Worksheet Protected

Site-Level Low Impact Development (LID) Design Effective Impervious Calculator

LID Credit by Impervious Reduction Factor (IRF) Method

User Input

Calculated cells

***Design Storm: 1-Hour Rain Depth	WQCV Event	0.53	inches	
***Minor Storm: 1-Hour Rain Depth	10-Year Event	1.75	inches	
***Major Storm: 1-Hour Rain Depth	100-Year Event	2.52	inches	
Optional User Defined Storm	CUHP			
(CUHP) NOAA 1 Hour Rainfall Depth and Frequency for User Defined Storm	100-Year Event			
Max Intensity for Optional User Defined Storm	0			

Designer:	**Matt Larson**
Company:	**Classic Consulting Engineers & Surveyors, LLC**
Date:	**January 17, 2020**
Project:	**FOREST LAKES - FILING 5**
Location:	**POND 'D'**

SITE INFORMATION (USER-INPUT)

Sub-basin Identifier	**FIL. 5**
Receiving Pervious Area Soil Type	Sandy Loam
Total Area (ac., Sum of DCIA, UIA, RPA, & SPA)	1.350
Directly Connected Impervious Area (DCIA, acres)	0.000
Unconnected Impervious Area (UIA, acres)	1.010
Receiving Pervious Area (RPA, acres)	0.340
Separate Pervious Area (SPA, acres)	0.000
RPA Treatment Type: Conveyance (C), Volume (V), or Permeable Pavement (PP)	C

CALCULATED RESULTS (OUTPUT)

Total Calculated Area (ac, check against input)	1.350
Directly Connected Impervious Area (DCIA, %)	0.0%
Unconnected Impervious Area (UIA, %)	74.8%
Receiving Pervious Area (RPA, %)	25.2%
Separate Pervious Area (SPA, %)	0.0%
A_R (RPA / UIA)	0.337
I_a Check	0.750
f / I for WQCV Event:	2.0
f / I for 10-Year Event:	0.5
f / I for 100-Year Event:	0.3
f / I for Optional User Defined Storm CUHP:	
IRF for WQCV Event:	0.75
IRF for 10-Year Event:	0.94
IRF for 100-Year Event:	0.97
IRF for Optional User Defined Storm CUHP:	
Total Site Imperviousness: I_{total}	74.8%
Effective Imperviousness for WQCV Event:	56.2%
Effective Imperviousness for 10-Year Event:	70.1%
Effective Imperviousness for 100-Year Event:	72.3%
Effective Imperviousness for Optional User Defined Storm CUHP:	

LID / EFFECTIVE IMPERVIOUSNESS CREDITS

WQCV Event CREDIT: Reduce Detention By:	24.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-Year Event CREDIT**: Reduce Detention By:	6.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100-Year Event CREDIT**: Reduce Detention By:	3.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
User Defined CUHP CREDIT: Reduce Detention By:														

Total Site Imperviousness:	**74.8%**
Total Site Effective Imperviousness for WQCV Event:	**56.2%**
Total Site Effective Imperviousness for 10-Year Event:	**70.1%**
Total Site Effective Imperviousness for 100-Year Event:	**72.3%**
Total Site Effective Imperviousness for Optional User Defined Storm CUHP:	

Notes:

* Use Green-Ampt average infiltration rate values from Table 3-3.

** Flood control detention volume credits based on empirical equations from Storage Chapter of USDCM.

*** Method assumes that 1-hour rainfall depth is equivalent to 1-hour intensity for calculation purposed

Replace with the SDI worksheet
File can be downloaded from
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif

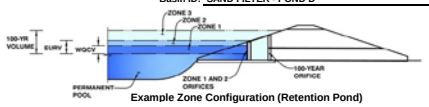
Unresolved. The pdf file upload shall contain both an SDI worksheet for both ponds.

