COACHELLA AIRPORT BUSINESS PARK

IN THE CITY OF
COACHELLA, CA

PRELIMINARY HYDROLOGY REPORT

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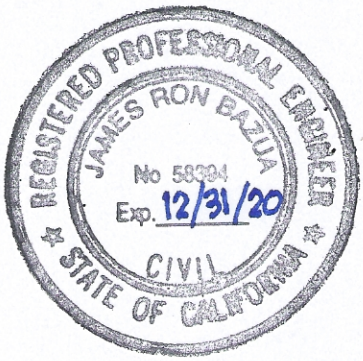
Expiration Date: December 31, 2020



COACHELLA AIRPORT BUSINESS PARK

PRELIMINARY HYDROLOGY REPORT

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I. PROJECT DESCRIPTION

Haagen Co., LLC is proposing to develop the Coachella Airport Business Park (proposed project), a mixed-use business park development which includes warehouse/commercial uses, self-storage, small business, drive thru coffee shop and service station/mini mart-related land uses in the City of Coachella, in Riverside County, California. The project site is located at the northwest corner of the intersection of State Route 86 and Airport Boulevard and is comprised of three parcels totaling approximately 42.69 acres. The proposed project will require a change of zone from M-H (Heavy Industrial) to MS-IP (Manufacturing Service – Industrial Park Overlay) to allow the proposed uses.

The project site is bordered by a vacant, undeveloped property owned by Coachella Valley Water District (CVWD) located immediately north. To the west, the project site is bordered by the Coachella Valley Stormwater Channel, to the east, bordered by SR-86 and beyond followed by agricultural land uses, and to the south, bordered by a mobile home park. A 3.44-acre right-of-way under California Department of Transportation (Caltrans) jurisdiction that is vacant and abuts the southeastern frontage of the project site. (See Preliminary Hydrology Map – Appendix).

Although the site is adjacent to the Coachella Valley Storm Channel it is currently in the flood plain Zone AE (Base Flood Elevations Provided) based on FEMA Map Number 06065C2270H, Panel 2270 of 3805, reflected in the map revised 3/6/18. Coachella Valley Water District (CVWD) maintains the existing Storm Water Channel and has proposed future channel lining improvements that will remove the entirety of existing Coachella Airport Business Park from the flood plain. However, Coachella Airport Business Park intends to go forward with development in a manner that protects the site from off-site flows by establish elevated grades along affected portion of the project perimeter. CVWD will conduct a Flood Development Review of the project development on behalf of FEMA before Final Engineering drawings are submitted to City of Coachella for first review to confirm that the project design protects the development from off-site flows. Modeling of off-site flows affecting the site under existing and proposed conditions will be submitted to CVWD for review based on the Flood Development Review requirements listed in the CVWD Development Design Guidelines. This Preliminary Hydrology Report supports the Preliminary Grading and Drainage Plan for entitlement which shows proposed conditions protecting the site from off-site flows. However, modeling of the proposed conditions and review of the proposed conditions will not occur until after project entitlement and before submittal of final engineering documents.

II. PROJECT SCOPE AND DESIGN METHODOLOGY

This Preliminary Hydrology Report was prepared in support of the Preliminary Site Grading and Drainage Plan included as part of the Conditional Use Permit Application for the Coachella Airport Business Park. The proposed Coachella Airport Business Park Development will be required to collect and store 100% of the runoff generated during the 100 year storm event on-site per City of Coachella drainage standards. The purpose of this report is to provide a study of the storm runoff generated under the post development condition, and support the design of on-site storm retention facilities in order to satisfy the City of Coachella on-site retention requirements. An analysis supporting the design and sizing of underground storm drain conduits and drain inlets will be provided during final design phase for the development.

The project can be separated into three main subareas and storm water collection system boundaries, 1.) the majority of the site is designed to surface flow to a series of drain inlets, gutters and swales where runoff can be collected and conveyed in an underground storm drain system toward retention basins located along the westerly side of the property 2.) a smaller portion of the project located at the northerly interior of the site will drain its surface runoff toward an interim retention basin location 3.) A portion of project located on the Easterly boundary will flow to a single retention basin adjacent to the project boundary. There are several depressed loading docks (0.16 acres) serving the proposed warehouse buildings on the northerly side of the project site. These loading docks will drain separately to underground storage facilities as their depth does not allow for gravity flow into the proposed storm drain retention system. The project soils report notes that underground infiltration systems are not recommended for the site due to relatively high groundwater levels. However, recommendations for infiltration systems are given to provide for separation from infrastructure. These recommendations will be adhered to and the assumed location of underground storage systems serving the loading docks are show on the Preliminary Hydrology Map. Alternate means of providing drainage for the depressed loading dock areas, such as automatic pumping systems may be considered during Final Engineering Design phase.

It is anticipated that future improvements to the adjacent Coachella Valley Storm Water Channel proposed by CVWD will lower the hydraulic grade line within the channel sufficiently to remove Coachella Airport Business Park from the flood plain and allow gravity flow of storm runoff from project site. CVWD has confirmed that this would be allowed as long as all State Water Quality Management requirements are met. The current project design is such that gravity flow to the Coachella Valley Storm Water Channel can be achieved with minor changes to the on-site storm drain system (including removal of the interim retention basin) should the Channel be improved.

The maximum depth of any on-site retention basin will be three (3) feet and will be sized to retain the entire storm volume generated on-site during the 10 year design storm. The project site will also provide sufficient capacity to contain the runoff volume generated during the 100 year design storm in combination with the retention basin and shallow ponding on surface streets and parking areas at a depth not to exceed 1.5’ in depth. In the event of an emergency flooding condition, flows exceeding the capacity of the on-site collection system

will overflow at the southeasterly end of project site toward State Highway 86 right of way and onto an adjacent undeveloped parcel of land. Flows ultimately would then proceed southerly via surface flow where make their way into the Coachella Valley Storm Water Channel. Flows then continue in the channel ultimately to its terminus at the Salton Sea.

On-site retention basins shall be designed in a manner that allows the stored volume generated from the 100 year design storm event to completely evacuate via percolation into the soil within a 72 hour period assuming the maximum percolation rate allowed by City of Coachella of 10 gallons/s.f./day (0.67in./hr). Several City of Coachella drywell infiltration chambers will be used in the design of the storm drain system in order to facilitate the conveyance of the underground storm drain system into the shallow retention basin. However, any additional infiltration provided by these drywells will not be included in calculations to reduce the size of the retention basin or aid in showing that the 100 year storm volume can be evacuated within the allotted time period.

Existing soils in the project area are predominantly consistent with Soil Type B. An Antecedent Moisture Condition of II with a Runoff Index Number of 56 as defined by RCFCD is used for the 100 year design storm.

This report includes:

1) The determination of on-site drainage areas as identified on the hydrology map for the project;

2) The determination of flood volumes for the retention basin utilizing Riverside County Flood Control District (RCFCD) Synthetic Unit Hydrograph (Short-cut Method) for the 10 year and 100 year storm event. Soil Type C values and corresponding Runoff Index (RI) Numbers are assumed.

3) A discussion regarding the project's ability to dissipate runoff stored after a 100 year storm event within a 72 hour period.

DESIGN CRITERIA

1) On-site drainage areas:

SUBAREA A –	27.65 acres commercial (85% impervious)
	0.97 perimeter landscaping (100% pervious)
	2.1 acres retention basin areas (100% impervious)
SUBAREA B –	8.18 acres commercial (85% impervious)
	1.00 acres retention basin area (100% impervious)
SUBAREA C –	2.32 acres commercial (85% impervious)
	0.10 perimeter landscaping (100% pervious)
	0.21 acres retention basin area (100% impervious)

2) The following parameters were used in the preparation of the analyses:

• Antecedant Moisture Condition – 10 year	1	
• Antecedant Moisture Condition – 100 year	2	
• 10 year – 3 hour Precipitation	0.984”	NOAA ATLAS 14
• 10 year – 6 hour Precipitation	1.28”	NOAA ATLAS 14
• 10 year – 24 hour Precipitation	2.07”	NOAA ATLAS 14
• 100 year – 3 hour Precipitation	2.03”	NOAA ATLAS 14
• 100 year – 6 hour Precipitation	2.71”	NOAA ATLAS 14
• 100 year – 24 hour Precipitation	4.24”	NOAA ATLAS 14
• Hydrologic Soil Type “B”		RCFCD Plate C-1.36
• Runoff Index Number	56	RCFCD Plate D-5.5
• 10 year Infiltration Rate	.70	RCFCD Plate E-6.2
• 100 year Infiltration Rate	.51	RCFCD Plate E-6.2
• Slope – Intensity Duration Curve	59	RCFCD Plate D-4.6

III RETENTION BASIN SIZING/ SYNTHETIC UNIT HYDROGRAPH CALCULATIONS

The proposed on-site retention system design is intended to collect design storm runoff generated on-site. Each of the proposed retention basins are a maximum of three feet deep in accordance with City of Coachella requirements. The basins provide sufficient capacity to retain the entire storm volume generated on-site during the 10 year design storm. The runoff volume generated during the 100 year design storm will be contained on-site within the retention basins and within portions of the paved access roads and parking areas with shallow ponding at a maximum depth of 1.5'. The maximum depth of ponding at the point where emergency overflow occurs is 1.0'. For the purpose of calculating the volume of ponding that occurs on-site, maximum average ponding depth is assumed to be 0.5'.

Design storm runoff volume calculations using the RCFCD Synthetic Unit Hydrograph method are included in this section.

RETENTION VOLUME

SUBAREA	BASIN VOLUME (CU.FT.)	PONDING AREA (SQ.FT.)	PONDED VOLUME (0.5' DEEP)	TOTAL VOLUME PROVIDED (CU.FT.)
A	139,026	90,110	45,055	184,081
B	138,198	11,004	5,502	143,700
C	16,706	17,238	8,619	25,325

SUBAREA	10 YEAR VOLUME REQUIRED (CU.FT.)	100 YEAR VOLUME REQUIRED (CU.FT.)	TOTAL VOLUME PROVIDED (CU.FT.)
A	38,514	182,214	184,081
B	9,953	48,487	143,700
C	3,639	16,621	25,325

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA AIRPORT BUSINESS PARK		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA A - 10 YEAR EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	27.87		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING	0.87		
23	RETENTION BASIN	1.98		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	1000		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	250		
30				
31	ELEVATION OF HEADWATER	387		
32	ELEVATION OF CONCENTRATION POINT	382		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	10		
37				
38	POINT RAIN			
39	3-HOUR	0.984		
40	6-HOUR	1.28		
41	24-HOUR	2.07		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		379	42516	
45		380	45027	
46		381	47609	
47		382	50263	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD — PROJECT: COACHELLA AIRPORT BUSINESS PARK
BASIC DATA CALCULATION FORM — TKC JOB # C1443
SHORTCUT METHOD — BY MES BAZUA, PE — DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA A - 10 YEAR EVENT
[3] AREA - ACRES	30.720
[4] L-FEET	1000
[5] L-MILES	0.189
[6] La-FEET	250.00
[7] La-MILES	0.047
[8] ELEVATION OF HEADWATER	387
[9] ELEVATION OF CONCENTRATION POINT	382
[10] H-FEET	5
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.002
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.04
[16] LAG TIME-MINUTES	2.6
[17] 100% OF LAG-MINUTES	2.6
[18] 200% OF LAG-MINUTES	5.2
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.66

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 10
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
0.98	30.720	1.00	0.98	1.28	30.720	1.00	1.28	2.07	30.720	1.00	2.07
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	30.72	SUM [7]	0.98	SUM [9]	30.72	SUM [11]	1.28	SUM [13]	30.72	SUM [15]	2.07
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			0.98				1.28				2.07

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	0.41	0.40	0.27
FLOOD VOLUME	(cu-ft)	45,515	44,163	30,125
	(acre-ft)	1.04	1.01	0.69
REQUIRED STORAGE	(cu-ft)	38,514	33,950	8,264
	(acre-ft)	0.88	0.78	0.19
PEAK FLOW	(cfs)	23.17	19.84	2.98
MAXIMUM WSEL	(ft)	379.88	379.78	379.17

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.70	85%	0.16	27.87	0.907	0.1492
B	PAVING/HARDSCAPE	56	0.70	100%	0.07	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.70	20%	0.57	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.70	40%	0.45	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.70	50%	0.39	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.70	65%	0.29	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.70	80%	0.20	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.70	75%	0.23	0.00	0.000	0.0000
B	LANDSCAPING	56	0.70	0%	0.70	0.87	0.028	0.0198
B	RETENTION BASINS	56	0.70	0%	0.70	1.98	0.064	0.0451
B	GOLF COURSE	56	0.70	0%	0.70	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.20	90%	0.20	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	30.72	SUM	0.2142

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.107090088
C= 0.00198

Ft=C(24-(T/60))^1.55 = 0.00198 (24-(T/60))^1.55 + 0.11 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
10 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: \MES BAZUA, FDATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.58
UNIT TIME-PERCENT OF LAG	193.9
TOTAL ADJUSTED STORM RAIN-INCHES	0.98
CONSTANT LOSS RATE-in/hr	0.21
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.154	0.21	0.14	0.02	0.47	0.00
2	10	0.17	1.3	0.154	0.21	0.14	0.02	0.47	0.00
3	15	0.25	1.1	0.130	0.21	0.12	0.01	0.40	0.00
4	20	0.33	1.5	0.177	0.21	0.16	0.02	0.54	0.00
5	25	0.42	1.5	0.177	0.21	0.16	0.02	0.54	0.00
6	30	0.50	1.8	0.213	0.21	0.19	0.02	0.65	0.00
7	35	0.58	1.5	0.177	0.21	0.16	0.02	0.54	0.00
8	40	0.67	1.8	0.213	0.21	0.19	0.02	0.65	0.00
9	45	0.75	1.8	0.213	0.21	0.19	0.02	0.65	0.00
10	50	0.83	1.5	0.177	0.21	0.16	0.02	0.54	0.00
11	55	0.92	1.6	0.189	0.21	0.17	0.02	0.58	0.00
12	60	1.00	1.8	0.213	0.21	0.19	0.02	0.65	0.00
13	65	1.08	2.2	0.260	0.21	0.23	0.05	1.40	222.39
14	70	1.17	2.2	0.260	0.21	0.23	0.05	1.40	222.39
15	75	1.25	2.2	0.260	0.21	0.23	0.05	1.40	222.39
16	80	1.33	2.0	0.236	0.21	0.21	0.02	0.68	4.75
17	85	1.42	2.6	0.307	0.21	0.28	0.09	2.85	657.68
18	90	1.50	2.7	0.319	0.21	0.29	0.10	3.21	766.51
19	95	1.58	2.4	0.283	0.21	0.26	0.07	2.13	440.04
20	100	1.67	2.7	0.319	0.21	0.29	0.10	3.21	766.51
21	105	1.75	3.3	0.390	0.21	0.35	0.18	5.39	1419.44
22	110	1.83	3.1	0.366	0.21	0.33	0.15	4.67	1201.80
23	115	1.92	2.9	0.342	0.21	0.31	0.13	3.94	984.15
24	120	2.00	3.0	0.354	0.21	0.32	0.14	4.30	1092.97
25	125	2.08	3.1	0.366	0.21	0.33	0.15	4.67	1201.80
26	130	2.17	4.2	0.496	0.21	0.45	0.28	8.66	2398.84
27	135	2.25	5.0	0.590	0.21	0.53	0.38	11.56	3269.42
28	140	2.33	3.5	0.413	0.21	0.37	0.20	6.12	1637.09
29	145	2.42	6.8	0.803	0.21	0.72	0.59	18.09	5228.23
30	150	2.50	7.3	0.862	0.21	0.78	0.65	19.90	5772.34
31	155	2.58	8.2	0.968	0.21	0.87	0.75	23.17	6751.75
32	160	2.67	5.9	0.697	0.21	0.63	0.48	14.82	4248.83
33	165	2.75	2.0	0.236	0.21	0.21	0.02	0.68	4.75
34	170	2.83	1.8	0.213	0.21	0.19	0.02	0.65	0.00
35	175	2.92	1.8	0.213	0.21	0.19	0.02	0.65	0.00
36	180	3.00	0.6	0.071	0.21	0.06	0.01	0.22	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.41
FLOOD VOLUME (acft)	1.04
FLOOD VOLUME (cuft)	45514.84
REQUIRED STORAGE (acft)	0.88
REQUIRED STORAGE (cuft)	38514.07
PEAK FLOW RATE (cfs)	23.17

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 10 YEAR - 6 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72		
UNIT TIME-MINUTES	5		
LAG TIME - MINUTES	2.58		
UNIT TIME-PERCENT OF LAG	193.9		
TOTAL ADJUSTED STORM RAIN-INCHES	1.28		
CONSTANT LOSS RATE-in/hr	0.214		
LOW LOSS RATE - PERCENT	90%	TOTAL PERCOLATION RATE (cfs)	0.66 cfs

Unit Time Period	Time		Pattern	Storm Rain	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	Percent (Plate E-5.9)	in/hr	Max	Low	in/hr	cfs	cf
1	5	0.08	0.5	0.077	0.21	0.07	0.01	0.24	0.00
2	10	0.17	0.6	0.092	0.21	0.08	0.01	0.28	0.00
3	15	0.25	0.6	0.092	0.21	0.08	0.01	0.28	0.00
4	20	0.33	0.6	0.092	0.21	0.08	0.01	0.28	0.00
5	25	0.42	0.6	0.092	0.21	0.08	0.01	0.28	0.00
6	30	0.50	0.7	0.108	0.21	0.10	0.01	0.33	0.00
7	35	0.58	0.7	0.108	0.21	0.10	0.01	0.33	0.00
8	40	0.67	0.7	0.108	0.21	0.10	0.01	0.33	0.00
9	45	0.75	0.7	0.108	0.21	0.10	0.01	0.33	0.00
10	50	0.83	0.7	0.108	0.21	0.10	0.01	0.33	0.00
11	55	0.92	0.7	0.108	0.21	0.10	0.01	0.33	0.00
12	60	1.00	0.8	0.123	0.21	0.11	0.01	0.38	0.00
13	65	1.08	0.8	0.123	0.21	0.11	0.01	0.38	0.00
14	70	1.17	0.8	0.123	0.21	0.11	0.01	0.38	0.00
15	75	1.25	0.8	0.123	0.21	0.11	0.01	0.38	0.00
16	80	1.33	0.8	0.123	0.21	0.11	0.01	0.38	0.00
17	85	1.42	0.8	0.123	0.21	0.11	0.01	0.38	0.00
18	90	1.50	0.8	0.123	0.21	0.11	0.01	0.38	0.00
19	95	1.58	0.8	0.123	0.21	0.11	0.01	0.38	0.00
20	100	1.67	0.8	0.123	0.21	0.11	0.01	0.38	0.00
21	105	1.75	0.8	0.123	0.21	0.11	0.01	0.38	0.00
22	110	1.83	0.8	0.123	0.21	0.11	0.01	0.38	0.00
23	115	1.92	0.8	0.123	0.21	0.11	0.01	0.38	0.00
24	120	2.00	0.9	0.138	0.21	0.12	0.01	0.42	0.00
25	125	2.08	0.8	0.123	0.21	0.11	0.01	0.38	0.00
26	130	2.17	0.9	0.138	0.21	0.12	0.01	0.42	0.00
27	135	2.25	0.9	0.138	0.21	0.12	0.01	0.42	0.00
28	140	2.33	0.9	0.138	0.21	0.12	0.01	0.42	0.00
29	145	2.42	0.9	0.138	0.21	0.12	0.01	0.42	0.00
30	150	2.50	0.9	0.138	0.21	0.12	0.01	0.42	0.00
31	155	2.58	0.9	0.138	0.21	0.12	0.01	0.42	0.00
32	160	2.67	0.9	0.138	0.21	0.12	0.01	0.42	0.00
33	165	2.75	1.0	0.154	0.21	0.14	0.02	0.47	0.00
34	170	2.83	1.0	0.154	0.21	0.14	0.02	0.47	0.00
35	175	2.92	1.0	0.154	0.21	0.14	0.02	0.47	0.00
36	180	3.00	1.0	0.154	0.21	0.14	0.02	0.47	0.00
37	185	3.08	1.0	0.154	0.21	0.14	0.02	0.47	0.00
38	190	3.17	1.1	0.169	0.21	0.15	0.02	0.52	0.00
39	195	3.25	1.1	0.169	0.21	0.15	0.02	0.52	0.00
40	200	3.33	1.1	0.169	0.21	0.15	0.02	0.52	0.00
41	205	3.42	1.2	0.184	0.21	0.17	0.02	0.57	0.00
42	210	3.50	1.3	0.200	0.21	0.18	0.02	0.61	0.00
43	215	3.58	1.4	0.215	0.21	0.19	0.00	0.03	0.00
44	220	3.67	1.4	0.215	0.21	0.19	0.00	0.03	0.00
45	225	3.75	1.5	0.230	0.21	0.21	0.02	0.50	0.00
46	230	3.83	1.5	0.230	0.21	0.21	0.02	0.50	0.00
47	235	3.92	1.6	0.246	0.21	0.22	0.03	0.97	93.22
48	240	4.00	1.6	0.246	0.21	0.22	0.03	0.97	93.22
49	245	4.08	1.7	0.261	0.21	0.24	0.05	1.44	234.78
50	250	4.17	1.8	0.276	0.21	0.25	0.06	1.91	376.34
51	255	4.25	1.9	0.292	0.21	0.26	0.08	2.39	517.90
52	260	4.33	2.0	0.307	0.21	0.28	0.09	2.86	659.45
53	265	4.42	2.1	0.323	0.21	0.29	0.11	3.33	801.01
54	270	4.50	2.1	0.323	0.21	0.29	0.11	3.33	801.01
55	275	4.58	2.2	0.338	0.21	0.30	0.12	3.80	942.57
56	280	4.67	2.3	0.353	0.21	0.32	0.14	4.27	1084.13

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 10 YEAR - 6 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72		
UNIT TIME-MINUTES	5		
LAG TIME - MINUTES	2.58		
UNIT TIME-PERCENT OF LAG	193.9		
TOTAL ADJUSTED STORM RAIN-INCHES	1.28		
CONSTANT LOSS RATE-in/hr	0.214		
LOW LOSS RATE - PERCENT	90%	TOTAL PERCOLATION RATE (cfs)	0.66 cfs

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
57	285	4.75	2.4	0.369	0.21	0.33	0.15	4.75	1225.68
58	290	4.83	2.4	0.369	0.21	0.33	0.15	4.75	1225.68
59	295	4.92	2.5	0.384	0.21	0.35	0.17	5.22	1367.24
60	300	5.00	2.6	0.399	0.21	0.36	0.19	5.69	1508.80
61	305	5.08	3.1	0.476	0.21	0.43	0.26	8.05	2216.59
62	310	5.17	3.6	0.553	0.21	0.50	0.34	10.41	2924.38
63	315	5.25	3.9	0.599	0.21	0.54	0.38	11.82	3349.05
64	320	5.33	4.2	0.645	0.21	0.58	0.43	13.24	3773.72
65	325	5.42	4.7	0.722	0.21	0.65	0.51	15.60	4481.51
66	330	5.50	5.6	0.860	0.21	0.77	0.65	19.84	5755.53
67	335	5.58	1.9	0.292	0.21	0.26	0.08	2.39	517.90
68	340	5.67	0.9	0.138	0.21	0.12	0.01	0.42	0.00
69	345	5.75	0.6	0.092	0.21	0.08	0.01	0.28	0.00
70	350	5.83	0.5	0.077	0.21	0.07	0.01	0.24	0.00
71	355	5.92	0.3	0.046	0.21	0.04	0.00	0.14	0.00
72	360	6.00	0.2	0.031	0.21	0.03	0.00	0.09	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.40
FLOOD VOLUME (acft)	1.01
FLOOD VOLUME (cuft)	44163.05
REQUIRED STORAGE (acft)	0.78
REQUIRED STORAGE (cuft)	33949.72
PEAK FLOW RATE (cfs)	19.84

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
10 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.720	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.2142
LAG TIME - MINUTES	2.58	MINIMUM LOSS RATE (for var. loss) - in/hr	0.107
UNIT TIME-PERCENT OF LAG	581.8	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00198
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	15	0.25	0.2	0.017	0.378	0.015	0.002	0.05	0.00
2	30	0.50	0.3	0.025	0.374	0.022	0.002	0.08	0.00
3	45	0.75	0.3	0.025	0.369	0.022	0.002	0.08	0.00
4	60	1.00	0.4	0.033	0.365	0.030	0.003	0.10	0.00
5	75	1.25	0.3	0.025	0.361	0.022	0.002	0.08	0.00
6	90	1.50	0.3	0.025	0.357	0.022	0.002	0.08	0.00
7	105	1.75	0.3	0.025	0.352	0.022	0.002	0.08	0.00
8	120	2.00	0.4	0.033	0.348	0.030	0.003	0.10	0.00
9	135	2.25	0.4	0.033	0.344	0.030	0.003	0.10	0.00
10	150	2.50	0.4	0.033	0.340	0.030	0.003	0.10	0.00
11	165	2.75	0.5	0.041	0.335	0.037	0.004	0.13	0.00
12	180	3.00	0.5	0.041	0.331	0.037	0.004	0.13	0.00
13	195	3.25	0.5	0.041	0.327	0.037	0.004	0.13	0.00
14	210	3.50	0.5	0.041	0.323	0.037	0.004	0.13	0.00
15	225	3.75	0.5	0.041	0.319	0.037	0.004	0.13	0.00
16	240	4.00	0.6	0.050	0.315	0.045	0.005	0.15	0.00
17	255	4.25	0.6	0.050	0.311	0.045	0.005	0.15	0.00
18	270	4.50	0.7	0.058	0.307	0.052	0.006	0.18	0.00
19	285	4.75	0.7	0.058	0.303	0.052	0.006	0.18	0.00
20	300	5.00	0.8	0.066	0.299	0.060	0.007	0.20	0.00
21	315	5.25	0.6	0.050	0.295	0.045	0.005	0.15	0.00
22	330	5.50	0.7	0.058	0.292	0.052	0.006	0.18	0.00
23	345	5.75	0.8	0.066	0.288	0.060	0.007	0.20	0.00
24	360	6.00	0.8	0.066	0.284	0.060	0.007	0.20	0.00
25	375	6.25	0.9	0.075	0.280	0.067	0.007	0.23	0.00
26	390	6.50	0.9	0.075	0.276	0.067	0.007	0.23	0.00
27	405	6.75	1.0	0.083	0.273	0.075	0.008	0.25	0.00
28	420	7.00	1.0	0.083	0.269	0.075	0.008	0.25	0.00
29	435	7.25	1.0	0.083	0.265	0.075	0.008	0.25	0.00
30	450	7.50	1.1	0.091	0.262	0.082	0.009	0.28	0.00
31	465	7.75	1.2	0.099	0.258	0.089	0.010	0.31	0.00
32	480	8.00	1.3	0.108	0.255	0.097	0.011	0.33	0.00
33	495	8.25	1.5	0.124	0.251	0.112	0.012	0.38	0.00
34	510	8.50	1.5	0.124	0.248	0.112	0.012	0.38	0.00
35	525	8.75	1.6	0.132	0.244	0.119	0.013	0.41	0.00
36	540	9.00	1.7	0.141	0.241	0.127	0.014	0.43	0.00
37	555	9.25	1.9	0.157	0.237	0.142	0.016	0.48	0.00
38	570	9.50	2.0	0.166	0.234	0.149	0.017	0.51	0.00
39	585	9.75	2.1	0.174	0.231	0.156	0.017	0.53	0.00
40	600	10.00	2.2	0.182	0.227	0.164	0.018	0.56	0.00
41	615	10.25	1.5	0.124	0.224	0.112	0.012	0.38	0.00
42	630	10.50	1.5	0.124	0.221	0.112	0.012	0.38	0.00
43	645	10.75	2.0	0.166	0.218	0.149	0.017	0.51	0.00
44	660	11.00	2.0	0.166	0.214	0.149	0.017	0.51	0.00
45	675	11.25	1.9	0.157	0.211	0.142	0.016	0.48	0.00
46	690	11.50	1.9	0.157	0.208	0.142	0.016	0.48	0.00
47	705	11.75	1.7	0.141	0.205	0.127	0.014	0.43	0.00
48	720	12.00	1.8	0.149	0.202	0.134	0.015	0.46	0.00
49	735	12.25	2.5	0.207	0.199	0.186	0.008	0.25	0.00
50	750	12.50	2.6	0.215	0.196	0.194	0.019	0.59	0.00
51	765	12.75	2.8	0.232	0.193	0.209	0.039	1.19	480.19
52	780	13.00	2.9	0.240	0.190	0.216	0.050	1.54	789.55
53	795	13.25	3.4	0.282	0.187	0.253	0.094	2.90	2013.62
54	810	13.50	3.4	0.282	0.184	0.253	0.097	2.98	2092.06
55	825	13.75	2.3	0.190	0.182	0.171	0.009	0.27	0.00
56	840	14.00	2.3	0.190	0.179	0.171	0.012	0.36	0.00
57	855	14.25	2.7	0.224	0.176	0.201	0.047	1.46	718.82
58	870	14.50	2.6	0.215	0.173	0.194	0.042	1.29	564.24
59	885	14.75	2.6	0.215	0.171	0.194	0.045	1.37	637.53
60	900	15.00	2.5	0.207	0.168	0.186	0.039	1.19	480.83
61	915	15.25	2.4	0.199	0.166	0.179	0.033	1.02	323.04

