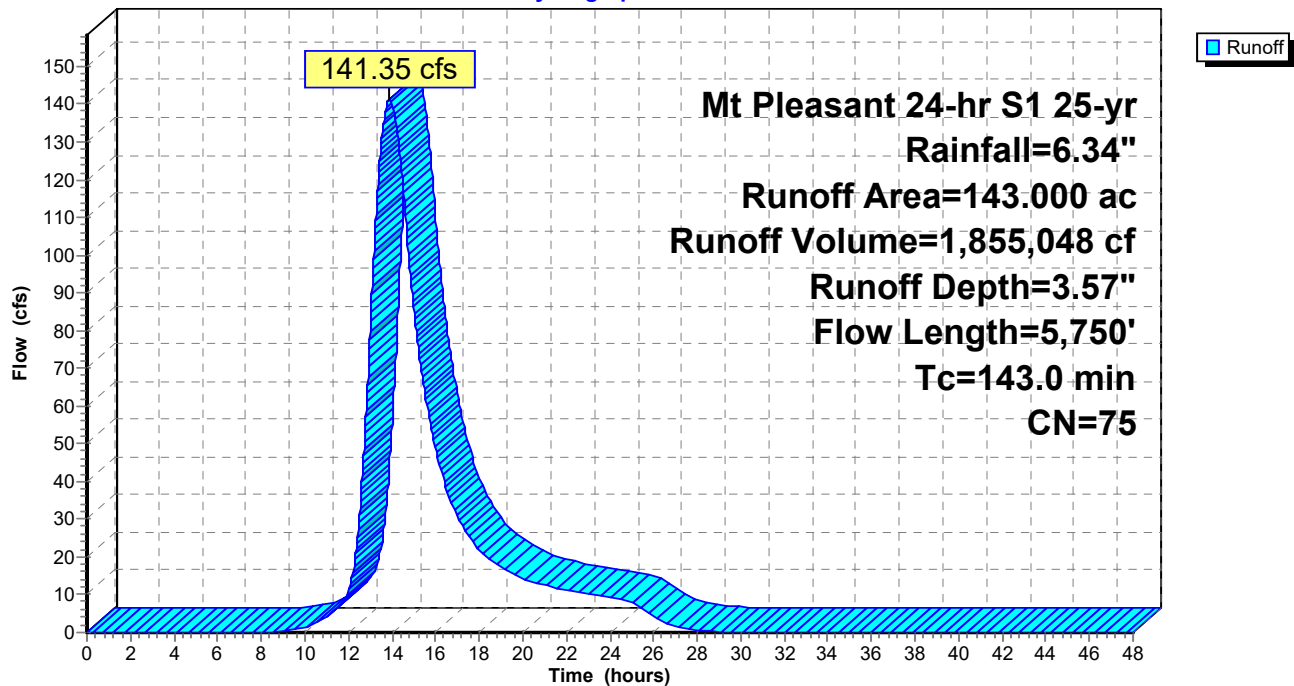
Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

Hydrograph



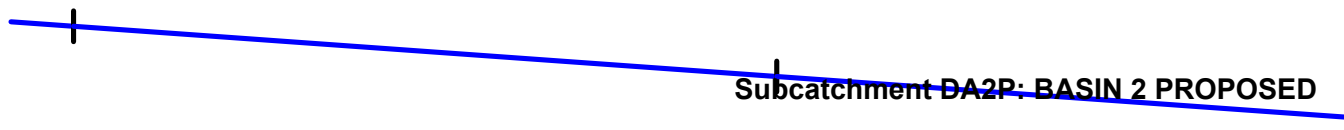
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 38.11 cfs @ 12.88 hrs, Volume= 294,710 cf, Depth= 2.33"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

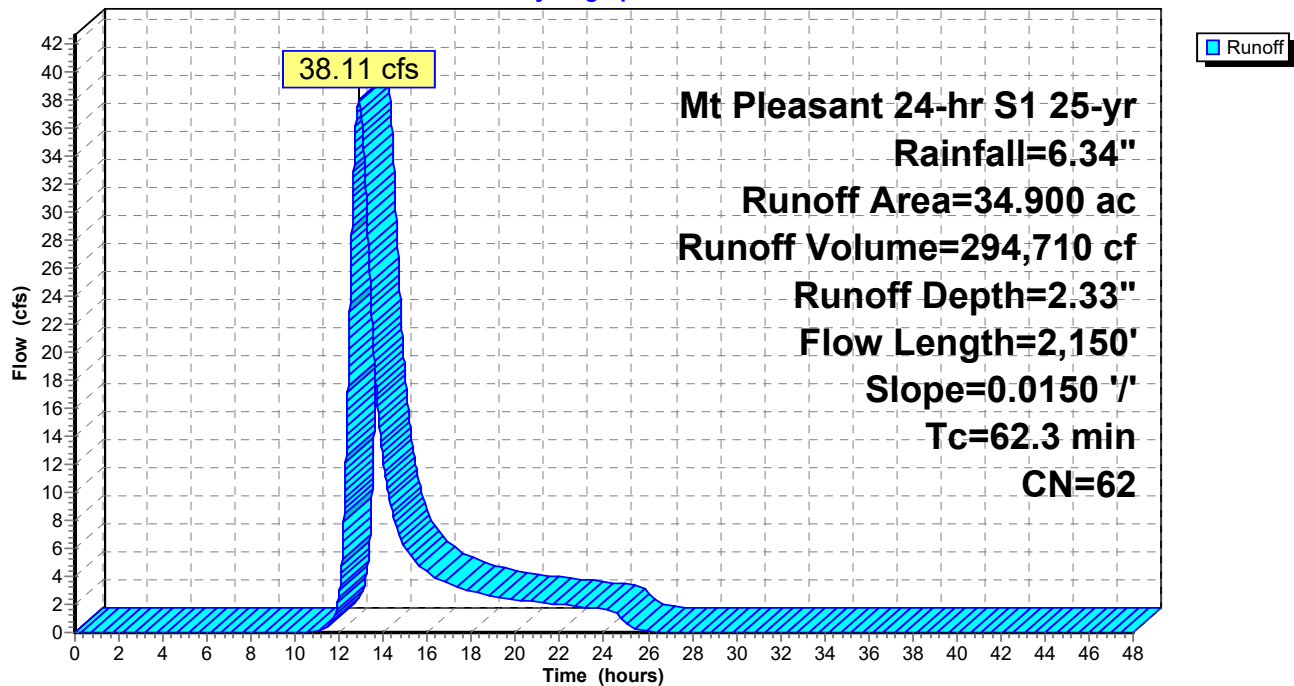
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 26.19 cfs @ 12.03 hrs, Volume= 68,851 cf, Depth= 3.98"

Routed to Reach OF4P : Primary Stream for Outfalls

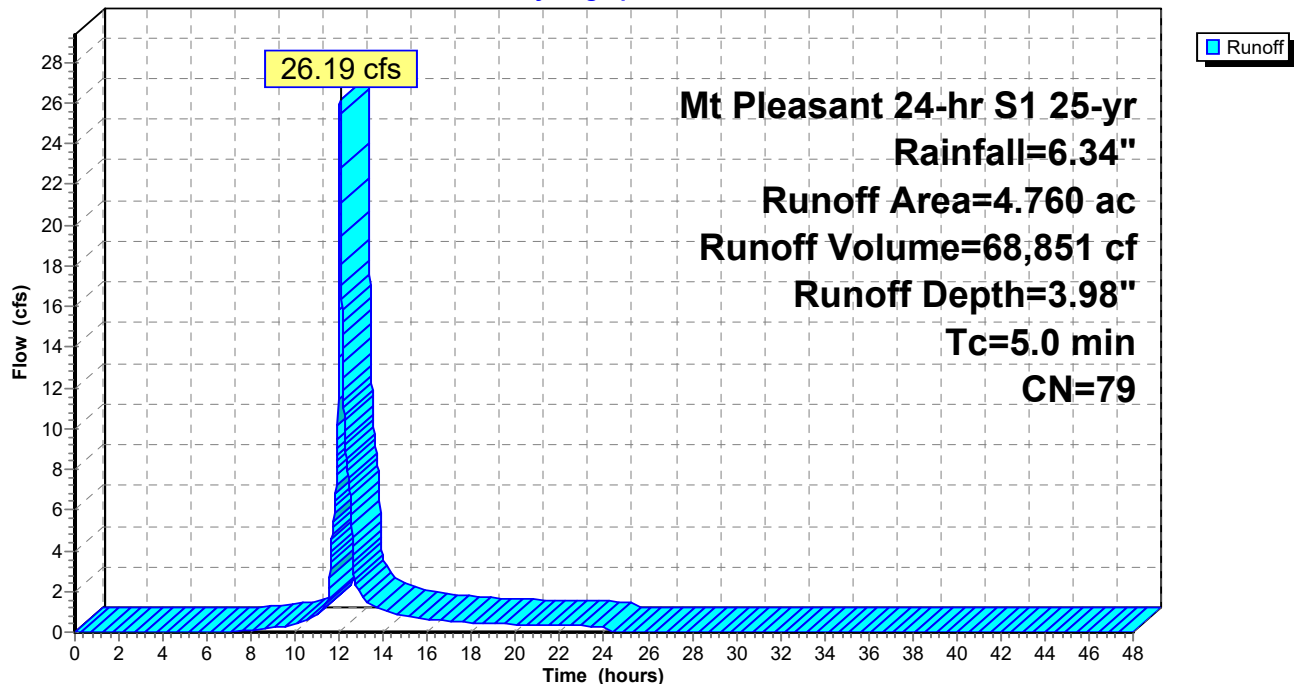
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

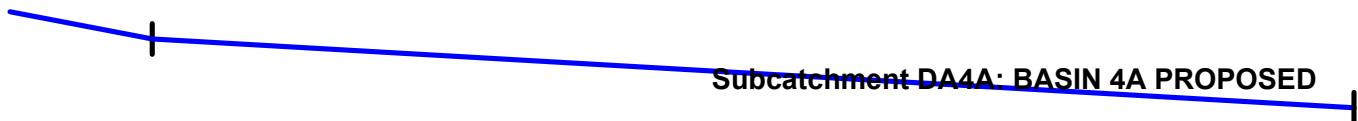
Runoff = 9.57 cfs @ 12.58 hrs, Volume= 57,904 cf, Depth= 2.88"

Routed to Reach OF4P : Primary Stream for Outfalls

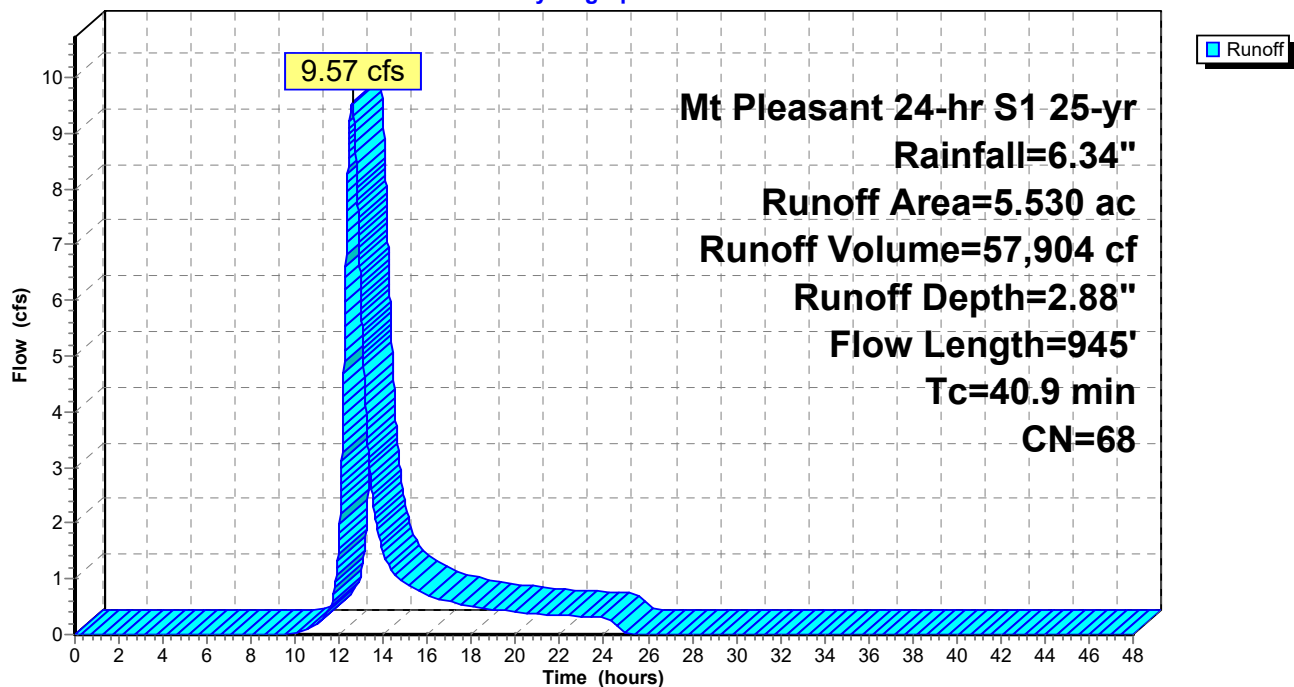
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



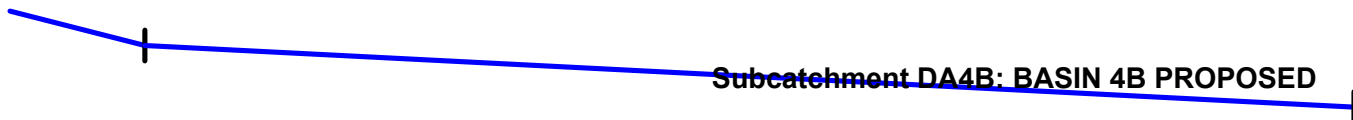
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

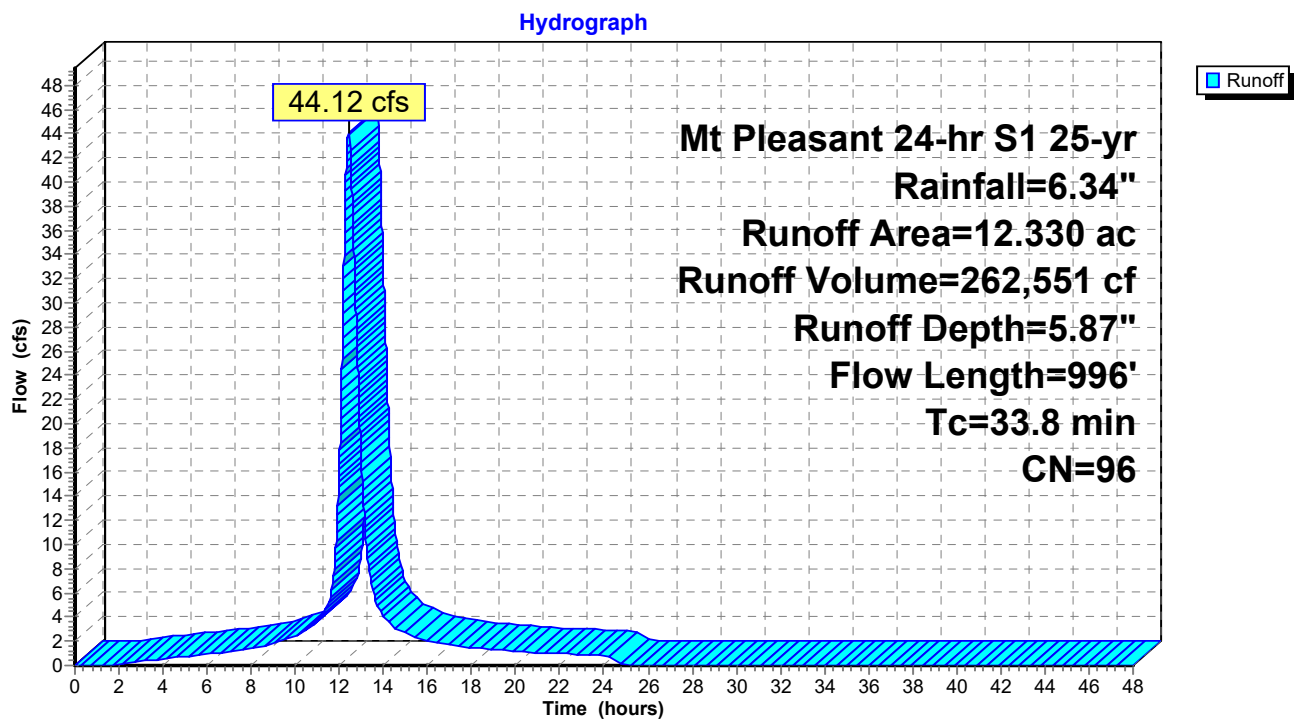
Runoff = 44.12 cfs @ 12.40 hrs, Volume= 262,551 cf, Depth= 5.87"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 5.00 cfs @ 12.03 hrs, Volume= 14,480 cf, Depth= 5.87"
 Routed to Reach D4C : Ditch 4C

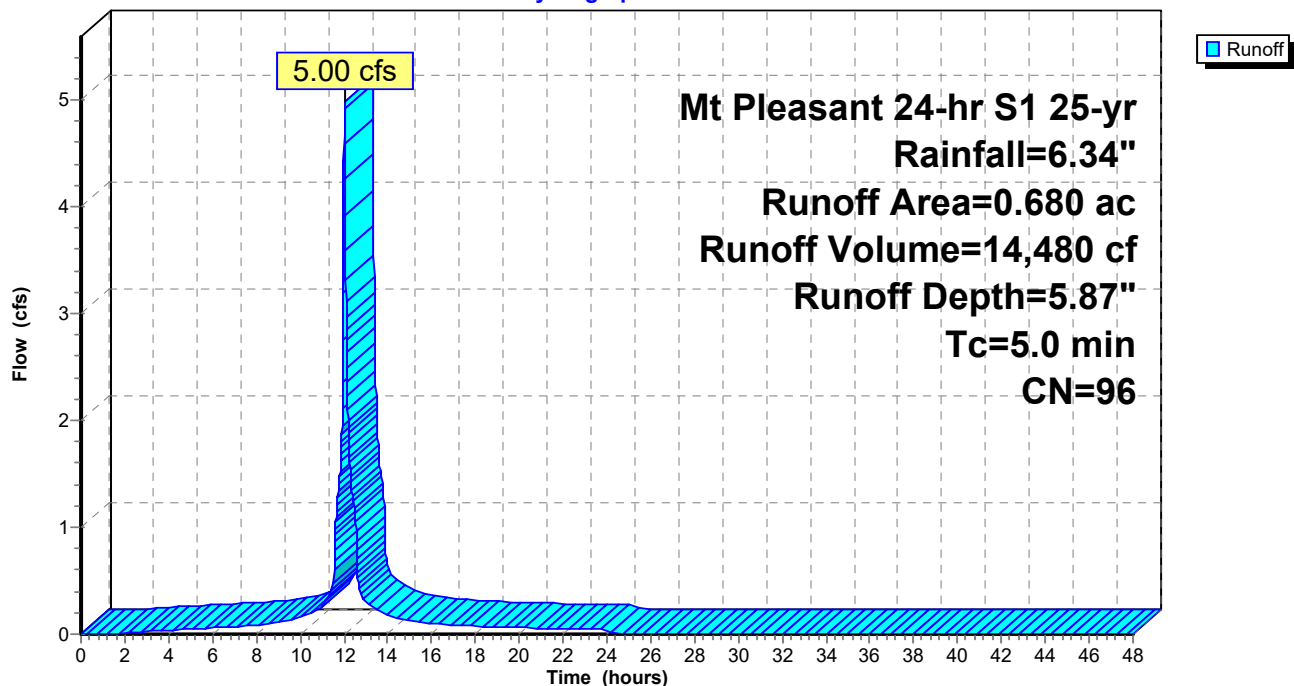
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 9.04 cfs @ 12.03 hrs, Volume= 26,191 cf, Depth= 5.87"
 Routed to Reach D4D : Ditch 4D

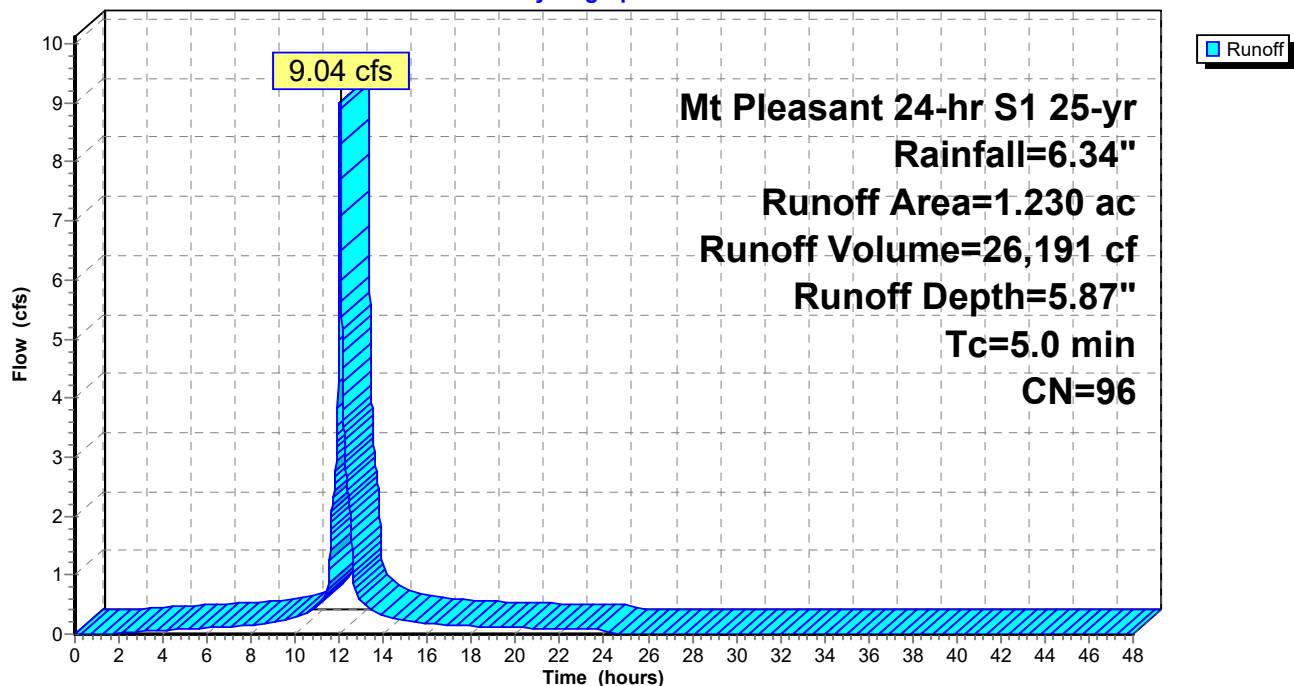
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



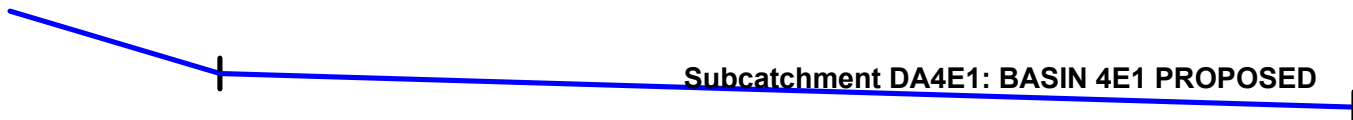
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

Runoff = 12.20 cfs @ 12.43 hrs, Volume= 66,118 cf, Depth= 2.51"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

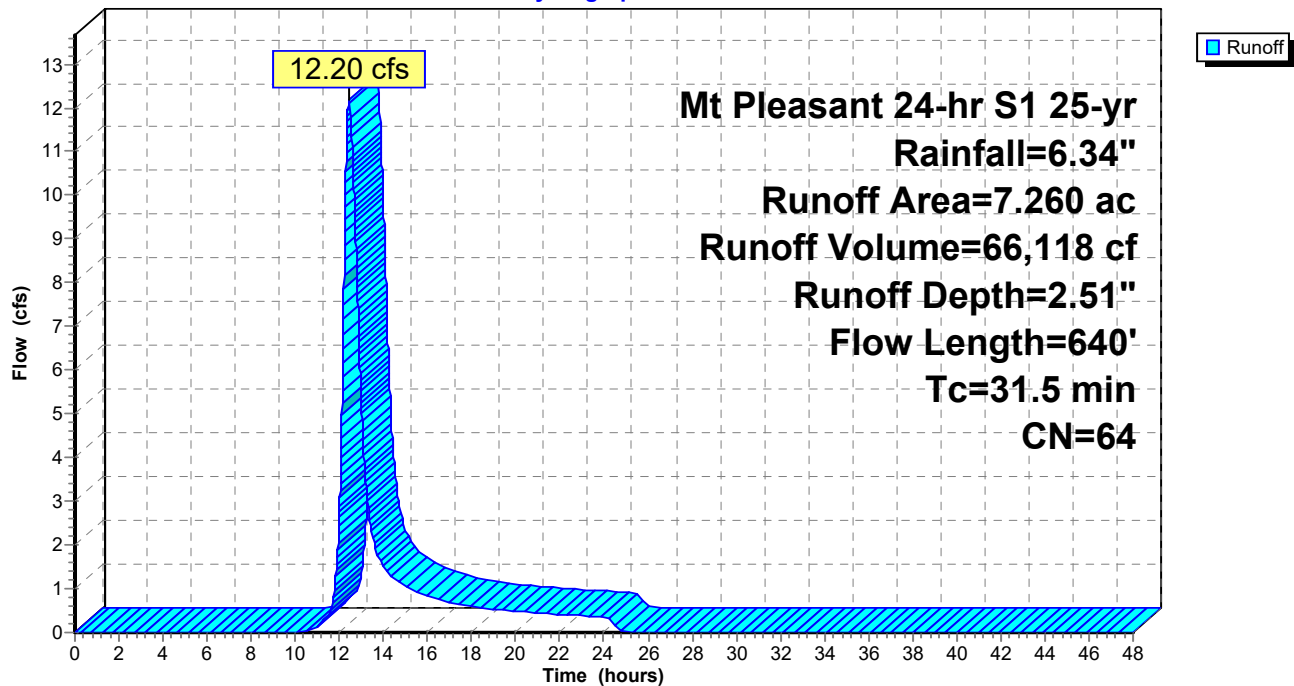
Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

Hydrograph



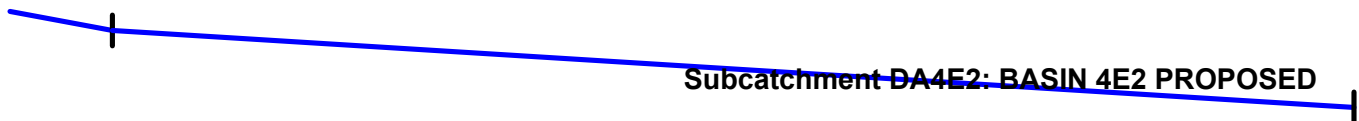
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

Runoff = 32.23 cfs @ 12.64 hrs, Volume= 207,516 cf, Depth= 2.98"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 25-yr Rainfall=6.34"

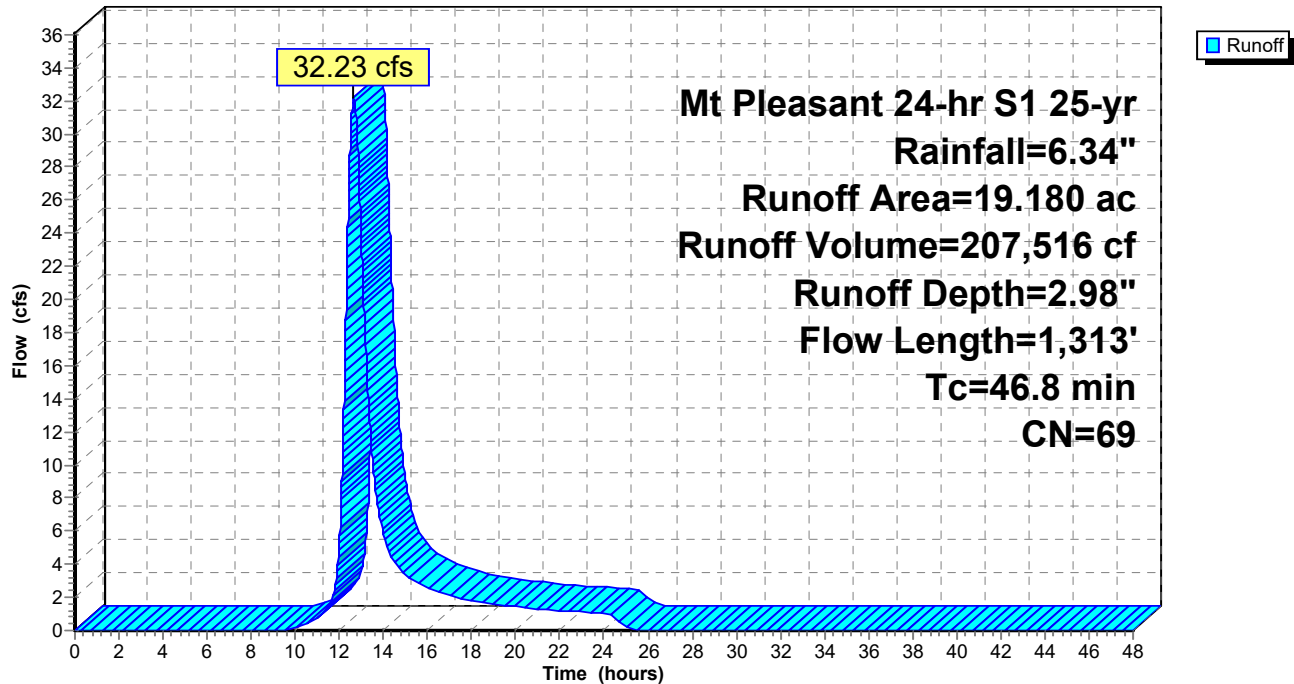
Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

Hydrograph



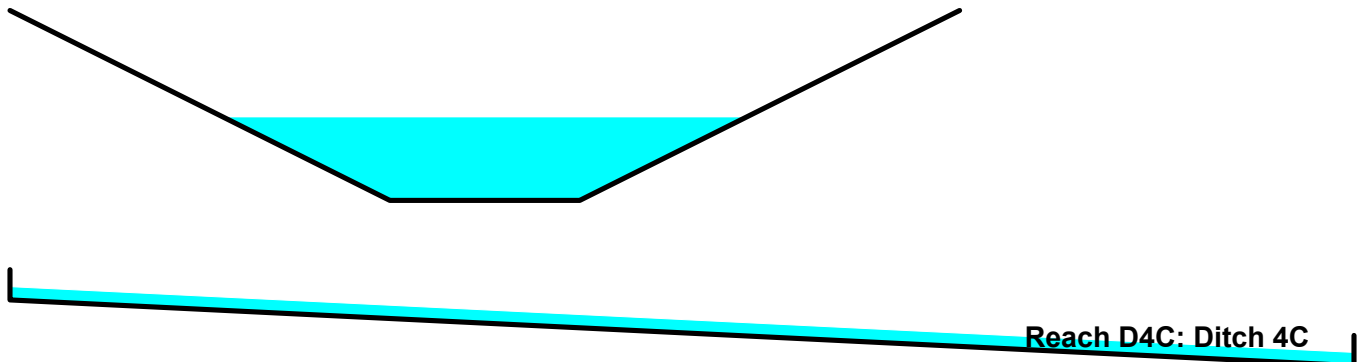
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 5.87" for 25-yr event
Inflow = 5.00 cfs @ 12.03 hrs, Volume= 14,480 cf
Outflow = 4.71 cfs @ 12.05 hrs, Volume= 14,480 cf, Atten= 6%, Lag= 1.2 min
Routed to Pond CD4C : Cross Drain 4C

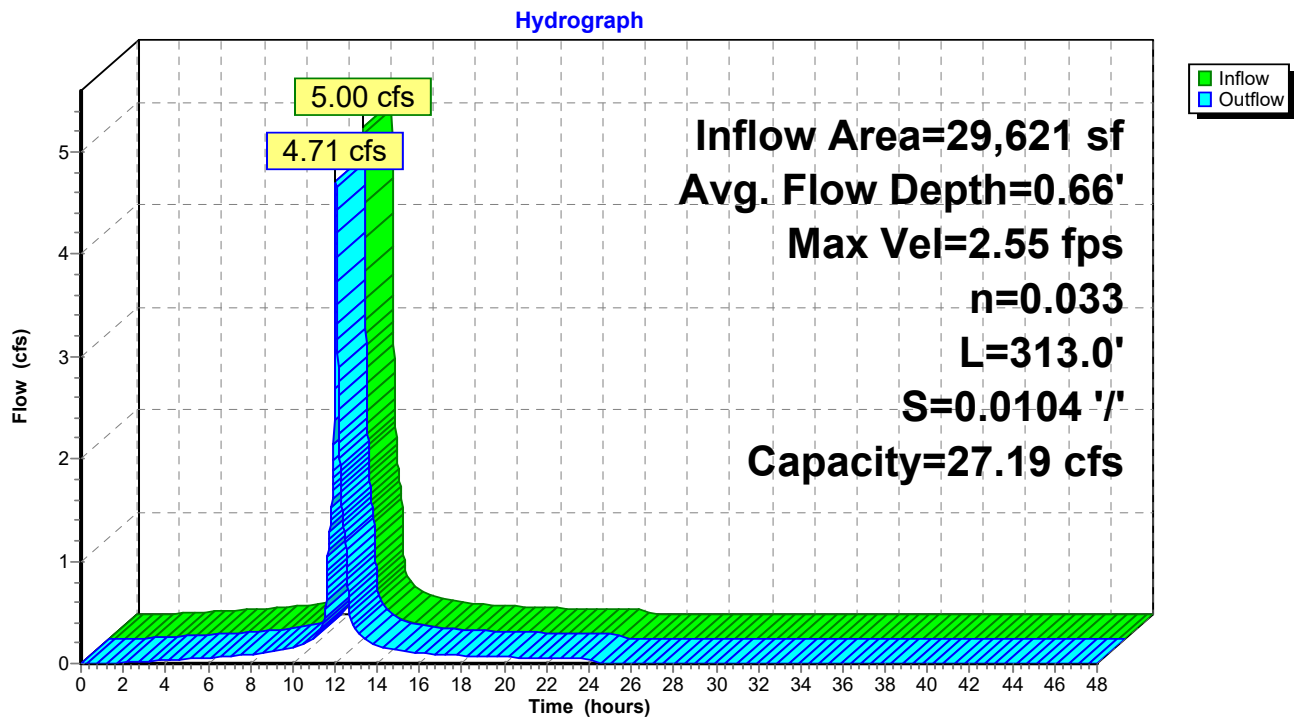
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 7.2 min

Peak Storage= 576 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.66' , Surface Width= 4.12'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

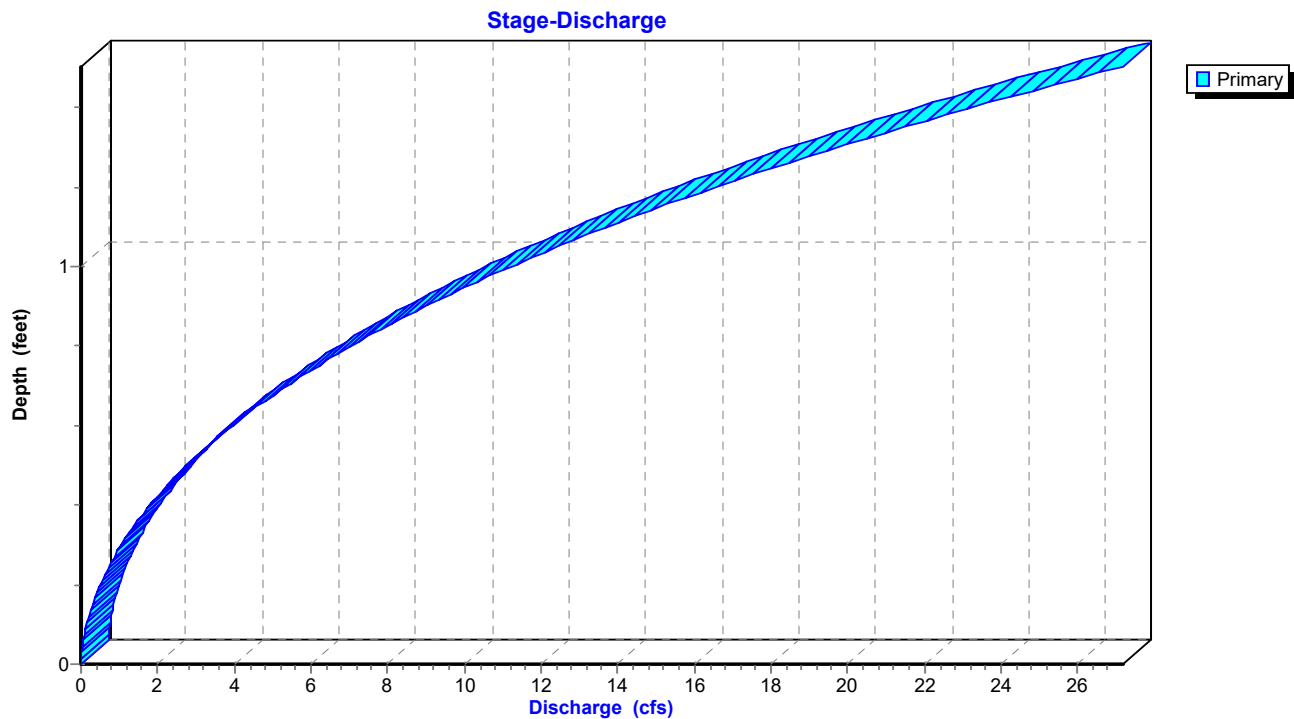
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



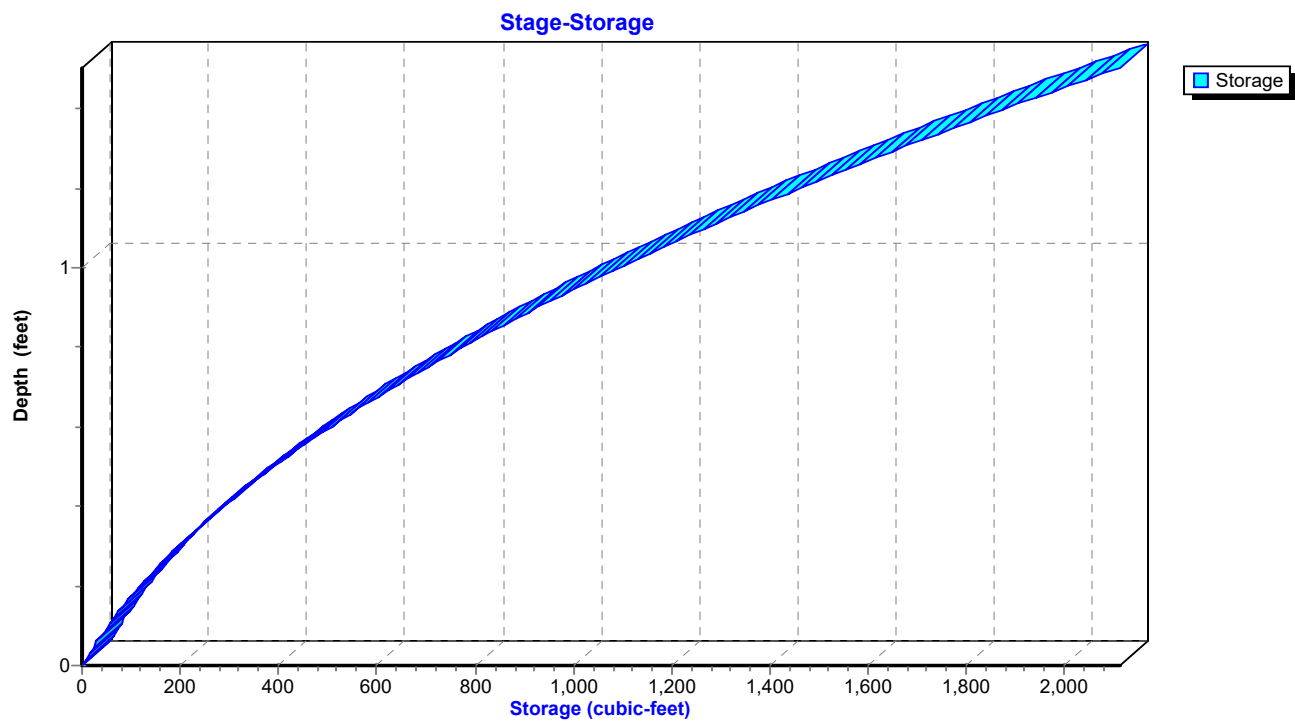
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



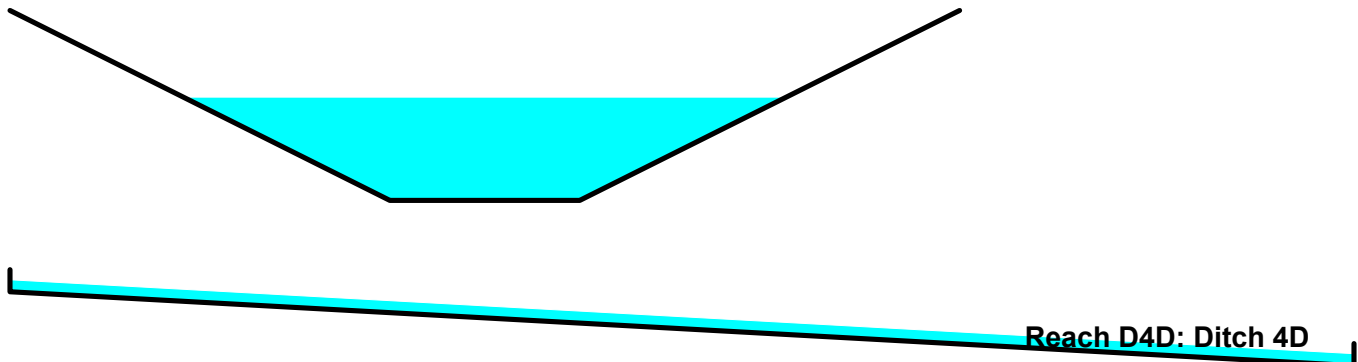
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 5.87" for 25-yr event
Inflow = 9.04 cfs @ 12.03 hrs, Volume= 26,191 cf
Outflow = 8.67 cfs @ 12.04 hrs, Volume= 26,191 cf, Atten= 4%, Lag= 1.0 min
Routed to Pond CD4DCE : Cross Drain 4DCE

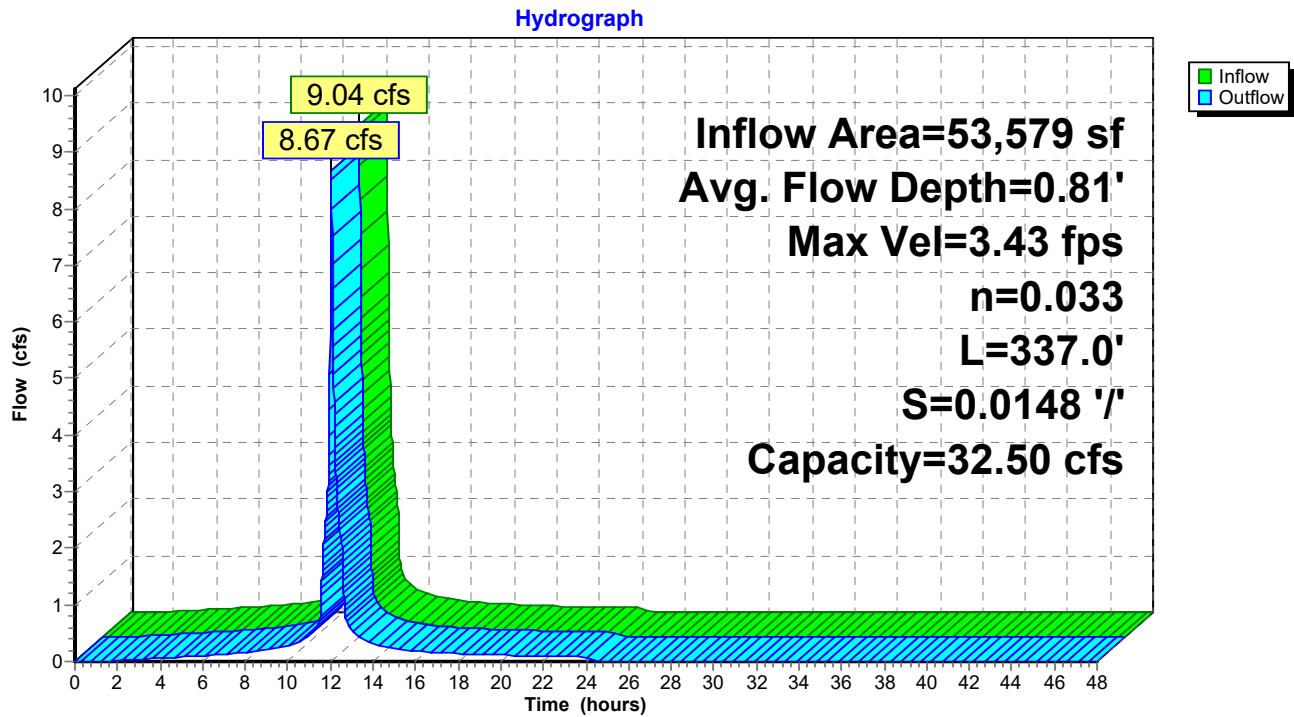
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.43 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 5.6 min

Peak Storage= 853 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.81' , Surface Width= 4.74'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

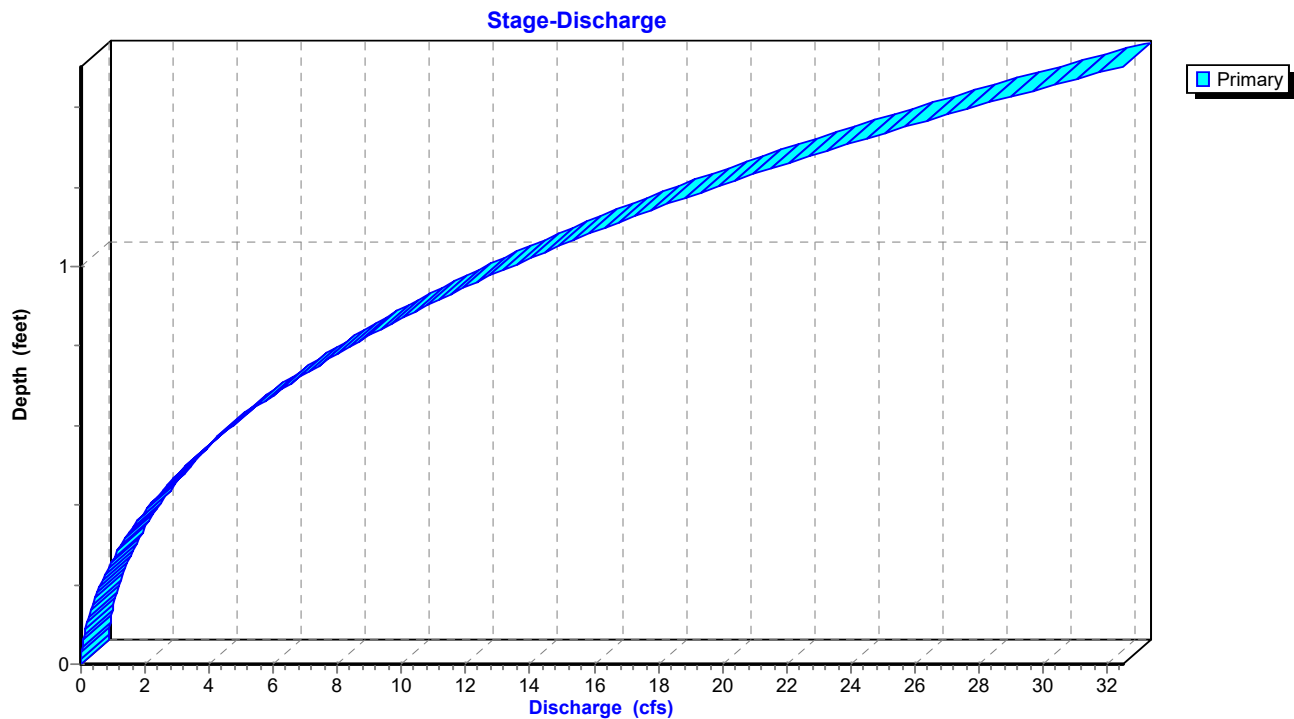
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



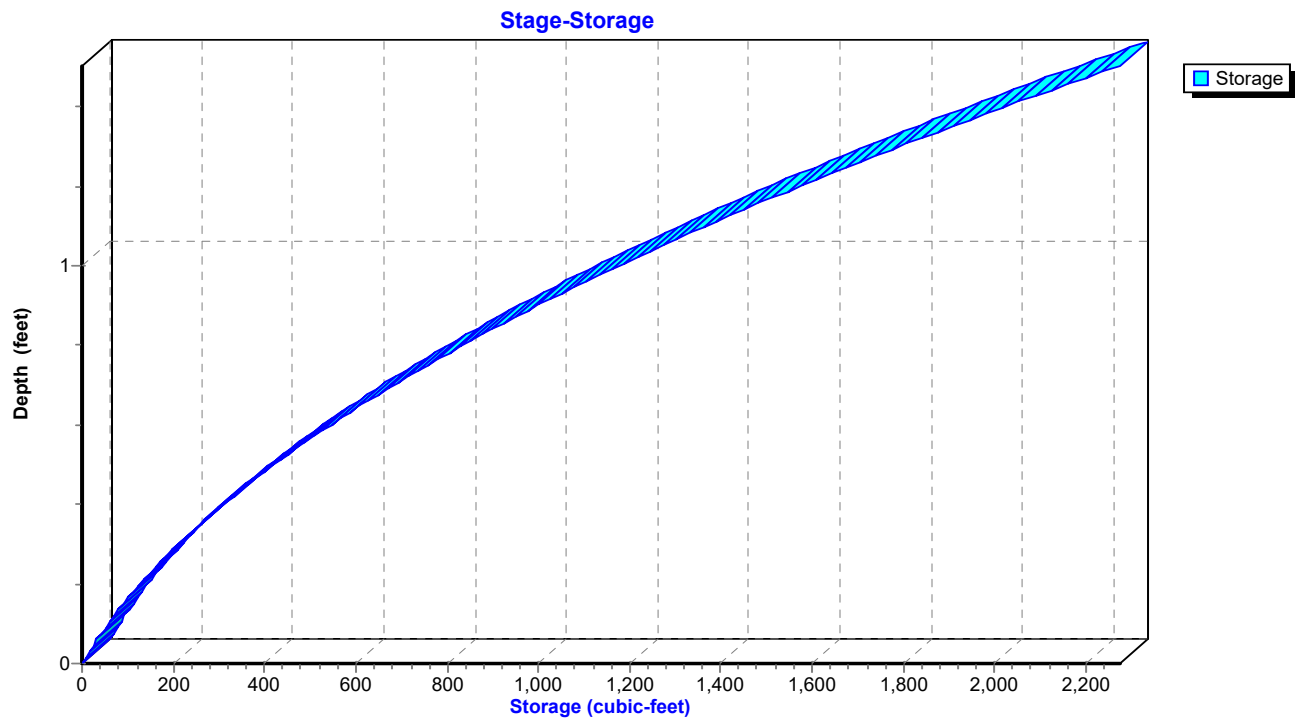
Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



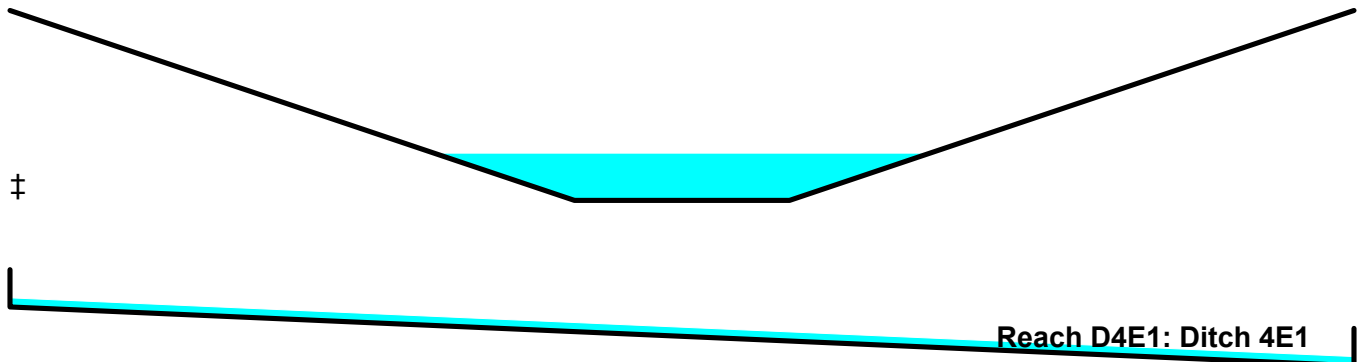
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 2.51" for 25-yr event
Inflow = 12.20 cfs @ 12.43 hrs, Volume= 66,118 cf
Outflow = 10.11 cfs @ 12.65 hrs, Volume= 66,118 cf, Atten= 17%, Lag= 13.4 min
Routed to Pond CD4E : Cross Drain 4E

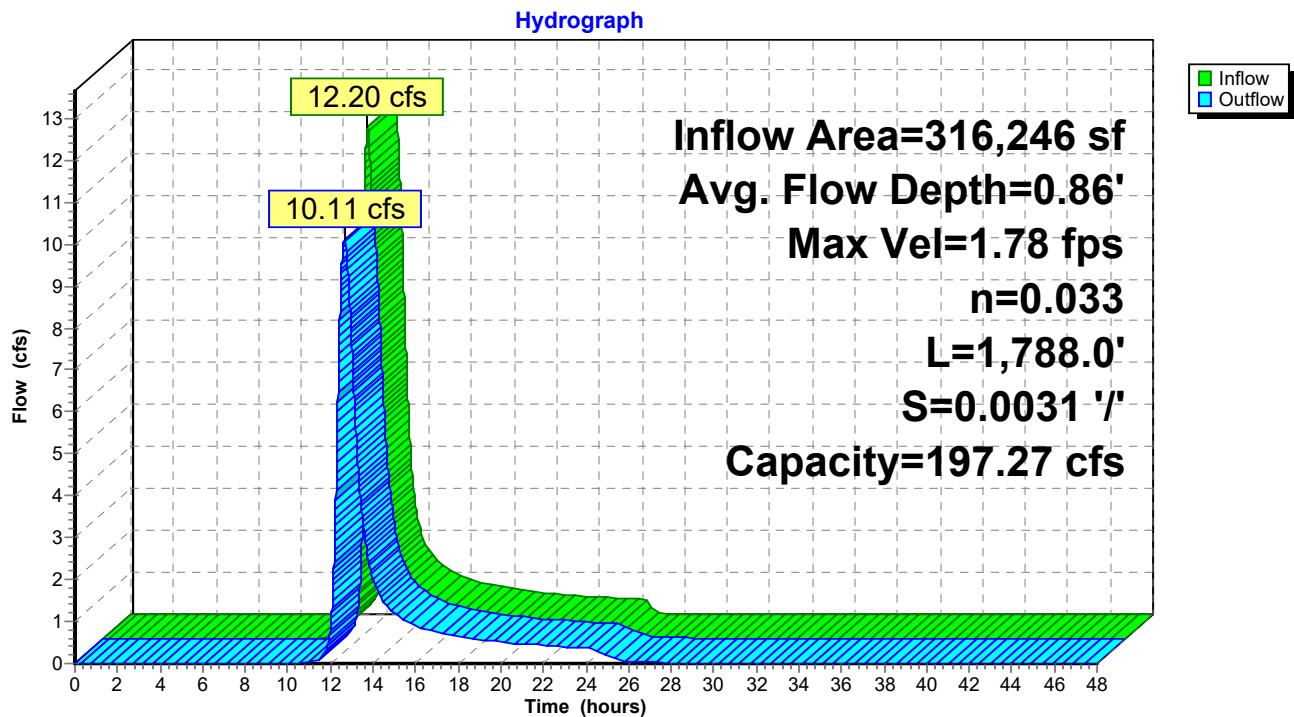
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.78 fps, Min. Travel Time= 16.8 min
Avg. Velocity= 0.52 fps, Avg. Travel Time= 56.8 min

Peak Storage= 10,160 cf @ 12.65 hrs
Average Depth at Peak Storage= 0.86' , Surface Width= 9.17'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

