

December 20, 2023

El Paso County  
Planning and Community Development  
2880 International Circle, Suite 110  
Colorado Springs, CO 80910



Attn.: Mr. Brad Walters, Inspection Supervisor  
RE: Solace Apartments Filing No. 1 – Pond Certifications

To whom it may concern,

This letter is intended to provide documentation with County Inspection Staff that the Pond facilities in Solace Apartments Filing No. 1 have been constructed within reasonable conformance to the design. The District owned pond facilities for Solace Apartments Filing No. 1 are described by the following:

- Pond A – north portion of Tract B (FSD Pond)
- Pond B – south portion of Tract B (FSD Pond)

JR Engineering reviewed the final constructed facilities and recently completed as-builts which confirm the appropriate size and design of the ponds.

The site and adjacent properties (as affected by work performed under the County permit) appear to be stable with respect to settlement and subsidence, sloughing of cut and fill slopes, revegetation or other ground cover, and the improvements (public improvements, common development improvements, site grading and paving) meet or exceed the minimum design requirements.

Based upon this information and information gathered during periodic site visits to the project under construction, JR Engineering is of the opinion that the stormwater BMPs have been constructed in general compliance with the approved Construction Plans, and Specifications as filed with El Paso County.

(See attached documents – UD Detention sheets and as-built drawings)

**Statement Of Engineer In Responsible Charge:**

To the best of my knowledge, information and belief, the referenced **Solace Apartments Filing No. 1** Pond facilities have been constructed in general compliance with the approved design plans and specifications as filed with El Paso County.

A handwritten signature in blue ink that reads "Mike Bramlett".

Mike Bramlett, P.E.  
Colorado No. 32314

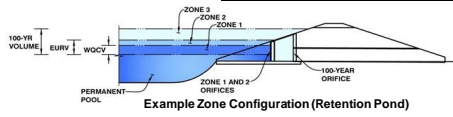


# DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.03 (May 2020)

Project: Solace Apartments

Basin ID: Pond A: As-Built- Revised Orifice Plate



### Watershed Information

Selected BMP Type =	EDB
Watershed Area =	7.89 acres
Watershed Length =	790 ft
Watershed Length to Centroid =	340 ft
Watershed Slope =	0.020 ft/ft
Watershed Imperviousness =	49.43% percent
Percentage Hydrologic Soil Group A =	1.0% percent
Percentage Hydrologic Soil Group B =	99.0% percent
Percentage Hydrologic Soil Groups C/D =	0.0% percent
Target WQC Drain Time =	40.0 hours
Location for 1-hr Rainfall Depths =	User Input

After providing required inputs above including 1-hour rainfall depths, click "Run CUHP" to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WOCV) =	0.135 acre-feet
Excess Urban Runoff Volume (EURV) =	0.417 acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.382 acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	0.546 acre-feet
10-yr Runoff Volume (P1 = 1.75 in.) =	0.691 acre-feet
25-yr Runoff Volume (P1 = 2 in.) =	0.887 acre-feet
50-yr Runoff Volume (P1 = 2.26 in.) =	1.052 acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	1.247 acre-feet
500-yr Runoff Volume (P1 = 3.14 in.) =	1.654 acre-feet
Approximate 2-yr Detention Volume =	0.314 acre-feet
Approximate 5-yr Detention Volume =	0.430 acre-feet
Approximate 10-yr Detention Volume =	0.570 acre-feet
Approximate 25-yr Detention Volume =	0.626 acre-feet
Approximate 50-yr Detention Volume =	0.657 acre-feet
Approximate 100-yr Detention Volume =	0.732 acre-feet

### Optional User Overrides

		acre-feet
		acre-feet
	1.19	inches
	1.50	inches
	1.75	inches
	2.00	inches
	2.26	inches
	2.52	inches
		inches

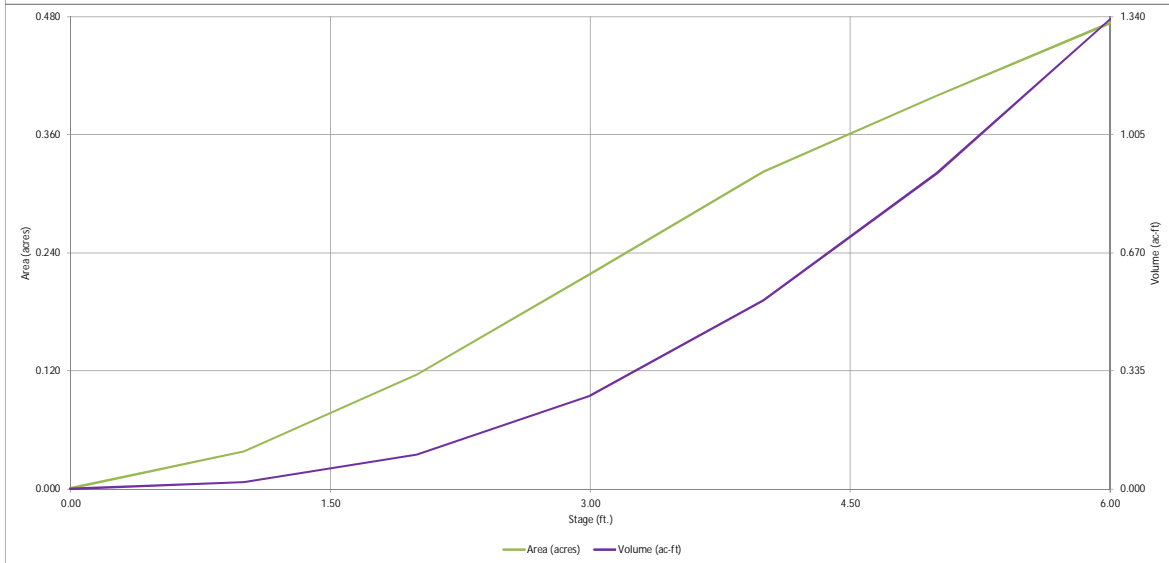
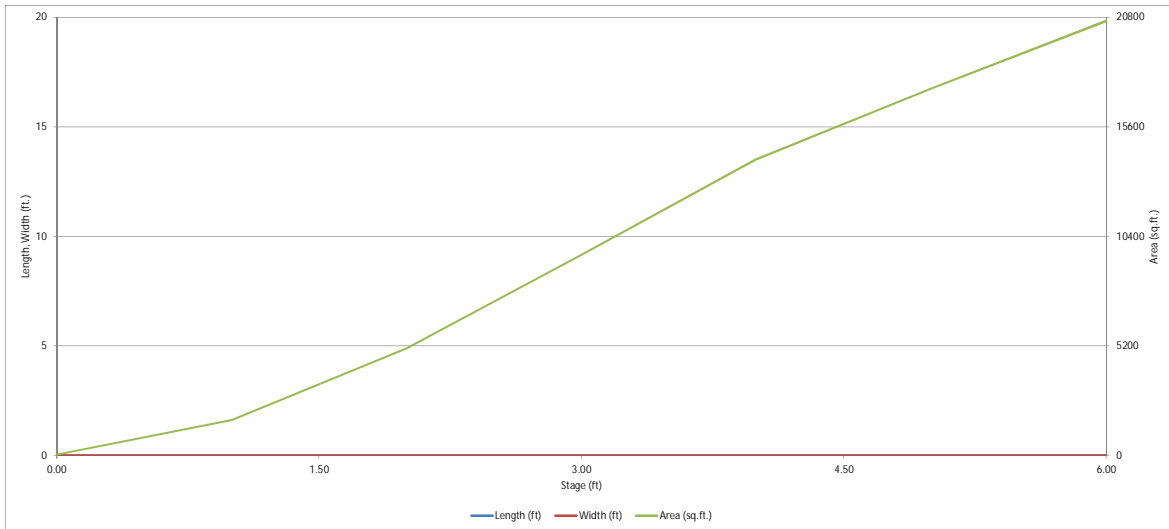
### Define Zones and Basin Geometry

Zone 1 Volume (WOCV) =	0.135	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.282	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.315	acre-feet
Total Detention Basin Volume =	0.732	acre-feet
Initial Surcharge Volume (ISV) =	user	ft <sup>3</sup>
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H <sub>total</sub> ) =	user	ft
Depth of Trickle Channel (H <sub>tc</sub> ) =	user	ft
Slope of Trickle Channel (S <sub>tc</sub> ) =	user	ft/ft
Slopes of Main Basin Sides (S <sub>main</sub> ) =	user	H:V
Basin Length-to-Width Ratio (R <sub>L/W</sub> ) =	user	
Initial Surcharge Area (A <sub>ISV</sub> ) =	user	ft <sup>2</sup>
Surcharge Volume Length (L <sub>ISV</sub> ) =	user	ft
Surcharge Volume Width (W <sub>ISV</sub> ) =	user	ft
Depth of Basin Floor (H <sub>FLOOR</sub> ) =	user	ft
Length of Basin Floor (L <sub>FLOOR</sub> ) =	user	ft
Width of Basin Floor (W <sub>FLOOR</sub> ) =	user	ft
Area of Basin Floor (A <sub>FLOOR</sub> ) =	user	ft <sup>2</sup>
Volume of Basin Floor (V <sub>FLOOR</sub> ) =	user	ft <sup>3</sup>
Depth of Main Basin (H <sub>MAIN</sub> ) =	user	ft
Length of Main Basin (L <sub>MAIN</sub> ) =	user	ft
Width of Main Basin (W <sub>MAIN</sub> ) =	user	ft
Area of Main Basin (A <sub>MAIN</sub> ) =	user	ft <sup>2</sup>
Volume of Main Basin (V <sub>MAIN</sub> ) =	user	ft <sup>3</sup>
Calculated Total Basin Volume (V <sub>total</sub> ) =	USER	acre-feet