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 10 YEAR - 24 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.720	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.2142
LAG TIME - MINUTES	2.58	MINIMUM LOSS RATE (for var. loss) - in/hr	0.107
UNIT TIME-PERCENT OF LAG	581.8	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00198
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
62	930	15.50	2.3	0.190	0.163	0.171	0.027	0.84	164.16
63	945	15.75	1.9	0.157	0.161	0.142	0.016	0.48	0.00
64	960	16.00	1.9	0.157	0.158	0.142	0.016	0.48	0.00
65	975	16.25	0.4	0.033	0.156	0.030	0.003	0.10	0.00
66	990	16.50	0.4	0.033	0.153	0.030	0.003	0.10	0.00
67	1005	16.75	0.3	0.025	0.151	0.022	0.002	0.08	0.00
68	1020	17.00	0.3	0.025	0.149	0.022	0.002	0.08	0.00
69	1035	17.25	0.5	0.041	0.146	0.037	0.004	0.13	0.00
70	1050	17.50	0.5	0.041	0.144	0.037	0.004	0.13	0.00
71	1065	17.75	0.5	0.041	0.142	0.037	0.004	0.13	0.00
72	1080	18.00	0.4	0.033	0.140	0.030	0.003	0.10	0.00
73	1095	18.25	0.4	0.033	0.138	0.030	0.003	0.10	0.00
74	1110	18.50	0.4	0.033	0.136	0.030	0.003	0.10	0.00
75	1125	18.75	0.3	0.025	0.134	0.022	0.002	0.08	0.00
76	1140	19.00	0.2	0.017	0.132	0.015	0.002	0.05	0.00
77	1155	19.25	0.3	0.025	0.130	0.022	0.002	0.08	0.00
78	1170	19.50	0.4	0.033	0.128	0.030	0.003	0.10	0.00
79	1185	19.75	0.3	0.025	0.127	0.022	0.002	0.08	0.00
80	1200	20.00	0.2	0.017	0.125	0.015	0.002	0.05	0.00
81	1215	20.25	0.3	0.025	0.123	0.022	0.002	0.08	0.00
82	1230	20.50	0.3	0.025	0.122	0.022	0.002	0.08	0.00
83	1245	20.75	0.3	0.025	0.120	0.022	0.002	0.08	0.00
84	1260	21.00	0.2	0.017	0.119	0.015	0.002	0.05	0.00
85	1275	21.25	0.3	0.025	0.117	0.022	0.002	0.08	0.00
86	1290	21.50	0.2	0.017	0.116	0.015	0.002	0.05	0.00
87	1305	21.75	0.3	0.025	0.115	0.022	0.002	0.08	0.00
88	1320	22.00	0.2	0.017	0.113	0.015	0.002	0.05	0.00
89	1335	22.25	0.3	0.025	0.112	0.022	0.002	0.08	0.00
90	1350	22.50	0.2	0.017	0.111	0.015	0.002	0.05	0.00
91	1365	22.75	0.2	0.017	0.110	0.015	0.002	0.05	0.00
92	1380	23.00	0.2	0.017	0.109	0.015	0.002	0.05	0.00
93	1395	23.25	0.2	0.017	0.109	0.015	0.002	0.05	0.00
94	1410	23.50	0.2	0.017	0.108	0.015	0.002	0.05	0.00
95	1425	23.75	0.2	0.017	0.108	0.015	0.002	0.05	0.00
96	1440	24.00	0.2	0.017	0.107	0.015	0.002	0.05	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.27
FLOOD VOLUME (acft)	0.69
FLOOD VOLUME (cuft)	30124.72
REQUIRED STORAGE (acft)	0.19
REQUIRED STORAGE (cuft)	8264.06
PEAK FLOW (cfs)	2.98

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
1

BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
379	0	0		42516	0	0	0.00
380	1	1	2511	45027	43772	43772	1.00
381	1	2	2582	47609	46318	90090	2.07
382	1	3	2654	50263	48936	139026	3.19

PERCOLATION CALCULATIONS
PERCOLATION RATE 0.67 in/hr 0.66 cfs

MAXWELL IV DRYWELLS
NUMBER USED 0
RATE/DRYWELL 0 cfs
TOTAL DISSIPATED 0 cfs

TOTAL PERCOLATION RATE 0.66 cfs

1

TKC JOB # C1443

10 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.47	141	141	198	-	379.00	-	0.00
2	10	0.47	141	141	198	-	379.00	-	0.00
3	15	0.40	120	120	198	-	379.00	-	0.00
4	20	0.54	163	163	198	-	379.00	-	0.00
5	25	0.54	163	163	198	-	379.00	-	0.00
6	30	0.65	196	196	198	-	379.00	-	0.00
7	35	0.54	163	163	198	-	379.00	-	0.00
8	40	0.65	196	196	198	-	379.00	-	0.00
9	45	0.65	196	196	198	-	379.00	-	0.00
10	50	0.54	163	163	198	-	379.00	-	0.00
11	55	0.58	174	174	198	-	379.00	-	0.00
12	60	0.65	196	196	198	-	379.00	-	0.00
13	65	1.40	420	420	198	222	379.01	222	0.01
14	70	1.40	420	643	198	445	379.01	445	0.01
15	75	1.40	420	865	198	667	379.02	667	0.02
16	80	0.68	203	870	198	672	379.02	672	0.02
17	85	2.85	856	1,527	198	1,330	379.03	1,330	0.03
18	90	3.21	964	2,294	198	2,096	379.05	2,096	0.05
19	95	2.13	638	2,734	198	2,536	379.06	2,536	0.06
20	100	3.21	964	3,500	198	3,303	379.08	3,303	0.08
21	105	5.39	1,617	4,920	198	4,722	379.11	4,722	0.11
22	110	4.67	1,400	6,122	198	5,924	379.14	5,924	0.14
23	115	3.94	1,182	7,106	198	6,908	379.16	6,908	0.16
24	120	4.30	1,291	8,199	198	8,001	379.18	8,001	0.18
25	125	4.67	1,400	9,401	198	9,203	379.21	9,203	0.21
26	130	8.66	2,597	11,799	198	11,602	379.27	11,602	0.27
27	135	11.56	3,467	15,069	198	14,871	379.34	14,871	0.34
28	140	6.12	1,835	16,706	198	16,508	379.38	16,508	0.38
29	145	18.09	5,426	21,934	198	21,736	379.50	21,736	0.50
30	150	19.90	5,970	27,707	198	27,509	379.63	27,509	0.63
31	155	23.17	6,950	34,458	198	34,260	379.78	34,260	0.79
32	160	14.82	4,447	38,707	198	38,509	379.88	38,509	0.88
33	165	0.68	203	38,712	198	38,514	379.88	38,514	0.88
34	170	0.65	196	38,710	198	38,512	379.88	38,512	0.88
35	175	0.65	196	38,708	198	38,510	379.88	38,510	0.88
36	180	0.22	65	38,575	198	38,378	379.88	38,378	0.88

1

TKC JOB # C1443

10 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.24	71	71	198	-	379.00	-	0.00
2	10	0.28	85	85	198	-	379.00	-	0.00
3	15	0.28	85	85	198	-	379.00	-	0.00
4	20	0.28	85	85	198	-	379.00	-	0.00
5	25	0.28	85	85	198	-	379.00	-	0.00
6	30	0.33	99	99	198	-	379.00	-	0.00
7	35	0.33	99	99	198	-	379.00	-	0.00
8	40	0.33	99	99	198	-	379.00	-	0.00
9	45	0.33	99	99	198	-	379.00	-	0.00
10	50	0.33	99	99	198	-	379.00	-	0.00
11	55	0.33	99	99	198	-	379.00	-	0.00
12	60	0.38	113	113	198	-	379.00	-	0.00
13	65	0.38	113	113	198	-	379.00	-	0.00
14	70	0.38	113	113	198	-	379.00	-	0.00
15	75	0.38	113	113	198	-	379.00	-	0.00
16	80	0.38	113	113	198	-	379.00	-	0.00
17	85	0.38	113	113	198	-	379.00	-	0.00
18	90	0.38	113	113	198	-	379.00	-	0.00
19	95	0.38	113	113	198	-	379.00	-	0.00
20	100	0.38	113	113	198	-	379.00	-	0.00
21	105	0.38	113	113	198	-	379.00	-	0.00
22	110	0.38	113	113	198	-	379.00	-	0.00
23	115	0.38	113	113	198	-	379.00	-	0.00
24	120	0.42	127	127	198	-	379.00	-	0.00
25	125	0.38	113	113	198	-	379.00	-	0.00
26	130	0.42	127	127	198	-	379.00	-	0.00
27	135	0.42	127	127	198	-	379.00	-	0.00
28	140	0.42	127	127	198	-	379.00	-	0.00
29	145	0.42	127	127	198	-	379.00	-	0.00
30	150	0.42	127	127	198	-	379.00	-	0.00
31	155	0.42	127	127	198	-	379.00	-	0.00
32	160	0.42	127	127	198	-	379.00	-	0.00
33	165	0.47	142	142	198	-	379.00	-	0.00
34	170	0.47	142	142	198	-	379.00	-	0.00
35	175	0.47	142	142	198	-	379.00	-	0.00
36	180	0.47	142	142	198	-	379.00	-	0.00
37	185	0.47	142	142	198	-	379.00	-	0.00
38	190	0.52	156	156	198	-	379.00	-	0.00
39	195	0.52	156	156	198	-	379.00	-	0.00
40	200	0.52	156	156	198	-	379.00	-	0.00
41	205	0.57	170	170	198	-	379.00	-	0.00
42	210	0.61	184	184	198	-	379.00	-	0.00
43	215	0.03	8	8	198	-	379.00	-	0.00
44	220	0.03	8	8	198	-	379.00	-	0.00
45	225	0.50	149	149	198	-	379.00	-	0.00
46	230	0.50	149	149	198	-	379.00	-	0.00
47	235	0.97	291	291	198	93	379.00	93	0.00
48	240	0.97	291	384	198	186	379.00	186	0.00
49	245	1.44	433	619	198	421	379.01	421	0.01
50	250	1.91	574	995	198	798	379.02	798	0.02
51	255	2.39	716	1,513	198	1,315	379.03	1,315	0.03
52	260	2.86	857	2,173	198	1,975	379.05	1,975	0.05
53	265	3.33	999	2,974	198	2,776	379.06	2,776	0.06
54	270	3.33	999	3,775	198	3,577	379.08	3,577	0.08
55	275	3.80	1,140	4,717	198	4,520	379.10	4,520	0.10

1

TKC JOB # C1443

10 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	4.27	1,282	5,801	198	5,604	379.13	5,604	0.13
57	285	4.75	1,424	7,027	198	6,829	379.16	6,829	0.16
58	290	4.75	1,424	8,253	198	8,055	379.18	8,055	0.18
59	295	5.22	1,565	9,620	198	9,422	379.22	9,422	0.22
60	300	5.69	1,707	11,129	198	10,931	379.25	10,931	0.25
61	305	8.05	2,414	13,345	198	13,148	379.30	13,148	0.30
62	310	10.41	3,122	16,270	198	16,072	379.37	16,072	0.37
63	315	11.82	3,547	19,619	198	19,421	379.44	19,421	0.45
64	320	13.24	3,972	23,393	198	23,195	379.53	23,195	0.53
65	325	15.60	4,679	27,874	198	27,676	379.63	27,676	0.64
66	330	19.84	5,953	33,630	198	33,432	379.76	33,432	0.77
67	335	2.39	716	34,148	198	33,950	379.78	33,950	0.78
68	340	0.42	127	34,077	198	33,879	379.77	33,879	0.78
69	345	0.28	85	33,964	198	33,766	379.77	33,766	0.78
70	350	0.24	71	33,837	198	33,639	379.77	33,639	0.77
71	355	0.14	42	33,682	198	33,484	379.76	33,484	0.77
72	360	0.09	28	33,512	198	33,315	379.76	33,315	0.76

1

TKC JOB # C1443

10 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.05	46	46	593	-	379.00	-	0.00
2	30	0.08	69	69	593	-	379.00	-	0.00
3	45	0.08	69	69	593	-	379.00	-	0.00
4	60	0.10	92	92	593	-	379.00	-	0.00
5	75	0.08	69	69	593	-	379.00	-	0.00
6	90	0.08	69	69	593	-	379.00	-	0.00
7	105	0.08	69	69	593	-	379.00	-	0.00
8	120	0.10	92	92	593	-	379.00	-	0.00
9	135	0.10	92	92	593	-	379.00	-	0.00
10	150	0.10	92	92	593	-	379.00	-	0.00
11	165	0.13	114	114	593	-	379.00	-	0.00
12	180	0.13	114	114	593	-	379.00	-	0.00
13	195	0.13	114	114	593	-	379.00	-	0.00
14	210	0.13	114	114	593	-	379.00	-	0.00
15	225	0.13	114	114	593	-	379.00	-	0.00
16	240	0.15	137	137	593	-	379.00	-	0.00
17	255	0.15	137	137	593	-	379.00	-	0.00
18	270	0.18	160	160	593	-	379.00	-	0.00
19	285	0.18	160	160	593	-	379.00	-	0.00
20	300	0.20	183	183	593	-	379.00	-	0.00
21	315	0.15	137	137	593	-	379.00	-	0.00
22	330	0.18	160	160	593	-	379.00	-	0.00
23	345	0.20	183	183	593	-	379.00	-	0.00
24	360	0.20	183	183	593	-	379.00	-	0.00
25	375	0.23	206	206	593	-	379.00	-	0.00
26	390	0.23	206	206	593	-	379.00	-	0.00
27	405	0.25	229	229	593	-	379.00	-	0.00
28	420	0.25	229	229	593	-	379.00	-	0.00
29	435	0.25	229	229	593	-	379.00	-	0.00
30	450	0.28	252	252	593	-	379.00	-	0.00
31	465	0.31	275	275	593	-	379.00	-	0.00
32	480	0.33	298	298	593	-	379.00	-	0.00
33	495	0.38	343	343	593	-	379.00	-	0.00
34	510	0.38	343	343	593	-	379.00	-	0.00
35	525	0.41	366	366	593	-	379.00	-	0.00
36	540	0.43	389	389	593	-	379.00	-	0.00
37	555	0.48	435	435	593	-	379.00	-	0.00
38	570	0.51	458	458	593	-	379.00	-	0.00
39	585	0.53	481	481	593	-	379.00	-	0.00
40	600	0.56	504	504	593	-	379.00	-	0.00
41	615	0.38	343	343	593	-	379.00	-	0.00
42	630	0.38	343	343	593	-	379.00	-	0.00
43	645	0.51	458	458	593	-	379.00	-	0.00
44	660	0.51	458	458	593	-	379.00	-	0.00
45	675	0.48	435	435	593	-	379.00	-	0.00
46	690	0.48	435	435	593	-	379.00	-	0.00
47	705	0.43	389	389	593	-	379.00	-	0.00
48	720	0.46	412	412	593	-	379.00	-	0.00
49	735	0.25	223	223	593	-	379.00	-	0.00
50	750	0.59	534	534	593	-	379.00	-	0.00
51	765	1.19	1,074	1,074	593	480	379.01	480	0.01
52	780	1.54	1,383	1,863	593	1,270	379.03	1,270	0.03
53	795	2.90	2,607	3,877	593	3,283	379.08	3,283	0.08
54	810	2.98	2,686	5,969	593	5,375	379.12	5,375	0.12
55	825	0.27	245	5,620	593	5,027	379.11	5,027	0.12
56	840	0.36	321	5,348	593	4,754	379.11	4,754	0.11
57	855	1.46	1,312	6,067	593	5,473	379.13	5,473	0.13
58	870	1.29	1,158	6,631	593	6,038	379.14	6,038	0.14

1

TKC JOB # C1443

10 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	1.37	1,231	7,269	593	6,675	379.15	6,675	0.15
60	900	1.19	1,074	7,749	593	7,156	379.16	7,156	0.16
61	915	1.02	916	8,072	593	7,479	379.17	7,479	0.17
62	930	0.84	758	8,237	593	7,643	379.17	7,643	0.18
63	945	0.48	435	8,078	593	7,485	379.17	7,485	0.17
64	960	0.48	435	7,920	593	7,326	379.17	7,326	0.17
65	975	0.10	92	7,418	593	6,824	379.16	6,824	0.16
66	990	0.10	92	6,916	593	6,322	379.14	6,322	0.15
67	1005	0.08	69	6,391	593	5,798	379.13	5,798	0.13
68	1020	0.08	69	5,866	593	5,273	379.12	5,273	0.12
69	1035	0.13	114	5,387	593	4,794	379.11	4,794	0.11
70	1050	0.13	114	4,908	593	4,315	379.10	4,315	0.10
71	1065	0.13	114	4,429	593	3,836	379.09	3,836	0.09
72	1080	0.10	92	3,927	593	3,334	379.08	3,334	0.08
73	1095	0.10	92	3,426	593	2,832	379.06	2,832	0.07
74	1110	0.10	92	2,924	593	2,330	379.05	2,330	0.05
75	1125	0.08	69	2,399	593	1,805	379.04	1,805	0.04
76	1140	0.05	46	1,851	593	1,258	379.03	1,258	0.03
77	1155	0.08	69	1,326	593	733	379.02	733	0.02
78	1170	0.10	92	825	593	231	379.01	231	0.01
79	1185	0.08	69	300	593	-	379.00	-	0.00
80	1200	0.05	46	46	593	-	379.00	-	0.00
81	1215	0.08	69	69	593	-	379.00	-	0.00
82	1230	0.08	69	69	593	-	379.00	-	0.00
83	1245	0.08	69	69	593	-	379.00	-	0.00
84	1260	0.05	46	46	593	-	379.00	-	0.00
85	1275	0.08	69	69	593	-	379.00	-	0.00
86	1290	0.05	46	46	593	-	379.00	-	0.00
87	1305	0.08	69	69	593	-	379.00	-	0.00
88	1320	0.05	46	46	593	-	379.00	-	0.00
89	1335	0.08	69	69	593	-	379.00	-	0.00
90	1350	0.05	46	46	593	-	379.00	-	0.00
91	1365	0.05	46	46	593	-	379.00	-	0.00
92	1380	0.05	46	46	593	-	379.00	-	0.00
93	1395	0.05	46	46	593	-	379.00	-	0.00
94	1410	0.05	46	46	593	-	379.00	-	0.00
95	1425	0.05	46	46	593	-	379.00	-	0.00
96	1440	0.05	46	46	593	-	379.00	-	0.00

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA BUSINESS PARK - INTERIM BASIN		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA B - 10 YEAR STORM EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	8.18		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING			
23	RETENTION BASIN	1		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	1000		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	285		
30				
31	ELEVATION OF HEADWATER	387		
32	ELEVATION OF CONCENTRATION POINT	382		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	100		
37				
38	POINT RAIN			
39	3-HOUR	0.984		
40	6-HOUR	1.28		
41	24-HOUR	2.07		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		382	42380	
45		383	44806	
46		384	47288	
47		385	49827	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
BASIC DATA CALCULATION FORM
SHORTCUT METHOD

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
TKC JOB # C1443
BY MES BAZUA, PE DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA B - 10 YEAR STORM EVENT
[3] AREA - ACRES	9.180
[4] L-FEET	1000
[5] L-MILES	0.189
[6] La-FEET	285.00
[7] La-MILES	0.054
[8] ELEVATION OF HEADWATER	387
[9] ELEVATION OF CONCENTRATION POINT	382
[10] H-FEET	5
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.002
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.05
[16] LAG TIME-MINUTES	2.7
[17] 100% OF LAG-MINUTES	2.7
[18] 200% OF LAG-MINUTES	5.4
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.66

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 100
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
0.98	9.180	1.00	0.98	1.28	9.180	1.00	1.28	2.07	9.180	1.00	2.07
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	9.18	SUM [7]	0.98	SUM [9]	9.18	SUM [11]	1.28	SUM [13]	9.18	SUM [15]	2.07
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			0.98				1.28				2.07

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	0.44	0.44	0.33
FLOOD VOLUME	(cu-ft)	14,675	14,503	10,856
	(acre-ft)	0.34	0.33	0.25
REQUIRED STORAGE	(cu-ft)	9,953	8,496	677
	(acre-ft)	0.23	0.20	0.02
PEAK FLOW	(cfs)	7.10	6.11	1.05
MAXIMUM WSEL	(ft)	382.23	382.19	382.02

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA BUSINESS PARK - INTERIM BASIN
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.70	90%	0.13	8.18	0.891	0.1185
B	PAVING/HARDSCAPE	56	0.70	100%	0.07	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.70	20%	0.57	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.70	40%	0.45	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.70	50%	0.39	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.70	65%	0.29	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.70	80%	0.20	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.70	75%	0.23	0.00	0.000	0.0000
B	LANDSCAPING	56	0.70	0%	0.70	0.00	0.000	0.0000
B	RETENTION BASINS	32	0.70	0%	0.70	1.00	0.109	0.0763
B	GOLF COURSE	56	0.70	0%	0.70	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.20	90%	0.04	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	9.18	SUM	0.1948

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.097382353
C= 0.00180

Ft=C(24-(T/60))^1.55 = 0.00180 (24-(T/60))^1.55 + 0.10 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
CONCENTRATION POINT: 1

BY: \MES BAZUA, F DATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	0.98
CONSTANT LOSS RATE-in/hr	0.19
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.154	0.19	0.14	0.02	0.14	0.00
2	10	0.17	1.3	0.154	0.19	0.14	0.02	0.14	0.00
3	15	0.25	1.1	0.130	0.19	0.12	0.01	0.12	0.00
4	20	0.33	1.5	0.177	0.19	0.16	0.02	0.16	0.00
5	25	0.42	1.5	0.177	0.19	0.16	0.02	0.16	0.00
6	30	0.50	1.8	0.213	0.19	0.19	0.02	0.16	0.00
7	35	0.58	1.5	0.177	0.19	0.16	0.02	0.16	0.00
8	40	0.67	1.8	0.213	0.19	0.19	0.02	0.16	0.00
9	45	0.75	1.8	0.213	0.19	0.19	0.02	0.16	0.00
10	50	0.83	1.5	0.177	0.19	0.16	0.02	0.16	0.00
11	55	0.92	1.6	0.189	0.19	0.17	0.02	0.17	0.00
12	60	1.00	1.8	0.213	0.19	0.19	0.02	0.16	0.00
13	65	1.08	2.2	0.260	0.19	0.23	0.07	0.60	0.00
14	70	1.17	2.2	0.260	0.19	0.23	0.07	0.60	0.00
15	75	1.25	2.2	0.260	0.19	0.23	0.07	0.60	0.00
16	80	1.33	2.0	0.236	0.19	0.21	0.04	0.38	0.00
17	85	1.42	2.6	0.307	0.19	0.28	0.11	1.03	111.93
18	90	1.50	2.7	0.319	0.19	0.29	0.12	1.14	144.45
19	95	1.58	2.4	0.283	0.19	0.26	0.09	0.81	46.89
20	100	1.67	2.7	0.319	0.19	0.29	0.12	1.14	144.45
21	105	1.75	3.3	0.390	0.19	0.35	0.19	1.79	339.57
22	110	1.83	3.1	0.366	0.19	0.33	0.17	1.57	274.53
23	115	1.92	2.9	0.342	0.19	0.31	0.15	1.36	209.49
24	120	2.00	3.0	0.354	0.19	0.32	0.16	1.46	242.01
25	125	2.08	3.1	0.366	0.19	0.33	0.17	1.57	274.53
26	130	2.17	4.2	0.496	0.19	0.45	0.30	2.76	632.24
27	135	2.25	5.0	0.590	0.19	0.53	0.40	3.63	892.39
28	140	2.33	3.5	0.413	0.19	0.37	0.22	2.01	404.61
29	145	2.42	6.8	0.803	0.19	0.72	0.61	5.58	1477.74
30	150	2.50	7.3	0.862	0.19	0.78	0.67	6.13	1640.34
31	155	2.58	8.2	0.968	0.19	0.87	0.77	7.10	1933.01
32	160	2.67	5.9	0.697	0.19	0.63	0.50	4.61	1185.07
33	165	2.75	2.0	0.236	0.19	0.21	0.04	0.38	0.00
34	170	2.83	1.8	0.213	0.19	0.19	0.02	0.16	0.00
35	175	2.92	1.8	0.213	0.19	0.19	0.02	0.16	0.00
36	180	3.00	0.6	0.071	0.19	0.06	0.01	0.07	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.44
FLOOD VOLUME (acft)	0.34
FLOOD VOLUME (cuft)	14675.45
REQUIRED STORAGE (acft)	0.23
REQUIRED STORAGE (cuft)	9953.26
PEAK FLOW RATE (cfs)	7.10

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	1.28
CONSTANT LOSS RATE-in/hr	0.195
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	0.5	0.077	0.19	0.07	0.01	0.07	0.00
2	10	0.17	0.6	0.092	0.19	0.08	0.01	0.08	0.00
3	15	0.25	0.6	0.092	0.19	0.08	0.01	0.08	0.00
4	20	0.33	0.6	0.092	0.19	0.08	0.01	0.08	0.00
5	25	0.42	0.6	0.092	0.19	0.08	0.01	0.08	0.00
6	30	0.50	0.7	0.108	0.19	0.10	0.01	0.10	0.00
7	35	0.58	0.7	0.108	0.19	0.10	0.01	0.10	0.00
8	40	0.67	0.7	0.108	0.19	0.10	0.01	0.10	0.00
9	45	0.75	0.7	0.108	0.19	0.10	0.01	0.10	0.00
10	50	0.83	0.7	0.108	0.19	0.10	0.01	0.10	0.00
11	55	0.92	0.7	0.108	0.19	0.10	0.01	0.10	0.00
12	60	1.00	0.8	0.123	0.19	0.11	0.01	0.11	0.00
13	65	1.08	0.8	0.123	0.19	0.11	0.01	0.11	0.00
14	70	1.17	0.8	0.123	0.19	0.11	0.01	0.11	0.00
15	75	1.25	0.8	0.123	0.19	0.11	0.01	0.11	0.00
16	80	1.33	0.8	0.123	0.19	0.11	0.01	0.11	0.00
17	85	1.42	0.8	0.123	0.19	0.11	0.01	0.11	0.00
18	90	1.50	0.8	0.123	0.19	0.11	0.01	0.11	0.00
19	95	1.58	0.8	0.123	0.19	0.11	0.01	0.11	0.00
20	100	1.67	0.8	0.123	0.19	0.11	0.01	0.11	0.00
21	105	1.75	0.8	0.123	0.19	0.11	0.01	0.11	0.00
22	110	1.83	0.8	0.123	0.19	0.11	0.01	0.11	0.00
23	115	1.92	0.8	0.123	0.19	0.11	0.01	0.11	0.00
24	120	2.00	0.9	0.138	0.19	0.12	0.01	0.13	0.00
25	125	2.08	0.8	0.123	0.19	0.11	0.01	0.11	0.00
26	130	2.17	0.9	0.138	0.19	0.12	0.01	0.13	0.00
27	135	2.25	0.9	0.138	0.19	0.12	0.01	0.13	0.00
28	140	2.33	0.9	0.138	0.19	0.12	0.01	0.13	0.00
29	145	2.42	0.9	0.138	0.19	0.12	0.01	0.13	0.00
30	150	2.50	0.9	0.138	0.19	0.12	0.01	0.13	0.00
31	155	2.58	0.9	0.138	0.19	0.12	0.01	0.13	0.00
32	160	2.67	0.9	0.138	0.19	0.12	0.01	0.13	0.00
33	165	2.75	1.0	0.154	0.19	0.14	0.02	0.14	0.00
34	170	2.83	1.0	0.154	0.19	0.14	0.02	0.14	0.00
35	175	2.92	1.0	0.154	0.19	0.14	0.02	0.14	0.00
36	180	3.00	1.0	0.154	0.19	0.14	0.02	0.14	0.00
37	185	3.08	1.0	0.154	0.19	0.14	0.02	0.14	0.00
38	190	3.17	1.1	0.169	0.19	0.15	0.02	0.16	0.00
39	195	3.25	1.1	0.169	0.19	0.15	0.02	0.16	0.00
40	200	3.33	1.1	0.169	0.19	0.15	0.02	0.16	0.00
41	205	3.42	1.2	0.184	0.19	0.17	0.02	0.17	0.00
42	210	3.50	1.3	0.200	0.19	0.18	0.00	0.05	0.00
43	215	3.58	1.4	0.215	0.19	0.19	0.02	0.19	0.00
44	220	3.67	1.4	0.215	0.19	0.19	0.02	0.19	0.00
45	225	3.75	1.5	0.230	0.19	0.21	0.04	0.33	0.00
46	230	3.83	1.5	0.230	0.19	0.21	0.04	0.33	0.00
47	235	3.92	1.6	0.246	0.19	0.22	0.05	0.47	0.00
48	240	4.00	1.6	0.246	0.19	0.22	0.05	0.47	0.00
49	245	4.08	1.7	0.261	0.19	0.24	0.07	0.61	0.00
50	250	4.17	1.8	0.276	0.19	0.25	0.08	0.75	27.86
51	255	4.25	1.9	0.292	0.19	0.26	0.10	0.89	70.16
52	260	4.33	2.0	0.307	0.19	0.28	0.11	1.03	112.46
53	265	4.42	2.1	0.323	0.19	0.29	0.13	1.17	154.76
54	270	4.50	2.1	0.323	0.19	0.29	0.13	1.17	154.76
55	275	4.58	2.2	0.338	0.19	0.30	0.14	1.31	197.06
56	280	4.67	2.3	0.353	0.19	0.32	0.16	1.46	239.37

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	1.28
CONSTANT LOSS RATE-in/hr	0.195
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
57	285	4.75	2.4	0.369	0.19	0.33	0.17	1.60	281.67
58	290	4.83	2.4	0.369	0.19	0.33	0.17	1.60	281.67
59	295	4.92	2.5	0.384	0.19	0.35	0.19	1.74	323.97
60	300	5.00	2.6	0.399	0.19	0.36	0.20	1.88	366.27
61	305	5.08	3.1	0.476	0.19	0.43	0.28	2.58	577.78
62	310	5.17	3.6	0.553	0.19	0.50	0.36	3.29	789.29
63	315	5.25	3.9	0.599	0.19	0.54	0.40	3.71	916.19
64	320	5.33	4.2	0.645	0.19	0.58	0.45	4.13	1043.09
65	325	5.42	4.7	0.722	0.19	0.65	0.53	4.84	1254.60
66	330	5.50	5.6	0.860	0.19	0.77	0.67	6.11	1635.31
67	335	5.58	1.9	0.292	0.19	0.26	0.10	0.89	70.16
68	340	5.67	0.9	0.138	0.19	0.12	0.01	0.13	0.00
69	345	5.75	0.6	0.092	0.19	0.08	0.01	0.08	0.00
70	350	5.83	0.5	0.077	0.19	0.07	0.01	0.07	0.00
71	355	5.92	0.3	0.046	0.19	0.04	0.00	0.04	0.00
72	360	6.00	0.2	0.031	0.19	0.03	0.00	0.03	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.44
FLOOD VOLUME (acft)	0.33
FLOOD VOLUME (cuft)	14503.26
REQUIRED STORAGE (acft)	0.20
REQUIRED STORAGE (cuft)	8496.44
PEAK FLOW RATE (cfs)	6.11