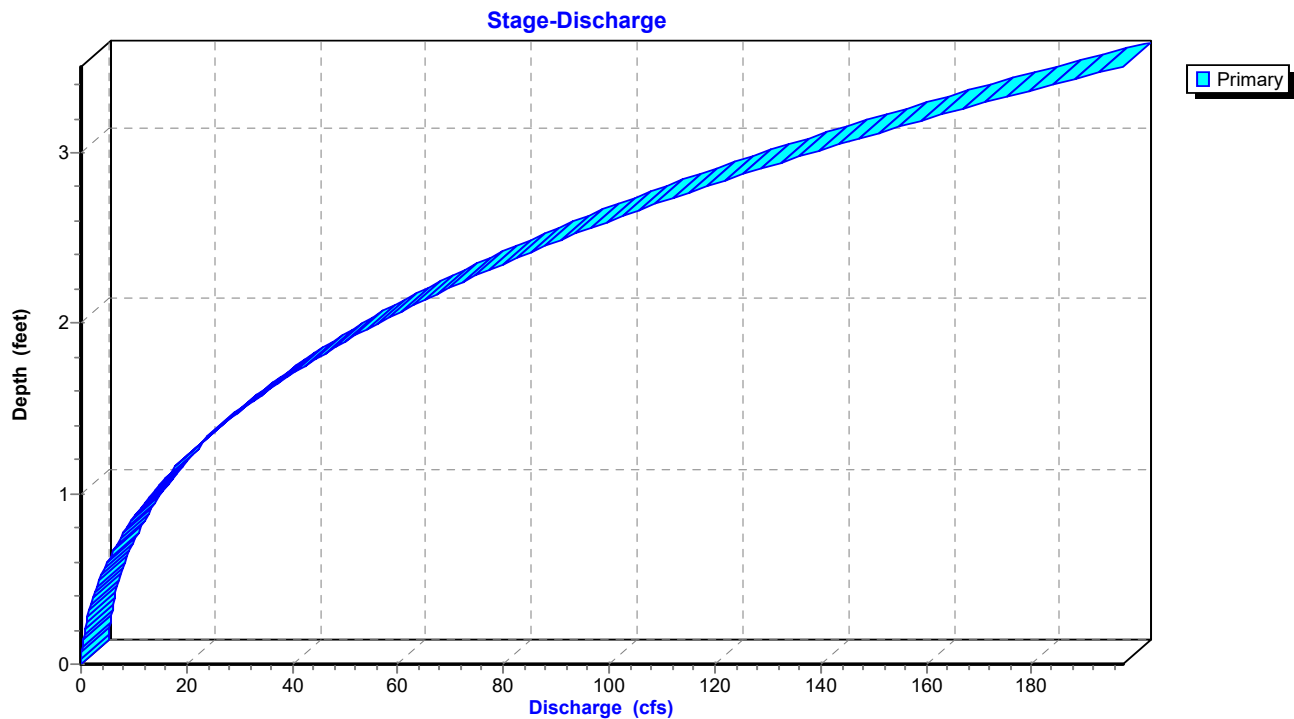
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 '/' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 '/'
Inlet Invert= 685.00', Outlet Invert= 679.50'



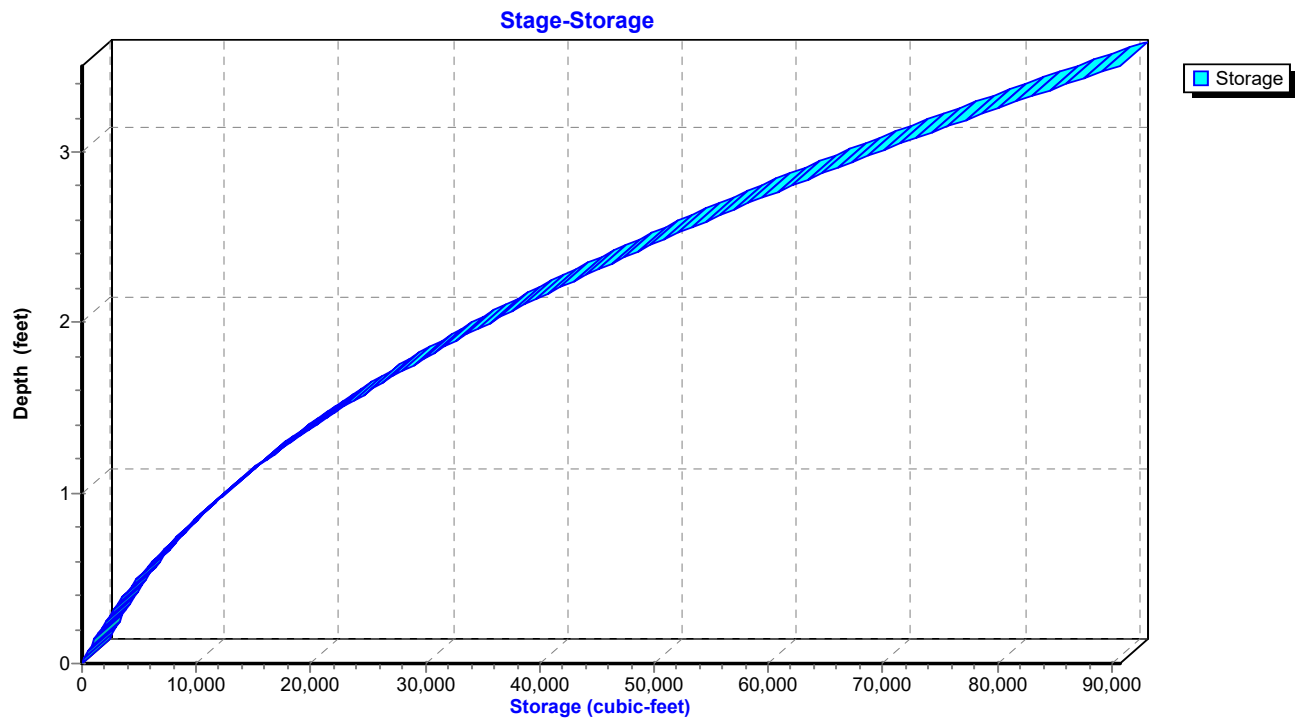
Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



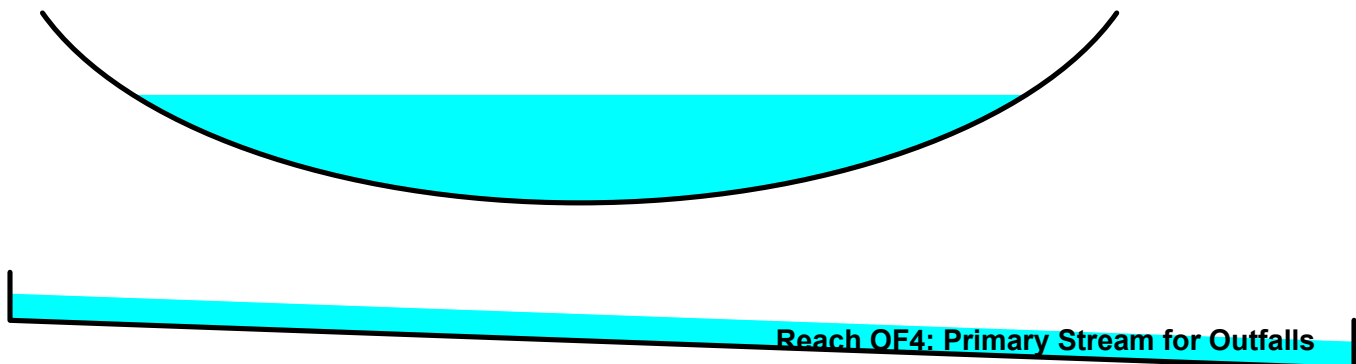
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 3.29" for 25-yr event
Inflow = 191.93 cfs @ 13.35 hrs, Volume= 2,728,193 cf
Outflow = 191.64 cfs @ 13.38 hrs, Volume= 2,728,193 cf, Atten= 0%, Lag= 1.8 min

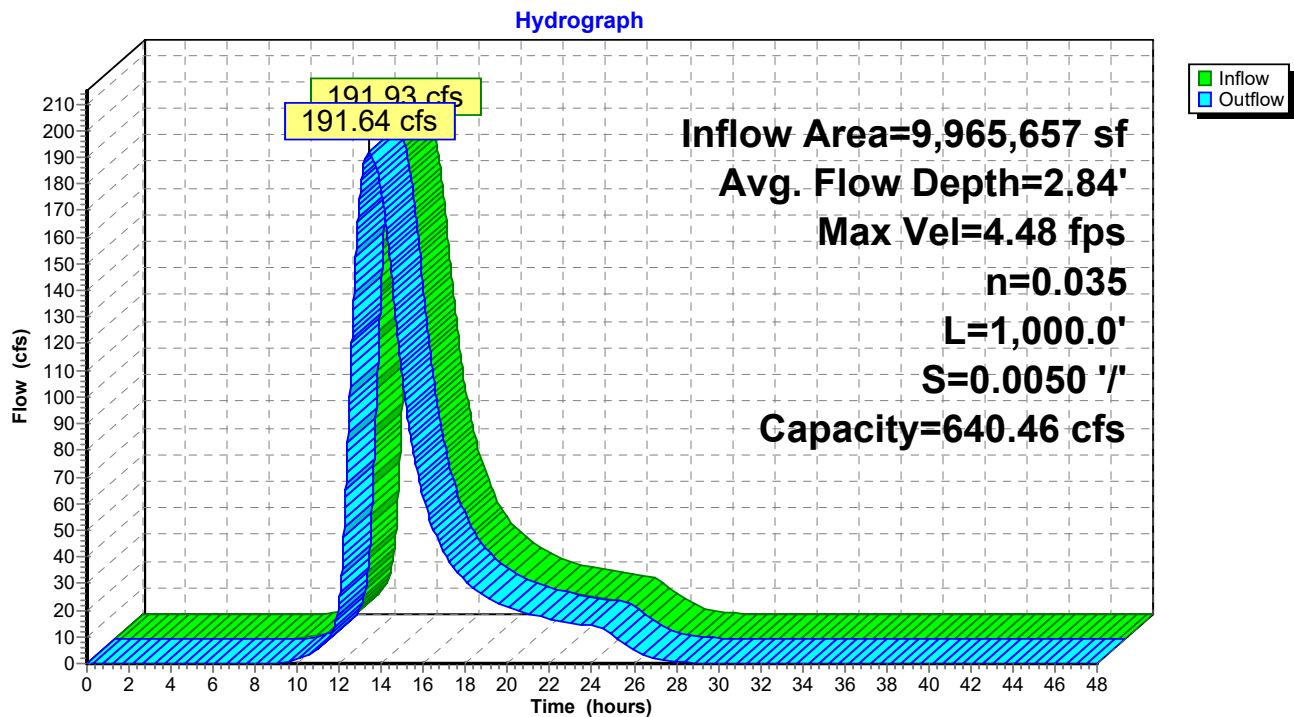
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.48 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 10.2 min

Peak Storage= 42,824 cf @ 13.38 hrs
Average Depth at Peak Storage= 2.84' , Surface Width= 22.61'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

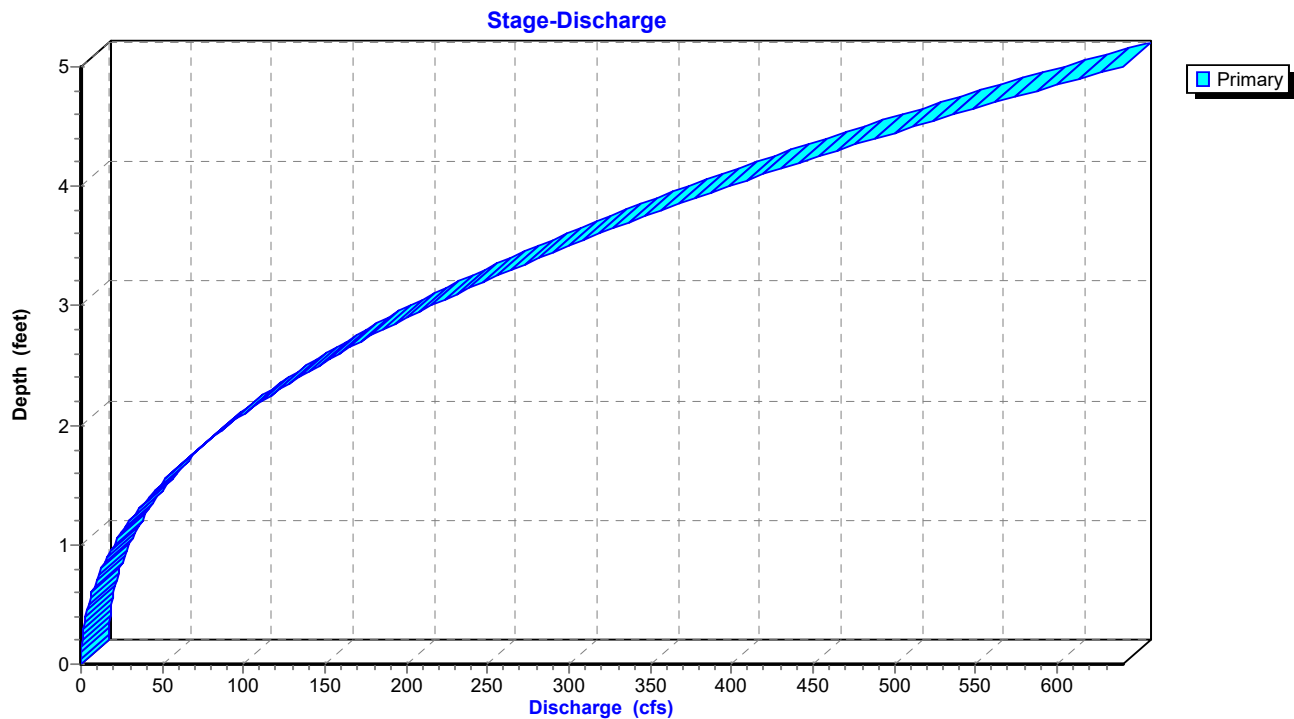
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

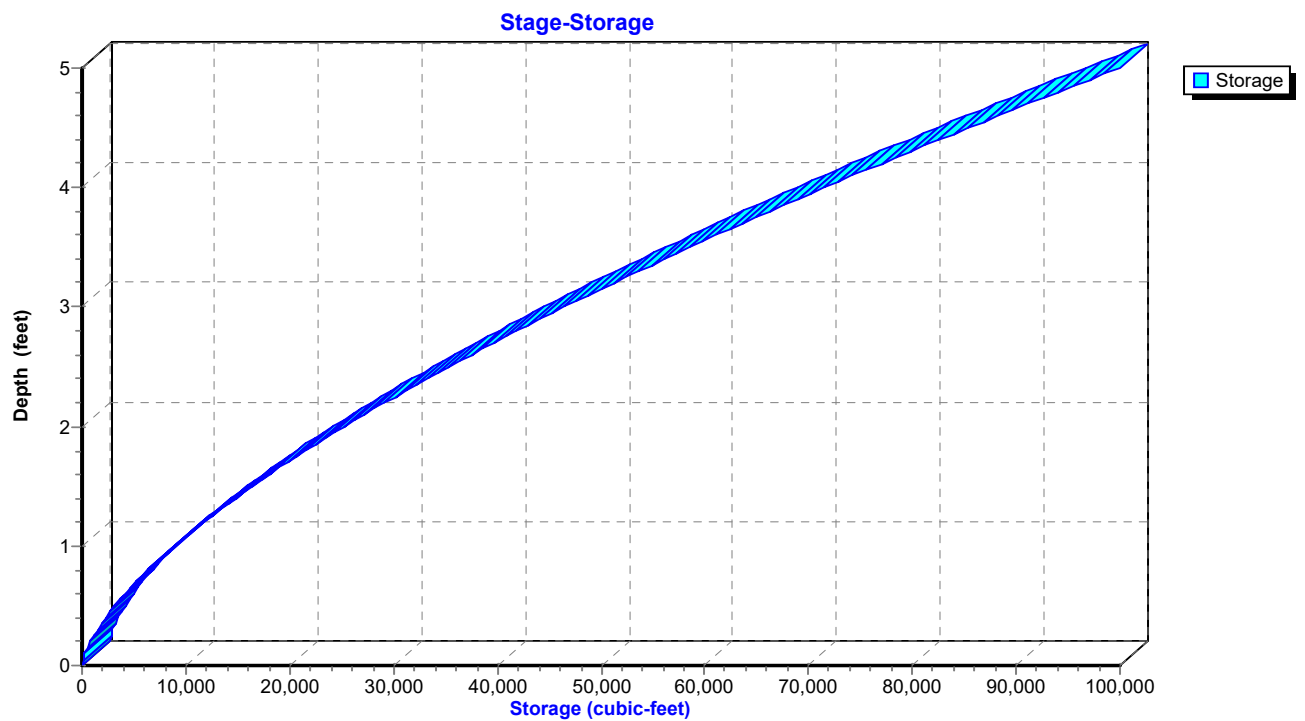


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

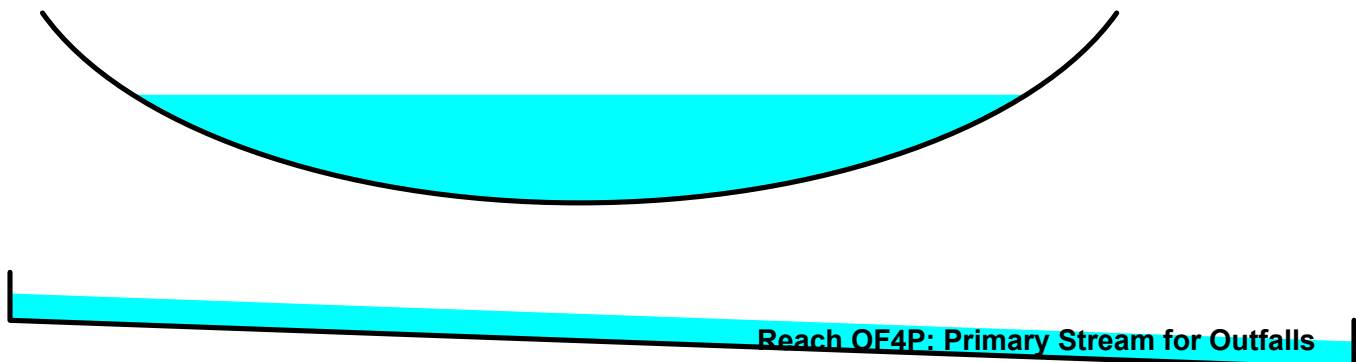
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 3.43" for 25-yr event
Inflow = 192.43 cfs @ 13.66 hrs, Volume= 2,853,359 cf
Outflow = 192.23 cfs @ 13.68 hrs, Volume= 2,853,357 cf, Atten= 0%, Lag= 1.3 min

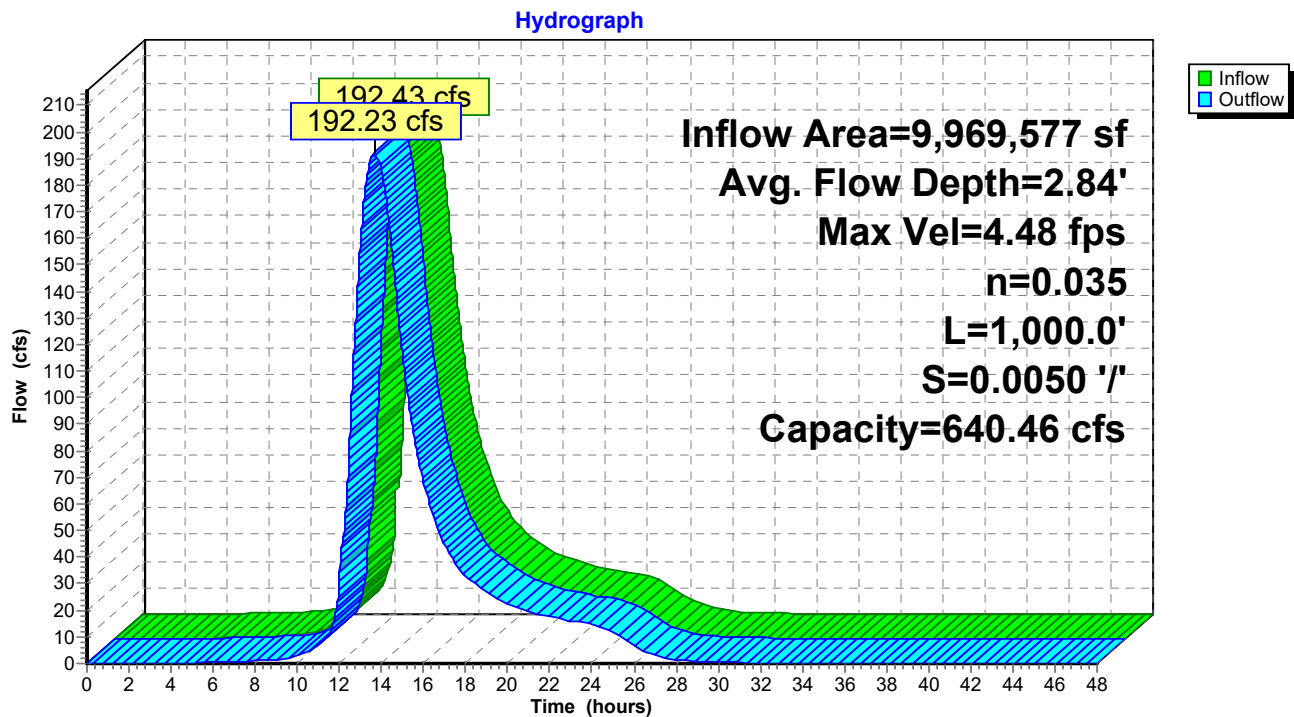
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.48 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 13.0 min

Peak Storage= 42,915 cf @ 13.68 hrs
Average Depth at Peak Storage= 2.84' , Surface Width= 22.63'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

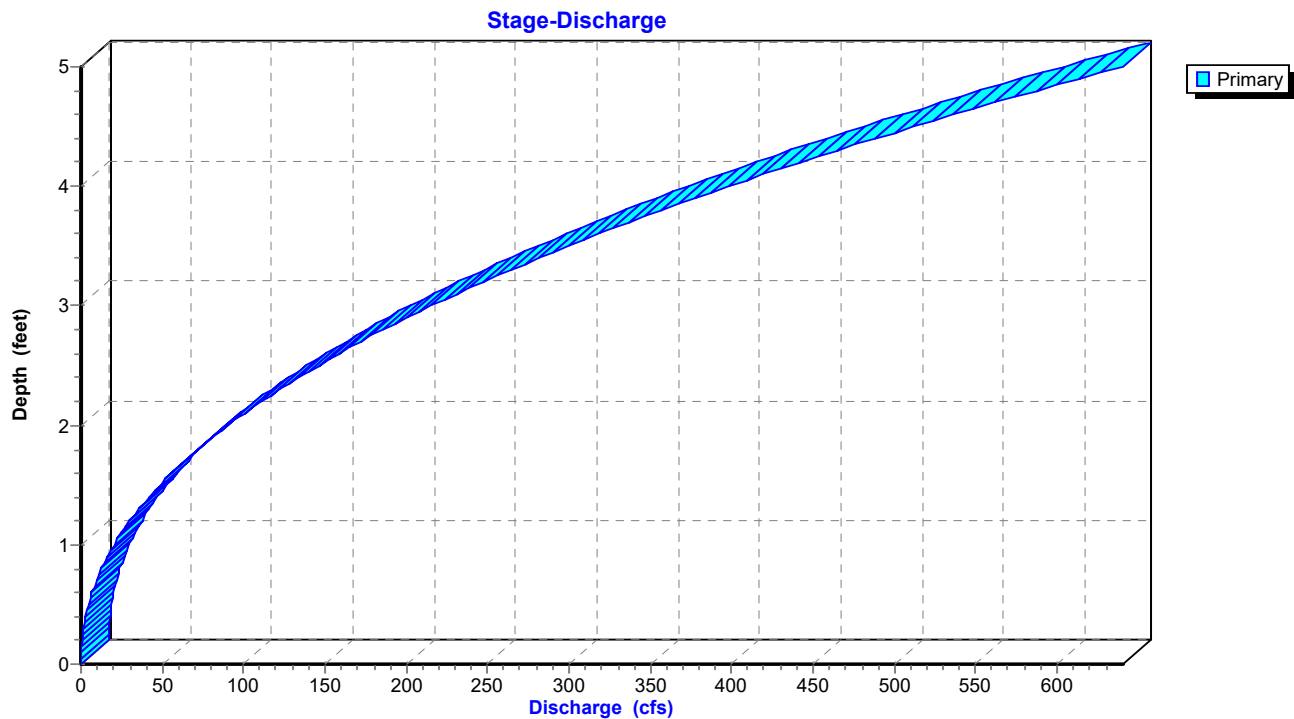
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

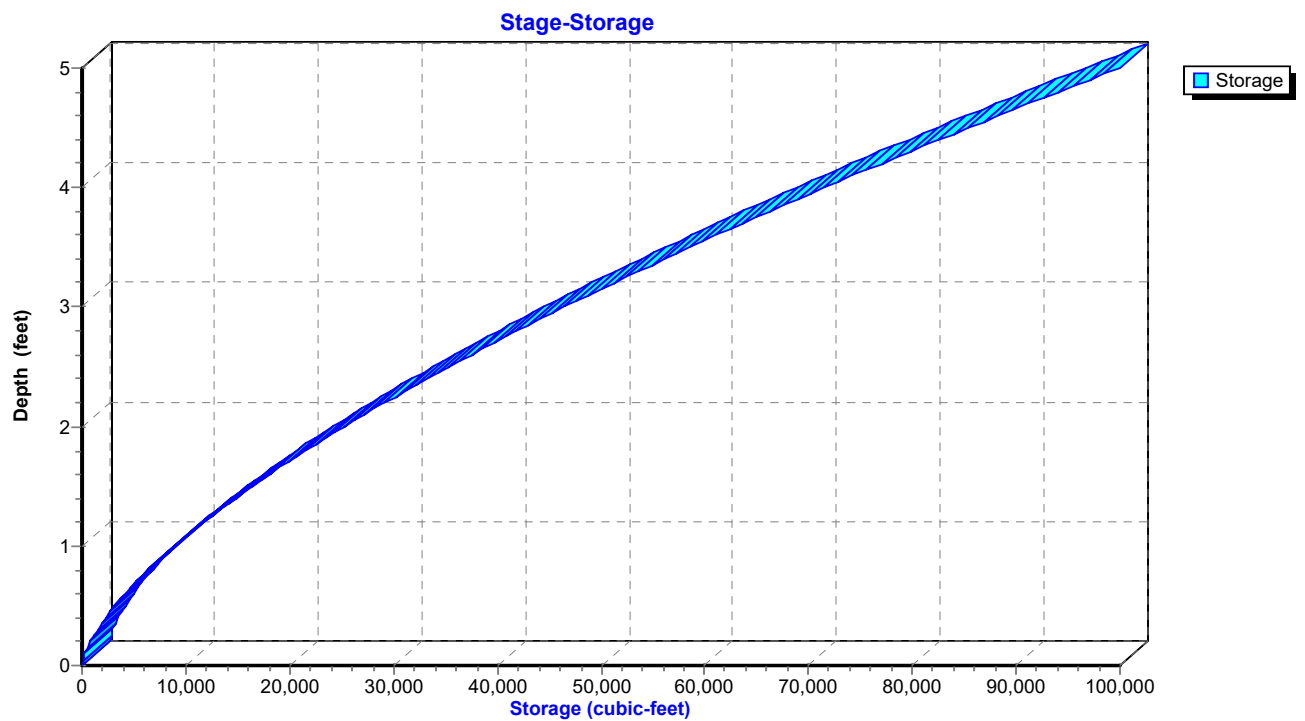


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

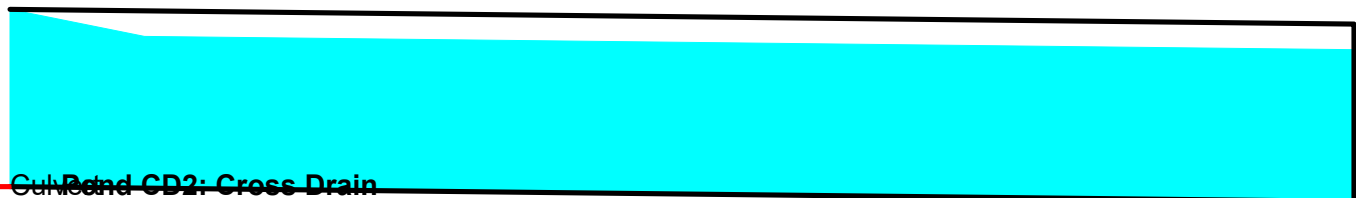
Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr event
 Inflow = 38.11 cfs @ 12.88 hrs, Volume= 294,710 cf
 Outflow = 38.11 cfs @ 12.88 hrs, Volume= 294,710 cf, Atten= 0%, Lag= 0.0 min
 Primary = 38.11 cfs @ 12.88 hrs, Volume= 294,710 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

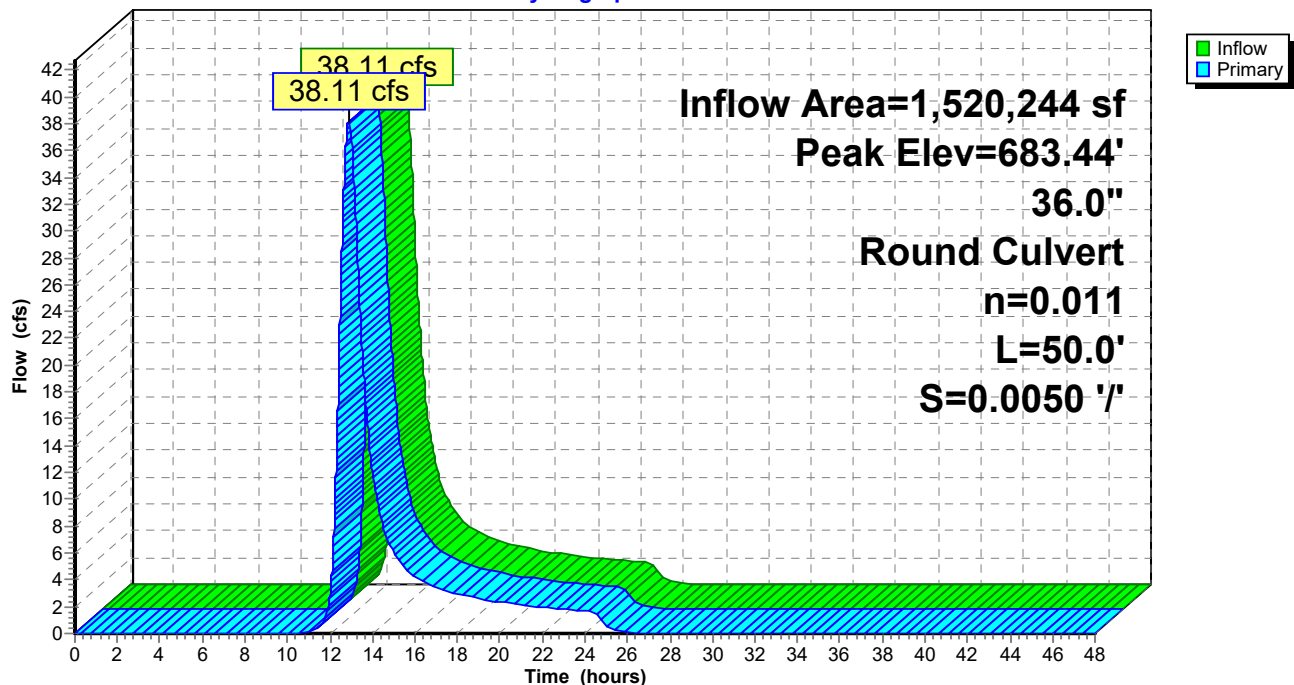
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 683.44' @ 12.88 hrs

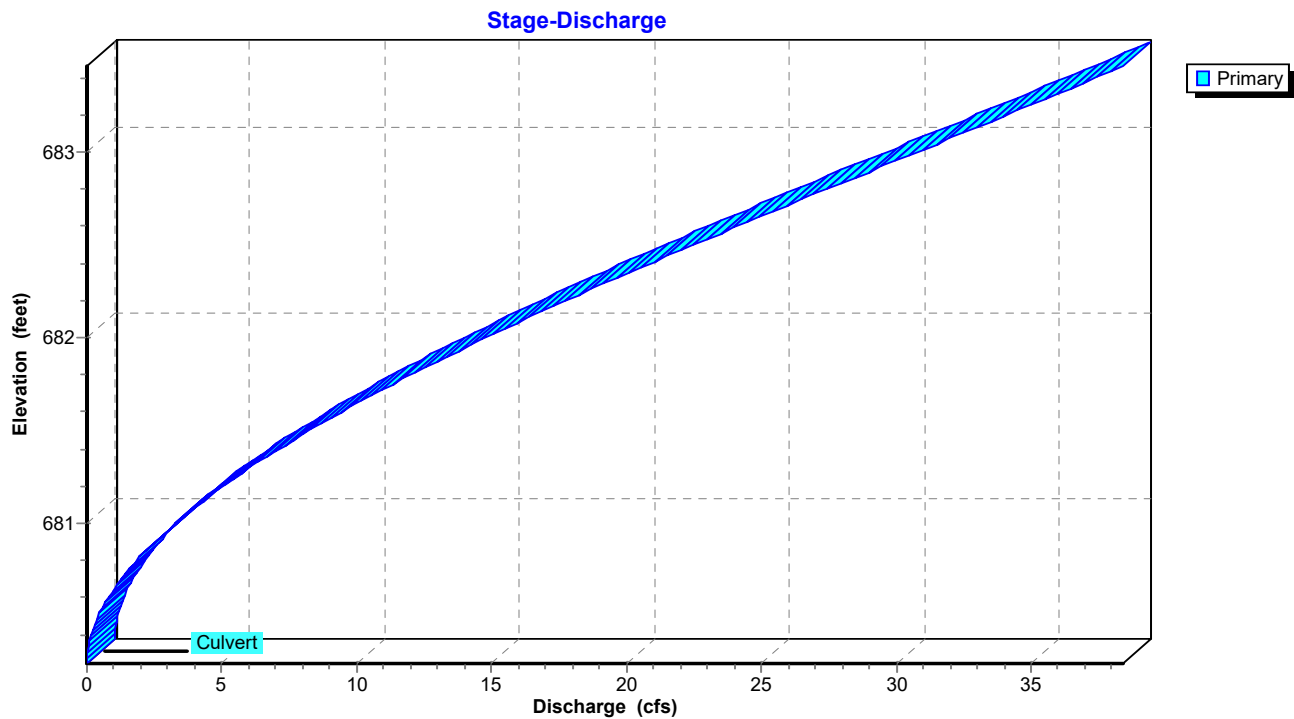
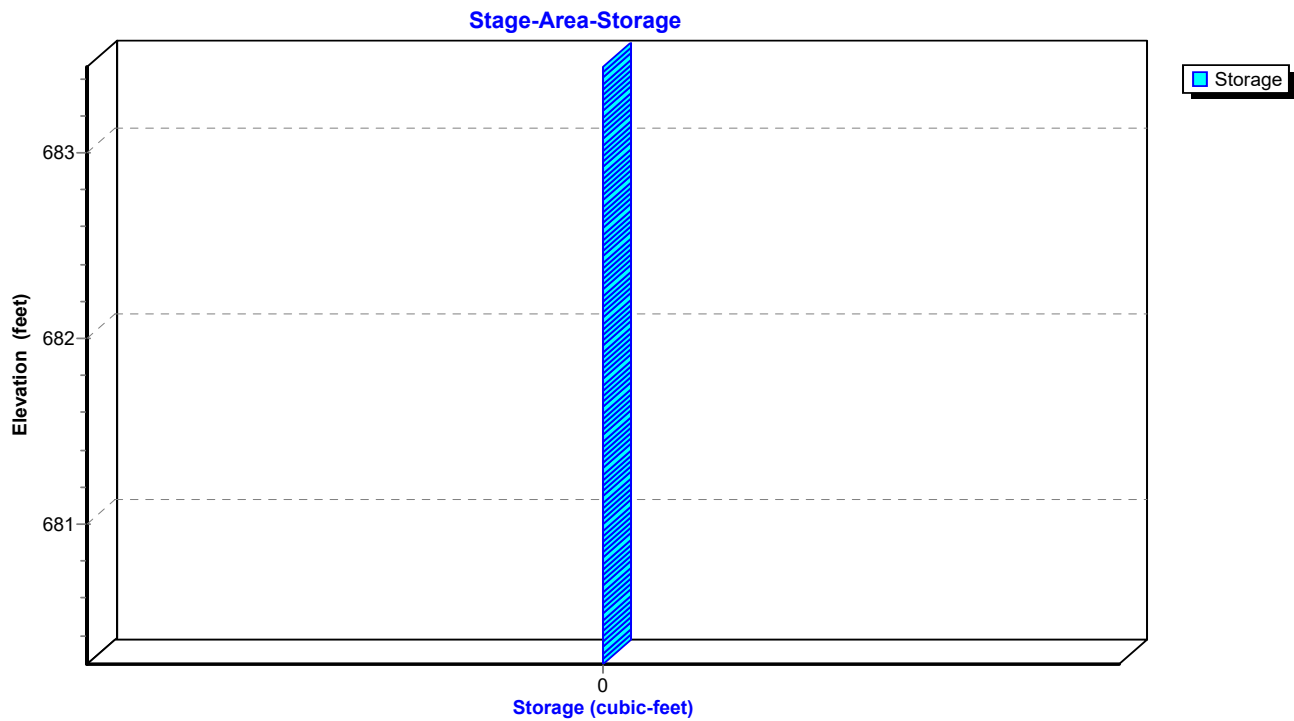
Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=38.11 cfs @ 12.88 hrs HW=683.44' TW=677.49' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 38.11 cfs @ 6.30 fps)

**Pond CD2: Cross Drain**

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

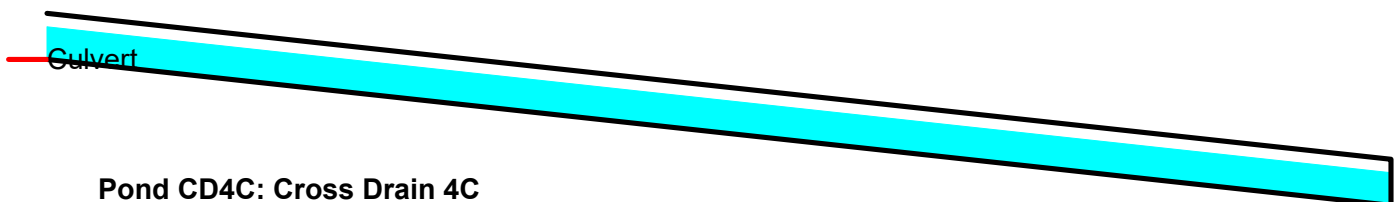
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 5.87" for 25-yr event
 Inflow = 4.71 cfs @ 12.05 hrs, Volume= 14,480 cf
 Outflow = 4.71 cfs @ 12.05 hrs, Volume= 14,480 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.71 cfs @ 12.05 hrs, Volume= 14,480 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

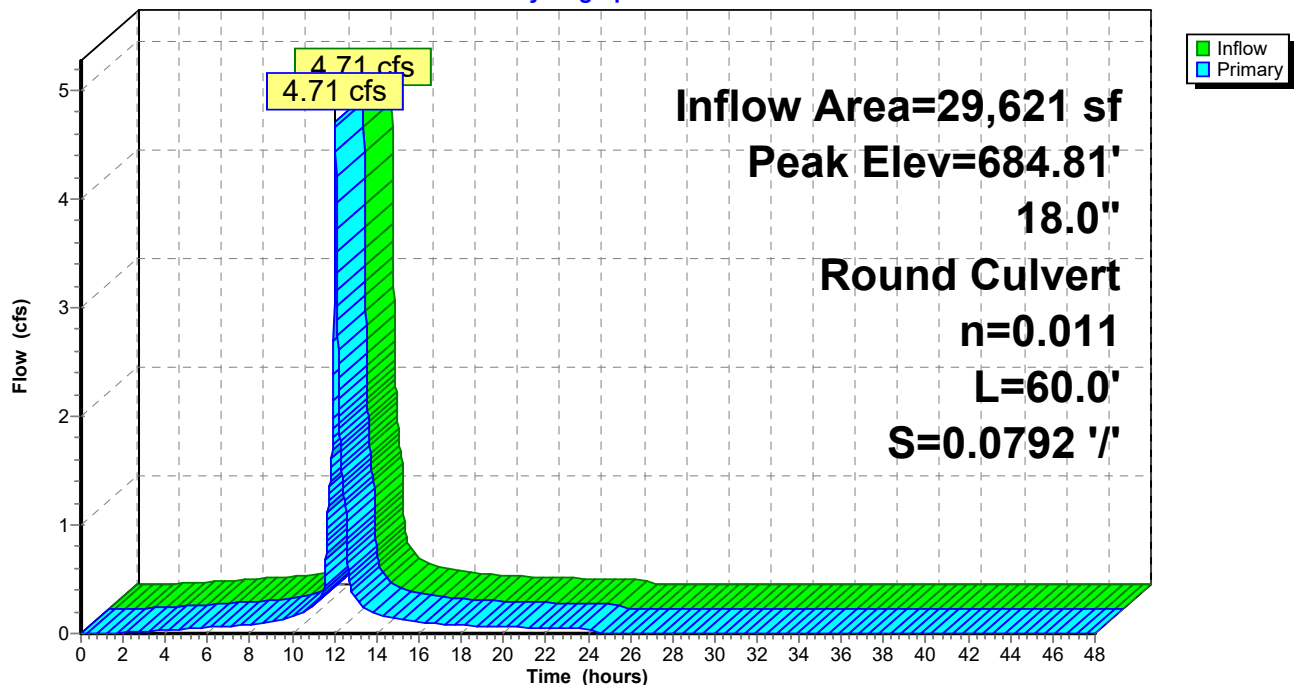
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.81' @ 12.05 hrs

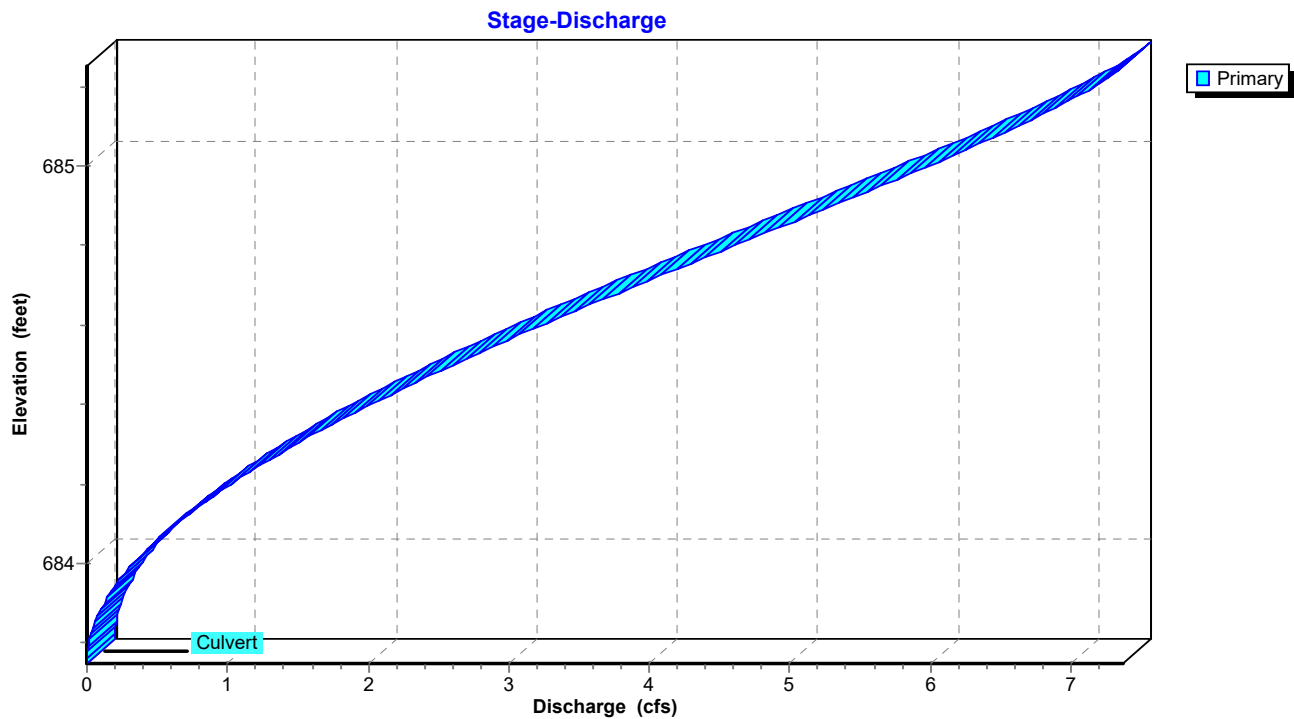
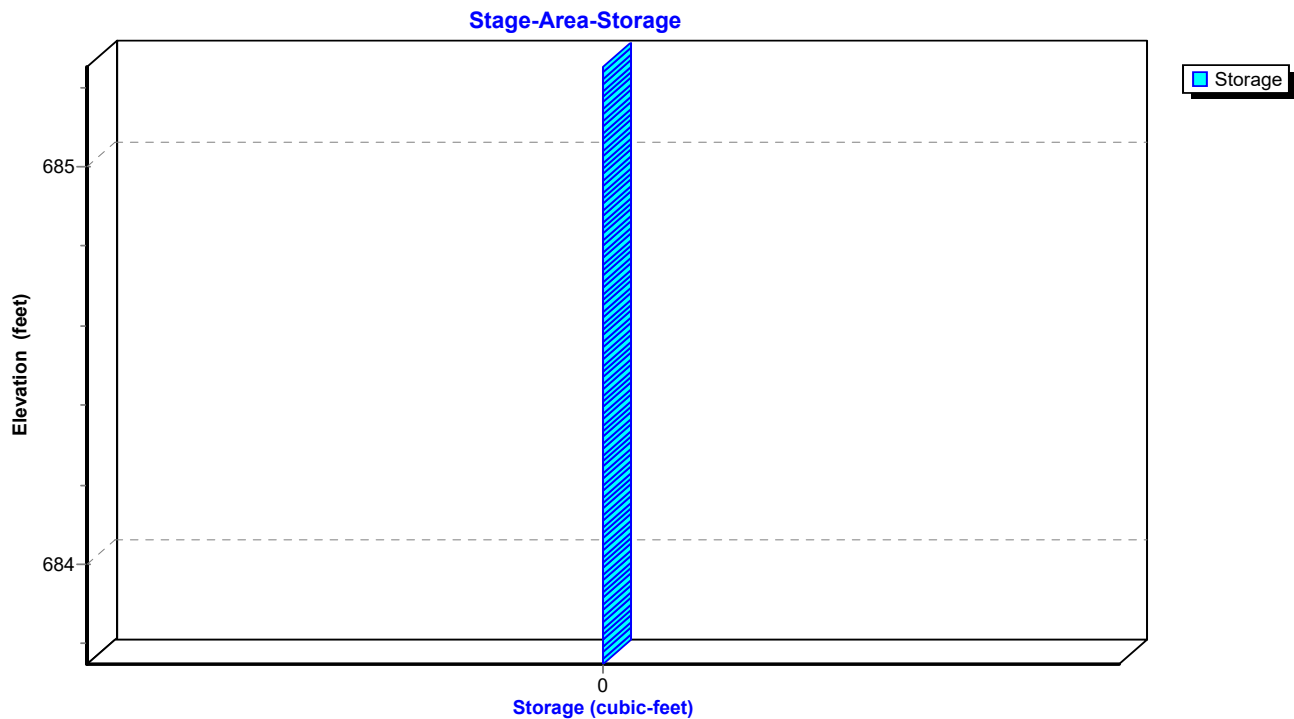
Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=4.69 cfs @ 12.05 hrs HW=684.81' TW=680.13' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 4.69 cfs @ 3.51 fps)

**Pond CD4C: Cross Drain 4C**

Hydrograph



Pond CD4C: Cross Drain 4C**Pond CD4C: Cross Drain 4C**

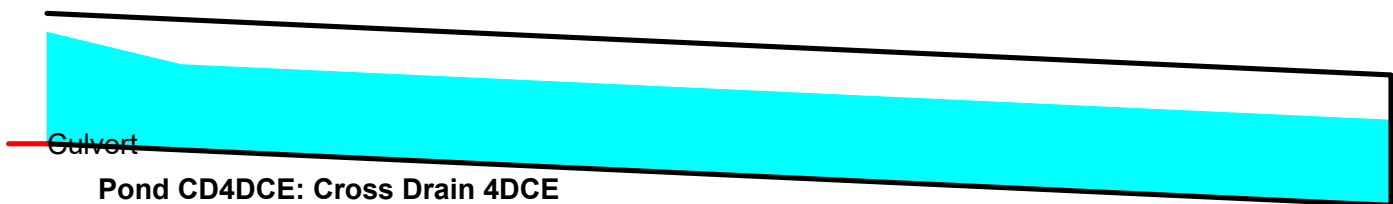
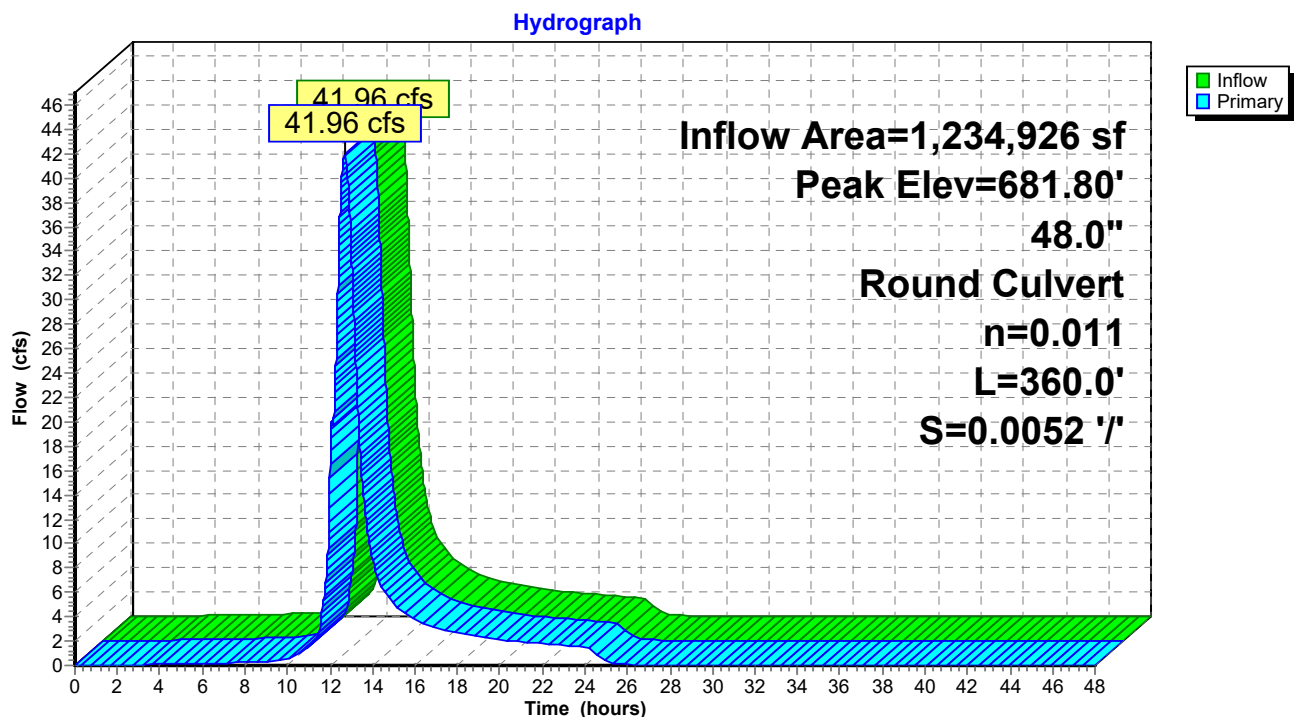
Summary for Pond CD4DCE: Cross Drain 4DCE

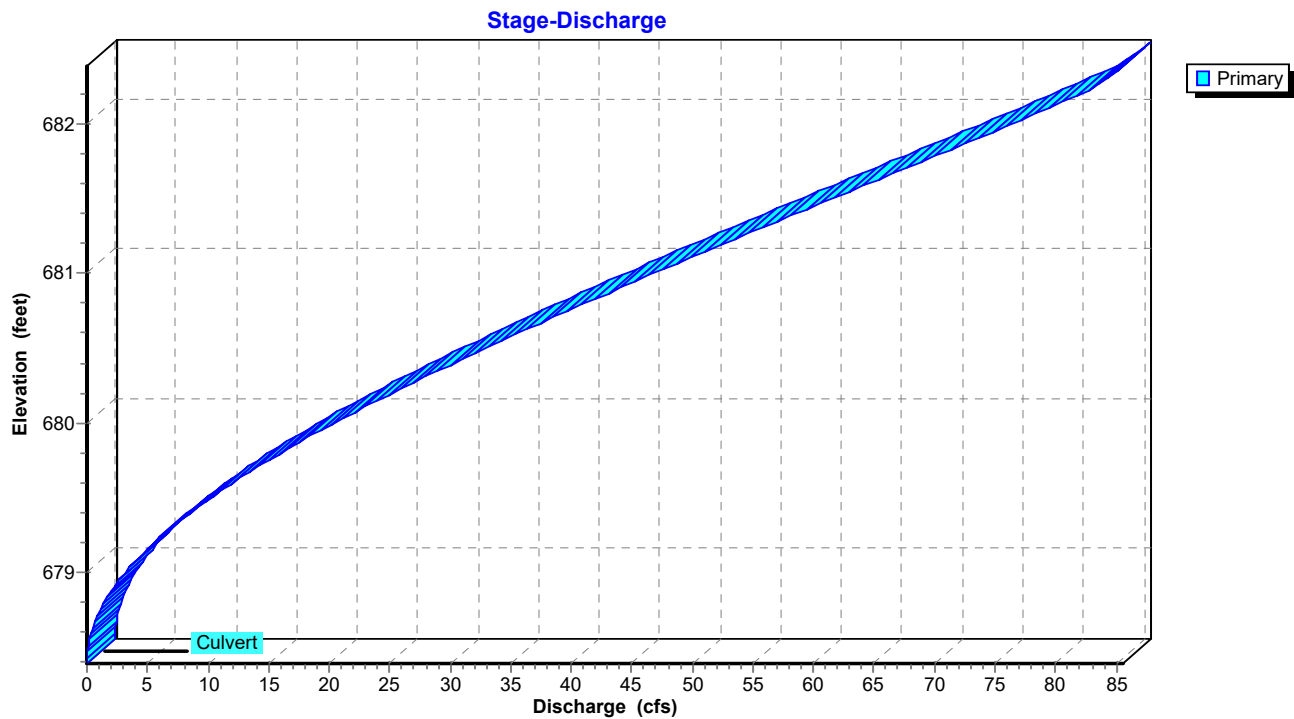
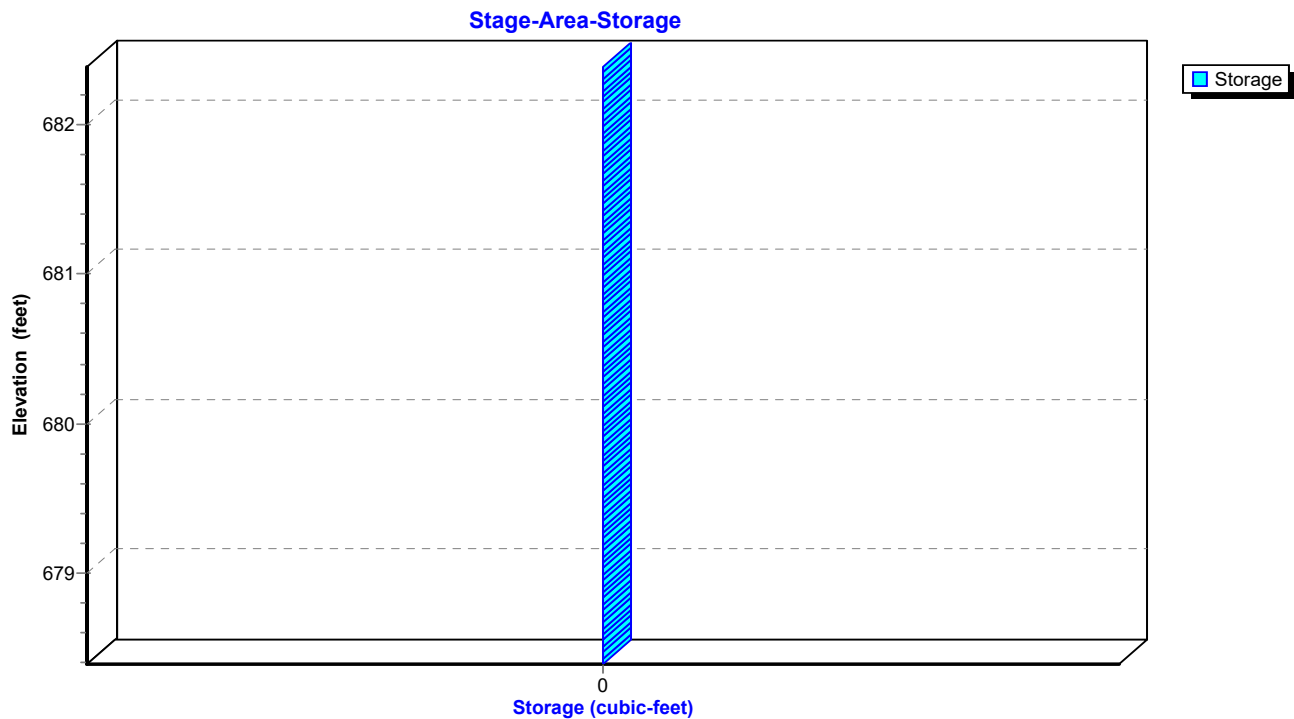
Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 3.05" for 25-yr event
 Inflow = 41.96 cfs @ 12.69 hrs, Volume= 314,301 cf
 Outflow = 41.96 cfs @ 12.69 hrs, Volume= 314,301 cf, Atten= 0%, Lag= 0.0 min
 Primary = 41.96 cfs @ 12.69 hrs, Volume= 314,301 cf
 Routed to Pond POND1P : PROP POND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.80' @ 12.86 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=41.52 cfs @ 12.69 hrs HW=681.70' TW=680.68' (Dynamic Tailwater)
 ↑ **1=Culvert** (Outlet Controls 41.52 cfs @ 5.06 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Pond CD4DCE: Cross Drain 4DCE**Pond CD4DCE: Cross Drain 4DCE**

Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 2.85" for 25-yr event
 Inflow = 42.33 cfs @ 12.64 hrs, Volume= 273,634 cf
 Outflow = 40.67 cfs @ 12.71 hrs, Volume= 273,631 cf, Atten= 4%, Lag= 4.3 min
 Primary = 40.67 cfs @ 12.71 hrs, Volume= 273,631 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

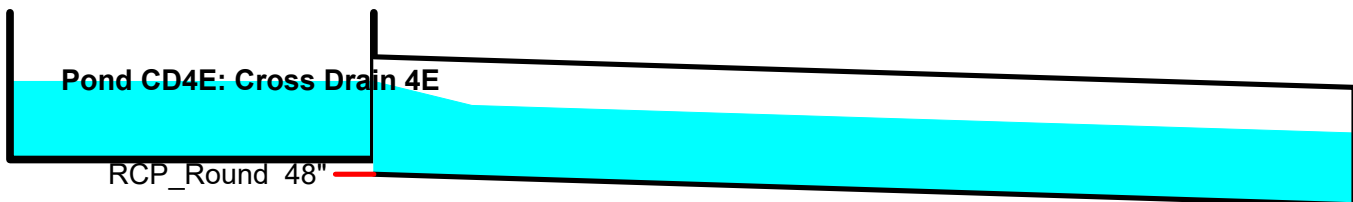
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.66' @ 12.78 hrs Surf.Area= 6,207 sf Storage= 7,049 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.7 min (884.1 - 882.4)

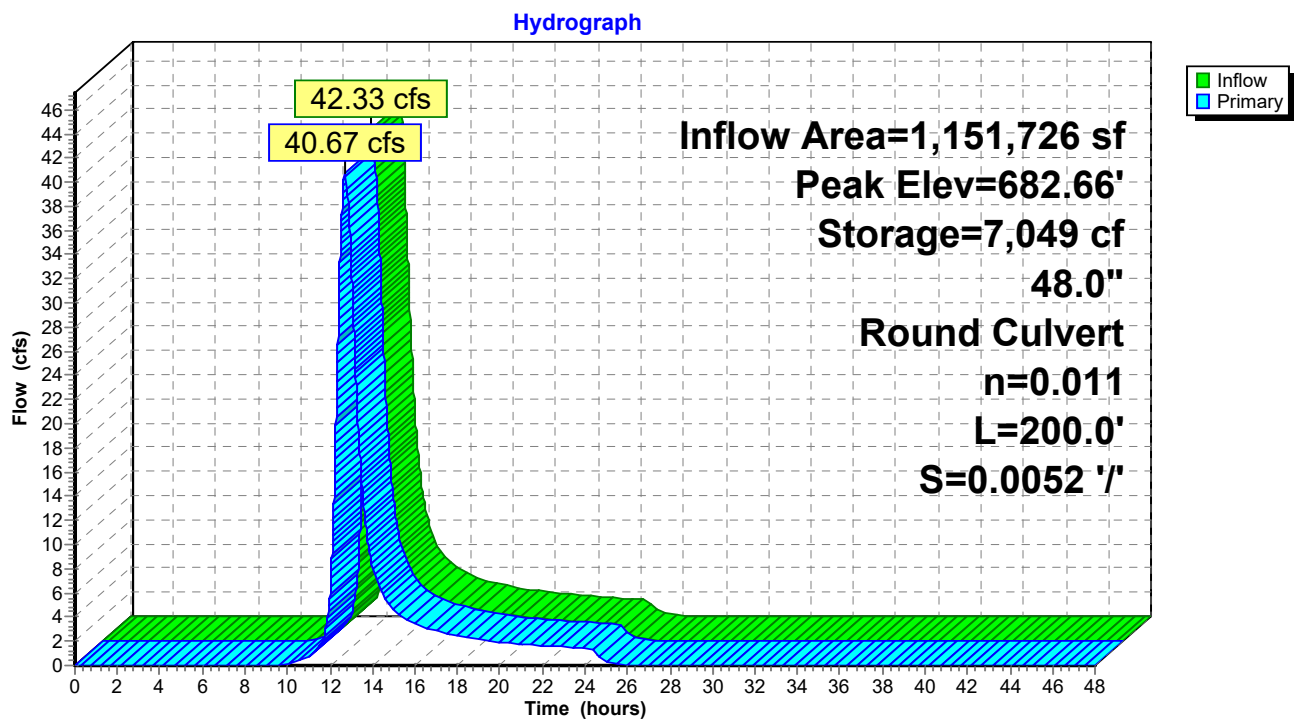
Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

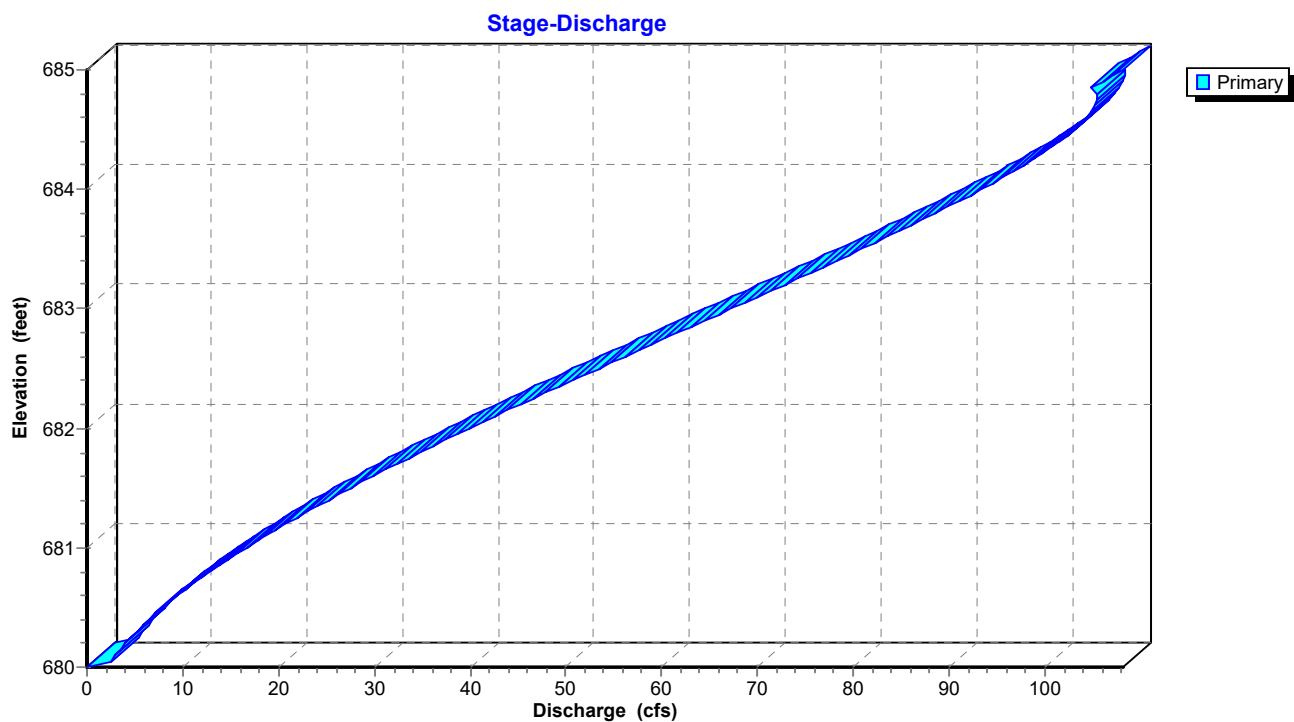
Primary OutFlow Max=40.42 cfs @ 12.71 hrs HW=682.64' TW=681.73' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 40.42 cfs @ 5.26 fps)

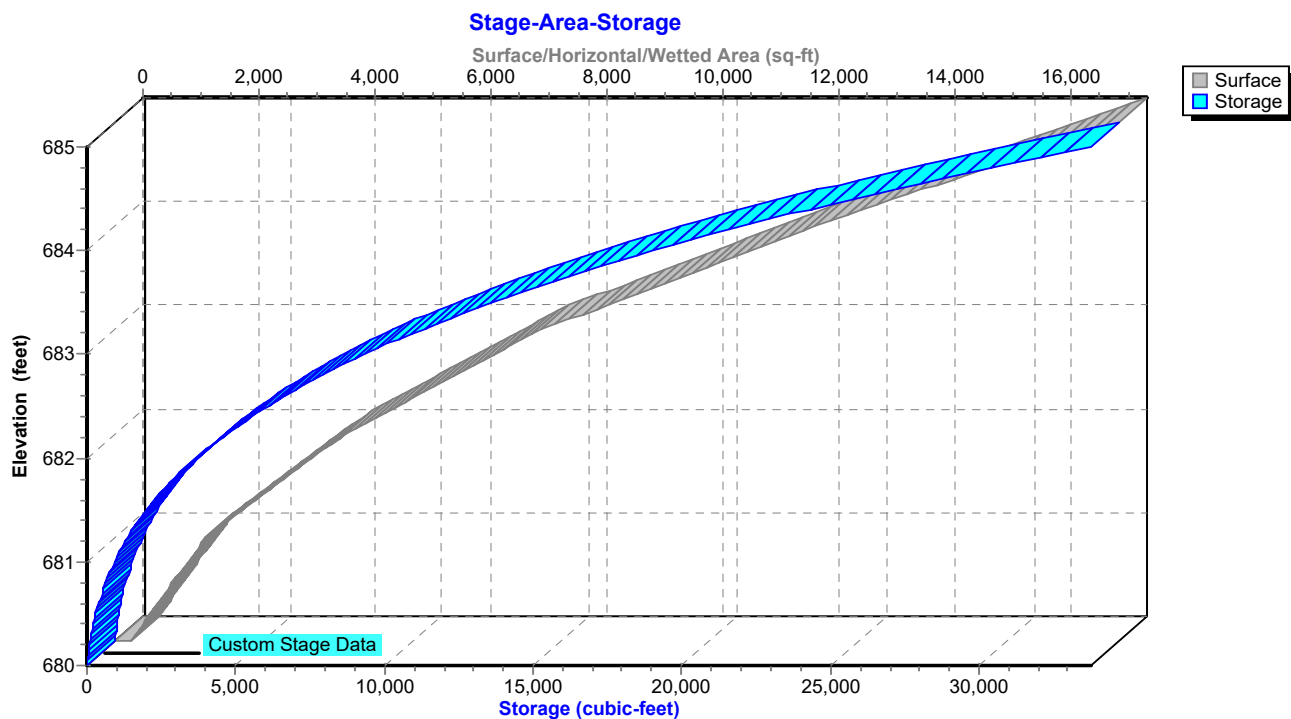


Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 3.91" for 25-yr event
 Inflow = 80.52 cfs @ 12.51 hrs, Volume= 576,852 cf
 Outflow = 38.67 cfs @ 13.14 hrs, Volume= 576,845 cf, Atten= 52%, Lag= 37.8 min
 Primary = 38.67 cfs @ 13.14 hrs, Volume= 576,845 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.13' @ 13.16 hrs Surf.Area= 80,166 sf Storage= 200,001 cf

Plug-Flow detention time= 109.1 min calculated for 576,845 cf (100% of inflow)
 Center-of-Mass det. time= 109.1 min (938.3 - 829.2)

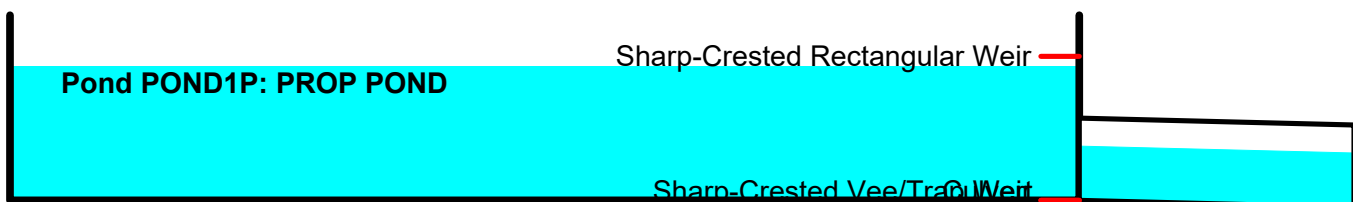
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

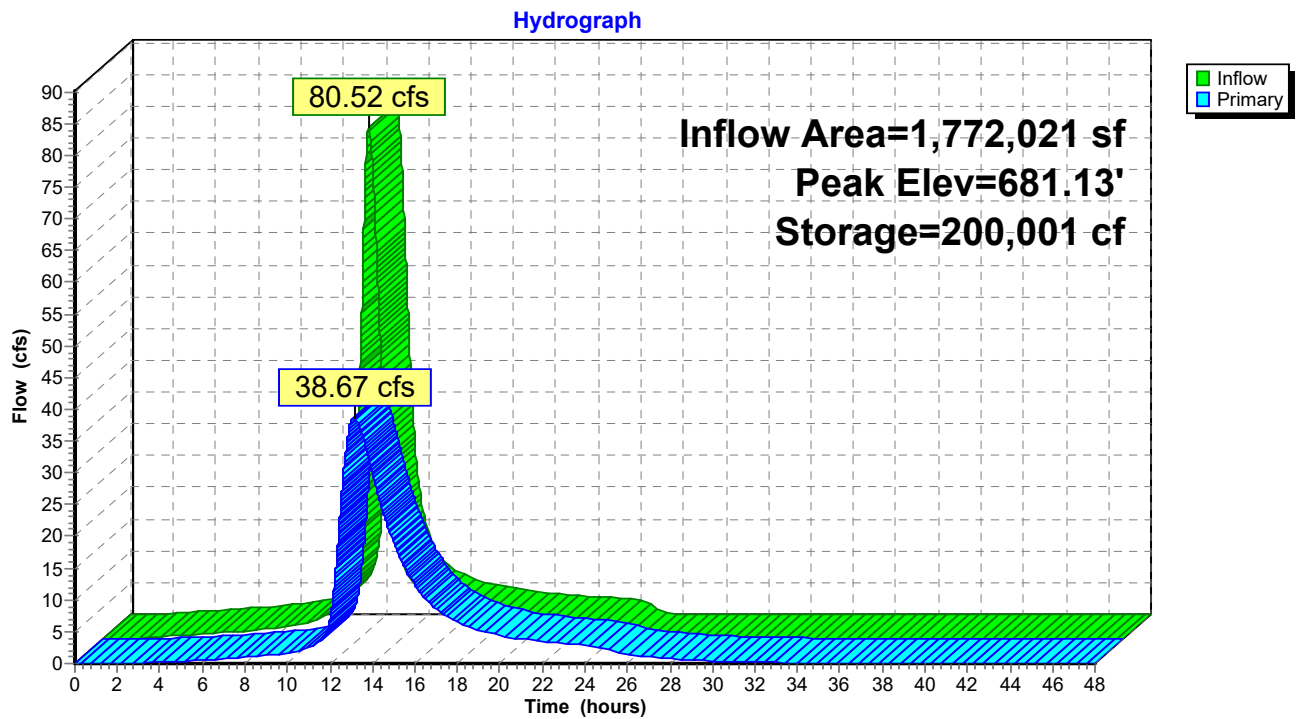
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=38.66 cfs @ 13.14 hrs HW=681.13' TW=677.70' (Dynamic Tailwater)

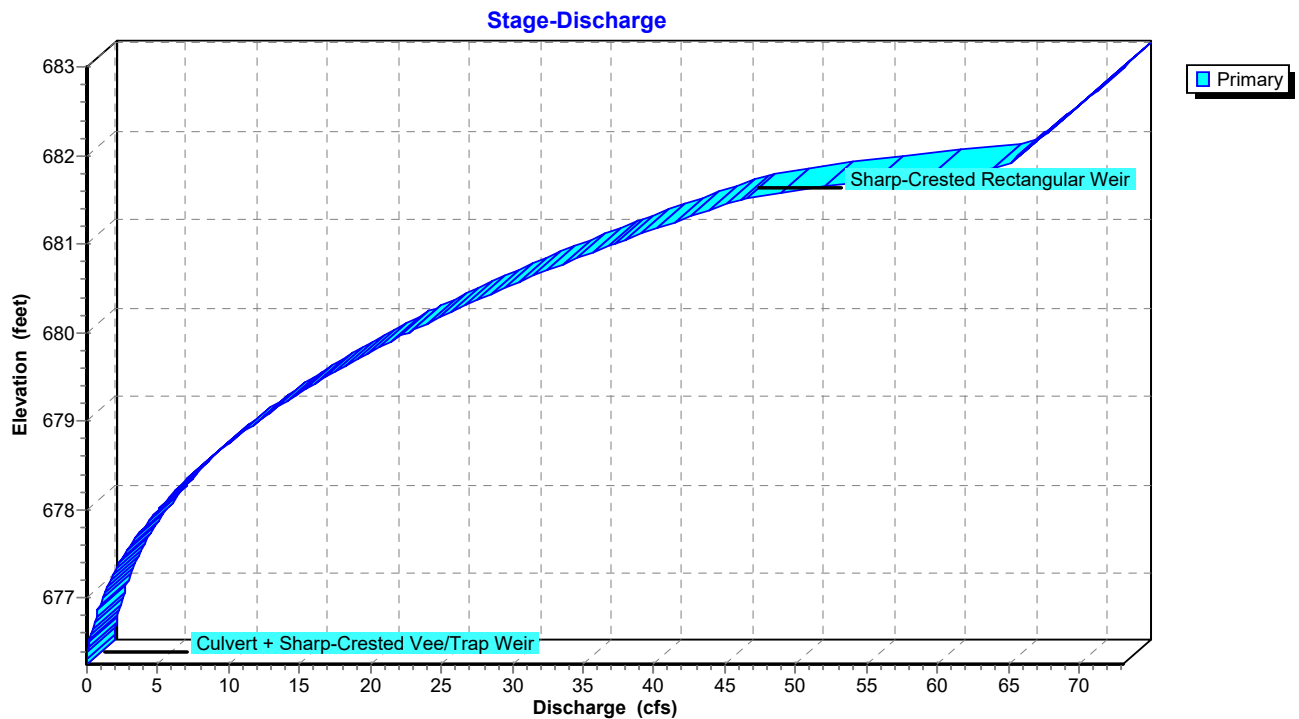
- 1=Culvert (Passes 38.66 cfs of 58.64 cfs potential flow)
- 2=Sharp-Crested Vee/Trap Weir (Weir Controls 38.66 cfs @ 6.29 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

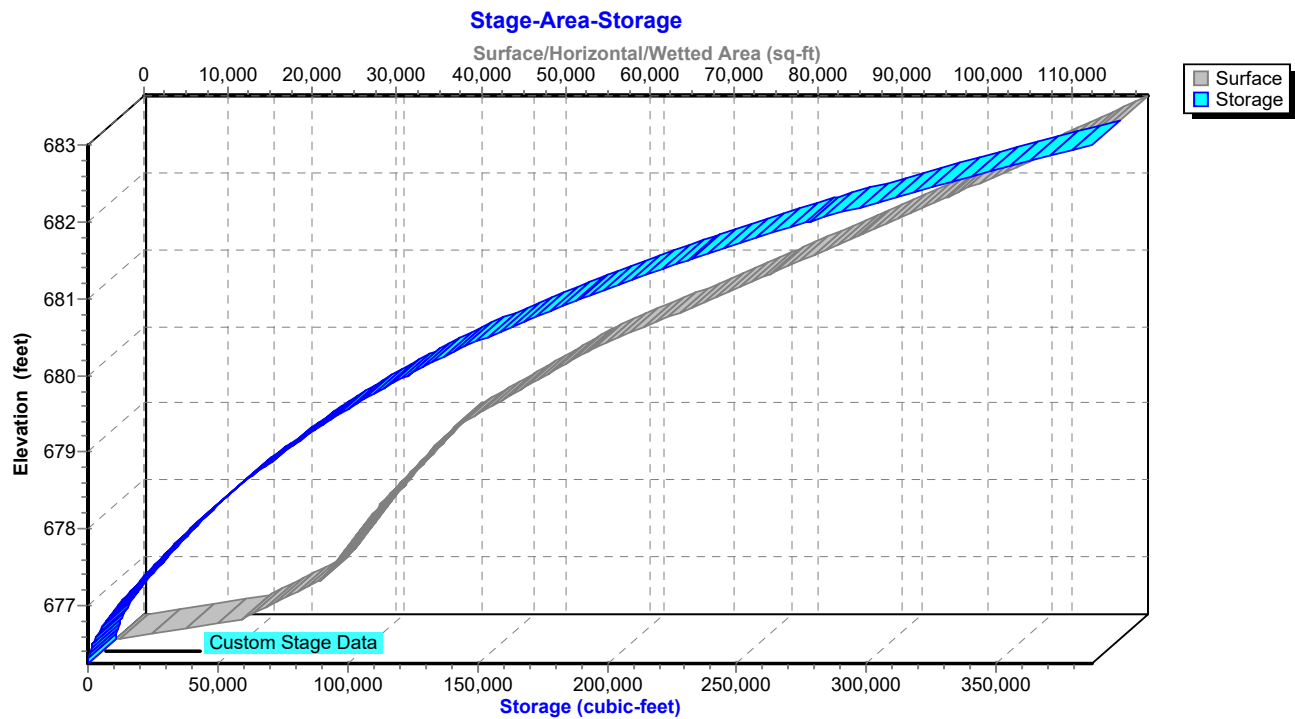


Pond POND1P: PROP POND



Pond POND1P: PROP POND



Pond POND1P: PROP POND

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=4.22"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=169.27 cfs 2,190,555 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=2.86"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=48.09 cfs 362,320 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=4.00"
 Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=28.36 cfs 136,345 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=3.68"
 Flow Length=2,468' Tc=68.1 min CN=70 Runoff=71.28 cfs 555,125 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=4.22"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=169.27 cfs 2,190,555 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=2.86"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=48.09 cfs 362,320 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=4.66"
 Tc=5.0 min CN=79 Runoff=30.15 cfs 80,478 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=3.47"
 Flow Length=945' Tc=40.9 min CN=68 Runoff=11.70 cfs 69,756 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=6.60"
 Flow Length=996' Tc=33.8 min CN=96 Runoff=49.75 cfs 295,555 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=6.60"
 Tc=5.0 min CN=96 Runoff=5.52 cfs 16,300 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=6.60"
 Tc=5.0 min CN=96 Runoff=9.99 cfs 29,484 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=3.06"
 Flow Length=640' Tc=31.5 min CN=64 Runoff=15.16 cfs 80,705 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=3.58"
 Flow Length=1,313' Tc=46.8 min CN=69 Runoff=39.30 cfs 249,230 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.69' Max Vel=2.63 fps Inflow=5.52 cfs 16,300 cf
 n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=5.23 cfs 16,300 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.85' Max Vel=3.52 fps Inflow=9.99 cfs 29,484 cf
 n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=9.62 cfs 29,484 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=0.97' Max Vel=1.90 fps Inflow=15.16 cfs 80,705 cf
 n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=12.81 cfs 80,705 cf

Reach OF4: Primary Stream for Avg. Flow Depth=3.11' Max Vel=4.74 fps Inflow=232.20 cfs 3,244,345 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=232.00 cfs 3,244,345 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=3.10' Max Vel=4.73 fps Inflow=230.65 cfs 3,374,372 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=230.51 cfs 3,374,370 cf

Pond CD2: Cross Drain Peak Elev=684.27' Inflow=48.09 cfs 362,320 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=48.09 cfs 362,320 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.89' Inflow=5.23 cfs 16,300 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=5.23 cfs 16,300 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=682.27' Inflow=50.83 cfs 375,714 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=50.83 cfs 375,714 cf

Pond CD4E: Cross Drain 4E Peak Elev=683.15' Storage=10,490 cf Inflow=52.11 cfs 329,935 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=49.42 cfs 329,930 cf

Pond POND1P: PROP POND Peak Elev=681.53' Storage=234,094 cf Inflow=94.09 cfs 671,269 cf
Outflow=45.92 cfs 671,262 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 6,618,728 cf Average Runoff Depth = 3.98"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 169.27 cfs @ 13.83 hrs, Volume= 2,190,555 cf, Depth= 4.22"

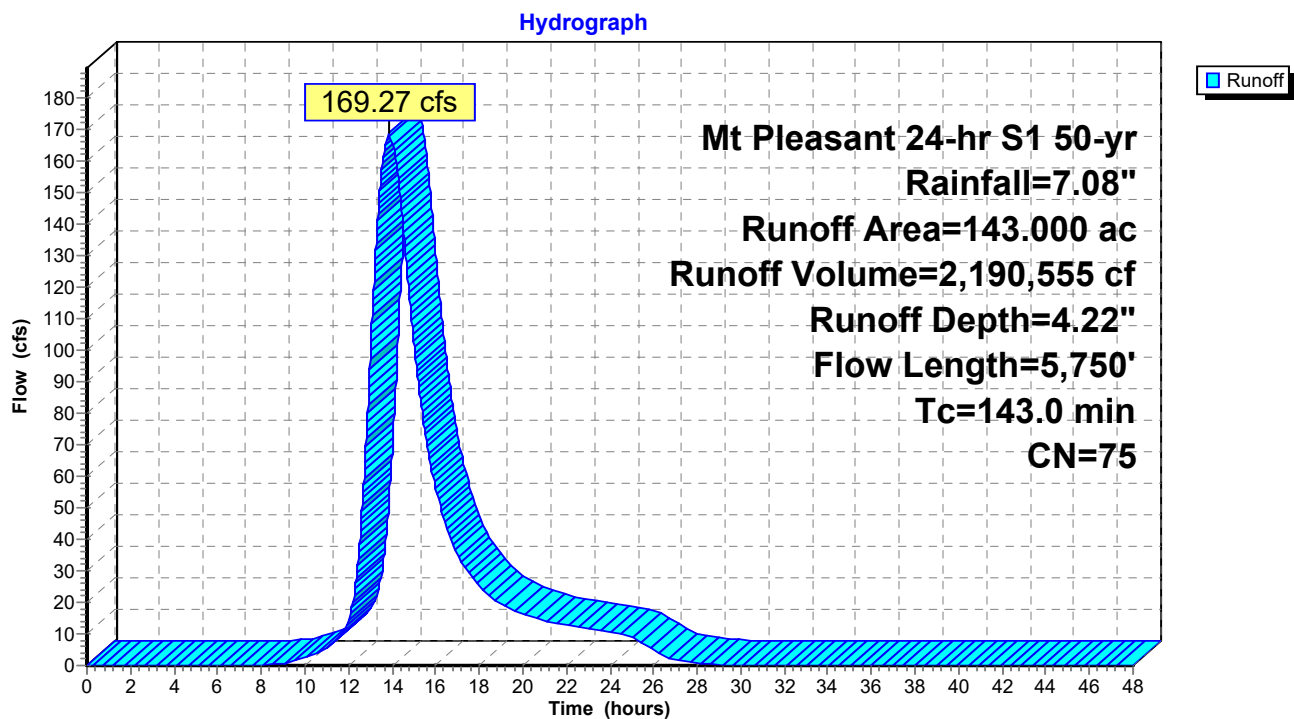
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

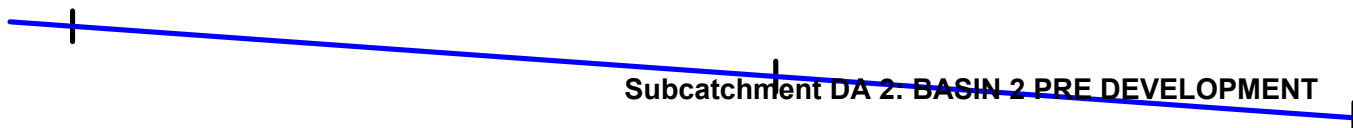
Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Runoff = 48.09 cfs @ 12.88 hrs, Volume= 362,320 cf, Depth= 2.86"
 Routed to Reach OF4 : Primary Stream for Outfalls

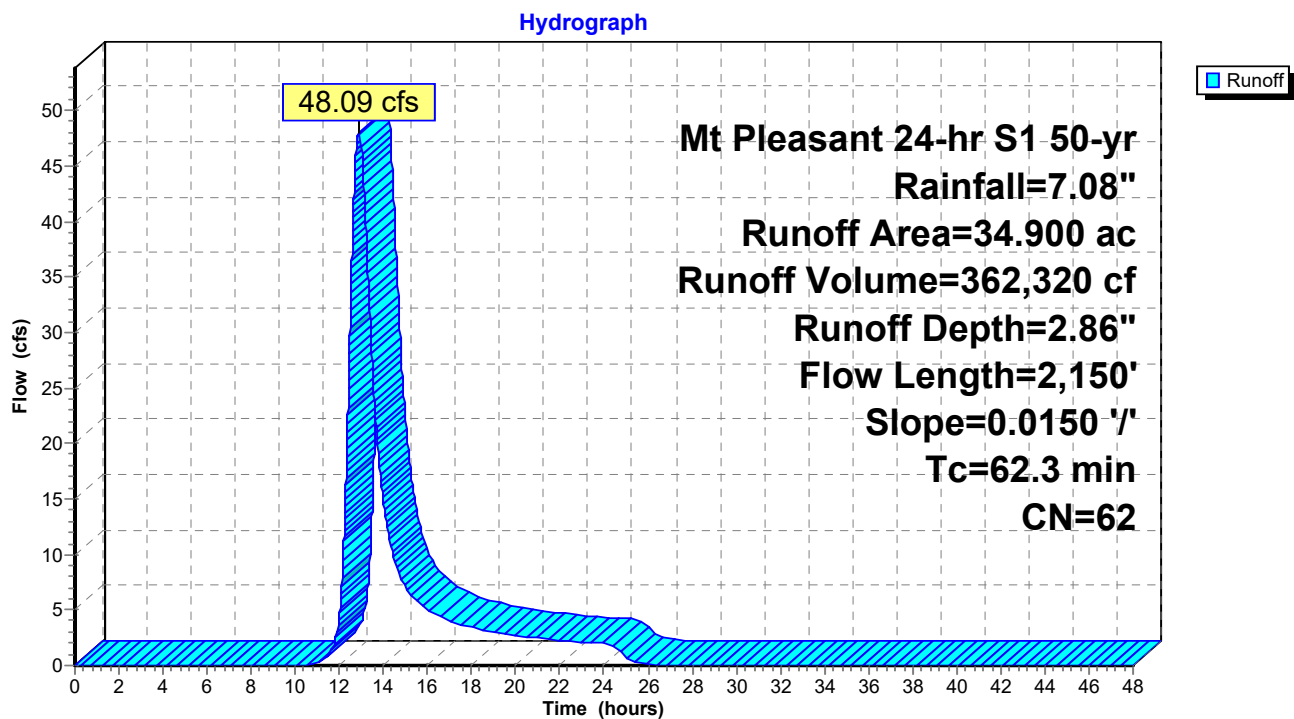
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 28.36 cfs @ 12.32 hrs, Volume= 136,345 cf, Depth= 4.00"

Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

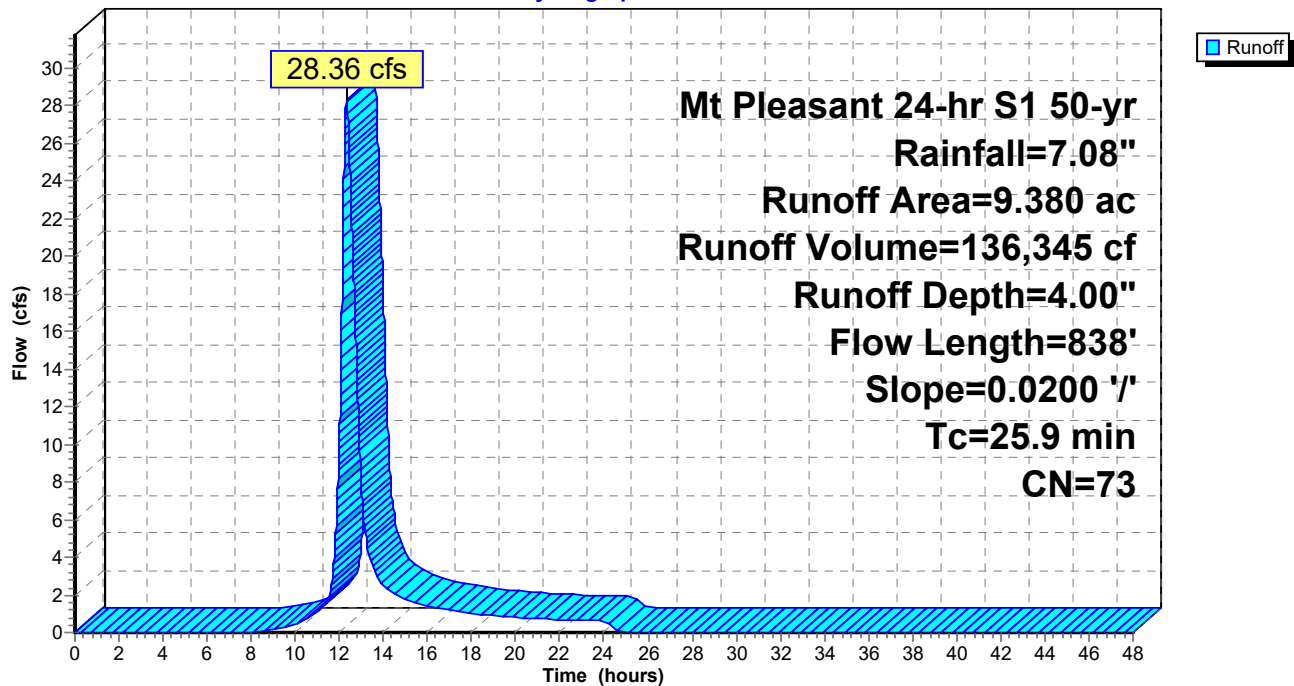
Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Runoff = 71.28 cfs @ 12.94 hrs, Volume= 555,125 cf, Depth= 3.68"

Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

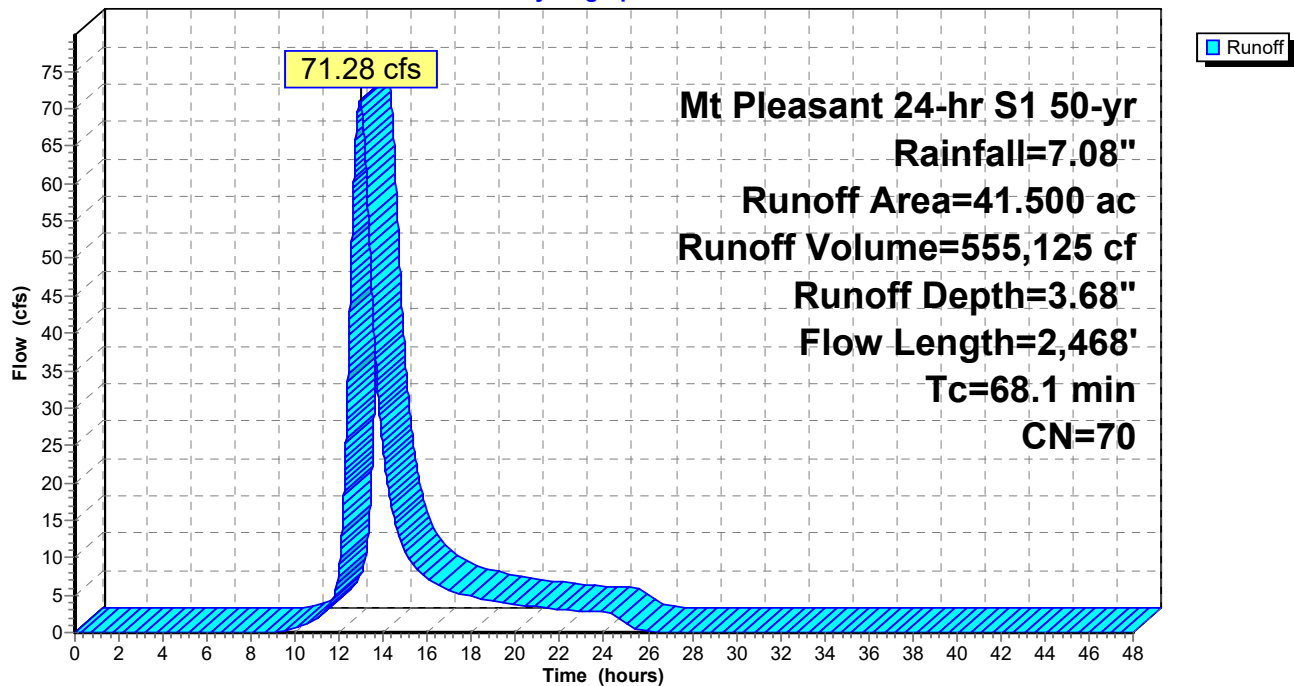
Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA1P: BASIN 1 PROPOSED

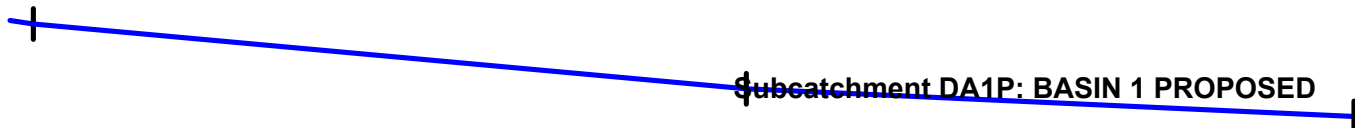
Runoff = 169.27 cfs @ 13.83 hrs, Volume= 2,190,555 cf, Depth= 4.22"

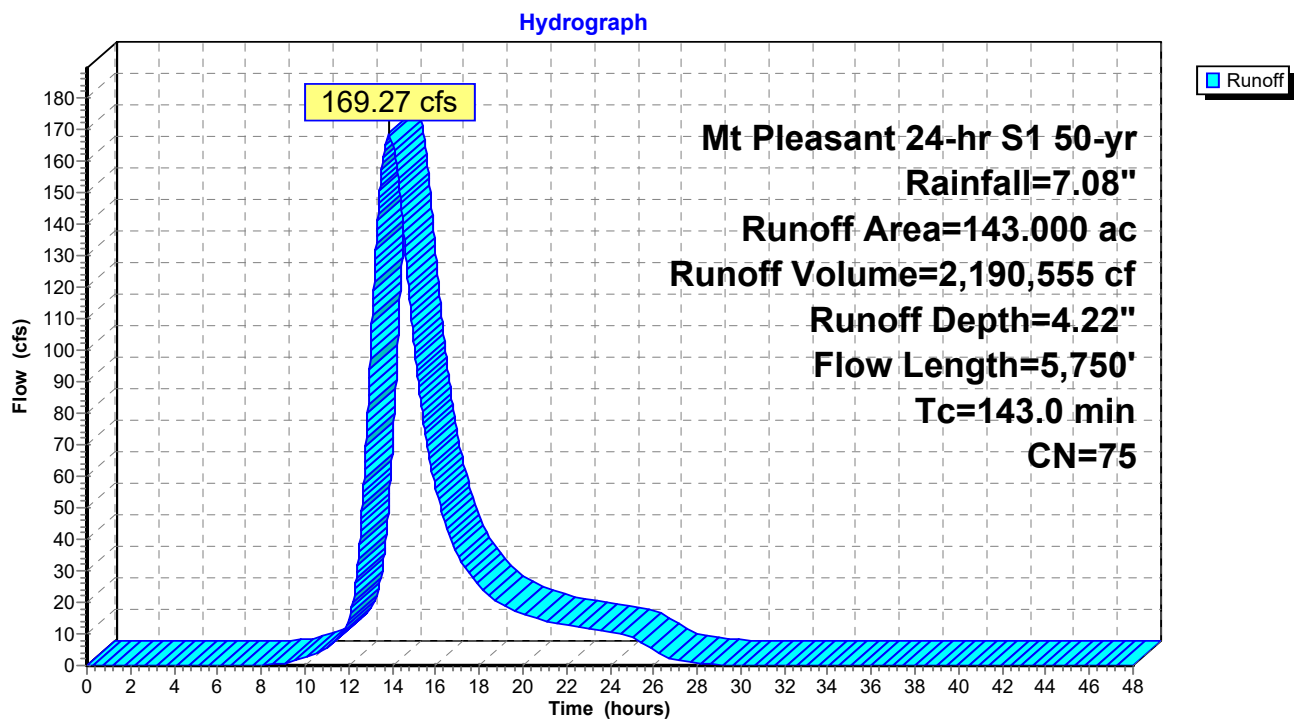
Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

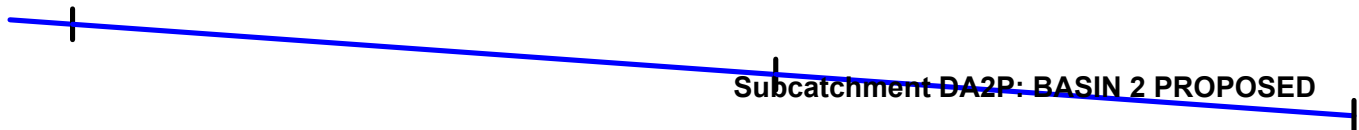
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 48.09 cfs @ 12.88 hrs, Volume= 362,320 cf, Depth= 2.86"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

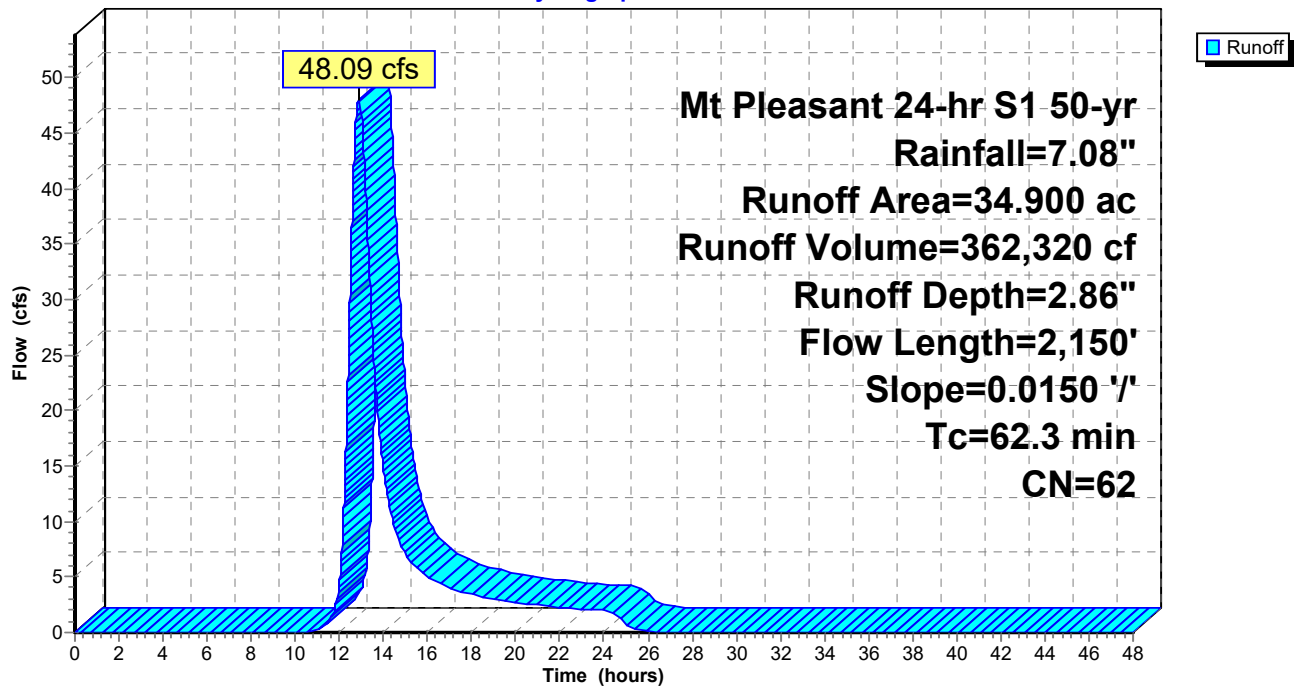
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 30.15 cfs @ 12.03 hrs, Volume= 80,478 cf, Depth= 4.66"

Routed to Reach OF4P : Primary Stream for Outfalls

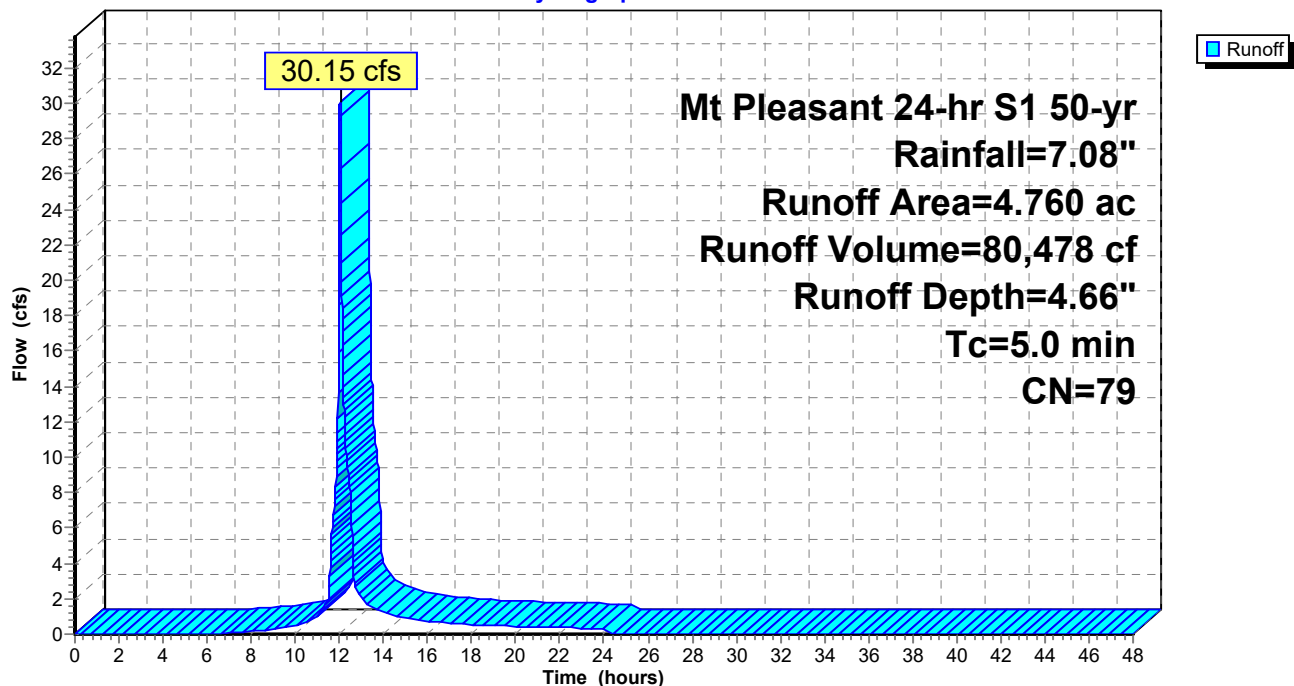
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

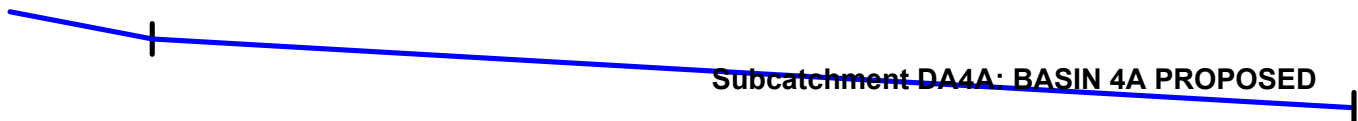
Runoff = 11.70 cfs @ 12.58 hrs, Volume= 69,756 cf, Depth= 3.47"

Routed to Reach OF4P : Primary Stream for Outfalls

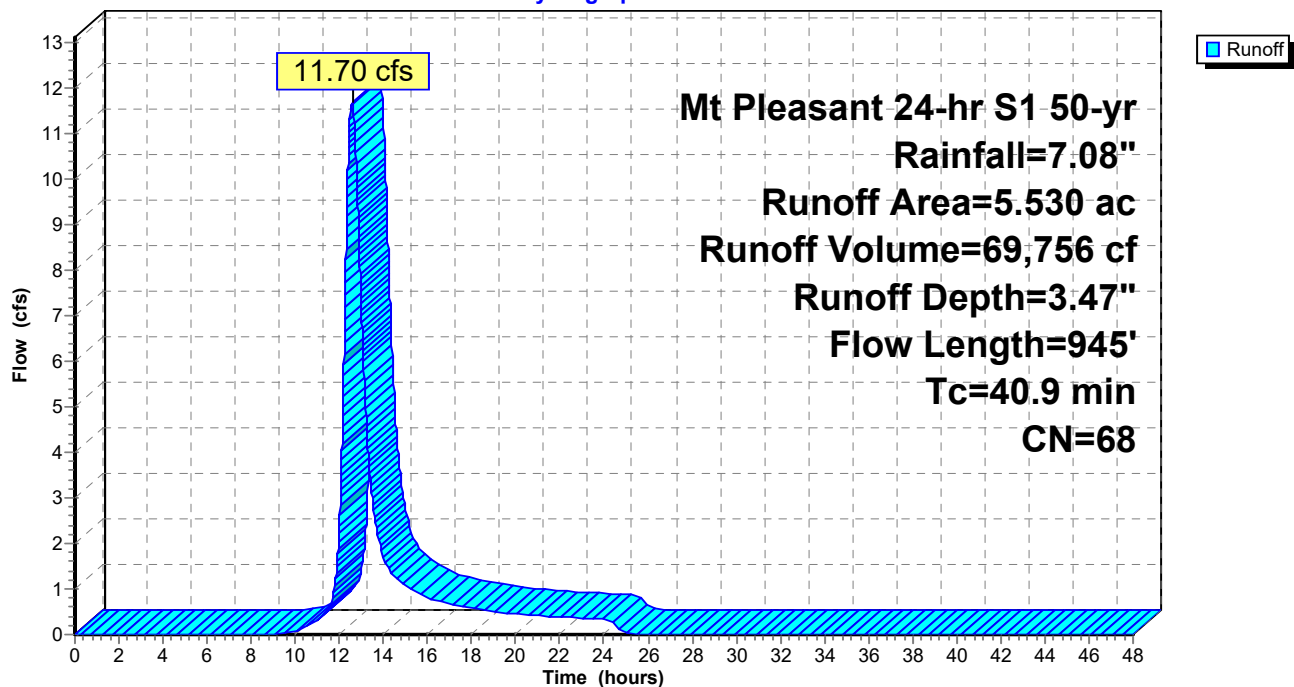
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



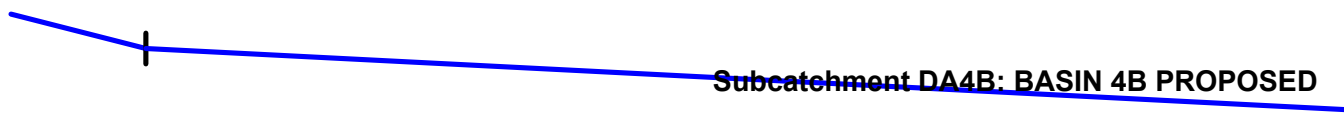
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

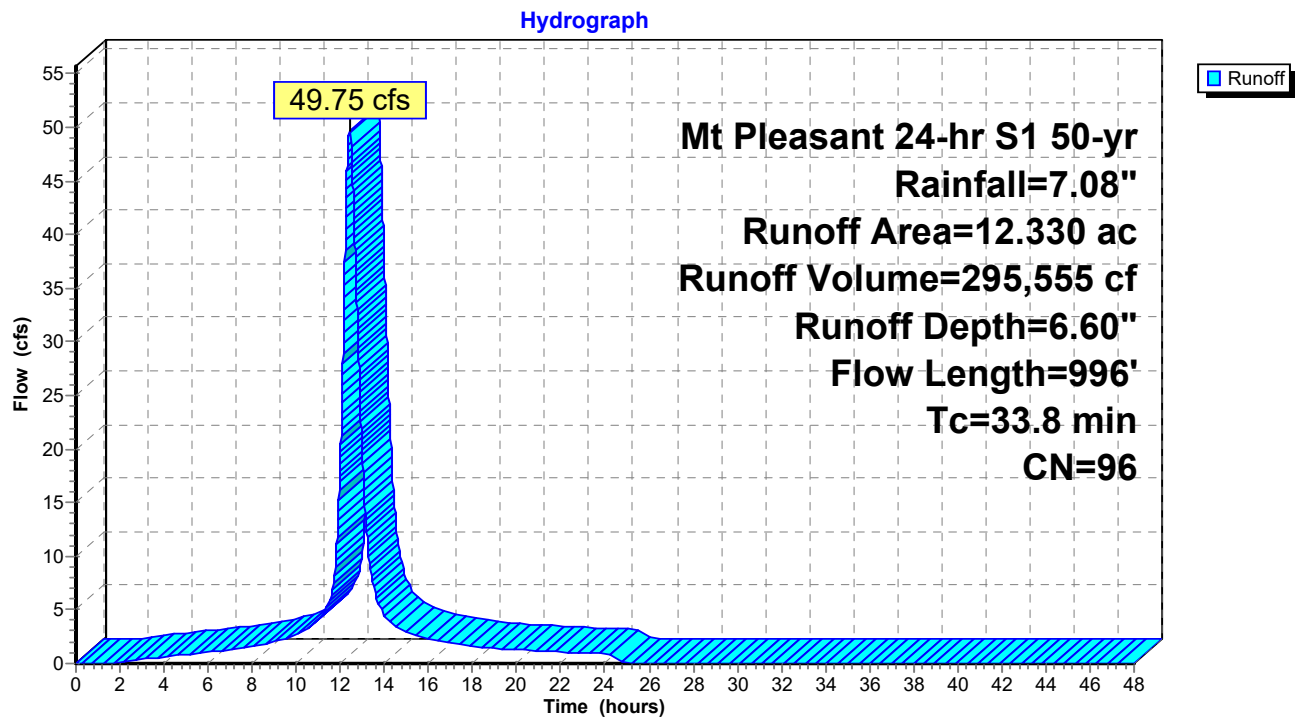
Runoff = 49.75 cfs @ 12.40 hrs, Volume= 295,555 cf, Depth= 6.60"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 5.52 cfs @ 12.03 hrs, Volume= 16,300 cf, Depth= 6.60"
 Routed to Reach D4C : Ditch 4C