Depth Increment =	ft	Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft <sup>2</sup> )	Optional Override Area (ft <sup>2</sup> )	Area (acre)	Volume (ft <sup>3</sup> )	Volume (ac-ft)
6251		Top of Micropool	--	0.00	--	--	--	40	0.001		
		ELEV:6252	--	1.00	--	--	--	1,666	0.038	853	0.020
		ELEV:6253	--	2.00	--	--	--	5,080	0.117	4,226	0.097
		ELEV:6254	--	3.00	--	--	--	9,523	0.219	11,527	0.265
		ELEV:6255	--	4.00	--	--	--	14,054	0.323	23,316	0.535
		ELEV:6256	--	5.00	--	--	--	17,415	0.400	39,050	0.896
		ELEV:6257	--	6.00	--	--	--	20,623	0.473	58,069	1.333

# DETENTION BASIN STAGE-STORAGE TABLE BUILDER

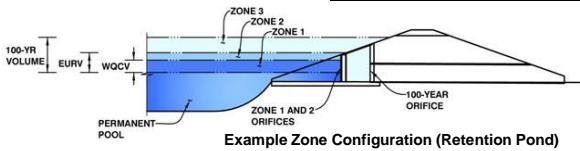
*MHFD-Detention, Version 4.03 (May 2020)*



# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.03 (May 2020)*

Project: Solace Apartments  
Basin ID: Pond A: As-Built-Revised Orifice Plate



**Example Zone Configuration (Retention Pond)**

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WOCV)	2.29	0.135	Orifice Plate
Zone 2 (EURV)	3.61	0.282	Circular Orifice
Zone 3 (100-year)	4.57	0.315	Weir&Pipe (Restrict)
<b>Total (all zones)</b>		<b>0.732</b>	

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

Underdrain Orifice Invert Depth =	<input type="text" value=""/>	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	<input type="text" value=""/>	inches

Calculated Parameters for Underdrain	
Underdrain Orifice Area =	<input type="text" value=""/>
Underdrain Orifice Centroid =	<input type="text" value=""/>

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

Invert of Lowest Orifice =	<input type="text" value="0.00"/>	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	<input type="text" value="2.49"/>	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	<input type="text" value="N/A"/>	inches
Orifice Plate: Orifice Area per Row =	<input type="text" value="0.58"/>	sq. inches (diameter = 7/8 inch)

Calculated Parameters for Plate	
WQ Orifice Area per Row =	<input type="text" value="4.028E-03"/>
Elliptical Half-Width =	<input type="text" value="N/A"/>
Orifice Centroid =	<input type="text" value="N/A"/>
Slot Area =	<input type="text" value="N/A"/>

**Revised Hole Diameter: 7/8"**

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

	Row 1 (required)	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)	0.00	0.71	1.56	2.27				
Orifice Area (sq. inches)	0.58	0.58	0.58	0.58				

	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)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Circular	Not Selected	
Invert of Vertical Orifice =	<input type="text" value="2.65"/>	<input type="text" value="N/A"/>	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	<input type="text" value="3.61"/>	<input type="text" value="N/A"/>	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	<input type="text" value="0.38"/>	<input type="text" value="N/A"/>	inches

Calculated Parameters for Vertical Orifice	
Vertical Orifice Area =	<input type="text" value="0.00"/>
Vertical Orifice Centroid =	<input type="text" value="0.02"/>

User Input: Overflow Weir (Dropbox with Flat or Sloped Gate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe))

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	<input type="text" value="3.68"/>	<input type="text" value="N/A"/>	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	<input type="text" value="4.00"/>	<input type="text" value="N/A"/>	feet
Overflow Weir Gate Slope =	<input type="text" value="0.00"/>	<input type="text" value="N/A"/>	H:V
Horiz. Length of Weir Sides =	<input type="text" value="3.00"/>	<input type="text" value="N/A"/>	feet
Overflow Gate Open Area % =	<input type="text" value="70%"/>	<input type="text" value="N/A"/>	%, gate open area/total area
Debris Clogging % =	<input type="text" value="50%"/>	<input type="text" value="N/A"/>	%

Calculated Parameters for Overflow Weir	
Height of Gate Upper Edge, H <sub>i</sub> =	<input type="text" value="3.68"/>
Overflow Weir Slope Length =	<input type="text" value="3.00"/>
Grate Open Area / 100-yr Orifice Area =	<input type="text" value="28.73"/>
Overflow Gate Open Area w/o Debris =	<input type="text" value="8.40"/>
Overflow Gate Open Area w/ Debris =	<input type="text" value="4.20"/>

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

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	<input type="text" value="0.00"/>	<input type="text" value="N/A"/>	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	<input type="text" value="18.00"/>	<input type="text" value="N/A"/>	inches
Restrictor Plate Height Above Pipe Invert =	<input type="text" value="4.00"/>	<input type="text" value="N/A"/>	inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate	
Outlet Orifice Area =	<input type="text" value="0.29"/>
Outlet Orifice Centroid =	<input type="text" value="0.20"/>
Half-Central Angle of Restrictor Plate on Pipe =	<input type="text" value="0.98"/>

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	<input type="text" value="5.28"/>	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	<input type="text" value="40.00"/>	feet
Spillway End Slopes =	<input type="text" value="10.00"/>	H:V
Freeboard above Max Water Surface =	<input type="text" value="1.00"/>	feet

Calculated Parameters for Spillway	
Spillway Design Flow Depth =	<input type="text" value="0.31"/>
Stage at Top of Freeboard =	<input type="text" value="6.59"/>
Basin Area at Top of Freeboard =	<input type="text" value="0.47"/>
Basin Volume at Top of Freeboard =	<input type="text" value="1.33"/>