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: Forest Lakes Filing 5

Basin ID: SAND FILTER - POND D



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	SF		
Watershed Area =	1.35	acres	
Watershed Length =	400	ft	
Watershed Slope =	0.030	ft/ft	
Watershed Imperviousness =	74.80%	percent	
Percentage Hydrologic Soil Group A =	0.0%	percent	
Percentage Hydrologic Soil Group B =	100.0%	percent	
Percentage Hydrologic Soil Groups C/D =	0.0%	percent	
Desired WQCV Drain Time =	12.0	hours	
Location for 1-hr Rainfall Depths =	User Input		
Water Quality Capture Volume (WQCV) =	0.027	acre-feet	
Excess Urban Runoff Volume (EURV) =	0.111	acre-feet	
2-yr Runoff Volume (P1 = 1.19 in.) =	0.094	acre-feet	
5-yr Runoff Volume (P1 = 1.5 in.) =	0.124	acre-feet	
10-yr Runoff Volume (P1 = 1.75 in.) =	0.155	acre-feet	
25-yr Runoff Volume (P1 = 2 in.) =	0.192	acre-feet	
50-yr Runoff Volume (P1 = 2.25 in.) =	0.220	acre-feet	
100-yr Runoff Volume (P1 = 2.52 in.) =	0.257	acre-feet	
500-yr Runoff Volume (P1 = 3.1 in.) =	0.330	acre-feet	
Approximate 2-yr Detention Volume =	0.088	acre-feet	
Approximate 5-yr Detention Volume =	0.116	acre-feet	
Approximate 10-yr Detention Volume =	0.145	acre-feet	
Approximate 25-yr Detention Volume =	0.156	acre-feet	
Approximate 50-yr Detention Volume =	0.162	acre-feet	
Approximate 100-yr Detention Volume =	0.172	acre-feet	

Optional User Override 1-hr Precipitation

1.19	inches
1.50	inches
1.75	inches
2.00	inches
2.25	inches
2.52	inches
3.10	inches

Stage-Storage Calculation

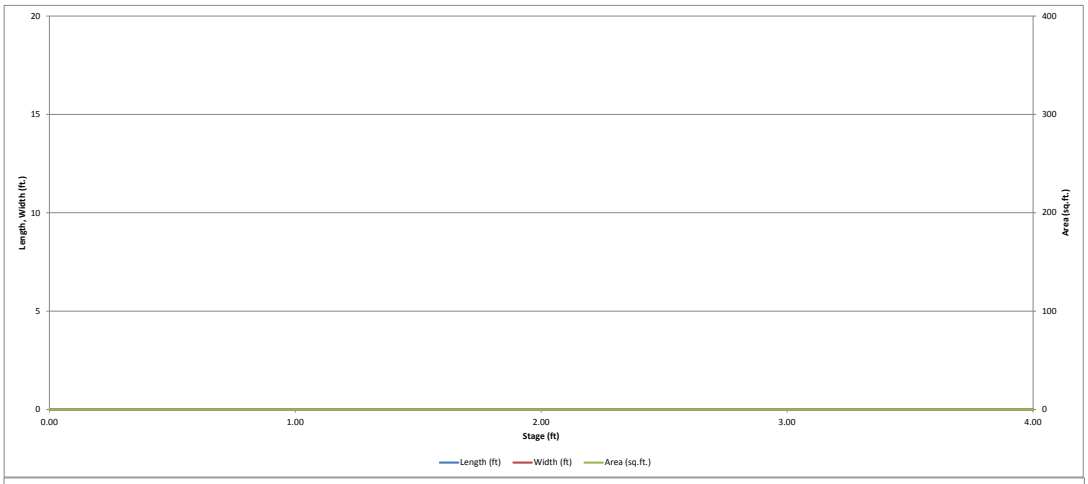
Zone 1 Volume (WQCV) =	0.027	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.085	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.061	acre-feet
Total Detention Basin Volume =	0.172	acre-feet
Initial Surcharge Volume (ISV) =	N/A	ft^3
Initial Surcharge Depth (ISD) =	N/A	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	N/A	ft
Slope of Trickle Channel (S_{TC}) =	N/A	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