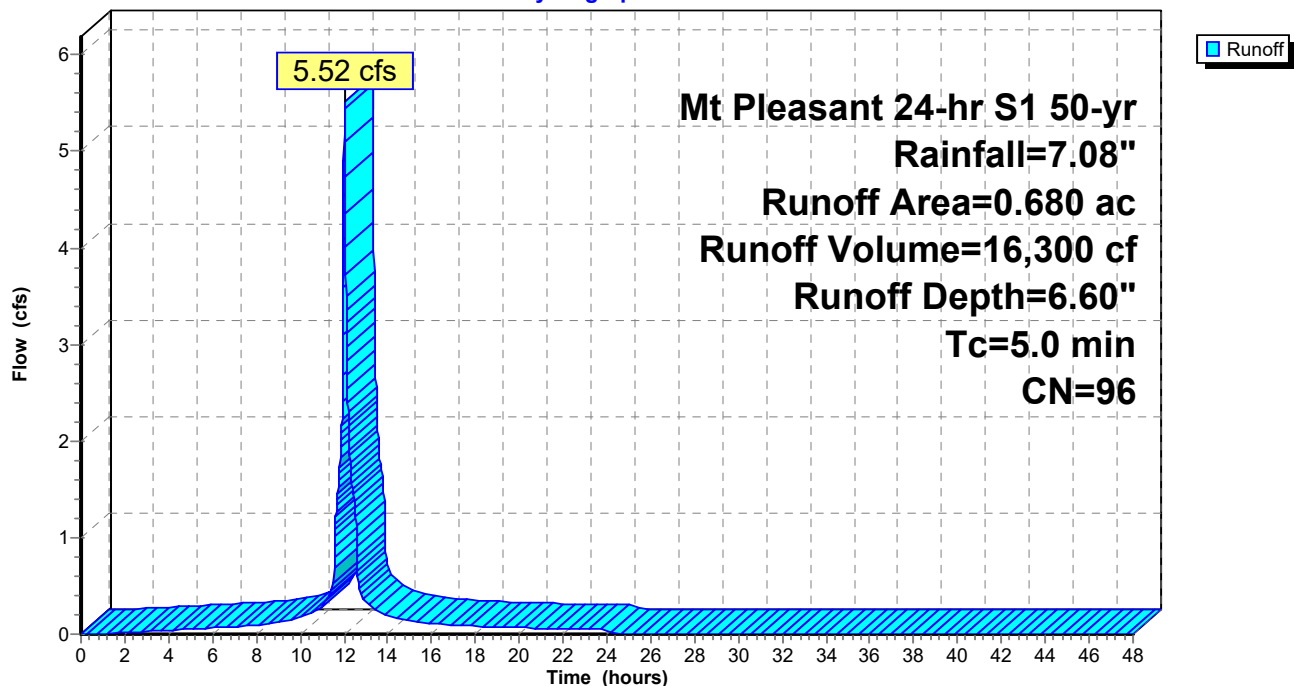
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 9.99 cfs @ 12.03 hrs, Volume= 29,484 cf, Depth= 6.60"
 Routed to Reach D4D : Ditch 4D

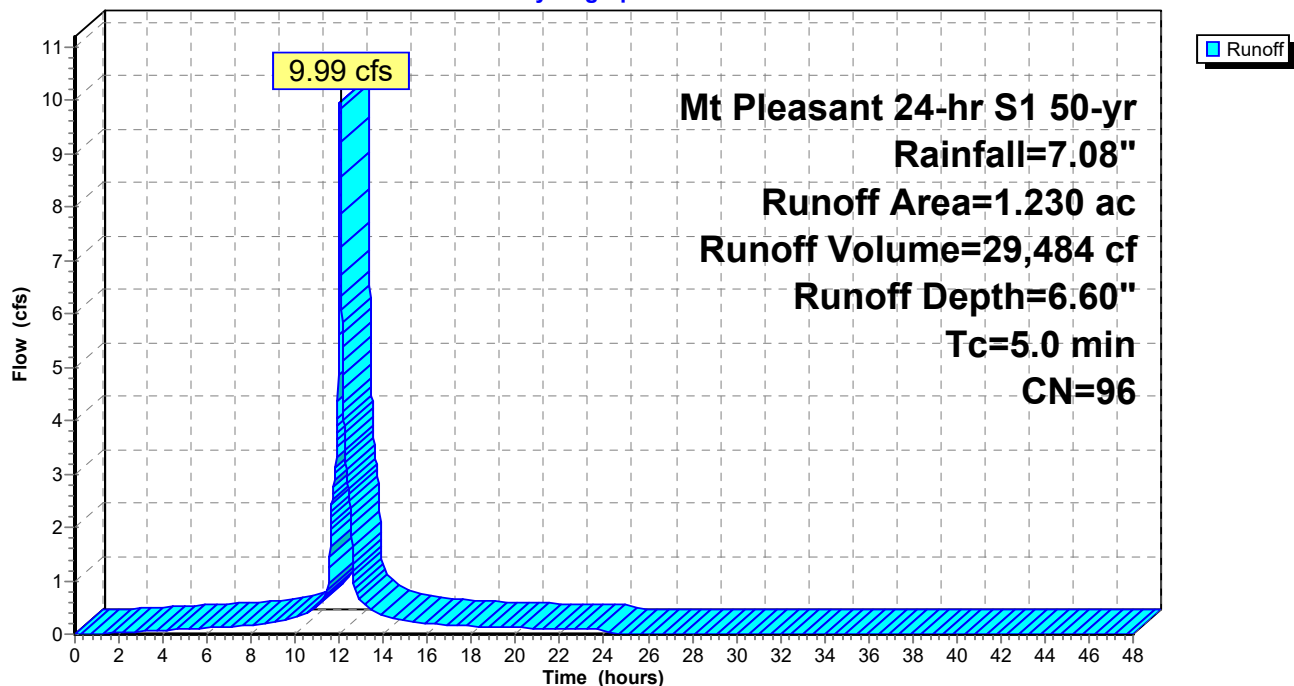
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



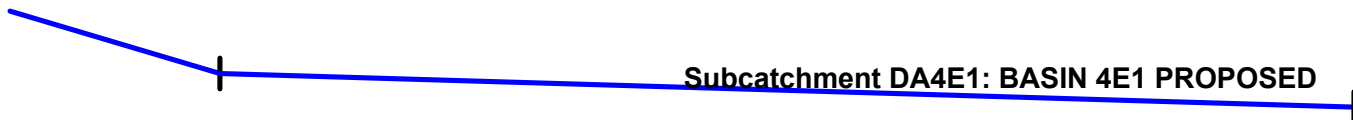
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

Runoff = 15.16 cfs @ 12.43 hrs, Volume= 80,705 cf, Depth= 3.06"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

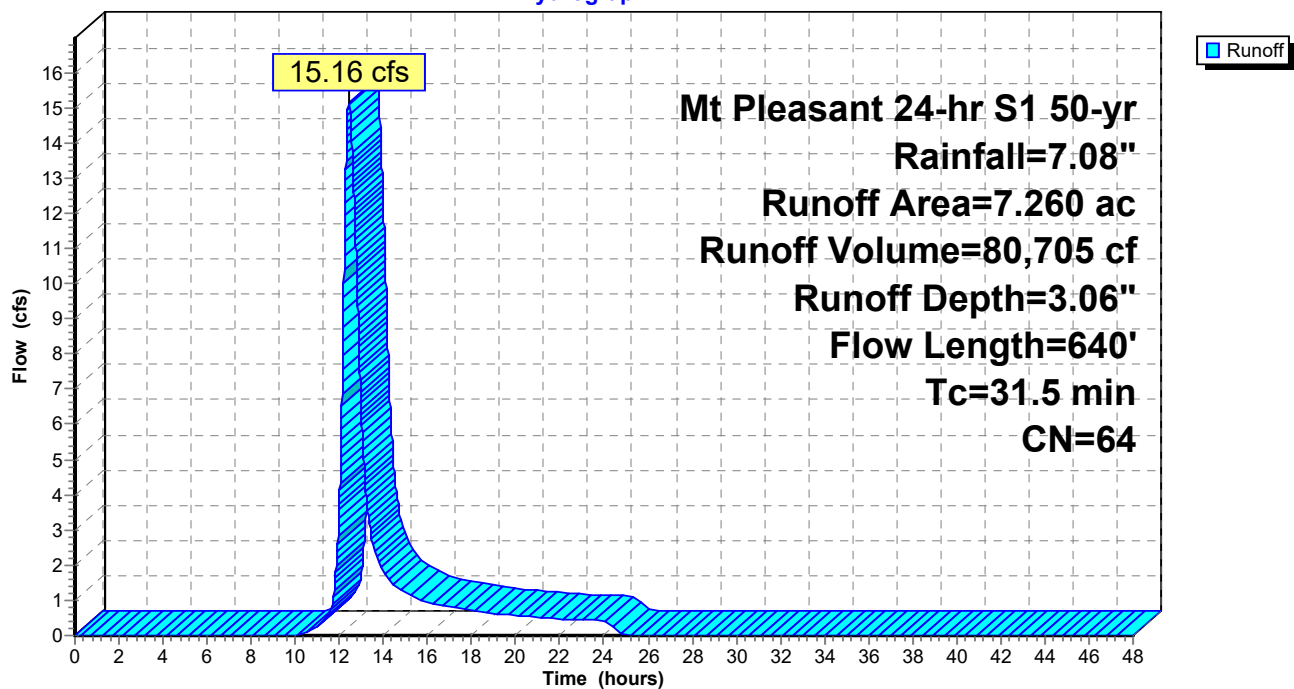
Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

Hydrograph



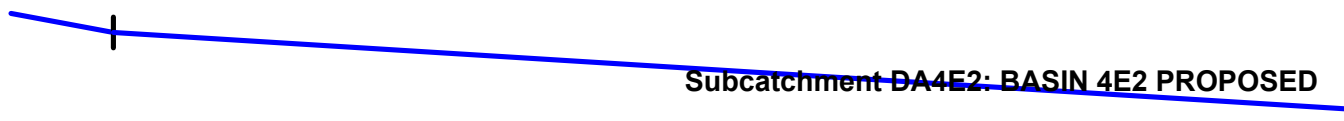
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

Runoff = 39.30 cfs @ 12.64 hrs, Volume= 249,230 cf, Depth= 3.58"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 50-yr Rainfall=7.08"

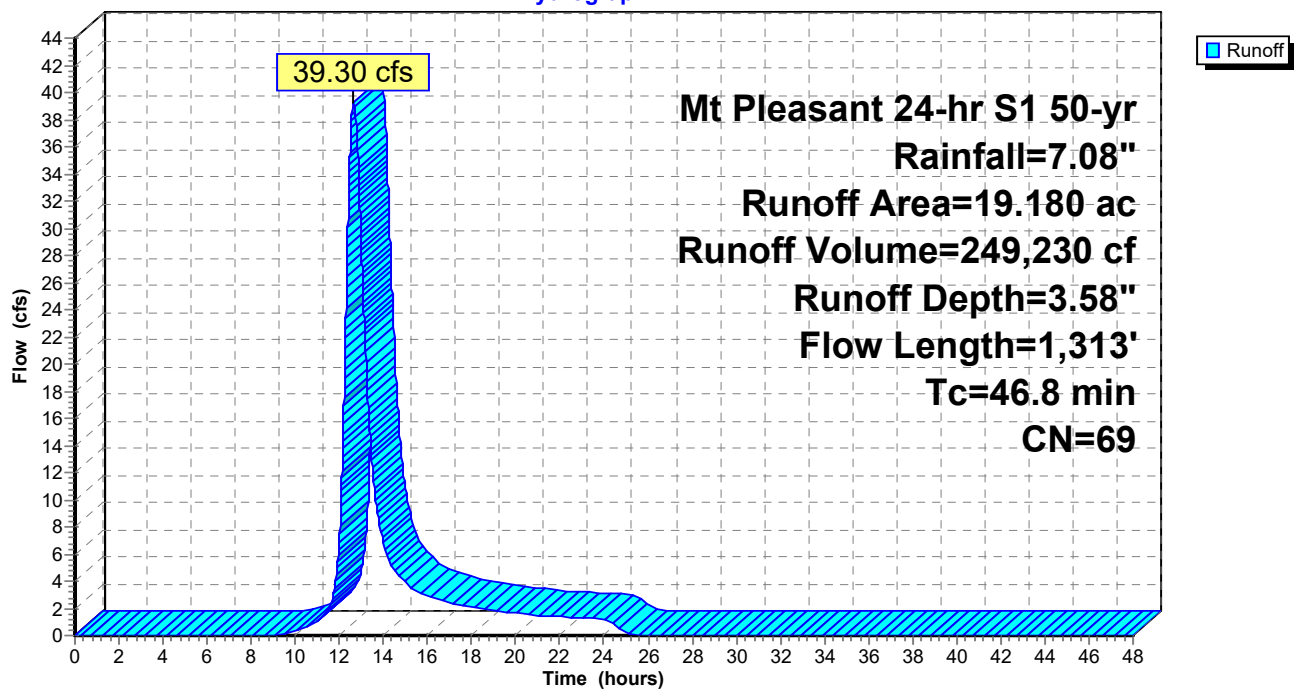
Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

Hydrograph



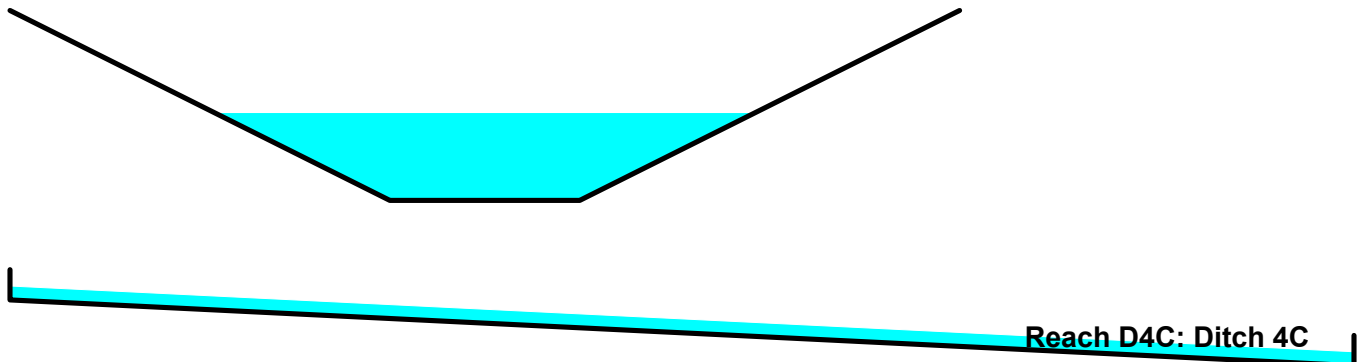
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 6.60" for 50-yr event
Inflow = 5.52 cfs @ 12.03 hrs, Volume= 16,300 cf
Outflow = 5.23 cfs @ 12.05 hrs, Volume= 16,300 cf, Atten= 5%, Lag= 1.2 min
Routed to Pond CD4C : Cross Drain 4C

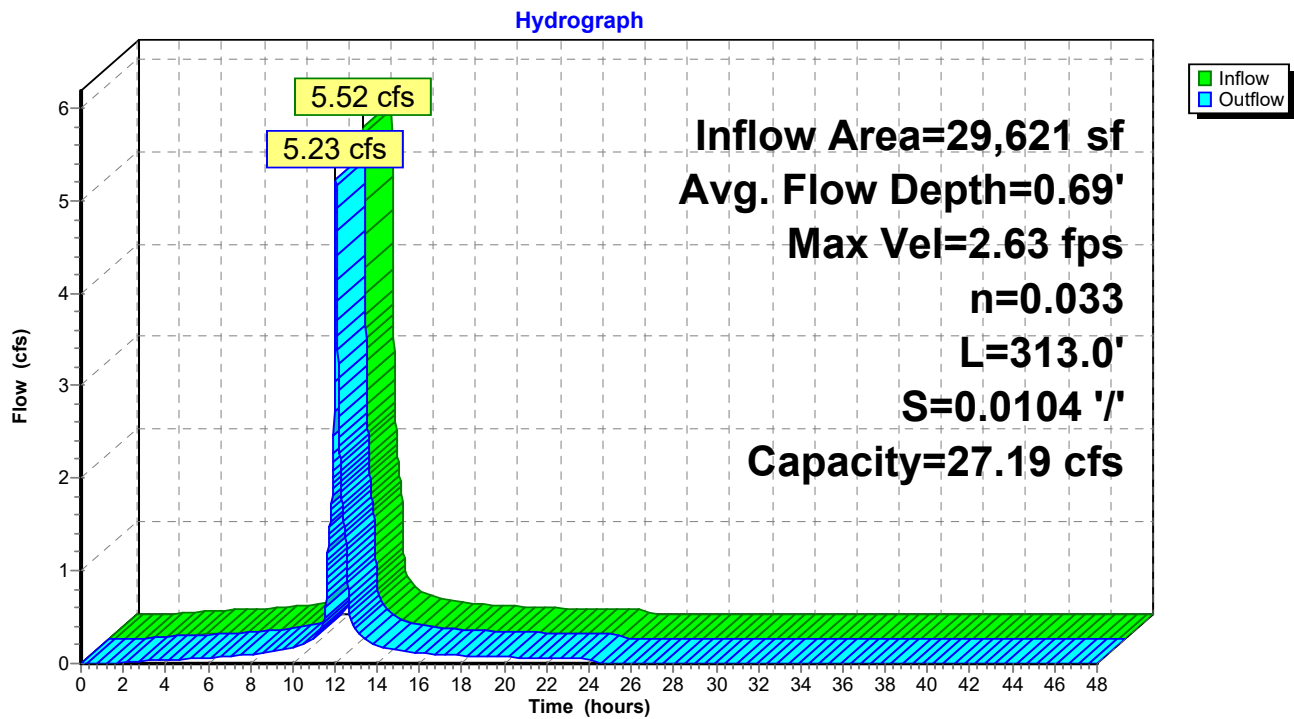
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.63 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 6.9 min

Peak Storage= 622 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.69' , Surface Width= 4.26'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

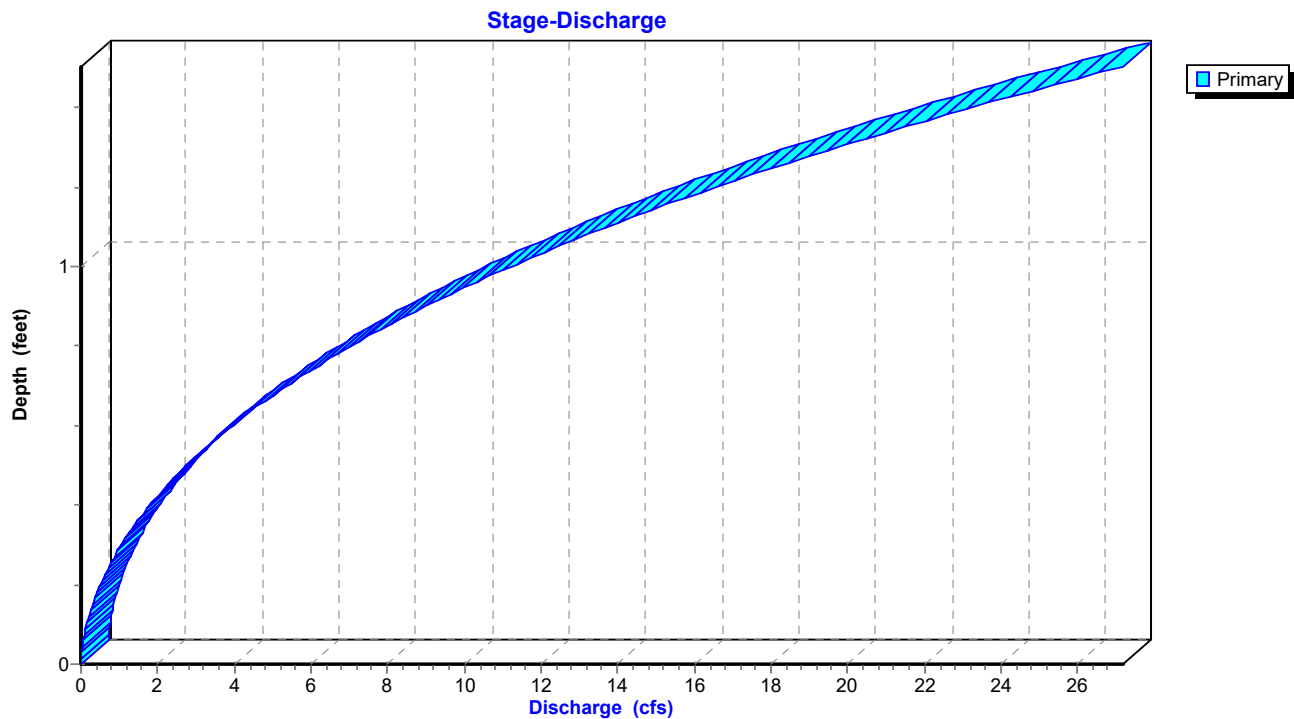
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



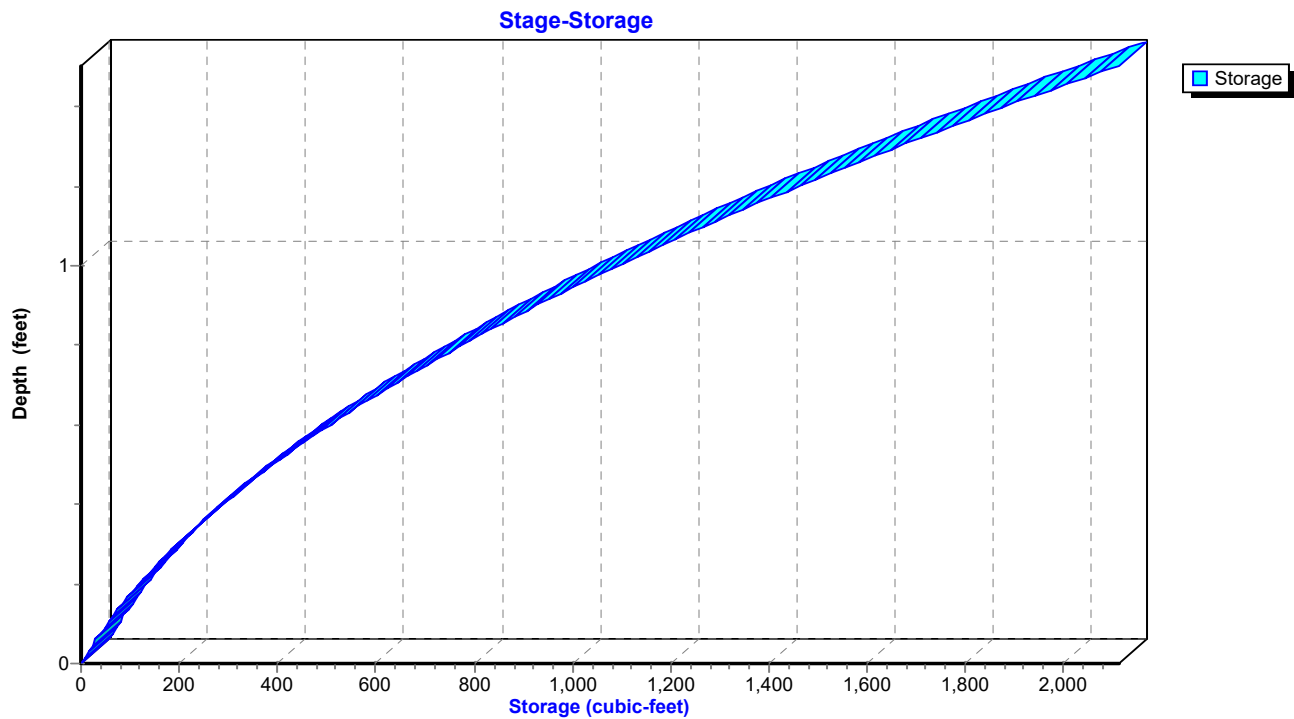
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



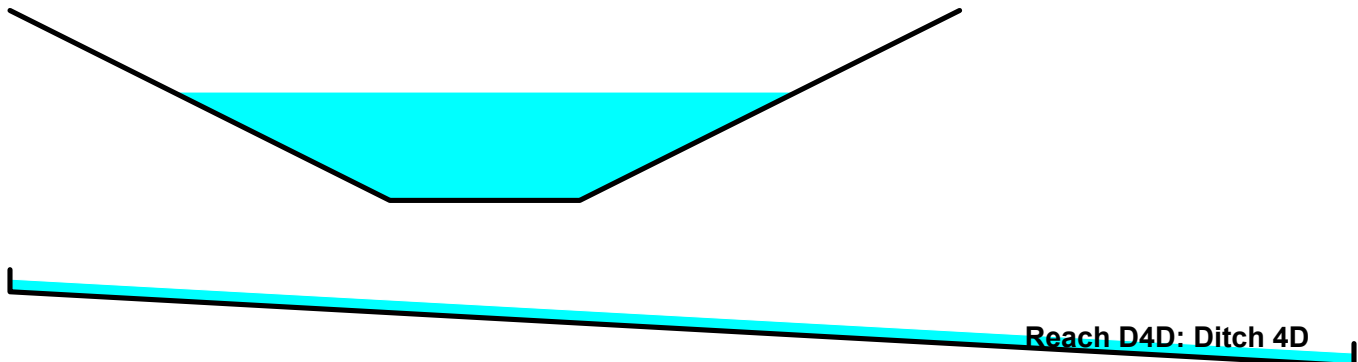
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 6.60" for 50-yr event
Inflow = 9.99 cfs @ 12.03 hrs, Volume= 29,484 cf
Outflow = 9.62 cfs @ 12.04 hrs, Volume= 29,484 cf, Atten= 4%, Lag= 1.0 min
Routed to Pond CD4DCE : Cross Drain 4DCE

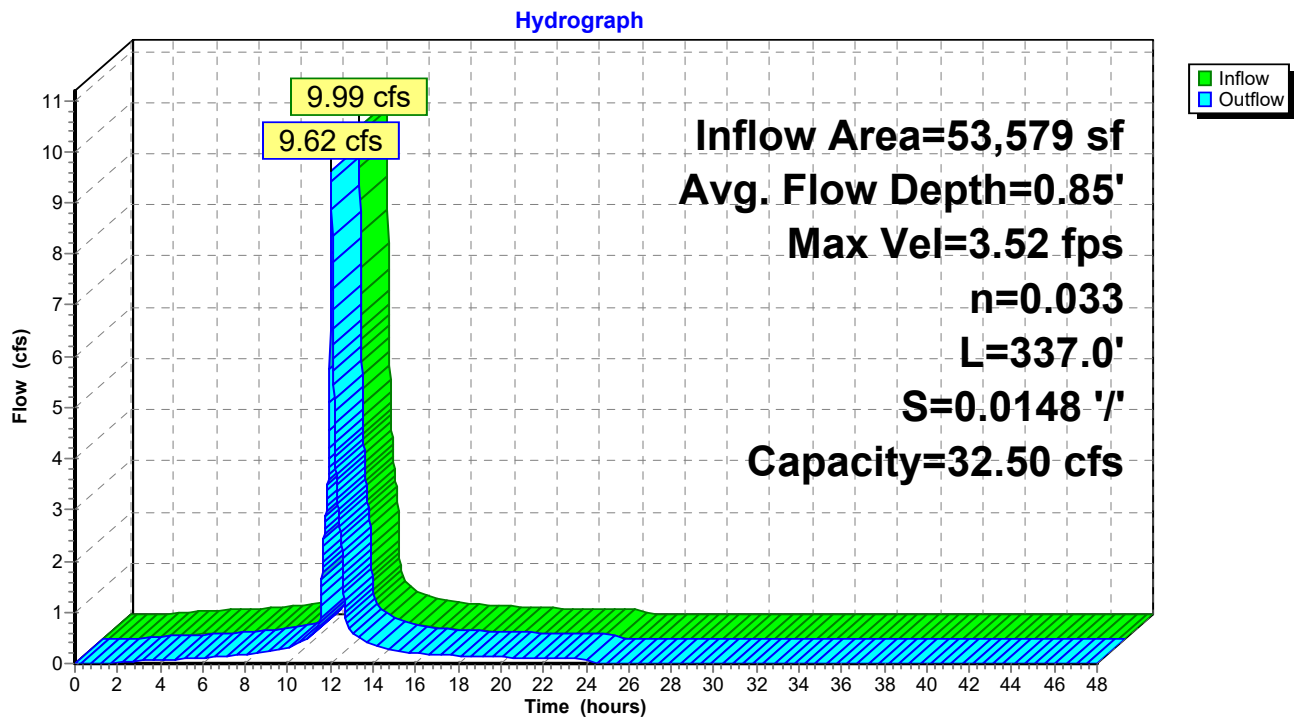
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 5.4 min

Peak Storage= 920 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.85' , Surface Width= 4.91'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

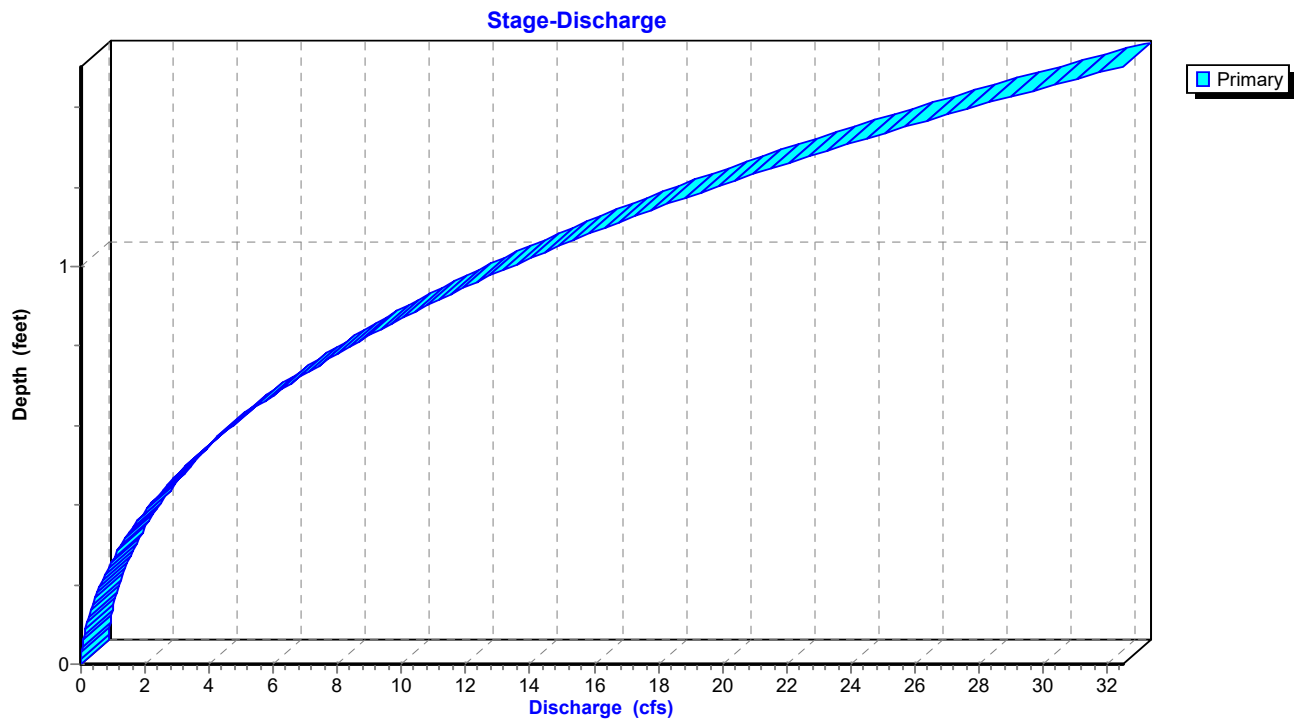
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



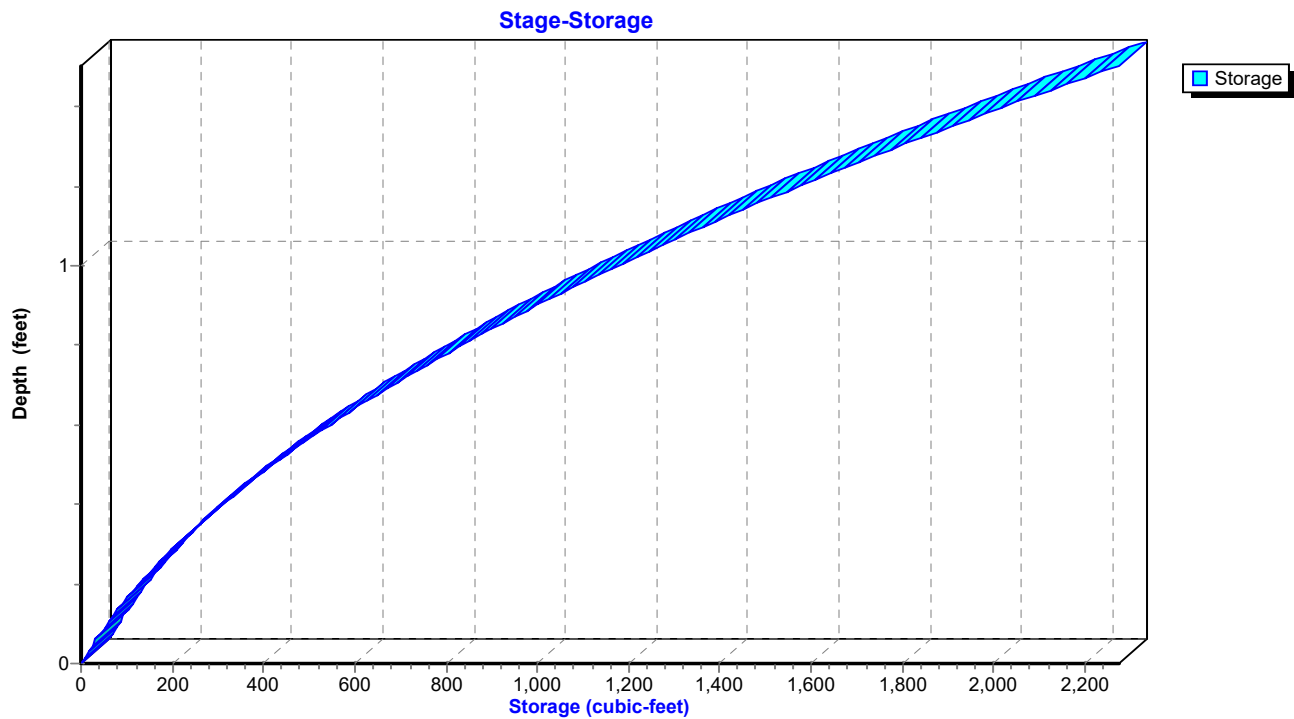
Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



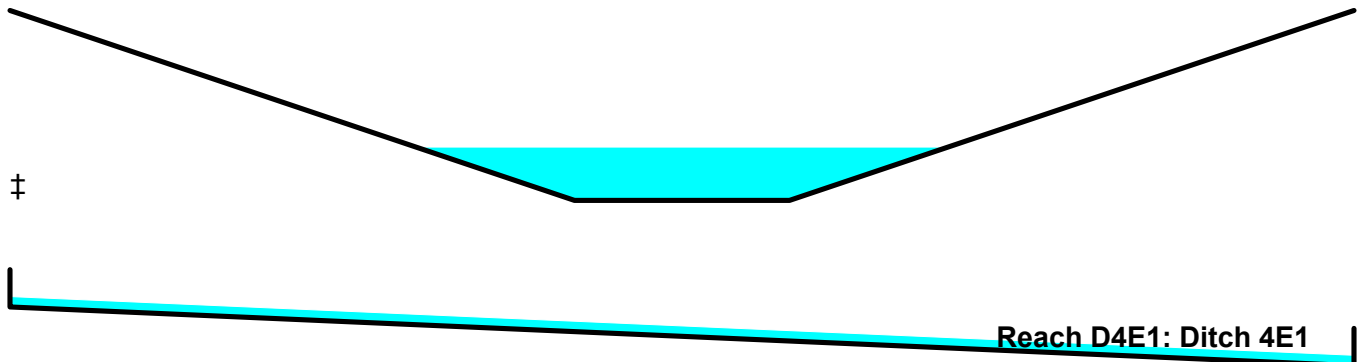
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 3.06" for 50-yr event
Inflow = 15.16 cfs @ 12.43 hrs, Volume= 80,705 cf
Outflow = 12.81 cfs @ 12.64 hrs, Volume= 80,705 cf, Atten= 15%, Lag= 12.5 min
Routed to Pond CD4E : Cross Drain 4E

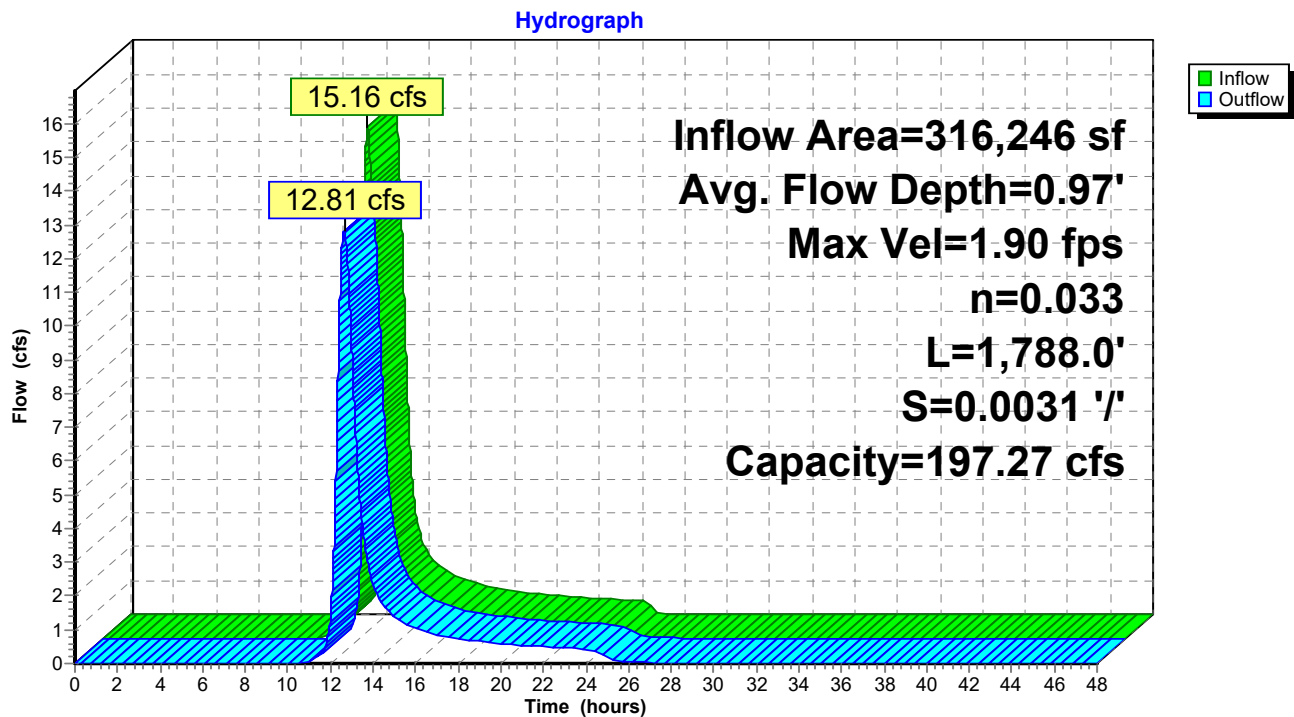
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.90 fps, Min. Travel Time= 15.7 min
Avg. Velocity= 0.55 fps, Avg. Travel Time= 54.7 min

Peak Storage= 12,053 cf @ 12.64 hrs
Average Depth at Peak Storage= 0.97' , Surface Width= 9.84'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

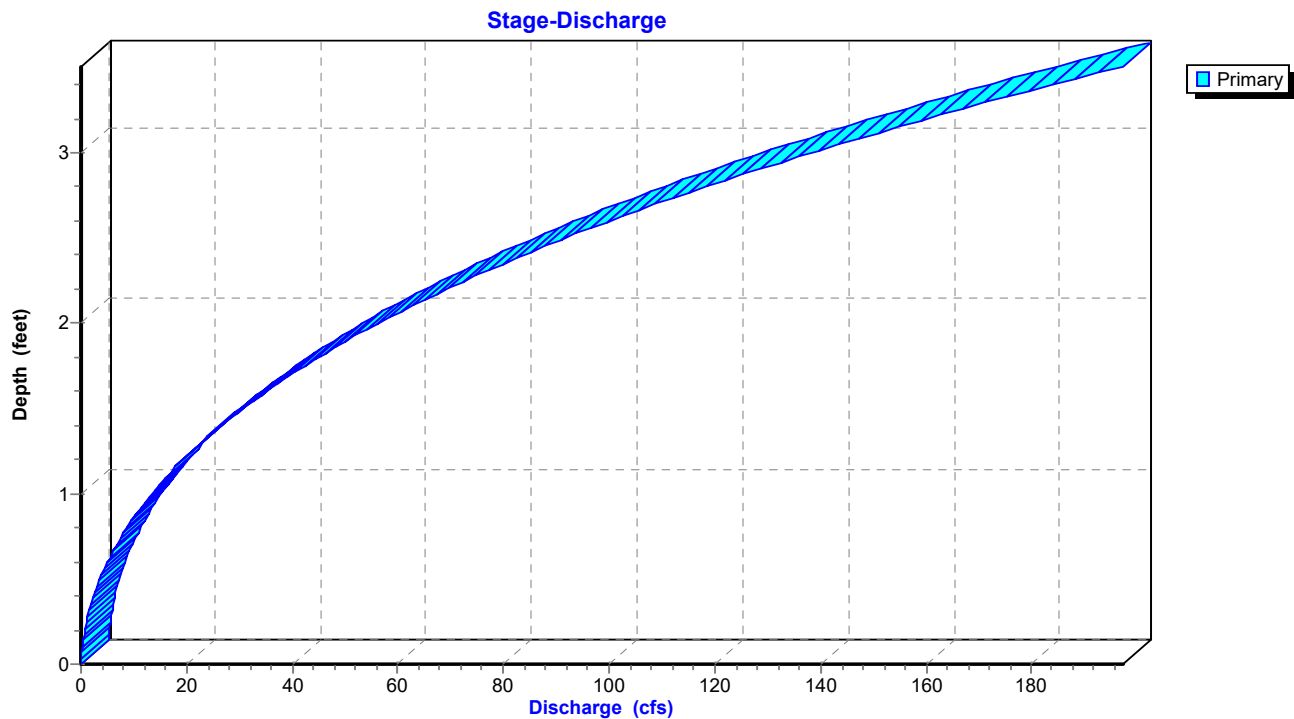
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 '/' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 '/'
Inlet Invert= 685.00', Outlet Invert= 679.50'



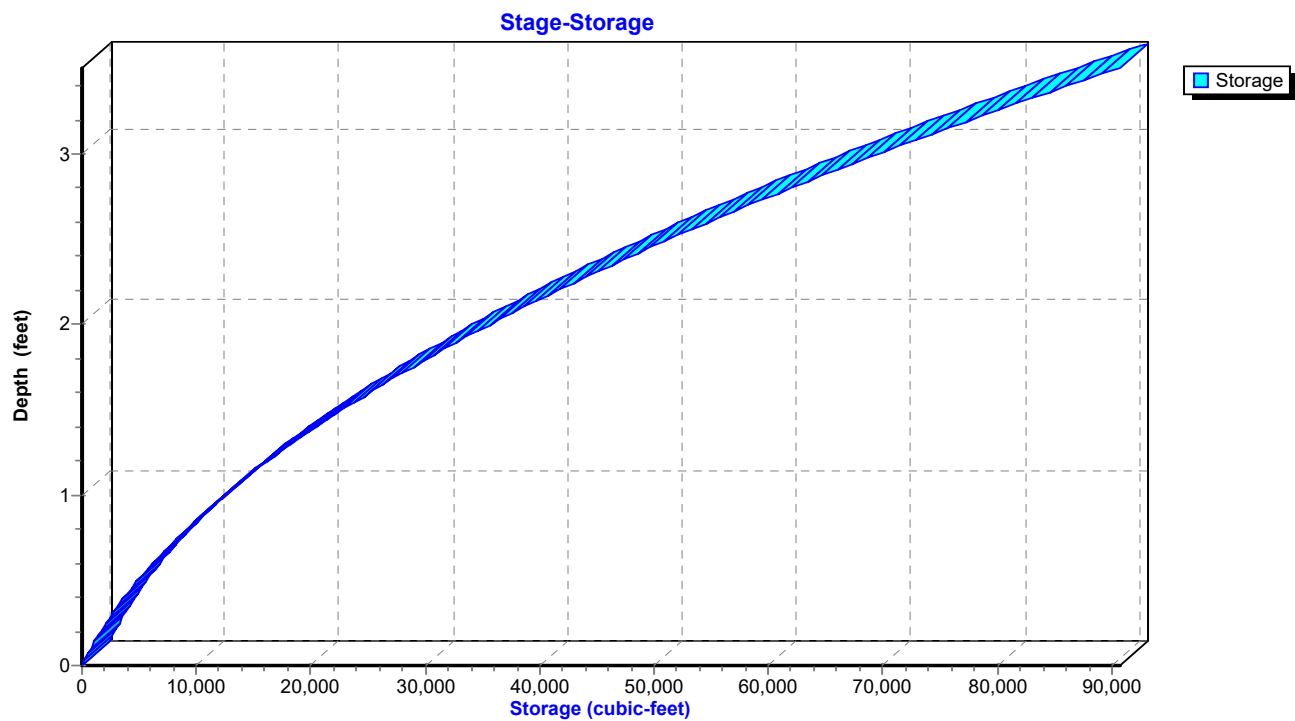
Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



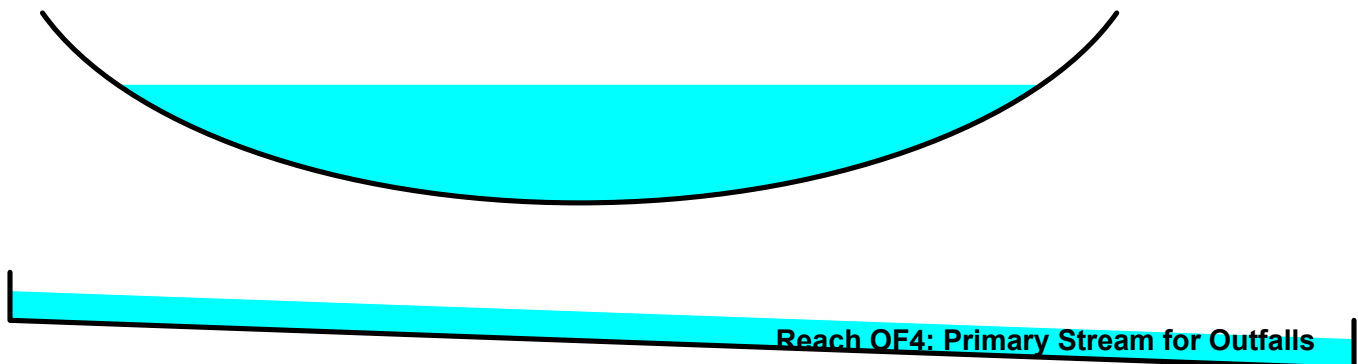
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 3.91" for 50-yr event
Inflow = 232.20 cfs @ 13.34 hrs, Volume= 3,244,345 cf
Outflow = 232.00 cfs @ 13.36 hrs, Volume= 3,244,345 cf, Atten= 0%, Lag= 1.0 min

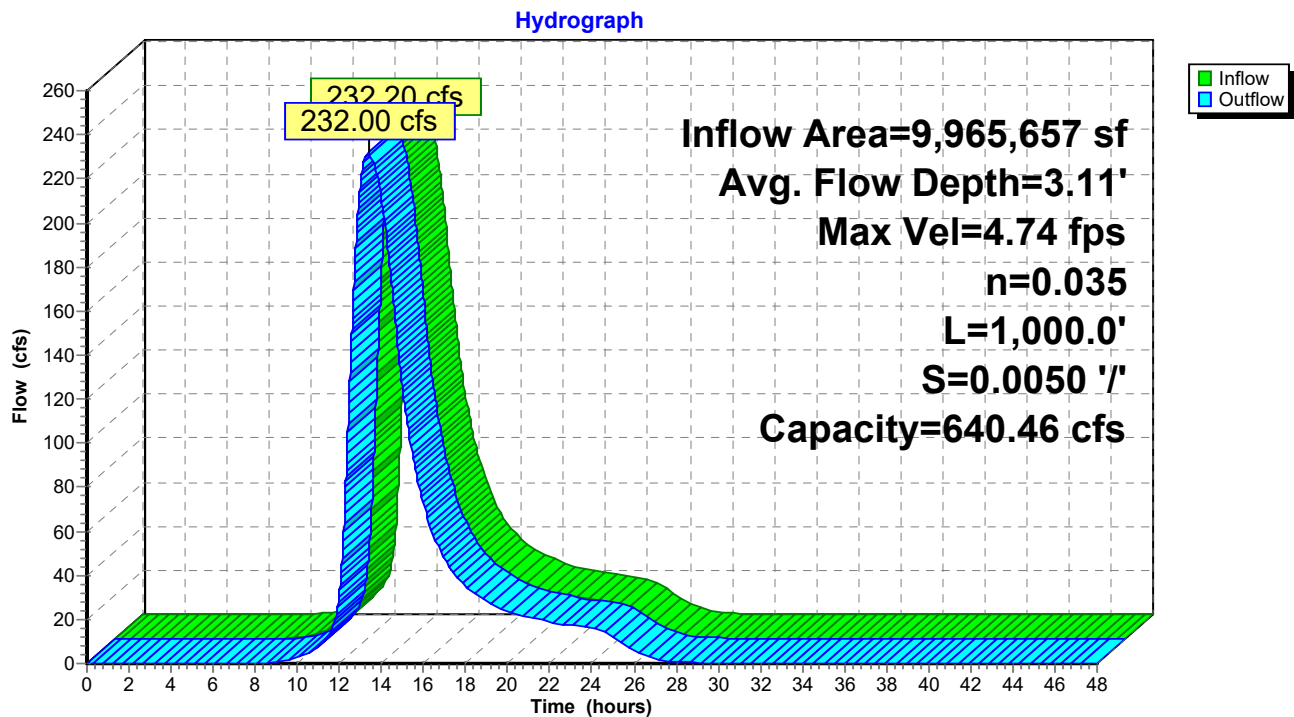
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 9.8 min

Peak Storage= 48,961 cf @ 13.36 hrs
Average Depth at Peak Storage= 3.11' , Surface Width= 23.64'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

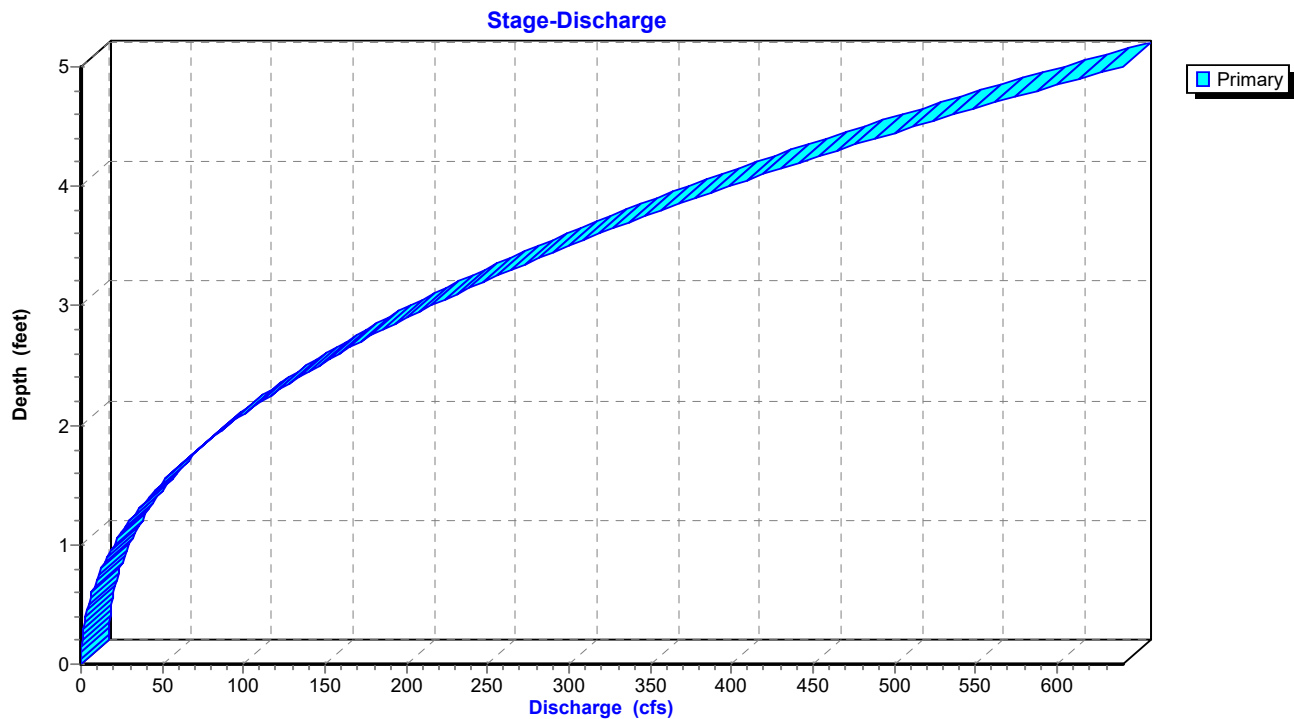
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

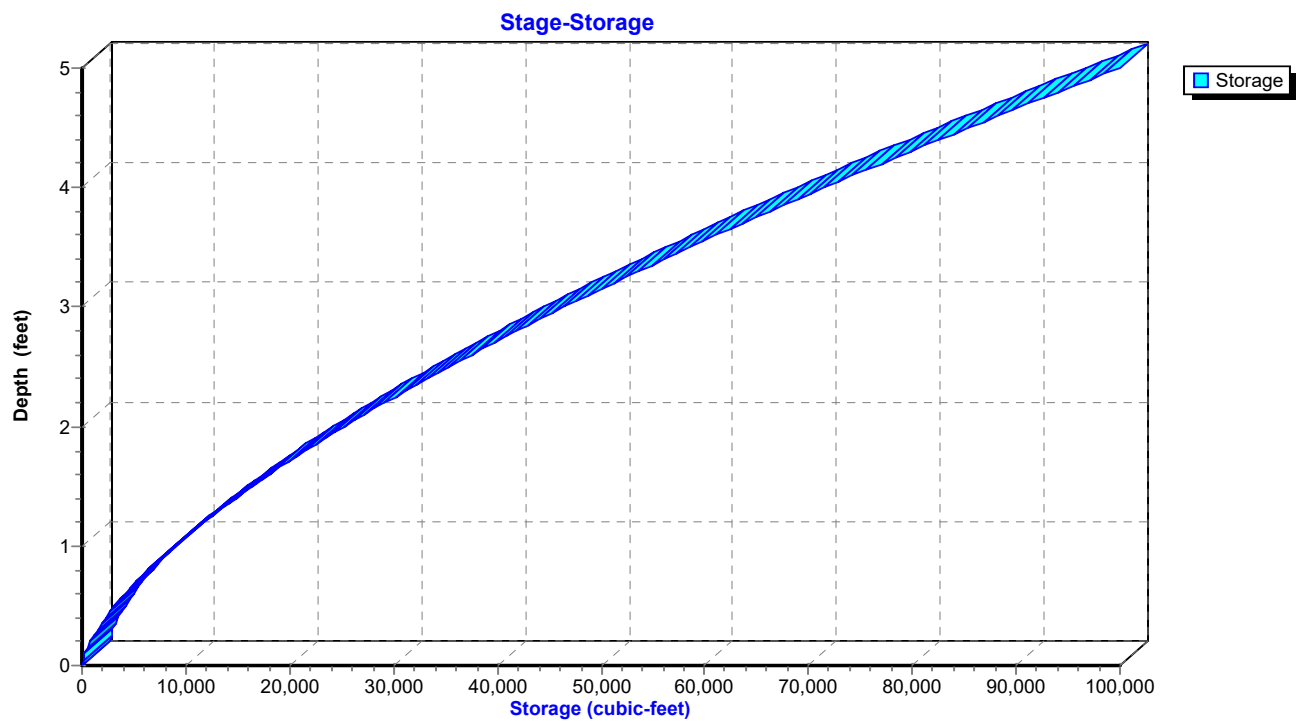


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

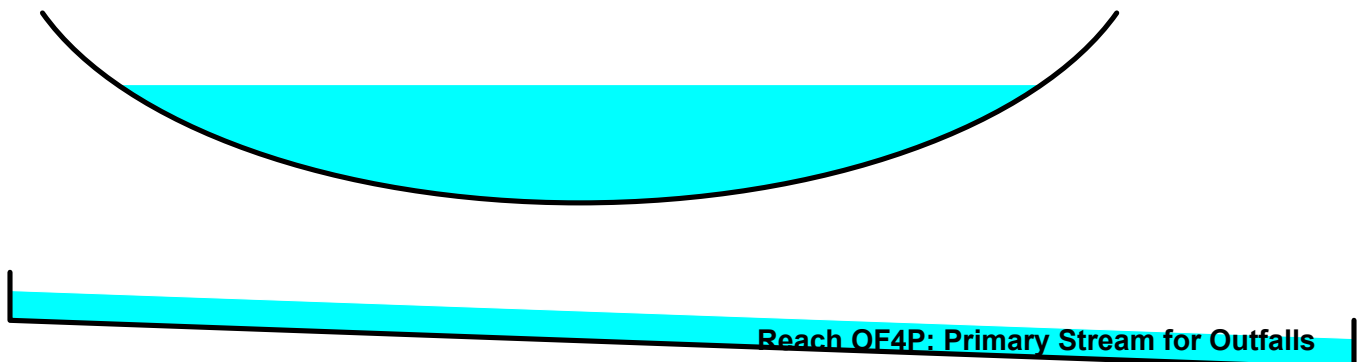
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 4.06" for 50-yr event
Inflow = 230.65 cfs @ 13.66 hrs, Volume= 3,374,372 cf
Outflow = 230.51 cfs @ 13.67 hrs, Volume= 3,374,370 cf, Atten= 0%, Lag= 0.9 min