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.180	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1948
LAG TIME - MINUTES	2.71	MINIMUM LOSS RATE (for var. loss) - in/hr	0.097
UNIT TIME-PERCENT OF LAG	553.6	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00180
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
1	15	0.25	0.2	0.017	0.344	0.015	0.002	0.02	0.00
2	30	0.50	0.3	0.025	0.340	0.022	0.002	0.02	0.00
3	45	0.75	0.3	0.025	0.336	0.022	0.002	0.02	0.00
4	60	1.00	0.4	0.033	0.332	0.030	0.003	0.03	0.00
5	75	1.25	0.3	0.025	0.328	0.022	0.002	0.02	0.00
6	90	1.50	0.3	0.025	0.324	0.022	0.002	0.02	0.00
7	105	1.75	0.3	0.025	0.320	0.022	0.002	0.02	0.00
8	120	2.00	0.4	0.033	0.316	0.030	0.003	0.03	0.00
9	135	2.25	0.4	0.033	0.313	0.030	0.003	0.03	0.00
10	150	2.50	0.4	0.033	0.309	0.030	0.003	0.03	0.00
11	165	2.75	0.5	0.041	0.305	0.037	0.004	0.04	0.00
12	180	3.00	0.5	0.041	0.301	0.037	0.004	0.04	0.00
13	195	3.25	0.5	0.041	0.298	0.037	0.004	0.04	0.00
14	210	3.50	0.5	0.041	0.294	0.037	0.004	0.04	0.00
15	225	3.75	0.5	0.041	0.290	0.037	0.004	0.04	0.00
16	240	4.00	0.6	0.050	0.287	0.045	0.005	0.05	0.00
17	255	4.25	0.6	0.050	0.283	0.045	0.005	0.05	0.00
18	270	4.50	0.7	0.058	0.279	0.052	0.006	0.05	0.00
19	285	4.75	0.7	0.058	0.276	0.052	0.006	0.05	0.00
20	300	5.00	0.8	0.066	0.272	0.060	0.007	0.06	0.00
21	315	5.25	0.6	0.050	0.269	0.045	0.005	0.05	0.00
22	330	5.50	0.7	0.058	0.265	0.052	0.006	0.05	0.00
23	345	5.75	0.8	0.066	0.262	0.060	0.007	0.06	0.00
24	360	6.00	0.8	0.066	0.258	0.060	0.007	0.06	0.00
25	375	6.25	0.9	0.075	0.255	0.067	0.007	0.07	0.00
26	390	6.50	0.9	0.075	0.251	0.067	0.007	0.07	0.00
27	405	6.75	1.0	0.083	0.248	0.075	0.008	0.08	0.00
28	420	7.00	1.0	0.083	0.245	0.075	0.008	0.08	0.00
29	435	7.25	1.0	0.083	0.241	0.075	0.008	0.08	0.00
30	450	7.50	1.1	0.091	0.238	0.082	0.009	0.08	0.00
31	465	7.75	1.2	0.099	0.235	0.089	0.010	0.09	0.00
32	480	8.00	1.3	0.108	0.232	0.097	0.011	0.10	0.00
33	495	8.25	1.5	0.124	0.228	0.112	0.012	0.11	0.00
34	510	8.50	1.5	0.124	0.225	0.112	0.012	0.11	0.00
35	525	8.75	1.6	0.132	0.222	0.119	0.013	0.12	0.00
36	540	9.00	1.7	0.141	0.219	0.127	0.014	0.13	0.00
37	555	9.25	1.9	0.157	0.216	0.142	0.016	0.14	0.00
38	570	9.50	2.0	0.166	0.213	0.149	0.017	0.15	0.00
39	585	9.75	2.1	0.174	0.210	0.156	0.017	0.16	0.00
40	600	10.00	2.2	0.182	0.207	0.164	0.018	0.17	0.00
41	615	10.25	1.5	0.124	0.204	0.112	0.012	0.11	0.00
42	630	10.50	1.5	0.124	0.201	0.112	0.012	0.11	0.00
43	645	10.75	2.0	0.166	0.198	0.149	0.017	0.15	0.00
44	660	11.00	2.0	0.166	0.195	0.149	0.017	0.15	0.00
45	675	11.25	1.9	0.157	0.192	0.142	0.016	0.14	0.00
46	690	11.50	1.9	0.157	0.189	0.142	0.016	0.14	0.00
47	705	11.75	1.7	0.141	0.186	0.127	0.014	0.13	0.00
48	720	12.00	1.8	0.149	0.184	0.134	0.015	0.14	0.00
49	735	12.25	2.5	0.207	0.181	0.186	0.026	0.24	0.00
50	750	12.50	2.6	0.215	0.178	0.194	0.037	0.34	0.00
51	765	12.75	2.8	0.232	0.176	0.209	0.056	0.52	0.00
52	780	13.00	2.9	0.240	0.173	0.216	0.067	0.62	0.00
53	795	13.25	3.4	0.282	0.170	0.253	0.111	1.02	327.73
54	810	13.50	3.4	0.282	0.168	0.253	0.114	1.05	349.05
55	825	13.75	2.3	0.190	0.165	0.171	0.025	0.23	0.00
56	840	14.00	2.3	0.190	0.163	0.171	0.028	0.26	0.00
57	855	14.25	2.7	0.224	0.160	0.201	0.063	0.58	0.00
58	870	14.50	2.6	0.215	0.158	0.194	0.058	0.53	0.00
59	885	14.75	2.6	0.215	0.155	0.194	0.060	0.55	0.00
60	900	15.00	2.5	0.207	0.153	0.186	0.054	0.50	0.00
61	915	15.25	2.4	0.199	0.151	0.179	0.048	0.44	0.00

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.180	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1948
LAG TIME - MINUTES	2.71	MINIMUM LOSS RATE (for var. loss) - in/hr	0.097
UNIT TIME-PERCENT OF LAG	553.6	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00180
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
62	930	15.50	2.3	0.190	0.148	0.171	0.042	0.39	0.00
63	945	15.75	1.9	0.157	0.146	0.142	0.011	0.10	0.00
64	960	16.00	1.9	0.157	0.144	0.142	0.014	0.12	0.00
65	975	16.25	0.4	0.033	0.142	0.030	0.003	0.03	0.00
66	990	16.50	0.4	0.033	0.139	0.030	0.003	0.03	0.00
67	1005	16.75	0.3	0.025	0.137	0.022	0.002	0.02	0.00
68	1020	17.00	0.3	0.025	0.135	0.022	0.002	0.02	0.00
69	1035	17.25	0.5	0.041	0.133	0.037	0.004	0.04	0.00
70	1050	17.50	0.5	0.041	0.131	0.037	0.004	0.04	0.00
71	1065	17.75	0.5	0.041	0.129	0.037	0.004	0.04	0.00
72	1080	18.00	0.4	0.033	0.127	0.030	0.003	0.03	0.00
73	1095	18.25	0.4	0.033	0.125	0.030	0.003	0.03	0.00
74	1110	18.50	0.4	0.033	0.124	0.030	0.003	0.03	0.00
75	1125	18.75	0.3	0.025	0.122	0.022	0.002	0.02	0.00
76	1140	19.00	0.2	0.017	0.120	0.015	0.002	0.02	0.00
77	1155	19.25	0.3	0.025	0.118	0.022	0.002	0.02	0.00
78	1170	19.50	0.4	0.033	0.117	0.030	0.003	0.03	0.00
79	1185	19.75	0.3	0.025	0.115	0.022	0.002	0.02	0.00
80	1200	20.00	0.2	0.017	0.114	0.015	0.002	0.02	0.00
81	1215	20.25	0.3	0.025	0.112	0.022	0.002	0.02	0.00
82	1230	20.50	0.3	0.025	0.111	0.022	0.002	0.02	0.00
83	1245	20.75	0.3	0.025	0.109	0.022	0.002	0.02	0.00
84	1260	21.00	0.2	0.017	0.108	0.015	0.002	0.02	0.00
85	1275	21.25	0.3	0.025	0.107	0.022	0.002	0.02	0.00
86	1290	21.50	0.2	0.017	0.105	0.015	0.002	0.02	0.00
87	1305	21.75	0.3	0.025	0.104	0.022	0.002	0.02	0.00
88	1320	22.00	0.2	0.017	0.103	0.015	0.002	0.02	0.00
89	1335	22.25	0.3	0.025	0.102	0.022	0.002	0.02	0.00
90	1350	22.50	0.2	0.017	0.101	0.015	0.002	0.02	0.00
91	1365	22.75	0.2	0.017	0.100	0.015	0.002	0.02	0.00
92	1380	23.00	0.2	0.017	0.100	0.015	0.002	0.02	0.00
93	1395	23.25	0.2	0.017	0.099	0.015	0.002	0.02	0.00
94	1410	23.50	0.2	0.017	0.098	0.015	0.002	0.02	0.00
95	1425	23.75	0.2	0.017	0.098	0.015	0.002	0.02	0.00
96	1440	24.00	0.2	0.017	0.097	0.015	0.002	0.02	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.33
FLOOD VOLUME (acft)	0.25
FLOOD VOLUME (cuft)	10855.73
REQUIRED STORAGE (acft)	0.02
REQUIRED STORAGE (cuft)	676.79
PEAK FLOW (cfs)	1.05

SIN

SIN

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
TKC JOB # C1443
1

BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
382	0	0		42380	0	0	0.00
383	1	1	2426	44806	43593	43593	1.00
384	1	2	2482	47288	46047	89640	2.06
385	1	3	2539	49827	48558	138198	3.17

PERCOLATION CALCULATIONS

PERCOLATION RATE	0.67 in/hr	0.66 cfs

MAXWELL IV DRYWELLS

NUMBER USED	0	
RATE/DRYWELL	0 cfs	
TOTAL DISSIPATED		0 cfs

TOTAL PERCOLATION RATE 0.66 cfs

1

TKC JOB # C1443

100 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.14	42	42	197	-	382.00	-	0.00
2	10	0.14	42	42	197	-	382.00	-	0.00
3	15	0.12	36	36	197	-	382.00	-	0.00
4	20	0.16	49	49	197	-	382.00	-	0.00
5	25	0.16	49	49	197	-	382.00	-	0.00
6	30	0.16	49	49	197	-	382.00	-	0.00
7	35	0.16	49	49	197	-	382.00	-	0.00
8	40	0.16	49	49	197	-	382.00	-	0.00
9	45	0.16	49	49	197	-	382.00	-	0.00
10	50	0.16	49	49	197	-	382.00	-	0.00
11	55	0.17	52	52	197	-	382.00	-	0.00
12	60	0.16	49	49	197	-	382.00	-	0.00
13	65	0.60	179	179	197	-	382.00	-	0.00
14	70	0.60	179	179	197	-	382.00	-	0.00
15	75	0.60	179	179	197	-	382.00	-	0.00
16	80	0.38	114	114	197	-	382.00	-	0.00
17	85	1.03	309	309	197	112	382.00	112	0.00
18	90	1.14	342	454	197	256	382.01	256	0.01
19	95	0.81	244	500	197	303	382.01	303	0.01
20	100	1.14	342	645	197	448	382.01	448	0.01
21	105	1.79	537	984	197	787	382.02	787	0.02
22	110	1.57	472	1,259	197	1,062	382.02	1,062	0.02
23	115	1.36	407	1,469	197	1,271	382.03	1,271	0.03
24	120	1.46	439	1,711	197	1,513	382.03	1,513	0.03
25	125	1.57	472	1,985	197	1,788	382.04	1,788	0.04
26	130	2.76	829	2,617	197	2,420	382.06	2,420	0.06
27	135	3.63	1,090	3,510	197	3,312	382.08	3,312	0.08
28	140	2.01	602	3,914	197	3,717	382.09	3,717	0.09
29	145	5.58	1,675	5,392	197	5,195	382.12	5,195	0.12
30	150	6.13	1,838	7,032	197	6,835	382.16	6,835	0.16
31	155	7.10	2,130	8,965	197	8,768	382.20	8,768	0.20
32	160	4.61	1,382	10,150	197	9,953	382.23	9,953	0.23
33	165	0.38	114	10,067	197	9,870	382.23	9,870	0.23
34	170	0.16	49	9,919	197	9,722	382.22	9,722	0.22
35	175	0.16	49	9,771	197	9,574	382.22	9,574	0.22
36	180	0.07	20	9,593	197	9,396	382.22	9,396	0.22

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.07	21	21	197	-	382.00	-	0.00
2	10	0.08	25	25	197	-	382.00	-	0.00
3	15	0.08	25	25	197	-	382.00	-	0.00
4	20	0.08	25	25	197	-	382.00	-	0.00
5	25	0.08	25	25	197	-	382.00	-	0.00
6	30	0.10	30	30	197	-	382.00	-	0.00
7	35	0.10	30	30	197	-	382.00	-	0.00
8	40	0.10	30	30	197	-	382.00	-	0.00
9	45	0.10	30	30	197	-	382.00	-	0.00
10	50	0.10	30	30	197	-	382.00	-	0.00
11	55	0.10	30	30	197	-	382.00	-	0.00
12	60	0.11	34	34	197	-	382.00	-	0.00
13	65	0.11	34	34	197	-	382.00	-	0.00
14	70	0.11	34	34	197	-	382.00	-	0.00
15	75	0.11	34	34	197	-	382.00	-	0.00
16	80	0.11	34	34	197	-	382.00	-	0.00
17	85	0.11	34	34	197	-	382.00	-	0.00
18	90	0.11	34	34	197	-	382.00	-	0.00
19	95	0.11	34	34	197	-	382.00	-	0.00
20	100	0.11	34	34	197	-	382.00	-	0.00
21	105	0.11	34	34	197	-	382.00	-	0.00
22	110	0.11	34	34	197	-	382.00	-	0.00
23	115	0.11	34	34	197	-	382.00	-	0.00
24	120	0.13	38	38	197	-	382.00	-	0.00
25	125	0.11	34	34	197	-	382.00	-	0.00
26	130	0.13	38	38	197	-	382.00	-	0.00
27	135	0.13	38	38	197	-	382.00	-	0.00
28	140	0.13	38	38	197	-	382.00	-	0.00
29	145	0.13	38	38	197	-	382.00	-	0.00
30	150	0.13	38	38	197	-	382.00	-	0.00
31	155	0.13	38	38	197	-	382.00	-	0.00
32	160	0.13	38	38	197	-	382.00	-	0.00
33	165	0.14	42	42	197	-	382.00	-	0.00
34	170	0.14	42	42	197	-	382.00	-	0.00
35	175	0.14	42	42	197	-	382.00	-	0.00
36	180	0.14	42	42	197	-	382.00	-	0.00
37	185	0.14	42	42	197	-	382.00	-	0.00
38	190	0.16	47	47	197	-	382.00	-	0.00
39	195	0.16	47	47	197	-	382.00	-	0.00
40	200	0.16	47	47	197	-	382.00	-	0.00
41	205	0.17	51	51	197	-	382.00	-	0.00
42	210	0.05	14	14	197	-	382.00	-	0.00
43	215	0.19	56	56	197	-	382.00	-	0.00
44	220	0.19	56	56	197	-	382.00	-	0.00
45	225	0.33	98	98	197	-	382.00	-	0.00
46	230	0.33	98	98	197	-	382.00	-	0.00
47	235	0.47	140	140	197	-	382.00	-	0.00
48	240	0.47	140	140	197	-	382.00	-	0.00
49	245	0.61	183	183	197	-	382.00	-	0.00
50	250	0.75	225	225	197	28	382.00	28	0.00
51	255	0.89	267	295	197	98	382.00	98	0.00
52	260	1.03	310	408	197	210	382.00	210	0.00
53	265	1.17	352	562	197	365	382.01	365	0.01
54	270	1.17	352	717	197	520	382.01	520	0.01
55	275	1.31	394	914	197	717	382.02	717	0.02

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	1.46	437	1,154	197	956	382.02	956	0.02
57	285	1.60	479	1,435	197	1,238	382.03	1,238	0.03
58	290	1.60	479	1,717	197	1,520	382.03	1,520	0.03
59	295	1.74	521	2,041	197	1,844	382.04	1,844	0.04
60	300	1.88	563	2,407	197	2,210	382.05	2,210	0.05
61	305	2.58	775	2,985	197	2,788	382.06	2,788	0.06
62	310	3.29	986	3,774	197	3,577	382.08	3,577	0.08
63	315	3.71	1,113	4,690	197	4,493	382.10	4,493	0.10
64	320	4.13	1,240	5,734	197	5,536	382.13	5,536	0.13
65	325	4.84	1,452	6,988	197	6,791	382.16	6,791	0.16
66	330	6.11	1,832	8,623	197	8,426	382.19	8,426	0.19
67	335	0.89	267	8,694	197	8,496	382.19	8,496	0.20
68	340	0.13	38	8,535	197	8,337	382.19	8,337	0.19
69	345	0.08	25	8,363	197	8,166	382.19	8,166	0.19
70	350	0.07	21	8,187	197	7,989	382.18	7,989	0.18
71	355	0.04	13	8,002	197	7,805	382.18	7,805	0.18
72	360	0.03	8	7,813	197	7,616	382.17	7,616	0.17

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.02	14	14	592	-	382.00	-	0.00
2	30	0.02	21	21	592	-	382.00	-	0.00
3	45	0.02	21	21	592	-	382.00	-	0.00
4	60	0.03	27	27	592	-	382.00	-	0.00
5	75	0.02	21	21	592	-	382.00	-	0.00
6	90	0.02	21	21	592	-	382.00	-	0.00
7	105	0.02	21	21	592	-	382.00	-	0.00
8	120	0.03	27	27	592	-	382.00	-	0.00
9	135	0.03	27	27	592	-	382.00	-	0.00
10	150	0.03	27	27	592	-	382.00	-	0.00
11	165	0.04	34	34	592	-	382.00	-	0.00
12	180	0.04	34	34	592	-	382.00	-	0.00
13	195	0.04	34	34	592	-	382.00	-	0.00
14	210	0.04	34	34	592	-	382.00	-	0.00
15	225	0.04	34	34	592	-	382.00	-	0.00
16	240	0.05	41	41	592	-	382.00	-	0.00
17	255	0.05	41	41	592	-	382.00	-	0.00
18	270	0.05	48	48	592	-	382.00	-	0.00
19	285	0.05	48	48	592	-	382.00	-	0.00
20	300	0.06	55	55	592	-	382.00	-	0.00
21	315	0.05	41	41	592	-	382.00	-	0.00
22	330	0.05	48	48	592	-	382.00	-	0.00
23	345	0.06	55	55	592	-	382.00	-	0.00
24	360	0.06	55	55	592	-	382.00	-	0.00
25	375	0.07	62	62	592	-	382.00	-	0.00
26	390	0.07	62	62	592	-	382.00	-	0.00
27	405	0.08	68	68	592	-	382.00	-	0.00
28	420	0.08	68	68	592	-	382.00	-	0.00
29	435	0.08	68	68	592	-	382.00	-	0.00
30	450	0.08	75	75	592	-	382.00	-	0.00
31	465	0.09	82	82	592	-	382.00	-	0.00
32	480	0.10	89	89	592	-	382.00	-	0.00
33	495	0.11	103	103	592	-	382.00	-	0.00
34	510	0.11	103	103	592	-	382.00	-	0.00
35	525	0.12	109	109	592	-	382.00	-	0.00
36	540	0.13	116	116	592	-	382.00	-	0.00
37	555	0.14	130	130	592	-	382.00	-	0.00
38	570	0.15	137	137	592	-	382.00	-	0.00
39	585	0.16	144	144	592	-	382.00	-	0.00
40	600	0.17	151	151	592	-	382.00	-	0.00
41	615	0.11	103	103	592	-	382.00	-	0.00
42	630	0.11	103	103	592	-	382.00	-	0.00
43	645	0.15	137	137	592	-	382.00	-	0.00
44	660	0.15	137	137	592	-	382.00	-	0.00
45	675	0.14	130	130	592	-	382.00	-	0.00
46	690	0.14	130	130	592	-	382.00	-	0.00
47	705	0.13	116	116	592	-	382.00	-	0.00
48	720	0.14	123	123	592	-	382.00	-	0.00
49	735	0.24	216	216	592	-	382.00	-	0.00
50	750	0.34	306	306	592	-	382.00	-	0.00
51	765	0.52	465	465	592	-	382.00	-	0.00
52	780	0.62	556	556	592	-	382.00	-	0.00
53	795	1.02	919	919	592	328	382.01	328	0.01
54	810	1.05	941	1,268	592	677	382.02	677	0.02
55	825	0.23	209	886	592	294	382.01	294	0.01
56	840	0.26	230	524	592	-	382.00	-	0.00
57	855	0.58	524	524	592	-	382.00	-	0.00
58	870	0.53	476	476	592	-	382.00	-	0.00

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	0.55	496	496	592	-	382.00	-	0.00
60	900	0.50	447	447	592	-	382.00	-	0.00
61	915	0.44	398	398	592	-	382.00	-	0.00
62	930	0.39	349	349	592	-	382.00	-	0.00
63	945	0.10	94	94	592	-	382.00	-	0.00
64	960	0.12	112	112	592	-	382.00	-	0.00
65	975	0.03	27	27	592	-	382.00	-	0.00
66	990	0.03	27	27	592	-	382.00	-	0.00
67	1005	0.02	21	21	592	-	382.00	-	0.00
68	1020	0.02	21	21	592	-	382.00	-	0.00
69	1035	0.04	34	34	592	-	382.00	-	0.00
70	1050	0.04	34	34	592	-	382.00	-	0.00
71	1065	0.04	34	34	592	-	382.00	-	0.00
72	1080	0.03	27	27	592	-	382.00	-	0.00
73	1095	0.03	27	27	592	-	382.00	-	0.00
74	1110	0.03	27	27	592	-	382.00	-	0.00
75	1125	0.02	21	21	592	-	382.00	-	0.00
76	1140	0.02	14	14	592	-	382.00	-	0.00
77	1155	0.02	21	21	592	-	382.00	-	0.00
78	1170	0.03	27	27	592	-	382.00	-	0.00
79	1185	0.02	21	21	592	-	382.00	-	0.00
80	1200	0.02	14	14	592	-	382.00	-	0.00
81	1215	0.02	21	21	592	-	382.00	-	0.00
82	1230	0.02	21	21	592	-	382.00	-	0.00
83	1245	0.02	21	21	592	-	382.00	-	0.00
84	1260	0.02	14	14	592	-	382.00	-	0.00
85	1275	0.02	21	21	592	-	382.00	-	0.00
86	1290	0.02	14	14	592	-	382.00	-	0.00
87	1305	0.02	21	21	592	-	382.00	-	0.00
88	1320	0.02	14	14	592	-	382.00	-	0.00
89	1335	0.02	21	21	592	-	382.00	-	0.00
90	1350	0.02	14	14	592	-	382.00	-	0.00
91	1365	0.02	14	14	592	-	382.00	-	0.00
92	1380	0.02	14	14	592	-	382.00	-	0.00
93	1395	0.02	14	14	592	-	382.00	-	0.00
94	1410	0.02	14	14	592	-	382.00	-	0.00
95	1425	0.02	14	14	592	-	382.00	-	0.00
96	1440	0.02	14	14	592	-	382.00	-	0.00

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA AIRPORT BUSINESS PARK		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA C - 10 YEAR EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	2.32		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING	0.1		
23	RETENTION BASIN	0.21		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	400		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	30		
30				
31	ELEVATION OF HEADWATER	386		
32	ELEVATION OF CONCENTRATION POINT	384		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	100		
37				
38	POINT RAIN			
39	3-HOUR	0.984		
40	6-HOUR	1.28		
41	24-HOUR	2.07		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		381	2664	
45		382	4561	
46		383	6529	
47		384	8568	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
BASIC DATA CALCULATION FORM
SHORTCUT METHOD

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
BY MES BAZUA, PE DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA C - 10 YEAR EVENT
[3] AREA - ACRES	2.630
[4] L-FEET	400
[5] L-MILES	0.076
[6] La-FEET	30.00
[7] La-MILES	0.006
[8] ELEVATION OF HEADWATER	386
[9] ELEVATION OF CONCENTRATION POINT	384
[10] H-FEET	2
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.000
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.01
[16] LAG TIME-MINUTES	0.8
[17] 100% OF LAG-MINUTES	0.8
[18] 200% OF LAG-MINUTES	1.6
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.04

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 100
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
0.98	2.630	1.00	0.98	1.28	2.630	1.00	1.28	2.07	2.630	1.00	2.07
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	2.63	SUM [7]	0.98	SUM [9]	2.63	SUM [11]	1.28	SUM [13]	2.63	SUM [15]	2.07
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			0.98				1.28				2.07

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	0.43	0.43	0.31
FLOOD VOLUME	(cu-ft)	4,096	4,066	2,949
	(acre-ft)	0.09	0.09	0.07
REQUIRED STORAGE	(cu-ft)	3,639	3,271	1,225
	(acre-ft)	0.08	0.08	0.03
PEAK FLOW	(cfs)	2.02	1.74	0.29
MAXIMUM WSEL	(ft)	382.00	381.91	381.33

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.70	90%	0.13	2.32	0.882	0.1173
B	PAVING/HARDSCAPE	56	0.70	100%	0.07	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.70	20%	0.57	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.70	40%	0.45	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.70	50%	0.39	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.70	65%	0.29	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.70	80%	0.20	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.70	75%	0.23	0.00	0.000	0.0000
B	LANDSCAPING	56	0.70	0%	0.70	0.10	0.038	0.0266
B	RETENTION BASINS	56	0.70	0%	0.70	0.21	0.080	0.0559
B	GOLF COURSE	56	0.70	0%	0.70	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.20	90%	0.04	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	2.63	SUM	0.1998

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.09991635
C= 0.00185

Ft=C(24-(T/60))^1.55 = 0.00185 (24-(T/60))^1.55 + 0.10 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: \MES BAZUA, FDATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	0.81
UNIT TIME-PERCENT OF LAG	614.9
TOTAL ADJUSTED STORM RAIN-INCHES	0.98
CONSTANT LOSS RATE-in/hr	0.20
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.04 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.154	0.20	0.14	0.02	0.04	0.00
2	10	0.17	1.3	0.154	0.20	0.14	0.02	0.04	0.00
3	15	0.25	1.1	0.130	0.20	0.12	0.01	0.03	0.00
4	20	0.33	1.5	0.177	0.20	0.16	0.02	0.05	1.58
5	25	0.42	1.5	0.177	0.20	0.16	0.02	0.05	1.58
6	30	0.50	1.8	0.213	0.20	0.19	0.01	0.03	0.00
7	35	0.58	1.5	0.177	0.20	0.16	0.02	0.05	1.58
8	40	0.67	1.8	0.213	0.20	0.19	0.01	0.03	0.00
9	45	0.75	1.8	0.213	0.20	0.19	0.01	0.03	0.00
10	50	0.83	1.5	0.177	0.20	0.16	0.02	0.05	1.58
11	55	0.92	1.6	0.189	0.20	0.17	0.02	0.05	2.51
12	60	1.00	1.8	0.213	0.20	0.19	0.01	0.03	0.00
13	65	1.08	2.2	0.260	0.20	0.23	0.06	0.16	34.90
14	70	1.17	2.2	0.260	0.20	0.23	0.06	0.16	34.90
15	75	1.25	2.2	0.260	0.20	0.23	0.06	0.16	34.90
16	80	1.33	2.0	0.236	0.20	0.21	0.04	0.10	16.27
17	85	1.42	2.6	0.307	0.20	0.28	0.11	0.28	72.17
18	90	1.50	2.7	0.319	0.20	0.29	0.12	0.31	81.48
19	95	1.58	2.4	0.283	0.20	0.26	0.08	0.22	53.53
20	100	1.67	2.7	0.319	0.20	0.29	0.12	0.31	81.48
21	105	1.75	3.3	0.390	0.20	0.35	0.19	0.50	137.38
22	110	1.83	3.1	0.366	0.20	0.33	0.17	0.44	118.75
23	115	1.92	2.9	0.342	0.20	0.31	0.14	0.38	100.12
24	120	2.00	3.0	0.354	0.20	0.32	0.15	0.41	109.43
25	125	2.08	3.1	0.366	0.20	0.33	0.17	0.44	118.75
26	130	2.17	4.2	0.496	0.20	0.45	0.30	0.78	221.23
27	135	2.25	5.0	0.590	0.20	0.53	0.39	1.03	295.76
28	140	2.33	3.5	0.413	0.20	0.37	0.21	0.56	156.01
29	145	2.42	6.8	0.803	0.20	0.72	0.60	1.59	463.46
30	150	2.50	7.3	0.862	0.20	0.78	0.66	1.74	510.04
31	155	2.58	8.2	0.968	0.20	0.87	0.77	2.02	593.89
32	160	2.67	5.9	0.697	0.20	0.63	0.50	1.31	379.61
33	165	2.75	2.0	0.236	0.20	0.21	0.04	0.10	16.27
34	170	2.83	1.8	0.213	0.20	0.19	0.01	0.03	0.00
35	175	2.92	1.8	0.213	0.20	0.19	0.01	0.03	0.00
36	180	3.00	0.6	0.071	0.20	0.06	0.01	0.02	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.43
FLOOD VOLUME (acft)	0.09
FLOOD VOLUME (cuft)	4095.54
REQUIRED STORAGE (acft)	0.08
REQUIRED STORAGE (cuft)	3639.17
PEAK FLOW RATE (cfs)	2.02

