

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Pond No. 2 - BMP B

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 284.00 ft

Stage / Storage Table				
Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	284.00	00	0	0
2.00	286.00	34,400	22,931	22,931
2.01	286.01	76,441	540	23,471
4.00	288.00	87,488	162,970	186,441
6.00	290.00	95,788	183,195	369,636
8.00	292.00	104,371	200,078	569,713

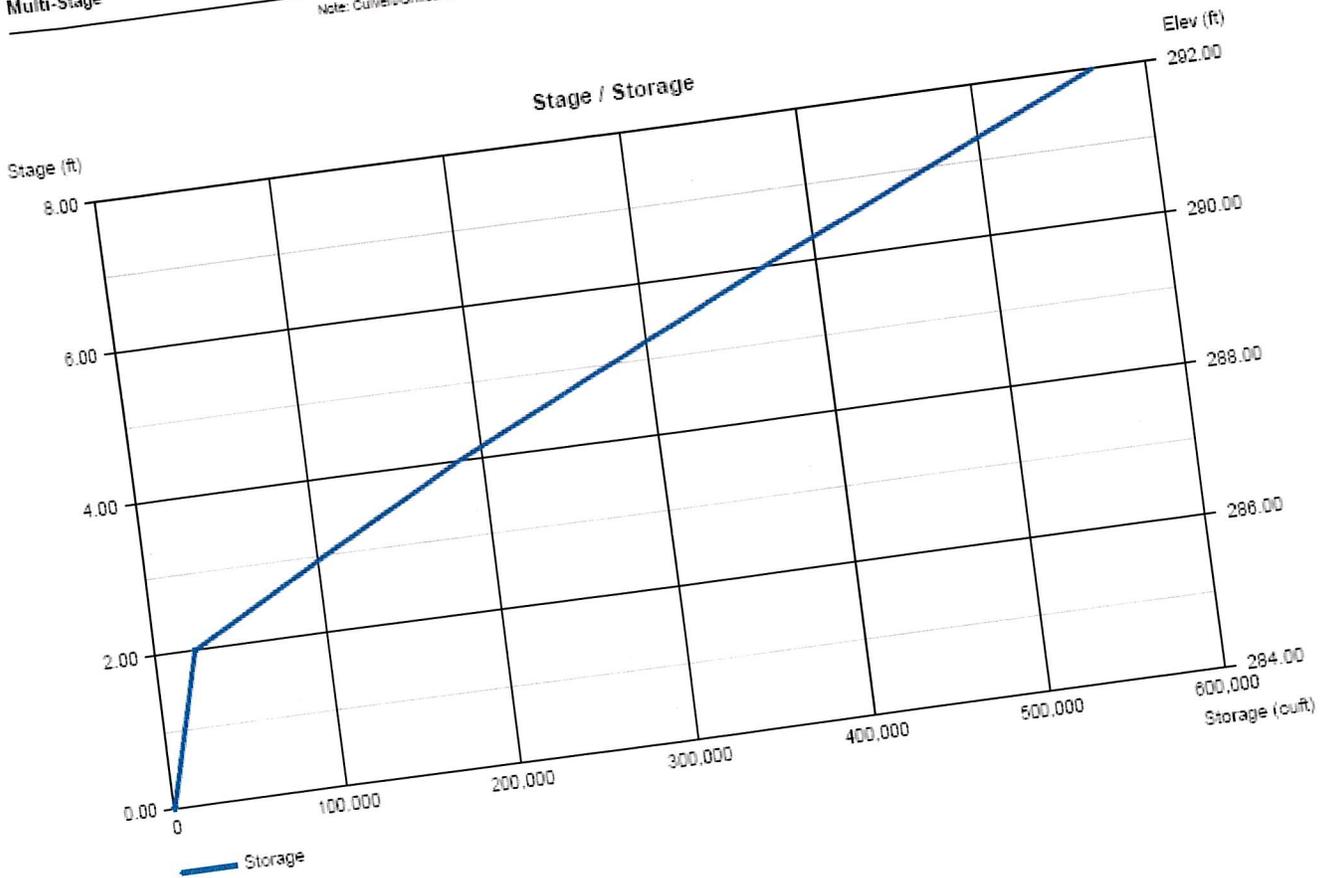
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	3.50	4.00	0.00
Span (in)	= 24.00	3.50	4.00	0.00
No. Barrels	= 1	3	2	0
Invert El. (ft)	= 285.00	285.00	288.50	0.00
Length (ft)	= 28.00	0.00	0.00	n/a
Slope (%)	= .013	.013	.013	n/a
N-Value	= 0.60	0.60	0.60	0.60
Orifice Coeff.	= n/a	Yes	Yes	No
Multi-Stage				