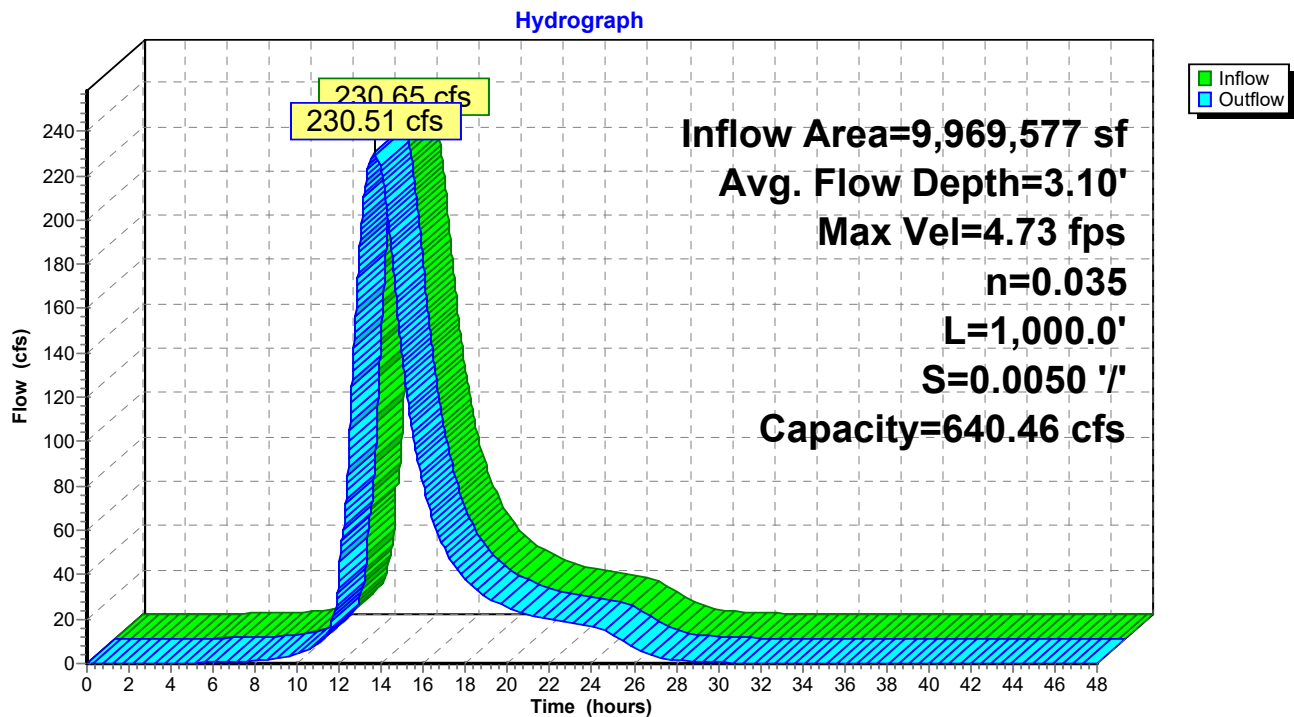
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.73 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 12.4 min

Peak Storage= 48,740 cf @ 13.67 hrs
Average Depth at Peak Storage= 3.10' , Surface Width= 23.61'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

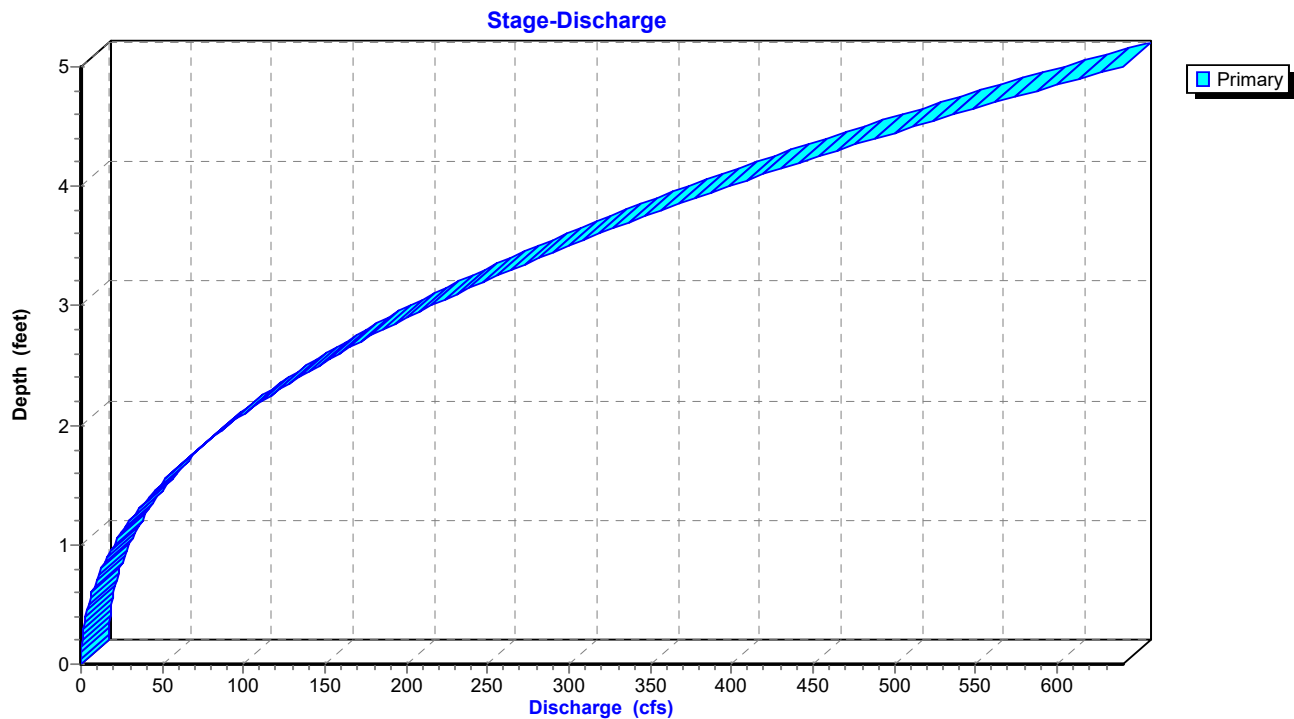
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

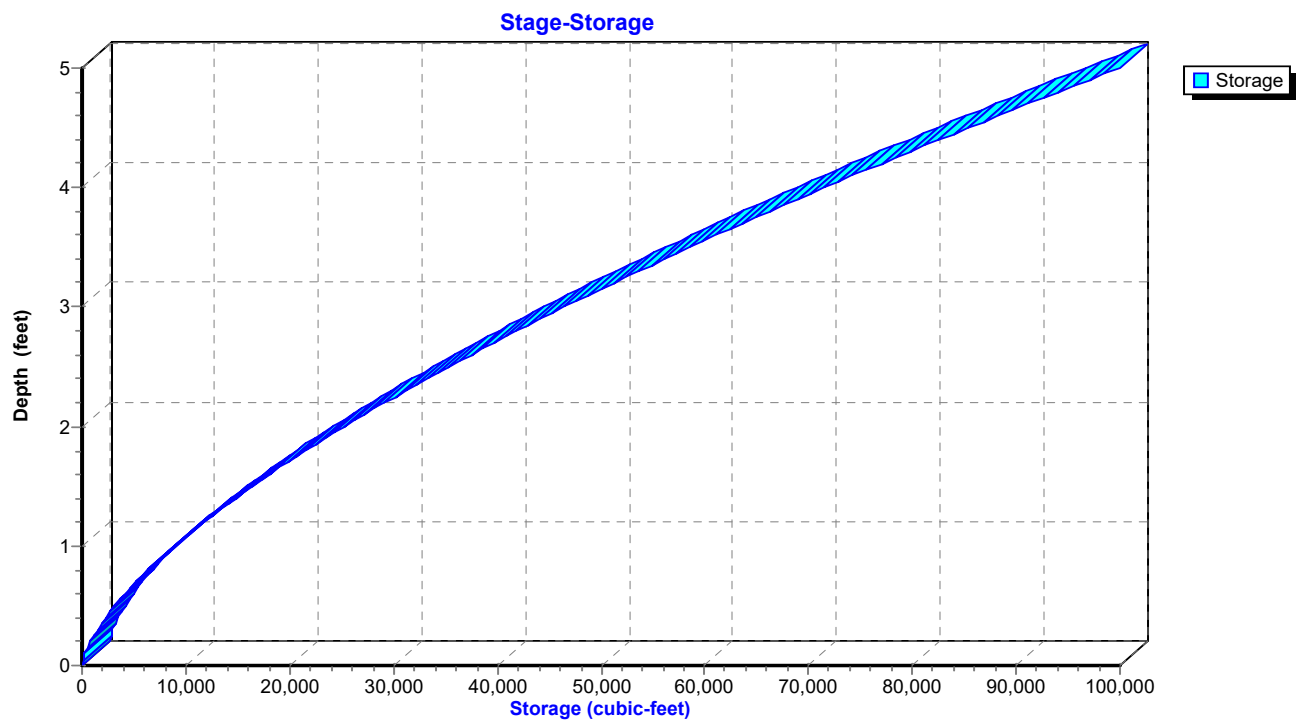


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

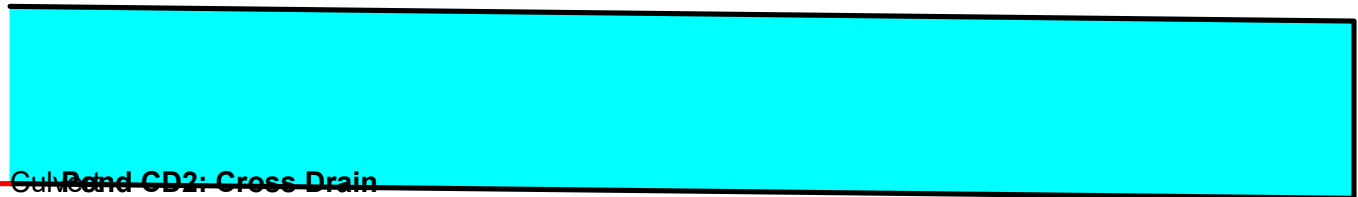
Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 2.86" for 50-yr event
 Inflow = 48.09 cfs @ 12.88 hrs, Volume= 362,320 cf
 Outflow = 48.09 cfs @ 12.88 hrs, Volume= 362,320 cf, Atten= 0%, Lag= 0.0 min
 Primary = 48.09 cfs @ 12.88 hrs, Volume= 362,320 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.27' @ 12.88 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

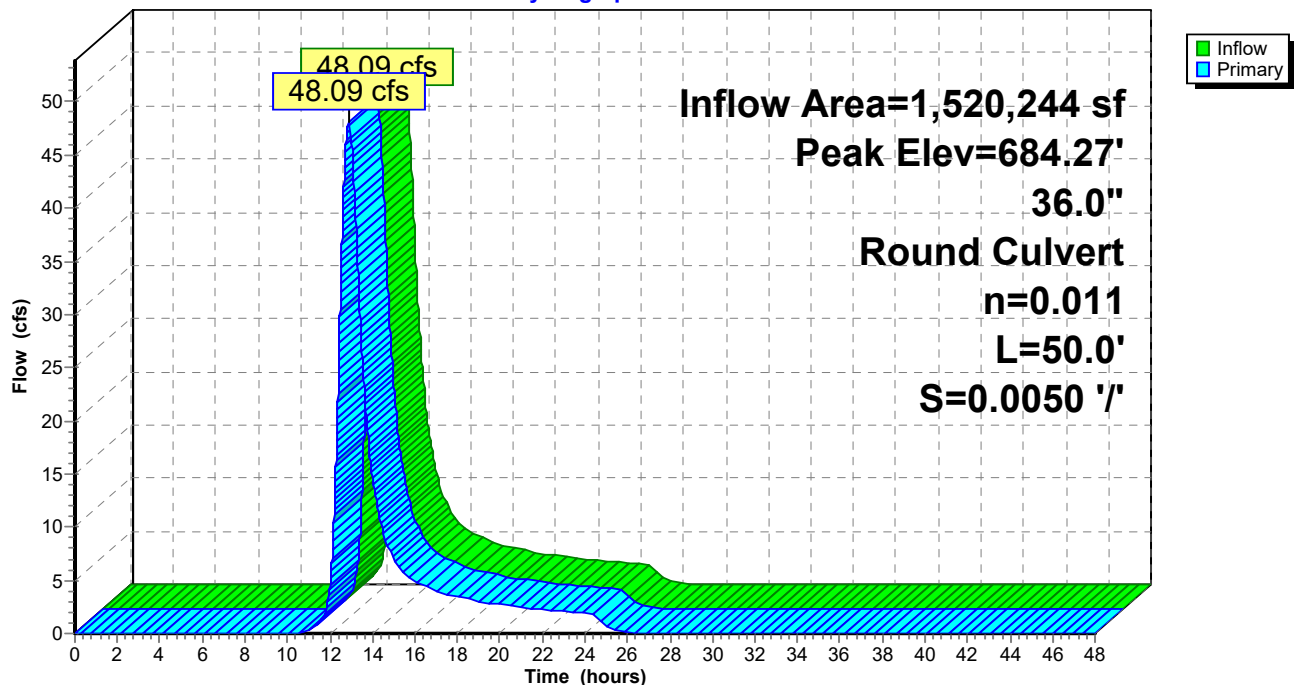
Primary OutFlow Max=48.09 cfs @ 12.88 hrs HW=684.26' TW=677.73' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 48.09 cfs @ 6.80 fps)

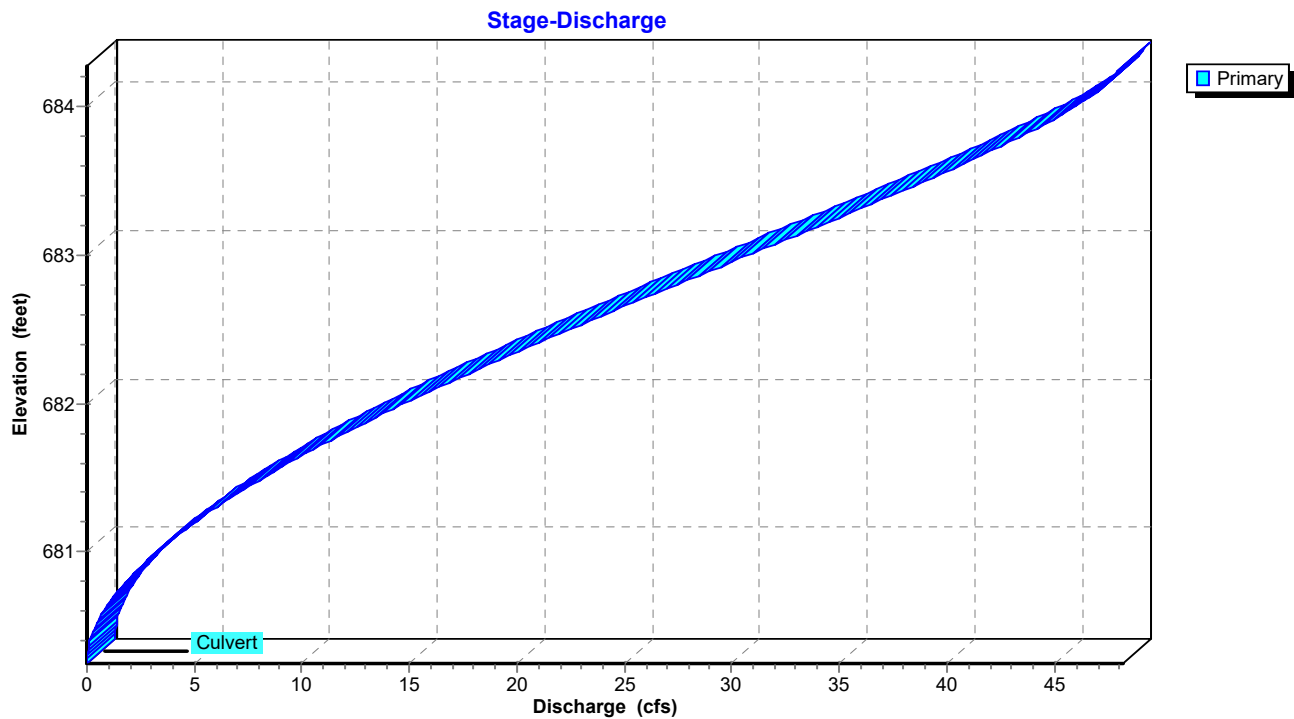
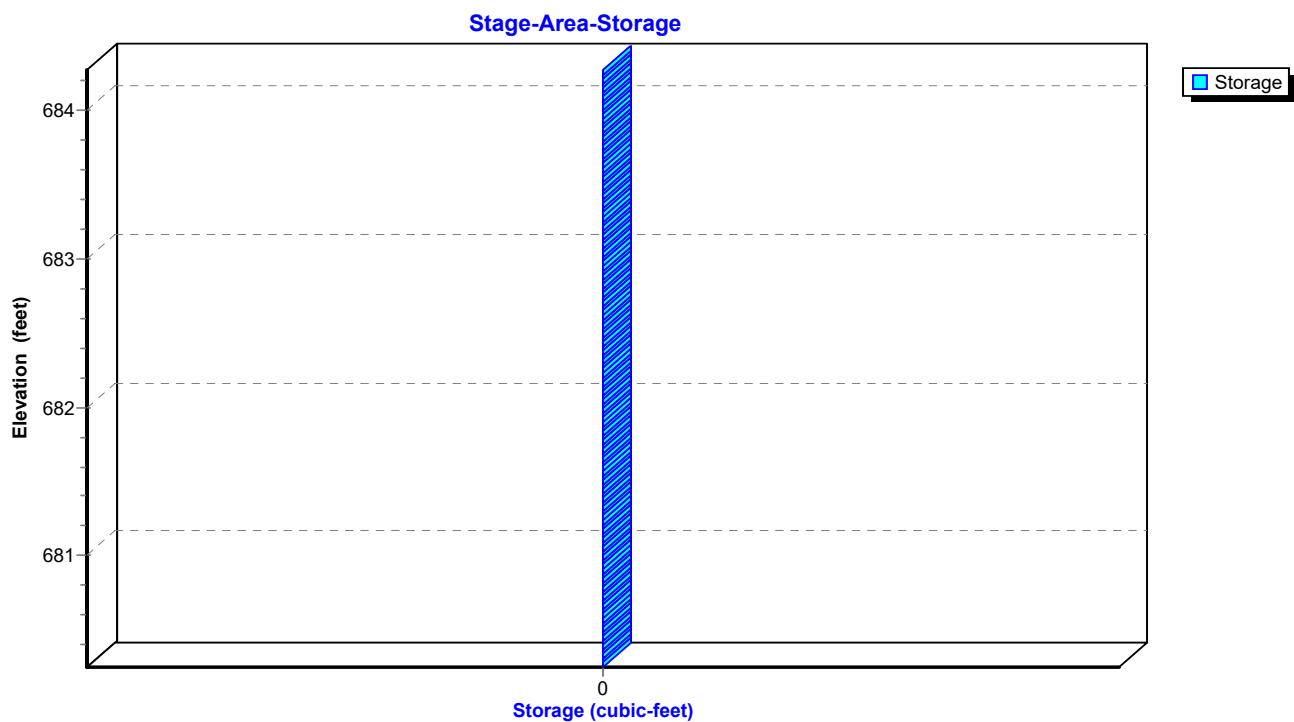


~~Culvert CD2: Cross Drain~~

Pond CD2: Cross Drain

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

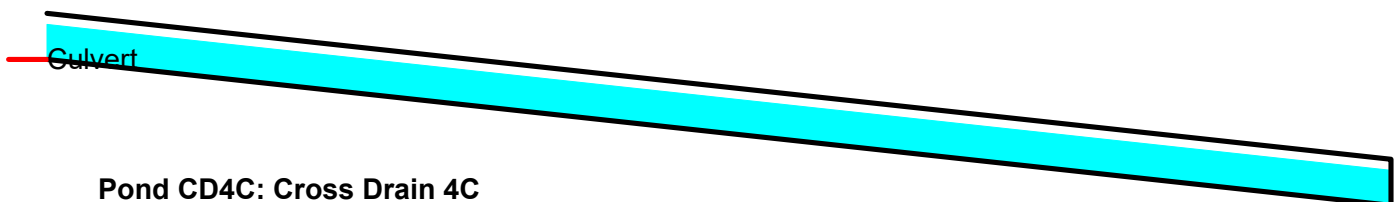
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 6.60" for 50-yr event
 Inflow = 5.23 cfs @ 12.05 hrs, Volume= 16,300 cf
 Outflow = 5.23 cfs @ 12.05 hrs, Volume= 16,300 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.23 cfs @ 12.05 hrs, Volume= 16,300 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

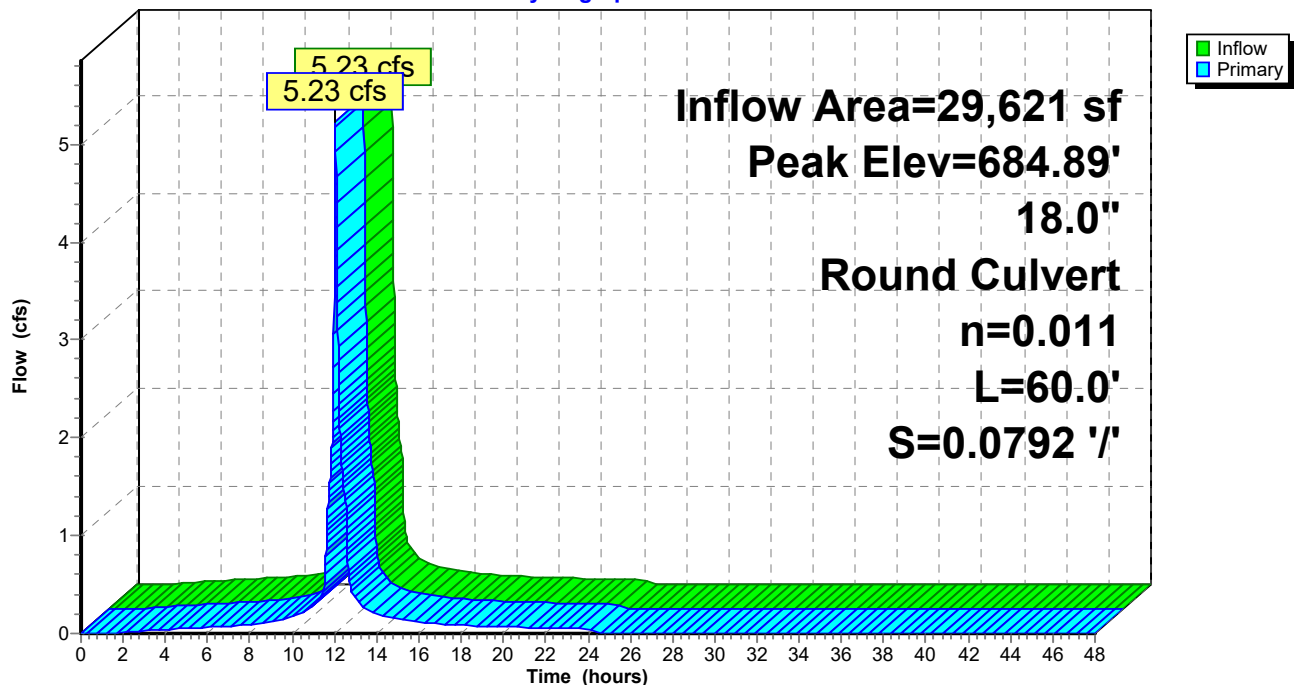
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.89' @ 12.05 hrs

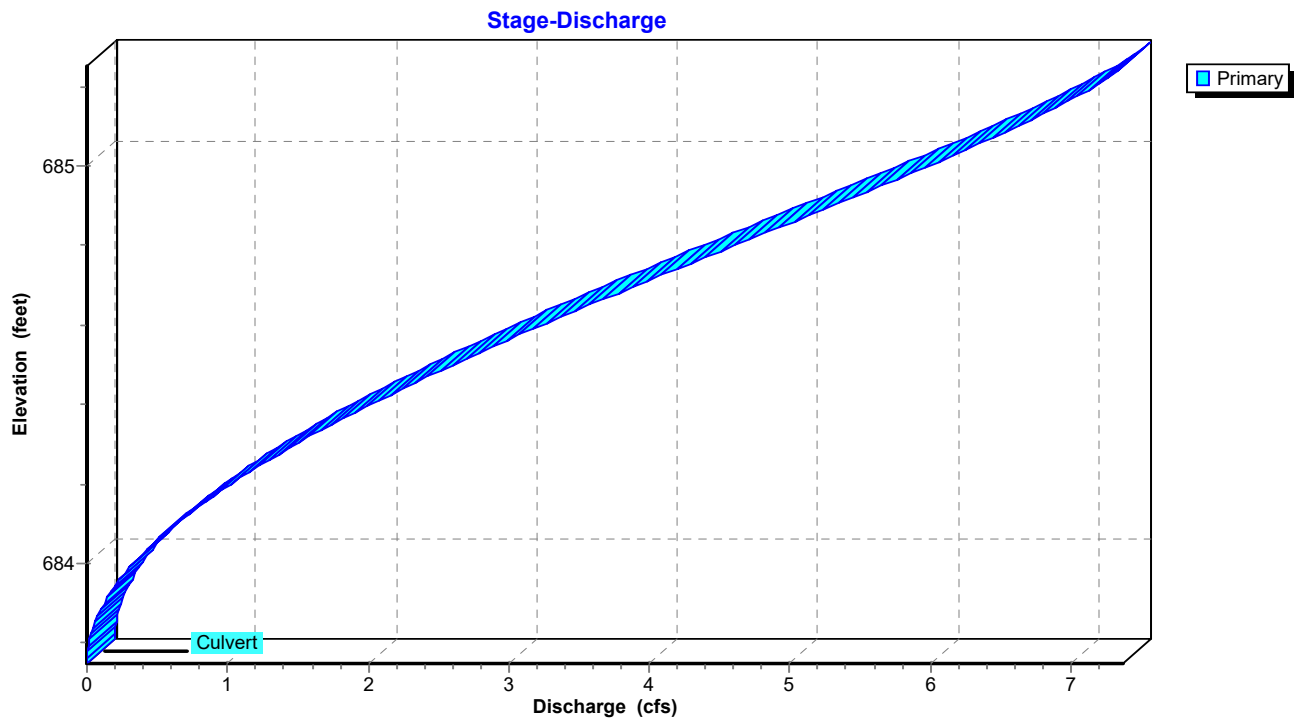
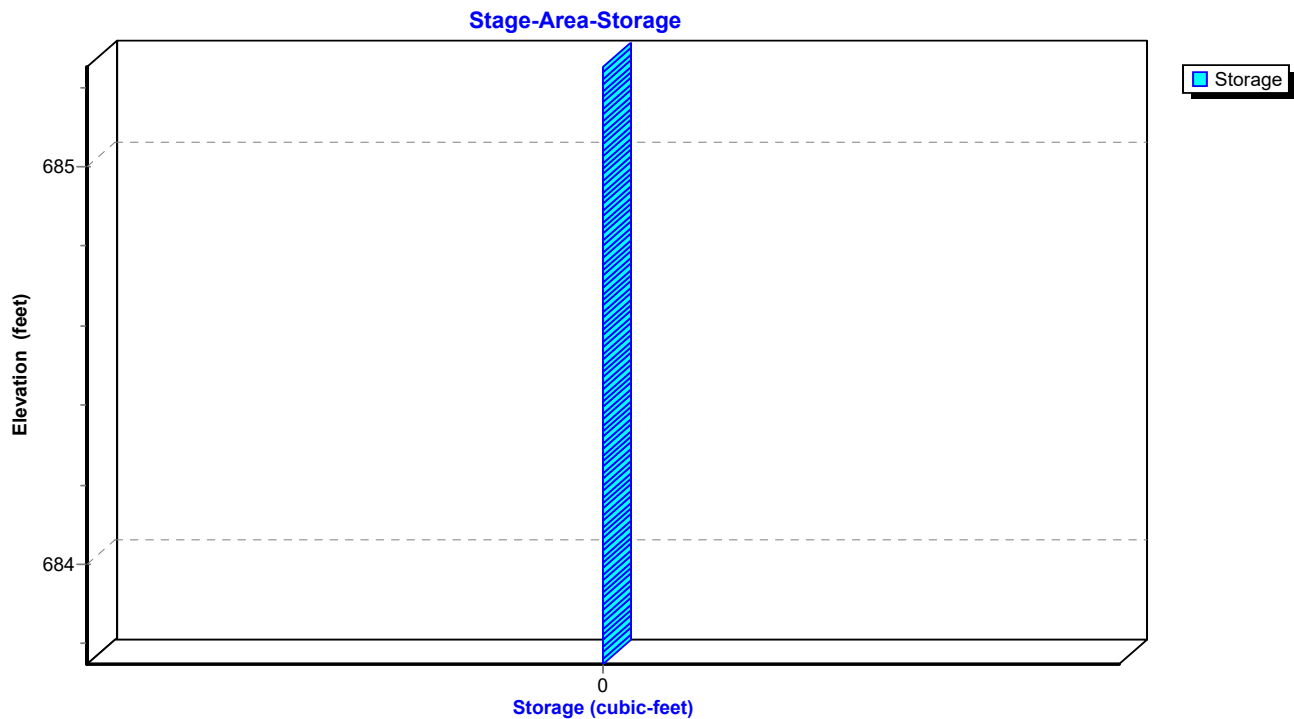
Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=5.21 cfs @ 12.05 hrs HW=684.89' TW=680.33' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 5.21 cfs @ 3.63 fps)

**Pond CD4C: Cross Drain 4C**

Hydrograph



Pond CD4C: Cross Drain 4C**Pond CD4C: Cross Drain 4C**

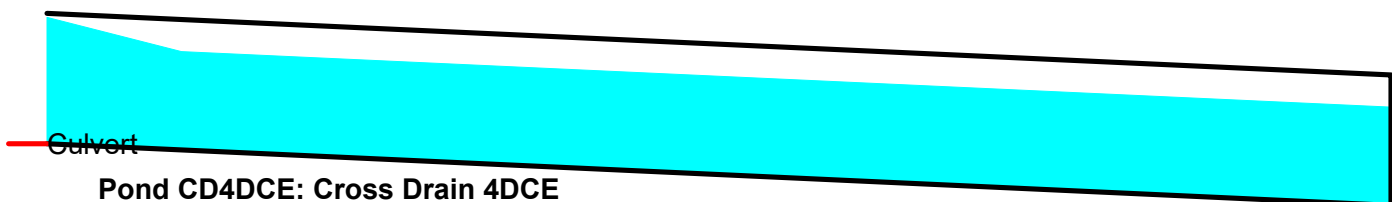
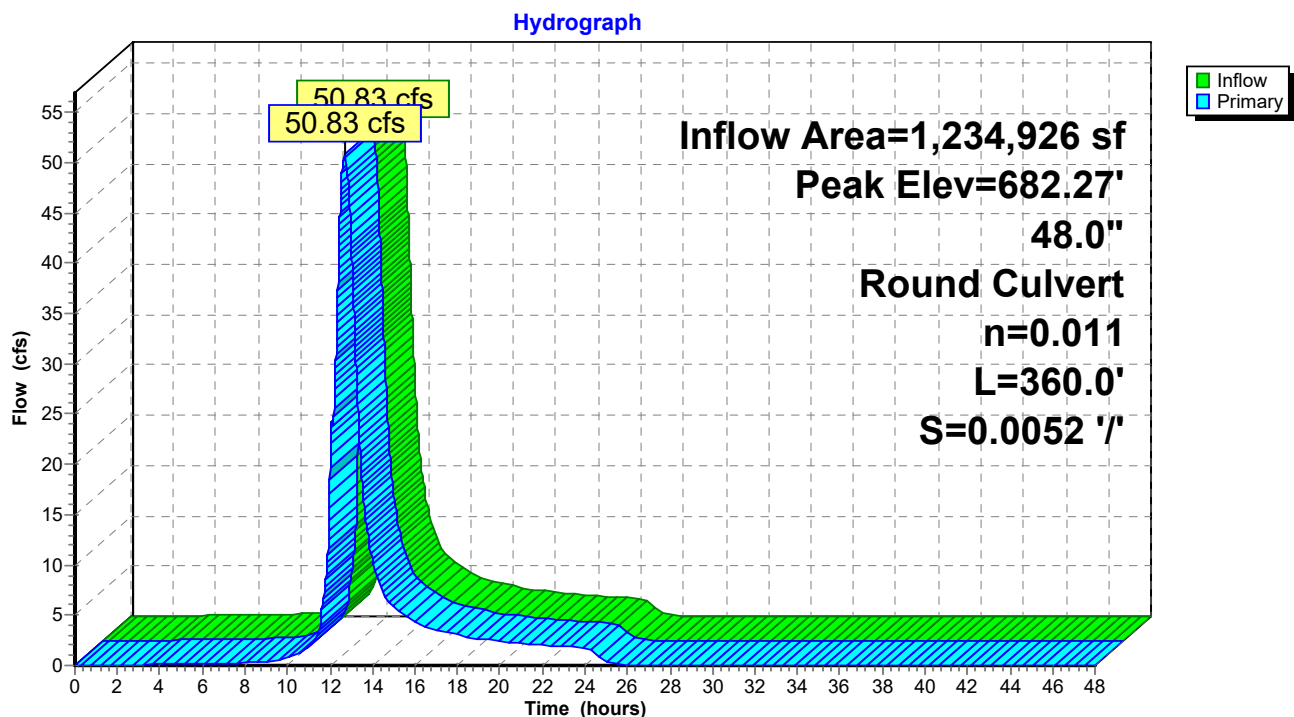
Summary for Pond CD4DCE: Cross Drain 4DCE

Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 3.65" for 50-yr event
 Inflow = 50.83 cfs @ 12.70 hrs, Volume= 375,714 cf
 Outflow = 50.83 cfs @ 12.70 hrs, Volume= 375,714 cf, Atten= 0%, Lag= 0.0 min
 Primary = 50.83 cfs @ 12.70 hrs, Volume= 375,714 cf
 Routed to Pond POND1P : PROP POND

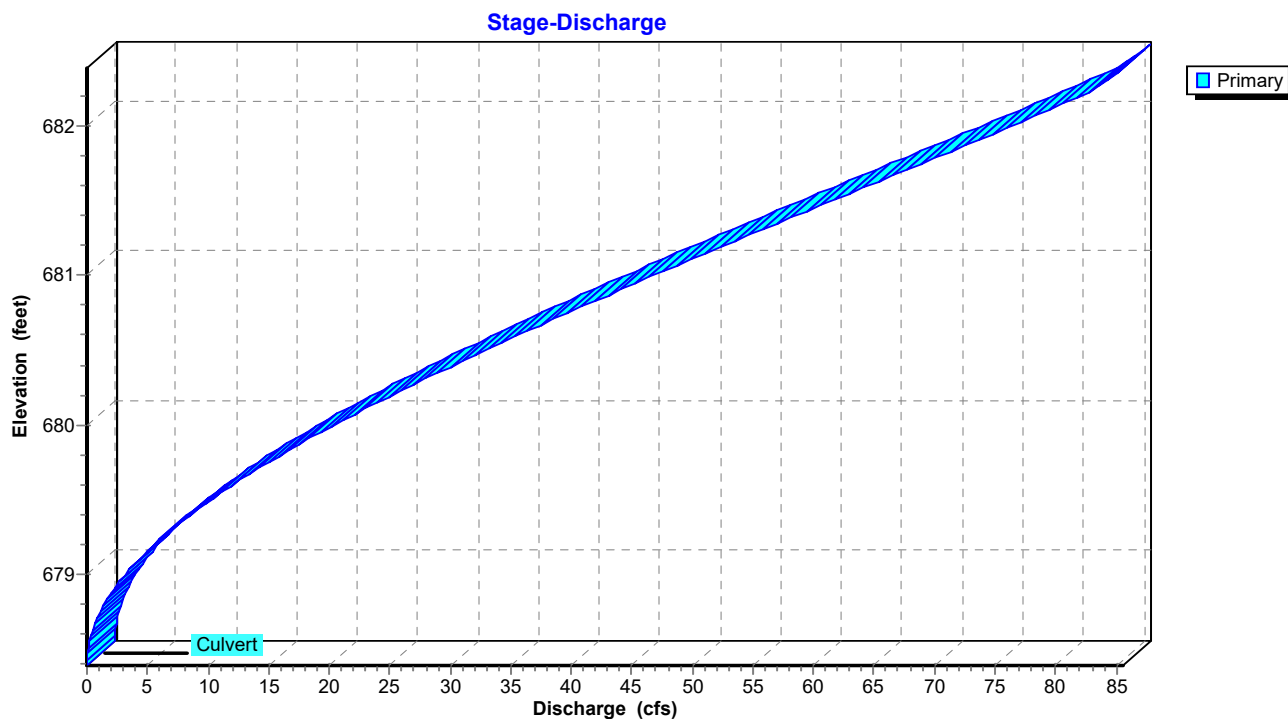
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.27' @ 12.87 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

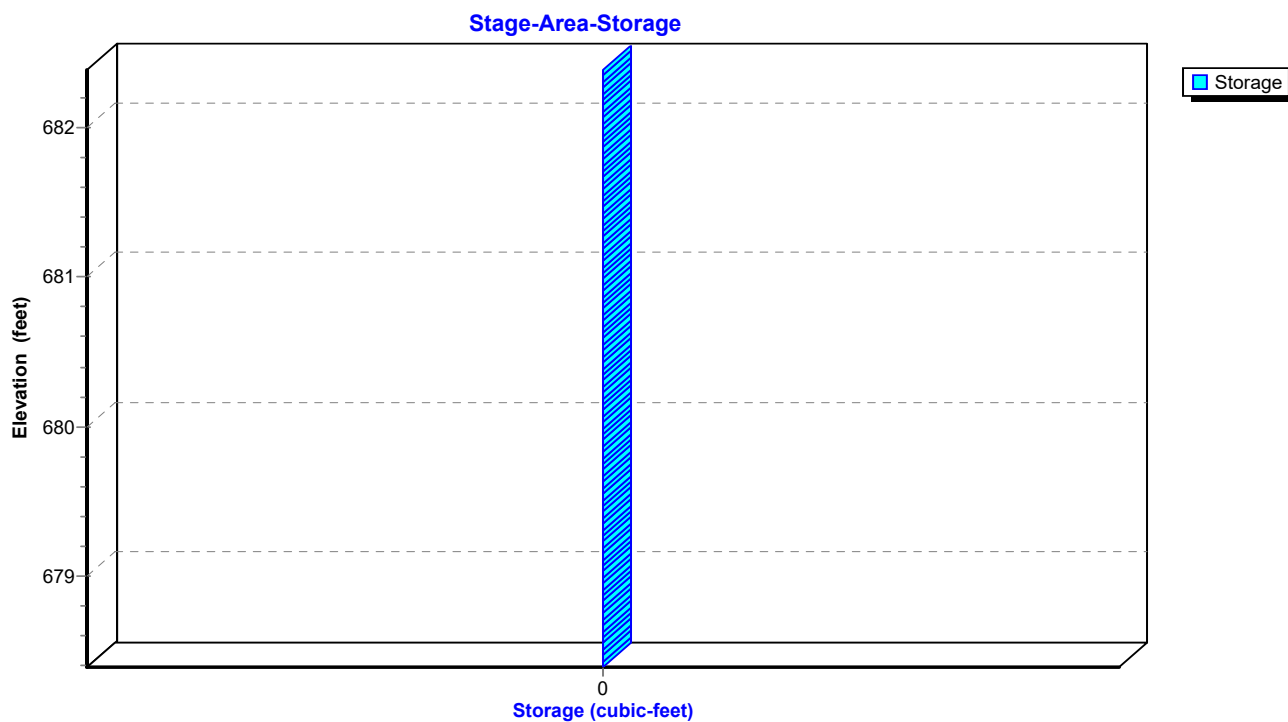
Primary OutFlow Max=50.31 cfs @ 12.70 hrs HW=682.15' TW=681.05' (Dynamic Tailwater)
 1=Culvert (Outlet Controls 50.31 cfs @ 5.31 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Pond CD4DCE: Cross Drain 4DCE



Pond CD4DCE: Cross Drain 4DCE



Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 3.44" for 50-yr event
 Inflow = 52.11 cfs @ 12.64 hrs, Volume= 329,935 cf
 Outflow = 49.42 cfs @ 12.72 hrs, Volume= 329,930 cf, Atten= 5%, Lag= 4.8 min
 Primary = 49.42 cfs @ 12.72 hrs, Volume= 329,930 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 683.15' @ 12.79 hrs Surf.Area= 8,055 sf Storage= 10,490 cf

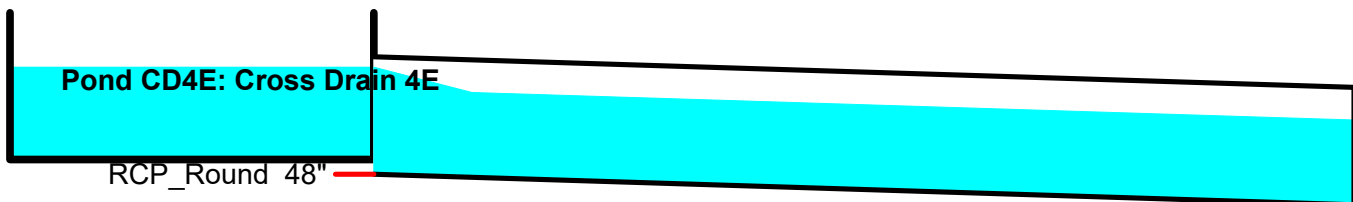
Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.1 min (877.2 - 875.1)

Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

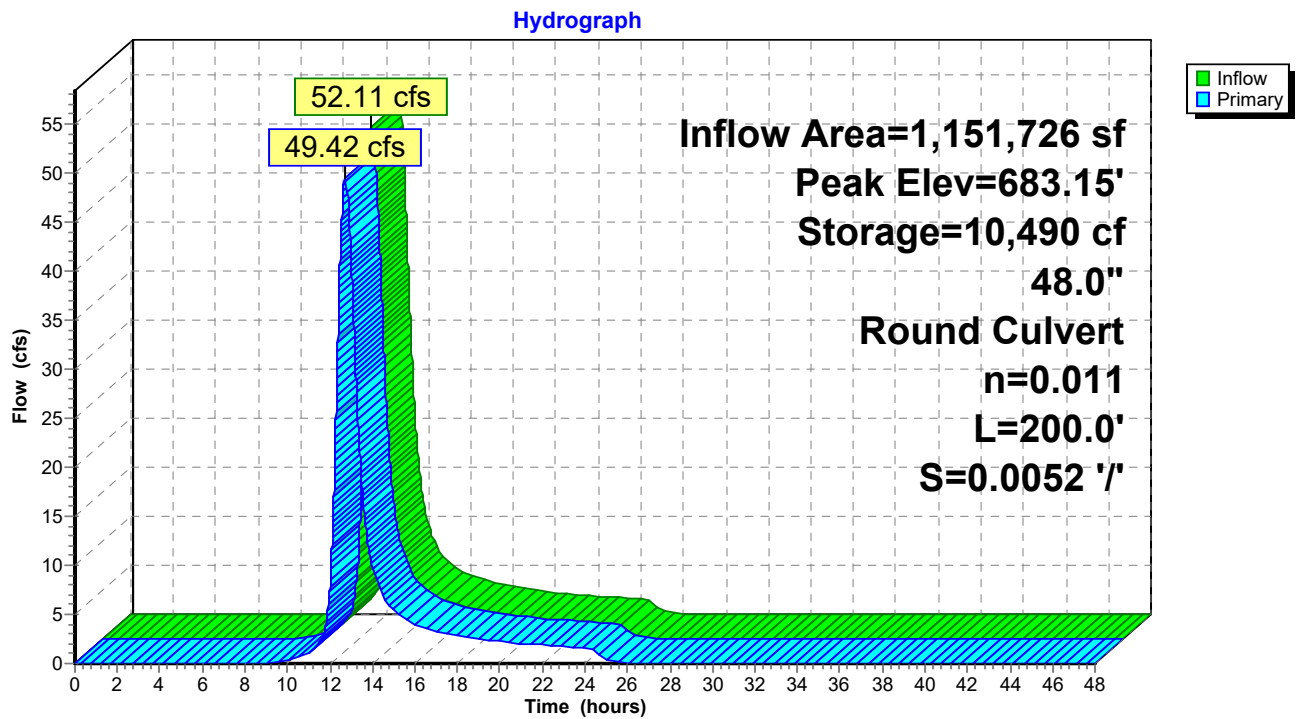
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

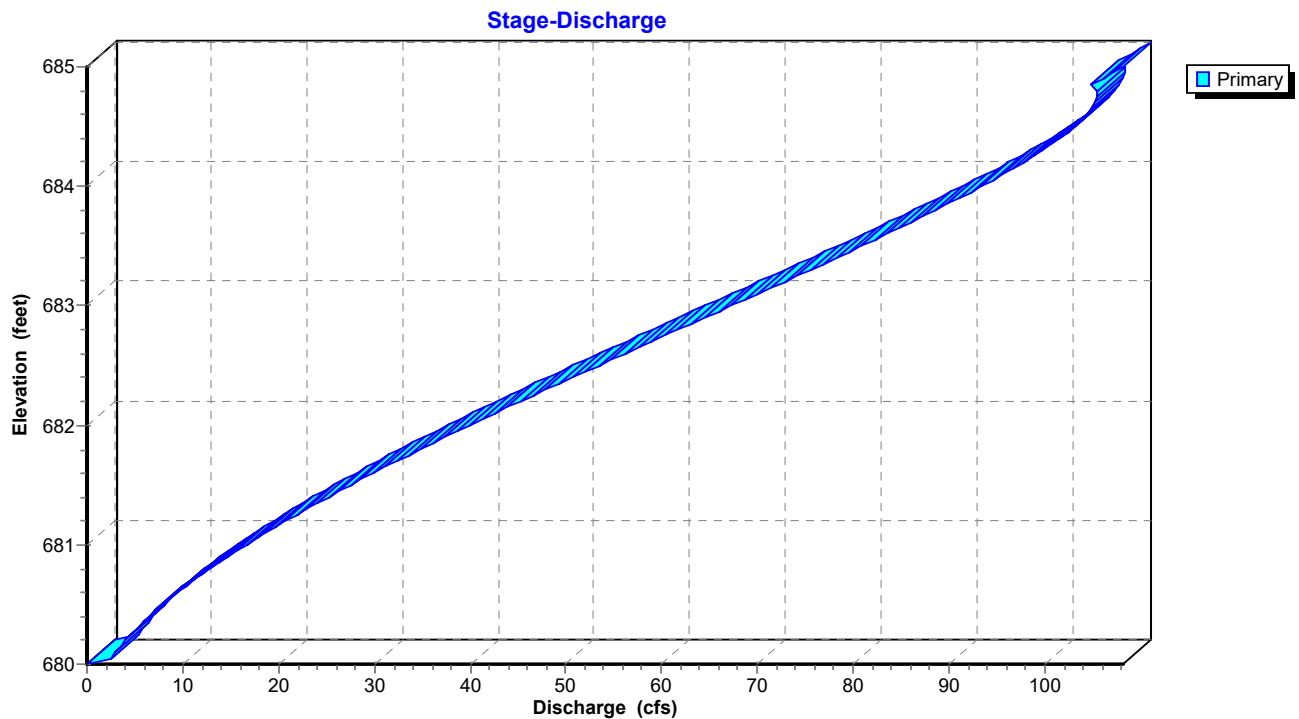
Primary OutFlow Max=49.09 cfs @ 12.72 hrs HW=683.12' TW=682.17' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 49.09 cfs @ 5.41 fps)

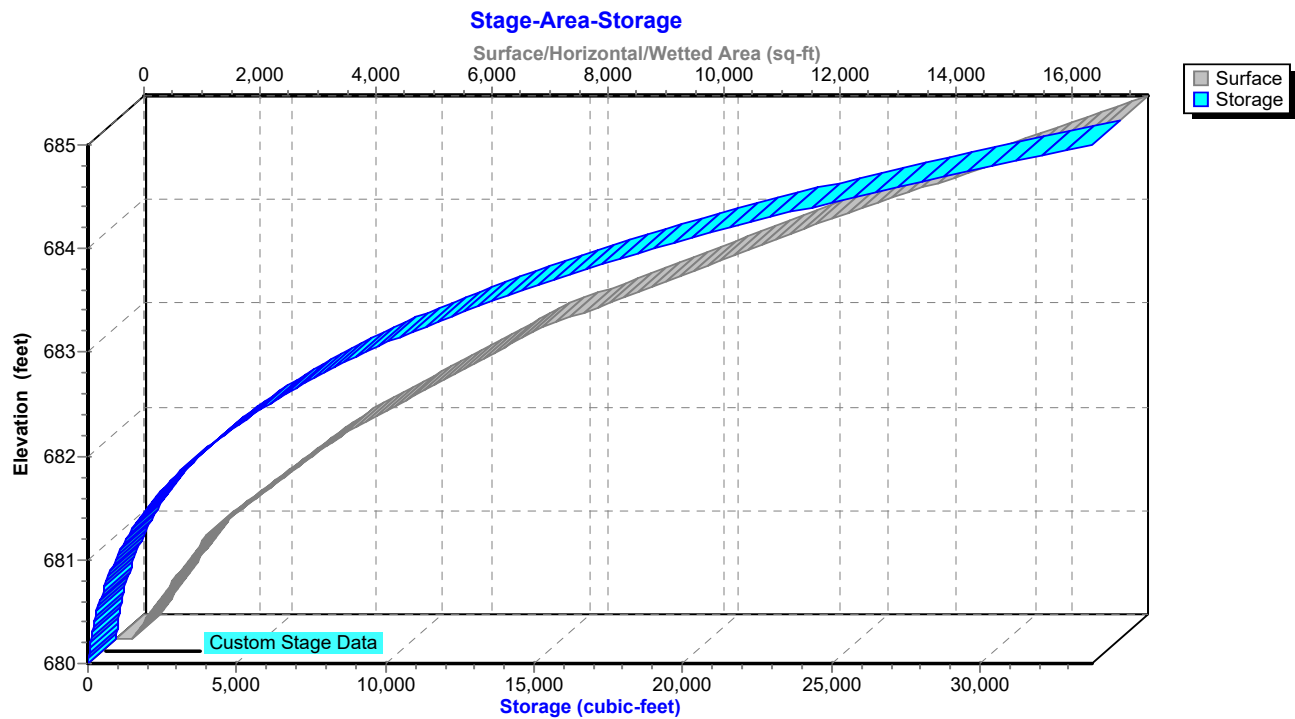


Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 4.55" for 50-yr event
 Inflow = 94.09 cfs @ 12.52 hrs, Volume= 671,269 cf
 Outflow = 45.92 cfs @ 13.15 hrs, Volume= 671,262 cf, Atten= 51%, Lag= 38.1 min
 Primary = 45.92 cfs @ 13.15 hrs, Volume= 671,262 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.53' @ 13.16 hrs Surf.Area= 88,715 sf Storage= 234,094 cf

Plug-Flow detention time= 106.2 min calculated for 671,262 cf (100% of inflow)
 Center-of-Mass det. time= 106.2 min (932.4 - 826.3)

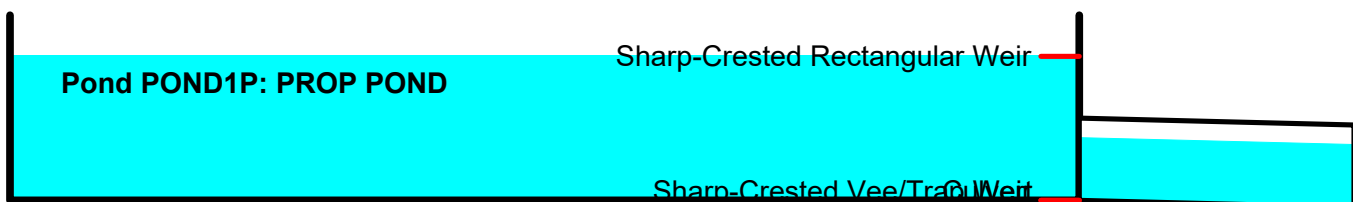
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

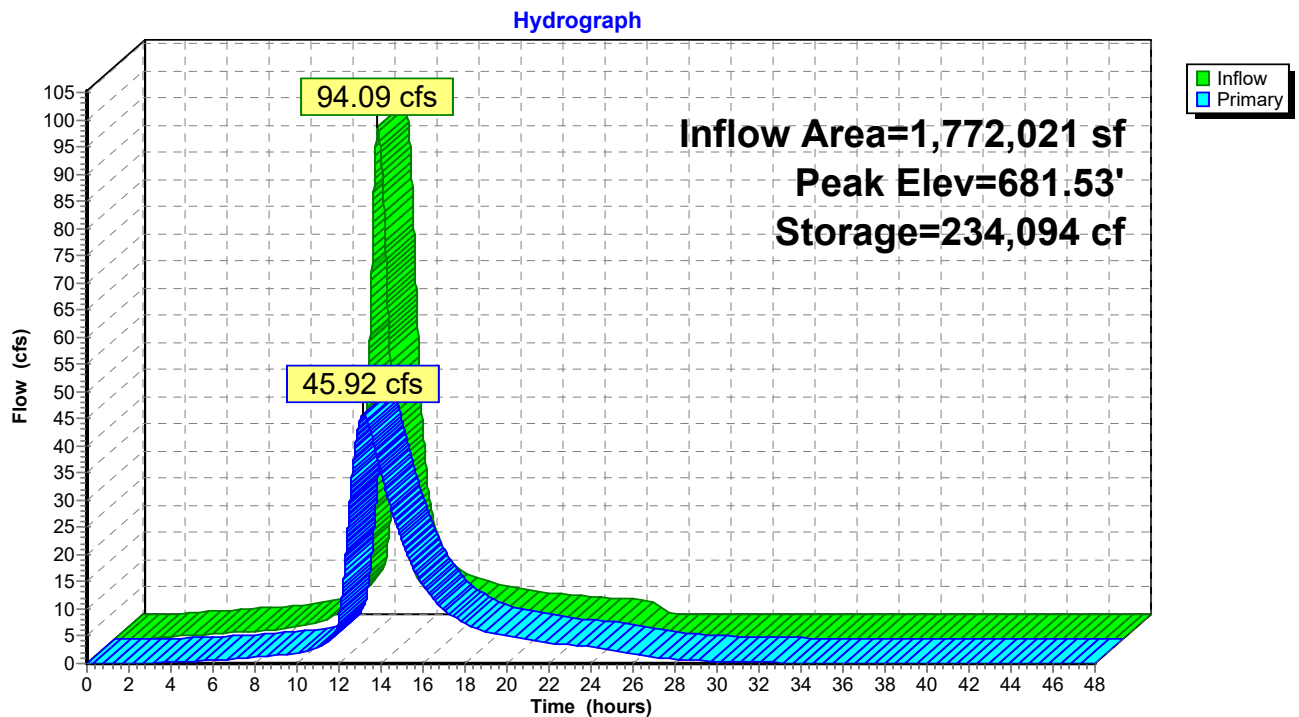
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=45.91 cfs @ 13.15 hrs HW=681.53' TW=677.96' (Dynamic Tailwater)