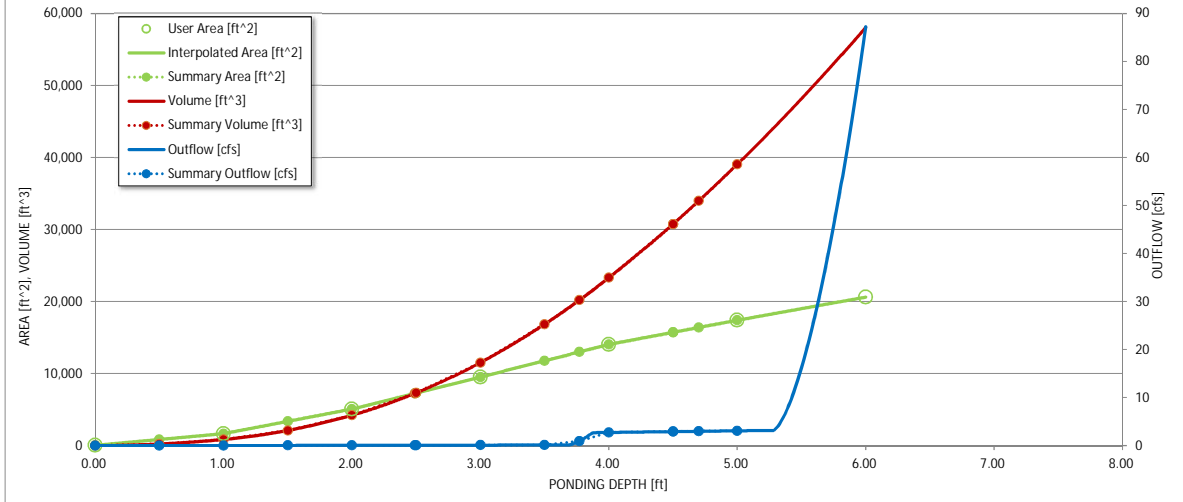
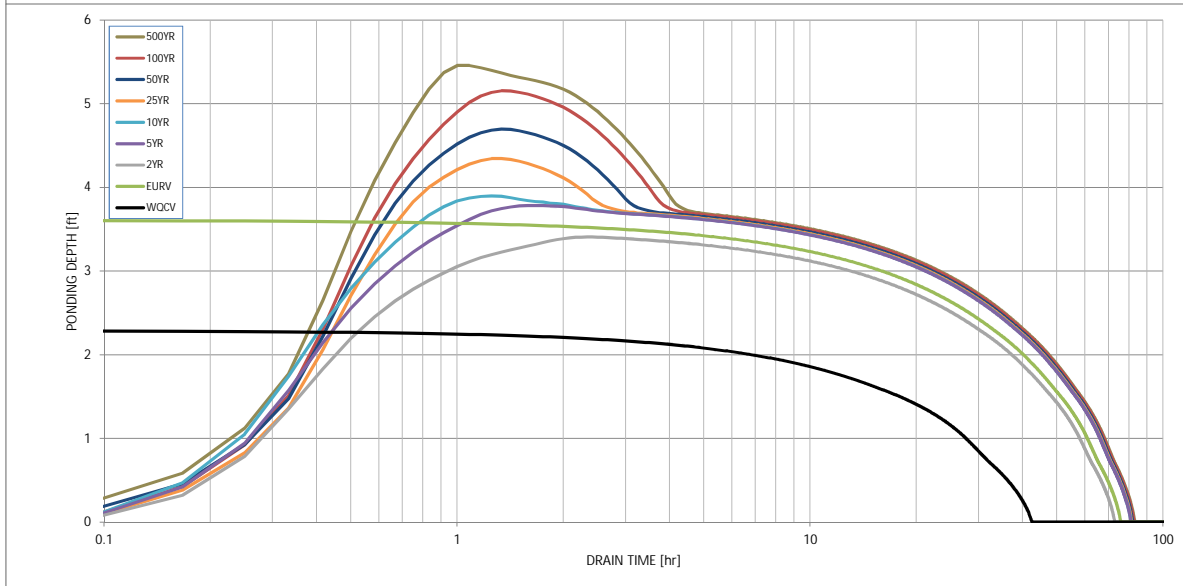
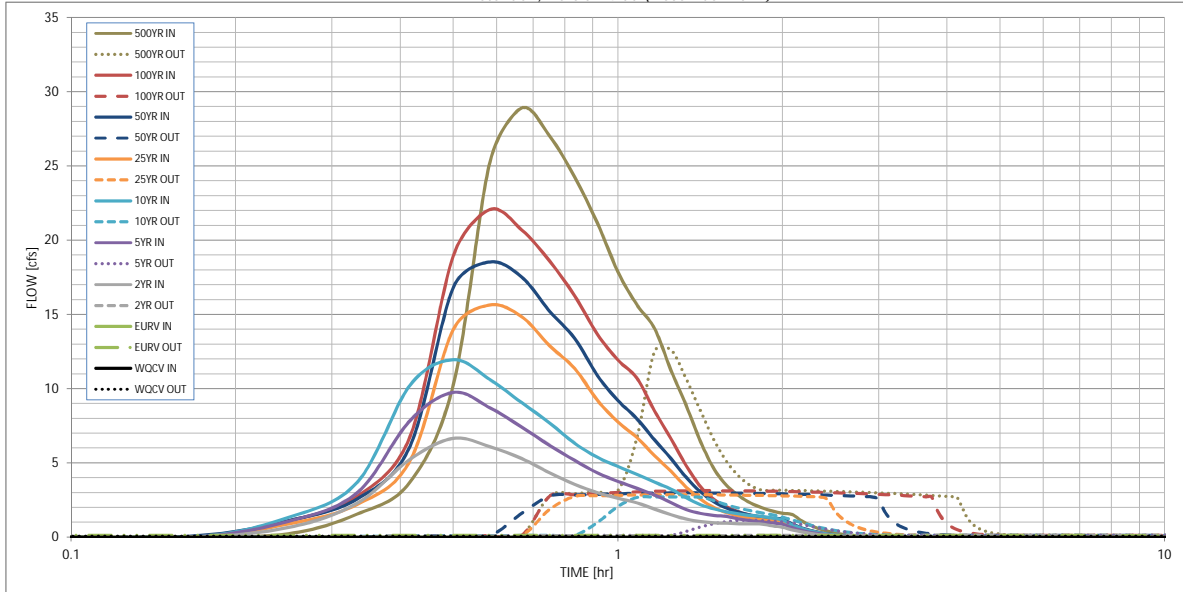
## Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

	WOCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period									
One-Hour Rainfall Depth (in)	N/A	N/A	1.19	1.50	1.75	2.00	2.26	2.52	3.14
CUHP Runoff Volume (acre-ft)	0.135	0.417	0.382	0.546	0.691	0.887	1.052	1.247	1.654
Inflow Hydrograph Volume (acre-ft)	N/A	N/A	0.382	0.546	0.691	0.887	1.052	1.247	1.654
CUHP Predevelopment Peak Q (cfs)	N/A	N/A	0.9	2.7	4.0	7.2	9.1	11.2	15.7
OPTIONAL Override Predevelopment Peak Q (cfs)	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre)	N/A	N/A	0.12	0.34	0.51	0.91	1.15	1.42	1.99
Peak Inflow Q (cfs)	N/A	N/A	6.7	9.8	12.0	15.6	18.5	22.1	28.9
Peak Outflow Q (cfs)	0.1	0.1	0.1	1.1	2.7	2.9	3.0	3.1	12.6
Ratio Peak Outflow to Predevelopment Q	N/A	N/A	N/A	0.4	0.7	0.4	0.3	0.3	0.8
Structure Controlling Flow	Plate	Vertical Orifice 1	Vertical Orifice 1	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Spillway
Max Velocity through Gate 1 (fps)	N/A	N/A	N/A	0.1	0.3	0.3	0.3	0.4	0.4
Max Velocity through Gate 2 (fps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours)	37	64	62	68	66	64	63	62	58
Time to Drain 99% of Inflow Volume (hours)	40	71	68	75	74	72	72	71	70
Maximum Ponding Depth (ft)	2.29	3.61	3.41	3.78	3.90	4.35	4.70	5.16	5.46
Area at Maximum Ponding Depth (acres)	0.15	0.28	0.26	0.30	0.31	0.35	0.38	0.41	0.43
Maximum Volume Stored (acre-ft)	0.135	0.417	0.360	0.467	0.500	0.649	0.776	0.957	1.084

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.00 (December 2019)*



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: \_\_\_\_\_

**Inflow Hydrographs**

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

Time Interval	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
	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]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.24
	0:15:00	0.00	0.00	0.66	1.08	1.34	0.90	1.12	1.10	1.55
	0:20:00	0.00	0.00	2.29	2.99	3.69	2.21	2.58	2.76	3.72
	0:25:00	0.00	0.00	5.25	7.86	10.25	5.16	6.14	6.79	10.27
	0:30:00	0.00	0.00	6.66	9.76	11.95	14.01	16.83	18.97	25.29
	0:35:00	0.00	0.00	6.09	8.72	10.62	15.64	18.54	22.08	28.92
	0:40:00	0.00	0.00	5.30	7.42	9.07	14.86	17.52	20.71	27.03
	0:45:00	0.00	0.00	4.33	6.18	7.70	12.90	15.22	18.61	24.26
	0:50:00	0.00	0.00	3.56	5.17	6.33	11.37	13.40	16.27	21.18
	0:55:00	0.00	0.00	3.00	4.33	5.39	9.24	10.91	13.68	17.88
	1:00:00	0.00	0.00	2.63	3.76	4.77	7.76	9.21	11.94	15.65
	1:05:00	0.00	0.00	2.32	3.29	4.23	6.71	7.99	10.71	14.07
	1:10:00	0.00	0.00	1.90	2.84	3.72	5.49	6.56	8.51	11.25
	1:15:00	0.00	0.00	1.52	2.33	3.25	4.44	5.31	6.64	8.87
	1:20:00	0.00	0.00	1.22	1.86	2.66	3.38	4.03	4.82	6.43
	1:25:00	0.00	0.00	1.05	1.60	2.19	2.55	3.05	3.40	4.58
	1:30:00	0.00	0.00	0.98	1.47	1.90	1.99	2.37	2.55	3.46
	1:35:00	0.00	0.00	0.93	1.39	1.70	1.65	1.95	2.04	2.77
	1:40:00	0.00	0.00	0.91	1.23	1.56	1.42	1.67	1.70	2.30
	1:45:00	0.00	0.00	0.89	1.11	1.47	1.27	1.49	1.46	1.99
	1:50:00	0.00	0.00	0.88	1.02	1.40	1.18	1.36	1.30	1.76
	1:55:00	0.00	0.00	0.76	0.96	1.30	1.11	1.28	1.19	1.61
	2:00:00	0.00	0.00	0.67	0.88	1.16	1.07	1.22	1.13	1.53
	2:05:00	0.00	0.00	0.49	0.64	0.84	0.78	0.89	0.82	1.11
	2:10:00	0.00	0.00	0.36	0.46	0.60	0.56	0.64	0.59	0.80
	2:15:00	0.00	0.00	0.26	0.33	0.43	0.40	0.45	0.43	0.57
	2:20:00	0.00	0.00	0.18	0.23	0.30	0.28	0.32	0.30	0.40
	2:25:00	0.00	0.00	0.12	0.15	0.21	0.19	0.22	0.21	0.28
	2:30:00	0.00	0.00	0.08	0.10	0.14	0.13	0.15	0.14	0.19
	2:35:00	0.00	0.00	0.05	0.07	0.09	0.09	0.10	0.09	0.13
	2:40:00	0.00	0.00	0.03	0.04	0.05	0.05	0.06	0.05	0.07
	2:45:00	0.00	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.03
	2:50:00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
	2:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