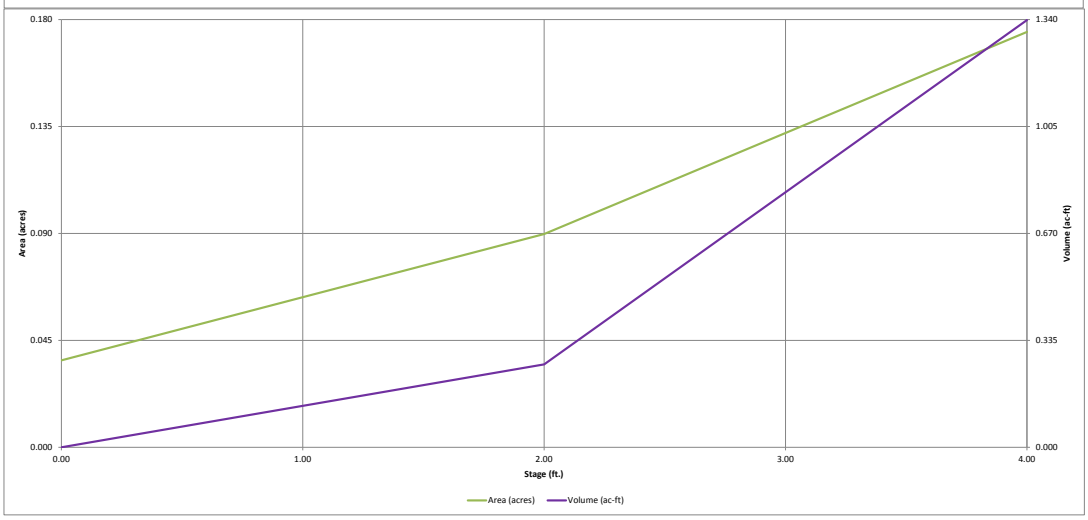
Depth Increment = 0.25 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Media Surface	--	0.00	--	--	--	1,594	0.037		
	--	2.00	--	--	--	3,909	0.090	11,323	0.260
	--	4.00	--	--	--	7,614	0.175	58,299	1.338

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



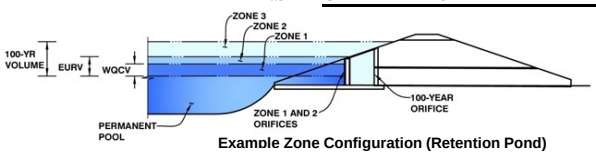


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Forest Lakes Filing 5

Basin ID: SAND FILTER - POND D



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	0.94	0.027	Filtration Media
Zone 2 (EURV)	1.47	0.085	Weir&Pipe (Restrict)
Zone 3 (100-year)	1.71	0.061	Weir&Pipe (Restrict)
		0.172	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	2.30	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	0.42	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	0.0	ft^2
Underdrain Orifice Centroid =	0.02	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	N/A	inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (optional)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	N/A	N/A	inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =	N/A	N/A	ft^2
Vertical Orifice Centroid =	N/A	N/A	feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 2 Weir	Zone 3 Weir	
Overflow Weir Front Edge Height, Ho =	1.10	1.50	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	1.00	4.00	feet
Overflow Weir Slope =	0.00	4.00	H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	0.50	4.00	feet
Overflow Grate Open Area % =	100%	60%	%, grate open area/total area
Debris Clogging % =	50%	50%	%

Calculated Parameters for Overflow Weir

	Zone 2 Weir	Zone 3 Weir	
Height of Grate Upper Edge, H_t =	1.10	2.50	feet
Over Flow Weir Slope Length =	0.50	4.12	feet
Grate Open Area / 100-yr Orifice Area =	5.37	106.18	should be ≥ 4
Overflow Grate Open Area w/o Debris =	0.50	9.90	ft^2
Overflow Grate Open Area w/ Debris =	0.25	4.95	ft^2

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 2 Restrictor	Zone 3 Restrictor	
Depth to Invert of Outlet Pipe =	2.30	2.30	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	8.00	8.00	inches
Restrictor Plate Height Above Pipe Invert =	2.50	2.50	inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 2 Restrictor	Zone 3 Restrictor	
Outlet Orifice Area =	0.09	0.09	ft^2
Outlet Orifice Centroid =	0.12	0.12	feet
Half-Central Angle of Restrictor Plate on Pipe =	1.19	1.19	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	2.00	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	5.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