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	0.81
UNIT TIME-PERCENT OF LAG	614.9
TOTAL ADJUSTED STORM RAIN-INCHES	1.28
CONSTANT LOSS RATE-in/hr	0.200
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.04 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	0.5	0.077	0.20	0.07	0.01	0.02	0.00
2	10	0.17	0.6	0.092	0.20	0.08	0.01	0.02	0.00
3	15	0.25	0.6	0.092	0.20	0.08	0.01	0.02	0.00
4	20	0.33	0.6	0.092	0.20	0.08	0.01	0.02	0.00
5	25	0.42	0.6	0.092	0.20	0.08	0.01	0.02	0.00
6	30	0.50	0.7	0.108	0.20	0.10	0.01	0.03	0.00
7	35	0.58	0.7	0.108	0.20	0.10	0.01	0.03	0.00
8	40	0.67	0.7	0.108	0.20	0.10	0.01	0.03	0.00
9	45	0.75	0.7	0.108	0.20	0.10	0.01	0.03	0.00
10	50	0.83	0.7	0.108	0.20	0.10	0.01	0.03	0.00
11	55	0.92	0.7	0.108	0.20	0.10	0.01	0.03	0.00
12	60	1.00	0.8	0.123	0.20	0.11	0.01	0.03	0.00
13	65	1.08	0.8	0.123	0.20	0.11	0.01	0.03	0.00
14	70	1.17	0.8	0.123	0.20	0.11	0.01	0.03	0.00
15	75	1.25	0.8	0.123	0.20	0.11	0.01	0.03	0.00
16	80	1.33	0.8	0.123	0.20	0.11	0.01	0.03	0.00
17	85	1.42	0.8	0.123	0.20	0.11	0.01	0.03	0.00
18	90	1.50	0.8	0.123	0.20	0.11	0.01	0.03	0.00
19	95	1.58	0.8	0.123	0.20	0.11	0.01	0.03	0.00
20	100	1.67	0.8	0.123	0.20	0.11	0.01	0.03	0.00
21	105	1.75	0.8	0.123	0.20	0.11	0.01	0.03	0.00
22	110	1.83	0.8	0.123	0.20	0.11	0.01	0.03	0.00
23	115	1.92	0.8	0.123	0.20	0.11	0.01	0.03	0.00
24	120	2.00	0.9	0.138	0.20	0.12	0.01	0.04	0.00
25	125	2.08	0.8	0.123	0.20	0.11	0.01	0.03	0.00
26	130	2.17	0.9	0.138	0.20	0.12	0.01	0.04	0.00
27	135	2.25	0.9	0.138	0.20	0.12	0.01	0.04	0.00
28	140	2.33	0.9	0.138	0.20	0.12	0.01	0.04	0.00
29	145	2.42	0.9	0.138	0.20	0.12	0.01	0.04	0.00
30	150	2.50	0.9	0.138	0.20	0.12	0.01	0.04	0.00
31	155	2.58	0.9	0.138	0.20	0.12	0.01	0.04	0.00
32	160	2.67	0.9	0.138	0.20	0.12	0.01	0.04	0.00
33	165	2.75	1.0	0.154	0.20	0.14	0.02	0.04	0.00
34	170	2.83	1.0	0.154	0.20	0.14	0.02	0.04	0.00
35	175	2.92	1.0	0.154	0.20	0.14	0.02	0.04	0.00
36	180	3.00	1.0	0.154	0.20	0.14	0.02	0.04	0.00
37	185	3.08	1.0	0.154	0.20	0.14	0.02	0.04	0.00
38	190	3.17	1.1	0.169	0.20	0.15	0.02	0.04	0.94
39	195	3.25	1.1	0.169	0.20	0.15	0.02	0.04	0.94
40	200	3.33	1.1	0.169	0.20	0.15	0.02	0.04	0.94
41	205	3.42	1.2	0.184	0.20	0.17	0.02	0.05	2.15
42	210	3.50	1.3	0.200	0.20	0.18	0.02	0.05	3.36
43	215	3.58	1.4	0.215	0.20	0.19	0.02	0.04	0.00
44	220	3.67	1.4	0.215	0.20	0.19	0.02	0.04	0.00
45	225	3.75	1.5	0.230	0.20	0.21	0.03	0.08	11.72
46	230	3.83	1.5	0.230	0.20	0.21	0.03	0.08	11.72
47	235	3.92	1.6	0.246	0.20	0.22	0.05	0.12	23.84
48	240	4.00	1.6	0.246	0.20	0.22	0.05	0.12	23.84
49	245	4.08	1.7	0.261	0.20	0.24	0.06	0.16	35.96
50	250	4.17	1.8	0.276	0.20	0.25	0.08	0.20	48.08
51	255	4.25	1.9	0.292	0.20	0.26	0.09	0.24	60.20
52	260	4.33	2.0	0.307	0.20	0.28	0.11	0.28	72.32
53	265	4.42	2.1	0.323	0.20	0.29	0.12	0.32	84.44
54	270	4.50	2.1	0.323	0.20	0.29	0.12	0.32	84.44
55	275	4.58	2.2	0.338	0.20	0.30	0.14	0.36	96.56
56	280	4.67	2.3	0.353	0.20	0.32	0.15	0.40	108.67

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 100 YEAR - 6 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63		
UNIT TIME-MINUTES	5		
LAG TIME - MINUTES	0.81		
UNIT TIME-PERCENT OF LAG	614.9		
TOTAL ADJUSTED STORM RAIN-INCHES	1.28		
CONSTANT LOSS RATE-in/hr	0.200		
LOW LOSS RATE - PERCENT	90%	TOTAL PERCOLATION RATE (cfs)	0.04 cfs

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
57	285	4.75	2.4	0.369	0.20	0.33	0.17	0.44	120.79
58	290	4.83	2.4	0.369	0.20	0.33	0.17	0.44	120.79
59	295	4.92	2.5	0.384	0.20	0.35	0.18	0.48	132.91
60	300	5.00	2.6	0.399	0.20	0.36	0.20	0.52	145.03
61	305	5.08	3.1	0.476	0.20	0.43	0.28	0.73	205.63
62	310	5.17	3.6	0.553	0.20	0.50	0.35	0.93	266.22
63	315	5.25	3.9	0.599	0.20	0.54	0.40	1.05	302.58
64	320	5.33	4.2	0.645	0.20	0.58	0.45	1.17	338.94
65	325	5.42	4.7	0.722	0.20	0.65	0.52	1.37	399.53
66	330	5.50	5.6	0.860	0.20	0.77	0.66	1.74	508.60
67	335	5.58	1.9	0.292	0.20	0.26	0.09	0.24	60.20
68	340	5.67	0.9	0.138	0.20	0.12	0.01	0.04	0.00
69	345	5.75	0.6	0.092	0.20	0.08	0.01	0.02	0.00
70	350	5.83	0.5	0.077	0.20	0.07	0.01	0.02	0.00
71	355	5.92	0.3	0.046	0.20	0.04	0.00	0.01	0.00
72	360	6.00	0.2	0.031	0.20	0.03	0.00	0.01	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.43
FLOOD VOLUME (acft)	0.09
FLOOD VOLUME (cuft)	4066.25
REQUIRED STORAGE (acft)	0.08
REQUIRED STORAGE (cuft)	3271.34
PEAK FLOW RATE (cfs)	1.74

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.630	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1998
LAG TIME - MINUTES	0.81	MINIMUM LOSS RATE (for var. loss) - in/hr	0.100
UNIT TIME-PERCENT OF LAG	1844.7	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00185
		PERCOLATION RATE (cfs)	0.04

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
1	15	0.25	0.2	0.017	0.353	0.015	0.002	0.00	0.00
2	30	0.50	0.3	0.025	0.349	0.022	0.002	0.01	0.00
3	45	0.75	0.3	0.025	0.345	0.022	0.002	0.01	0.00
4	60	1.00	0.4	0.033	0.341	0.030	0.003	0.01	0.00
5	75	1.25	0.3	0.025	0.337	0.022	0.002	0.01	0.00
6	90	1.50	0.3	0.025	0.333	0.022	0.002	0.01	0.00
7	105	1.75	0.3	0.025	0.329	0.022	0.002	0.01	0.00
8	120	2.00	0.4	0.033	0.325	0.030	0.003	0.01	0.00
9	135	2.25	0.4	0.033	0.321	0.030	0.003	0.01	0.00
10	150	2.50	0.4	0.033	0.317	0.030	0.003	0.01	0.00
11	165	2.75	0.5	0.041	0.313	0.037	0.004	0.01	0.00
12	180	3.00	0.5	0.041	0.309	0.037	0.004	0.01	0.00
13	195	3.25	0.5	0.041	0.305	0.037	0.004	0.01	0.00
14	210	3.50	0.5	0.041	0.302	0.037	0.004	0.01	0.00
15	225	3.75	0.5	0.041	0.298	0.037	0.004	0.01	0.00
16	240	4.00	0.6	0.050	0.294	0.045	0.005	0.01	0.00
17	255	4.25	0.6	0.050	0.290	0.045	0.005	0.01	0.00
18	270	4.50	0.7	0.058	0.287	0.052	0.006	0.02	0.00
19	285	4.75	0.7	0.058	0.283	0.052	0.006	0.02	0.00
20	300	5.00	0.8	0.066	0.279	0.060	0.007	0.02	0.00
21	315	5.25	0.6	0.050	0.276	0.045	0.005	0.01	0.00
22	330	5.50	0.7	0.058	0.272	0.052	0.006	0.02	0.00
23	345	5.75	0.8	0.066	0.268	0.060	0.007	0.02	0.00
24	360	6.00	0.8	0.066	0.265	0.060	0.007	0.02	0.00
25	375	6.25	0.9	0.075	0.261	0.067	0.007	0.02	0.00
26	390	6.50	0.9	0.075	0.258	0.067	0.007	0.02	0.00
27	405	6.75	1.0	0.083	0.254	0.075	0.008	0.02	0.00
28	420	7.00	1.0	0.083	0.251	0.075	0.008	0.02	0.00
29	435	7.25	1.0	0.083	0.248	0.075	0.008	0.02	0.00
30	450	7.50	1.1	0.091	0.244	0.082	0.009	0.02	0.00
31	465	7.75	1.2	0.099	0.241	0.089	0.010	0.03	0.00
32	480	8.00	1.3	0.108	0.238	0.097	0.011	0.03	0.00
33	495	8.25	1.5	0.124	0.234	0.112	0.012	0.03	0.00
34	510	8.50	1.5	0.124	0.231	0.112	0.012	0.03	0.00
35	525	8.75	1.6	0.132	0.228	0.119	0.013	0.03	0.00
36	540	9.00	1.7	0.141	0.225	0.127	0.014	0.04	0.00
37	555	9.25	1.9	0.157	0.221	0.142	0.016	0.04	0.05
38	570	9.50	2.0	0.166	0.218	0.149	0.017	0.04	2.01
39	585	9.75	2.1	0.174	0.215	0.156	0.017	0.05	3.97
40	600	10.00	2.2	0.182	0.212	0.164	0.018	0.05	5.93
41	615	10.25	1.5	0.124	0.209	0.112	0.012	0.03	0.00
42	630	10.50	1.5	0.124	0.206	0.112	0.012	0.03	0.00
43	645	10.75	2.0	0.166	0.203	0.149	0.017	0.04	2.01
44	660	11.00	2.0	0.166	0.200	0.149	0.017	0.04	2.01
45	675	11.25	1.9	0.157	0.197	0.142	0.016	0.04	0.05
46	690	11.50	1.9	0.157	0.194	0.142	0.016	0.04	0.05
47	705	11.75	1.7	0.141	0.191	0.127	0.014	0.04	0.00
48	720	12.00	1.8	0.149	0.188	0.134	0.015	0.04	0.00
49	735	12.25	2.5	0.207	0.186	0.186	0.021	0.06	13.46
50	750	12.50	2.6	0.215	0.183	0.194	0.032	0.09	39.64
51	765	12.75	2.8	0.232	0.180	0.209	0.052	0.14	85.34
52	780	13.00	2.9	0.240	0.177	0.216	0.063	0.17	111.36
53	795	13.25	3.4	0.282	0.175	0.253	0.107	0.28	215.70
54	810	13.50	3.4	0.282	0.172	0.253	0.109	0.29	221.96
55	825	13.75	2.3	0.190	0.169	0.171	0.021	0.06	12.56
56	840	14.00	2.3	0.190	0.167	0.171	0.024	0.06	18.67
57	855	14.25	2.7	0.224	0.164	0.201	0.059	0.16	103.08
58	870	14.50	2.6	0.215	0.162	0.194	0.053	0.14	89.42
59	885	14.75	2.6	0.215	0.159	0.194	0.056	0.15	95.28
60	900	15.00	2.5	0.207	0.157	0.186	0.050	0.13	81.45
61	915	15.25	2.4	0.199	0.154	0.179	0.044	0.12	67.53

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.630	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1998
LAG TIME - MINUTES	0.81	MINIMUM LOSS RATE (for var. loss) - in/hr	0.100
UNIT TIME-PERCENT OF LAG	1844.7	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	2.07	C	0.00185
		PERCOLATION RATE (cfs)	0.04

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
62	930	15.50	2.3	0.190	0.152	0.171	0.038	0.10	53.53
63	945	15.75	1.9	0.157	0.150	0.142	0.008	0.02	0.00
64	960	16.00	1.9	0.157	0.148	0.142	0.010	0.03	0.00
65	975	16.25	0.4	0.033	0.145	0.030	0.003	0.01	0.00
66	990	16.50	0.4	0.033	0.143	0.030	0.003	0.01	0.00
67	1005	16.75	0.3	0.025	0.141	0.022	0.002	0.01	0.00
68	1020	17.00	0.3	0.025	0.139	0.022	0.002	0.01	0.00
69	1035	17.25	0.5	0.041	0.137	0.037	0.004	0.01	0.00
70	1050	17.50	0.5	0.041	0.135	0.037	0.004	0.01	0.00
71	1065	17.75	0.5	0.041	0.133	0.037	0.004	0.01	0.00
72	1080	18.00	0.4	0.033	0.131	0.030	0.003	0.01	0.00
73	1095	18.25	0.4	0.033	0.129	0.030	0.003	0.01	0.00
74	1110	18.50	0.4	0.033	0.127	0.030	0.003	0.01	0.00
75	1125	18.75	0.3	0.025	0.125	0.022	0.002	0.01	0.00
76	1140	19.00	0.2	0.017	0.123	0.015	0.002	0.00	0.00
77	1155	19.25	0.3	0.025	0.121	0.022	0.002	0.01	0.00
78	1170	19.50	0.4	0.033	0.120	0.030	0.003	0.01	0.00
79	1185	19.75	0.3	0.025	0.118	0.022	0.002	0.01	0.00
80	1200	20.00	0.2	0.017	0.117	0.015	0.002	0.00	0.00
81	1215	20.25	0.3	0.025	0.115	0.022	0.002	0.01	0.00
82	1230	20.50	0.3	0.025	0.114	0.022	0.002	0.01	0.00
83	1245	20.75	0.3	0.025	0.112	0.022	0.002	0.01	0.00
84	1260	21.00	0.2	0.017	0.111	0.015	0.002	0.00	0.00
85	1275	21.25	0.3	0.025	0.109	0.022	0.002	0.01	0.00
86	1290	21.50	0.2	0.017	0.108	0.015	0.002	0.00	0.00
87	1305	21.75	0.3	0.025	0.107	0.022	0.002	0.01	0.00
88	1320	22.00	0.2	0.017	0.106	0.015	0.002	0.00	0.00
89	1335	22.25	0.3	0.025	0.105	0.022	0.002	0.01	0.00
90	1350	22.50	0.2	0.017	0.104	0.015	0.002	0.00	0.00
91	1365	22.75	0.2	0.017	0.103	0.015	0.002	0.00	0.00
92	1380	23.00	0.2	0.017	0.102	0.015	0.002	0.00	0.00
93	1395	23.25	0.2	0.017	0.101	0.015	0.002	0.00	0.00
94	1410	23.50	0.2	0.017	0.101	0.015	0.002	0.00	0.00
95	1425	23.75	0.2	0.017	0.100	0.015	0.002	0.00	0.00
96	1440	24.00	0.2	0.017	0.100	0.015	0.002	0.00	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	0.31
FLOOD VOLUME (acft)	0.07
FLOOD VOLUME (cuft)	2949.37
REQUIRED STORAGE (acft)	0.03
REQUIRED STORAGE (cuft)	1225.07
PEAK FLOW (cfs)	0.29

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
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BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
381	0	0		2664	0	0	0.00
382	1	1	1897	4561	3613	3613	0.08
383	1	2	1968	6529	5545	9158	0.21
384	1	3	2039	8568	7549	16706	0.38

PERCOLATION CALCULATIONS
PERCOLATION RATE 0.67 in/hr 0.04 cfs

MAXWELL IV DRYWELLS
NUMBER USED 0
RATE/DRYWELL 0 cfs
TOTAL DISSIPATED 0 cfs

TOTAL PERCOLATION RATE 0.04 cfs

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TKC JOB # C1443

100 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.04	12	12	12	-	381.00	-	0.00
2	10	0.04	12	12	12	-	381.00	-	0.00
3	15	0.03	10	10	12	-	381.00	-	0.00
4	20	0.05	14	14	12	2	381.00	2	0.00
5	25	0.05	14	16	12	3	381.00	3	0.00
6	30	0.03	10	13	12	1	381.00	1	0.00
7	35	0.05	14	15	12	2	381.00	2	0.00
8	40	0.03	10	12	12	0	381.00	0	0.00
9	45	0.03	10	10	12	-	381.00	-	0.00
10	50	0.05	14	14	12	2	381.00	2	0.00
11	55	0.05	15	16	12	4	381.00	4	0.00
12	60	0.03	10	14	12	2	381.00	2	0.00
13	65	0.16	47	49	12	37	381.01	37	0.00
14	70	0.16	47	84	12	72	381.02	72	0.00
15	75	0.16	47	119	12	106	381.03	106	0.00
16	80	0.10	29	135	12	123	381.03	123	0.00
17	85	0.28	85	207	12	195	381.05	195	0.00
18	90	0.31	94	289	12	276	381.08	276	0.01
19	95	0.22	66	342	12	330	381.09	330	0.01
20	100	0.31	94	424	12	411	381.11	411	0.01
21	105	0.50	150	561	12	549	381.15	549	0.01
22	110	0.44	131	680	12	667	381.18	667	0.02
23	115	0.38	113	780	12	768	381.21	768	0.02
24	120	0.41	122	889	12	877	381.24	877	0.02
25	125	0.44	131	1,008	12	996	381.28	996	0.02
26	130	0.78	234	1,229	12	1,217	381.34	1,217	0.03
27	135	1.03	308	1,525	12	1,513	381.42	1,513	0.03
28	140	0.56	168	1,681	12	1,669	381.46	1,669	0.04
29	145	1.59	476	2,145	12	2,132	381.59	2,132	0.05
30	150	1.74	522	2,655	12	2,642	381.73	2,642	0.06
31	155	2.02	606	3,249	12	3,236	381.90	3,236	0.07
32	160	1.31	392	3,628	12	3,616	382.00	3,616	0.08
33	165	0.10	29	3,644	12	3,632	382.00	3,632	0.08
34	170	0.03	10	3,642	12	3,630	382.00	3,630	0.08
35	175	0.03	10	3,640	12	3,627	382.00	3,627	0.08
36	180	0.02	6	3,633	12	3,621	382.00	3,621	0.08

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.02	6	6	12	-	381.00	-	0.00
2	10	0.02	7	7	12	-	381.00	-	0.00
3	15	0.02	7	7	12	-	381.00	-	0.00
4	20	0.02	7	7	12	-	381.00	-	0.00
5	25	0.02	7	7	12	-	381.00	-	0.00
6	30	0.03	8	8	12	-	381.00	-	0.00
7	35	0.03	8	8	12	-	381.00	-	0.00
8	40	0.03	8	8	12	-	381.00	-	0.00
9	45	0.03	8	8	12	-	381.00	-	0.00
10	50	0.03	8	8	12	-	381.00	-	0.00
11	55	0.03	8	8	12	-	381.00	-	0.00
12	60	0.03	10	10	12	-	381.00	-	0.00
13	65	0.03	10	10	12	-	381.00	-	0.00
14	70	0.03	10	10	12	-	381.00	-	0.00
15	75	0.03	10	10	12	-	381.00	-	0.00
16	80	0.03	10	10	12	-	381.00	-	0.00
17	85	0.03	10	10	12	-	381.00	-	0.00
18	90	0.03	10	10	12	-	381.00	-	0.00
19	95	0.03	10	10	12	-	381.00	-	0.00
20	100	0.03	10	10	12	-	381.00	-	0.00
21	105	0.03	10	10	12	-	381.00	-	0.00
22	110	0.03	10	10	12	-	381.00	-	0.00
23	115	0.03	10	10	12	-	381.00	-	0.00
24	120	0.04	11	11	12	-	381.00	-	0.00
25	125	0.03	10	10	12	-	381.00	-	0.00
26	130	0.04	11	11	12	-	381.00	-	0.00
27	135	0.04	11	11	12	-	381.00	-	0.00
28	140	0.04	11	11	12	-	381.00	-	0.00
29	145	0.04	11	11	12	-	381.00	-	0.00
30	150	0.04	11	11	12	-	381.00	-	0.00
31	155	0.04	11	11	12	-	381.00	-	0.00
32	160	0.04	11	11	12	-	381.00	-	0.00
33	165	0.04	12	12	12	-	381.00	-	0.00
34	170	0.04	12	12	12	-	381.00	-	0.00
35	175	0.04	12	12	12	-	381.00	-	0.00
36	180	0.04	12	12	12	-	381.00	-	0.00
37	185	0.04	12	12	12	-	381.00	-	0.00
38	190	0.04	13	13	12	1	381.00	1	0.00
39	195	0.04	13	14	12	2	381.00	2	0.00
40	200	0.04	13	15	12	3	381.00	3	0.00
41	205	0.05	15	17	12	5	381.00	5	0.00
42	210	0.05	16	21	12	8	381.00	8	0.00
43	215	0.04	12	20	12	8	381.00	8	0.00
44	220	0.04	12	20	12	8	381.00	8	0.00
45	225	0.08	24	32	12	19	381.01	19	0.00
46	230	0.08	24	43	12	31	381.01	31	0.00
47	235	0.12	36	67	12	55	381.02	55	0.00
48	240	0.12	36	91	12	79	381.02	79	0.00
49	245	0.16	48	127	12	115	381.03	115	0.00
50	250	0.20	60	175	12	163	381.05	163	0.00
51	255	0.24	73	235	12	223	381.06	223	0.01
52	260	0.28	85	308	12	295	381.08	295	0.01
53	265	0.32	97	392	12	380	381.11	380	0.01
54	270	0.32	97	476	12	464	381.13	464	0.01
55	275	0.36	109	573	12	561	381.16	561	0.01

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	0.40	121	682	12	669	381.19	669	0.02
57	285	0.44	133	803	12	790	381.22	790	0.02
58	290	0.44	133	923	12	911	381.25	911	0.02
59	295	0.48	145	1,056	12	1,044	381.29	1,044	0.02
60	300	0.52	157	1,201	12	1,189	381.33	1,189	0.03
61	305	0.73	218	1,407	12	1,394	381.39	1,394	0.03
62	310	0.93	279	1,673	12	1,661	381.46	1,661	0.04
63	315	1.05	315	1,976	12	1,963	381.54	1,963	0.05
64	320	1.17	351	2,315	12	2,302	381.64	2,302	0.05
65	325	1.37	412	2,714	12	2,702	381.75	2,702	0.06
66	330	1.74	521	3,223	12	3,210	381.89	3,210	0.07
67	335	0.24	73	3,283	12	3,271	381.91	3,271	0.08
68	340	0.04	11	3,281	12	3,269	381.90	3,269	0.08
69	345	0.02	7	3,276	12	3,264	381.90	3,264	0.07
70	350	0.02	6	3,270	12	3,258	381.90	3,258	0.07
71	355	0.01	4	3,261	12	3,249	381.90	3,249	0.07
72	360	0.01	2	3,251	12	3,239	381.90	3,239	0.07

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TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.00	4	4	37	-	381.00	-	0.00
2	30	0.01	6	6	37	-	381.00	-	0.00
3	45	0.01	6	6	37	-	381.00	-	0.00
4	60	0.01	8	8	37	-	381.00	-	0.00
5	75	0.01	6	6	37	-	381.00	-	0.00
6	90	0.01	6	6	37	-	381.00	-	0.00
7	105	0.01	6	6	37	-	381.00	-	0.00
8	120	0.01	8	8	37	-	381.00	-	0.00
9	135	0.01	8	8	37	-	381.00	-	0.00
10	150	0.01	8	8	37	-	381.00	-	0.00
11	165	0.01	10	10	37	-	381.00	-	0.00
12	180	0.01	10	10	37	-	381.00	-	0.00
13	195	0.01	10	10	37	-	381.00	-	0.00
14	210	0.01	10	10	37	-	381.00	-	0.00
15	225	0.01	10	10	37	-	381.00	-	0.00
16	240	0.01	12	12	37	-	381.00	-	0.00
17	255	0.01	12	12	37	-	381.00	-	0.00
18	270	0.02	14	14	37	-	381.00	-	0.00
19	285	0.02	14	14	37	-	381.00	-	0.00
20	300	0.02	16	16	37	-	381.00	-	0.00
21	315	0.01	12	12	37	-	381.00	-	0.00
22	330	0.02	14	14	37	-	381.00	-	0.00
23	345	0.02	16	16	37	-	381.00	-	0.00
24	360	0.02	16	16	37	-	381.00	-	0.00
25	375	0.02	18	18	37	-	381.00	-	0.00
26	390	0.02	18	18	37	-	381.00	-	0.00
27	405	0.02	20	20	37	-	381.00	-	0.00
28	420	0.02	20	20	37	-	381.00	-	0.00
29	435	0.02	20	20	37	-	381.00	-	0.00
30	450	0.02	22	22	37	-	381.00	-	0.00
31	465	0.03	24	24	37	-	381.00	-	0.00
32	480	0.03	25	25	37	-	381.00	-	0.00
33	495	0.03	29	29	37	-	381.00	-	0.00
34	510	0.03	29	29	37	-	381.00	-	0.00
35	525	0.03	31	31	37	-	381.00	-	0.00
36	540	0.04	33	33	37	-	381.00	-	0.00
37	555	0.04	37	37	37	0	381.00	0	0.00
38	570	0.04	39	39	37	2	381.00	2	0.00
39	585	0.05	41	43	37	6	381.00	6	0.00
40	600	0.05	43	49	37	12	381.00	12	0.00
41	615	0.03	29	41	37	4	381.00	4	0.00
42	630	0.03	29	34	37	-	381.00	-	0.00
43	645	0.04	39	39	37	2	381.00	2	0.00
44	660	0.04	39	41	37	4	381.00	4	0.00
45	675	0.04	37	41	37	4	381.00	4	0.00
46	690	0.04	37	41	37	4	381.00	4	0.00
47	705	0.04	33	37	37	0	381.00	0	0.00
48	720	0.04	35	36	37	-	381.00	-	0.00
49	735	0.06	51	51	37	13	381.00	13	0.00
50	750	0.09	77	90	37	53	381.01	53	0.00
51	765	0.14	123	176	37	138	381.04	138	0.00
52	780	0.17	149	287	37	250	381.07	250	0.01
53	795	0.28	253	503	37	465	381.13	465	0.01
54	810	0.29	259	725	37	687	381.19	687	0.02
55	825	0.06	50	737	37	700	381.19	700	0.02
56	840	0.06	56	756	37	719	381.20	719	0.02
57	855	0.16	140	859	37	822	381.23	822	0.02
58	870	0.14	127	948	37	911	381.25	911	0.02

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	0.15	132	1,044	37	1,006	381.28	1,006	0.02
60	900	0.13	119	1,125	37	1,088	381.30	1,088	0.02
61	915	0.12	105	1,193	37	1,155	381.32	1,155	0.03
62	930	0.10	91	1,246	37	1,209	381.33	1,209	0.03
63	945	0.02	18	1,227	37	1,190	381.33	1,190	0.03
64	960	0.03	23	1,213	37	1,176	381.33	1,176	0.03
65	975	0.01	8	1,184	37	1,146	381.32	1,146	0.03
66	990	0.01	8	1,154	37	1,117	381.31	1,117	0.03
67	1005	0.01	6	1,123	37	1,086	381.30	1,086	0.02
68	1020	0.01	6	1,092	37	1,054	381.29	1,054	0.02
69	1035	0.01	10	1,064	37	1,027	381.28	1,027	0.02
70	1050	0.01	10	1,037	37	1,000	381.28	1,000	0.02
71	1065	0.01	10	1,009	37	972	381.27	972	0.02
72	1080	0.01	8	980	37	943	381.26	943	0.02
73	1095	0.01	8	951	37	914	381.25	914	0.02
74	1110	0.01	8	921	37	884	381.24	884	0.02
75	1125	0.01	6	890	37	853	381.24	853	0.02
76	1140	0.00	4	857	37	820	381.23	820	0.02
77	1155	0.01	6	825	37	788	381.22	788	0.02
78	1170	0.01	8	796	37	759	381.21	759	0.02
79	1185	0.01	6	765	37	728	381.20	728	0.02
80	1200	0.00	4	732	37	694	381.19	694	0.02
81	1215	0.01	6	700	37	663	381.18	663	0.02
82	1230	0.01	6	669	37	632	381.17	632	0.01
83	1245	0.01	6	638	37	600	381.17	600	0.01
84	1260	0.00	4	604	37	567	381.16	567	0.01
85	1275	0.01	6	573	37	536	381.15	536	0.01
86	1290	0.00	4	540	37	503	381.14	503	0.01
87	1305	0.01	6	509	37	471	381.13	471	0.01
88	1320	0.00	4	475	37	438	381.12	438	0.01
89	1335	0.01	6	444	37	407	381.11	407	0.01
90	1350	0.00	4	411	37	373	381.10	373	0.01
91	1365	0.00	4	377	37	340	381.09	340	0.01
92	1380	0.00	4	344	37	307	381.08	307	0.01
93	1395	0.00	4	311	37	274	381.08	274	0.01
94	1410	0.00	4	278	37	240	381.07	240	0.01
95	1425	0.00	4	244	37	207	381.06	207	0.00
96	1440	0.00	4	211	37	174	381.05	174	0.00

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA AIRPORT BUSINESS PARK		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA A - 100 YEAR EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	27.65		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING	0.97		
23	RETENTION BASIN	2.1		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	1000		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	250		
30				
31	ELEVATION OF HEADWATER	387		
32	ELEVATION OF CONCENTRATION POINT	382		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	100		
37				
38	POINT RAIN			
39	3-HOUR	2.03		
40	6-HOUR	2.71		
41	24-HOUR	4.24		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		379	42516	
45		380	45027	
46		381	47609	
47		382	50263	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD — PROJECT: COACHELLA AIRPORT BUSINESS PARK
BASIC DATA CALCULATION FORM — TKC JOB # C1443
SHORTCUT METHOD — BY MES BAZUA, PE — DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA A - 100 YEAR EVENT
[3] AREA - ACRES	30.720
[4] L-FEET	1000
[5] L-MILES	0.189
[6] La-FEET	250.00
[7] La-MILES	0.047
[8] ELEVATION OF HEADWATER	387
[9] ELEVATION OF CONCENTRATION POINT	382
[10] H-FEET	5
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.002
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.04
[16] LAG TIME-MINUTES	2.6
[17] 100% OF LAG-MINUTES	2.6
[18] 200% OF LAG-MINUTES	5.2
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.66

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 100
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
2.03	30.720	1.00	2.03	2.71	30.720	1.00	2.71	4.24	30.720	1.00	4.24
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	30.72	SUM [7]	2.03	SUM [9]	30.72	SUM [11]	2.71	SUM [13]	30.72	SUM [15]	4.24
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			2.03				2.71				4.24

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	1.56	1.77	1.89
FLOOD VOLUME	(cu-ft)	173,489	197,518	211,182
	(acre-ft)	3.98	4.53	4.85
REQUIRED STORAGE	(cu-ft)	164,996	182,214	176,577
	(acre-ft)	3.79	4.18	4.05
PEAK FLOW	(cfs)	56.48	51.07	13.51
MAXIMUM WSEL	(ft)	381.80	381.99	381.95