# Stormwater Detention and Infiltration Design Data Sheet

SDI-Design Data v2.00, Released January 2020

Stormwater Facility Name: **Pond A: As-Built**

Facility Location & Jurisdiction: **Solace Apartments**

## User Input: Watershed Characteristics

Extended Detention Basin (EDB) ▼	EDB	
Watershed Area =	7.89	acres
Watershed Length =	790	ft
Watershed Length to Centroid =	340	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	49.4%	percent
Percentage Hydrologic Soil Group A =	1.0%	percent
Percentage Hydrologic Soil Group B =	99.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

Location for 1-hr Rainfall Depths (use dropdown):

User Input ▼

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Once CUHP has been run and the Stage-Area-Discharge information has been provided, click 'Process Data' to interpolate the Stage-Area-Volume-Discharge data and generate summary results in the table below. Once this is complete, click 'Print to PDF'.

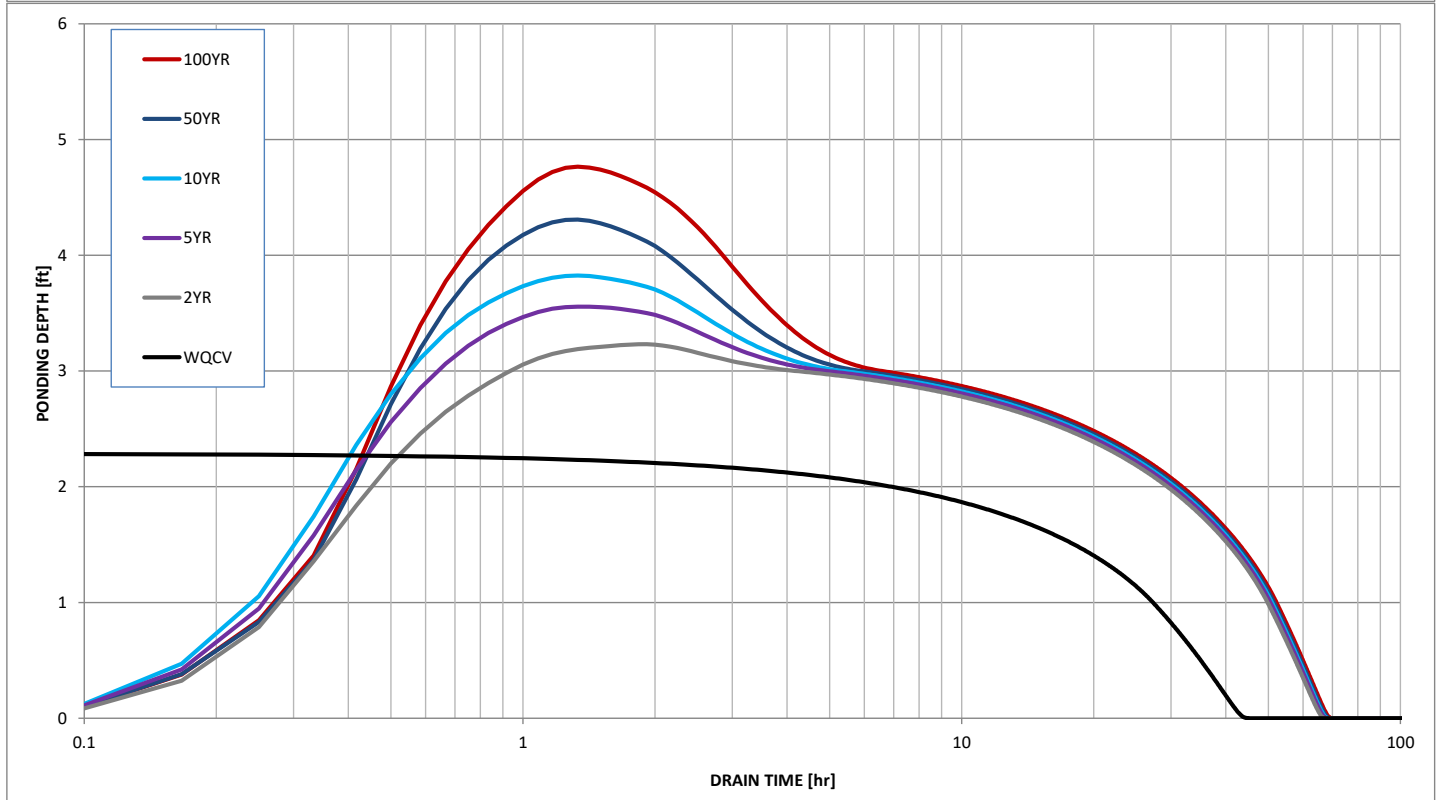
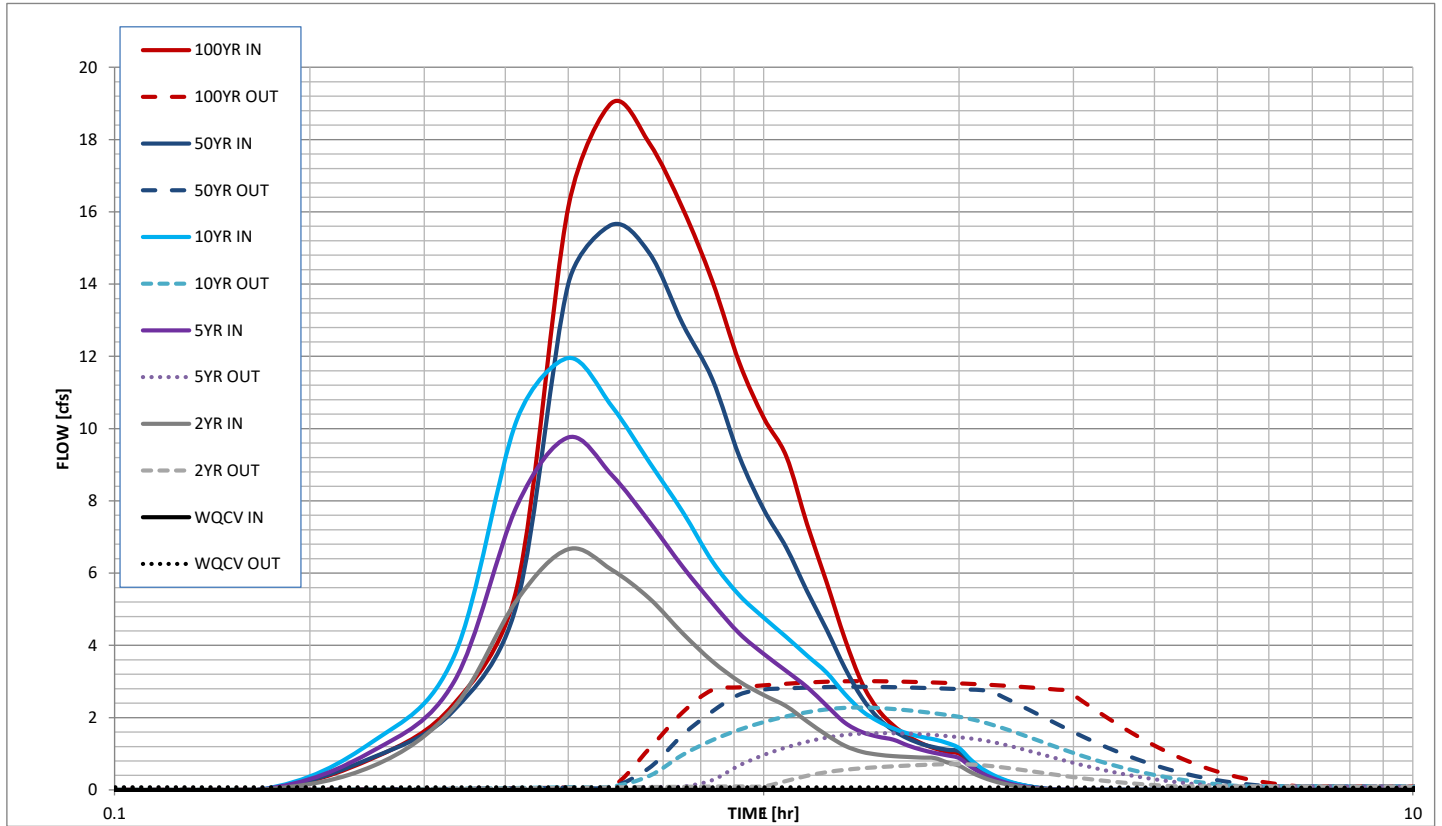
User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	40	0.00	0.00
1.00	1,666	1.00	0.03
2.00	5,080	2.00	0.06
3.00	9,523	3.00	0.10
4.00	14,054	4.00	2.75
5.00	17,415	5.00	3.09
6.00	20,623	6.00	87.26

After completing and printing this worksheet to a pdf, go to: <https://maperture.digitaldataservices.com/gvh/?viewer=cswdif>  
Create a new stormwater facility, and attach the PDF of this worksheet to that record.

## Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	1.19	1.50	1.75	2.00	2.25	in
CUHP Runoff Volume =	0.135	0.382	0.546	0.691	0.887	1.075	acre-ft
Inflow Hydrograph Volume =	N/A	0.382	0.546	0.691	0.887	1.075	acre-ft
Time to Drain 97% of Inflow Volume =	36.1	53.6	51.9	50.5	48.9	47.7	hours
Time to Drain 99% of Inflow Volume =	39.3	58.8	58.1	57.4	56.8	56.3	hours
Maximum Ponding Depth =	2.29	3.23	3.56	3.83	4.31	4.77	ft
Maximum Poned Area =	0.15	0.24	0.28	0.30	0.35	0.38	acres
Maximum Volume Stored =	0.135	0.317	0.401	0.480	0.637	0.802	acre-ft

# Stormwater Detention and Infiltration Design Data Sheet

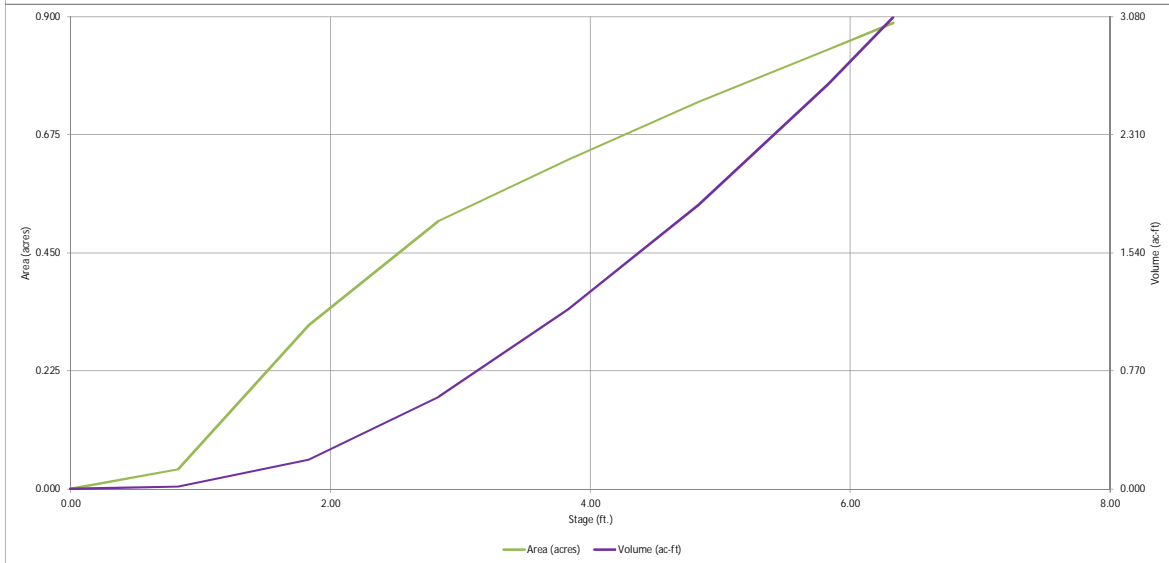
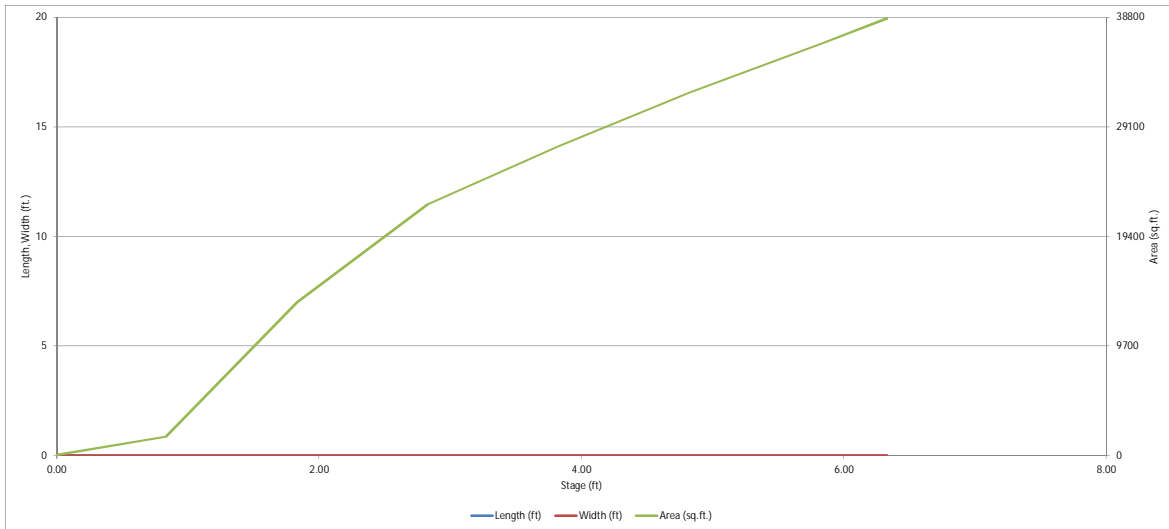






# DETENTION BASIN STAGE-STORAGE TABLE BUILDER

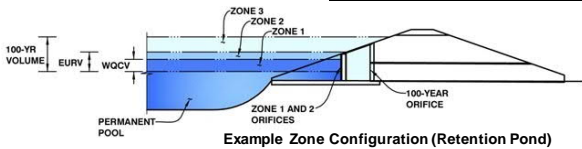
*MHFD-Detention, Version 4.03 (May 2020)*



# DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.03 (May 2020)

Project: Solace Apartments  
 Basin ID: Pond B: As-Built-Revised Orifice Plate



	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WOCV)	2.06	0.264	Orifice Plate
Zone 2 (EURV)	3.11	0.482	Circular Orifice
Zone 3 (100-year)	4.21	0.666	Weir & Pipe (Restrict)
Total (all zones)		1.412	

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

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft <sup>2</sup>
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

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

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WO Orifice Area per Row =	6.042E-03	ft <sup>2</sup>
Depth at top of Zone using Orifice Plate =	2.60	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Orifice Plate: Orifice Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	0.87	sq. inches (diameter = 1-1/16 inches)	Orifice Plate: Orifice Area =	N/A	ft <sup>2</sup>

**Revised Hole Diameter: 1-1/16"**

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

	Row 1 (required)	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)	0.00	0.50	1.06	1.63	2.25			
Orifice Area (sq. inches)	0.87	0.87	0.87	0.87	0.87			

	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)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Circular	Not Selected		Zone 2 Circular	Not Selected
Invert of Vertical Orifice =	2.79	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.02
Depth at top of Zone using Vertical Orifice =	3.11	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.07
Vertical Orifice Diameter =	1.77	N/A	inches		N/A

User Input: Overflow Weir (Dropbox with Flat or Sloped Gate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe))

	Zone 3 Weir	Not Selected		Zone 3 Weir	Not Selected
Overflow Weir Front Edge Height, Ho =	3.50	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Gate Upper Edge, H <sub>1</sub> =	3.50
Overflow Weir Front Edge Length =	4.00	N/A	feet	Overflow Weir Slope Length =	3.00
Overflow Weir Gate Slope =	0.00	N/A	H:V	Gate Open Area / 100-yr Orifice Area =	28.73
Horiz. Length of Weir Sides =	3.00	N/A	feet	Overflow Gate Open Area w/o Debris =	8.40
Overflow Gate Open Area % =	70%	N/A	%, gate open area/total area	Overflow Gate Open Area w/ Debris =	4.20
Debris Clogging % =	50%	N/A	%		

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

	Zone 3 Restrictor	Not Selected		Zone 3 Restrictor	Not Selected
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	0.29
Outlet Pipe Diameter =	18.00	N/A	inches	Outlet Orifice Centroid =	0.20
Restrictor Plate Height Above Pipe Invert =	4.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	0.98

User Input: Emergency Spillway (Rectangular or Trapezoidal)

				Zone 3 Restrictor	Not Selected
Spillway Invert Stage =	6.42	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth =	0.34	feet
Spillway Crest Length =	50.00	feet	Stage at Top of Freeboard =	7.76	feet
Spillway End Slopes =	10.00	H:V	Basin Area at Top of Freeboard =	0.89	acres
Freeboard above Max Water Surface =	1.00	feet	Basin Volume at Top of Freeboard =	3.07	acre-ft