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	300.00	Inactive	0.00
Crest El. (ft)	= 290.00	290.50	0.00	0.00
Weir Coeff.	= 3.33	2.80	3.33	3.33
Weir Type	= Rect	Broad	--	--
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir users checked for orifice conditions (ic) and submergence (s).



BASIN C modeling

The initial model using the contour area of 115,916 sq. ft. for the basin bottom as well as the top of fill media (i.e., contour 216.00').

3.0' is removed (i.e., zero storage volume) from the routing, from 212.00 to 215.00 where the lowest orifice (underdrain orifice) is installed.

1.0' is 30% void space, from 215.00 to 216.00 with an area of 115,916.
 $115,916 \times 1 \times 30\% = 37,774 \text{ cu. ft.}$

This was then approximated by artificially adjusting the contour areas to achieve the noted volumes. Some volume was not utilized leaving the calculations slightly conservative. The remaining contours are reflective of the surface design conditions.

Row	Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cuft)
0	0.00	212.00	0	0.000	0.000
1	4.00	216.00	115,916	37,774	37,774
2	4.01	216.01	28,333	672	38,445
3	6.00	218.00	126,194	240,803	279,248
4	8.00	220.00	136,697	262,795	542,043
5	10.00	222.00	147,725	284,322	826,365
6	12.00	224.00	158,385	306,018	1,132,383
7					

Fill



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Thursday, 01 / 30 / 2025

Pond No. 3 - BMP C

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 212.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	212.00	00	0	0
4.00	216.00	26,333	37,774	37,774
4.01	216.01	115,918	872	38,446
6.00	218.00	126,194	240,803	279,248
8.00	220.00	136,697	262,786	542,043
10.00	222.00	147,726	284,322	826,365
12.00	224.00	158,385	306,018	1,132,383

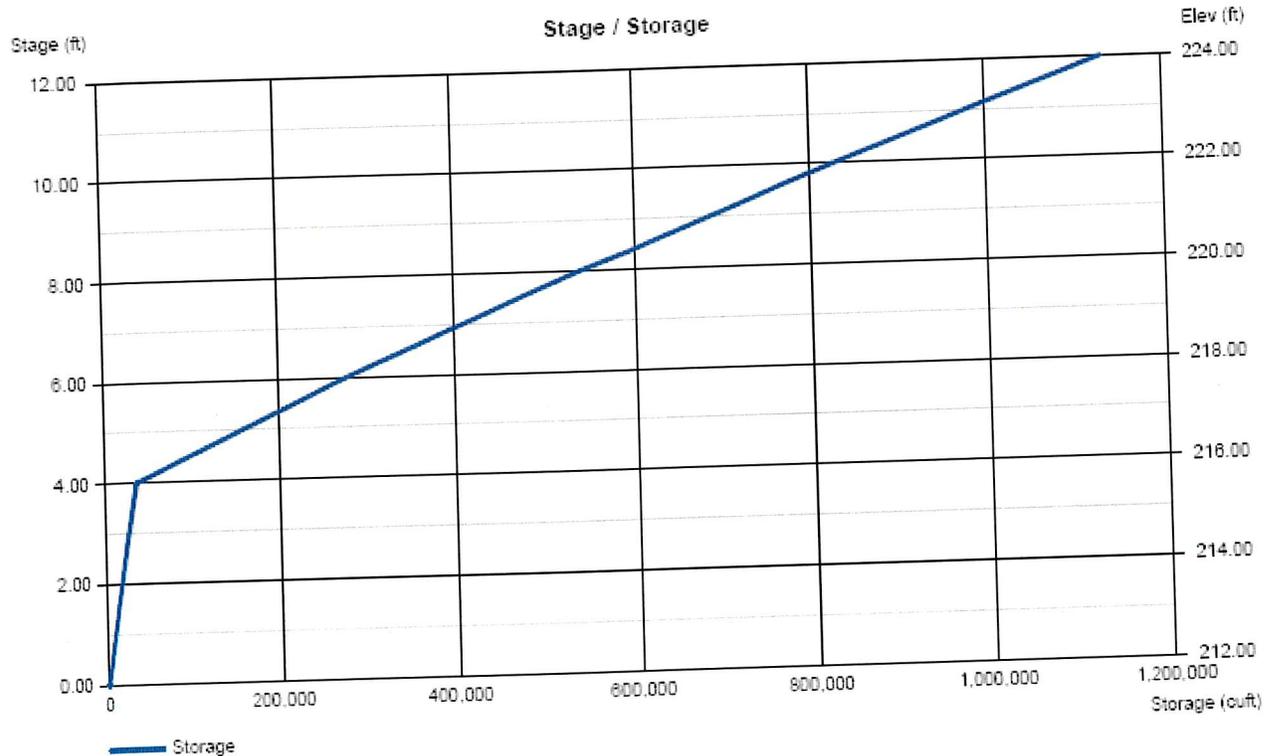
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	1.50	8.00	0.00
Span (in)	= 24.00	1.50	8.00	0.00
No. Barrels	= 1	4	4	0
Invert El. (ft)	= 215.00	215.00	216.30	0.00
Length (ft)	= 61.00	0.00	0.00	0.00
Slope (%)	= 3.26	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	100.00	Inactive	0.00
Crest El. (ft)	= 220.00	222.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= Rect	Broad	--	--
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir users checked for orifice conditions (ic) and submergence (s).