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.51	85%	0.12	27.65	0.900	0.1079
B	PAVING/HARDSCAPE	56	0.51	100%	0.05	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.51	20%	0.42	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.51	40%	0.33	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.51	50%	0.28	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.51	65%	0.21	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.51	80%	0.14	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.51	75%	0.17	0.00	0.000	0.0000
B	LANDSCAPING	56	0.51	0%	0.51	0.97	0.032	0.0161
B	RETENTION BASINS	56	0.51	0%	0.51	2.10	0.068	0.0349
B	GOLF COURSE	56	0.51	0%	0.51	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.08	90%	0.02	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	30.72	SUM	0.1588

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.0794198
C= 0.00147

Ft=C(24-(T/60))^1.55 = 0.00147 (24-(T/60))^1.55 + 0.08 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: \MES BAZUA, FDATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.58
UNIT TIME-PERCENT OF LAG	193.9
TOTAL ADJUSTED STORM RAIN-INCHES	2.03
CONSTANT LOSS RATE-in/hr	0.16
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.317	0.16	0.29	0.16	4.85	1256.84
2	10	0.17	1.3	0.317	0.16	0.29	0.16	4.85	1256.84
3	15	0.25	1.1	0.268	0.16	0.24	0.11	3.35	807.84
4	20	0.33	1.5	0.365	0.16	0.33	0.21	6.35	1705.84
5	25	0.42	1.5	0.365	0.16	0.33	0.21	6.35	1705.84
6	30	0.50	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
7	35	0.58	1.5	0.365	0.16	0.33	0.21	6.35	1705.84
8	40	0.67	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
9	45	0.75	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
10	50	0.83	1.5	0.365	0.16	0.33	0.21	6.35	1705.84
11	55	0.92	1.6	0.390	0.16	0.35	0.23	7.09	1930.34
12	60	1.00	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
13	65	1.08	2.2	0.536	0.16	0.48	0.38	11.58	3277.36
14	70	1.17	2.2	0.536	0.16	0.48	0.38	11.58	3277.36
15	75	1.25	2.2	0.536	0.16	0.48	0.38	11.58	3277.36
16	80	1.33	2.0	0.487	0.16	0.44	0.33	10.09	2828.35
17	85	1.42	2.6	0.633	0.16	0.57	0.47	14.58	4175.36
18	90	1.50	2.7	0.658	0.16	0.59	0.50	15.33	4399.86
19	95	1.58	2.4	0.585	0.16	0.53	0.43	13.08	3726.36
20	100	1.67	2.7	0.658	0.16	0.59	0.50	15.33	4399.86
21	105	1.75	3.3	0.804	0.16	0.72	0.65	19.82	5746.87
22	110	1.83	3.1	0.755	0.16	0.68	0.60	18.32	5297.87
23	115	1.92	2.9	0.706	0.16	0.64	0.55	16.82	4848.87
24	120	2.00	3.0	0.731	0.16	0.66	0.57	17.57	5073.37
25	125	2.08	3.1	0.755	0.16	0.68	0.60	18.32	5297.87
26	130	2.17	4.2	1.023	0.16	0.92	0.86	26.55	7767.39
27	135	2.25	5.0	1.218	0.16	1.10	1.06	32.54	9563.40
28	140	2.33	3.5	0.853	0.16	0.77	0.69	21.31	6195.88
29	145	2.42	6.8	1.656	0.16	1.49	1.50	46.01	13604.44
30	150	2.50	7.3	1.778	0.16	1.60	1.62	49.75	14726.95
31	155	2.58	8.2	1.998	0.16	1.80	1.84	56.48	16747.46
32	160	2.67	5.9	1.437	0.16	1.29	1.28	39.27	11583.92
33	165	2.75	2.0	0.487	0.16	0.44	0.33	10.09	2828.35
34	170	2.83	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
35	175	2.92	1.8	0.438	0.16	0.39	0.28	8.59	2379.35
36	180	3.00	0.6	0.146	0.16	0.13	0.01	0.45	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.56
FLOOD VOLUME (acft)	3.98
FLOOD VOLUME (cuft)	173488.61
REQUIRED STORAGE (acft)	3.79
REQUIRED STORAGE (cuft)	164995.84
PEAK FLOW RATE (cfs)	56.48

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 100 YEAR - 6 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72		
UNIT TIME-MINUTES	5		
LAG TIME - MINUTES	2.58		
UNIT TIME-PERCENT OF LAG	193.9		
TOTAL ADJUSTED STORM RAIN-INCHES	2.71		
CONSTANT LOSS RATE-in/hr	0.159		
LOW LOSS RATE - PERCENT	90%	TOTAL PERCOLATION RATE (cfs)	0.66 cfs

Unit Time Period	Time		Pattern	Storm Rain	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	Percent (Plate E-5.9)	in/hr	Max	Low	in/hr	cfs	cf
1	5	0.08	0.5	0.163	0.16	0.15	0.00	0.12	0.00
2	10	0.17	0.6	0.195	0.16	0.18	0.04	1.11	136.54
3	15	0.25	0.6	0.195	0.16	0.18	0.04	1.11	136.54
4	20	0.33	0.6	0.195	0.16	0.18	0.04	1.11	136.54
5	25	0.42	0.6	0.195	0.16	0.18	0.04	1.11	136.54
6	30	0.50	0.7	0.228	0.16	0.20	0.07	2.11	436.25
7	35	0.58	0.7	0.228	0.16	0.20	0.07	2.11	436.25
8	40	0.67	0.7	0.228	0.16	0.20	0.07	2.11	436.25
9	45	0.75	0.7	0.228	0.16	0.20	0.07	2.11	436.25
10	50	0.83	0.7	0.228	0.16	0.20	0.07	2.11	436.25
11	55	0.92	0.7	0.228	0.16	0.20	0.07	2.11	436.25
12	60	1.00	0.8	0.260	0.16	0.23	0.10	3.11	735.95
13	65	1.08	0.8	0.260	0.16	0.23	0.10	3.11	735.95
14	70	1.17	0.8	0.260	0.16	0.23	0.10	3.11	735.95
15	75	1.25	0.8	0.260	0.16	0.23	0.10	3.11	735.95
16	80	1.33	0.8	0.260	0.16	0.23	0.10	3.11	735.95
17	85	1.42	0.8	0.260	0.16	0.23	0.10	3.11	735.95
18	90	1.50	0.8	0.260	0.16	0.23	0.10	3.11	735.95
19	95	1.58	0.8	0.260	0.16	0.23	0.10	3.11	735.95
20	100	1.67	0.8	0.260	0.16	0.23	0.10	3.11	735.95
21	105	1.75	0.8	0.260	0.16	0.23	0.10	3.11	735.95
22	110	1.83	0.8	0.260	0.16	0.23	0.10	3.11	735.95
23	115	1.92	0.8	0.260	0.16	0.23	0.10	3.11	735.95
24	120	2.00	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
25	125	2.08	0.8	0.260	0.16	0.23	0.10	3.11	735.95
26	130	2.17	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
27	135	2.25	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
28	140	2.33	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
29	145	2.42	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
30	150	2.50	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
31	155	2.58	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
32	160	2.67	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
33	165	2.75	1.0	0.325	0.16	0.29	0.17	5.11	1335.36
34	170	2.83	1.0	0.325	0.16	0.29	0.17	5.11	1335.36
35	175	2.92	1.0	0.325	0.16	0.29	0.17	5.11	1335.36
36	180	3.00	1.0	0.325	0.16	0.29	0.17	5.11	1335.36
37	185	3.08	1.0	0.325	0.16	0.29	0.17	5.11	1335.36
38	190	3.17	1.1	0.358	0.16	0.32	0.20	6.11	1635.06
39	195	3.25	1.1	0.358	0.16	0.32	0.20	6.11	1635.06
40	200	3.33	1.1	0.358	0.16	0.32	0.20	6.11	1635.06
41	205	3.42	1.2	0.390	0.16	0.35	0.23	7.11	1934.77
42	210	3.50	1.3	0.423	0.16	0.38	0.26	8.11	2234.47
43	215	3.58	1.4	0.455	0.16	0.41	0.30	9.11	2534.18
44	220	3.67	1.4	0.455	0.16	0.41	0.30	9.11	2534.18
45	225	3.75	1.5	0.488	0.16	0.44	0.33	10.11	2833.88
46	230	3.83	1.5	0.488	0.16	0.44	0.33	10.11	2833.88
47	235	3.92	1.6	0.520	0.16	0.47	0.36	11.10	3133.59
48	240	4.00	1.6	0.520	0.16	0.47	0.36	11.10	3133.59
49	245	4.08	1.7	0.553	0.16	0.50	0.39	12.10	3433.29
50	250	4.17	1.8	0.585	0.16	0.53	0.43	13.10	3732.99
51	255	4.25	1.9	0.618	0.16	0.56	0.46	14.10	4032.70
52	260	4.33	2.0	0.650	0.16	0.59	0.49	15.10	4332.40
53	265	4.42	2.1	0.683	0.16	0.61	0.52	16.10	4632.11
54	270	4.50	2.1	0.683	0.16	0.61	0.52	16.10	4632.11
55	275	4.58	2.2	0.715	0.16	0.64	0.56	17.10	4931.81
56	280	4.67	2.3	0.748	0.16	0.67	0.59	18.10	5231.52

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.72
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.58
UNIT TIME-PERCENT OF LAG	193.9
TOTAL ADJUSTED STORM RAIN-INCHES	2.71
CONSTANT LOSS RATE-in/hr	0.159
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
57	285	4.75	2.4	0.780	0.16	0.70	0.62	19.10	5531.22
58	290	4.83	2.4	0.780	0.16	0.70	0.62	19.10	5531.22
59	295	4.92	2.5	0.813	0.16	0.73	0.65	20.10	5830.92
60	300	5.00	2.6	0.846	0.16	0.76	0.69	21.09	6130.63
61	305	5.08	3.1	1.008	0.16	0.91	0.85	26.09	7629.15
62	310	5.17	3.6	1.171	0.16	1.05	1.01	31.08	9127.67
63	315	5.25	3.9	1.268	0.16	1.14	1.11	34.08	10026.79
64	320	5.33	4.2	1.366	0.16	1.23	1.21	37.08	10925.90
65	325	5.42	4.7	1.528	0.16	1.38	1.37	42.07	12424.42
66	330	5.50	5.6	1.821	0.16	1.64	1.66	51.07	15121.76
67	335	5.58	1.9	0.618	0.16	0.56	0.46	14.10	4032.70
68	340	5.67	0.9	0.293	0.16	0.26	0.13	4.11	1035.66
69	345	5.75	0.6	0.195	0.16	0.18	0.04	1.11	136.54
70	350	5.83	0.5	0.163	0.16	0.15	0.00	0.12	0.00
71	355	5.92	0.3	0.098	0.16	0.09	0.01	0.30	0.00
72	360	6.00	0.2	0.065	0.16	0.06	0.01	0.20	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.77
FLOOD VOLUME (acft)	4.53
FLOOD VOLUME (cuft)	197518.19
REQUIRED STORAGE (acft)	4.18
REQUIRED STORAGE (cuft)	182214.29
PEAK FLOW RATE (cfs)	51.07

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.720	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1588
LAG TIME - MINUTES	2.58	MINIMUM LOSS RATE (for var. loss) - in/hr	0.079
UNIT TIME-PERCENT OF LAG	581.8	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00147
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
1	15	0.25	0.2	0.034	0.280	0.031	0.003	0.10	0.00
2	30	0.50	0.3	0.051	0.277	0.046	0.005	0.16	0.00
3	45	0.75	0.3	0.051	0.274	0.046	0.005	0.16	0.00
4	60	1.00	0.4	0.068	0.271	0.061	0.007	0.21	0.00
5	75	1.25	0.3	0.051	0.268	0.046	0.005	0.16	0.00
6	90	1.50	0.3	0.051	0.264	0.046	0.005	0.16	0.00
7	105	1.75	0.3	0.051	0.261	0.046	0.005	0.16	0.00
8	120	2.00	0.4	0.068	0.258	0.061	0.007	0.21	0.00
9	135	2.25	0.4	0.068	0.255	0.061	0.007	0.21	0.00
10	150	2.50	0.4	0.068	0.252	0.061	0.007	0.21	0.00
11	165	2.75	0.5	0.085	0.249	0.076	0.008	0.26	0.00
12	180	3.00	0.5	0.085	0.246	0.076	0.008	0.26	0.00
13	195	3.25	0.5	0.085	0.243	0.076	0.008	0.26	0.00
14	210	3.50	0.5	0.085	0.240	0.076	0.008	0.26	0.00
15	225	3.75	0.5	0.085	0.237	0.076	0.008	0.26	0.00
16	240	4.00	0.6	0.102	0.234	0.092	0.010	0.31	0.00
17	255	4.25	0.6	0.102	0.231	0.092	0.010	0.31	0.00
18	270	4.50	0.7	0.119	0.228	0.107	0.012	0.36	0.00
19	285	4.75	0.7	0.119	0.225	0.107	0.012	0.36	0.00
20	300	5.00	0.8	0.136	0.222	0.122	0.014	0.42	0.00
21	315	5.25	0.6	0.102	0.219	0.092	0.010	0.31	0.00
22	330	5.50	0.7	0.119	0.216	0.107	0.012	0.36	0.00
23	345	5.75	0.8	0.136	0.213	0.122	0.014	0.42	0.00
24	360	6.00	0.8	0.136	0.211	0.122	0.014	0.42	0.00
25	375	6.25	0.9	0.153	0.208	0.137	0.015	0.47	0.00
26	390	6.50	0.9	0.153	0.205	0.137	0.015	0.47	0.00
27	405	6.75	1.0	0.170	0.202	0.153	0.017	0.52	0.00
28	420	7.00	1.0	0.170	0.200	0.153	0.017	0.52	0.00
29	435	7.25	1.0	0.170	0.197	0.153	0.017	0.52	0.00
30	450	7.50	1.1	0.187	0.194	0.168	0.019	0.57	0.00
31	465	7.75	1.2	0.204	0.191	0.183	0.012	0.37	0.00
32	480	8.00	1.3	0.220	0.189	0.198	0.032	0.97	280.90
33	495	8.25	1.5	0.254	0.186	0.229	0.068	2.09	1291.12
34	510	8.50	1.5	0.254	0.184	0.229	0.071	2.17	1362.89
35	525	8.75	1.6	0.271	0.181	0.244	0.090	2.77	1902.95
36	540	9.00	1.7	0.288	0.179	0.259	0.110	3.37	2442.37
37	555	9.25	1.9	0.322	0.176	0.290	0.146	4.49	3450.07
38	570	9.50	2.0	0.339	0.173	0.305	0.166	5.09	3988.21
39	585	9.75	2.1	0.356	0.171	0.321	0.185	5.69	4525.70
40	600	10.00	2.2	0.373	0.169	0.336	0.205	6.28	5062.54
41	615	10.25	1.5	0.254	0.166	0.229	0.088	2.71	1847.45
42	630	10.50	1.5	0.254	0.164	0.229	0.091	2.79	1914.05
43	645	10.75	2.0	0.339	0.161	0.305	0.178	5.46	4324.55
44	660	11.00	2.0	0.339	0.159	0.305	0.180	5.54	4389.81
45	675	11.25	1.9	0.322	0.157	0.290	0.166	5.09	3985.49
46	690	11.50	1.9	0.322	0.154	0.290	0.168	5.16	4049.39
47	705	11.75	1.7	0.288	0.152	0.259	0.136	4.19	3174.77
48	720	12.00	1.8	0.305	0.150	0.275	0.156	4.78	3706.19
49	735	12.25	2.5	0.424	0.148	0.382	0.276	8.49	7050.37
50	750	12.50	2.6	0.441	0.145	0.397	0.296	9.08	7580.37
51	765	12.75	2.8	0.475	0.143	0.427	0.332	10.19	8578.57
52	780	13.00	2.9	0.492	0.141	0.443	0.351	10.78	9107.12
53	795	13.25	3.4	0.577	0.139	0.519	0.438	13.45	11510.59
54	810	13.50	3.4	0.577	0.137	0.519	0.440	13.51	11568.77
55	825	13.75	2.3	0.390	0.135	0.351	0.255	7.85	6468.18
56	840	14.00	2.3	0.390	0.133	0.351	0.257	7.91	6524.86
57	855	14.25	2.7	0.458	0.131	0.412	0.327	10.06	8456.40
58	870	14.50	2.6	0.441	0.129	0.397	0.312	9.60	8042.63
59	885	14.75	2.6	0.441	0.127	0.397	0.314	9.66	8096.98
60	900	15.00	2.5	0.424	0.125	0.382	0.299	9.19	7681.63
61	915	15.25	2.4	0.407	0.123	0.366	0.284	8.73	7265.48

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 100 YEAR - 24 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	30.720	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1588
LAG TIME - MINUTES	2.58	MINIMUM LOSS RATE (for var. loss) - in/hr	0.079
UNIT TIME-PERCENT OF LAG	581.8	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00147
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
62	930	15.50	2.3	0.390	0.121	0.351	0.269	8.27	6848.52
63	945	15.75	1.9	0.322	0.119	0.290	0.203	6.24	5024.00
64	960	16.00	1.9	0.322	0.117	0.290	0.205	6.30	5074.30
65	975	16.25	0.4	0.068	0.115	0.061	0.007	0.21	0.00
66	990	16.50	0.4	0.068	0.114	0.061	0.007	0.21	0.00
67	1005	16.75	0.3	0.051	0.112	0.046	0.005	0.16	0.00
68	1020	17.00	0.3	0.051	0.110	0.046	0.005	0.16	0.00
69	1035	17.25	0.5	0.085	0.109	0.076	0.008	0.26	0.00
70	1050	17.50	0.5	0.085	0.107	0.076	0.008	0.26	0.00
71	1065	17.75	0.5	0.085	0.105	0.076	0.008	0.26	0.00
72	1080	18.00	0.4	0.068	0.104	0.061	0.007	0.21	0.00
73	1095	18.25	0.4	0.068	0.102	0.061	0.007	0.21	0.00
74	1110	18.50	0.4	0.068	0.101	0.061	0.007	0.21	0.00
75	1125	18.75	0.3	0.051	0.099	0.046	0.005	0.16	0.00
76	1140	19.00	0.2	0.034	0.098	0.031	0.003	0.10	0.00
77	1155	19.25	0.3	0.051	0.097	0.046	0.005	0.16	0.00
78	1170	19.50	0.4	0.068	0.095	0.061	0.007	0.21	0.00
79	1185	19.75	0.3	0.051	0.094	0.046	0.005	0.16	0.00
80	1200	20.00	0.2	0.034	0.093	0.031	0.003	0.10	0.00
81	1215	20.25	0.3	0.051	0.091	0.046	0.005	0.16	0.00
82	1230	20.50	0.3	0.051	0.090	0.046	0.005	0.16	0.00
83	1245	20.75	0.3	0.051	0.089	0.046	0.005	0.16	0.00
84	1260	21.00	0.2	0.034	0.088	0.031	0.003	0.10	0.00
85	1275	21.25	0.3	0.051	0.087	0.046	0.005	0.16	0.00
86	1290	21.50	0.2	0.034	0.086	0.031	0.003	0.10	0.00
87	1305	21.75	0.3	0.051	0.085	0.046	0.005	0.16	0.00
88	1320	22.00	0.2	0.034	0.084	0.031	0.003	0.10	0.00
89	1335	22.25	0.3	0.051	0.083	0.046	0.005	0.16	0.00
90	1350	22.50	0.2	0.034	0.083	0.031	0.003	0.10	0.00
91	1365	22.75	0.2	0.034	0.082	0.031	0.003	0.10	0.00
92	1380	23.00	0.2	0.034	0.081	0.031	0.003	0.10	0.00
93	1395	23.25	0.2	0.034	0.081	0.031	0.003	0.10	0.00
94	1410	23.50	0.2	0.034	0.080	0.031	0.003	0.10	0.00
95	1425	23.75	0.2	0.034	0.080	0.031	0.003	0.10	0.00
96	1440	24.00	0.2	0.034	0.079	0.031	0.003	0.10	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.89
FLOOD VOLUME (acft)	4.85
FLOOD VOLUME (cuft)	211181.60
REQUIRED STORAGE (acft)	4.05
REQUIRED STORAGE (cuft)	176577.21
PEAK FLOW (cfs)	13.51

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
1

BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
379	0	0		42516	0	0	0.00
380	1	1	2511	45027	43772	43772	1.00
381	1	2	2582	47609	46318	90090	2.07
382	1	3	2654	50263	48936	139026	3.19

PERCOLATION CALCULATIONS
PERCOLATION RATE 0.67 in/hr 0.66 cfs

MAXWELL IV DRYWELLS
NUMBER USED 0
RATE/DRYWELL 0 cfs
TOTAL DISSIPATED 0 cfs

TOTAL PERCOLATION RATE 0.66 cfs

1

TKC JOB # C1443

100 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	4.85	1,455	1,455	198	1,257	379.03	1,257	0.03
2	10	4.85	1,455	2,711	198	2,514	379.06	2,514	0.06
3	15	3.35	1,006	3,519	198	3,322	379.08	3,322	0.08
4	20	6.35	1,904	5,225	198	5,027	379.11	5,027	0.12
5	25	6.35	1,904	6,931	198	6,733	379.15	6,733	0.15
6	30	8.59	2,577	9,310	198	9,113	379.21	9,113	0.21
7	35	6.35	1,904	11,016	198	10,818	379.25	10,818	0.25
8	40	8.59	2,577	13,396	198	13,198	379.30	13,198	0.30
9	45	8.59	2,577	15,775	198	15,577	379.36	15,577	0.36
10	50	6.35	1,904	17,481	198	17,283	379.39	17,283	0.40
11	55	7.09	2,128	19,411	198	19,213	379.44	19,213	0.44
12	60	8.59	2,577	21,790	198	21,593	379.49	21,593	0.50
13	65	11.58	3,475	25,068	198	24,870	379.57	24,870	0.57
14	70	11.58	3,475	28,345	198	28,147	379.64	28,147	0.65
15	75	11.58	3,475	31,623	198	31,425	379.72	31,425	0.72
16	80	10.09	3,026	34,451	198	34,253	379.78	34,253	0.79
17	85	14.58	4,373	38,626	198	38,428	379.88	38,428	0.88
18	90	15.33	4,598	43,026	198	42,828	379.98	42,828	0.98
19	95	13.08	3,924	46,752	198	46,555	380.06	46,555	1.07
20	100	15.33	4,598	51,152	198	50,954	380.16	50,954	1.17
21	105	19.82	5,945	56,899	198	56,701	380.28	56,701	1.30
22	110	18.32	5,496	62,197	198	61,999	380.39	61,999	1.42
23	115	16.82	5,047	67,046	198	66,848	380.50	66,848	1.53
24	120	17.57	5,271	72,119	198	71,921	380.61	71,921	1.65
25	125	18.32	5,496	77,417	198	77,219	380.72	77,219	1.77
26	130	26.55	7,965	85,185	198	84,987	380.89	84,987	1.95
27	135	32.54	9,761	94,748	198	94,550	381.09	94,550	2.17
28	140	21.31	6,394	100,944	198	100,746	381.22	100,746	2.31
29	145	46.01	13,802	114,548	198	114,350	381.50	114,350	2.63
30	150	49.75	14,925	129,275	198	129,077	381.80	129,077	2.96
31	155	56.48	16,945	146,023	198	145,825	-	145,825	3.35
32	160	39.27	11,782	157,607	198	157,409	-	157,409	3.61
33	165	10.09	3,026	160,435	198	160,237	-	160,237	3.68
34	170	8.59	2,577	162,814	198	162,616	-	162,616	3.73
35	175	8.59	2,577	165,194	198	164,996	-	164,996	3.79
36	180	0.45	135	165,131	198	164,933	-	164,933	3.79

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.12	35	35	198	-	379.00	-	0.00
2	10	1.11	334	334	198	137	379.00	137	0.00
3	15	1.11	334	471	198	273	379.01	273	0.01
4	20	1.11	334	607	198	410	379.01	410	0.01
5	25	1.11	334	744	198	546	379.01	546	0.01
6	30	2.11	634	1,180	198	982	379.02	982	0.02
7	35	2.11	634	1,616	198	1,419	379.03	1,419	0.03
8	40	2.11	634	2,053	198	1,855	379.04	1,855	0.04
9	45	2.11	634	2,489	198	2,291	379.05	2,291	0.05
10	50	2.11	634	2,925	198	2,727	379.06	2,727	0.06
11	55	2.11	634	3,361	198	3,164	379.07	3,164	0.07
12	60	3.11	934	4,097	198	3,900	379.09	3,900	0.09
13	65	3.11	934	4,833	198	4,636	379.11	4,636	0.11
14	70	3.11	934	5,569	198	5,372	379.12	5,372	0.12
15	75	3.11	934	6,305	198	6,107	379.14	6,107	0.14
16	80	3.11	934	7,041	198	6,843	379.16	6,843	0.16
17	85	3.11	934	7,777	198	7,579	379.17	7,579	0.17
18	90	3.11	934	8,513	198	8,315	379.19	8,315	0.19
19	95	3.11	934	9,249	198	9,051	379.21	9,051	0.21
20	100	3.11	934	9,985	198	9,787	379.22	9,787	0.22
21	105	3.11	934	10,721	198	10,523	379.24	10,523	0.24
22	110	3.11	934	11,457	198	11,259	379.26	11,259	0.26
23	115	3.11	934	12,193	198	11,995	379.27	11,995	0.28
24	120	4.11	1,233	13,229	198	13,031	379.30	13,031	0.30
25	125	3.11	934	13,964	198	13,767	379.31	13,767	0.32
26	130	4.11	1,233	15,000	198	14,802	379.34	14,802	0.34
27	135	4.11	1,233	16,036	198	15,838	379.36	15,838	0.36
28	140	4.11	1,233	17,071	198	16,874	379.39	16,874	0.39
29	145	4.11	1,233	18,107	198	17,909	379.41	17,909	0.41
30	150	4.11	1,233	19,143	198	18,945	379.43	18,945	0.43
31	155	4.11	1,233	20,178	198	19,981	379.46	19,981	0.46
32	160	4.11	1,233	21,214	198	21,016	379.48	21,016	0.48
33	165	5.11	1,533	22,549	198	22,352	379.51	22,352	0.51
34	170	5.11	1,533	23,885	198	23,687	379.54	23,687	0.54
35	175	5.11	1,533	25,220	198	25,022	379.57	25,022	0.57
36	180	5.11	1,533	26,556	198	26,358	379.60	26,358	0.61
37	185	5.11	1,533	27,891	198	27,693	379.63	27,693	0.64
38	190	6.11	1,833	29,526	198	29,328	379.67	29,328	0.67
39	195	6.11	1,833	31,161	198	30,963	379.71	30,963	0.71
40	200	6.11	1,833	32,796	198	32,598	379.74	32,598	0.75
41	205	7.11	2,133	34,731	198	34,533	379.79	34,533	0.79
42	210	8.11	2,432	36,965	198	36,767	379.84	36,767	0.84
43	215	9.11	2,732	39,499	198	39,302	379.90	39,302	0.90
44	220	9.11	2,732	42,034	198	41,836	379.96	41,836	0.96
45	225	10.11	3,032	44,868	198	44,670	380.02	44,670	1.03
46	230	10.11	3,032	47,701	198	47,504	380.08	47,504	1.09
47	235	11.10	3,331	50,835	198	50,637	380.15	50,637	1.16
48	240	11.10	3,331	53,969	198	53,771	380.22	53,771	1.23
49	245	12.10	3,631	57,402	198	57,204	380.29	57,204	1.31
50	250	13.10	3,931	61,135	198	60,937	380.37	60,937	1.40
51	255	14.10	4,231	65,168	198	64,970	380.46	64,970	1.49
52	260	15.10	4,530	69,500	198	69,302	380.55	69,302	1.59
53	265	16.10	4,830	74,132	198	73,934	380.65	73,934	1.70
54	270	16.10	4,830	78,764	198	78,566	380.75	78,566	1.80
55	275	17.10	5,130	83,696	198	83,498	380.86	83,498	1.92

1

TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	18.10	5,429	88,928	198	88,730	380.97	88,730	2.04
57	285	19.10	5,729	94,459	198	94,261	381.09	94,261	2.16
58	290	19.10	5,729	99,990	198	99,792	381.20	99,792	2.29
59	295	20.10	6,029	105,821	198	105,623	381.32	105,623	2.42
60	300	21.09	6,328	111,952	198	111,754	381.44	111,754	2.57
61	305	26.09	7,827	119,581	198	119,383	381.60	119,383	2.74
62	310	31.08	9,325	128,708	198	128,511	381.79	128,511	2.95
63	315	34.08	10,225	138,735	198	138,537	381.99	138,537	3.18
64	320	37.08	11,124	149,661	198	149,463	-	149,463	3.43
65	325	42.07	12,622	162,085	198	161,888	-	161,888	3.72
66	330	51.07	15,320	177,207	198	177,009	-	177,009	4.06
67	335	14.10	4,231	181,240	198	181,042	-	181,042	4.16
68	340	4.11	1,233	182,276	198	182,078	-	182,078	4.18
69	345	1.11	334	182,412	198	182,214	-	182,214	4.18
70	350	0.12	35	182,249	198	182,051	-	182,051	4.18
71	355	0.30	90	182,141	198	181,943	-	181,943	4.18
72	360	0.20	60	182,003	198	181,805	-	181,805	4.17