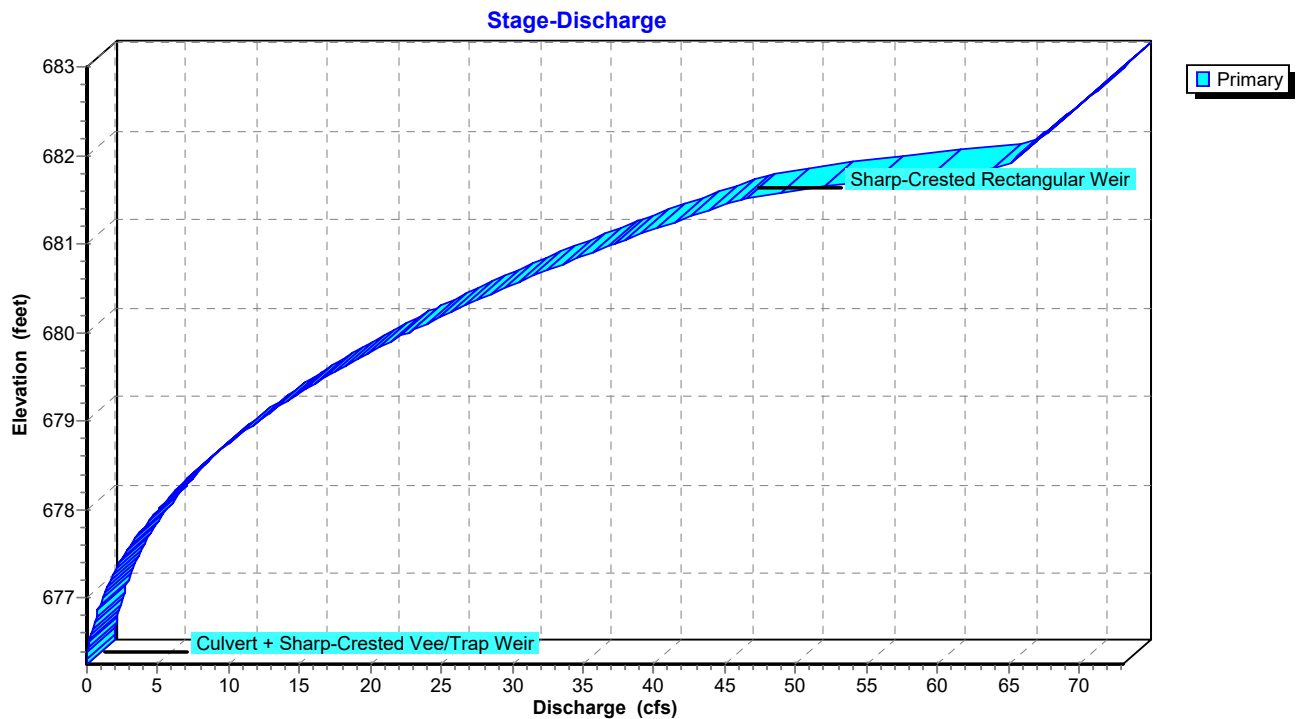
- 1=Culvert (Passes 45.91 cfs of 60.28 cfs potential flow)
- 2=Sharp-Crested Vee/Trap Weir (Weir Controls 45.62 cfs @ 6.49 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 0.29 cfs @ 0.58 fps)

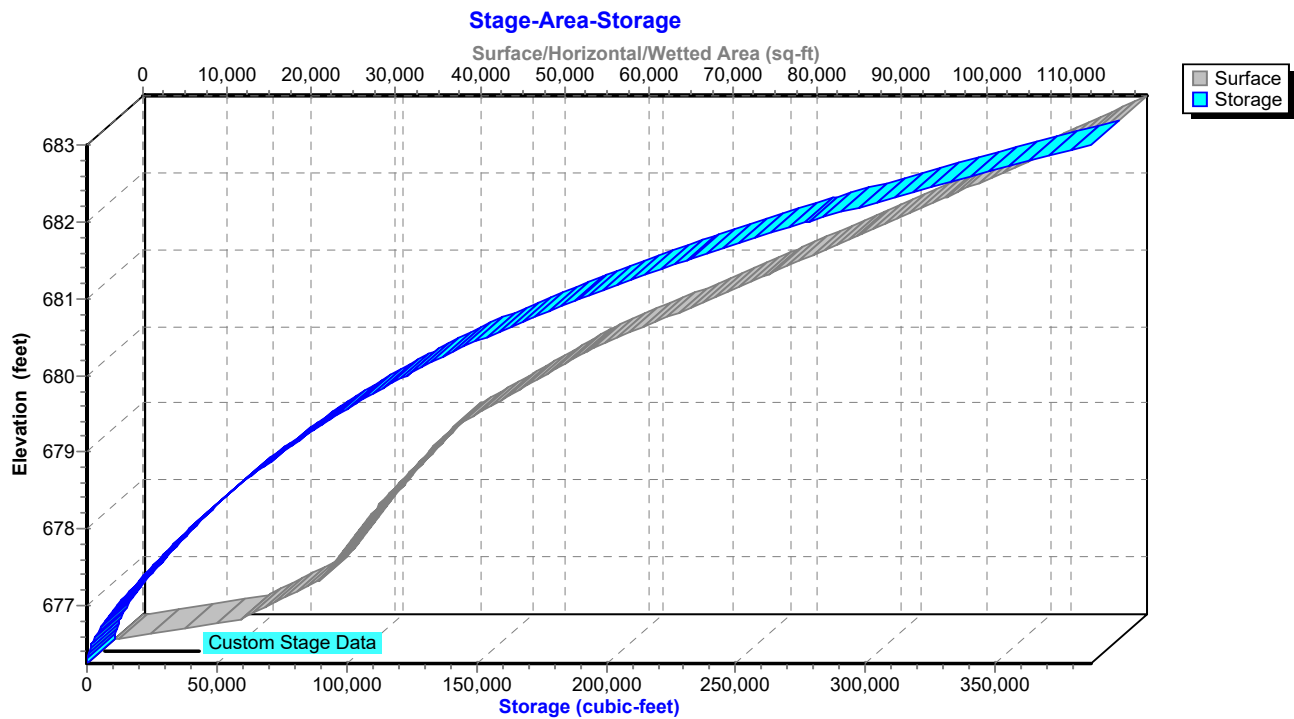


Pond POND1P: PROP POND



Pond POND1P: PROP POND



Pond POND1P: PROP POND

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA 1: BASIN 1 PRE Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=4.89"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=198.72 cfs 2,537,591 cf

Subcatchment DA 2: BASIN 2 PRE Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=3.43"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=58.90 cfs 433,944 cf

Subcatchment DA 3: BASIN 3 PRE Runoff Area=9.380 ac 0.00% Impervious Runoff Depth=4.66"
 Flow Length=838' Slope=0.0200 '/' Tc=25.9 min CN=73 Runoff=33.23 cfs 158,657 cf

Subcatchment DA 4: BASIN 4 PRE Runoff Area=41.500 ac 0.00% Impervious Runoff Depth=4.32"
 Flow Length=2,468' Tc=68.1 min CN=70 Runoff=84.83 cfs 650,568 cf

Subcatchment DA1P: BASIN 1 PROPOSED Runoff Area=143.000 ac 1.75% Impervious Runoff Depth=4.89"
 Flow Length=5,750' Tc=143.0 min CN=75 Runoff=198.72 cfs 2,537,591 cf

Subcatchment DA2P: BASIN 2 PROPOSED Runoff Area=34.900 ac 0.00% Impervious Runoff Depth=3.43"
 Flow Length=2,150' Slope=0.0150 '/' Tc=62.3 min CN=62 Runoff=58.90 cfs 433,944 cf

Subcatchment DA3P: BASIN 3 PRE Runoff Area=4.760 ac 0.00% Impervious Runoff Depth=5.35"
 Tc=5.0 min CN=79 Runoff=34.23 cfs 92,439 cf

Subcatchment DA4A: BASIN 4A PROPOSED Runoff Area=5.530 ac 0.00% Impervious Runoff Depth=4.09"
 Flow Length=945' Tc=40.9 min CN=68 Runoff=13.98 cfs 82,160 cf

Subcatchment DA4B: BASIN 4B Runoff Area=12.330 ac 24.33% Impervious Runoff Depth=7.35"
 Flow Length=996' Tc=33.8 min CN=96 Runoff=55.64 cfs 329,027 cf

Subcatchment DA4C: BASIN 4C PROPOSED Runoff Area=0.680 ac 0.00% Impervious Runoff Depth=7.35"
 Tc=5.0 min CN=96 Runoff=6.07 cfs 18,146 cf

Subcatchment DA4D: BASIN 4D PROPOSED Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=7.35"
 Tc=5.0 min CN=96 Runoff=10.99 cfs 32,823 cf

Subcatchment DA4E1: BASIN 4E1 Runoff Area=7.260 ac 13.77% Impervious Runoff Depth=3.65"
 Flow Length=640' Tc=31.5 min CN=64 Runoff=18.33 cfs 96,090 cf

Subcatchment DA4E2: BASIN 4E2 Runoff Area=19.180 ac 0.00% Impervious Runoff Depth=4.21"
 Flow Length=1,313' Tc=46.8 min CN=69 Runoff=46.83 cfs 292,804 cf

Reach D4C: Ditch 4C Avg. Flow Depth=0.72' Max Vel=2.70 fps Inflow=6.07 cfs 18,146 cf
 n=0.033 L=313.0' S=0.0104 '/' Capacity=27.19 cfs Outflow=5.77 cfs 18,146 cf

Reach D4D: Ditch 4D Avg. Flow Depth=0.89' Max Vel=3.61 fps Inflow=10.99 cfs 32,823 cf
 n=0.033 L=337.0' S=0.0148 '/' Capacity=32.50 cfs Outflow=10.60 cfs 32,823 cf

Reach D4E1: Ditch 4E1 Avg. Flow Depth=1.08' Max Vel=2.01 fps Inflow=18.33 cfs 96,090 cf
 n=0.033 L=1,788.0' S=0.0031 '/' Capacity=197.27 cfs Outflow=15.73 cfs 96,090 cf

Reach OF4: Primary Stream for Avg. Flow Depth=3.36' Max Vel=4.98 fps Inflow=274.93 cfs 3,780,759 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=274.79 cfs 3,780,759 cf

Reach OF4P: Primary Stream for Avg. Flow Depth=3.34' Max Vel=4.96 fps Inflow=270.89 cfs 3,915,011 cf
n=0.035 L=1,000.0' S=0.0050 '/' Capacity=640.46 cfs Outflow=270.52 cfs 3,915,010 cf

Pond CD2: Cross Drain Peak Elev=684.90' Inflow=58.90 cfs 433,944 cf
36.0" Round Culvert n=0.011 L=50.0' S=0.0050 '/' Outflow=58.90 cfs 433,944 cf

Pond CD4C: Cross Drain 4C Peak Elev=684.97' Inflow=5.77 cfs 18,146 cf
18.0" Round Culvert n=0.011 L=60.0' S=0.0792 '/' Outflow=5.77 cfs 18,146 cf

Pond CD4DCE: Cross Drain 4DCE Peak Elev=682.73' Inflow=59.73 cfs 439,858 cf
48.0" Round Culvert n=0.011 L=360.0' S=0.0052 '/' Outflow=59.73 cfs 439,858 cf

Pond CD4E: Cross Drain 4E Peak Elev=683.65' Storage=15,164 cf Inflow=62.56 cfs 388,894 cf
48.0" Round Culvert n=0.011 L=200.0' S=0.0052 '/' Outflow=58.22 cfs 388,890 cf

Pond POND1P: PROP POND Peak Elev=681.84' Storage=262,115 cf Inflow=108.15 cfs 768,885 cf
Outflow=61.01 cfs 768,878 cf

Total Runoff Area = 19,935,234 sf Runoff Volume = 7,695,782 cf Average Runoff Depth = 4.63"
98.03% Pervious = 19,543,194 sf 1.97% Impervious = 392,040 sf

Summary for Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Runoff = 198.72 cfs @ 13.82 hrs, Volume= 2,537,591 cf, Depth= 4.89"

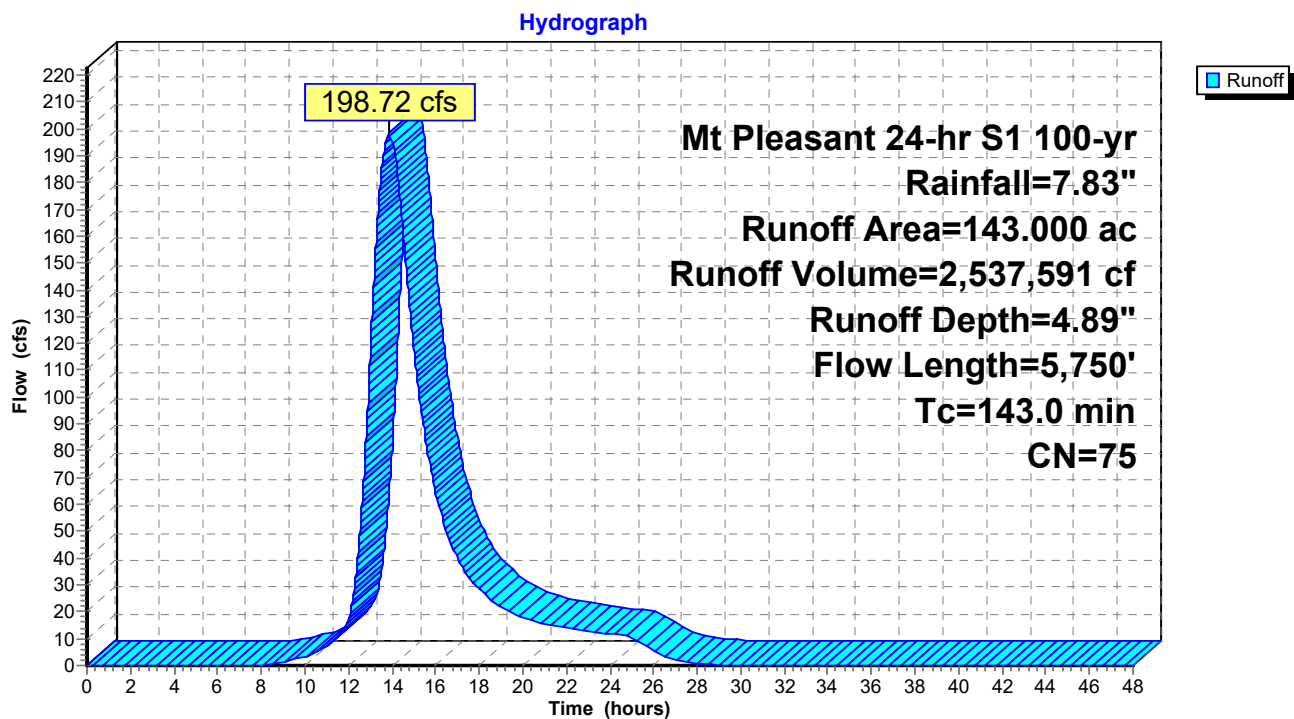
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

Subcatchment DA 1: BASIN 1 PRE DEVELOPMENT

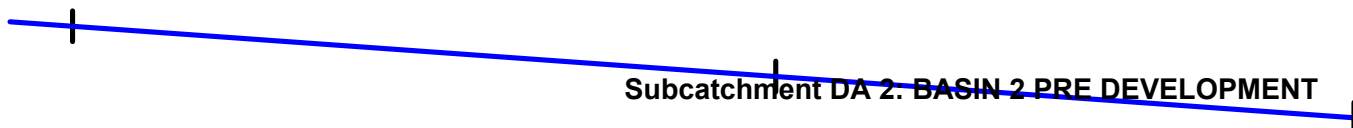
Summary for Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Runoff = 58.90 cfs @ 12.88 hrs, Volume= 433,944 cf, Depth= 3.43"
 Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

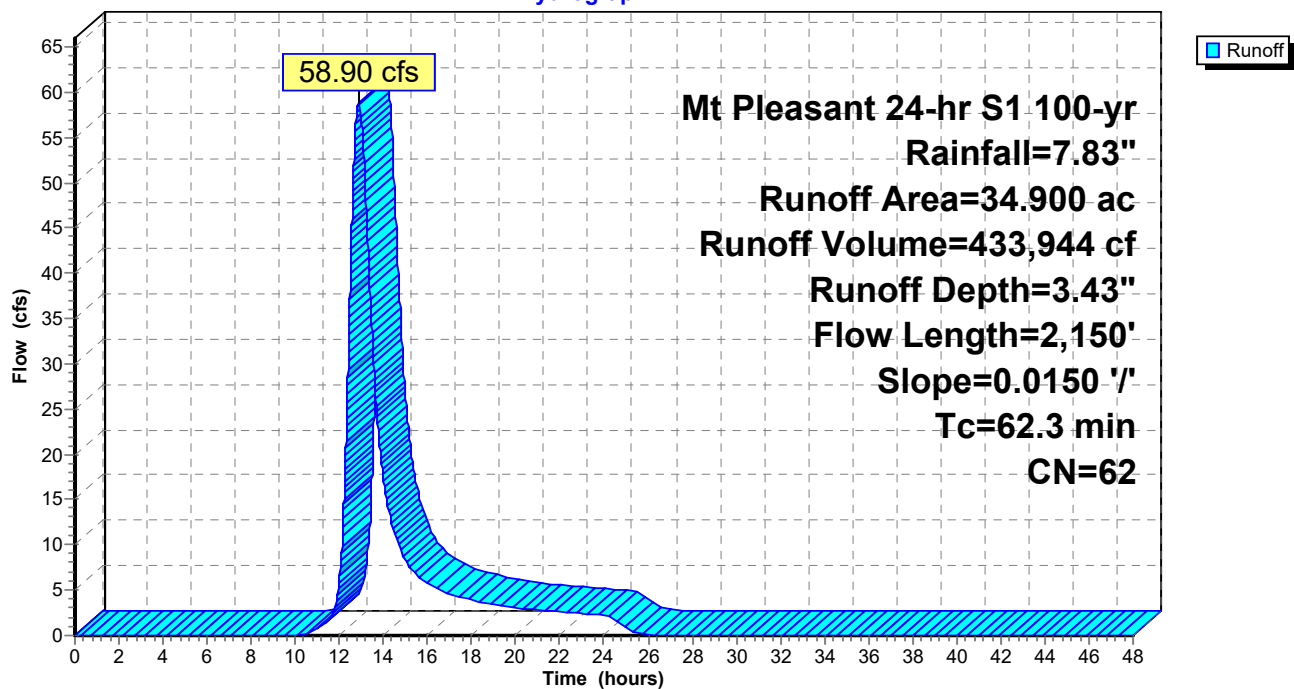
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Subcatchment DA 2: BASIN 2 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Runoff = 33.23 cfs @ 12.32 hrs, Volume= 158,657 cf, Depth= 4.66"

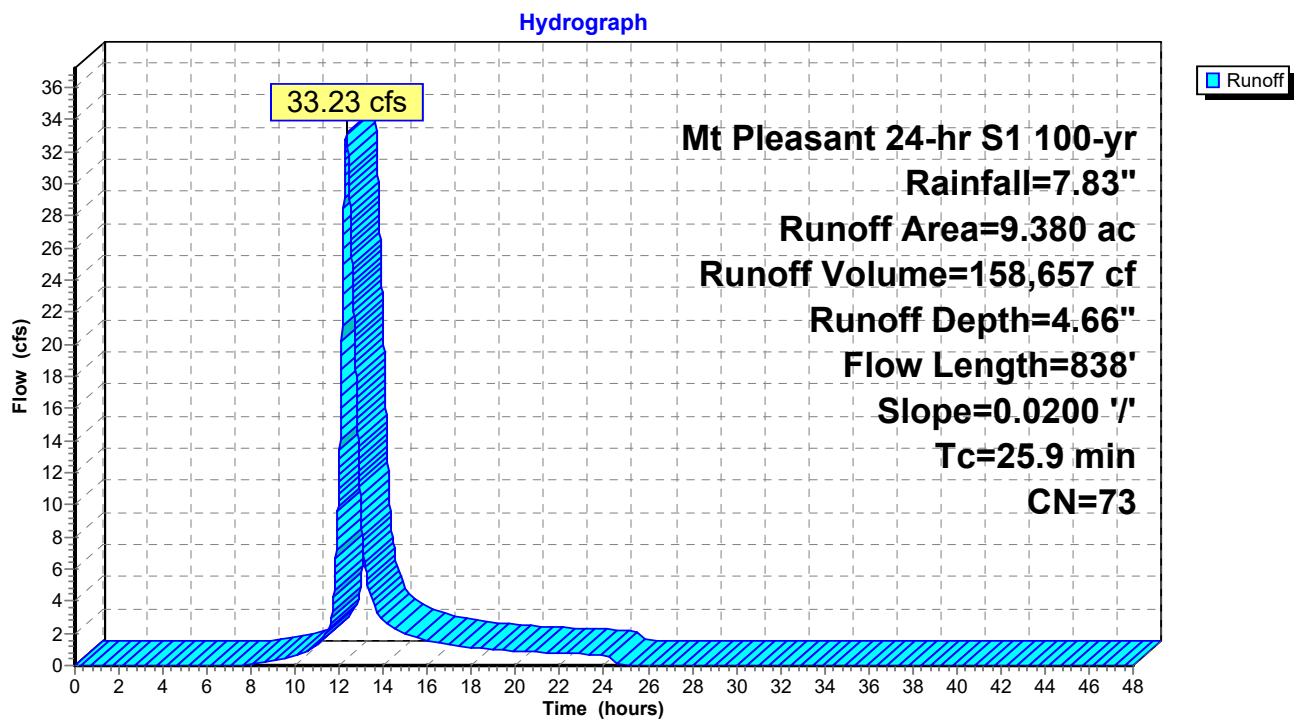
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
3.300	78	Meadow, non-grazed, HSG D
3.300	79	Woods, Fair, HSG D
2.250	58	Meadow, non-grazed, HSG B
0.530	60	Woods, Fair, HSG B
9.380	73	Weighted Average
9.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	100	0.0200	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
12.4	738	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.9	838	Total			

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Subcatchment DA 3: BASIN 3 PRE DEVELOPMENT

Summary for Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Runoff = 84.83 cfs @ 12.94 hrs, Volume= 650,568 cf, Depth= 4.32"

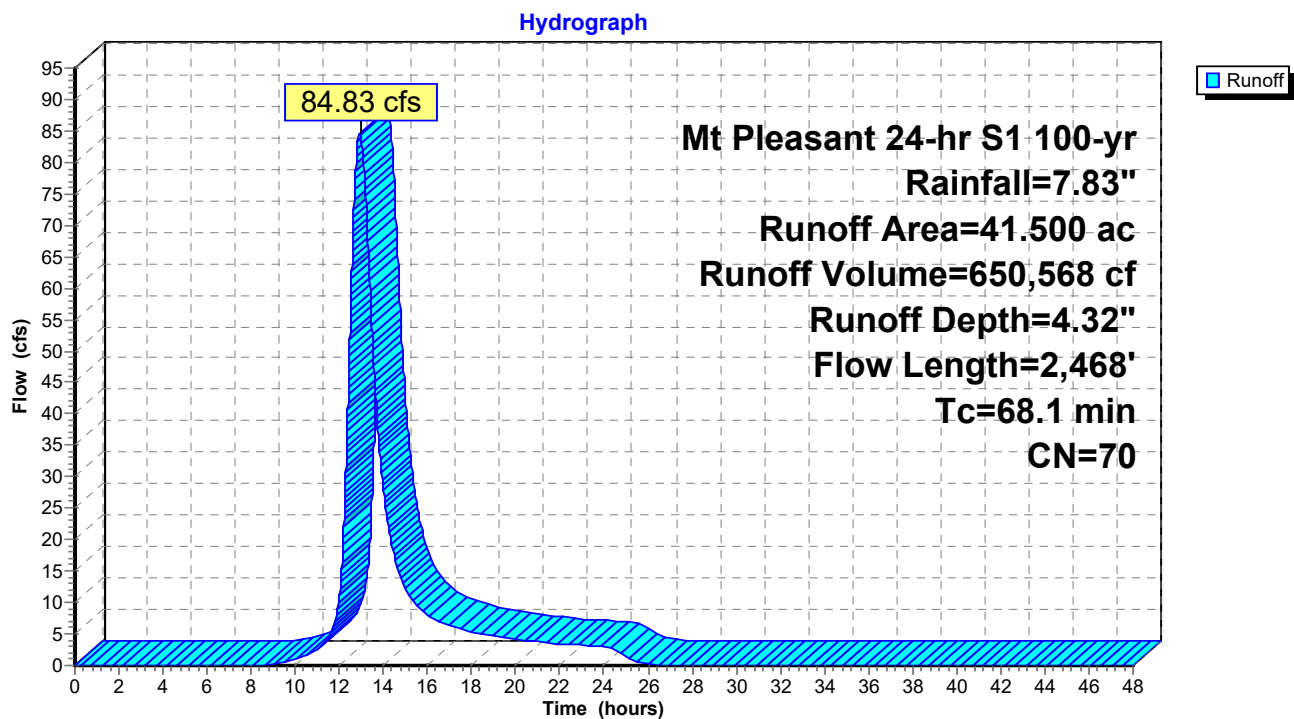
Routed to Reach OF4 : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
7.300	78	Meadow, non-grazed, HSG D
1.830	79	Woods, Fair, HSG D
7.640	58	Meadow, non-grazed, HSG B
1.910	60	Woods, Fair, HSG B
4.150	73	Woods, Fair, HSG C
9.960	71	Meadow, non-grazed, HSG C
2.490	73	Woods, Fair, HSG C
4.970	71	Meadow, non-grazed, HSG C
1.250	73	Woods, Fair, HSG C
41.500	70	Weighted Average
41.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
43.6	2,368	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
68.1	2,468	Total			

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Subcatchment DA 4: BASIN 4 PRE DEVELOPMENT

Summary for Subcatchment DA1P: BASIN 1 PROPOSED

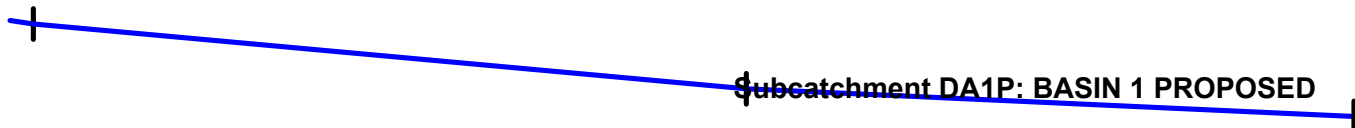
Runoff = 198.72 cfs @ 13.82 hrs, Volume= 2,537,591 cf, Depth= 4.89"

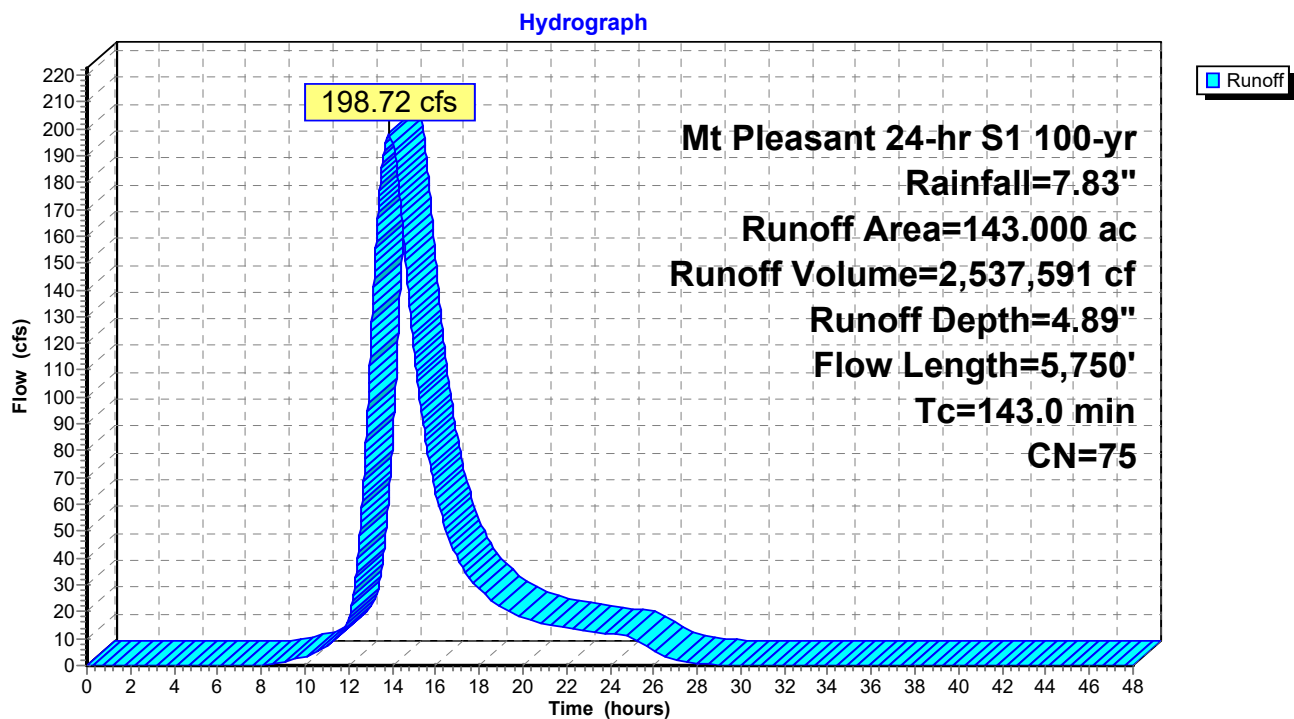
Routed to Reach OF4P : Primary Stream for Outfalls

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
69.500	74	>75% Grass cover, Good, HSG C
71.000	76	Woods/grass comb., Fair, HSG C
2.500	98	Paved parking, HSG C
143.000	75	Weighted Average
140.500		98.25% Pervious Area
2.500		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.4	100	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
92.8	3,050	0.0120	0.55		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.8	2,600	0.0060	2.93	11.71	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.030
143.0	5,750	Total			



Subcatchment DA1P: BASIN 1 PROPOSED

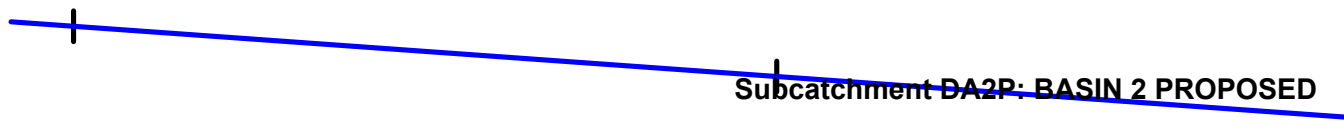
Summary for Subcatchment DA2P: BASIN 2 PROPOSED

Runoff = 58.90 cfs @ 12.88 hrs, Volume= 433,944 cf, Depth= 3.43"
 Routed to Pond CD2 : Cross Drain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

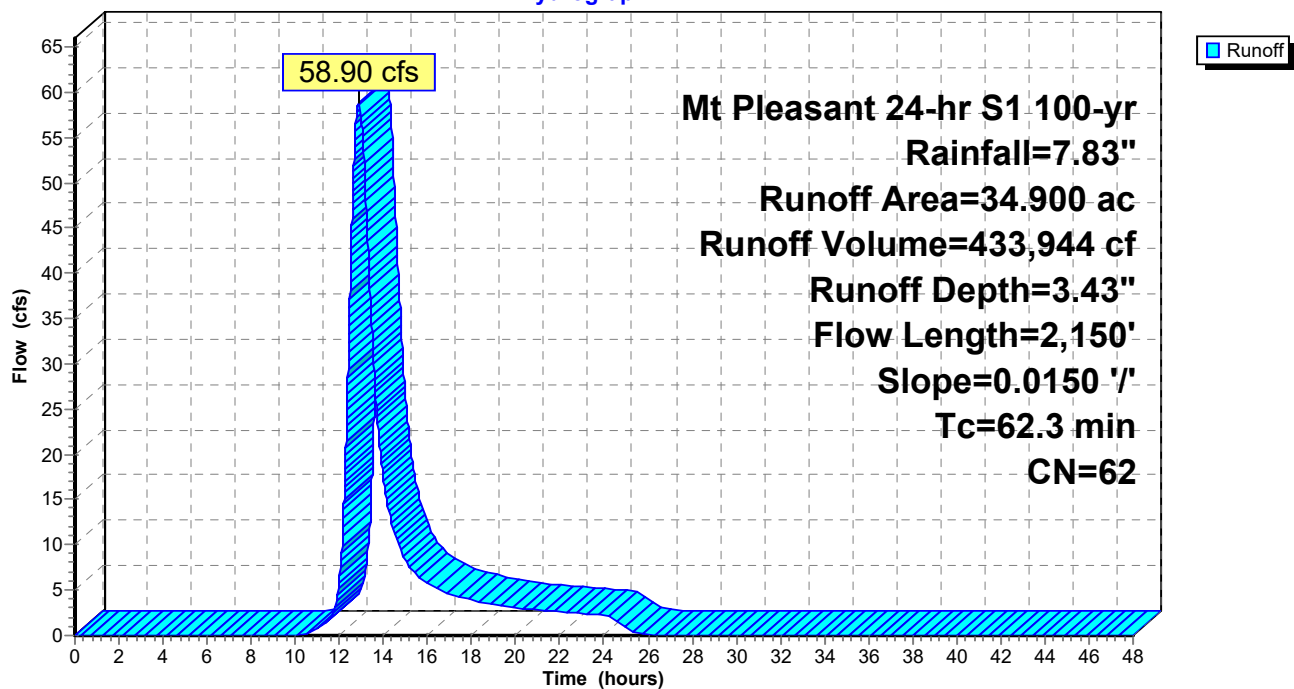
Area (ac)	CN	Description
17.450	58	Meadow, non-grazed, HSG B
14.450	60	Woods, Fair, HSG B
3.000	96	Gravel surface, HSG C
34.900	62	Weighted Average
34.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0150	0.11		Sheet Flow, Grass: Dense n= 0.240 P2= 3.57"
21.9	1,125	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.2	925	0.0150	0.61		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
62.3	2,150	Total			



Subcatchment DA2P: BASIN 2 PROPOSED

Hydrograph



Summary for Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Runoff = 34.23 cfs @ 12.03 hrs, Volume= 92,439 cf, Depth= 5.35"

Routed to Reach OF4P : Primary Stream for Outfalls

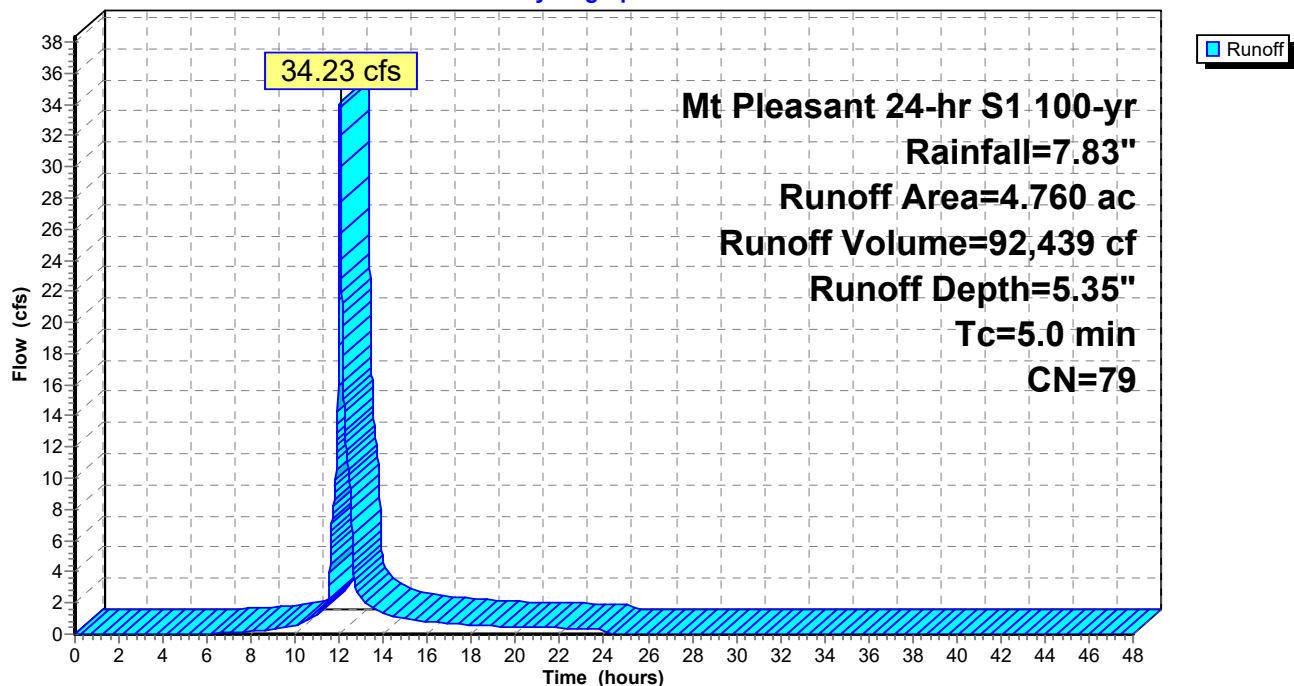
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
4.760	79	Woods, Fair, HSG D
4.760		100.00% Pervious Area

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

Subcatchment DA3P: BASIN 3 PRE DEVELOPMENT

Hydrograph



Summary for Subcatchment DA4A: BASIN 4A PROPOSED

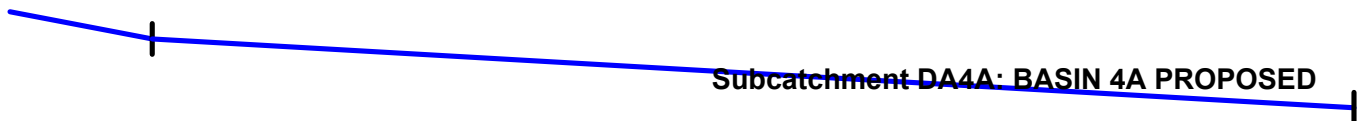
Runoff = 13.98 cfs @ 12.55 hrs, Volume= 82,160 cf, Depth= 4.09"

Routed to Reach OF4P : Primary Stream for Outfalls

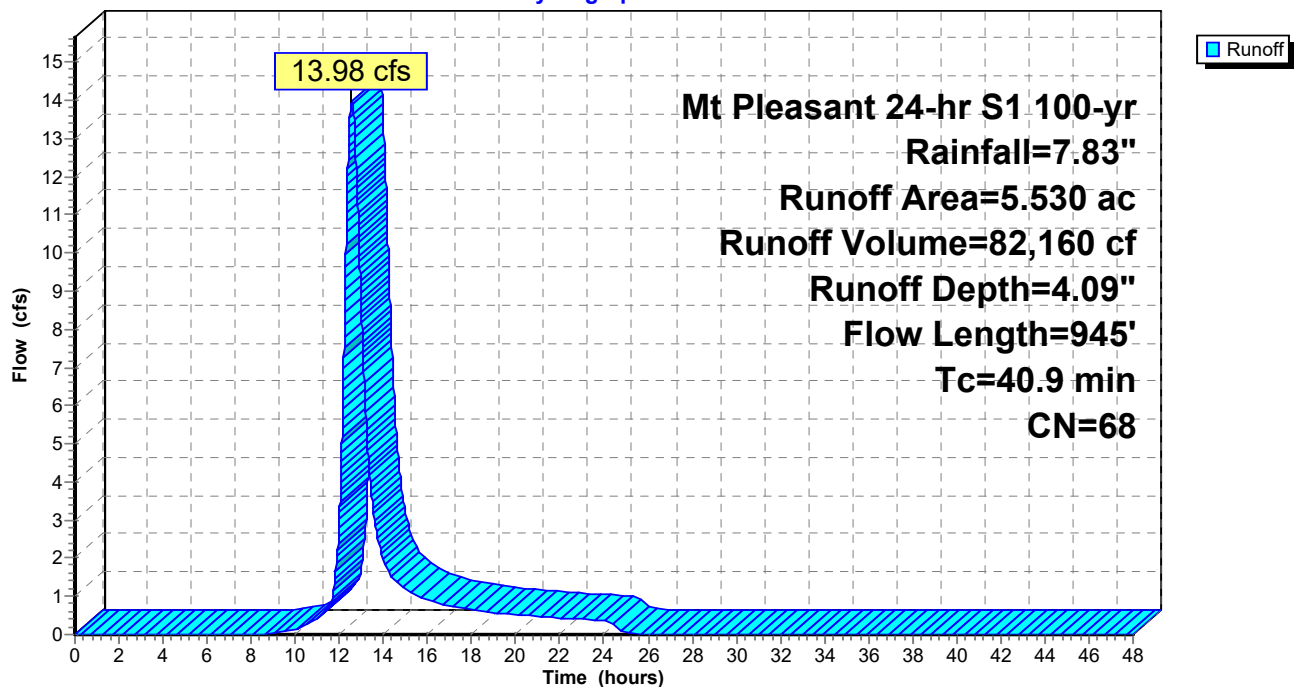
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
2.200	60	Woods, Fair, HSG B
3.330	73	Woods, Fair, HSG C
5.530	68	Weighted Average
5.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
16.4	845	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
40.9	945	Total			

**Subcatchment DA4A: BASIN 4A PROPOSED**

Hydrograph



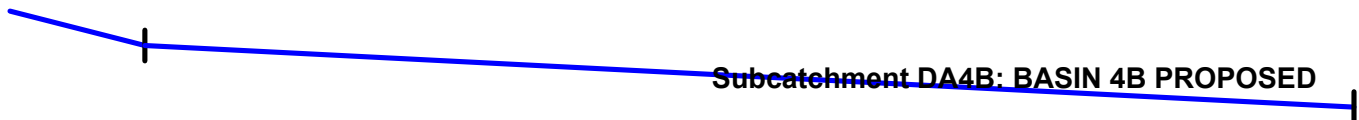
Summary for Subcatchment DA4B: BASIN 4B PROPOSED

Runoff = 55.64 cfs @ 12.42 hrs, Volume= 329,027 cf, Depth= 7.35"
 Routed to Pond POND1P : PROP POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

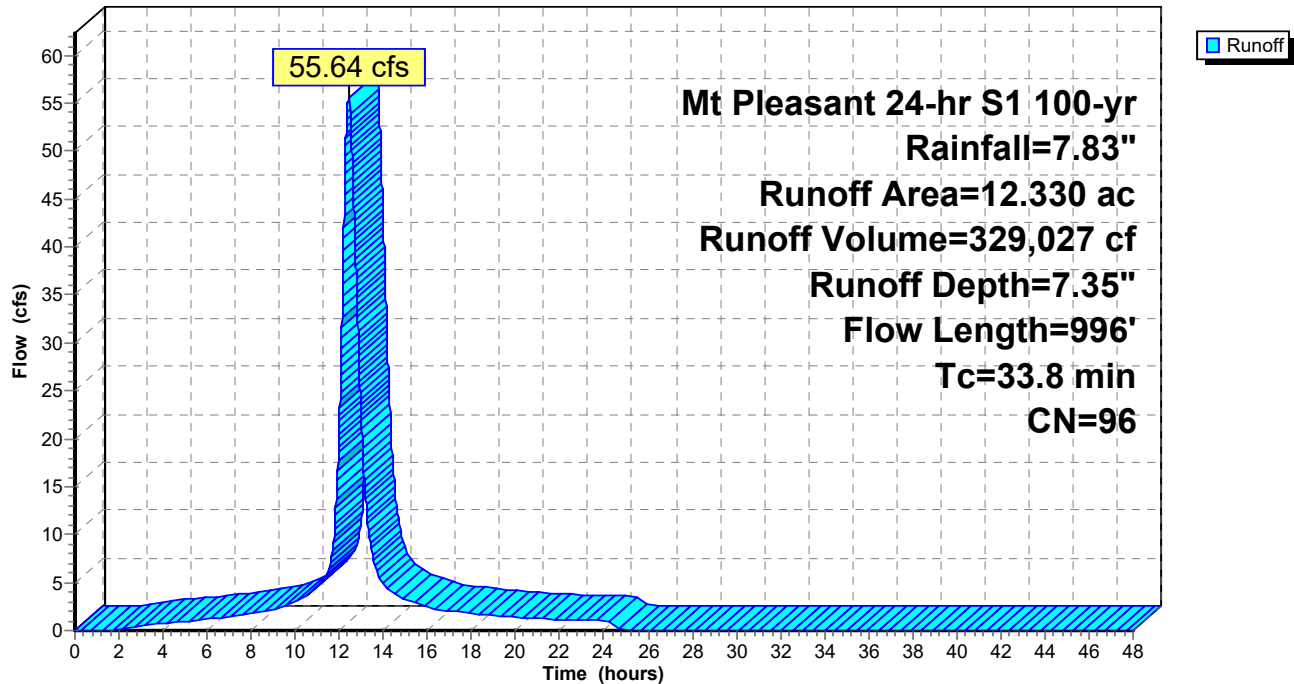
Area (ac)	CN	Description
9.330	96	Gravel surface, HSG C
1.000	98	Paved parking, HSG D
2.000	98	Roofs, HSG D
12.330	96	Weighted Average
9.330		75.67% Pervious Area
3.000		24.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, n= 0.800 P2= 3.57"
9.3	896	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
33.8	996	Total			



Subcatchment DA4B: BASIN 4B PROPOSED

Hydrograph



Summary for Subcatchment DA4C: BASIN 4C PROPOSED

Runoff = 6.07 cfs @ 12.03 hrs, Volume= 18,146 cf, Depth= 7.35"
 Routed to Reach D4C : Ditch 4C

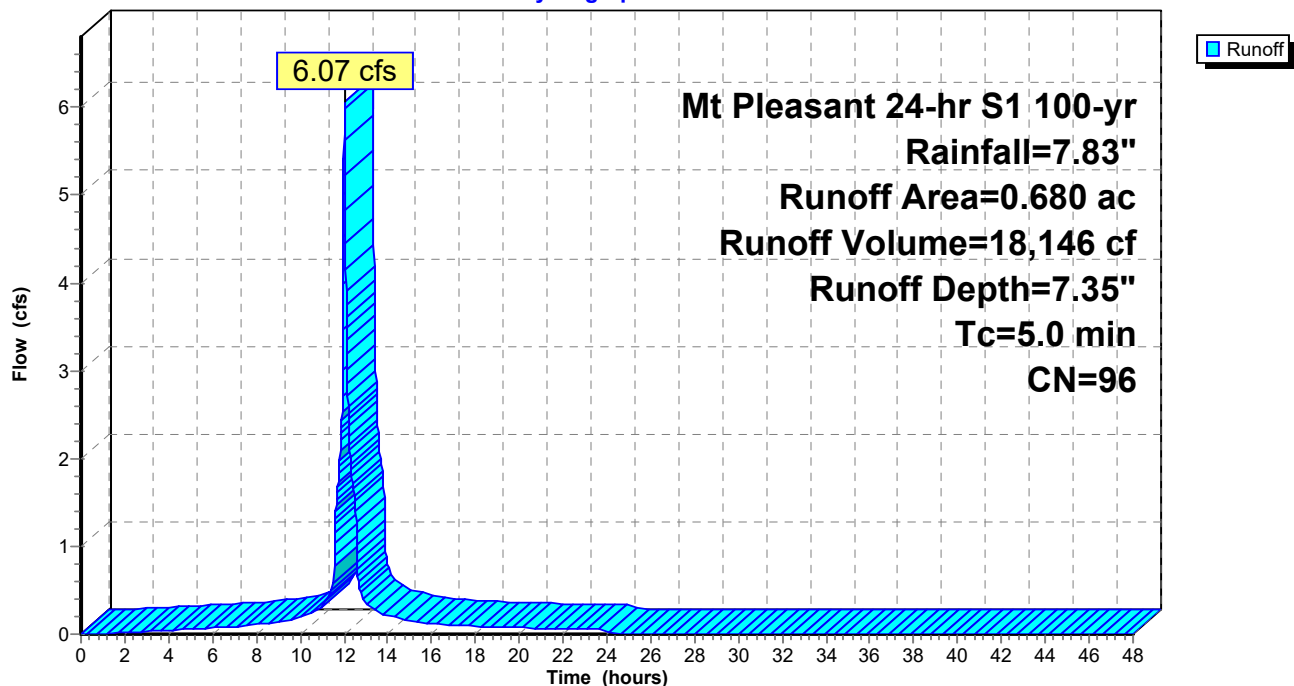
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
0.680	96	Gravel surface, HSG C
0.680		100.00% Pervious Area

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

Subcatchment DA4C: BASIN 4C PROPOSED

Hydrograph



Summary for Subcatchment DA4D: BASIN 4D PROPOSED

Runoff = 10.99 cfs @ 12.03 hrs, Volume= 32,823 cf, Depth= 7.35"
 Routed to Reach D4D : Ditch 4D

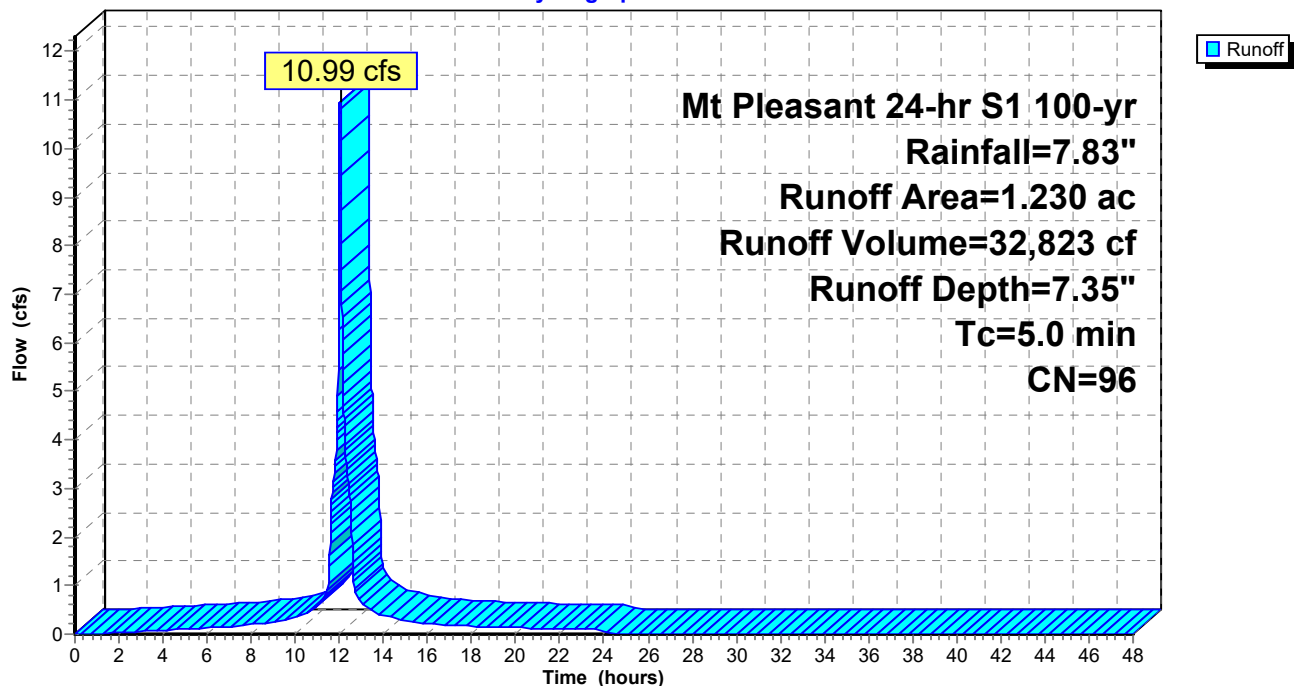
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

Area (ac)	CN	Description
1.230	96	Gravel surface, HSG C
1.230		100.00% Pervious Area

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

Subcatchment DA4D: BASIN 4D PROPOSED

Hydrograph



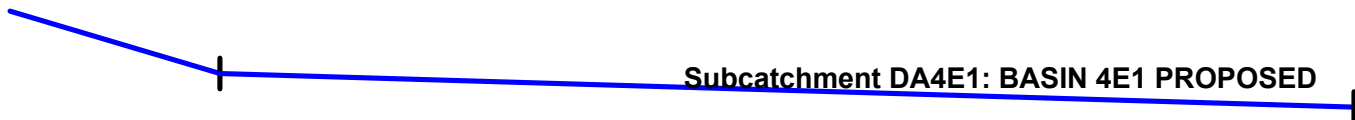
Summary for Subcatchment DA4E1: BASIN 4E1 PROPOSED

Runoff = 18.33 cfs @ 12.43 hrs, Volume= 96,090 cf, Depth= 3.65"
 Routed to Reach D4E1 : Ditch 4E1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

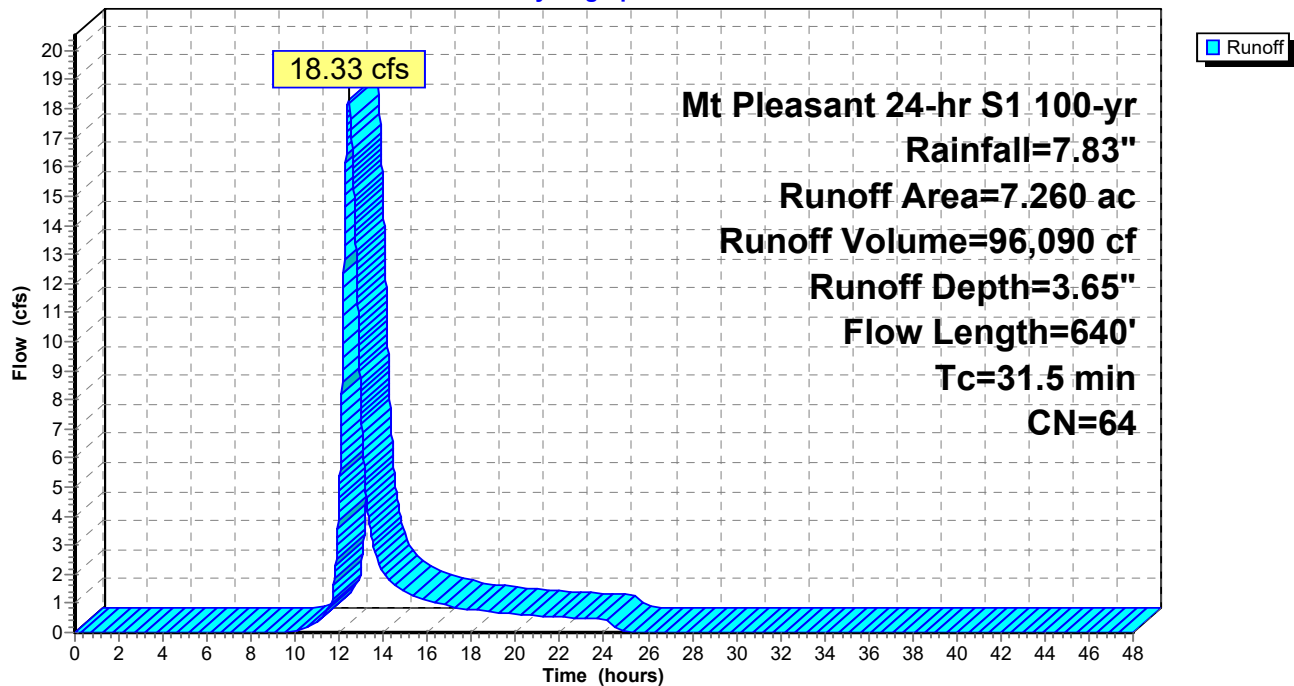
Area (ac)	CN	Description
3.130	58	Meadow, non-grazed, HSG B
3.130	60	Woods, Fair, HSG B
1.000	98	Paved roads w/curbs & sewers, HSG B
7.260	64	Weighted Average
6.260		86.23% Pervious Area
1.000		13.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
12.9	540	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
31.5	640	Total			



Subcatchment DA4E1: BASIN 4E1 PROPOSED

Hydrograph



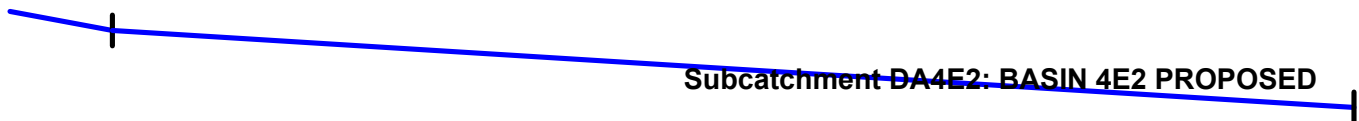
Summary for Subcatchment DA4E2: BASIN 4E2 PROPOSED

Runoff = 46.83 cfs @ 12.64 hrs, Volume= 292,804 cf, Depth= 4.21"
 Routed to Pond CD4E : Cross Drain 4E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Mt Pleasant 24-hr S1 100-yr Rainfall=7.83"