BASIN E modeling

The initial model using the contour area of 8,762 sq. ft. for the basin bottom as well as the top of fill media (i.e., contour 256.00').

3.0' is removed (i.e., zero storage volume) from the routing, from 252.00 to 255.00 where the lowest orifice (underdrain orifice) is installed.

1.0' is 30% void space, from 255.00 to 256.00 with an area of 8,762.
 $8,762 \times 1 \times 30\% = 2,629 \text{ cu. ft.}$

This was then approximated by artificially adjusting the contour areas to achieve the noted volumes. Some volume was not utilized leaving the calculations slightly conservative. The remaining contours are reflective of the surface design conditions.

Pond Name BMP E

Row	Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incremental Storage (cuft)	Total Storage (cuft)
0	0.00	252.00	0	0.000	0.000
1	4.00	256.00	1,972	2,629	2,629
2	4.01	256.01	8,762	49.6	2,679
3	6.00	258.00	11,385	19,987	22,666
4	8.00	260.00	14,240	25,569	48,235
5	10.00	262.00	17,331	31,517	79,753
6					

Fill



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Thursday, 01 / 30 / 2025

Pond No. 4 - BMP E

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 252.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	252.00	00	0	0
4.00	256.00	1,972	2,629	2,629
4.01	256.01	8,762	60	2,679
6.00	258.00	11,385	19,987	22,666
8.00	260.00	14,240	25,569	48,235
10.00	262.00	17,331	31,517	79,753