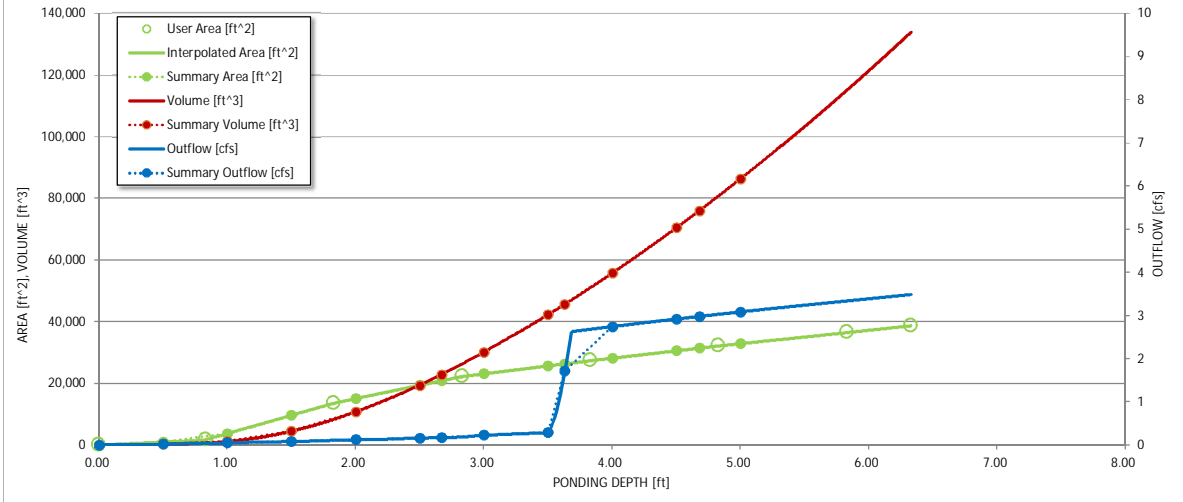
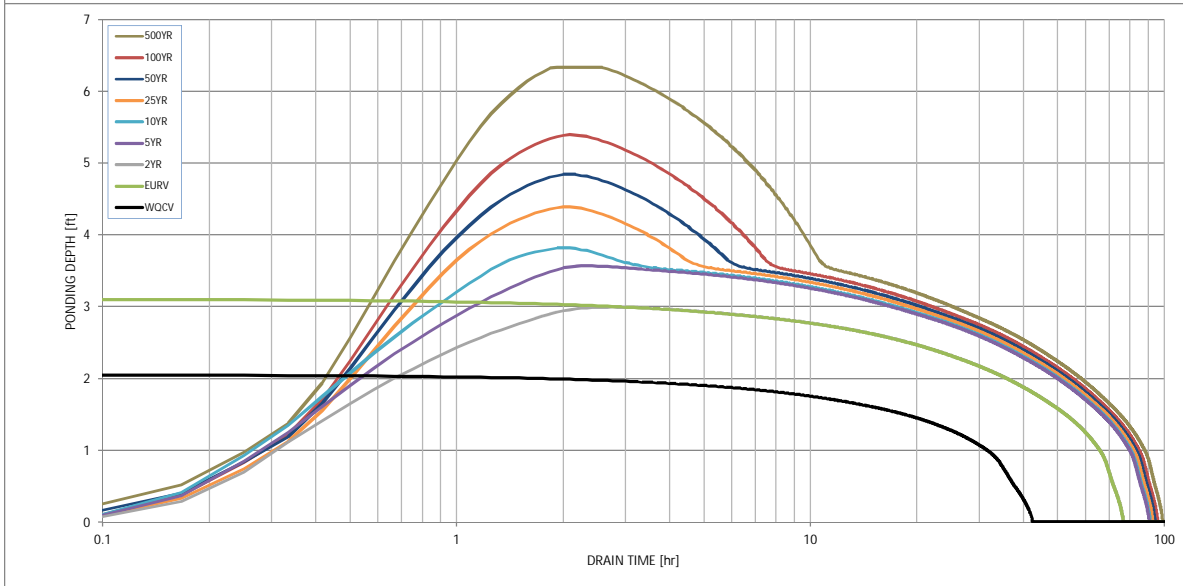
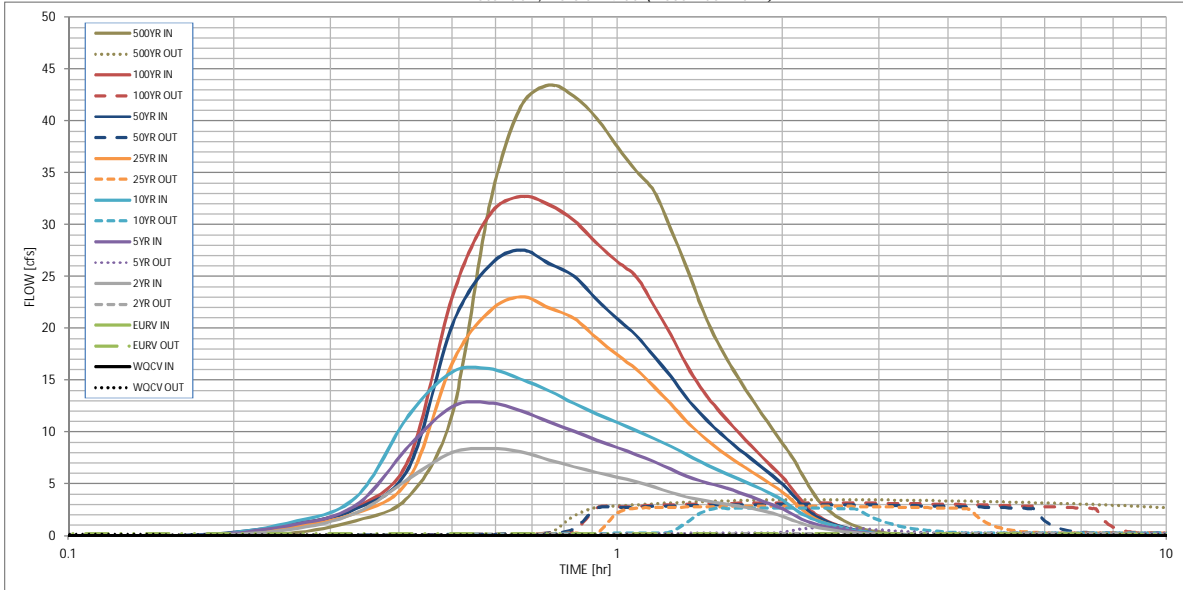
## Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

	WOCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period	N/A	N/A	1.19	1.50	1.75	2.00	2.26	2.52	3.14
One-Hour Rainfall Depth (in)	N/A	N/A	1.19	1.50	1.75	2.00	2.26	2.52	3.14
CUHP Runoff Volume (acre-ft)	0.264	0.746	0.729	1.088	1.408	1.872	2.246	2.702	3.634
Inflow Hydrograph Volume (acre-ft)	N/A	N/A	0.729	1.088	1.408	1.872	2.246	2.702	3.634
CUHP Predevelopment Peak Q (cfs)	N/A	N/A	1.4	4.0	6.1	11.3	14.3	18.2	25.4
OPTIONAL Override Predevelopment Peak Q (cfs)	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre)	N/A	N/A	0.08	0.23	0.35	0.64	0.82	1.04	1.45
Peak Inflow Q (cfs)	N/A	N/A	8.4	12.8	16.1	23.1	27.6	32.7	43.5
Peak Outflow Q (cfs)	0.1	0.2	0.2	0.8	2.7	2.9	3.0	3.2	3.5
Ratio Peak Outflow to Predevelopment Q	N/A	N/A	N/A	0.2	0.4	0.3	0.2	0.2	0.1
Structure Controlling Flow	Plate	Vertical Orifice 1	Vertical Orifice 1	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	N/A
Max Velocity through Gate 1 (fps)	N/A	N/A	N/A	0.1	0.3	0.3	0.3	0.3	0.4
Max Velocity through Gate 2 (fps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours)	37	67	67	78	77	76	76	75	74
Time to Drain 99% of Inflow Volume (hours)	40	71	71	84	84	84	84	85	86
Maximum Ponding Depth (ft)	2.06	3.11	3.00	3.57	3.82	4.39	4.85	5.39	6.33
Area at Maximum Ponding Depth (acres)	0.36	0.54	0.53	0.60	0.63	0.69	0.74	0.79	0.89
Maximum Volume Stored (acre-ft)	0.267	0.749	0.685	1.006	1.165	1.533	1.862	2.283	3.073