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.10	94	94	593	-	379.00	-	0.00
2	30	0.16	141	141	593	-	379.00	-	0.00
3	45	0.16	141	141	593	-	379.00	-	0.00
4	60	0.21	188	188	593	-	379.00	-	0.00
5	75	0.16	141	141	593	-	379.00	-	0.00
6	90	0.16	141	141	593	-	379.00	-	0.00
7	105	0.16	141	141	593	-	379.00	-	0.00
8	120	0.21	188	188	593	-	379.00	-	0.00
9	135	0.21	188	188	593	-	379.00	-	0.00
10	150	0.21	188	188	593	-	379.00	-	0.00
11	165	0.26	234	234	593	-	379.00	-	0.00
12	180	0.26	234	234	593	-	379.00	-	0.00
13	195	0.26	234	234	593	-	379.00	-	0.00
14	210	0.26	234	234	593	-	379.00	-	0.00
15	225	0.26	234	234	593	-	379.00	-	0.00
16	240	0.31	281	281	593	-	379.00	-	0.00
17	255	0.31	281	281	593	-	379.00	-	0.00
18	270	0.36	328	328	593	-	379.00	-	0.00
19	285	0.36	328	328	593	-	379.00	-	0.00
20	300	0.42	375	375	593	-	379.00	-	0.00
21	315	0.31	281	281	593	-	379.00	-	0.00
22	330	0.36	328	328	593	-	379.00	-	0.00
23	345	0.42	375	375	593	-	379.00	-	0.00
24	360	0.42	375	375	593	-	379.00	-	0.00
25	375	0.47	422	422	593	-	379.00	-	0.00
26	390	0.47	422	422	593	-	379.00	-	0.00
27	405	0.52	469	469	593	-	379.00	-	0.00
28	420	0.52	469	469	593	-	379.00	-	0.00
29	435	0.52	469	469	593	-	379.00	-	0.00
30	450	0.57	516	516	593	-	379.00	-	0.00
31	465	0.37	332	332	593	-	379.00	-	0.00
32	480	0.97	874	874	593	281	379.01	281	0.01
33	495	2.09	1,885	2,165	593	1,572	379.04	1,572	0.04
34	510	2.17	1,956	3,528	593	2,935	379.07	2,935	0.07
35	525	2.77	2,496	5,431	593	4,838	379.11	4,838	0.11
36	540	3.37	3,036	7,874	593	7,280	379.17	7,280	0.17
37	555	4.49	4,044	11,324	593	10,730	379.25	10,730	0.25
38	570	5.09	4,582	15,312	593	14,719	379.34	14,719	0.34
39	585	5.69	5,119	19,838	593	19,244	379.44	19,244	0.44
40	600	6.28	5,656	24,900	593	24,307	379.56	24,307	0.56
41	615	2.71	2,441	26,748	593	26,154	379.60	26,154	0.60
42	630	2.79	2,508	28,662	593	28,068	379.64	28,068	0.64
43	645	5.46	4,918	32,986	593	32,393	379.74	32,393	0.74
44	660	5.54	4,983	37,376	593	36,783	379.84	36,783	0.84
45	675	5.09	4,579	41,362	593	40,768	379.93	40,768	0.94
46	690	5.16	4,643	45,411	593	44,817	380.02	44,817	1.03
47	705	4.19	3,768	48,586	593	47,992	380.09	47,992	1.10
48	720	4.78	4,300	52,292	593	51,698	380.17	51,698	1.19
49	735	8.49	7,644	59,342	593	58,749	380.32	58,749	1.35
50	750	9.08	8,174	66,923	593	66,329	380.49	66,329	1.52
51	765	10.19	9,172	75,501	593	74,908	380.67	74,908	1.72
52	780	10.78	9,701	84,608	593	84,015	380.87	84,015	1.93
53	795	13.45	12,104	96,119	593	95,525	381.11	95,525	2.19
54	810	13.51	12,162	107,688	593	107,094	381.35	107,094	2.46
55	825	7.85	7,062	114,156	593	113,562	381.48	113,562	2.61
56	840	7.91	7,118	120,681	593	120,087	381.61	120,087	2.76
57	855	10.06	9,050	129,137	593	128,544	381.79	128,544	2.95
58	870	9.60	8,636	137,180	593	136,586	381.95	136,586	3.14

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TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	9.66	8,690	145,277	593	144,683	-	144,683	3.32
60	900	9.19	8,275	152,958	593	152,365	-	152,365	3.50
61	915	8.73	7,859	160,224	593	159,630	-	159,630	3.66
62	930	8.27	7,442	167,072	593	166,479	-	166,479	3.82
63	945	6.24	5,617	172,096	593	171,503	-	171,503	3.94
64	960	6.30	5,668	177,171	593	176,577	-	176,577	4.05
65	975	0.21	188	176,765	593	176,171	-	176,171	4.04
66	990	0.21	188	176,359	593	175,765	-	175,765	4.04
67	1005	0.16	141	175,906	593	175,313	-	175,313	4.02
68	1020	0.16	141	175,453	593	174,860	-	174,860	4.01
69	1035	0.26	234	175,094	593	174,501	-	174,501	4.01
70	1050	0.26	234	174,735	593	174,142	-	174,142	4.00
71	1065	0.26	234	174,376	593	173,783	-	173,783	3.99
72	1080	0.21	188	173,970	593	173,377	-	173,377	3.98
73	1095	0.21	188	173,565	593	172,971	-	172,971	3.97
74	1110	0.21	188	173,159	593	172,565	-	172,565	3.96
75	1125	0.16	141	172,706	593	172,112	-	172,112	3.95
76	1140	0.10	94	172,206	593	171,613	-	171,613	3.94
77	1155	0.16	141	171,753	593	171,160	-	171,160	3.93
78	1170	0.21	188	171,348	593	170,754	-	170,754	3.92
79	1185	0.16	141	170,895	593	170,301	-	170,301	3.91
80	1200	0.10	94	170,395	593	169,802	-	169,802	3.90
81	1215	0.16	141	169,942	593	169,349	-	169,349	3.89
82	1230	0.16	141	169,490	593	168,896	-	168,896	3.88
83	1245	0.16	141	169,037	593	168,443	-	168,443	3.87
84	1260	0.10	94	168,537	593	167,944	-	167,944	3.86
85	1275	0.16	141	168,084	593	167,491	-	167,491	3.85
86	1290	0.10	94	167,585	593	166,991	-	166,991	3.83
87	1305	0.16	141	167,132	593	166,538	-	166,538	3.82
88	1320	0.10	94	166,632	593	166,039	-	166,039	3.81
89	1335	0.16	141	166,179	593	165,586	-	165,586	3.80
90	1350	0.10	94	165,680	593	165,086	-	165,086	3.79
91	1365	0.10	94	165,180	593	164,587	-	164,587	3.78
92	1380	0.10	94	164,680	593	164,087	-	164,087	3.77
93	1395	0.10	94	164,181	593	163,587	-	163,587	3.76
94	1410	0.10	94	163,681	593	163,088	-	163,088	3.74
95	1425	0.10	94	163,181	593	162,588	-	162,588	3.73
96	1440	0.10	94	162,682	593	162,088	-	162,088	3.72

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA BUSINESS PARK - INTERIM BASIN		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA B - 100 YEAR STORM EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	8.18		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING			
23	RETENTION BASIN	1		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	1000		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	285		
30				
31	ELEVATION OF HEADWATER	387		
32	ELEVATION OF CONCENTRATION POINT	382		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	100		
37				
38	POINT RAIN			
39	3-HOUR	2.03		
40	6-HOUR	2.71		
41	24-HOUR	4.24		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		382	42380	
45		383	44806	
46		384	47288	
47		385	49827	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

	A	B	C	D
1	**RCFCD SYNTHETIC UNIT HYDROGRAPH**			
2	DATA INPUT SHEET			
3				
4	WORKSHEET PREPARED BY:	JAMES BAZUA, PE		
5				
6	PROJECT NAME	COACHELLA AIRPORT BUSINESS PARK		
7	TAG Project No.	C1443		
8				
9	CONCENTRATION POINT DESIGNATION	1		
10	AREA DESIGNATION	SUBAREA C - 100 YEAR EVENT		
11				
12	TRIBUTARY AREAS	ACRES		
13				
14	COMMERCIAL	2.32		
15	PAVING/HARDSCAPE			
16	SF - 1 ACRE			
17	SF - 1/2 ACRE			
18	SF - 1/4 ACRE			
19	MF - CONDOMINIUMS			
20	MF - APARTMENTS			
21	MOBILE HOME PARK			
22	LANDSCAPING	0.1		
23	RETENTION BASIN	0.21		
24	GOLF COURSE			
25	MOUNTAINOUS			
26	LOW LOSS RATE (PERCENT)	90%		
27				
28	LENGTH OF WATERCOURSE (L)	400		
29	LENGTH TO POINT OPPOSITE CENTROID (Lca)	30		
30				
31	ELEVATION OF HEADWATER	386		
32	ELEVATION OF CONCENTRATION POINT	384		
33				
34	AVERAGE MANNINGS 'N' VALUE	0.02		
35				
36	STORM FREQUENCY (YEAR)	100		
37				
38	POINT RAIN			
39	3-HOUR	2.03		
40	6-HOUR	2.71		
41	24-HOUR	4.24		
42				
43	BASIN CHARACTERISTICS:	ELEVATION	AREA	
44		381	2664	
45		382	4561	
46		383	6529	
47		384	8568	
48				
49				
50				
51				
52	PERCOLATION RATE (in/hr)	0.67		
53				
54	DRYWELL DATA			
55	NUMBER USED			
56	PERCOLATION RATE (cfs)			

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
BASIC DATA CALCULATION FORM
SHORTCUT METHOD

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
BY MES BAZUA, PE DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA C - 100 YEAR EVENT
[3] AREA - ACRES	2.630
[4] L-FEET	400
[5] L-MILES	0.076
[6] La-FEET	30.00
[7] La-MILES	0.006
[8] ELEVATION OF HEADWATER	386
[9] ELEVATION OF CONCENTRATION POINT	384
[10] H-FEET	2
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.000
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.01
[16] LAG TIME-MINUTES	0.8
[17] 100% OF LAG-MINUTES	0.8
[18] 200% OF LAG-MINUTES	1.6
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.04

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 100
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
2.03	2.630	1.00	2.03	2.71	2.630	1.00	2.71	4.24	2.630	1.00	4.24
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	2.63	SUM [7]	2.03	SUM [9]	2.63	SUM [11]	2.71	SUM [13]	2.63	SUM [15]	4.24
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			2.03				2.71				4.24

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	1.59	1.85	2.00
FLOOD VOLUME	(cu-ft)	15,210	17,648	19,085
	(acre-ft)	0.35	0.41	0.44
REQUIRED STORAGE	(cu-ft)	14,650	16,621	16,588
	(acre-ft)	0.34	0.38	0.38
PEAK FLOW	(cfs)	4.87	4.41	1.19
MAXIMUM WSEL	(ft)	383.73	383.99	383.98

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.51	90%	0.10	2.32	0.882	0.0855
B	PAVING/HARDSCAPE	56	0.51	100%	0.05	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.51	20%	0.42	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.51	40%	0.33	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.51	50%	0.28	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.51	65%	0.21	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.51	80%	0.14	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.51	75%	0.17	0.00	0.000	0.0000
B	LANDSCAPING	56	0.51	0%	0.51	0.10	0.038	0.0194
B	RETENTION BASINS	56	0.51	0%	0.51	0.21	0.080	0.0407
B	GOLF COURSE	56	0.51	0%	0.51	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.08	90%	0.02	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	2.63	SUM	0.1456

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.072796198
C= 0.00135

Ft=C(24-(T/60))^1.55 = 0.00135 (24-(T/60))^1.55 + 0.07 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: \MES BAZUA, FDATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	0.81
UNIT TIME-PERCENT OF LAG	614.9
TOTAL ADJUSTED STORM RAIN-INCHES	2.03
CONSTANT LOSS RATE-in/hr	0.15
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.04 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.317	0.15	0.29	0.17	0.45	122.59
2	10	0.17	1.3	0.317	0.15	0.29	0.17	0.45	122.59
3	15	0.25	1.1	0.268	0.15	0.24	0.12	0.32	84.15
4	20	0.33	1.5	0.365	0.15	0.33	0.22	0.58	161.03
5	25	0.42	1.5	0.365	0.15	0.33	0.22	0.58	161.03
6	30	0.50	1.8	0.438	0.15	0.39	0.29	0.77	218.69
7	35	0.58	1.5	0.365	0.15	0.33	0.22	0.58	161.03
8	40	0.67	1.8	0.438	0.15	0.39	0.29	0.77	218.69
9	45	0.75	1.8	0.438	0.15	0.39	0.29	0.77	218.69
10	50	0.83	1.5	0.365	0.15	0.33	0.22	0.58	161.03
11	55	0.92	1.6	0.390	0.15	0.35	0.24	0.64	180.25
12	60	1.00	1.8	0.438	0.15	0.39	0.29	0.77	218.69
13	65	1.08	2.2	0.536	0.15	0.48	0.39	1.03	295.57
14	70	1.17	2.2	0.536	0.15	0.48	0.39	1.03	295.57
15	75	1.25	2.2	0.536	0.15	0.48	0.39	1.03	295.57
16	80	1.33	2.0	0.487	0.15	0.44	0.34	0.90	257.13
17	85	1.42	2.6	0.633	0.15	0.57	0.49	1.28	372.45
18	90	1.50	2.7	0.658	0.15	0.59	0.51	1.35	391.67
19	95	1.58	2.4	0.585	0.15	0.53	0.44	1.15	334.01
20	100	1.67	2.7	0.658	0.15	0.59	0.51	1.35	391.67
21	105	1.75	3.3	0.804	0.15	0.72	0.66	1.73	506.99
22	110	1.83	3.1	0.755	0.15	0.68	0.61	1.60	468.55
23	115	1.92	2.9	0.706	0.15	0.64	0.56	1.48	430.11
24	120	2.00	3.0	0.731	0.15	0.66	0.59	1.54	449.33
25	125	2.08	3.1	0.755	0.15	0.68	0.61	1.60	468.55
26	130	2.17	4.2	1.023	0.15	0.92	0.88	2.31	679.97
27	135	2.25	5.0	1.218	0.15	1.10	1.07	2.82	833.73
28	140	2.33	3.5	0.853	0.15	0.77	0.71	1.86	545.43
29	145	2.42	6.8	1.656	0.15	1.49	1.51	3.97	1179.70
30	150	2.50	7.3	1.778	0.15	1.60	1.63	4.29	1275.80
31	155	2.58	8.2	1.998	0.15	1.80	1.85	4.87	1448.78
32	160	2.67	5.9	1.437	0.15	1.29	1.29	3.40	1006.71
33	165	2.75	2.0	0.487	0.15	0.44	0.34	0.90	257.13
34	170	2.83	1.8	0.438	0.15	0.39	0.29	0.77	218.69
35	175	2.92	1.8	0.438	0.15	0.39	0.29	0.77	218.69
36	180	3.00	0.6	0.146	0.15	0.13	0.00	0.00	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.59
FLOOD VOLUME (acft)	0.35
FLOOD VOLUME (cuft)	15210.40
REQUIRED STORAGE (acft)	0.34
REQUIRED STORAGE (cuft)	14650.36
PEAK FLOW RATE (cfs)	4.87

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	0.81
UNIT TIME-PERCENT OF LAG	614.9
TOTAL ADJUSTED STORM RAIN-INCHES	2.71
CONSTANT LOSS RATE-in/hr	0.146
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.04 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	0.5	0.163	0.15	0.15	0.02	0.04	1.02
2	10	0.17	0.6	0.195	0.15	0.18	0.05	0.13	26.68
3	15	0.25	0.6	0.195	0.15	0.18	0.05	0.13	26.68
4	20	0.33	0.6	0.195	0.15	0.18	0.05	0.13	26.68
5	25	0.42	0.6	0.195	0.15	0.18	0.05	0.13	26.68
6	30	0.50	0.7	0.228	0.15	0.20	0.08	0.22	52.34
7	35	0.58	0.7	0.228	0.15	0.20	0.08	0.22	52.34
8	40	0.67	0.7	0.228	0.15	0.20	0.08	0.22	52.34
9	45	0.75	0.7	0.228	0.15	0.20	0.08	0.22	52.34
10	50	0.83	0.7	0.228	0.15	0.20	0.08	0.22	52.34
11	55	0.92	0.7	0.228	0.15	0.20	0.08	0.22	52.34
12	60	1.00	0.8	0.260	0.15	0.23	0.11	0.30	78.00
13	65	1.08	0.8	0.260	0.15	0.23	0.11	0.30	78.00
14	70	1.17	0.8	0.260	0.15	0.23	0.11	0.30	78.00
15	75	1.25	0.8	0.260	0.15	0.23	0.11	0.30	78.00
16	80	1.33	0.8	0.260	0.15	0.23	0.11	0.30	78.00
17	85	1.42	0.8	0.260	0.15	0.23	0.11	0.30	78.00
18	90	1.50	0.8	0.260	0.15	0.23	0.11	0.30	78.00
19	95	1.58	0.8	0.260	0.15	0.23	0.11	0.30	78.00
20	100	1.67	0.8	0.260	0.15	0.23	0.11	0.30	78.00
21	105	1.75	0.8	0.260	0.15	0.23	0.11	0.30	78.00
22	110	1.83	0.8	0.260	0.15	0.23	0.11	0.30	78.00
23	115	1.92	0.8	0.260	0.15	0.23	0.11	0.30	78.00
24	120	2.00	0.9	0.293	0.15	0.26	0.15	0.39	103.66
25	125	2.08	0.8	0.260	0.15	0.23	0.11	0.30	78.00
26	130	2.17	0.9	0.293	0.15	0.26	0.15	0.39	103.66
27	135	2.25	0.9	0.293	0.15	0.26	0.15	0.39	103.66
28	140	2.33	0.9	0.293	0.15	0.26	0.15	0.39	103.66
29	145	2.42	0.9	0.293	0.15	0.26	0.15	0.39	103.66
30	150	2.50	0.9	0.293	0.15	0.26	0.15	0.39	103.66
31	155	2.58	0.9	0.293	0.15	0.26	0.15	0.39	103.66
32	160	2.67	0.9	0.293	0.15	0.26	0.15	0.39	103.66
33	165	2.75	1.0	0.325	0.15	0.29	0.18	0.47	129.32
34	170	2.83	1.0	0.325	0.15	0.29	0.18	0.47	129.32
35	175	2.92	1.0	0.325	0.15	0.29	0.18	0.47	129.32
36	180	3.00	1.0	0.325	0.15	0.29	0.18	0.47	129.32
37	185	3.08	1.0	0.325	0.15	0.29	0.18	0.47	129.32
38	190	3.17	1.1	0.358	0.15	0.32	0.21	0.56	154.97
39	195	3.25	1.1	0.358	0.15	0.32	0.21	0.56	154.97
40	200	3.33	1.1	0.358	0.15	0.32	0.21	0.56	154.97
41	205	3.42	1.2	0.390	0.15	0.35	0.24	0.64	180.63
42	210	3.50	1.3	0.423	0.15	0.38	0.28	0.73	206.29
43	215	3.58	1.4	0.455	0.15	0.41	0.31	0.81	231.95
44	220	3.67	1.4	0.455	0.15	0.41	0.31	0.81	231.95
45	225	3.75	1.5	0.488	0.15	0.44	0.34	0.90	257.61
46	230	3.83	1.5	0.488	0.15	0.44	0.34	0.90	257.61
47	235	3.92	1.6	0.520	0.15	0.47	0.37	0.99	283.27
48	240	4.00	1.6	0.520	0.15	0.47	0.37	0.99	283.27
49	245	4.08	1.7	0.553	0.15	0.50	0.41	1.07	308.92
50	250	4.17	1.8	0.585	0.15	0.53	0.44	1.16	334.58
51	255	4.25	1.9	0.618	0.15	0.56	0.47	1.24	360.24
52	260	4.33	2.0	0.650	0.15	0.59	0.50	1.33	385.90
53	265	4.42	2.1	0.683	0.15	0.61	0.54	1.41	411.56
54	270	4.50	2.1	0.683	0.15	0.61	0.54	1.41	411.56
55	275	4.58	2.2	0.715	0.15	0.64	0.57	1.50	437.21
56	280	4.67	2.3	0.748	0.15	0.67	0.60	1.58	462.87

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 100 YEAR - 6 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.63		
UNIT TIME-MINUTES	5		
LAG TIME - MINUTES	0.81		
UNIT TIME-PERCENT OF LAG	614.9		
TOTAL ADJUSTED STORM RAIN-INCHES	2.71		
CONSTANT LOSS RATE-in/hr	0.146		
LOW LOSS RATE - PERCENT	90%	TOTAL PERCOLATION RATE (cfs)	0.04 cfs

Unit Time Period	Time		Pattern	Storm Rain	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	Percent (Plate E-5.9)	in/hr	Max	Low	in/hr	cfs	cf
57	285	4.75	2.4	0.780	0.15	0.70	0.63	1.67	488.53
58	290	4.83	2.4	0.780	0.15	0.70	0.63	1.67	488.53
59	295	4.92	2.5	0.813	0.15	0.73	0.67	1.76	514.19
60	300	5.00	2.6	0.846	0.15	0.76	0.70	1.84	539.85
61	305	5.08	3.1	1.008	0.15	0.91	0.86	2.27	668.14
62	310	5.17	3.6	1.171	0.15	1.05	1.03	2.70	796.43
63	315	5.25	3.9	1.268	0.15	1.14	1.12	2.95	873.41
64	320	5.33	4.2	1.366	0.15	1.23	1.22	3.21	950.38
65	325	5.42	4.7	1.528	0.15	1.38	1.38	3.64	1078.67
66	330	5.50	5.6	1.821	0.15	1.64	1.68	4.41	1309.60
67	335	5.58	1.9	0.618	0.15	0.56	0.47	1.24	360.24
68	340	5.67	0.9	0.293	0.15	0.26	0.15	0.39	103.66
69	345	5.75	0.6	0.195	0.15	0.18	0.05	0.13	26.68
70	350	5.83	0.5	0.163	0.15	0.15	0.02	0.04	1.02
71	355	5.92	0.3	0.098	0.15	0.09	0.01	0.03	0.00
72	360	6.00	0.2	0.065	0.15	0.06	0.01	0.02	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.85
FLOOD VOLUME (acft)	0.41
FLOOD VOLUME (cuft)	17647.67
REQUIRED STORAGE (acft)	0.38
REQUIRED STORAGE (cuft)	16621.27
PEAK FLOW RATE (cfs)	4.41

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA AIRPORT BUSINESS PARK
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.630	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1456
LAG TIME - MINUTES	0.81	MINIMUM LOSS RATE (for var. loss) - in/hr	0.073
UNIT TIME-PERCENT OF LAG	1844.7	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00135
		PERCOLATION RATE (cfs)	0.04

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
1	15	0.25	0.2	0.034	0.257	0.031	0.003	0.01	0.00
2	30	0.50	0.3	0.051	0.254	0.046	0.005	0.01	0.00
3	45	0.75	0.3	0.051	0.251	0.046	0.005	0.01	0.00
4	60	1.00	0.4	0.068	0.248	0.061	0.007	0.02	0.00
5	75	1.25	0.3	0.051	0.245	0.046	0.005	0.01	0.00
6	90	1.50	0.3	0.051	0.242	0.046	0.005	0.01	0.00
7	105	1.75	0.3	0.051	0.239	0.046	0.005	0.01	0.00
8	120	2.00	0.4	0.068	0.237	0.061	0.007	0.02	0.00
9	135	2.25	0.4	0.068	0.234	0.061	0.007	0.02	0.00
10	150	2.50	0.4	0.068	0.231	0.061	0.007	0.02	0.00
11	165	2.75	0.5	0.085	0.228	0.076	0.008	0.02	0.00
12	180	3.00	0.5	0.085	0.225	0.076	0.008	0.02	0.00
13	195	3.25	0.5	0.085	0.222	0.076	0.008	0.02	0.00
14	210	3.50	0.5	0.085	0.220	0.076	0.008	0.02	0.00
15	225	3.75	0.5	0.085	0.217	0.076	0.008	0.02	0.00
16	240	4.00	0.6	0.102	0.214	0.092	0.010	0.03	0.00
17	255	4.25	0.6	0.102	0.212	0.092	0.010	0.03	0.00
18	270	4.50	0.7	0.119	0.209	0.107	0.012	0.03	0.00
19	285	4.75	0.7	0.119	0.206	0.107	0.012	0.03	0.00
20	300	5.00	0.8	0.136	0.203	0.122	0.014	0.04	0.00
21	315	5.25	0.6	0.102	0.201	0.092	0.010	0.03	0.00
22	330	5.50	0.7	0.119	0.198	0.107	0.012	0.03	0.00
23	345	5.75	0.8	0.136	0.196	0.122	0.014	0.04	0.00
24	360	6.00	0.8	0.136	0.193	0.122	0.014	0.04	0.00
25	375	6.25	0.9	0.153	0.190	0.137	0.015	0.04	0.00
26	390	6.50	0.9	0.153	0.188	0.137	0.015	0.04	0.00
27	405	6.75	1.0	0.170	0.185	0.153	0.017	0.04	2.96
28	420	7.00	1.0	0.170	0.183	0.153	0.017	0.04	2.96
29	435	7.25	1.0	0.170	0.180	0.153	0.017	0.04	2.96
30	450	7.50	1.1	0.187	0.178	0.168	0.009	0.02	0.00
31	465	7.75	1.2	0.204	0.176	0.183	0.028	0.07	29.08
32	480	8.00	1.3	0.220	0.173	0.198	0.047	0.12	74.95
33	495	8.25	1.5	0.254	0.171	0.229	0.084	0.22	160.92
34	510	8.50	1.5	0.254	0.168	0.229	0.086	0.23	166.55
35	525	8.75	1.6	0.271	0.166	0.244	0.105	0.28	212.28
36	540	9.00	1.7	0.288	0.164	0.259	0.125	0.33	257.96
37	555	9.25	1.9	0.322	0.161	0.290	0.161	0.42	343.73
38	570	9.50	2.0	0.339	0.159	0.305	0.180	0.47	389.31
39	585	9.75	2.1	0.356	0.157	0.321	0.199	0.52	434.83
40	600	10.00	2.2	0.373	0.154	0.336	0.219	0.57	480.31
41	615	10.25	1.5	0.254	0.152	0.229	0.102	0.27	204.58
42	630	10.50	1.5	0.254	0.150	0.229	0.104	0.27	209.80
43	645	10.75	2.0	0.339	0.148	0.305	0.191	0.50	415.70
44	660	11.00	2.0	0.339	0.146	0.305	0.193	0.51	420.82
45	675	11.25	1.9	0.322	0.144	0.290	0.179	0.47	385.75
46	690	11.50	1.9	0.322	0.141	0.290	0.181	0.48	390.76
47	705	11.75	1.7	0.288	0.139	0.259	0.149	0.39	315.43
48	720	12.00	1.8	0.305	0.137	0.275	0.168	0.44	360.48
49	735	12.25	2.5	0.424	0.135	0.382	0.289	0.76	646.34
50	750	12.50	2.6	0.441	0.133	0.397	0.308	0.81	691.28
51	765	12.75	2.8	0.475	0.131	0.427	0.344	0.90	776.31
52	780	13.00	2.9	0.492	0.129	0.443	0.363	0.95	821.13
53	795	13.25	3.4	0.577	0.127	0.519	0.449	1.18	1026.48
54	810	13.50	3.4	0.577	0.125	0.519	0.451	1.19	1031.04
55	825	13.75	2.3	0.390	0.123	0.351	0.267	0.70	593.96
56	840	14.00	2.3	0.390	0.122	0.351	0.269	0.71	598.41
57	855	14.25	2.7	0.458	0.120	0.412	0.338	0.89	763.37
58	870	14.50	2.6	0.441	0.118	0.397	0.323	0.85	727.55
59	885	14.75	2.6	0.441	0.116	0.397	0.325	0.85	731.82
60	900	15.00	2.5	0.424	0.114	0.382	0.310	0.81	695.88
61	915	15.25	2.4	0.407	0.113	0.366	0.294	0.77	659.87

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD 100 YEAR - 24 HOUR STORM EVENT	PROJECT: COACHELLA AIRPORT BUSINESS PARK CONCENTRATION POINT: 1 BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	2.630	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1456
LAG TIME - MINUTES	0.81	MINIMUM LOSS RATE (for var. loss) - in/hr	0.073
UNIT TIME-PERCENT OF LAG	1844.7	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00135
		PERCOLATION RATE (cfs)	0.04

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
62	930	15.50	2.3	0.390	0.111	0.351	0.279	0.73	623.81
63	945	15.75	1.9	0.322	0.109	0.290	0.213	0.56	467.24
64	960	16.00	1.9	0.322	0.107	0.290	0.215	0.56	471.19
65	975	16.25	0.4	0.068	0.106	0.061	0.007	0.02	0.00
66	990	16.50	0.4	0.068	0.104	0.061	0.007	0.02	0.00
67	1005	16.75	0.3	0.051	0.103	0.046	0.005	0.01	0.00
68	1020	17.00	0.3	0.051	0.101	0.046	0.005	0.01	0.00
69	1035	17.25	0.5	0.085	0.100	0.076	0.008	0.02	0.00
70	1050	17.50	0.5	0.085	0.098	0.076	0.008	0.02	0.00
71	1065	17.75	0.5	0.085	0.097	0.076	0.008	0.02	0.00
72	1080	18.00	0.4	0.068	0.095	0.061	0.007	0.02	0.00
73	1095	18.25	0.4	0.068	0.094	0.061	0.007	0.02	0.00
74	1110	18.50	0.4	0.068	0.092	0.061	0.007	0.02	0.00
75	1125	18.75	0.3	0.051	0.091	0.046	0.005	0.01	0.00
76	1140	19.00	0.2	0.034	0.090	0.031	0.003	0.01	0.00
77	1155	19.25	0.3	0.051	0.089	0.046	0.005	0.01	0.00
78	1170	19.50	0.4	0.068	0.087	0.061	0.007	0.02	0.00
79	1185	19.75	0.3	0.051	0.086	0.046	0.005	0.01	0.00
80	1200	20.00	0.2	0.034	0.085	0.031	0.003	0.01	0.00
81	1215	20.25	0.3	0.051	0.084	0.046	0.005	0.01	0.00
82	1230	20.50	0.3	0.051	0.083	0.046	0.005	0.01	0.00
83	1245	20.75	0.3	0.051	0.082	0.046	0.005	0.01	0.00
84	1260	21.00	0.2	0.034	0.081	0.031	0.003	0.01	0.00
85	1275	21.25	0.3	0.051	0.080	0.046	0.005	0.01	0.00
86	1290	21.50	0.2	0.034	0.079	0.031	0.003	0.01	0.00
87	1305	21.75	0.3	0.051	0.078	0.046	0.005	0.01	0.00
88	1320	22.00	0.2	0.034	0.077	0.031	0.003	0.01	0.00
89	1335	22.25	0.3	0.051	0.076	0.046	0.005	0.01	0.00
90	1350	22.50	0.2	0.034	0.076	0.031	0.003	0.01	0.00
91	1365	22.75	0.2	0.034	0.075	0.031	0.003	0.01	0.00
92	1380	23.00	0.2	0.034	0.074	0.031	0.003	0.01	0.00
93	1395	23.25	0.2	0.034	0.074	0.031	0.003	0.01	0.00
94	1410	23.50	0.2	0.034	0.073	0.031	0.003	0.01	0.00
95	1425	23.75	0.2	0.034	0.073	0.031	0.003	0.01	0.00
96	1440	24.00	0.2	0.034	0.073	0.031	0.003	0.01	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	2.00
FLOOD VOLUME (acft)	0.44
FLOOD VOLUME (cuft)	19085.17
REQUIRED STORAGE (acft)	0.38
REQUIRED STORAGE (cuft)	16587.80
PEAK FLOW (cfs)	1.19