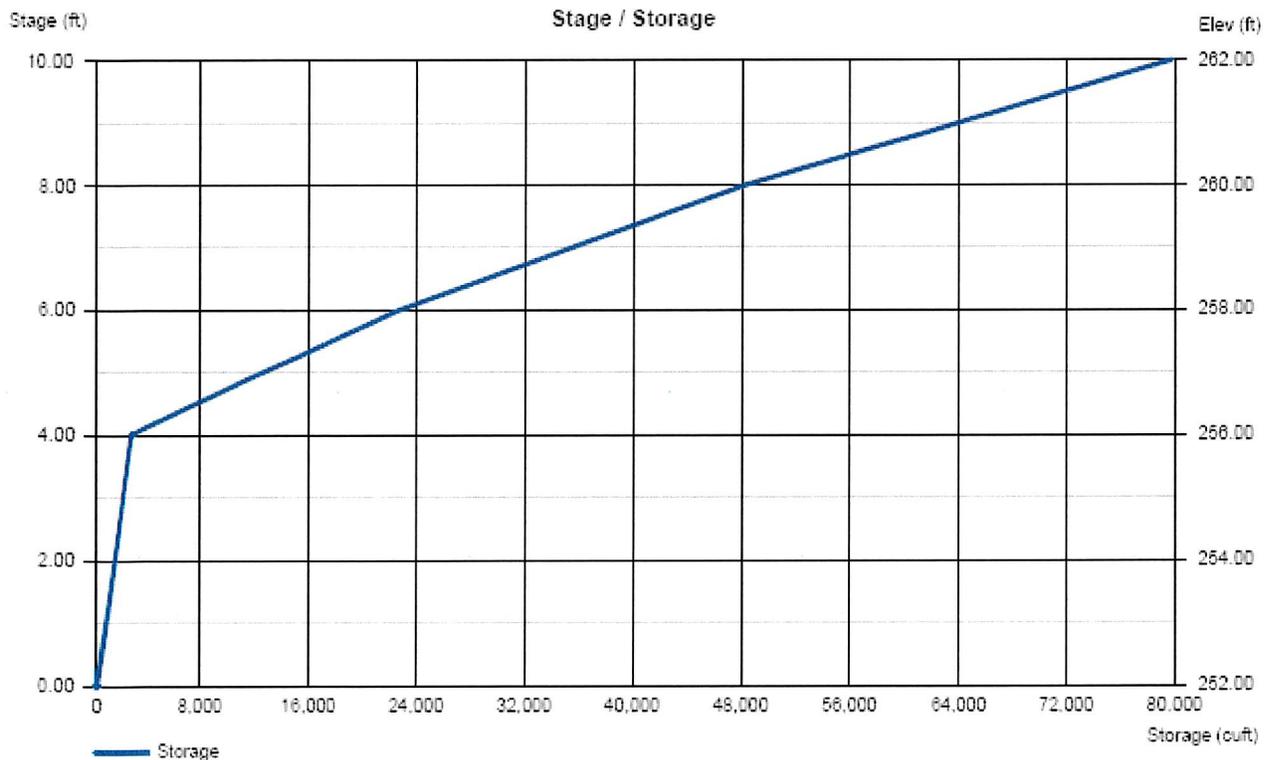
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	1.00	4.00	0.00
Span (in)	= 24.00	1.00	4.00	0.00
No. Barrels	= 1	1	2	0
Invert El. (ft)	= 255.00	255.00	256.80	0.00
Length (ft)	= 3.18	0.00	0.00	0.00
Slope (%)	= 5.42	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	Inactive	0.00
Crest El. (ft)	= 259.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	--	--	--
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