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.00 (December 2019)*



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:* \_\_\_\_\_

**Inflow Hydrographs**

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

Time Interval	SOURCE	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]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.22
	0:15:00	0.00	0.00	0.60	0.98	1.22	0.82	1.04	1.00	1.47
	0:20:00	0.00	0.00	2.20	2.93	3.70	2.19	2.59	2.74	3.81
	0:25:00	0.00	0.00	5.52	8.65	11.64	5.47	6.59	7.37	11.75
	0:30:00	0.00	0.00	8.06	12.47	15.81	16.67	20.33	23.06	31.64
	0:35:00	0.00	0.00	8.44	12.83	16.12	21.61	26.01	30.90	41.39
	0:40:00	0.00	0.00	8.09	12.06	15.12	23.06	27.59	32.73	43.47
	0:45:00	0.00	0.00	7.34	11.00	14.00	21.99	26.27	31.95	42.38
	0:50:00	0.00	0.00	6.67	10.11	12.76	20.97	25.04	30.40	40.28
	0:55:00	0.00	0.00	6.11	9.24	11.75	19.06	22.79	28.22	37.47
	1:00:00	0.00	0.00	5.66	8.51	10.92	17.44	20.92	26.44	35.17
	1:05:00	0.00	0.00	5.24	7.83	10.14	16.03	19.28	24.94	33.21
	1:10:00	0.00	0.00	4.70	7.16	9.37	14.37	17.31	22.17	29.63
	1:15:00	0.00	0.00	4.19	6.44	8.65	12.75	15.38	19.40	26.05
	1:20:00	0.00	0.00	3.77	5.78	7.87	11.09	13.38	16.57	22.30
	1:25:00	0.00	0.00	3.46	5.31	7.15	9.78	11.80	14.33	19.34
	1:30:00	0.00	0.00	3.24	4.94	6.52	8.69	10.47	12.60	17.01
	1:35:00	0.00	0.00	3.03	4.60	5.96	7.78	9.36	11.17	15.07
	1:40:00	0.00	0.00	2.84	4.18	5.45	6.97	8.36	9.89	13.34
	1:45:00	0.00	0.00	2.65	3.78	4.96	6.23	7.45	8.73	11.76
	1:50:00	0.00	0.00	2.47	3.38	4.49	5.54	6.60	7.64	10.28
	1:55:00	0.00	0.00	2.18	3.00	3.99	4.87	5.78	6.61	8.88
	2:00:00	0.00	0.00	1.89	2.61	3.44	4.22	4.99	5.64	7.57
	2:05:00	0.00	0.00	1.52	2.09	2.75	3.37	3.97	4.47	5.98
	2:10:00	0.00	0.00	1.19	1.61	2.13	2.56	3.01	3.36	4.49
	2:15:00	0.00	0.00	0.94	1.27	1.71	1.89	2.22	2.45	3.32
	2:20:00	0.00	0.00	0.76	1.04	1.40	1.45	1.70	1.84	2.52
	2:25:00	0.00	0.00	0.63	0.85	1.15	1.13	1.33	1.40	1.93
	2:30:00	0.00	0.00	0.52	0.70	0.94	0.89	1.04	1.07	1.48
	2:35:00	0.00	0.00	0.42	0.57	0.77	0.70	0.82	0.81	1.12
	2:40:00	0.00	0.00	0.35	0.46	0.61	0.55	0.64	0.60	0.84
	2:45:00	0.00	0.00	0.28	0.37	0.48	0.43	0.50	0.45	0.62
	2:50:00	0.00	0.00	0.23	0.29	0.38	0.33	0.38	0.34	0.47
	2:55:00	0.00	0.00	0.18	0.23	0.30	0.26	0.30	0.27	0.37
	3:00:00	0.00	0.00	0.15	0.18	0.23	0.21	0.24	0.22	0.30
	3:05:00	0.00	0.00	0.12	0.14	0.18	0.16	0.19	0.17	0.24
	3:10:00	0.00	0.00	0.09	0.11	0.14	0.13	0.14	0.13	0.18
	3:15:00	0.00	0.00	0.06	0.08	0.10	0.09	0.11	0.10	0.13
	3:20:00	0.00	0.00	0.04	0.05	0.07	0.07	0.07	0.07	0.09
	3:25:00	0.00	0.00	0.03	0.04	0.05	0.04	0.05	0.04	0.06
	3:30:00	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.03
	3:35:00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Stormwater Detention and Infiltration Design Data Sheet

*SDI-Design Data v2.00, Released January 2020*

Stormwater Facility Name: **Pond A: As-Built**

Facility Location & Jurisdiction: **Solace Apartments**

**User Input: Watershed Characteristics**

<input type="text" value="Extended Detention Basin (EDB)"/>	<b>EDB</b>			
Watershed Area =	17.50	acres		
Watershed Length =	1,631	ft		
Watershed Length to Centroid =	740	ft		
Watershed Slope =	0.014	ft/ft		
Watershed Imperviousness =	40.6%	percent		
Percentage Hydrologic Soil Group A =	1.0%	percent		
Percentage Hydrologic Soil Group B =	99.0%	percent		
Percentage Hydrologic Soil Groups C/D =	0.0%	percent		
Target WQCV Drain Time =	40.0	hours		
Location for 1-hr Rainfall Depths (use dropdown):				
<input type="text" value="User Input"/>				▼

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Once CUHP has been run and the Stage-Area-Discharge information has been provided, click 'Process Data' to interpolate the Stage-Area-Volume-Discharge data and generate summary results in the table below. Once this is complete, click 'Print to PDF'.