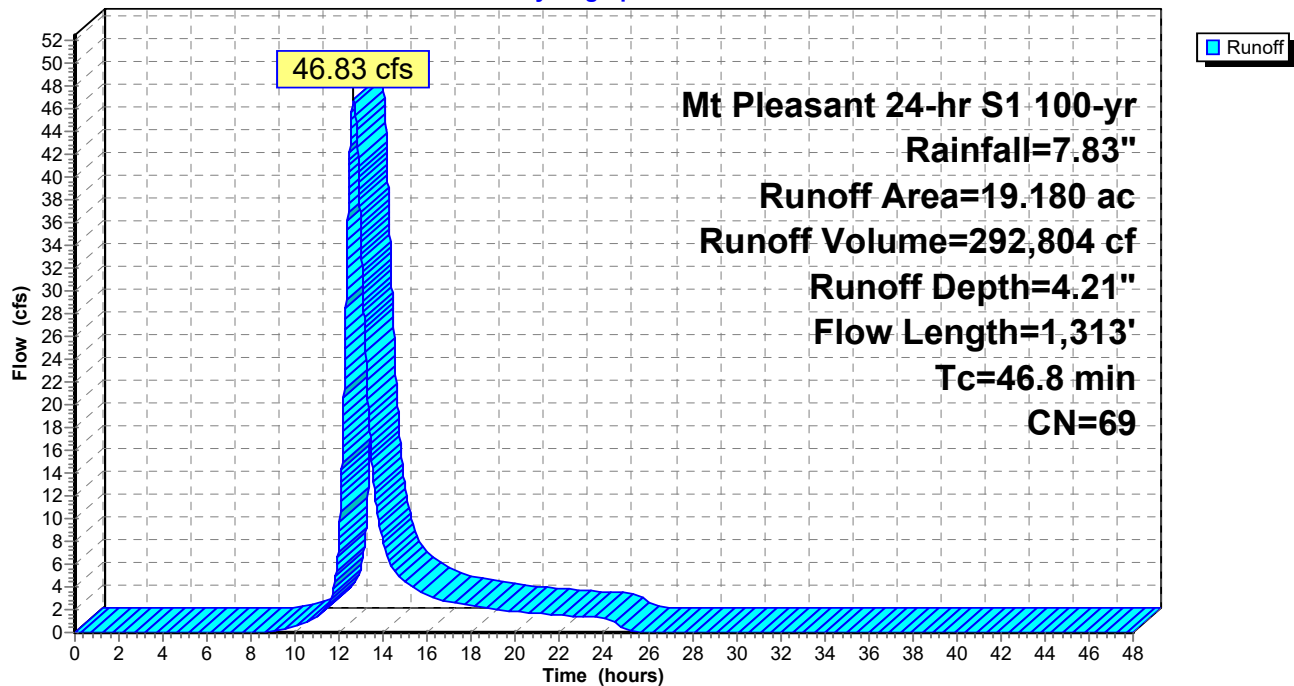
Area (ac)	CN	Description
9.300	79	Woods, Fair, HSG D
4.940	58	Meadow, non-grazed, HSG B
4.940	60	Woods, Fair, HSG B
19.180	69	Weighted Average
19.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0500	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.57"
22.3	1,213	0.0167	0.90		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
46.8	1,313	Total			



Subcatchment DA4E2: BASIN 4E2 PROPOSED

Hydrograph



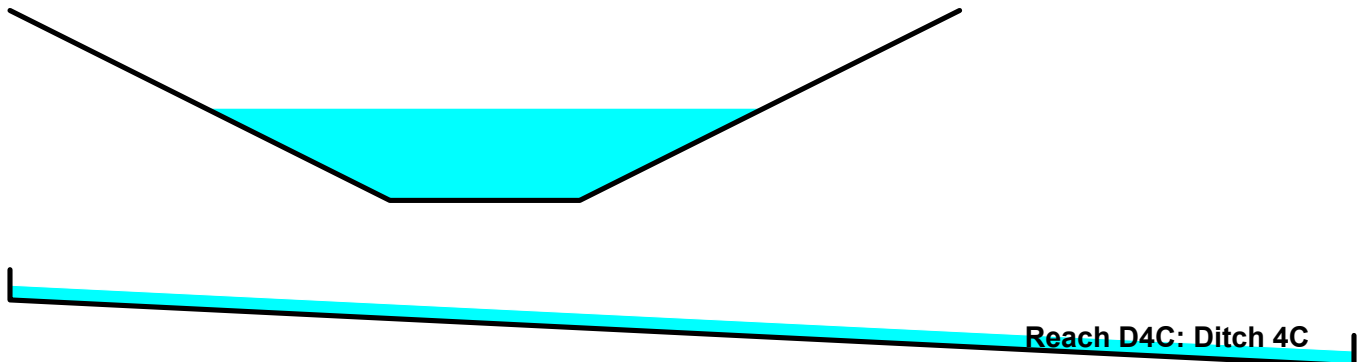
Summary for Reach D4C: Ditch 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 7.35" for 100-yr event
Inflow = 6.07 cfs @ 12.03 hrs, Volume= 18,146 cf
Outflow = 5.77 cfs @ 12.05 hrs, Volume= 18,146 cf, Atten= 5%, Lag= 1.2 min
Routed to Pond CD4C : Cross Drain 4C

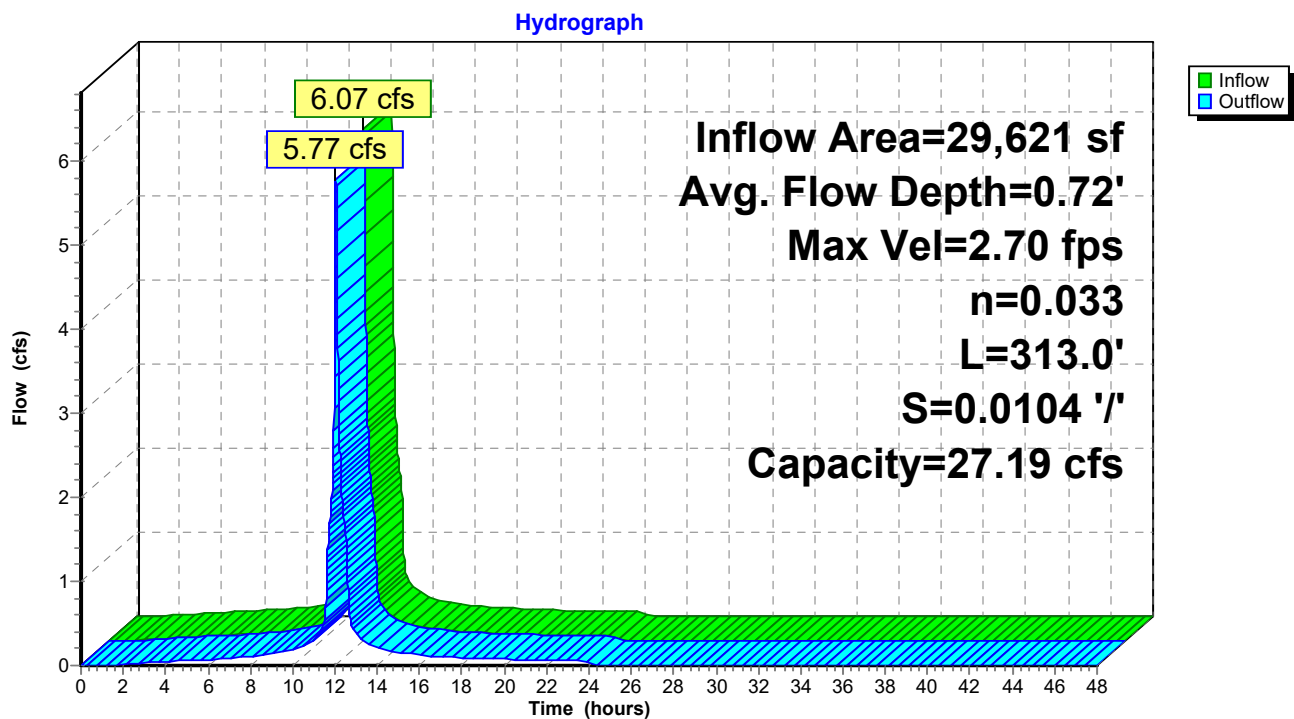
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.70 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 6.7 min

Peak Storage= 669 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.72' , Surface Width= 4.40'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 27.19 cfs

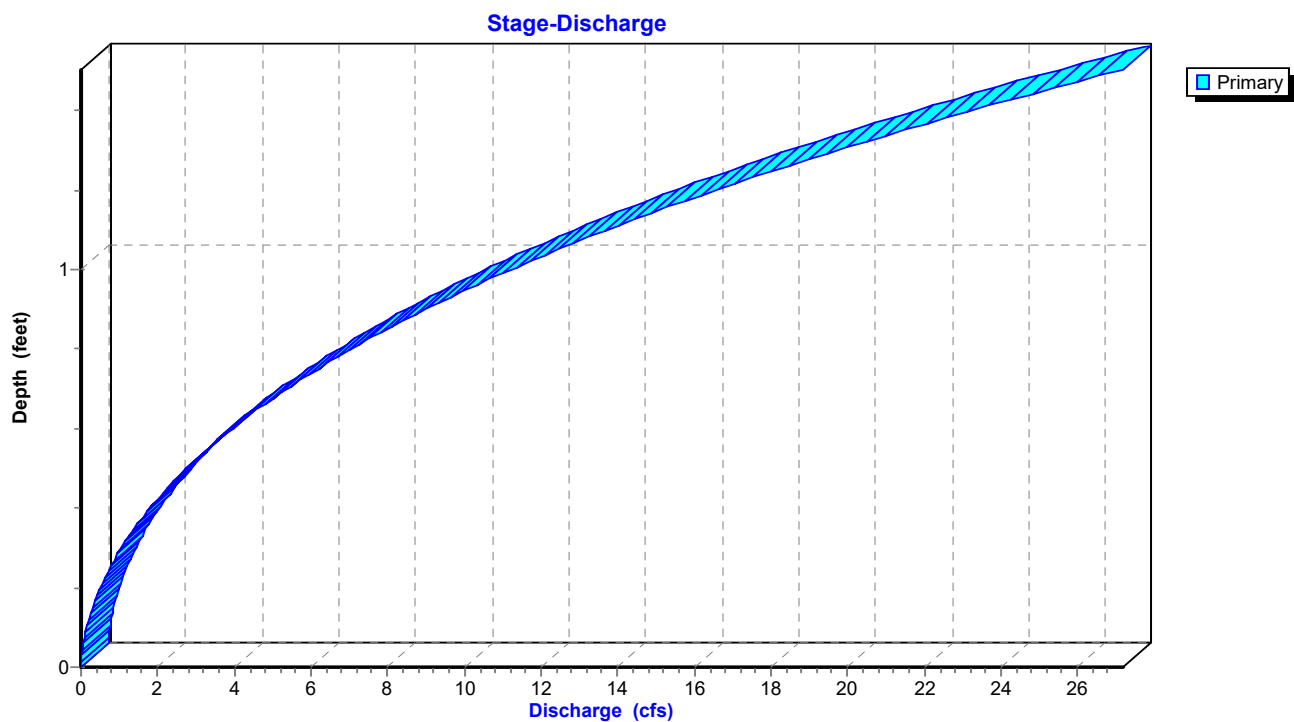
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 313.0' Slope= 0.0104 '/'
Inlet Invert= 687.00', Outlet Invert= 683.75'



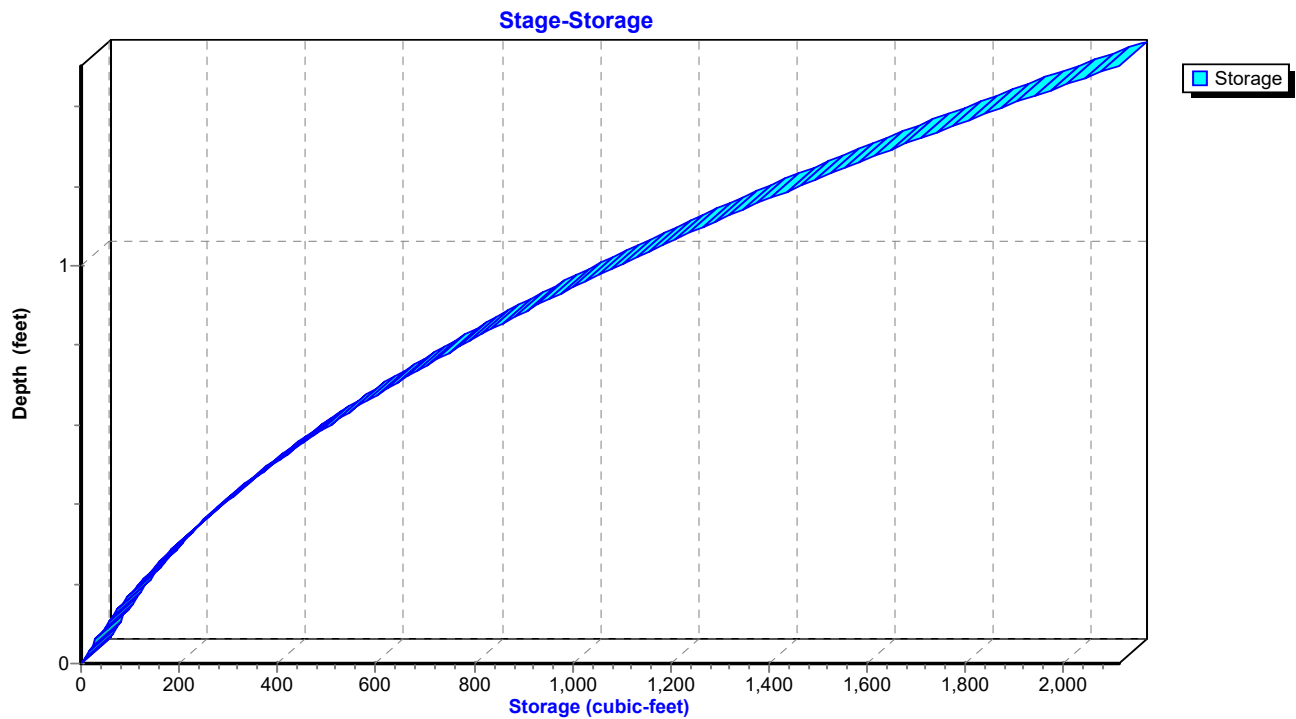
Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



Reach D4C: Ditch 4C



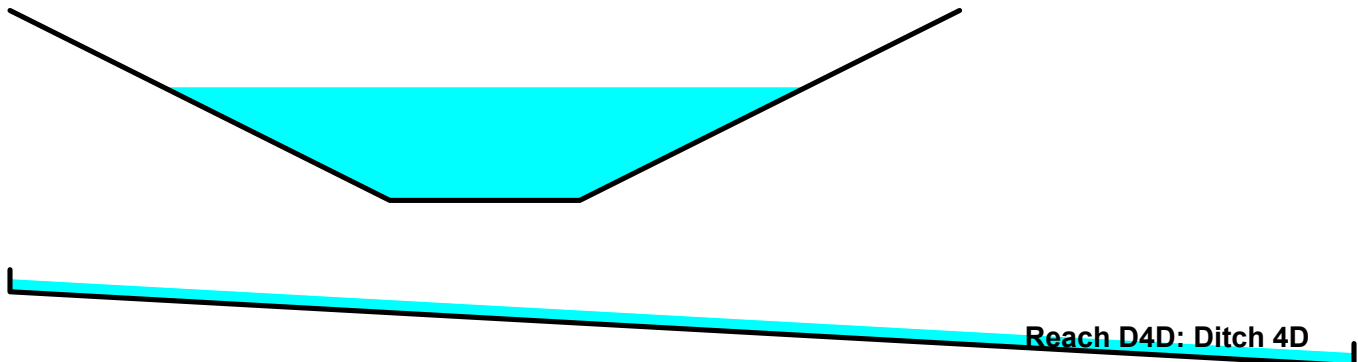
Summary for Reach D4D: Ditch 4D

Inflow Area = 53,579 sf, 0.00% Impervious, Inflow Depth = 7.35" for 100-yr event
Inflow = 10.99 cfs @ 12.03 hrs, Volume= 32,823 cf
Outflow = 10.60 cfs @ 12.04 hrs, Volume= 32,823 cf, Atten= 4%, Lag= 1.0 min
Routed to Pond CD4DCE : Cross Drain 4DCE

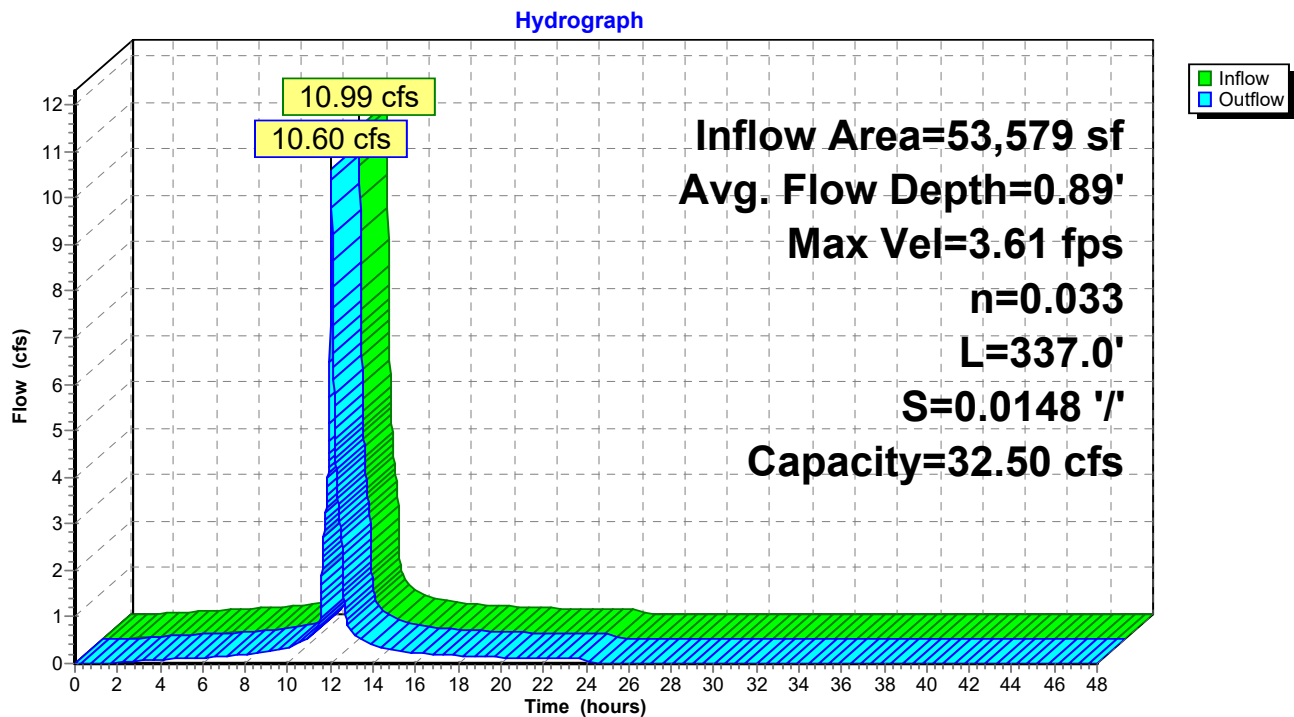
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 5.2 min

Peak Storage= 989 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.89' , Surface Width= 5.07'
Bank-Full Depth= 1.50' Flow Area= 6.8 sf, Capacity= 32.50 cfs

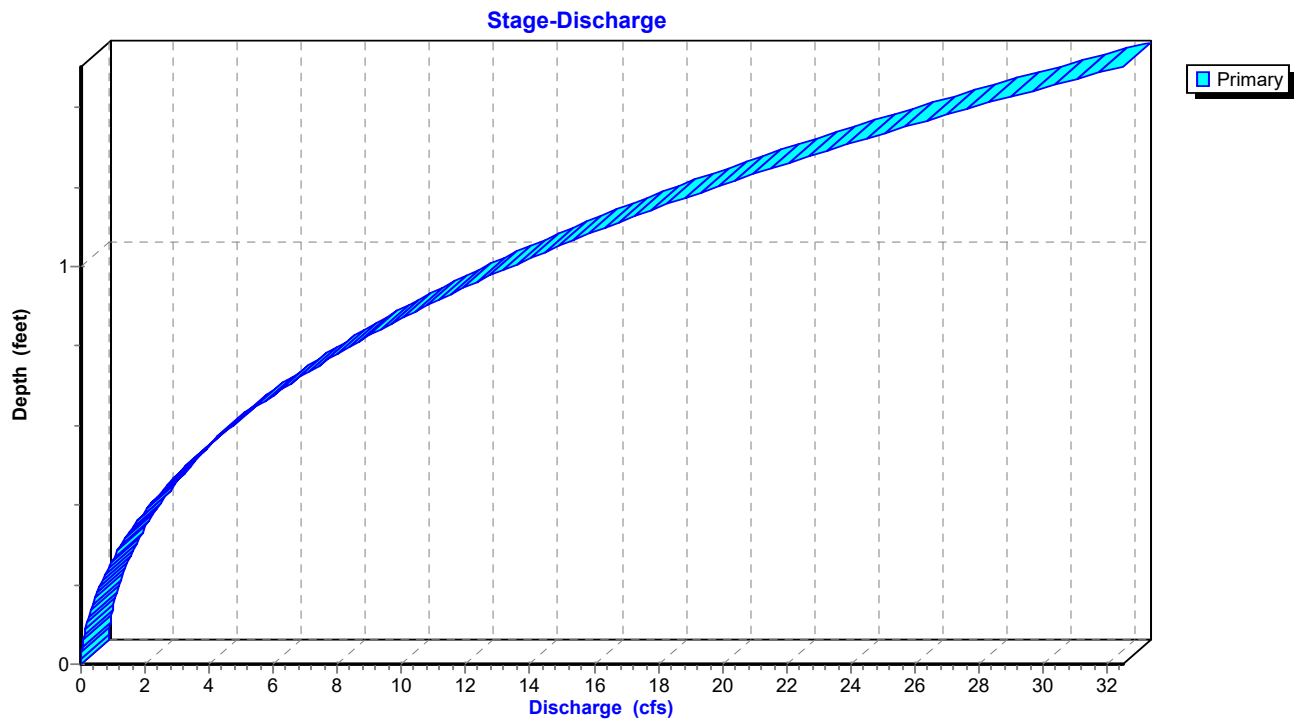
1.50' x 1.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 2.0 '/' Top Width= 7.50'
Length= 337.0' Slope= 0.0148 '/'
Inlet Invert= 688.00', Outlet Invert= 683.00'



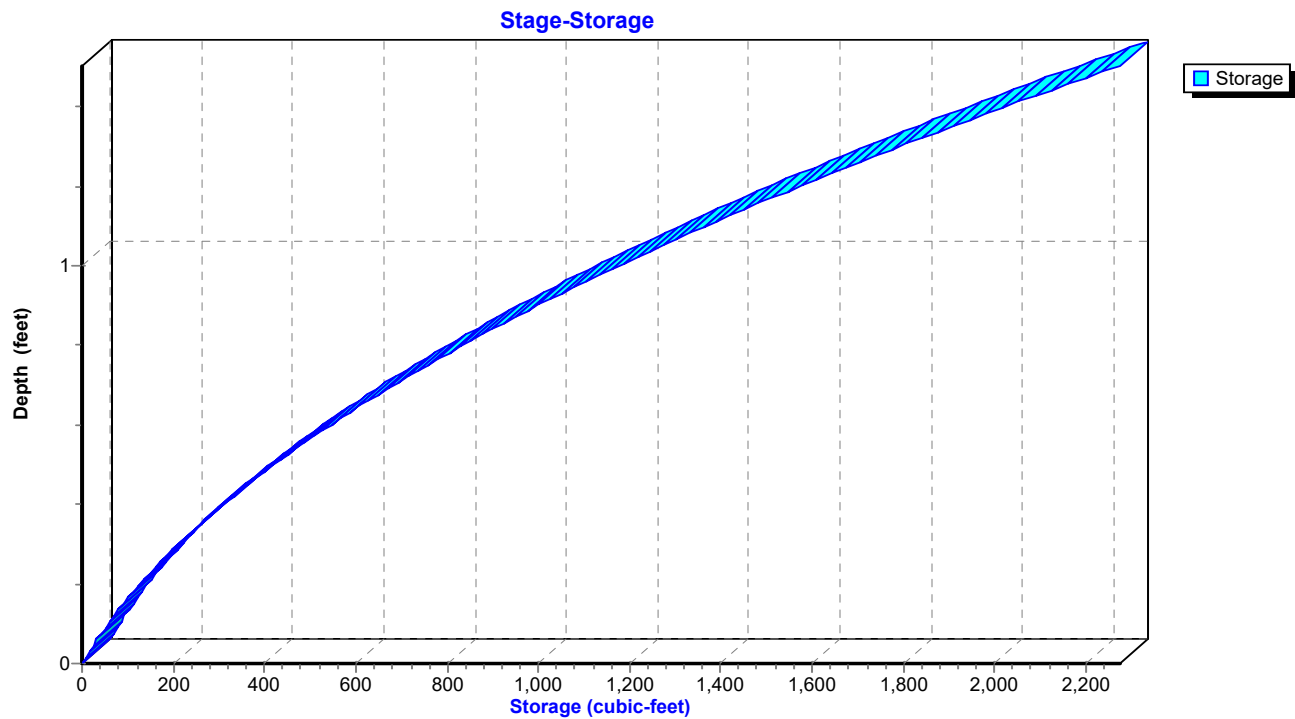
Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



Reach D4D: Ditch 4D



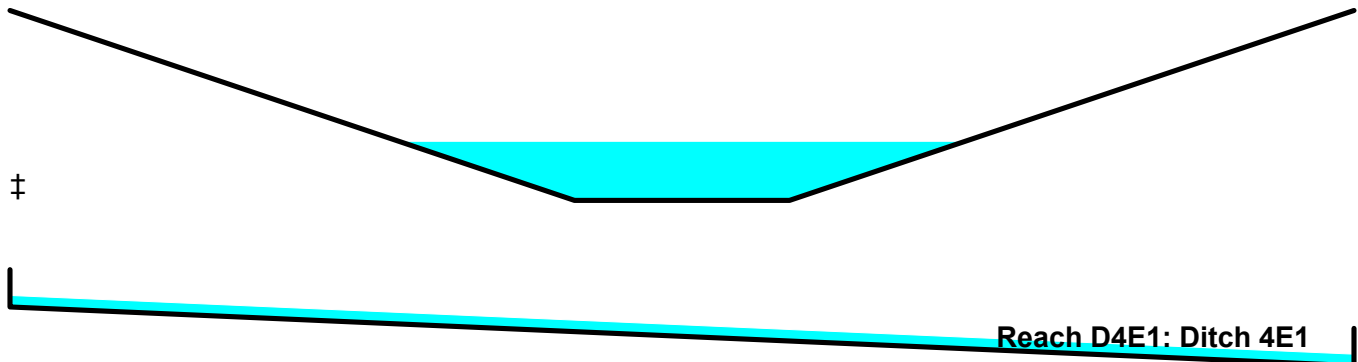
Summary for Reach D4E1: Ditch 4E1

Inflow Area = 316,246 sf, 13.77% Impervious, Inflow Depth = 3.65" for 100-yr event
Inflow = 18.33 cfs @ 12.43 hrs, Volume= 96,090 cf
Outflow = 15.73 cfs @ 12.62 hrs, Volume= 96,090 cf, Atten= 14%, Lag= 11.8 min
Routed to Pond CD4E : Cross Drain 4E

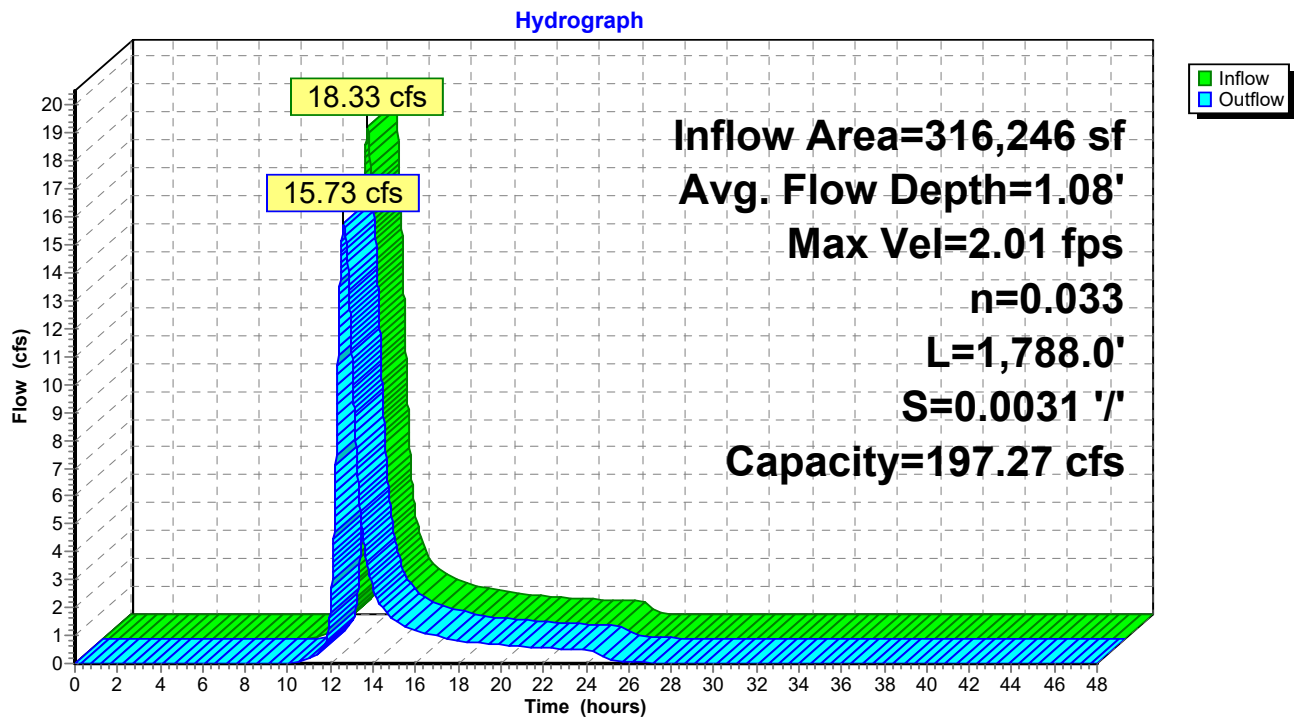
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 14.8 min
Avg. Velocity= 0.56 fps, Avg. Travel Time= 52.9 min

Peak Storage= 13,992 cf @ 12.62 hrs
Average Depth at Peak Storage= 1.08' , Surface Width= 10.48'
Bank-Full Depth= 3.50' Flow Area= 50.8 sf, Capacity= 197.27 cfs

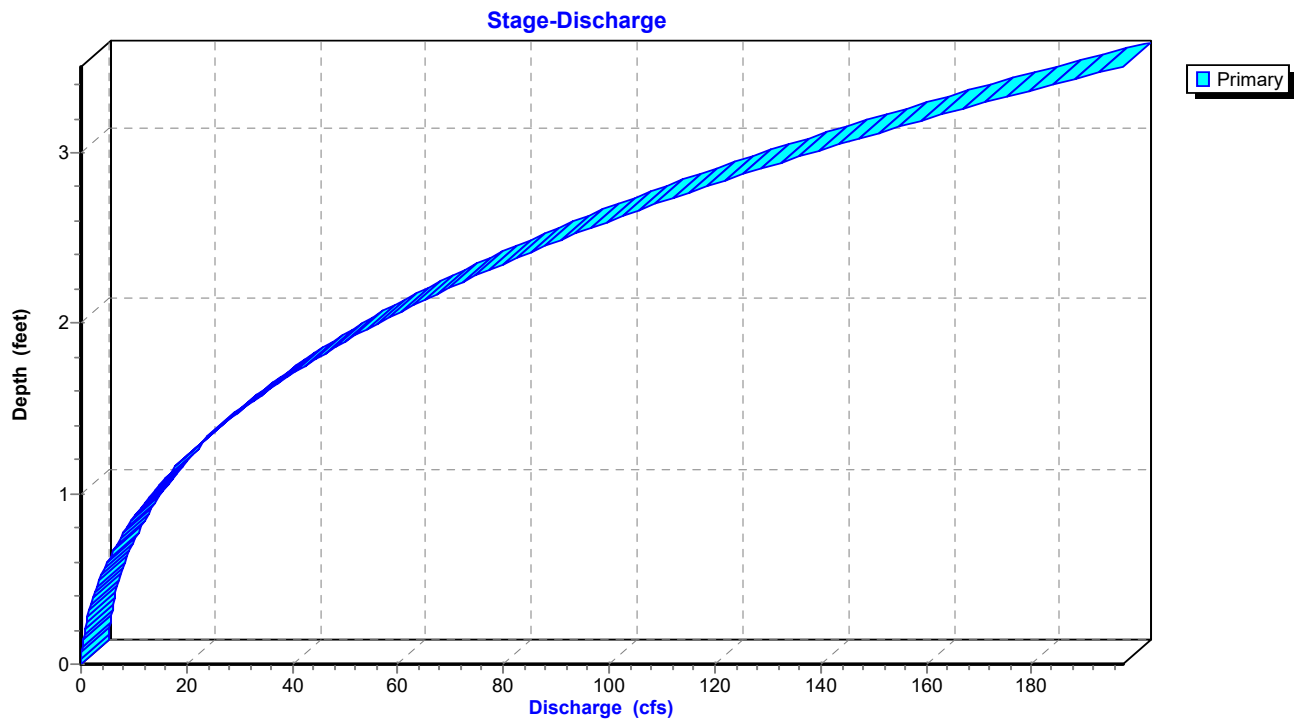
4.00' x 3.50' deep channel, n= 0.033 Riprap, 1-inch
Side Slope Z-value= 3.0 '/' Top Width= 25.00'
Length= 1,788.0' Slope= 0.0031 '/'
Inlet Invert= 685.00', Outlet Invert= 679.50'

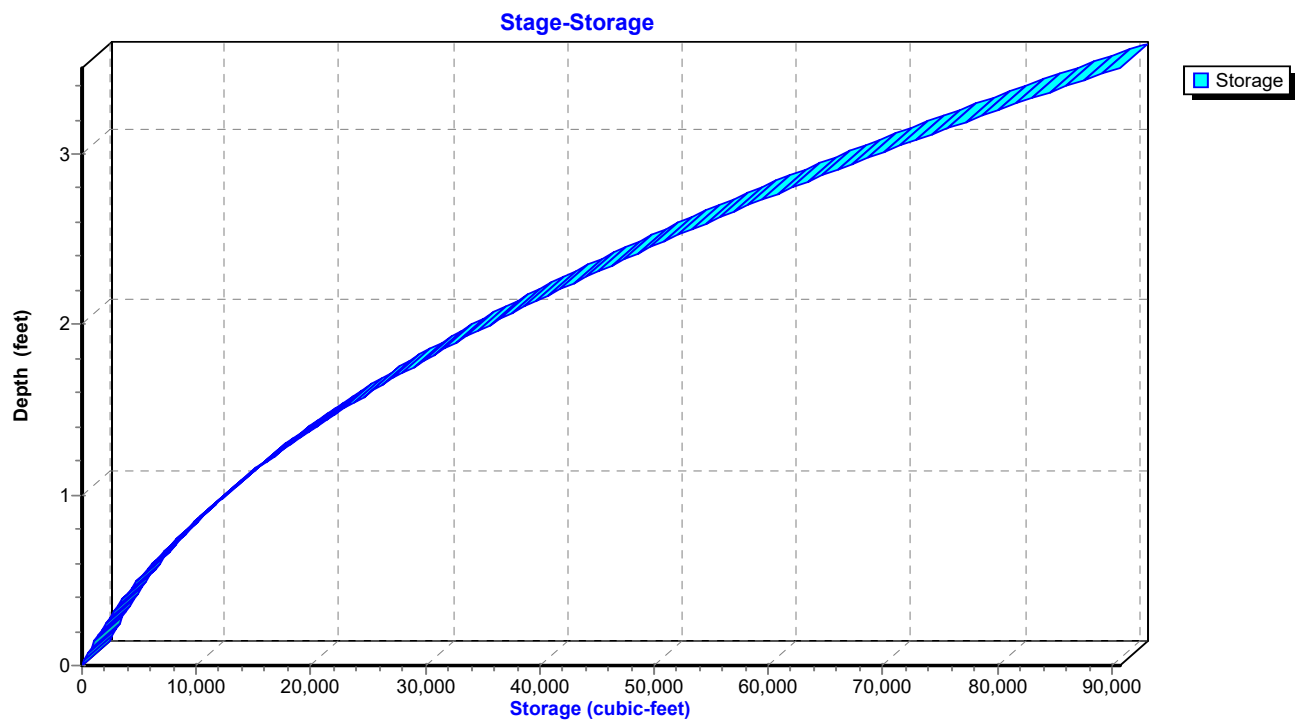


Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1



Reach D4E1: Ditch 4E1

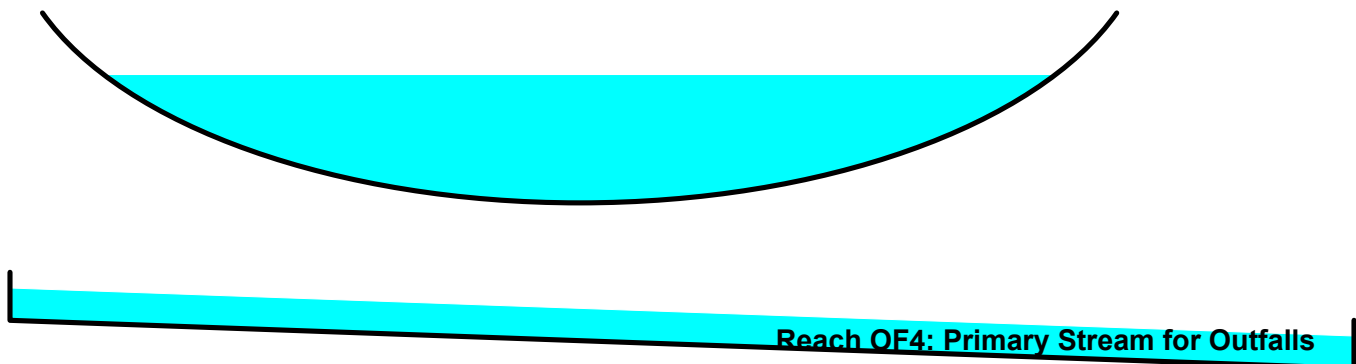
Summary for Reach OF4: Primary Stream for Outfalls

Inflow Area = 9,965,657 sf, 1.09% Impervious, Inflow Depth = 4.55" for 100-yr event
Inflow = 274.93 cfs @ 13.24 hrs, Volume= 3,780,759 cf
Outflow = 274.79 cfs @ 13.35 hrs, Volume= 3,780,759 cf, Atten= 0%, Lag= 6.3 min

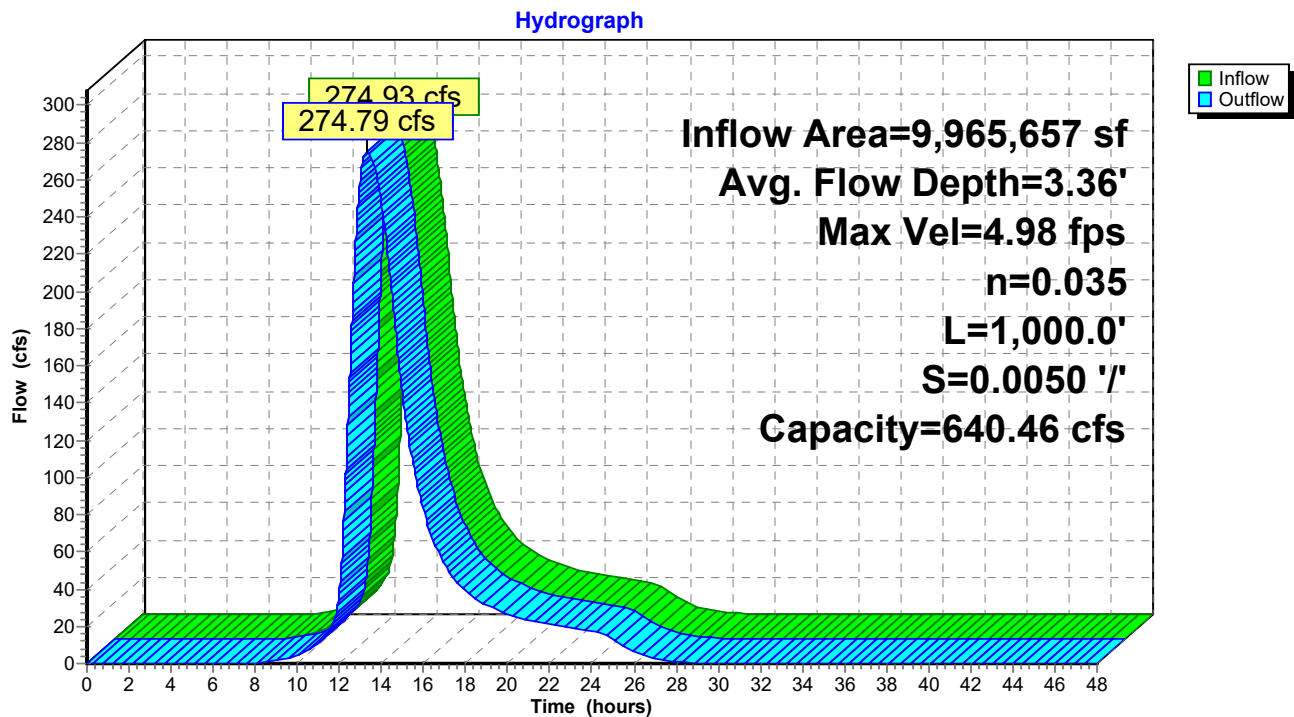
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.98 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 9.5 min

Peak Storage= 55,132 cf @ 13.35 hrs
Average Depth at Peak Storage= 3.36' , Surface Width= 24.60'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

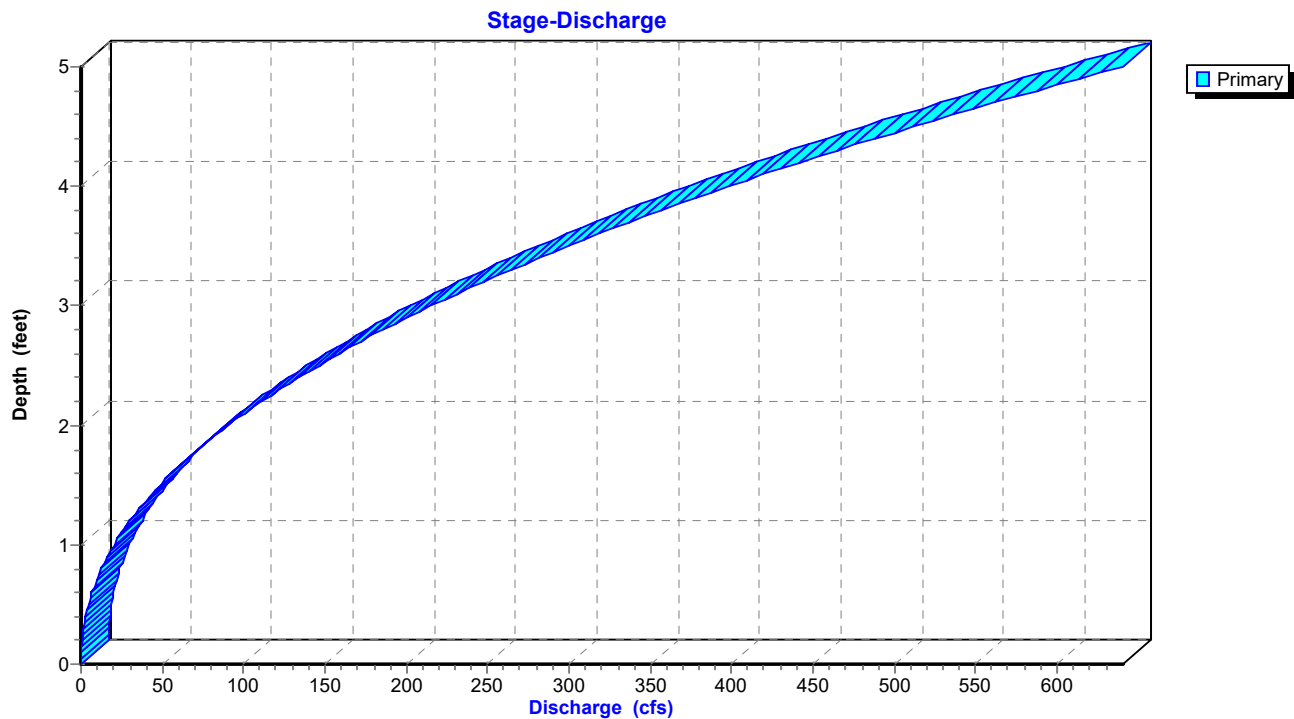
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

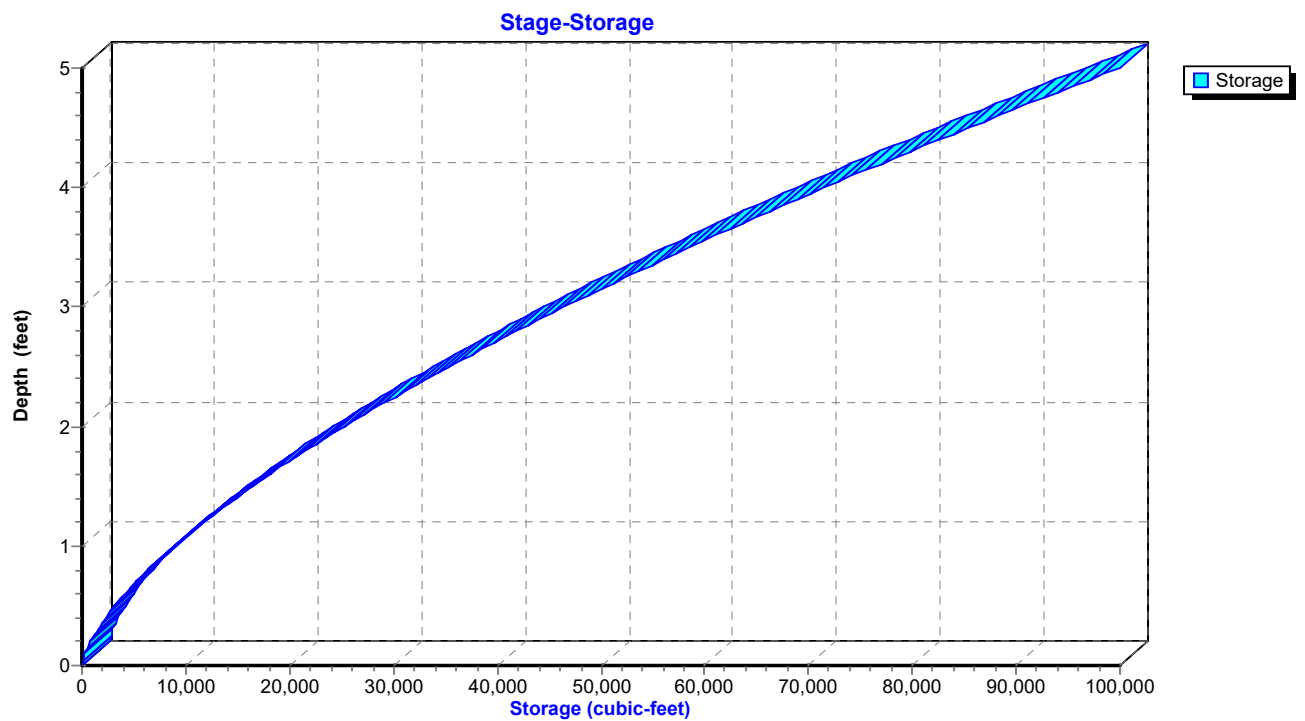


Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls



Reach OF4: Primary Stream for Outfalls

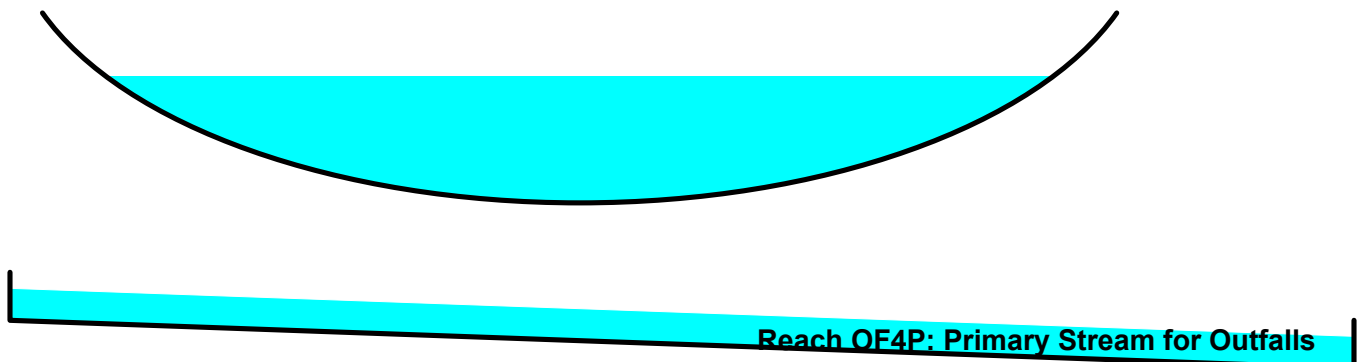
Summary for Reach OF4P: Primary Stream for Outfalls

Inflow Area = 9,969,577 sf, 2.84% Impervious, Inflow Depth = 4.71" for 100-yr event
Inflow = 270.89 cfs @ 13.50 hrs, Volume= 3,915,011 cf
Outflow = 270.52 cfs @ 13.52 hrs, Volume= 3,915,010 cf, Atten= 0%, Lag= 1.2 min

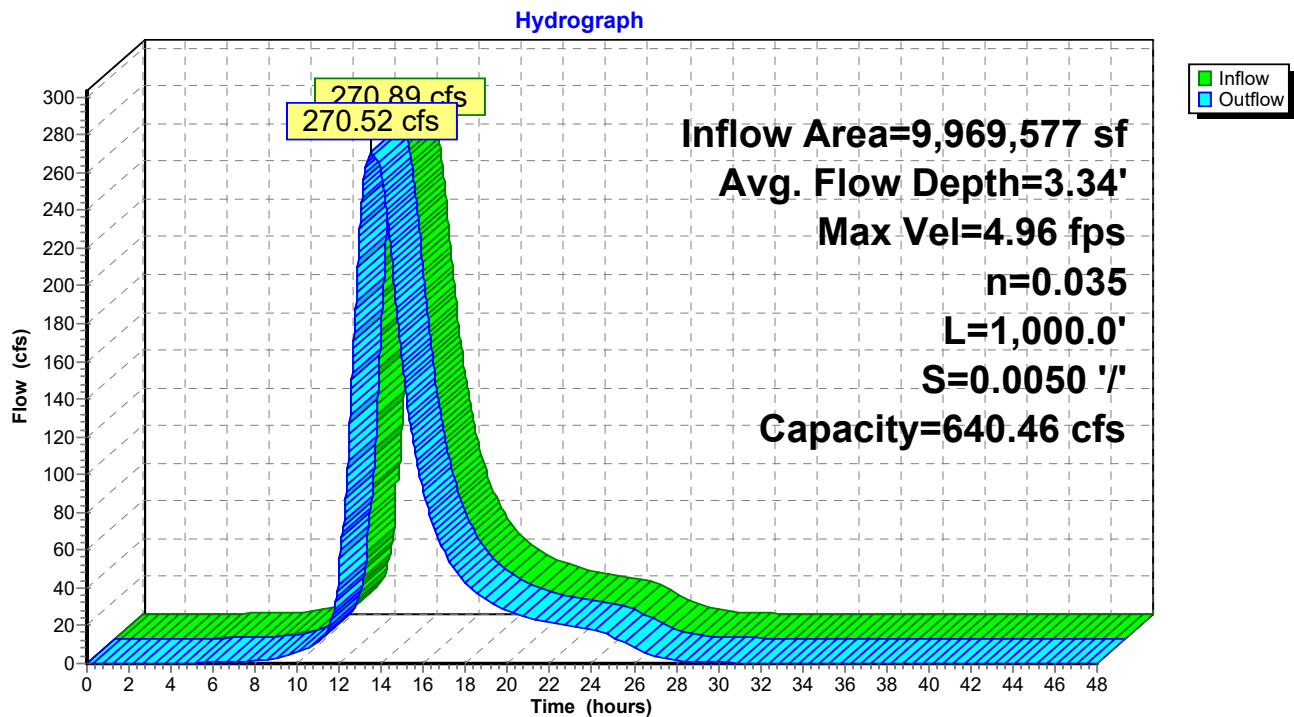
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.96 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 12.0 min

Peak Storage= 54,530 cf @ 13.52 hrs
Average Depth at Peak Storage= 3.34' , Surface Width= 24.51'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 640.46 cfs

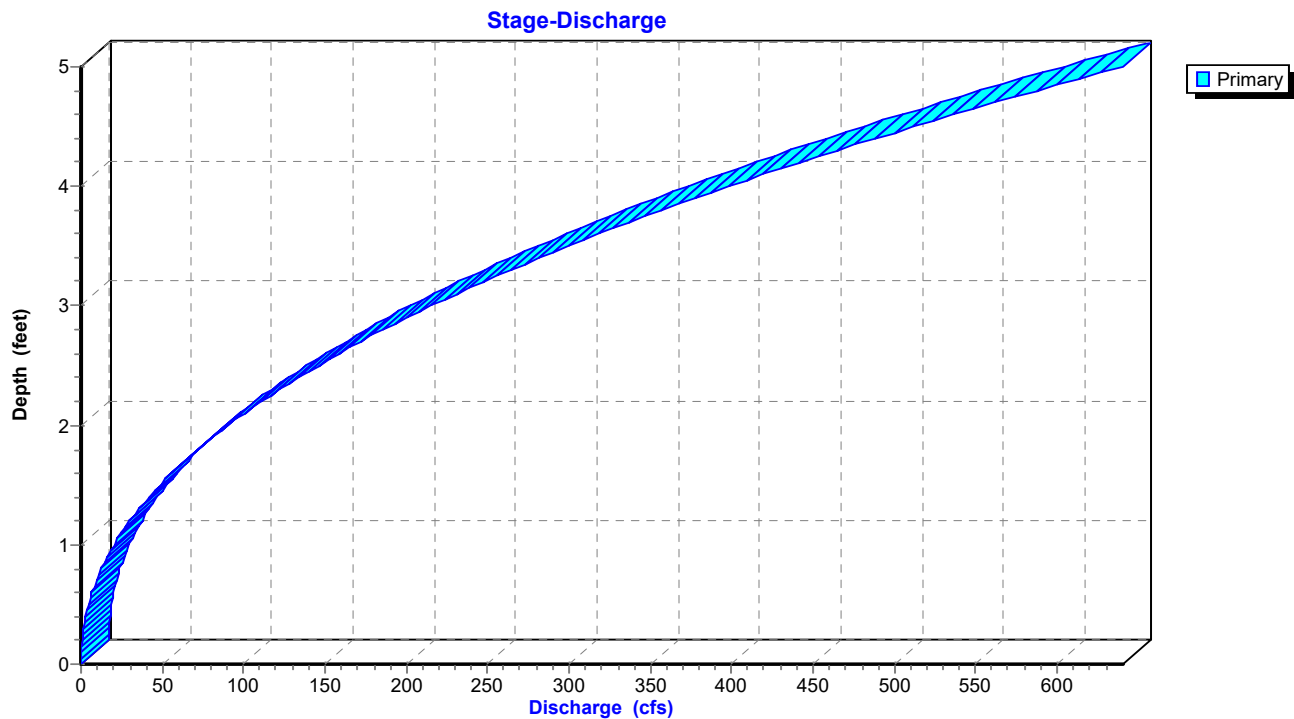
30.00' x 5.00' deep Parabolic Channel, n= 0.035
Length= 1,000.0' Slope= 0.0050 '/'
Inlet Invert= 675.00', Outlet Invert= 670.00'