PROJECT SUMMARY

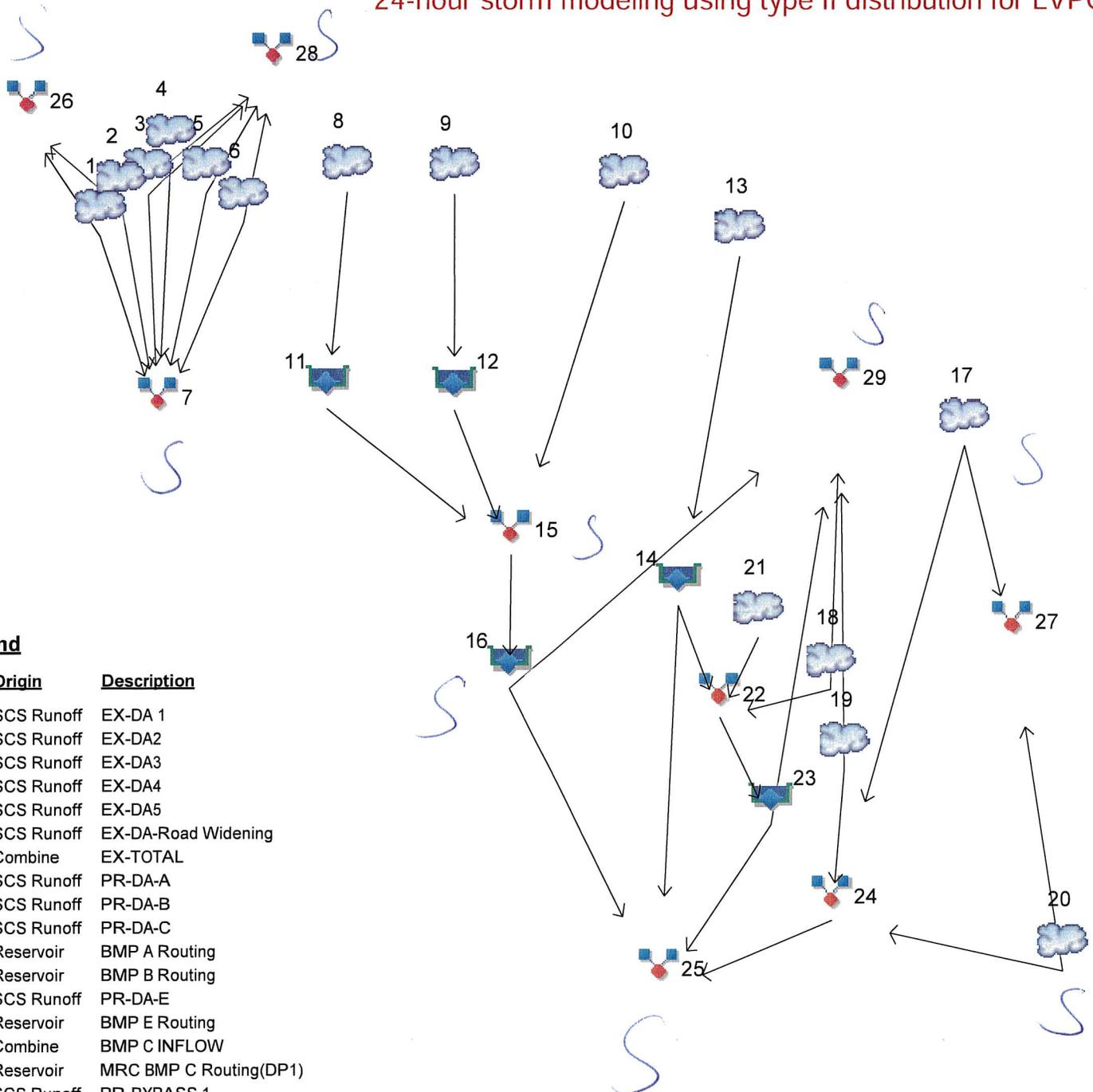
OVERALL PROJECT SITE

DESIGN STORM	EXISTING (CFS) HYDROGRAPH 7	CRITERIA	ALLOWABLE RATE (CFS)	PROPOSED (CFS) HYDROGRAPH 25
1YR	16.07	N/A	N/A	3.67
2YR	31.95	< 30% OF EXISITNG 2YR	8.26	6.33
5YR	55.33	N/A	N/A	11.14
10YR	105.30	N/A	N/A	25.63
25YR	165.60	N/A	N/A	47.46
50YR	232.41	N/A	N/A	100.98
100YR	303.92	N/A	N/A	137.88

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

24-hour storm modeling using type II distribution for LVPC



Legend

Hvd.	Origin	Description
1	SCS Runoff	EX-DA 1
2	SCS Runoff	EX-DA2
3	SCS Runoff	EX-DA3
4	SCS Runoff	EX-DA4
5	SCS Runoff	EX-DA5
6	SCS Runoff	EX-DA-Road Widening
7	Combine	EX-TOTAL
8	SCS Runoff	PR-DA-A
9	SCS Runoff	PR-DA-B
10	SCS Runoff	PR-DA-C
11	Reservoir	BMP A Routing
12	Reservoir	BMP B Routing
13	SCS Runoff	PR-DA-E
14	Reservoir	BMP E Routing
15	Combine	BMP C INFLOW
16	Reservoir	MRC BMP C Routing(DP1)
17	SCS Runoff	PR-BYPASS 1
18	SCS Runoff	PR RG
19	SCS Runoff	PR-BYPASS 2
20	SCS Runoff	PR-BYPASS 3
21	SCS Runoff	PR-Road Widening
22	Combine	BMP E Outflow + PR Road Widening
23	Reservoir	RG Routing (DP2)
24	Combine	PR-BYPASS
25	Combine	PROPOSED ENTIRE SITE (POI)
26	Combine	EX-to- Bushkill
27	Combine	PR-to-Bushkill
28	Combine	EX-to-UNT
29	Combine	PR-to-UNT (DPs 001 & 002)