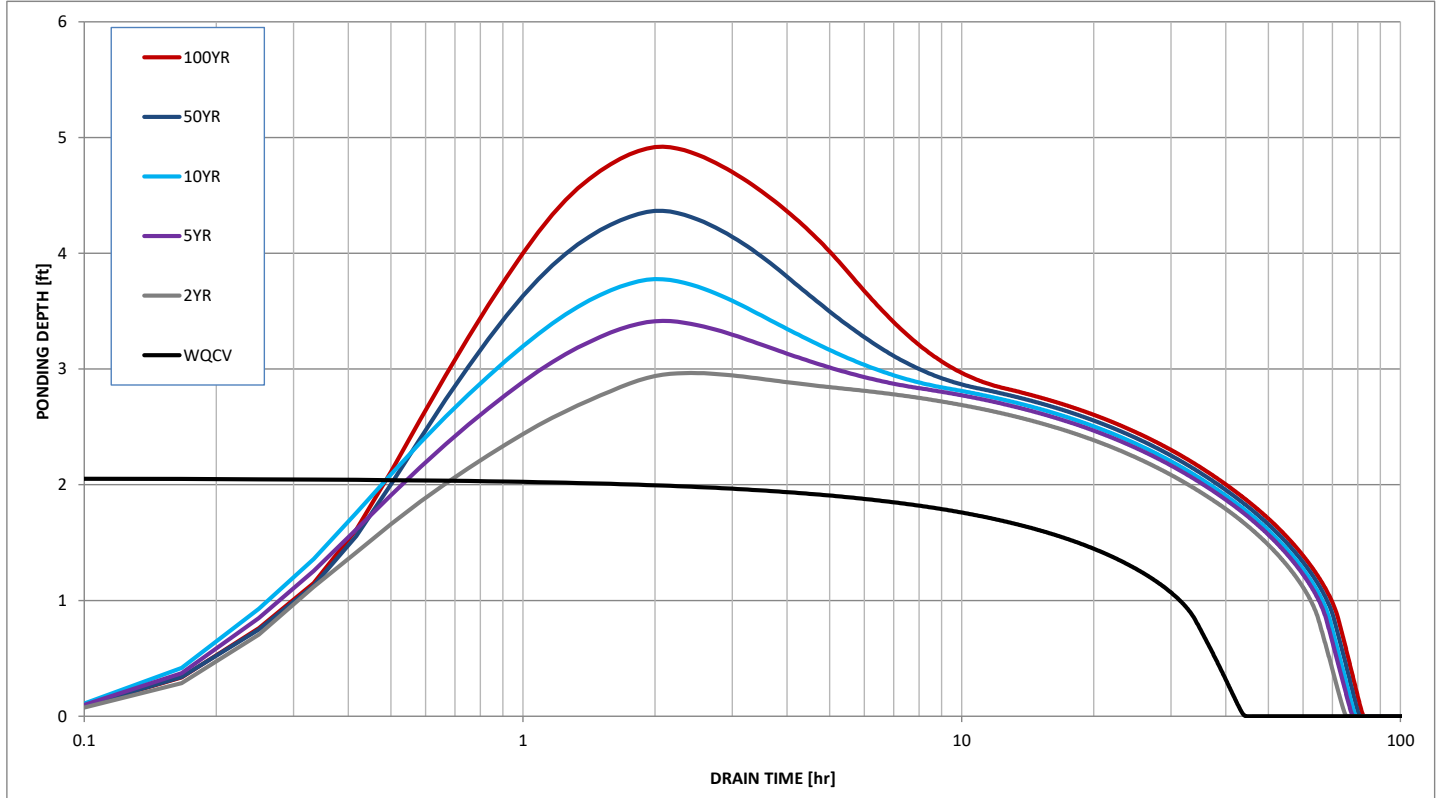
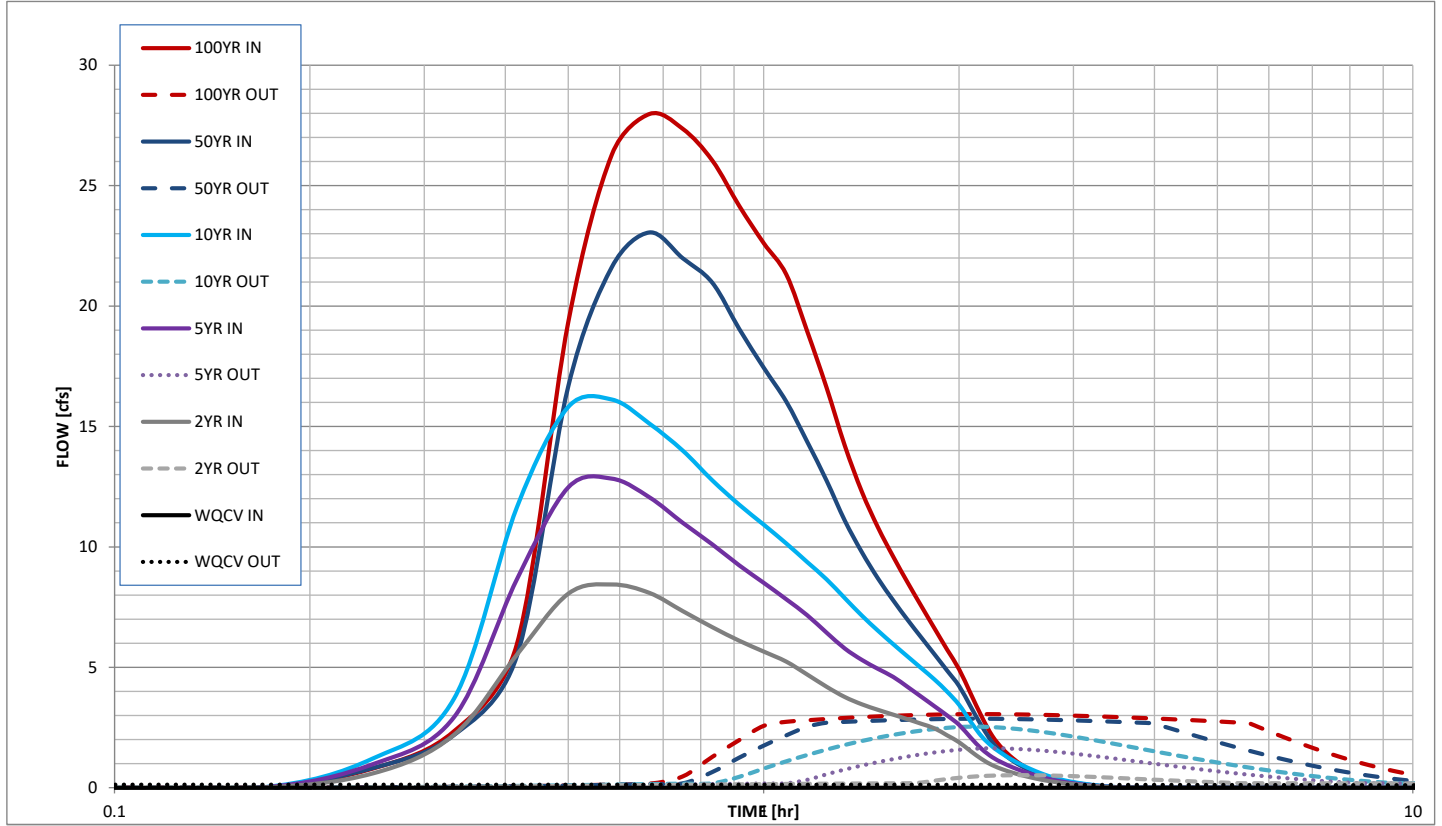
User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	28	0.00	0.00
0.83	1,638	0.83	0.04
1.83	13,572	1.83	0.11
2.83	22,241	2.83	0.19
3.83	27,370	3.83	2.68
4.83	32,147	4.83	3.03
5.83	36,488	5.83	3.34
6.83	38,696	6.83	3.49

After completing and printing this worksheet to a pdf, go to: <https://maperture.digitaldataservices.com/gvh/?viewer=cswdif>  
 Create a new stormwater facility, and attach the PDF of this worksheet to that record.

**Routed Hydrograph Results**

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =	N/A	1.19	1.50	1.75	2.00	2.25	in
CUHP Runoff Volume =	0.264	0.729	1.088	1.408	1.872	2.312	acre-ft
Inflow Hydrograph Volume =	N/A	0.729	1.088	1.408	1.872	2.312	acre-ft
Time to Drain 97% of Inflow Volume =	36.9	63.5	<b>63.8</b>	63.0	62.1	61.5	hours
Time to Drain 99% of Inflow Volume =	39.8	68.3	69.5	69.7	69.9	<b>70.4</b>	hours
Maximum Ponding Depth =	2.06	2.97	3.42	3.78	4.37	4.92	ft
Maximum Poned Area =	0.36	0.53	0.58	0.62	0.69	<b>0.75</b>	acres
Maximum Volume Stored =	0.265	0.667	0.918	1.135	1.520	1.917	acre-ft

# Stormwater Detention and Infiltration Design Data Sheet



December 20, 2023

El Paso County  
Development Services Division  
2880 International Circle  
Colorado Springs, CO 80910



RE: **Solace Apartments Filing 1 – Public Storm Sewer**

The public storm drainage facilities for Solace Apartments Filing No. 1 consist of the following facilities:

- |                        |            |                     |
|------------------------|------------|---------------------|
| - (5) 10' Type R Inlet | - (117 LF) | 18" RCP Storm Drain |
| - (3) 15' Type R Inlet | - ( 44 LF) | 24" RCP Storm Drain |
| - (2) Storm Manholes   | - (187 LF) | 36" RCP Storm Drain |
|                        | - ( 33 LF) | 42" RCP Storm Drain |

The above listed storm system was recently installed by CS Powers and Galley, LLC and per the approved drainage report, the storm system drains to Ponds A and B which are subject to a separate certification.

The site and adjacent properties (as affected by work performed under the County permit) appear to be stable with respect to settlement and subsidence, sloughing of cut and fill slopes, revegetation or other ground cover, and the improvements (public improvements, common development improvements, site grading and paving) meet or exceed the minimum design requirements.

Based upon information gathered during periodic site visits to the project and the as-built drawings, JR Engineering is of the opinion that the storm drainage facilities have been constructed in general compliance with the approved design plans and specifications as filed with the County.

On behalf of CS Powers and Galley, LLC, JR Engineering hereby requests probationary inspection of these facilities by County Engineering so that the warranty period can begin.

Statement Of Engineer In Responsible Charge:

To the best of my knowledge, information and belief, the referenced public storm drainage facilities have been constructed in general compliance with the approved design plans and specifications as filed with El Paso County.

Respectfully submitted,

JR ENGINEERING, LLC

A handwritten signature in blue ink that reads "Mike Bramlett".

Mike Bramlett, PE  
Colorado No. 32314





December 20, 2023



El Paso County  
Development Services Division  
2880 International Circle  
Colorado Springs, CO 80910

**RE: Solace Apartments Filing No. 1 – Paonia Street Improvements**

The public Paonia Street improvements associated with Solace Apartments Filing 1 consist of the paving, curb and gutter, cross pans, sidewalk, pedestrian ramps and driveways to Solace Pond View and Tranquil Glen Grove which have been recently installed by CS Powers and Galley, LLC.

The site and adjacent properties (as affected by work performed under the County permit) appear to be stable with respect to settlement and subsidence, sloughing of cut and fill slopes, revegetation or other ground cover, and the improvements (public improvements, common development improvements, site grading and paving) meet or exceed the minimum design requirements.

Based upon information gathered during periodic site visits during the installation of the street improvements and the as-built drawings, JR Engineering is of the opinion that the street improvements have been constructed in general compliance with the approved design plans and specifications as filed with the County.

On behalf of CS Powers and Galley, LLC, JR Engineering hereby requests probationary inspection of these facilities by County Engineering so that the warranty period can begin.

STATEMENT OF ENGINEER IN RESPONSIBLE CHARGE:

To the best of my knowledge, information and belief, the referenced public street improvements have been constructed in general compliance with the approved design plans and specifications as filed with El Paso County.

Respectfully submitted,

JR ENGINEERING, LLC

A handwritten signature in black ink that reads "Mike Bramlett".

Mike Bramlett, PE  
Colorado No. 32314