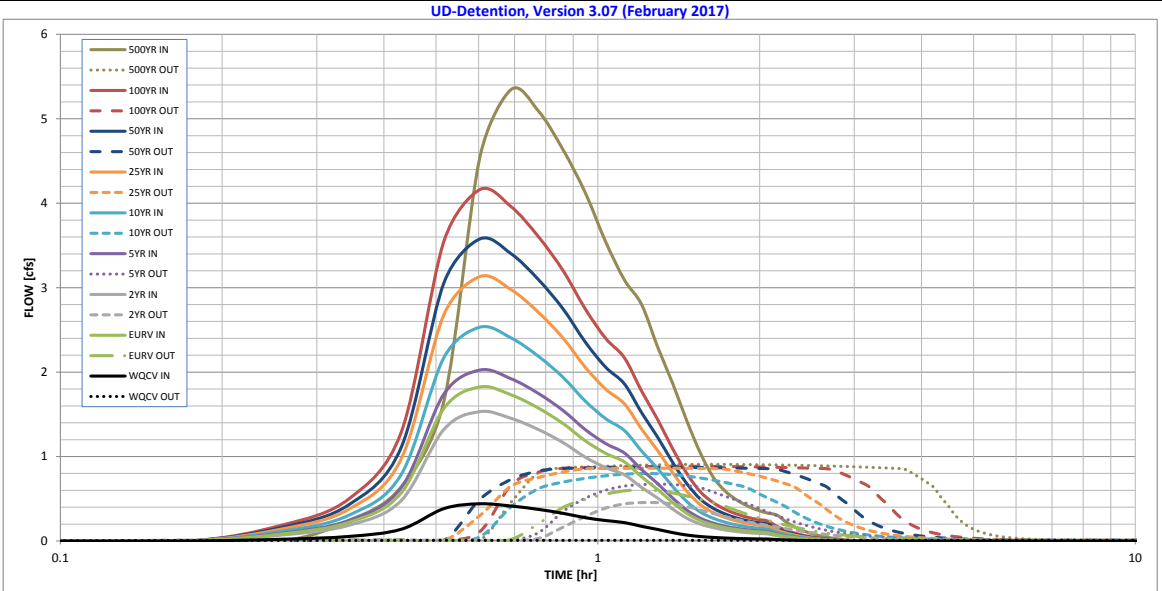
Spillway Design Flow Depth=	0.35	feet
Stage at Top of Freeboard =	3.35	feet
Basin Area at Top of Freeboard =	0.60	acres