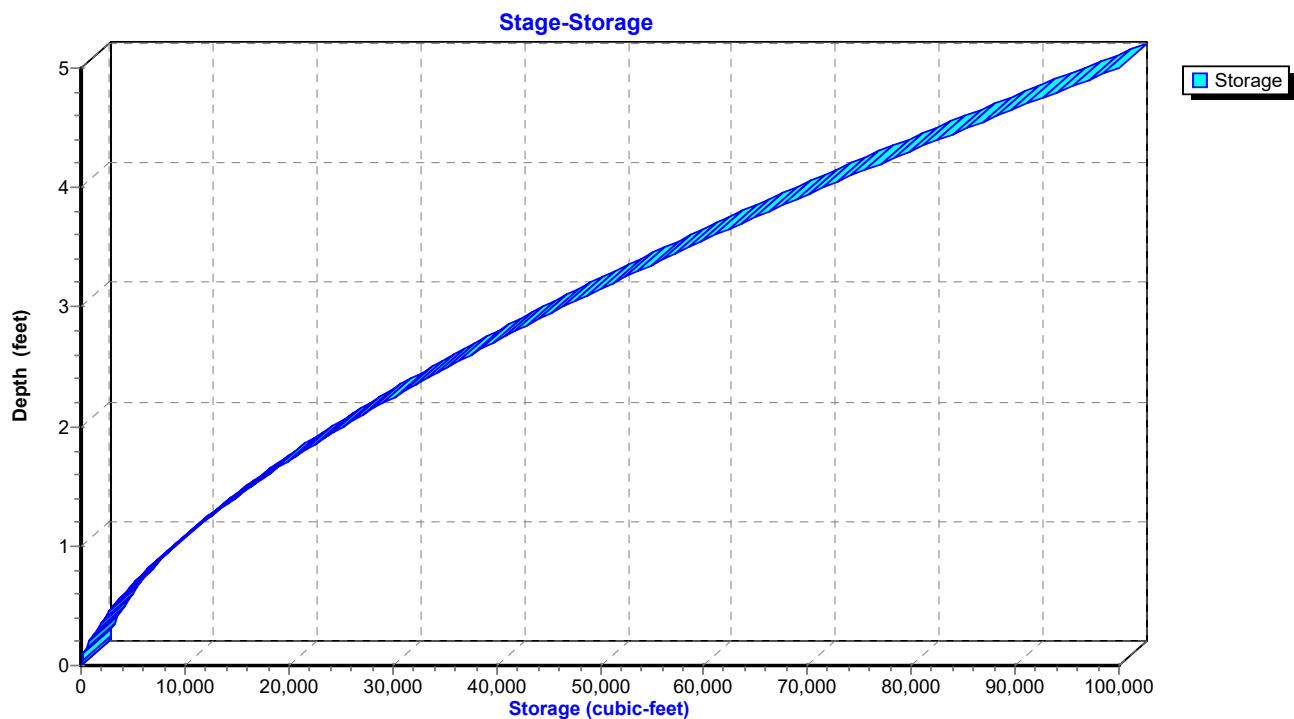


Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls



Reach OF4P: Primary Stream for Outfalls

Summary for Pond CD2: Cross Drain

Inflow Area = 1,520,244 sf, 0.00% Impervious, Inflow Depth = 3.43" for 100-yr event
 Inflow = 58.90 cfs @ 12.88 hrs, Volume= 433,944 cf
 Outflow = 58.90 cfs @ 12.88 hrs, Volume= 433,944 cf, Atten= 0%, Lag= 0.0 min
 Primary = 58.90 cfs @ 12.88 hrs, Volume= 433,944 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.90' @ 12.88 hrs

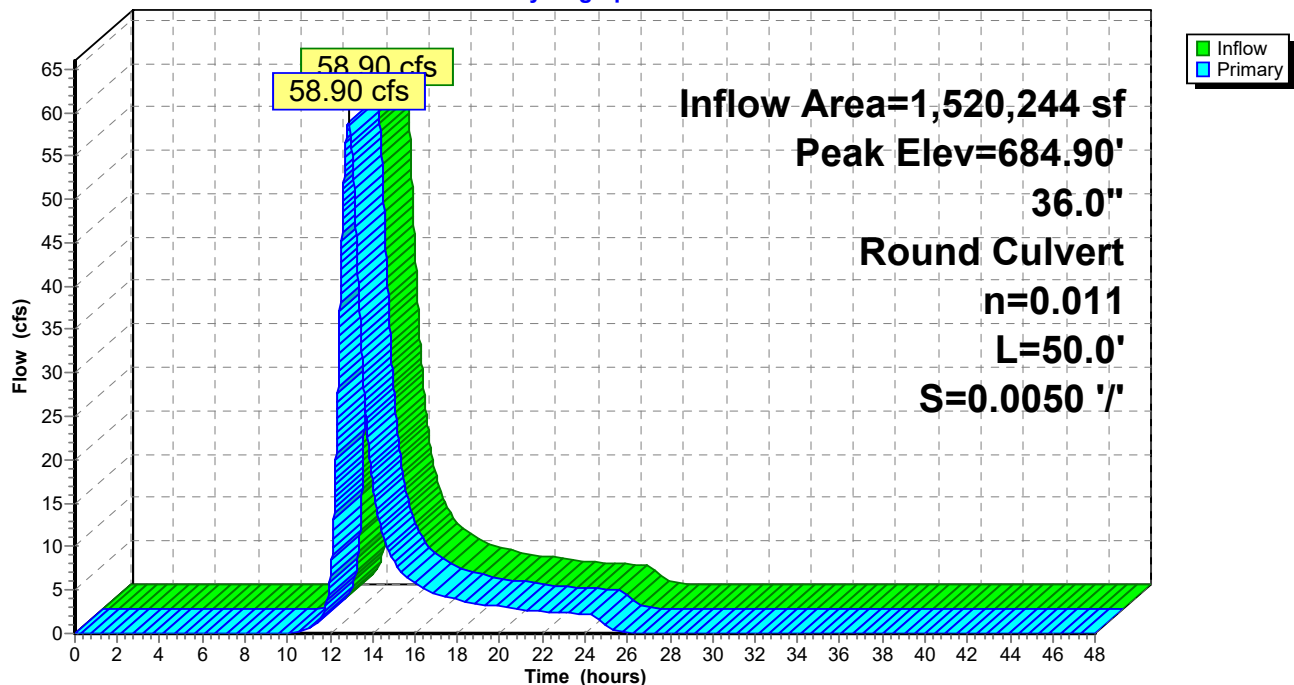
Device	Routing	Invert	Outlet Devices
#1	Primary	680.25'	36.0" Round Culvert L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 680.25' / 680.00' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

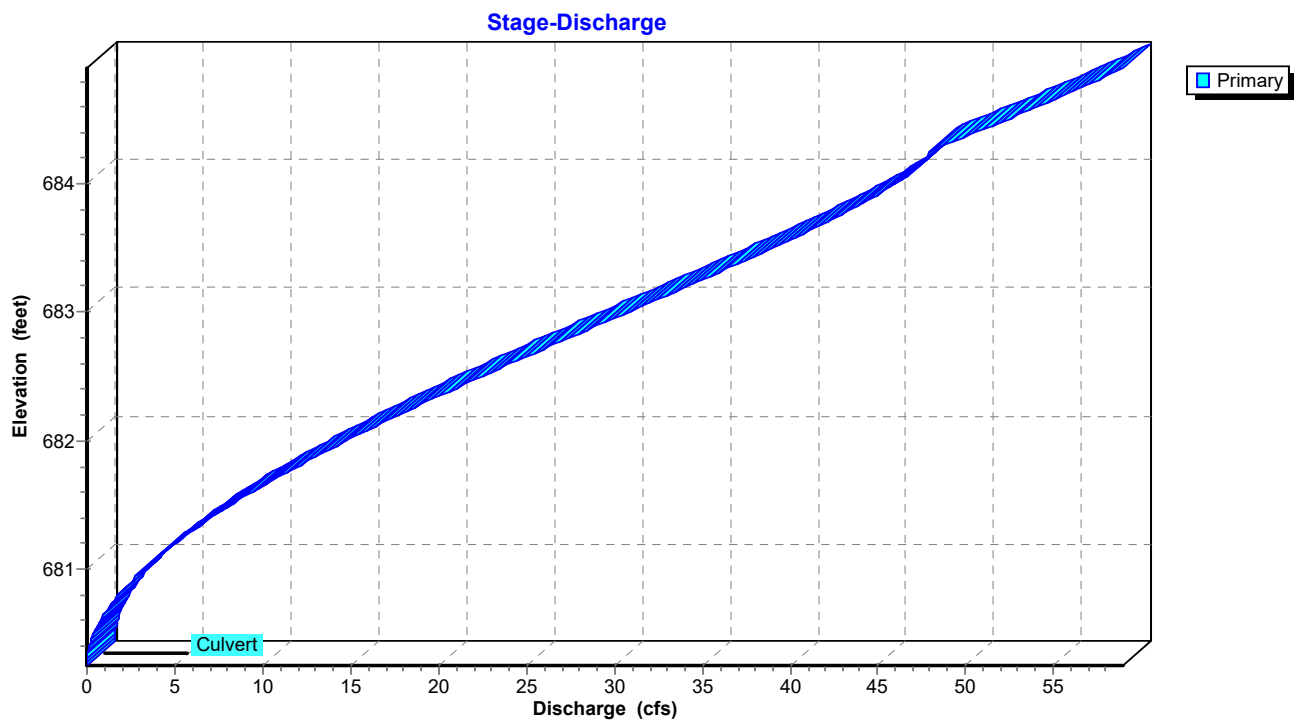
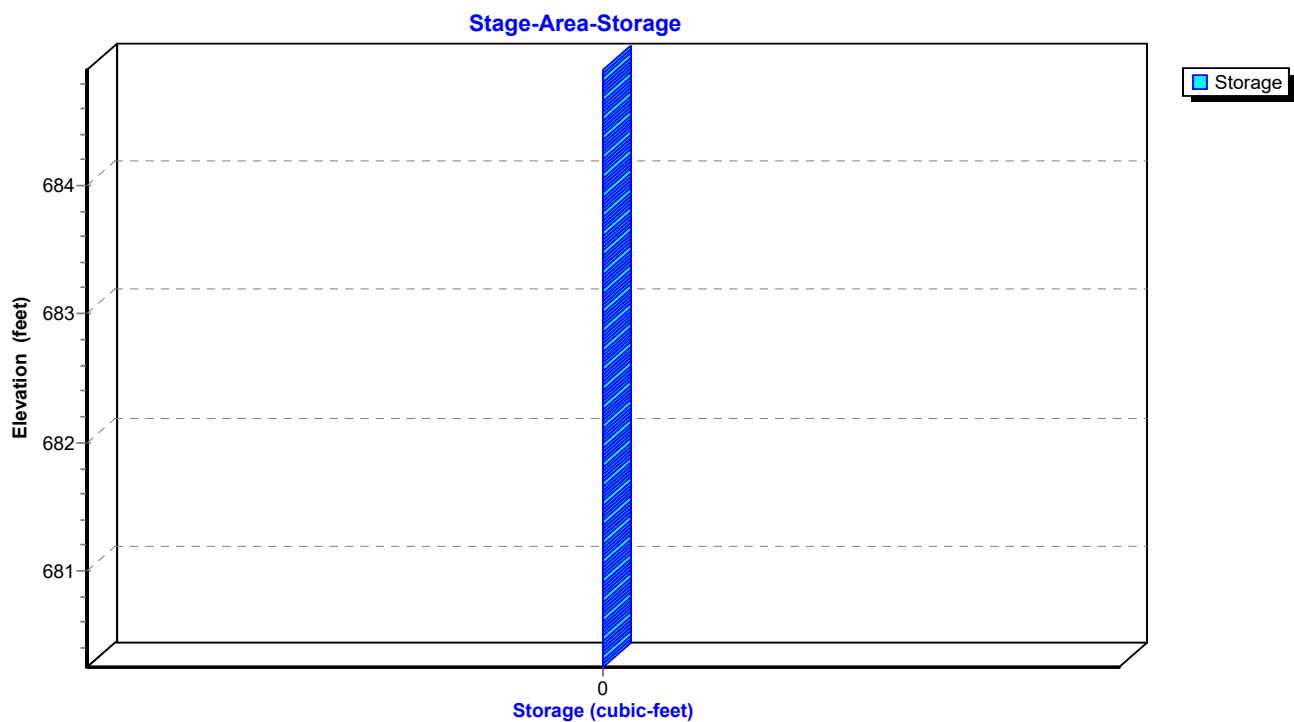
Primary OutFlow Max=58.89 cfs @ 12.88 hrs HW=684.90' TW=677.98' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 58.89 cfs @ 8.33 fps)

~~Culvert CD2: Cross Drain~~

Pond CD2: Cross Drain

Hydrograph



Pond CD2: Cross Drain**Pond CD2: Cross Drain**

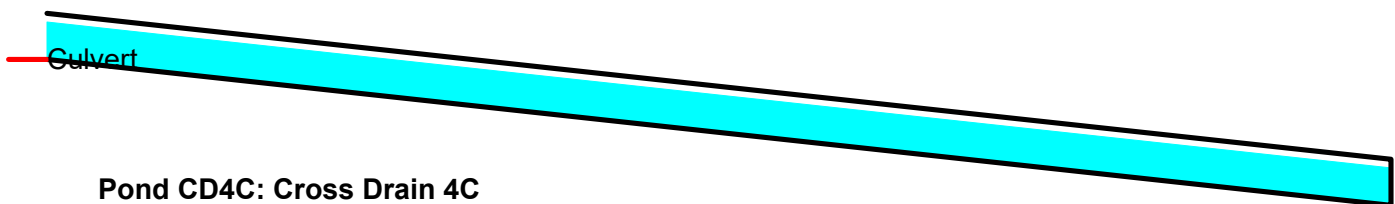
Summary for Pond CD4C: Cross Drain 4C

Inflow Area = 29,621 sf, 0.00% Impervious, Inflow Depth = 7.35" for 100-yr event
 Inflow = 5.77 cfs @ 12.05 hrs, Volume= 18,146 cf
 Outflow = 5.77 cfs @ 12.05 hrs, Volume= 18,146 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.77 cfs @ 12.05 hrs, Volume= 18,146 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

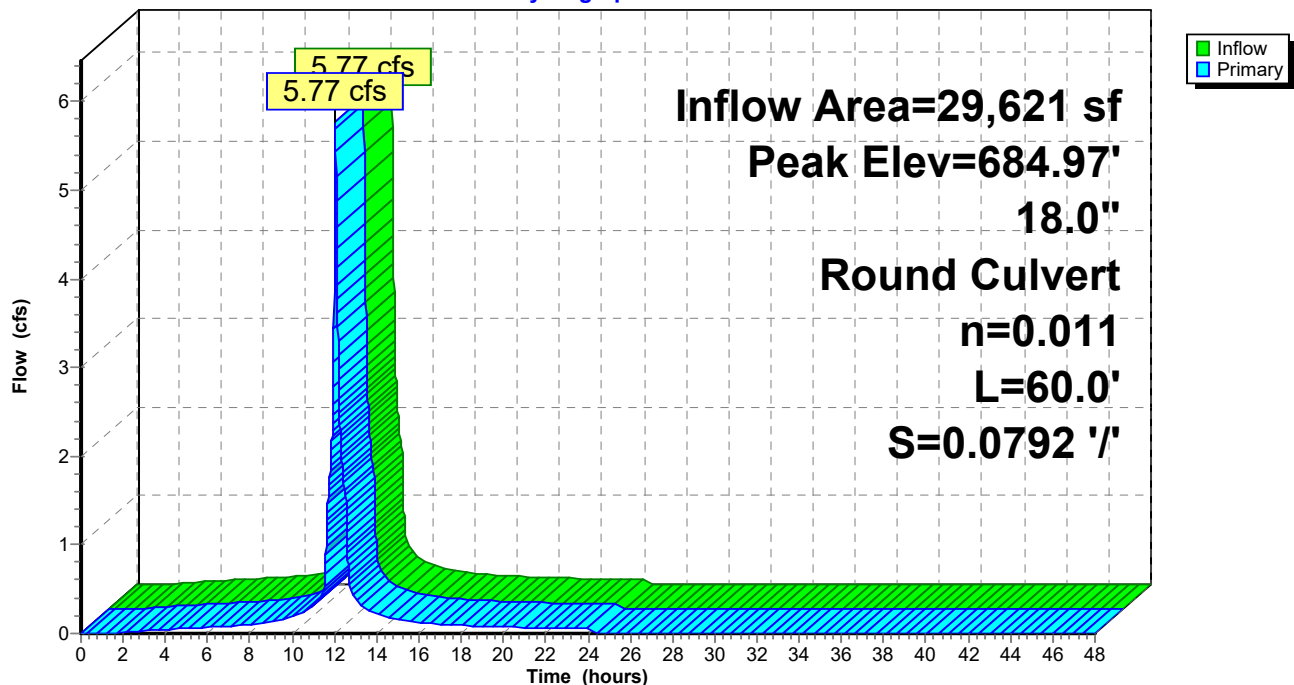
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 684.97' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	683.75'	18.0" Round Culvert L= 60.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 683.75' / 679.00' S= 0.0792 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

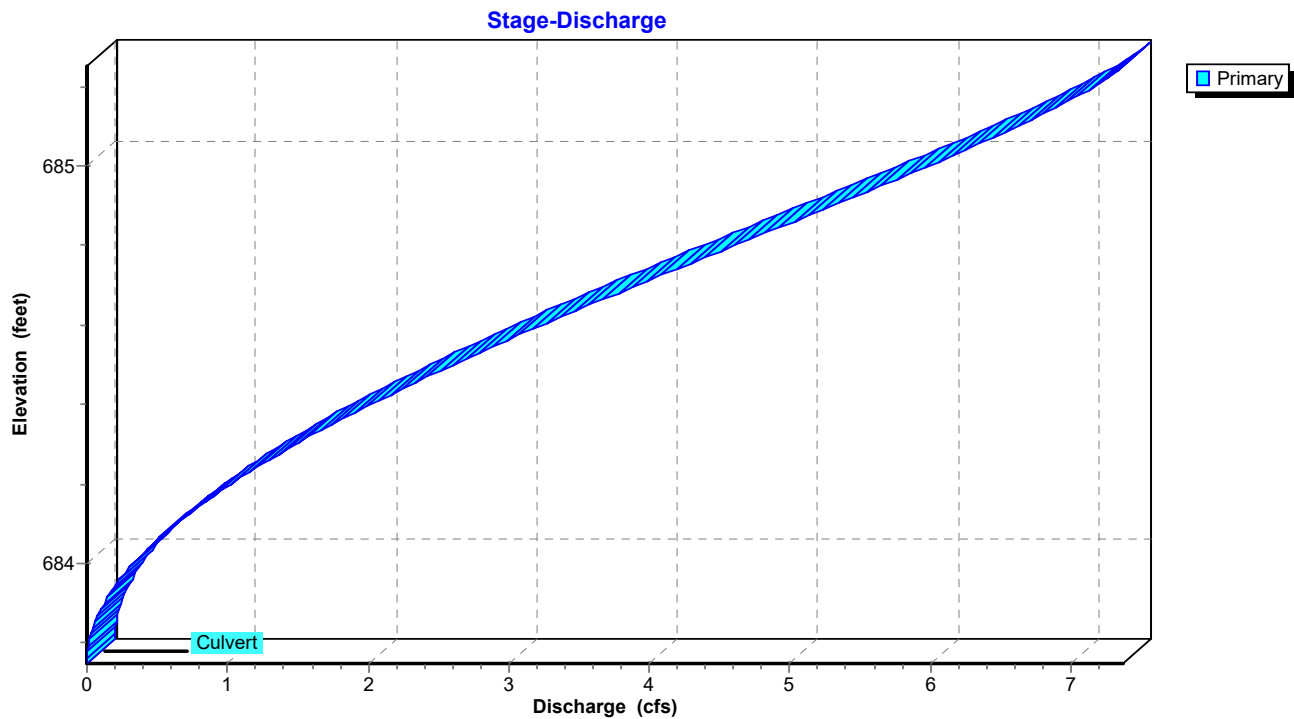
Primary OutFlow Max=5.75 cfs @ 12.05 hrs HW=684.96' TW=680.53' (Dynamic Tailwater)
 1=Culvert (Inlet Controls 5.75 cfs @ 3.75 fps)

**Pond CD4C: Cross Drain 4C**

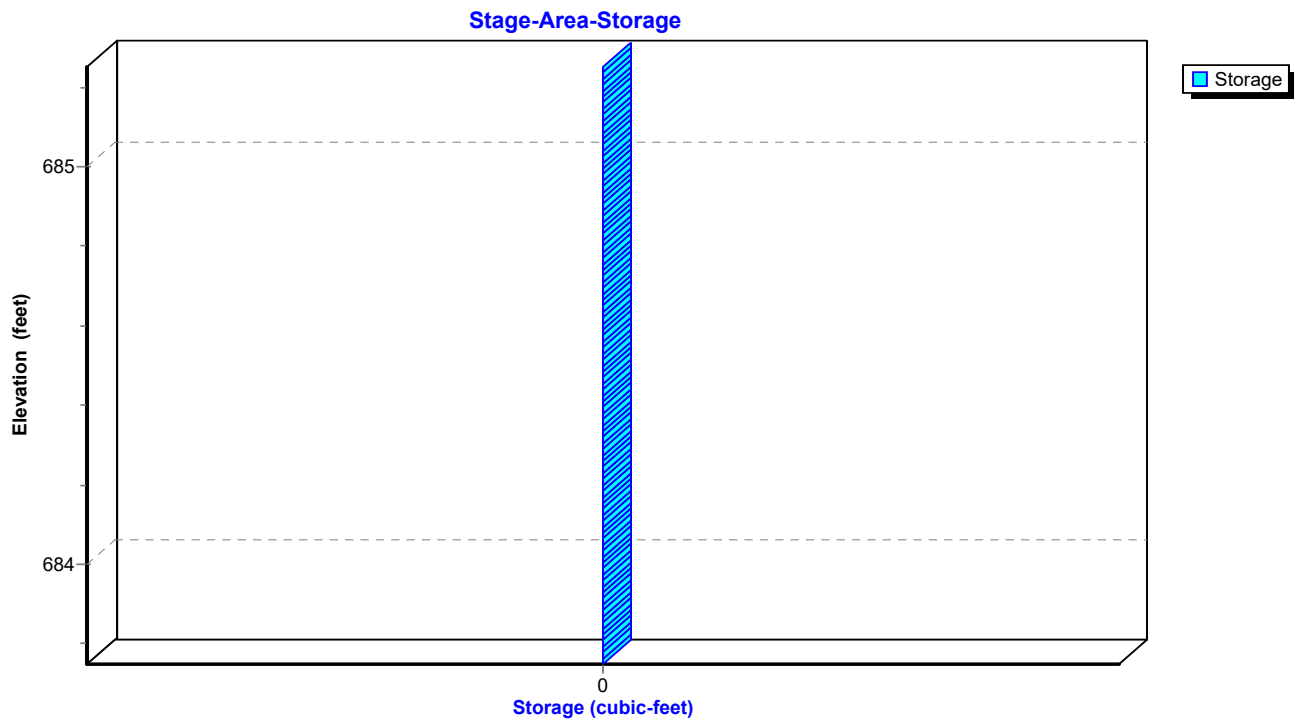
Hydrograph



Pond CD4C: Cross Drain 4C



Pond CD4C: Cross Drain 4C



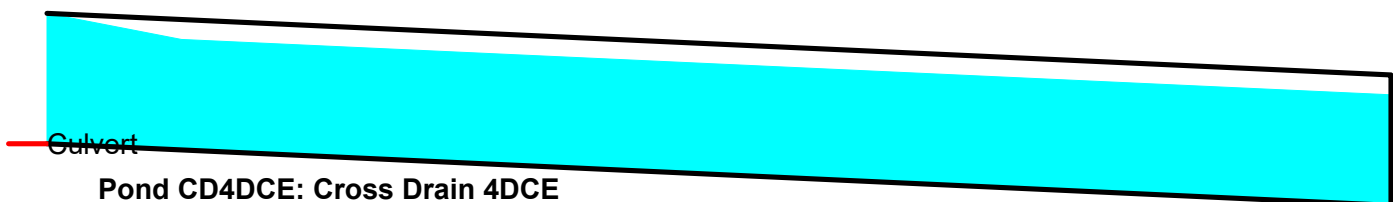
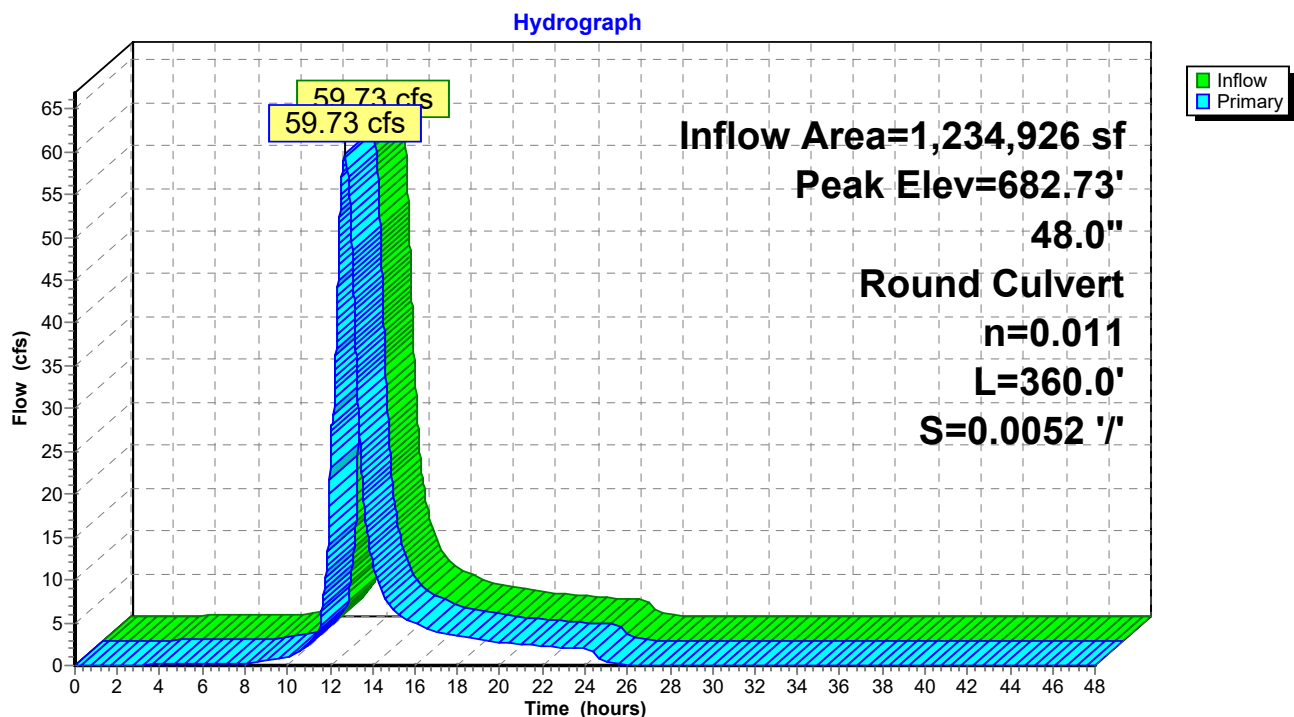
Summary for Pond CD4DCE: Cross Drain 4DCE

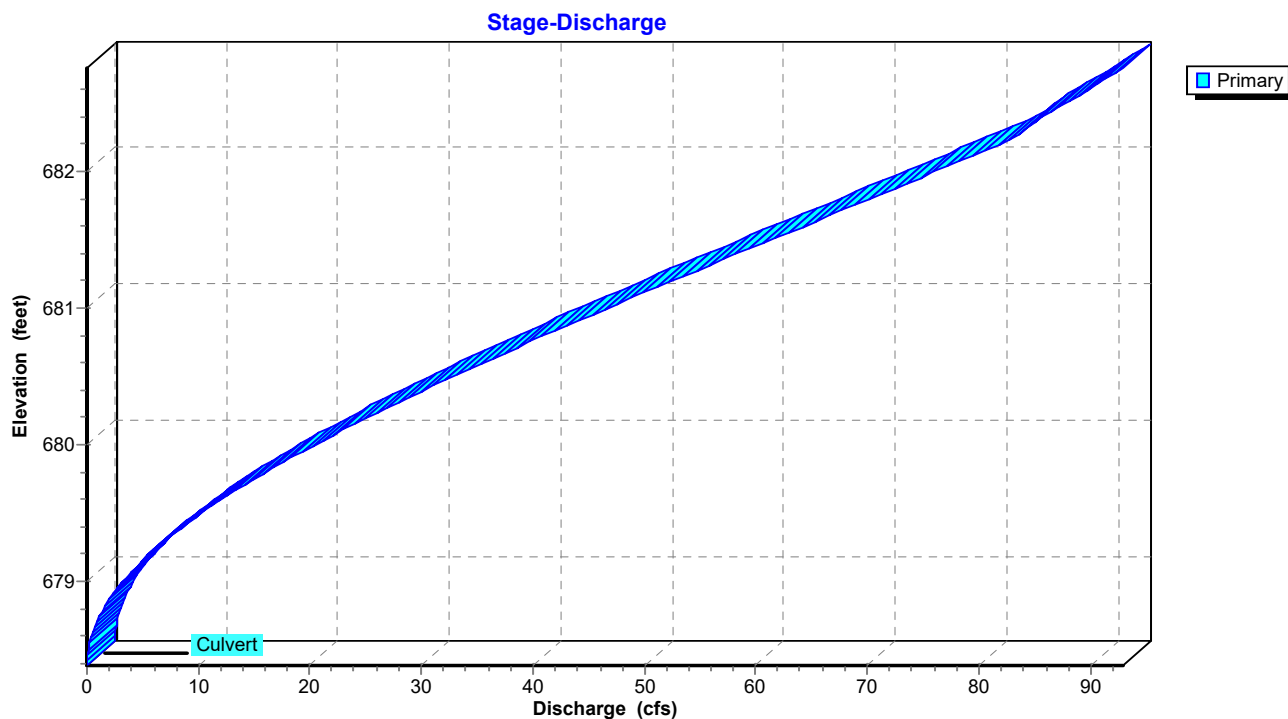
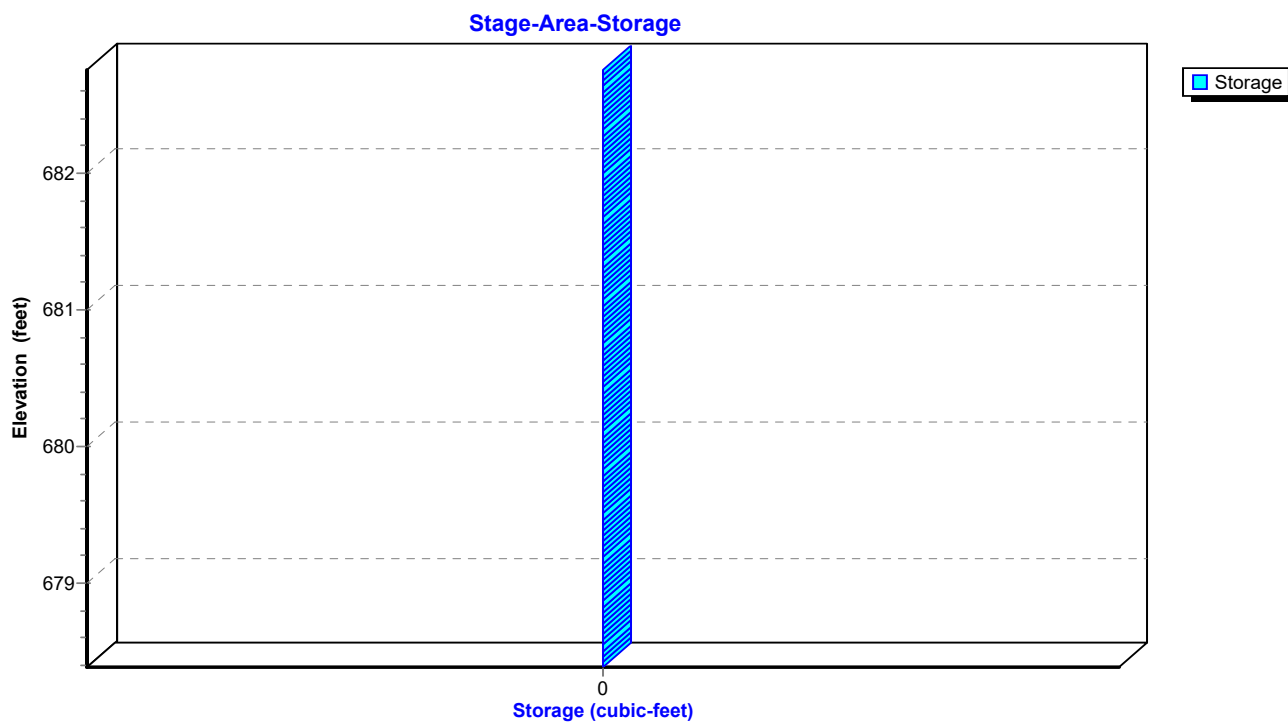
Inflow Area = 1,234,926 sf, 3.53% Impervious, Inflow Depth = 4.27" for 100-yr event
 Inflow = 59.73 cfs @ 12.71 hrs, Volume= 439,858 cf
 Outflow = 59.73 cfs @ 12.71 hrs, Volume= 439,858 cf, Atten= 0%, Lag= 0.0 min
 Primary = 59.73 cfs @ 12.71 hrs, Volume= 439,858 cf
 Routed to Pond POND1P : PROP POND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 682.73' @ 12.87 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	678.39'	48.0" Round Culvert L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 678.39' / 676.50' S= 0.0052 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

Primary OutFlow Max=59.14 cfs @ 12.71 hrs HW=682.60' TW=681.41' (Dynamic Tailwater)
 ↑ **1=Culvert** (Outlet Controls 59.14 cfs @ 5.55 fps)

**Pond CD4DCE: Cross Drain 4DCE**

Pond CD4DCE: Cross Drain 4DCE**Pond CD4DCE: Cross Drain 4DCE**

Summary for Pond CD4E: Cross Drain 4E

Inflow Area = 1,151,726 sf, 3.78% Impervious, Inflow Depth = 4.05" for 100-yr event
 Inflow = 62.56 cfs @ 12.64 hrs, Volume= 388,894 cf
 Outflow = 58.22 cfs @ 12.73 hrs, Volume= 388,890 cf, Atten= 7%, Lag= 5.5 min
 Primary = 58.22 cfs @ 12.73 hrs, Volume= 388,890 cf
 Routed to Pond CD4DCE : Cross Drain 4DCE

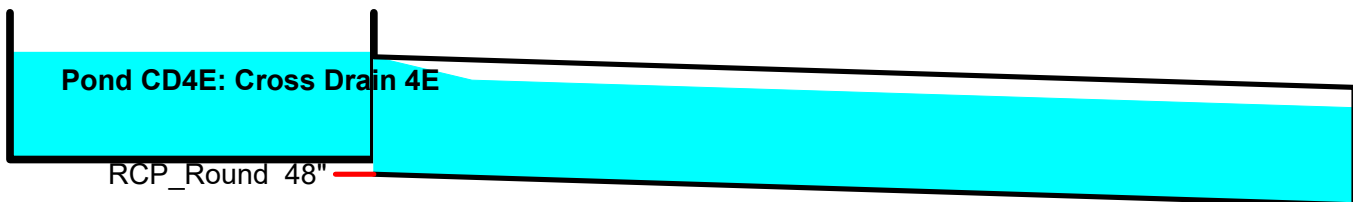
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 683.65' @ 12.81 hrs Surf.Area= 10,447 sf Storage= 15,164 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.6 min (871.1 - 868.6)

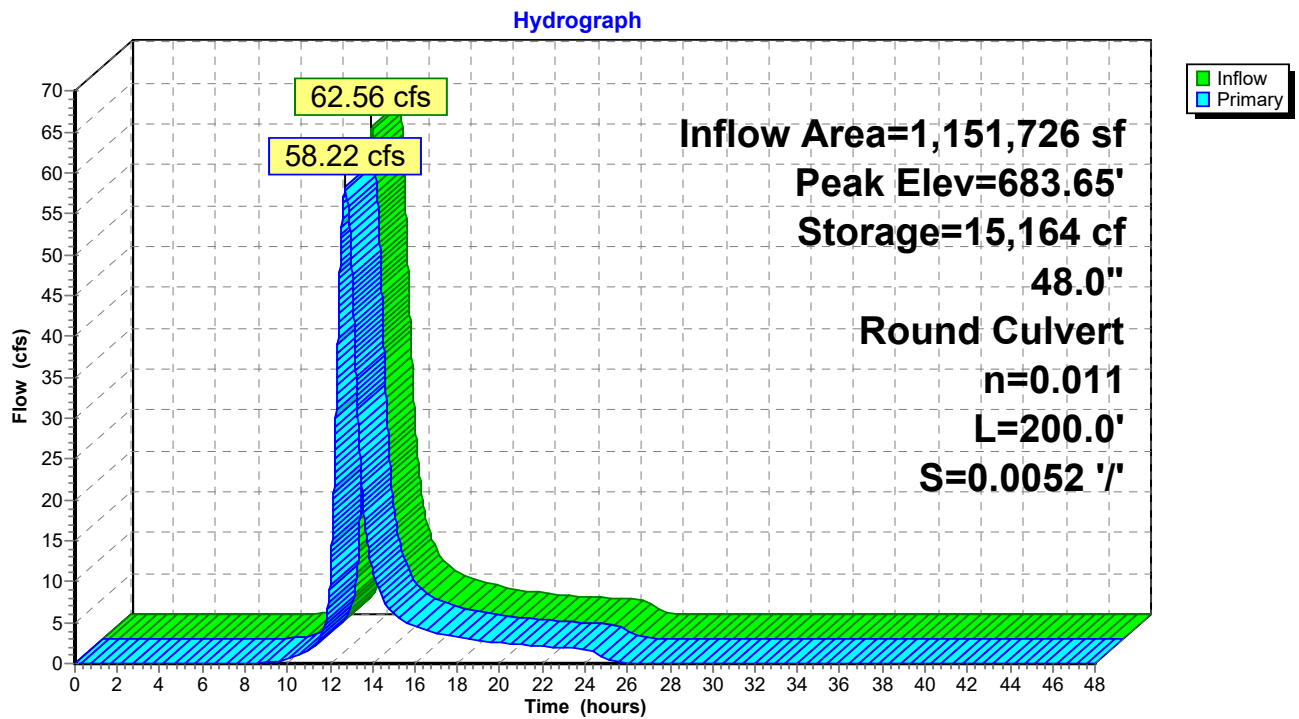
Volume	Invert	Avail.Storage	Storage Description
#1	680.00'	33,779 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.00	274	0	0
681.00	1,562	918	918
682.00	3,975	2,769	3,687
683.00	7,355	5,665	9,352
684.00	12,090	9,723	19,074
685.00	17,320	14,705	33,779

Device	Routing	Invert	Outlet Devices
#1	Primary	679.50'	48.0" Round RCP_Round 48" L= 200.0' Ke= 0.500 Inlet / Outlet Invert= 679.50' / 678.46' S= 0.0052 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 12.57 sf

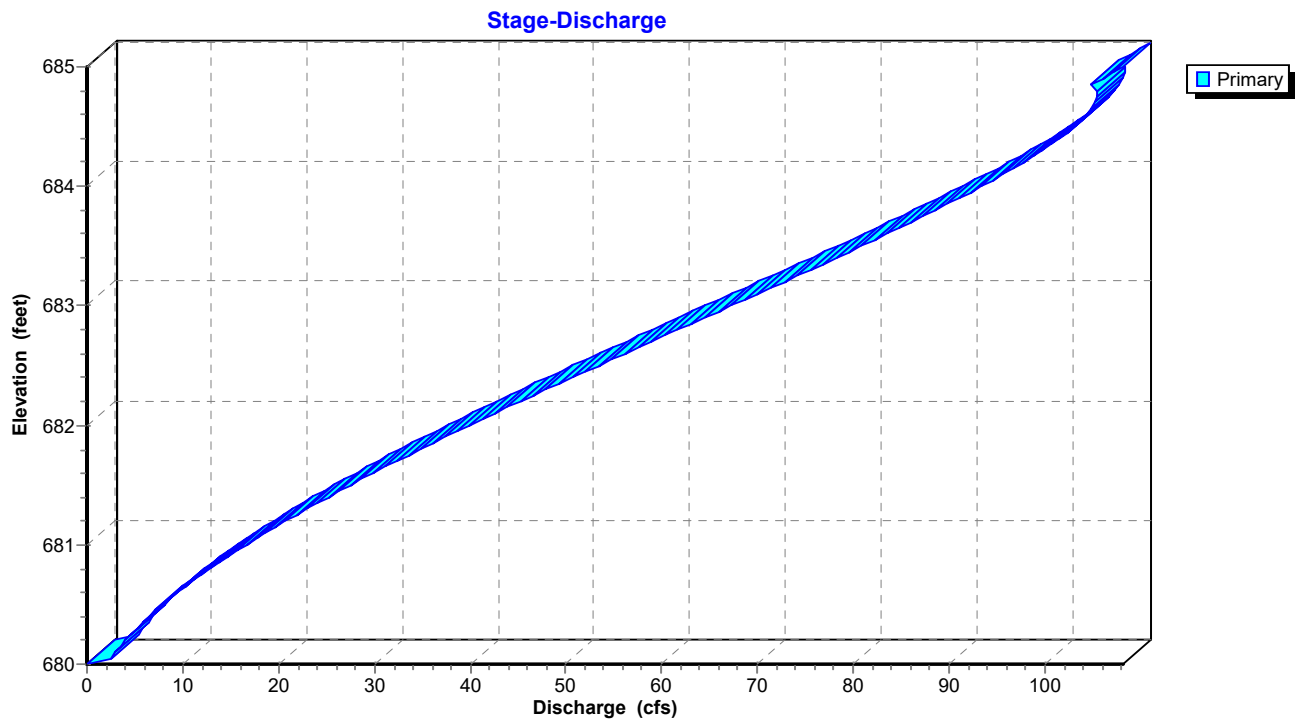
Primary OutFlow Max=57.80 cfs @ 12.73 hrs HW=683.61' TW=682.63' (Dynamic Tailwater)
 ↑1=RCP_Round 48" (Outlet Controls 57.80 cfs @ 5.56 fps)

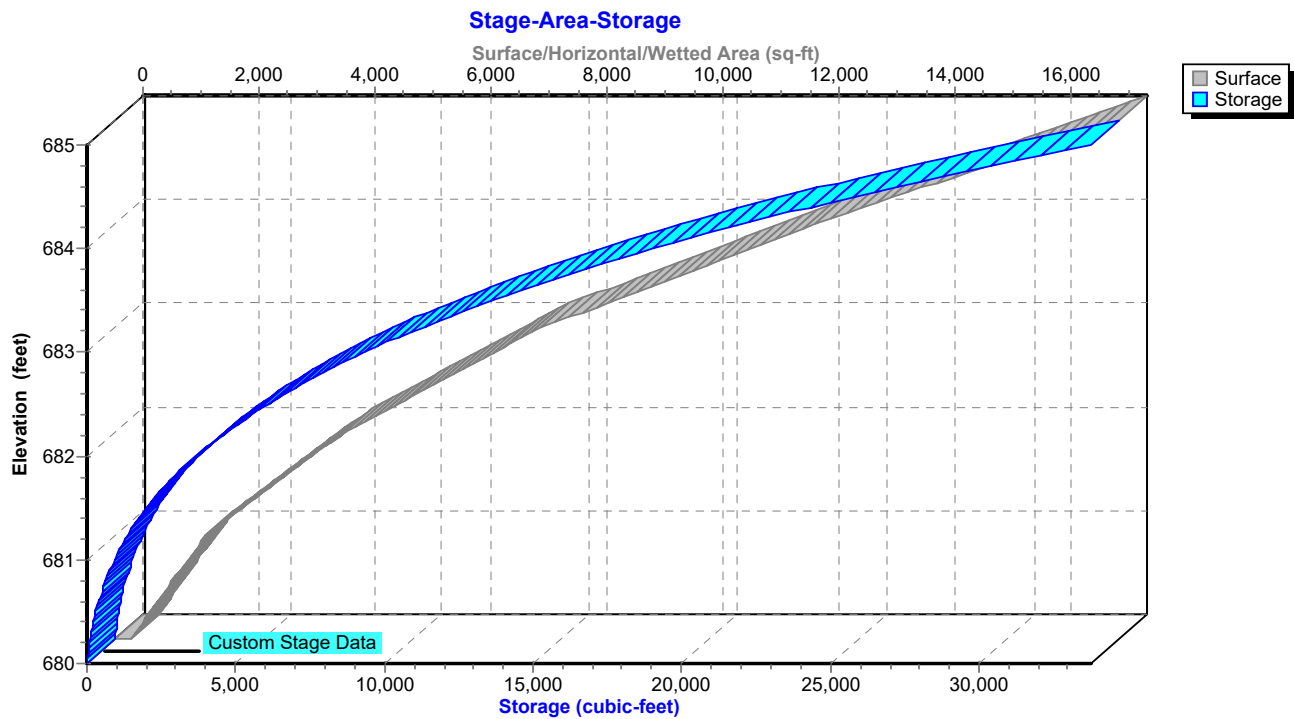


Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E



Pond CD4E: Cross Drain 4E

Summary for Pond POND1P: PROP POND

Inflow Area = 1,772,021 sf, 9.83% Impervious, Inflow Depth = 5.21" for 100-yr event
 Inflow = 108.15 cfs @ 12.53 hrs, Volume= 768,885 cf
 Outflow = 61.01 cfs @ 13.05 hrs, Volume= 768,878 cf, Atten= 44%, Lag= 31.6 min
 Primary = 61.01 cfs @ 13.05 hrs, Volume= 768,878 cf
 Routed to Reach OF4P : Primary Stream for Outfalls

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 681.84' @ 13.11 hrs Surf.Area= 95,168 sf Storage= 262,115 cf

Plug-Flow detention time= 101.9 min calculated for 768,718 cf (100% of inflow)
 Center-of-Mass det. time= 102.0 min (925.5 - 823.5)

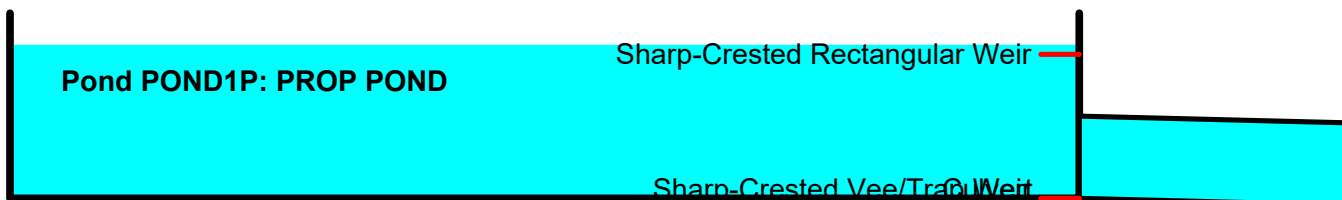
Volume	Invert	Avail.Storage	Storage Description
#1	676.25'	386,863 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.25	505	0	0
676.50	14,826	1,916	1,916
677.00	24,194	9,755	11,671
678.00	31,409	27,802	39,473
679.00	39,965	35,687	75,160
680.00	56,082	48,024	123,183
681.00	77,468	66,775	189,958
682.00	98,642	88,055	278,013
683.00	119,057	108,850	386,863

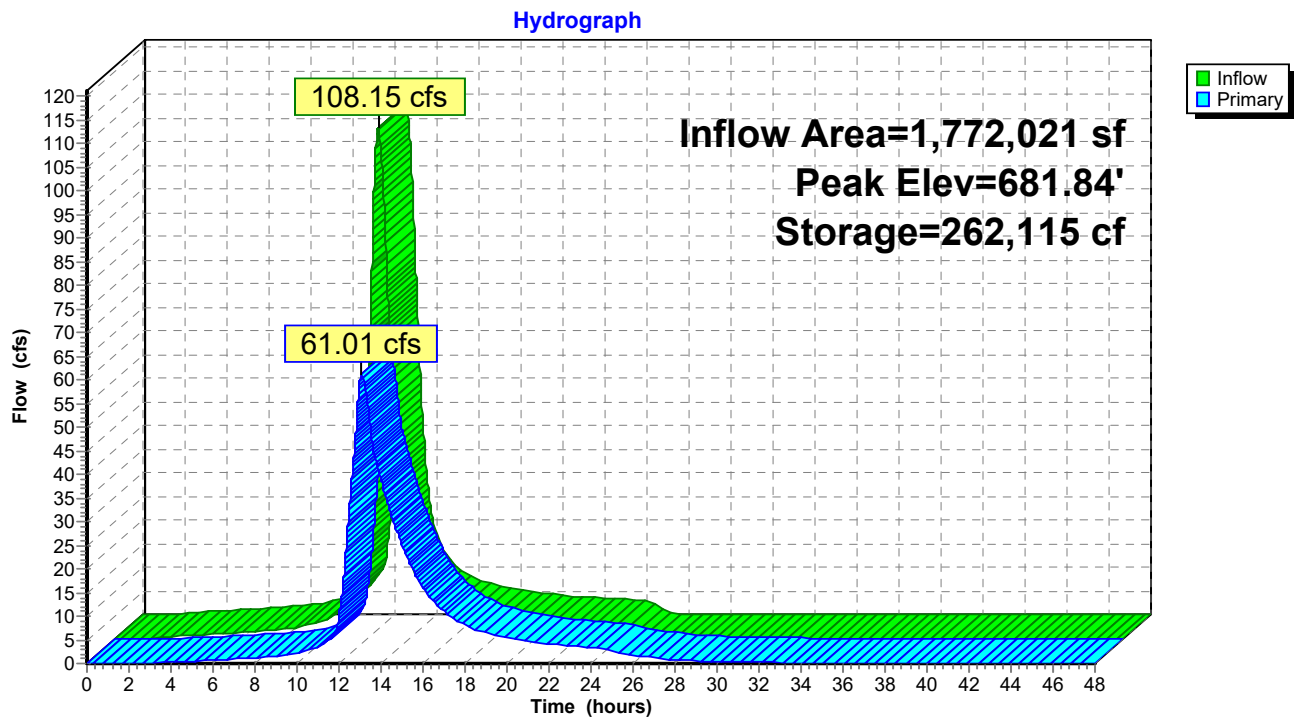
Device	Routing	Invert	Outlet Devices
#1	Primary	676.25'	36.0" Round Culvert L= 50.0' Ke= 0.600 Inlet / Outlet Invert= 676.25' / 676.00' S= 0.0050 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Device 1	676.25'	20.0 deg x 0.4' long Sharp-Crested Vee/Trap Weir Cv= 2.69 (C= 3.36)
#3	Device 1	681.50'	16.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=60.92 cfs @ 13.05 hrs HW=681.83' TW=678.18' (Dynamic Tailwater)

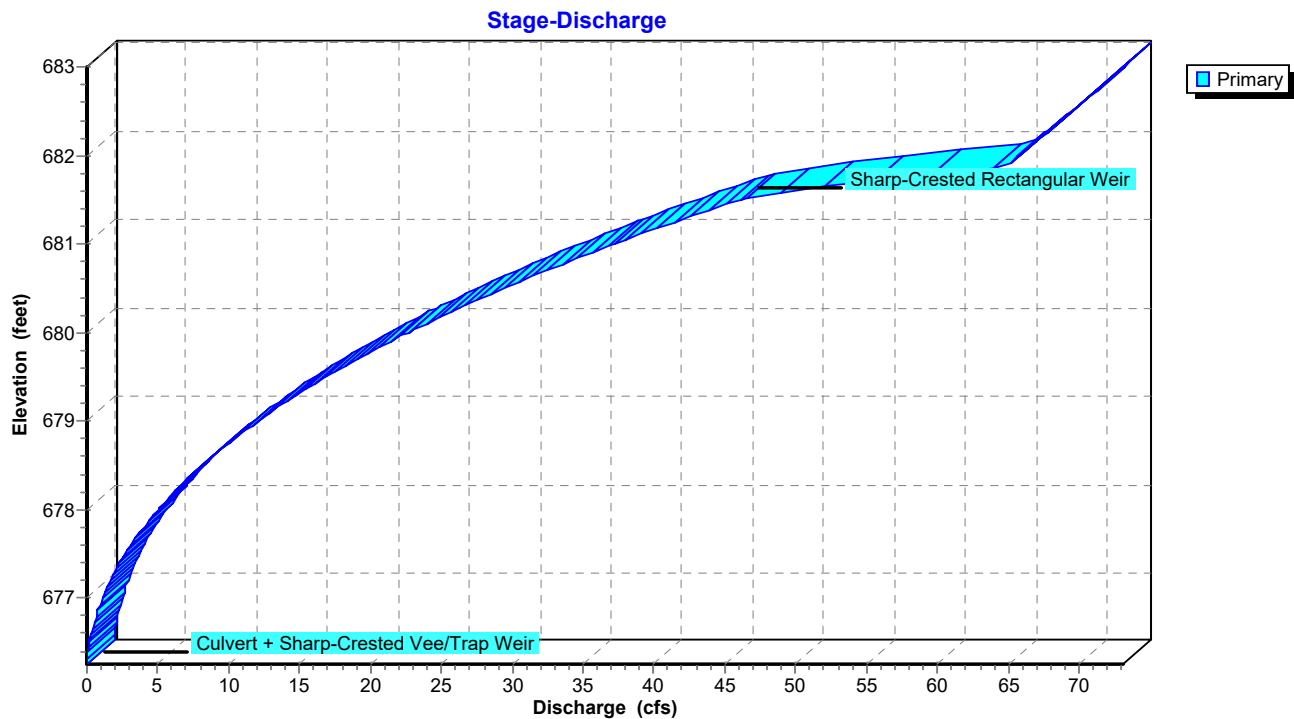
- 1=Culvert (Inlet Controls 60.92 cfs @ 8.62 fps)
- 2=Sharp-Crested Vee/Trap Weir (Passes < 51.15 cfs potential flow)
- 3=Sharp-Crested Rectangular Weir (Passes < 9.88 cfs potential flow)



Pond POND1P: PROP POND



Pond POND1P: PROP POND



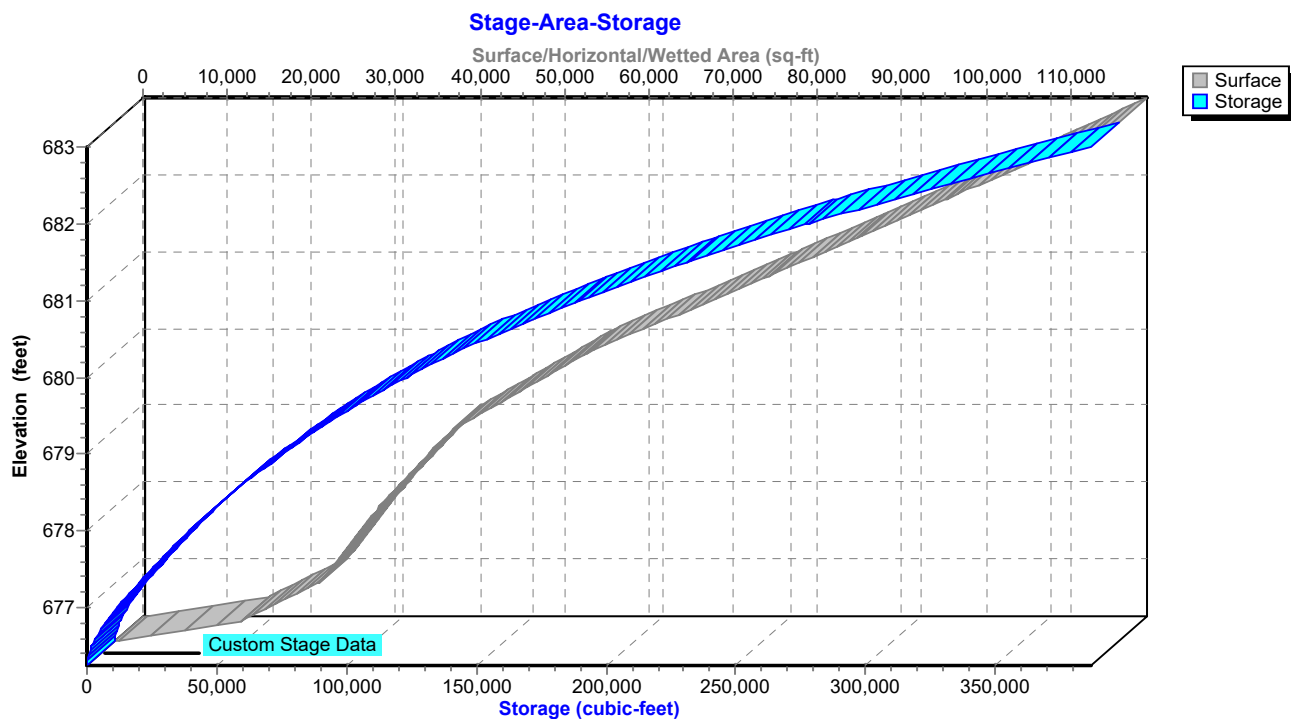
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TrueRail 040226

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