PROJECT: COACHELLA AIRPORT BUSINESS PARK
TKC JOB # C1443
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BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
381	0	0		2664	0	0	0.00
382	1	1	1897	4561	3613	3613	0.08
383	1	2	1968	6529	5545	9158	0.21
384	1	3	2039	8568	7549	16706	0.38

PERCOLATION CALCULATIONS
PERCOLATION RATE 0.67 in/hr 0.04 cfs

MAXWELL IV DRYWELLS
NUMBER USED 0
RATE/DRYWELL 0 cfs
TOTAL DISSIPATED 0 cfs

TOTAL PERCOLATION RATE 0.04 cfs

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TKC JOB # C1443

100 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.45	135	135	12	123	381.03	123	0.00
2	10	0.45	135	258	12	245	381.07	245	0.01
3	15	0.32	97	342	12	329	381.09	329	0.01
4	20	0.58	173	503	12	490	381.14	490	0.01
5	25	0.58	173	664	12	651	381.18	651	0.01
6	30	0.77	231	882	12	870	381.24	870	0.02
7	35	0.58	173	1,044	12	1,031	381.29	1,031	0.02
8	40	0.77	231	1,262	12	1,250	381.35	1,250	0.03
9	45	0.77	231	1,481	12	1,469	381.41	1,469	0.03
10	50	0.58	173	1,642	12	1,630	381.45	1,630	0.04
11	55	0.64	193	1,822	12	1,810	381.50	1,810	0.04
12	60	0.77	231	2,041	12	2,028	381.56	2,028	0.05
13	65	1.03	308	2,336	12	2,324	381.64	2,324	0.05
14	70	1.03	308	2,632	12	2,620	381.73	2,620	0.06
15	75	1.03	308	2,928	12	2,915	381.81	2,915	0.07
16	80	0.90	270	3,185	12	3,172	381.88	3,172	0.07
17	85	1.28	385	3,557	12	3,545	381.98	3,545	0.08
18	90	1.35	404	3,949	12	3,936	382.06	3,936	0.09
19	95	1.15	346	4,283	12	4,270	382.12	4,270	0.10
20	100	1.35	404	4,675	12	4,662	382.19	4,662	0.11
21	105	1.73	519	5,182	12	5,169	382.28	5,169	0.12
22	110	1.60	481	5,650	12	5,638	382.37	5,638	0.13
23	115	1.48	443	6,080	12	6,068	382.44	6,068	0.14
24	120	1.54	462	6,530	12	6,517	382.52	6,517	0.15
25	125	1.60	481	6,998	12	6,986	382.61	6,986	0.16
26	130	2.31	692	7,678	12	7,666	382.73	7,666	0.18
27	135	2.82	846	8,512	12	8,499	382.88	8,499	0.20
28	140	1.86	558	9,057	12	9,045	382.98	9,045	0.21
29	145	3.97	1,192	10,237	12	10,225	383.14	10,225	0.23
30	150	4.29	1,288	11,513	12	11,500	383.31	11,500	0.26
31	155	4.87	1,461	12,962	12	12,949	383.50	12,949	0.30
32	160	3.40	1,019	13,968	12	13,956	383.64	13,956	0.32
33	165	0.90	270	14,225	12	14,213	383.67	14,213	0.33
34	170	0.77	231	14,444	12	14,432	383.70	14,432	0.33
35	175	0.77	231	14,663	12	14,650	383.73	14,650	0.34
36	180	0.00	0	14,651	12	14,638	383.73	14,638	0.34

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.04	13	13	12	1	381.00	1	0.00
2	10	0.13	39	40	12	28	381.01	28	0.00
3	15	0.13	39	67	12	54	381.02	54	0.00
4	20	0.13	39	93	12	81	381.02	81	0.00
5	25	0.13	39	120	12	108	381.03	108	0.00
6	30	0.22	65	172	12	160	381.04	160	0.00
7	35	0.22	65	225	12	212	381.06	212	0.00
8	40	0.22	65	277	12	265	381.07	265	0.01
9	45	0.22	65	330	12	317	381.09	317	0.01
10	50	0.22	65	382	12	369	381.10	369	0.01
11	55	0.22	65	434	12	422	381.12	422	0.01
12	60	0.30	90	512	12	500	381.14	500	0.01
13	65	0.30	90	590	12	578	381.16	578	0.01
14	70	0.30	90	668	12	656	381.18	656	0.02
15	75	0.30	90	746	12	734	381.20	734	0.02
16	80	0.30	90	824	12	812	381.22	812	0.02
17	85	0.30	90	902	12	890	381.25	890	0.02
18	90	0.30	90	980	12	968	381.27	968	0.02
19	95	0.30	90	1,058	12	1,046	381.29	1,046	0.02
20	100	0.30	90	1,136	12	1,124	381.31	1,124	0.03
21	105	0.30	90	1,214	12	1,202	381.33	1,202	0.03
22	110	0.30	90	1,292	12	1,280	381.35	1,280	0.03
23	115	0.30	90	1,370	12	1,358	381.38	1,358	0.03
24	120	0.39	116	1,474	12	1,461	381.40	1,461	0.03
25	125	0.30	90	1,552	12	1,539	381.43	1,539	0.04
26	130	0.39	116	1,655	12	1,643	381.45	1,643	0.04
27	135	0.39	116	1,759	12	1,747	381.48	1,747	0.04
28	140	0.39	116	1,863	12	1,850	381.51	1,850	0.04
29	145	0.39	116	1,966	12	1,954	381.54	1,954	0.04
30	150	0.39	116	2,070	12	2,058	381.57	2,058	0.05
31	155	0.39	116	2,174	12	2,161	381.60	2,161	0.05
32	160	0.39	116	2,277	12	2,265	381.63	2,265	0.05
33	165	0.47	142	2,407	12	2,394	381.66	2,394	0.05
34	170	0.47	142	2,536	12	2,524	381.70	2,524	0.06
35	175	0.47	142	2,665	12	2,653	381.73	2,653	0.06
36	180	0.47	142	2,795	12	2,782	381.77	2,782	0.06
37	185	0.47	142	2,924	12	2,912	381.81	2,912	0.07
38	190	0.56	167	3,079	12	3,067	381.85	3,067	0.07
39	195	0.56	167	3,234	12	3,222	381.89	3,222	0.07
40	200	0.56	167	3,389	12	3,377	381.93	3,377	0.08
41	205	0.64	193	3,570	12	3,557	381.98	3,557	0.08
42	210	0.73	219	3,776	12	3,763	382.03	3,763	0.09
43	215	0.81	244	4,008	12	3,995	382.07	3,995	0.09
44	220	0.81	244	4,240	12	4,227	382.11	4,227	0.10
45	225	0.90	270	4,497	12	4,485	382.16	4,485	0.10
46	230	0.90	270	4,755	12	4,743	382.20	4,743	0.11
47	235	0.99	296	5,038	12	5,026	382.25	5,026	0.12
48	240	0.99	296	5,321	12	5,309	382.31	5,309	0.12
49	245	1.07	321	5,630	12	5,618	382.36	5,618	0.13
50	250	1.16	347	5,965	12	5,953	382.42	5,953	0.14
51	255	1.24	373	6,325	12	6,313	382.49	6,313	0.14
52	260	1.33	398	6,711	12	6,699	382.56	6,699	0.15
53	265	1.41	424	7,123	12	7,110	382.63	7,110	0.16
54	270	1.41	424	7,534	12	7,522	382.71	7,522	0.17
55	275	1.50	450	7,971	12	7,959	382.78	7,959	0.18

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	1.58	475	8,434	12	8,422	382.87	8,422	0.19
57	285	1.67	501	8,923	12	8,910	382.96	8,910	0.20
58	290	1.67	501	9,411	12	9,399	383.03	9,399	0.22
59	295	1.76	527	9,926	12	9,913	383.10	9,913	0.23
60	300	1.84	552	10,465	12	10,453	383.17	10,453	0.24
61	305	2.27	681	11,134	12	11,121	383.26	11,121	0.26
62	310	2.70	809	11,930	12	11,918	383.37	11,918	0.27
63	315	2.95	886	12,803	12	12,791	383.48	12,791	0.29
64	320	3.21	963	13,754	12	13,741	383.61	13,741	0.32
65	325	3.64	1,091	14,832	12	14,820	383.75	14,820	0.34
66	330	4.41	1,322	16,142	12	16,130	383.92	16,130	0.37
67	335	1.24	373	16,502	12	16,490	383.97	16,490	0.38
68	340	0.39	116	16,606	12	16,594	383.99	16,594	0.38
69	345	0.13	39	16,633	12	16,620	383.99	16,620	0.38
70	350	0.04	13	16,634	12	16,621	383.99	16,621	0.38
71	355	0.03	8	16,629	12	16,617	383.99	16,617	0.38
72	360	0.02	5	16,622	12	16,609	383.99	16,609	0.38

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TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.01	8	8	37	-	381.00	-	0.00
2	30	0.01	12	12	37	-	381.00	-	0.00
3	45	0.01	12	12	37	-	381.00	-	0.00
4	60	0.02	16	16	37	-	381.00	-	0.00
5	75	0.01	12	12	37	-	381.00	-	0.00
6	90	0.01	12	12	37	-	381.00	-	0.00
7	105	0.01	12	12	37	-	381.00	-	0.00
8	120	0.02	16	16	37	-	381.00	-	0.00
9	135	0.02	16	16	37	-	381.00	-	0.00
10	150	0.02	16	16	37	-	381.00	-	0.00
11	165	0.02	20	20	37	-	381.00	-	0.00
12	180	0.02	20	20	37	-	381.00	-	0.00
13	195	0.02	20	20	37	-	381.00	-	0.00
14	210	0.02	20	20	37	-	381.00	-	0.00
15	225	0.02	20	20	37	-	381.00	-	0.00
16	240	0.03	24	24	37	-	381.00	-	0.00
17	255	0.03	24	24	37	-	381.00	-	0.00
18	270	0.03	28	28	37	-	381.00	-	0.00
19	285	0.03	28	28	37	-	381.00	-	0.00
20	300	0.04	32	32	37	-	381.00	-	0.00
21	315	0.03	24	24	37	-	381.00	-	0.00
22	330	0.03	28	28	37	-	381.00	-	0.00
23	345	0.04	32	32	37	-	381.00	-	0.00
24	360	0.04	32	32	37	-	381.00	-	0.00
25	375	0.04	36	36	37	-	381.00	-	0.00
26	390	0.04	36	36	37	-	381.00	-	0.00
27	405	0.04	40	40	37	3	381.00	3	0.00
28	420	0.04	40	43	37	6	381.00	6	0.00
29	435	0.04	40	46	37	9	381.00	9	0.00
30	450	0.02	20	29	37	-	381.00	-	0.00
31	465	0.07	66	66	37	29	381.01	29	0.00
32	480	0.12	112	141	37	104	381.03	104	0.00
33	495	0.22	198	302	37	265	381.07	265	0.01
34	510	0.23	204	469	37	432	381.12	432	0.01
35	525	0.28	249	681	37	644	381.18	644	0.01
36	540	0.33	295	939	37	902	381.25	902	0.02
37	555	0.42	381	1,283	37	1,245	381.34	1,245	0.03
38	570	0.47	426	1,672	37	1,635	381.45	1,635	0.04
39	585	0.52	472	2,107	37	2,070	381.57	2,070	0.05
40	600	0.57	517	2,587	37	2,550	381.71	2,550	0.06
41	615	0.27	242	2,792	37	2,755	381.76	2,755	0.06
42	630	0.27	247	3,001	37	2,964	381.82	2,964	0.07
43	645	0.50	453	3,417	37	3,380	381.94	3,380	0.08
44	660	0.51	458	3,838	37	3,801	382.03	3,801	0.09
45	675	0.47	423	4,224	37	4,187	382.10	4,187	0.10
46	690	0.48	428	4,615	37	4,577	382.17	4,577	0.11
47	705	0.39	353	4,930	37	4,893	382.23	4,893	0.11
48	720	0.44	398	5,290	37	5,253	382.30	5,253	0.12
49	735	0.76	684	5,937	37	5,900	382.41	5,900	0.14
50	750	0.81	728	6,628	37	6,591	382.54	6,591	0.15
51	765	0.90	813	7,404	37	7,367	382.68	7,367	0.17
52	780	0.95	858	8,225	37	8,188	382.83	8,188	0.19
53	795	1.18	1,064	9,252	37	9,215	383.01	9,215	0.21
54	810	1.19	1,068	10,283	37	10,246	383.14	10,246	0.24
55	825	0.70	631	10,877	37	10,840	383.22	10,840	0.25
56	840	0.71	636	11,475	37	11,438	383.30	11,438	0.26
57	855	0.89	801	12,239	37	12,202	383.40	12,202	0.28
58	870	0.85	765	12,966	37	12,929	383.50	12,929	0.30

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TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	0.85	769	13,698	37	13,661	383.60	13,661	0.31
60	900	0.81	733	14,394	37	14,357	383.69	14,357	0.33
61	915	0.77	697	15,054	37	15,017	383.78	15,017	0.34
62	930	0.73	661	15,678	37	15,640	383.86	15,640	0.36
63	945	0.56	504	16,145	37	16,108	383.92	16,108	0.37
64	960	0.56	508	16,616	37	16,579	383.98	16,579	0.38
65	975	0.02	16	16,595	37	16,558	383.98	16,558	0.38
66	990	0.02	16	16,574	37	16,537	383.98	16,537	0.38
67	1005	0.01	12	16,549	37	16,512	383.97	16,512	0.38
68	1020	0.01	12	16,524	37	16,486	383.97	16,486	0.38
69	1035	0.02	20	16,506	37	16,469	383.97	16,469	0.38
70	1050	0.02	20	16,489	37	16,452	383.97	16,452	0.38
71	1065	0.02	20	16,472	37	16,435	383.96	16,435	0.38
72	1080	0.02	16	16,451	37	16,414	383.96	16,414	0.38
73	1095	0.02	16	16,430	37	16,393	383.96	16,393	0.38
74	1110	0.02	16	16,409	37	16,372	383.96	16,372	0.38
75	1125	0.01	12	16,384	37	16,347	383.95	16,347	0.38
76	1140	0.01	8	16,355	37	16,317	383.95	16,317	0.37
77	1155	0.01	12	16,329	37	16,292	383.95	16,292	0.37
78	1170	0.02	16	16,308	37	16,271	383.94	16,271	0.37
79	1185	0.01	12	16,283	37	16,246	383.94	16,246	0.37
80	1200	0.01	8	16,254	37	16,217	383.94	16,217	0.37
81	1215	0.01	12	16,229	37	16,192	383.93	16,192	0.37
82	1230	0.01	12	16,204	37	16,167	383.93	16,167	0.37
83	1245	0.01	12	16,179	37	16,141	383.93	16,141	0.37
84	1260	0.01	8	16,149	37	16,112	383.92	16,112	0.37
85	1275	0.01	12	16,124	37	16,087	383.92	16,087	0.37
86	1290	0.01	8	16,095	37	16,058	383.91	16,058	0.37
87	1305	0.01	12	16,070	37	16,033	383.91	16,033	0.37
88	1320	0.01	8	16,041	37	16,004	383.91	16,004	0.37
89	1335	0.01	12	16,016	37	15,978	383.90	15,978	0.37
90	1350	0.01	8	15,987	37	15,949	383.90	15,949	0.37
91	1365	0.01	8	15,957	37	15,920	383.90	15,920	0.37
92	1380	0.01	8	15,928	37	15,891	383.89	15,891	0.36
93	1395	0.01	8	15,899	37	15,862	383.89	15,862	0.36
94	1410	0.01	8	15,870	37	15,833	383.88	15,833	0.36
95	1425	0.01	8	15,841	37	15,804	383.88	15,804	0.36
96	1440	0.01	8	15,812	37	15,774	383.88	15,774	0.36

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
BASIC DATA CALCULATION FORM
SHORTCUT METHOD

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
TKC JOB # C1443
BY MES BAZUA, PE DATE 6/10/2020

PHYSICAL DATA

[1] CONCENTRATION POINT	1
[2] AREA DESIGNATION	SUBAREA B - 100 YEAR STORM EVENT
[3] AREA - ACRES	9.180
[4] L-FEET	1000
[5] L-MILES	0.189
[6] La-FEET	285.00
[7] La-MILES	0.054
[8] ELEVATION OF HEADWATER	387
[9] ELEVATION OF CONCENTRATION POINT	382
[10] H-FEET	5
[11] S-FEET/MILE	26.4
[12] S^0.5	5.14
[13] L*LCA/S^0.5	0.002
[14] AVERAGE MANNINGS 'N'	0.02
[15] LAG TIME-HOURS	0.05
[16] LAG TIME-MINUTES	2.7
[17] 100% OF LAG-MINUTES	2.7
[18] 200% OF LAG-MINUTES	5.4
[19] UNIT TIME-MINUTES (100%-200% OF LAG)	5
[24] TOTAL PERCOLATION RATE (cfs)	0.66

RAINFALL DATA

[1] SOURCE
[2] FREQUENCY-YEARS 100
[3] DURATION:

3-HOURS				6-HOURS				24-HOURS			
[4] POINT RAIN INCHES (Plate E-5.2)	[5] AREA	[6]	[7] AVERAGE POINT RAIN INCHES	[8] POINT RAIN INCHES (Plate E-5.4)	[9] AREA	[10]	[11] AVERAGE POINT RAIN INCHES	[12] POINT RAIN INCHES (Plate E-5.6)	[13] AREA	[14]	[15] AVERAGE POINT RAIN INCHES
2.03	9.180	1.00	2.03	2.71	9.180	1.00	2.71	4.24	9.180	1.00	4.24
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
		0.00	0.00			0.00	0.00			0.00	0.00
SUM [5]	9.18	SUM [7]	2.03	SUM [9]	9.18	SUM [11]	2.71	SUM [13]	9.18	SUM [15]	4.24
[16] AREA ADJ FACTOR			1.000				1.000				1.000
[17] ADJ AVG POINT RAIN			2.03				2.71				4.24

STORM EVENT SUMMARY

DURATION		3-HOUR	6-HOUR	24-HOUR
EFFECTIVE RAIN	(in)	1.60	1.87	2.03
FLOOD VOLUME	(cu-ft)	53,461	62,317	67,656
	(acre-ft)	1.23	1.43	1.55
REQUIRED STORAGE	(cu-ft)	46,106	48,487	43,649
	(acre-ft)	1.06	1.11	1.00
PEAK FLOW	(cfs)	17.03	15.42	4.17
MAXIMUM WSEL	(ft)	383.05	383.11	383.00

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD

PROJECT COACHELLA BUSINESS PARK - INTERIM BASIN
CONCENTRATION POINT: 1
BY JAMES BAZUA, PE DATE 6/10/2020

ADJUSTED LOSS RATE

SOIL GROUP [Plate C-1]	LAND USE	RI NUMBER [Plate E-6.1]	PERVIOUS AREA INFILTRATION RATE (in/hr) [Plate E-6.2]	DECIMAL PERCENT OF AREA IMPERVIOUS [Plate E-6.3]	ADJUSTED INFILTRATION RATE (in/hr)	AREA		AVERAGE ADJUSTED INFILTRATION RATE (in/hr)
B	COMMERCIAL	56	0.51	90%	0.10	8.18	0.891	0.0863
B	PAVING/HARDSCAPE	56	0.51	100%	0.05	0.00	0.000	0.0000
B	SF - 1 ACRE	56	0.51	20%	0.42	0.00	0.000	0.0000
B	SF - 1/2 ACRE	56	0.51	40%	0.33	0.00	0.000	0.0000
B	SF - 1/4 ACRE	56	0.51	50%	0.28	0.00	0.000	0.0000
B	MF - COND0MINIUMS	56	0.51	65%	0.21	0.00	0.000	0.0000
B	MF - APARTMENTS	56	0.51	80%	0.14	0.00	0.000	0.0000
B	MOBILE HOME PARKS	56	0.51	75%	0.17	0.00	0.000	0.0000
B	LANDSCAPING	56	0.51	0%	0.51	0.00	0.000	0.0000
B	RETENTION BASINS	32	0.51	0%	0.51	1.00	0.109	0.0556
B	GOLF COURSE	56	0.51	0%	0.51	0.00	0.000	0.0000
D	MOUNTAINOUS	93	0.08	90%	0.02	0.00	0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					0.00		0.000	0.0000
					SUM	9.18	SUM	0.1419

VARIABLE LOSS RATE CURVE (24-HOUR STORM ONLY)

Fm= 0.07095
C= 0.00131

Ft=C(24-(T/60))^1.55 = 0.00131 (24-(T/60))^1.55 + 0.07 in/hr

LOW LOSS RATE (80-90 PERCENT) = 90%

Where:

T=Time in minutes. To get an average value for each unit time period, Use T=1/2 the unit time for the first time period, T=1 1/2 unit time for the second period, etc.

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 3 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
CONCENTRATION POINT: 1

BY: \MES BAZUA, FDATE 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	2.03
CONSTANT LOSS RATE-in/hr	0.14
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	1.3	0.317	0.14	0.29	0.17	1.60	284.16
2	10	0.17	1.3	0.317	0.14	0.29	0.17	1.60	284.16
3	15	0.25	1.1	0.268	0.14	0.24	0.13	1.16	149.98
4	20	0.33	1.5	0.365	0.14	0.33	0.22	2.05	418.33
5	25	0.42	1.5	0.365	0.14	0.33	0.22	2.05	418.33
6	30	0.50	1.8	0.438	0.14	0.39	0.30	2.72	619.60
7	35	0.58	1.5	0.365	0.14	0.33	0.22	2.05	418.33
8	40	0.67	1.8	0.438	0.14	0.39	0.30	2.72	619.60
9	45	0.75	1.8	0.438	0.14	0.39	0.30	2.72	619.60
10	50	0.83	1.5	0.365	0.14	0.33	0.22	2.05	418.33
11	55	0.92	1.6	0.390	0.14	0.35	0.25	2.28	485.42
12	60	1.00	1.8	0.438	0.14	0.39	0.30	2.72	619.60
13	65	1.08	2.2	0.536	0.14	0.48	0.39	3.62	887.95
14	70	1.17	2.2	0.536	0.14	0.48	0.39	3.62	887.95
15	75	1.25	2.2	0.536	0.14	0.48	0.39	3.62	887.95
16	80	1.33	2.0	0.487	0.14	0.44	0.35	3.17	753.77
17	85	1.42	2.6	0.633	0.14	0.57	0.49	4.51	1156.30
18	90	1.50	2.7	0.658	0.14	0.59	0.52	4.74	1223.38
19	95	1.58	2.4	0.585	0.14	0.53	0.44	4.06	1022.12
20	100	1.67	2.7	0.658	0.14	0.59	0.52	4.74	1223.38
21	105	1.75	3.3	0.804	0.14	0.72	0.66	6.08	1625.91
22	110	1.83	3.1	0.755	0.14	0.68	0.61	5.63	1491.73
23	115	1.92	2.9	0.706	0.14	0.64	0.56	5.18	1357.56
24	120	2.00	3.0	0.731	0.14	0.66	0.59	5.41	1424.65
25	125	2.08	3.1	0.755	0.14	0.68	0.61	5.63	1491.73
26	130	2.17	4.2	1.023	0.14	0.92	0.88	8.09	2229.70
27	135	2.25	5.0	1.218	0.14	1.10	1.08	9.88	2766.39
28	140	2.33	3.5	0.853	0.14	0.77	0.71	6.52	1760.08
29	145	2.42	6.8	1.656	0.14	1.49	1.51	13.90	3973.97
30	150	2.50	7.3	1.778	0.14	1.60	1.64	15.02	4309.41
31	155	2.58	8.2	1.998	0.14	1.80	1.86	17.03	4913.19
32	160	2.67	5.9	1.437	0.14	1.29	1.30	11.89	3370.18
33	165	2.75	2.0	0.487	0.14	0.44	0.35	3.17	753.77
34	170	2.83	1.8	0.438	0.14	0.39	0.30	2.72	619.60
35	175	2.92	1.8	0.438	0.14	0.39	0.30	2.72	619.60
36	180	3.00	0.6	0.146	0.14	0.13	0.00	0.04	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.60
FLOOD VOLUME (acft)	1.23
FLOOD VOLUME (cuft)	53460.94
REQUIRED STORAGE (acft)	1.06
REQUIRED STORAGE (cuft)	46105.71
PEAK FLOW RATE (cfs)	17.03

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	2.71
CONSTANT LOSS RATE-in/hr	0.142
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
1	5	0.08	0.5	0.163	0.14	0.15	0.02	0.19	0.00
2	10	0.17	0.6	0.195	0.14	0.18	0.05	0.49	0.00
3	15	0.25	0.6	0.195	0.14	0.18	0.05	0.49	0.00
4	20	0.33	0.6	0.195	0.14	0.18	0.05	0.49	0.00
5	25	0.42	0.6	0.195	0.14	0.18	0.05	0.49	0.00
6	30	0.50	0.7	0.228	0.14	0.20	0.09	0.79	38.94
7	35	0.58	0.7	0.228	0.14	0.20	0.09	0.79	38.94
8	40	0.67	0.7	0.228	0.14	0.20	0.09	0.79	38.94
9	45	0.75	0.7	0.228	0.14	0.20	0.09	0.79	38.94
10	50	0.83	0.7	0.228	0.14	0.20	0.09	0.79	38.94
11	55	0.92	0.7	0.228	0.14	0.20	0.09	0.79	38.94
12	60	1.00	0.8	0.260	0.14	0.23	0.12	1.09	128.50
13	65	1.08	0.8	0.260	0.14	0.23	0.12	1.09	128.50
14	70	1.17	0.8	0.260	0.14	0.23	0.12	1.09	128.50
15	75	1.25	0.8	0.260	0.14	0.23	0.12	1.09	128.50
16	80	1.33	0.8	0.260	0.14	0.23	0.12	1.09	128.50
17	85	1.42	0.8	0.260	0.14	0.23	0.12	1.09	128.50
18	90	1.50	0.8	0.260	0.14	0.23	0.12	1.09	128.50
19	95	1.58	0.8	0.260	0.14	0.23	0.12	1.09	128.50
20	100	1.67	0.8	0.260	0.14	0.23	0.12	1.09	128.50
21	105	1.75	0.8	0.260	0.14	0.23	0.12	1.09	128.50
22	110	1.83	0.8	0.260	0.14	0.23	0.12	1.09	128.50
23	115	1.92	0.8	0.260	0.14	0.23	0.12	1.09	128.50
24	120	2.00	0.9	0.293	0.14	0.26	0.15	1.38	218.06
25	125	2.08	0.8	0.260	0.14	0.23	0.12	1.09	128.50
26	130	2.17	0.9	0.293	0.14	0.26	0.15	1.38	218.06
27	135	2.25	0.9	0.293	0.14	0.26	0.15	1.38	218.06
28	140	2.33	0.9	0.293	0.14	0.26	0.15	1.38	218.06
29	145	2.42	0.9	0.293	0.14	0.26	0.15	1.38	218.06
30	150	2.50	0.9	0.293	0.14	0.26	0.15	1.38	218.06
31	155	2.58	0.9	0.293	0.14	0.26	0.15	1.38	218.06
32	160	2.67	0.9	0.293	0.14	0.26	0.15	1.38	218.06
33	165	2.75	1.0	0.325	0.14	0.29	0.18	1.68	307.62
34	170	2.83	1.0	0.325	0.14	0.29	0.18	1.68	307.62
35	175	2.92	1.0	0.325	0.14	0.29	0.18	1.68	307.62
36	180	3.00	1.0	0.325	0.14	0.29	0.18	1.68	307.62
37	185	3.08	1.0	0.325	0.14	0.29	0.18	1.68	307.62
38	190	3.17	1.1	0.358	0.14	0.32	0.22	1.98	397.18
39	195	3.25	1.1	0.358	0.14	0.32	0.22	1.98	397.18
40	200	3.33	1.1	0.358	0.14	0.32	0.22	1.98	397.18
41	205	3.42	1.2	0.390	0.14	0.35	0.25	2.28	486.74
42	210	3.50	1.3	0.423	0.14	0.38	0.28	2.58	576.30
43	215	3.58	1.4	0.455	0.14	0.41	0.31	2.88	665.86
44	220	3.67	1.4	0.455	0.14	0.41	0.31	2.88	665.86
45	225	3.75	1.5	0.488	0.14	0.44	0.35	3.18	755.42
46	230	3.83	1.5	0.488	0.14	0.44	0.35	3.18	755.42
47	235	3.92	1.6	0.520	0.14	0.47	0.38	3.47	844.98
48	240	4.00	1.6	0.520	0.14	0.47	0.38	3.47	844.98
49	245	4.08	1.7	0.553	0.14	0.50	0.41	3.77	934.54
50	250	4.17	1.8	0.585	0.14	0.53	0.44	4.07	1024.10
51	255	4.25	1.9	0.618	0.14	0.56	0.48	4.37	1113.66
52	260	4.33	2.0	0.650	0.14	0.59	0.51	4.67	1203.22
53	265	4.42	2.1	0.683	0.14	0.61	0.54	4.97	1292.78
54	270	4.50	2.1	0.683	0.14	0.61	0.54	4.97	1292.78
55	275	4.58	2.2	0.715	0.14	0.64	0.57	5.27	1382.34
56	280	4.67	2.3	0.748	0.14	0.67	0.61	5.56	1471.90

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 6 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.18
UNIT TIME-MINUTES	5
LAG TIME - MINUTES	2.71
UNIT TIME-PERCENT OF LAG	184.5
TOTAL ADJUSTED STORM RAIN-INCHES	2.71
CONSTANT LOSS RATE-in/hr	0.142
LOW LOSS RATE - PERCENT	90%

TOTAL PERCOLATION RATE (cfs) 0.66 cfs

Unit Time Period	Time		Pattern	Storm Rain	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	Percent (Plate E-5.9)	in/hr	Max	Low	in/hr	cfs	cf
57	285	4.75	2.4	0.780	0.14	0.70	0.64	5.86	1561.46
58	290	4.83	2.4	0.780	0.14	0.70	0.64	5.86	1561.46
59	295	4.92	2.5	0.813	0.14	0.73	0.67	6.16	1651.02
60	300	5.00	2.6	0.846	0.14	0.76	0.70	6.46	1740.58
61	305	5.08	3.1	1.008	0.14	0.91	0.87	7.95	2188.39
62	310	5.17	3.6	1.171	0.14	1.05	1.03	9.44	2636.19
63	315	5.25	3.9	1.268	0.14	1.14	1.13	10.34	2904.87
64	320	5.33	4.2	1.366	0.14	1.23	1.22	11.24	3173.55
65	325	5.42	4.7	1.528	0.14	1.38	1.39	12.73	3621.35
66	330	5.50	5.6	1.821	0.14	1.64	1.68	15.42	4427.39
67	335	5.58	1.9	0.618	0.14	0.56	0.48	4.37	1113.66
68	340	5.67	0.9	0.293	0.14	0.26	0.15	1.38	218.06
69	345	5.75	0.6	0.195	0.14	0.18	0.05	0.49	0.00
70	350	5.83	0.5	0.163	0.14	0.15	0.02	0.19	0.00
71	355	5.92	0.3	0.098	0.14	0.09	0.01	0.09	0.00
72	360	6.00	0.2	0.065	0.14	0.06	0.01	0.06	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	1.87
FLOOD VOLUME (acft)	1.43
FLOOD VOLUME (cuft)	62316.83
REQUIRED STORAGE (acft)	1.11
REQUIRED STORAGE (cuft)	48487.31
PEAK FLOW RATE (cfs)	15.42