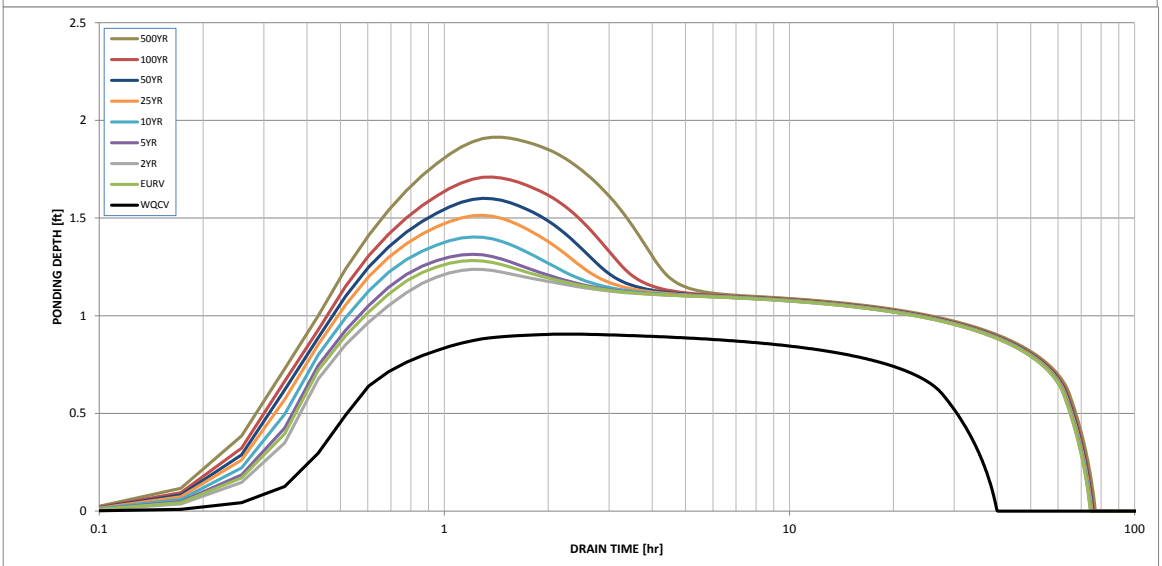
Routed Hydrograph Results

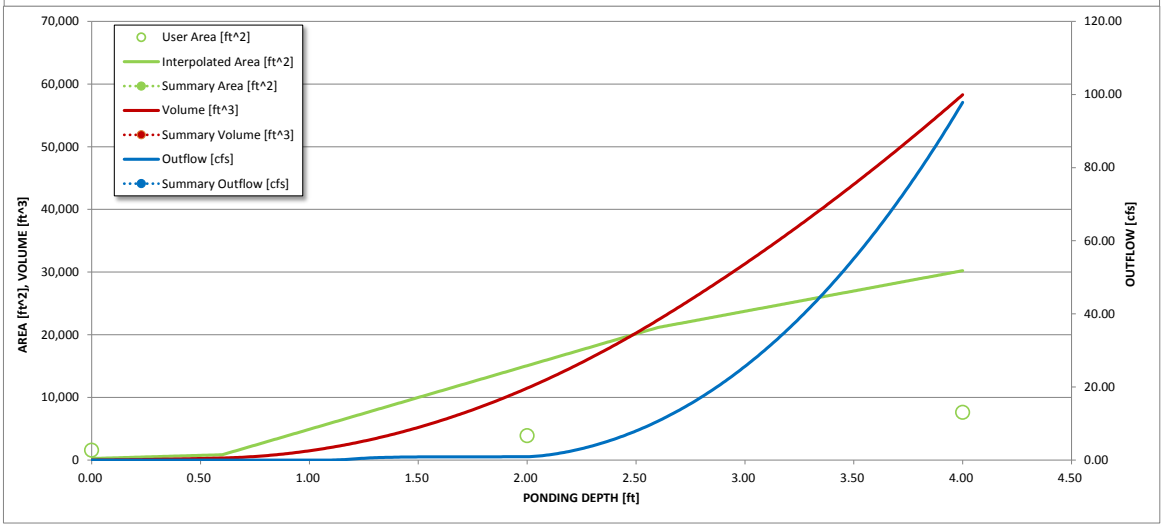
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	0.53	1.07	1.19	1.50	1.75	2.00	2.25	2.52	3.10
Calculated Runoff Volume (acre-ft) =	0.027	0.111	0.094	0.124	0.155	0.192	0.220	0.257	0.330
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.026	0.111	0.093	0.123	0.155	0.192	0.220	0.256	0.330
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.01	0.02	0.19	0.64	0.88	1.19	1.73
Predevelopment Peak Q (cfs) =	0.0	0.0	0.0	0.027	0.3	0.9	1.2	1.6	2.3
Peak Inflow Q (cfs) =	0.4	1.8	1.5	2.0	2.5	3.1	3.6	4.2	5.3
Peak Outflow Q (cfs) =	0.0	0.6	0.5	0.673	0.8	0.9	0.9	0.9	0.9
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	25.1	3.1	1.0	0.7	0.6	0.4
Structure Controlling Flow =	Filtration Media	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1
Max Velocity through Grate 1 (fps) =	N/A	1.10	0.85	1.3	1.5	1.7	1.7	1.7	1.8
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	0.0	0.0	0.0	0.0
Time to Drain 97% of Inflow Volume (hours) =	39	69	70	69	67	66	65	64	61
Time to Drain 99% of Inflow Volume (hours) =	**40**	73	73	73	72	72	72	72	72
Maximum Ponding Depth (ft) =	0.91	1.28	1.24	1.31	1.40	1.51	1.60	1.71	1.91
Area at Maximum Ponding Depth (acres) =	0.09	0.18	0.17	0.19	0.21	0.23	0.25	0.28	0.32
Maximum Volume Stored (acre-ft) =	0.024	0.075	0.066	0.080	0.098	0.122	0.144	0.173	0.233