Schematic Save dPrint

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description	
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr		100-yr
1	SCS Runoff	----	0.129	1.184	-----	5.145	16.00	30.73	47.55	65.95	EX-DA 1
2	SCS Runoff	----	3.627	8.484	-----	14.28	24.81	36.44	48.90	62.09	EX-DA2
3	SCS Runoff	----	1.271	6.047	-----	13.66	30.08	49.39	70.69	93.46	EX-DA3
4	SCS Runoff	----	9.002	14.39	-----	20.23	30.33	40.87	51.62	62.50	EX-DA4
5	SCS Runoff	----	0.009	0.051	-----	0.282	1.919	5.040	9.211	14.14	EX-DA5
6	SCS Runoff	----	2.945	4.333	-----	5.779	8.154	10.56	12.98	15.39	EX-DA-Road Widening
7	Combine	1, 2, 3, 4, 5, 6	16.07	31.95	-----	55.33	105.30	165.60	232.41	303.92	EX-TOTAL
8	SCS Runoff	----	37.88	48.40	-----	58.85	75.45	91.97	108.42	124.84	PR-DA-A
9	SCS Runoff	----	47.87	61.17	-----	74.37	95.35	116.22	137.01	157.76	PR-DA-B
10	SCS Runoff	----	70.60	96.15	-----	121.84	162.91	203.76	244.36	284.74	PR-DA-C
11	Reservoir	8	0.677	0.743	-----	0.803	0.894	0.979	1.056	1.125	BMP A Routing
12	Reservoir	9	1.058	1.169	-----	1.273	1.429	1.567	1.735	2.243	BMP B Routing
13	SCS Runoff	----	11.08	16.85	-----	22.97	33.49	44.31	55.27	66.27	PR-DA-E
14	Reservoir	13	0.320	0.700	-----	0.992	1.338	7.733	25.46	31.89	BMP E Routing
15	Combine	10, 11, 12,	72.15	97.82	-----	123.64	164.88	205.90	246.67	287.19	BMP C INFLOW
16	Reservoir	15	2.896	4.410	-----	5.905	7.953	9.544	10.91	12.11	MRC BMP C Routing(DP1)
17	SCS Runoff	----	1.516	3.812	-----	6.515	11.45	16.92	22.74	28.81	PR-BYPASS 1
18	SCS Runoff	----	0.739	1.385	-----	2.116	3.404	4.786	6.265	7.790	PR RG
19	SCS Runoff	----	0.000	0.016	-----	0.066	0.941	3.522	7.200	11.53	PR-BYPASS 2
20	SCS Runoff	----	0.302	1.190	-----	2.395	4.667	7.247	10.05	13.00	PR-BYPASS 3
21	SCS Runoff	----	4.753	5.984	-----	7.211	9.169	11.12	13.07	15.02	PR-Road Widening
22	Combine	14, 18, 21	5.457	7.356	-----	9.830	13.53	17.54	41.50	53.64	BMP E Outflow + PR Road Widening
23	Reservoir	22	0.440	1.027	-----	2.119	9.117	17.11	39.43	51.29	RG Routing (DP2)
24	Combine	17, 19, 20,	1.777	5.002	-----	8.910	16.55	26.90	39.11	52.43	PR-BYPASS
25	Combine	14, 16, 23, 24	3.667	6.318	-----	11.32	24.79	46.78	98.07	136.30	PROPOSED ENTIRE SITE (POI)
26	Combine	1, 2,	3.627	9.106	-----	18.35	39.60	65.97	95.39	126.98	EX-to- Bushkill
27	Combine	17, 20,	1.777	5.002	-----	8.910	16.12	24.17	32.79	41.81	PR-to-Bushkill
28	Combine	3, 4, 5, 6,	12.48	22.84	-----	36.98	65.70	99.62	137.03	176.94	EX-to-UNT
29	Combine	16, 18, 19, 23,	3.304	5.408	-----	7.742	18.89	31.84	60.83	78.84	PR-to-UNT (DPs 001 & 002)

No chx to Unt - No BMP } not in this
 to Unt - No BMP }
 to Unt - No BMP }

49.54
 40.19 pm
 71.30 pm
 46.42 pm
 10.89 pm
 21.42 pm
 229.20 pm