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Detention Basin Outlet Structure Design

Outflow Hydrograph Workbook Filename:

Storm Inflow Hydrographs **UD-Detention, Version 3.07 (February 2017)**

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	SOURCE	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.17 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrograph Constant	0:10:20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:15:31	0.02	0.08	0.07	0.09	0.12	0.14	0.16	0.19	0.24
0.968	0:20:41	0.05	0.22	0.19	0.25	0.31	0.38	0.43	0.50	0.64
	0:25:51	0.14	0.57	0.48	0.63	0.79	0.97	1.11	1.29	1.65
	0:31:01	0.38	1.57	1.32	1.74	2.17	2.68	3.05	3.55	4.54
	0:36:11	0.44	1.82	1.53	2.02	2.53	3.13	3.58	4.16	5.35
	0:41:22	0.41	1.73	1.45	1.92	2.41	2.98	3.40	3.96	5.09
	0:46:32	0.37	1.57	1.32	1.75	2.19	2.71	3.09	3.60	4.63
	0:51:42	0.33	1.39	1.17	1.55	1.94	2.40	2.75	3.20	4.12
	0:56:52	0.28	1.19	0.99	1.32	1.66	2.06	2.36	2.75	3.54
	1:02:02	0.24	1.04	0.87	1.15	1.45	1.80	2.06	2.40	3.09
	1:07:13	0.22	0.94	0.78	1.04	1.31	1.63	1.86	2.17	2.80
	1:12:23	0.17	0.76	0.63	0.85	1.06	1.32	1.52	1.77	2.29
	1:17:33	0.14	0.61	0.51	0.68	0.86	1.07	1.23	1.44	1.86
	1:22:43	0.10	0.45	0.38	0.51	0.64	0.81	0.93	1.09	1.42
	1:27:53	0.07	0.33	0.27	0.37	0.47	0.59	0.68	0.80	1.04
	1:33:04	0.05	0.24	0.20	0.27	0.34	0.43	0.50	0.58	0.76
	1:38:14	0.04	0.19	0.16	0.21	0.27	0.34	0.39	0.46	0.59
	1:43:24	0.04	0.16	0.13	0.18	0.22	0.28	0.32	0.38	0.49
	1:48:34	0.03	0.14	0.11	0.15	0.19	0.24	0.27	0.32	0.42
	1:53:44	0.03	0.12	0.10	0.13	0.17	0.21	0.24	0.28	0.37
	1:58:55	0.02	0.11	0.09	0.12	0.15	0.19	0.22	0.26	0.33
	2:04:05	0.02	0.10	0.08	0.11	0.14	0.18	0.20	0.24	0.31
	2:09:15	0.02	0.07	0.06	0.08	0.10	0.13	0.15	0.17	0.22
	2:14:25	0.01	0.05	0.05	0.06	0.08	0.09	0.11	0.13	0.16
	2:19:35	0.01	0.04	0.03	0.04	0.06	0.07	0.08	0.09	0.12
	2:24:46	0.01	0.03	0.02	0.03	0.04	0.05	0.06	0.07	0.09
	2:29:56	0.00	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06
	2:35:06	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04
	2:40:16	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
	2:45:26	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02
	2:50:37	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
	2:55:47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	3:00:57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:06:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:11:17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:16:28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:21:38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:26:48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:31:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:37:08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:42:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:47:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:52:39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:57:49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:02:59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:08:10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:13:20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:18:30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:23:40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:28:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:34:01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:39:11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:44:21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:49:31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:54:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:59:52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:36:03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:41:13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:46:23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:51:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:56:44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:01:54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:07:04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:12:14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Summary Stage-Area-Volume-Discharge Relationships

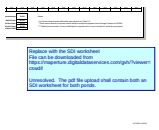
The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]

SDI V_2 redlines.pdf Markup Summary

dsdlaforce (1)



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