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.180	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1419
LAG TIME - MINUTES	2.71	MINIMUM LOSS RATE (for var. loss) - in/hr	0.071
UNIT TIME-PERCENT OF LAG	553.6	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00131
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time		Pattern Percent	Storm Rain in/hr	Loss Rate in/hr		Effective Rain	Flood Hydrograph Flow	Required Storage
	Minutes	Hours	(Plate E-5.9)		Max	Low	in/hr	cfs	cf
1	15	0.25	0.2	0.034	0.251	0.031	0.003	0.03	0.00
2	30	0.50	0.3	0.051	0.248	0.046	0.005	0.05	0.00
3	45	0.75	0.3	0.051	0.245	0.046	0.005	0.05	0.00
4	60	1.00	0.4	0.068	0.242	0.061	0.007	0.06	0.00
5	75	1.25	0.3	0.051	0.239	0.046	0.005	0.05	0.00
6	90	1.50	0.3	0.051	0.236	0.046	0.005	0.05	0.00
7	105	1.75	0.3	0.051	0.233	0.046	0.005	0.05	0.00
8	120	2.00	0.4	0.068	0.231	0.061	0.007	0.06	0.00
9	135	2.25	0.4	0.068	0.228	0.061	0.007	0.06	0.00
10	150	2.50	0.4	0.068	0.225	0.061	0.007	0.06	0.00
11	165	2.75	0.5	0.085	0.222	0.076	0.008	0.08	0.00
12	180	3.00	0.5	0.085	0.220	0.076	0.008	0.08	0.00
13	195	3.25	0.5	0.085	0.217	0.076	0.008	0.08	0.00
14	210	3.50	0.5	0.085	0.214	0.076	0.008	0.08	0.00
15	225	3.75	0.5	0.085	0.211	0.076	0.008	0.08	0.00
16	240	4.00	0.6	0.102	0.209	0.092	0.010	0.09	0.00
17	255	4.25	0.6	0.102	0.206	0.092	0.010	0.09	0.00
18	270	4.50	0.7	0.119	0.204	0.107	0.012	0.11	0.00
19	285	4.75	0.7	0.119	0.201	0.107	0.012	0.11	0.00
20	300	5.00	0.8	0.136	0.198	0.122	0.014	0.12	0.00
21	315	5.25	0.6	0.102	0.196	0.092	0.010	0.09	0.00
22	330	5.50	0.7	0.119	0.193	0.107	0.012	0.11	0.00
23	345	5.75	0.8	0.136	0.191	0.122	0.014	0.12	0.00
24	360	6.00	0.8	0.136	0.188	0.122	0.014	0.12	0.00
25	375	6.25	0.9	0.153	0.186	0.137	0.015	0.14	0.00
26	390	6.50	0.9	0.153	0.183	0.137	0.015	0.14	0.00
27	405	6.75	1.0	0.170	0.181	0.153	0.017	0.16	0.00
28	420	7.00	1.0	0.170	0.178	0.153	0.017	0.16	0.00
29	435	7.25	1.0	0.170	0.176	0.153	0.017	0.16	0.00
30	450	7.50	1.1	0.187	0.173	0.168	0.013	0.12	0.00
31	465	7.75	1.2	0.204	0.171	0.183	0.032	0.30	0.00
32	480	8.00	1.3	0.220	0.169	0.198	0.052	0.48	0.00
33	495	8.25	1.5	0.254	0.166	0.229	0.088	0.81	135.70
34	510	8.50	1.5	0.254	0.164	0.229	0.090	0.83	154.86
35	525	8.75	1.6	0.271	0.162	0.244	0.110	1.01	313.98
36	540	9.00	1.7	0.288	0.159	0.259	0.129	1.18	472.93
37	555	9.25	1.9	0.322	0.157	0.290	0.165	1.51	771.83
38	570	9.50	2.0	0.339	0.155	0.305	0.184	1.69	930.43
39	585	9.75	2.1	0.356	0.153	0.321	0.203	1.87	1088.87
40	600	10.00	2.2	0.373	0.151	0.336	0.223	2.04	1247.13
41	615	10.25	1.5	0.254	0.148	0.229	0.106	0.97	284.22
42	630	10.50	1.5	0.254	0.146	0.229	0.108	0.99	302.00
43	645	10.75	2.0	0.339	0.144	0.305	0.195	1.79	1020.22
44	660	11.00	2.0	0.339	0.142	0.305	0.197	1.81	1037.65
45	675	11.25	1.9	0.322	0.140	0.290	0.182	1.67	914.76
46	690	11.50	1.9	0.322	0.138	0.290	0.184	1.69	931.82
47	705	11.75	1.7	0.288	0.136	0.259	0.153	1.40	668.45
48	720	12.00	1.8	0.305	0.134	0.275	0.171	1.57	825.26
49	735	12.25	2.5	0.424	0.132	0.382	0.292	2.68	1822.63
50	750	12.50	2.6	0.441	0.130	0.397	0.311	2.86	1979.06
51	765	12.75	2.8	0.475	0.128	0.427	0.347	3.19	2275.42
52	780	13.00	2.9	0.492	0.126	0.443	0.366	3.36	2431.47
53	795	13.25	3.4	0.577	0.124	0.519	0.453	4.15	3147.82
54	810	13.50	3.4	0.577	0.122	0.519	0.454	4.17	3163.35
55	825	13.75	2.3	0.390	0.120	0.351	0.270	2.48	1637.32
56	840	14.00	2.3	0.390	0.118	0.351	0.272	2.49	1652.45
57	855	14.25	2.7	0.458	0.117	0.412	0.341	3.13	2227.87
58	870	14.50	2.6	0.441	0.115	0.397	0.326	2.99	2102.46
59	885	14.75	2.6	0.441	0.113	0.397	0.328	3.01	2116.97
60	900	15.00	2.5	0.424	0.111	0.382	0.313	2.87	1991.15
61	915	15.25	2.4	0.407	0.110	0.366	0.297	2.73	1865.11

RCFCD SYNTHETIC UNIT HYDROGRAPH METHOD
100 YEAR - 24 HOUR STORM EVENT

PROJECT: COACHELLA BUSINESS PARK - INTERIM BA
CONCENTRATION POINT: 1

BY: JAMES BAZUA DATE: 6/10/2020

EFFECTIVE RAIN CALCULATION FORM

DRAINAGE AREA-ACRES	9.180	CONSTANT LOSS RATE-in/hr	n/a
UNIT TIME-MINUTES	15	VARIABLE LOSS RATE (AVG) in/hr	0.1419
LAG TIME - MINUTES	2.71	MINIMUM LOSS RATE (for var. loss) - in/hr	0.071
UNIT TIME-PERCENT OF LAG	553.6	LOW LOSS RATE - DECIMAL	0.90
TOTAL ADJUSTED STORM RAIN-INCHES	4.24	C	0.00131
		PERCOLATION RATE (cfs)	0.66

Unit Time Period	Time Minutes	Time Hours	Pattern Percent (Plate E-5.9)	Storm Rain in/hr	Loss Rate in/hr Max	Loss Rate in/hr Low	Effective Rain in/hr	Flood Hydrograph Flow cfs	Required Storage cf
62	930	15.50	2.3	0.390	0.108	0.351	0.282	2.59	1738.85
63	945	15.75	1.9	0.322	0.106	0.290	0.216	1.98	1192.01
64	960	16.00	1.9	0.322	0.105	0.290	0.218	2.00	1205.43
65	975	16.25	0.4	0.068	0.103	0.061	0.007	0.06	0.00
66	990	16.50	0.4	0.068	0.102	0.061	0.007	0.06	0.00
67	1005	16.75	0.3	0.051	0.100	0.046	0.005	0.05	0.00
68	1020	17.00	0.3	0.051	0.099	0.046	0.005	0.05	0.00
69	1035	17.25	0.5	0.085	0.097	0.076	0.008	0.08	0.00
70	1050	17.50	0.5	0.085	0.096	0.076	0.008	0.08	0.00
71	1065	17.75	0.5	0.085	0.094	0.076	0.008	0.08	0.00
72	1080	18.00	0.4	0.068	0.093	0.061	0.007	0.06	0.00
73	1095	18.25	0.4	0.068	0.091	0.061	0.007	0.06	0.00
74	1110	18.50	0.4	0.068	0.090	0.061	0.007	0.06	0.00
75	1125	18.75	0.3	0.051	0.089	0.046	0.005	0.05	0.00
76	1140	19.00	0.2	0.034	0.087	0.031	0.003	0.03	0.00
77	1155	19.25	0.3	0.051	0.086	0.046	0.005	0.05	0.00
78	1170	19.50	0.4	0.068	0.085	0.061	0.007	0.06	0.00
79	1185	19.75	0.3	0.051	0.084	0.046	0.005	0.05	0.00
80	1200	20.00	0.2	0.034	0.083	0.031	0.003	0.03	0.00
81	1215	20.25	0.3	0.051	0.082	0.046	0.005	0.05	0.00
82	1230	20.50	0.3	0.051	0.081	0.046	0.005	0.05	0.00
83	1245	20.75	0.3	0.051	0.080	0.046	0.005	0.05	0.00
84	1260	21.00	0.2	0.034	0.079	0.031	0.003	0.03	0.00
85	1275	21.25	0.3	0.051	0.078	0.046	0.005	0.05	0.00
86	1290	21.50	0.2	0.034	0.077	0.031	0.003	0.03	0.00
87	1305	21.75	0.3	0.051	0.076	0.046	0.005	0.05	0.00
88	1320	22.00	0.2	0.034	0.075	0.031	0.003	0.03	0.00
89	1335	22.25	0.3	0.051	0.074	0.046	0.005	0.05	0.00
90	1350	22.50	0.2	0.034	0.074	0.031	0.003	0.03	0.00
91	1365	22.75	0.2	0.034	0.073	0.031	0.003	0.03	0.00
92	1380	23.00	0.2	0.034	0.073	0.031	0.003	0.03	0.00
93	1395	23.25	0.2	0.034	0.072	0.031	0.003	0.03	0.00
94	1410	23.50	0.2	0.034	0.072	0.031	0.003	0.03	0.00
95	1425	23.75	0.2	0.034	0.071	0.031	0.003	0.03	0.00
96	1440	24.00	0.2	0.034	0.071	0.031	0.003	0.03	0.00

EFFECTIVE RAIN & FLOOD VOLUMES SUMMARY

EFFECTIVE RAIN (in)	2.03
FLOOD VOLUME (acft)	1.55
FLOOD VOLUME (cuft)	67655.92
REQUIRED STORAGE (acft)	1.00
REQUIRED STORAGE (cuft)	43649.48
PEAK FLOW (cfs)	4.17

SIN

SIN

PROJECT: COACHELLA BUSINESS PARK - INTERIM BASIN
TKC JOB # C1443
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BASIN CHARACTERISTICS

CONTOUR	DEPTH		AREA		VOLUME		
	INCR (ft)	TOTAL (ft)	INCR (sf)	TOTAL (sf)	INCR (cuft)	TOTAL (cuft)	(acre-ft)
382	0	0		42380	0	0	0.00
383	1	1	2426	44806	43593	43593	1.00
384	1	2	2482	47288	46047	89640	2.06
385	1	3	2539	49827	48558	138198	3.17

PERCOLATION CALCULATIONS

PERCOLATION RATE	0.67 in/hr	0.66 cfs

MAXWELL IV DRYWELLS

NUMBER USED	0	
RATE/DRYWELL	0 cfs	
TOTAL DISSIPATED		0 cfs

TOTAL PERCOLATION RATE 0.66 cfs

1

TKC JOB # C1443

100 YEAR - 3 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	1.60	481	481	197	284	382.01	284	0.01
2	10	1.60	481	766	197	568	382.01	568	0.01
3	15	1.16	347	915	197	718	382.02	718	0.02
4	20	2.05	616	1,334	197	1,137	382.03	1,137	0.03
5	25	2.05	616	1,752	197	1,555	382.04	1,555	0.04
6	30	2.72	817	2,372	197	2,175	382.05	2,175	0.05
7	35	2.05	616	2,790	197	2,593	382.06	2,593	0.06
8	40	2.72	817	3,410	197	3,212	382.07	3,212	0.07
9	45	2.72	817	4,029	197	3,832	382.09	3,832	0.09
10	50	2.05	616	4,448	197	4,250	382.10	4,250	0.10
11	55	2.28	683	4,933	197	4,736	382.11	4,736	0.11
12	60	2.72	817	5,553	197	5,355	382.12	5,355	0.12
13	65	3.62	1,085	6,441	197	6,243	382.14	6,243	0.14
14	70	3.62	1,085	7,329	197	7,131	382.16	7,131	0.16
15	75	3.62	1,085	8,216	197	8,019	382.18	8,019	0.18
16	80	3.17	951	8,970	197	8,773	382.20	8,773	0.20
17	85	4.51	1,353	10,127	197	9,929	382.23	9,929	0.23
18	90	4.74	1,421	11,350	197	11,153	382.26	11,153	0.26
19	95	4.06	1,219	12,372	197	12,175	382.28	12,175	0.28
20	100	4.74	1,421	13,595	197	13,398	382.31	13,398	0.31
21	105	6.08	1,823	15,221	197	15,024	382.34	15,024	0.34
22	110	5.63	1,689	16,713	197	16,516	382.38	16,516	0.38
23	115	5.18	1,555	18,071	197	17,873	382.41	17,873	0.41
24	120	5.41	1,622	19,495	197	19,298	382.44	19,298	0.44
25	125	5.63	1,689	20,987	197	20,790	382.48	20,790	0.48
26	130	8.09	2,427	23,217	197	23,020	382.53	23,020	0.53
27	135	9.88	2,964	25,983	197	25,786	382.59	25,786	0.59
28	140	6.52	1,957	27,743	197	27,546	382.63	27,546	0.63
29	145	13.90	4,171	31,717	197	31,520	382.72	31,520	0.72
30	150	15.02	4,507	36,027	197	35,829	382.82	35,829	0.82
31	155	17.03	5,110	40,940	197	40,743	382.93	40,743	0.94
32	160	11.89	3,567	44,310	197	44,113	383.01	44,113	1.01
33	165	3.17	951	45,064	197	44,867	383.03	44,867	1.03
34	170	2.72	817	45,683	197	45,486	383.04	45,486	1.04
35	175	2.72	817	46,303	197	46,106	383.05	46,106	1.06
36	180	0.04	12	46,117	197	45,920	383.05	45,920	1.05

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	5	0.19	57	57	197	-	382.00	-	0.00
2	10	0.49	147	147	197	-	382.00	-	0.00
3	15	0.49	147	147	197	-	382.00	-	0.00
4	20	0.49	147	147	197	-	382.00	-	0.00
5	25	0.49	147	147	197	-	382.00	-	0.00
6	30	0.79	236	236	197	39	382.00	39	0.00
7	35	0.79	236	275	197	78	382.00	78	0.00
8	40	0.79	236	314	197	117	382.00	117	0.00
9	45	0.79	236	353	197	156	382.00	156	0.00
10	50	0.79	236	392	197	195	382.00	195	0.00
11	55	0.79	236	431	197	234	382.01	234	0.01
12	60	1.09	326	559	197	362	382.01	362	0.01
13	65	1.09	326	688	197	491	382.01	491	0.01
14	70	1.09	326	816	197	619	382.01	619	0.01
15	75	1.09	326	945	197	748	382.02	748	0.02
16	80	1.09	326	1,073	197	876	382.02	876	0.02
17	85	1.09	326	1,202	197	1,005	382.02	1,005	0.02
18	90	1.09	326	1,330	197	1,133	382.03	1,133	0.03
19	95	1.09	326	1,459	197	1,262	382.03	1,262	0.03
20	100	1.09	326	1,587	197	1,390	382.03	1,390	0.03
21	105	1.09	326	1,716	197	1,519	382.03	1,519	0.03
22	110	1.09	326	1,844	197	1,647	382.04	1,647	0.04
23	115	1.09	326	1,973	197	1,776	382.04	1,776	0.04
24	120	1.38	415	2,191	197	1,994	382.05	1,994	0.05
25	125	1.09	326	2,319	197	2,122	382.05	2,122	0.05
26	130	1.38	415	2,538	197	2,340	382.05	2,340	0.05
27	135	1.38	415	2,756	197	2,558	382.06	2,558	0.06
28	140	1.38	415	2,974	197	2,776	382.06	2,776	0.06
29	145	1.38	415	3,192	197	2,995	382.07	2,995	0.07
30	150	1.38	415	3,410	197	3,213	382.07	3,213	0.07
31	155	1.38	415	3,628	197	3,431	382.08	3,431	0.08
32	160	1.38	415	3,846	197	3,649	382.08	3,649	0.08
33	165	1.68	505	4,154	197	3,956	382.09	3,956	0.09
34	170	1.68	505	4,461	197	4,264	382.10	4,264	0.10
35	175	1.68	505	4,769	197	4,572	382.10	4,572	0.10
36	180	1.68	505	5,076	197	4,879	382.11	4,879	0.11
37	185	1.68	505	5,384	197	5,187	382.12	5,187	0.12
38	190	1.98	594	5,781	197	5,584	382.13	5,584	0.13
39	195	1.98	594	6,178	197	5,981	382.14	5,981	0.14
40	200	1.98	594	6,576	197	6,378	382.15	6,378	0.15
41	205	2.28	684	7,062	197	6,865	382.16	6,865	0.16
42	210	2.58	773	7,639	197	7,441	382.17	7,441	0.17
43	215	2.88	863	8,304	197	8,107	382.19	8,107	0.19
44	220	2.88	863	8,970	197	8,773	382.20	8,773	0.20
45	225	3.18	953	9,726	197	9,529	382.22	9,529	0.22
46	230	3.18	953	10,481	197	10,284	382.24	10,284	0.24
47	235	3.47	1,042	11,326	197	11,129	382.26	11,129	0.26
48	240	3.47	1,042	12,171	197	11,974	382.27	11,974	0.27
49	245	3.77	1,132	13,106	197	12,909	382.30	12,909	0.30
50	250	4.07	1,221	14,130	197	13,933	382.32	13,933	0.32
51	255	4.37	1,311	15,243	197	15,046	382.35	15,046	0.35
52	260	4.67	1,400	16,447	197	16,250	382.37	16,250	0.37
53	265	4.97	1,490	17,739	197	17,542	382.40	17,542	0.40
54	270	4.97	1,490	19,032	197	18,835	382.43	18,835	0.43
55	275	5.27	1,580	20,415	197	20,217	382.46	20,217	0.46

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TKC JOB # C1443

100 YEAR - 6 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
56	280	5.56	1,669	21,887	197	21,689	382.50	21,689	0.50
57	285	5.86	1,759	23,448	197	23,251	382.53	23,251	0.53
58	290	5.86	1,759	25,009	197	24,812	382.57	24,812	0.57
59	295	6.16	1,848	26,660	197	26,463	382.61	26,463	0.61
60	300	6.46	1,938	28,401	197	28,204	382.65	28,204	0.65
61	305	7.95	2,386	30,589	197	30,392	382.70	30,392	0.70
62	310	9.44	2,833	33,226	197	33,028	382.76	33,028	0.76
63	315	10.34	3,102	36,130	197	35,933	382.82	35,933	0.82
64	320	11.24	3,371	39,304	197	39,107	382.90	39,107	0.90
65	325	12.73	3,819	42,925	197	42,728	382.98	42,728	0.98
66	330	15.42	4,625	47,353	197	47,156	383.08	47,156	1.08
67	335	4.37	1,311	48,466	197	48,269	383.10	48,269	1.11
68	340	1.38	415	48,684	197	48,487	383.11	48,487	1.11
69	345	0.49	147	48,634	197	48,437	383.11	48,437	1.11
70	350	0.19	57	48,494	197	48,297	383.10	48,297	1.11
71	355	0.09	27	48,323	197	48,126	383.10	48,126	1.10
72	360	0.06	18	48,144	197	47,947	383.09	47,947	1.10

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
1	15	0.03	28	28	592	-	382.00	-	0.00
2	30	0.05	42	42	592	-	382.00	-	0.00
3	45	0.05	42	42	592	-	382.00	-	0.00
4	60	0.06	56	56	592	-	382.00	-	0.00
5	75	0.05	42	42	592	-	382.00	-	0.00
6	90	0.05	42	42	592	-	382.00	-	0.00
7	105	0.05	42	42	592	-	382.00	-	0.00
8	120	0.06	56	56	592	-	382.00	-	0.00
9	135	0.06	56	56	592	-	382.00	-	0.00
10	150	0.06	56	56	592	-	382.00	-	0.00
11	165	0.08	70	70	592	-	382.00	-	0.00
12	180	0.08	70	70	592	-	382.00	-	0.00
13	195	0.08	70	70	592	-	382.00	-	0.00
14	210	0.08	70	70	592	-	382.00	-	0.00
15	225	0.08	70	70	592	-	382.00	-	0.00
16	240	0.09	84	84	592	-	382.00	-	0.00
17	255	0.09	84	84	592	-	382.00	-	0.00
18	270	0.11	98	98	592	-	382.00	-	0.00
19	285	0.11	98	98	592	-	382.00	-	0.00
20	300	0.12	112	112	592	-	382.00	-	0.00
21	315	0.09	84	84	592	-	382.00	-	0.00
22	330	0.11	98	98	592	-	382.00	-	0.00
23	345	0.12	112	112	592	-	382.00	-	0.00
24	360	0.12	112	112	592	-	382.00	-	0.00
25	375	0.14	126	126	592	-	382.00	-	0.00
26	390	0.14	126	126	592	-	382.00	-	0.00
27	405	0.16	140	140	592	-	382.00	-	0.00
28	420	0.16	140	140	592	-	382.00	-	0.00
29	435	0.16	140	140	592	-	382.00	-	0.00
30	450	0.12	108	108	592	-	382.00	-	0.00
31	465	0.30	268	268	592	-	382.00	-	0.00
32	480	0.48	428	428	592	-	382.00	-	0.00
33	495	0.81	727	727	592	136	382.00	136	0.00
34	510	0.83	746	882	592	291	382.01	291	0.01
35	525	1.01	906	1,196	592	605	382.01	605	0.01
36	540	1.18	1,064	1,669	592	1,077	382.02	1,077	0.02
37	555	1.51	1,363	2,441	592	1,849	382.04	1,849	0.04
38	570	1.69	1,522	3,371	592	2,780	382.06	2,780	0.06
39	585	1.87	1,680	4,460	592	3,869	382.09	3,869	0.09
40	600	2.04	1,839	5,707	592	5,116	382.12	5,116	0.12
41	615	0.97	876	5,992	592	5,400	382.12	5,400	0.12
42	630	0.99	894	6,294	592	5,702	382.13	5,702	0.13
43	645	1.79	1,612	7,314	592	6,722	382.15	6,722	0.15
44	660	1.81	1,629	8,351	592	7,760	382.18	7,760	0.18
45	675	1.67	1,506	9,266	592	8,675	382.20	8,675	0.20
46	690	1.69	1,523	10,198	592	9,606	382.22	9,606	0.22
47	705	1.40	1,260	10,866	592	10,275	382.24	10,275	0.24
48	720	1.57	1,417	11,692	592	11,100	382.25	11,100	0.25
49	735	2.68	2,414	13,514	592	12,923	382.30	12,923	0.30
50	750	2.86	2,571	15,493	592	14,902	382.34	14,902	0.34
51	765	3.19	2,867	17,769	592	17,177	382.39	17,177	0.39
52	780	3.36	3,023	20,200	592	19,609	382.45	19,609	0.45
53	795	4.15	3,739	23,348	592	22,757	382.52	22,757	0.52
54	810	4.17	3,755	26,511	592	25,920	382.59	25,920	0.60
55	825	2.48	2,229	28,149	592	27,557	382.63	27,557	0.63
56	840	2.49	2,244	29,801	592	29,210	382.67	29,210	0.67
57	855	3.13	2,819	32,029	592	31,437	382.72	31,437	0.72
58	870	2.99	2,694	34,132	592	33,540	382.77	33,540	0.77

1

TKC JOB # C1443

100 YEAR - 24 HOUR STORM EVENT

TIME UNIT PERIOD	(min)	FLOW IN (cfs)	VOLUME IN (cuft)	TOTAL IN BASIN (cuft)	PERC OUT (cuft)	TOTAL IN BASIN (cuft)	BASIN DEPTH (ft)	BALANCE IN BASIN (cuft)	(acre-ft)
59	885	3.01	2,709	36,248	592	35,657	382.82	35,657	0.82
60	900	2.87	2,583	38,240	592	37,648	382.86	37,648	0.86
61	915	2.73	2,457	40,105	592	39,513	382.91	39,513	0.91
62	930	2.59	2,330	41,844	592	41,252	382.95	41,252	0.95
63	945	1.98	1,784	43,036	592	42,444	382.97	42,444	0.97
64	960	2.00	1,797	44,241	592	43,649	383.00	43,649	1.00
65	975	0.06	56	43,706	592	43,114	382.99	43,114	0.99
66	990	0.06	56	43,170	592	42,578	382.98	42,578	0.98
67	1005	0.05	42	42,621	592	42,029	382.96	42,029	0.96
68	1020	0.05	42	42,071	592	41,479	382.95	41,479	0.95
69	1035	0.08	70	41,549	592	40,958	382.94	40,958	0.94
70	1050	0.08	70	41,028	592	40,436	382.93	40,436	0.93
71	1065	0.08	70	40,507	592	39,915	382.92	39,915	0.92
72	1080	0.06	56	39,971	592	39,379	382.90	39,379	0.90
73	1095	0.06	56	39,435	592	38,844	382.89	38,844	0.89
74	1110	0.06	56	38,900	592	38,308	382.88	38,308	0.88
75	1125	0.05	42	38,350	592	37,759	382.87	37,759	0.87
76	1140	0.03	28	37,787	592	37,195	382.85	37,195	0.85
77	1155	0.05	42	37,237	592	36,646	382.84	36,646	0.84
78	1170	0.06	56	36,702	592	36,110	382.83	36,110	0.83
79	1185	0.05	42	36,152	592	35,561	382.82	35,561	0.82
80	1200	0.03	28	35,589	592	34,997	382.80	34,997	0.80
81	1215	0.05	42	35,039	592	34,448	382.79	34,448	0.79
82	1230	0.05	42	34,490	592	33,898	382.78	33,898	0.78
83	1245	0.05	42	33,940	592	33,349	382.77	33,349	0.77
84	1260	0.03	28	33,377	592	32,785	382.75	32,785	0.75
85	1275	0.05	42	32,827	592	32,236	382.74	32,236	0.74
86	1290	0.03	28	32,264	592	31,672	382.73	31,672	0.73
87	1305	0.05	42	31,714	592	31,123	382.71	31,123	0.71
88	1320	0.03	28	31,151	592	30,559	382.70	30,559	0.70
89	1335	0.05	42	30,601	592	30,010	382.69	30,010	0.69
90	1350	0.03	28	30,038	592	29,446	382.68	29,446	0.68
91	1365	0.03	28	29,474	592	28,883	382.66	28,883	0.66
92	1380	0.03	28	28,911	592	28,319	382.65	28,319	0.65
93	1395	0.03	28	28,347	592	27,756	382.64	27,756	0.64
94	1410	0.03	28	27,784	592	27,192	382.62	27,192	0.62
95	1425	0.03	28	27,220	592	26,628	382.61	26,628	0.61
96	1440	0.03	28	26,656	592	26,065	382.60	26,065	0.60

IV RETENTION BASIN INFILTRATION STUDY

The project runoff volume generated during the 100 year design storm event and stored in the on-site retention system will be designed to infiltrate into the soil to eliminate the presence of standing water and risk of vector control issues within a period of 72 hours in accordance with the City of Coachella Municipal Code. Since infiltration will occur within unpaved retention basin areas, the surface volume of the basin areas will be tabulated so that the allowable infiltration rate can be applied over this surface area

Retention basin calculations in Section III of this report show that the total volume of runoff stored on-site during 100 year storm event over the three separate subareas is **247,322** cu.ft. Assuming the maximum infiltration allowed by City of Coachella (10 gal/s.f./day), the time required to evacuate the stored volume of runoff during the 100 year storm event is:

Maximum allowable infiltration rate:

10 gal/s.f./day = 1.34 cu.ft/s.f./day = 4.02 cu.ft/s.f./72 hours

Total area contributing to infiltration:

42,516 s.f. (SUBAREA A) + 42,380 s.f. (SUBAREA B) + 2,664 s.f. (SUBAREA C)
= **87,560 s.f.**

(4.02 cu.ft/s.f./72 hours) X (87,560 s.f.) = 351,991 cu.ft / 72 hours

The retention basin and adjacent pervious area has the capacity to evacuate 351,991 cu.ft. of runoff volume within a 72 hour period which excess the amount of stored volume during the 100 year storm event (247,322 cu.ft.)

V APPENDIX

1 IN = 0.25 MI

The Altum Group

Project Vicinity

Coachella Airport Business Park

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCEL MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES.

SEC. 15 T.6S, R.8E

CITY OF COACHELLA

TRA 012-048
012-049

763-33

25-39-1

15

N89-51-15E 2614.29

478.04

634.78

L=947.16

L=981.76

L=742.81

645.60

456.05

186.05

310.17

132.38

219.84

451.47

771.92

59.30

30

1324.96

S00-26-57E

383.01

1583.27

1828.61

1318.98

306.17

740.56

183.63

L=393.64

315.86

1474.76

311.81

L=530.43

L=496.15

717.02

220.10

259.92

53.13

144.75

434.80

421.46

L = 259.48

300.83

399.01

145.12

416.84

871.00

1324.96

N

W E

S

1 " = 400 '

Legend

- Lot Lines
- Right-Of-Way
- Old Lot Lines
- Reference R.O.W
- Other Easements
- Lease Area
- Subdivision Tic Mark

TRA 012-049

TRA 012-048

(13) 21.56 AC ML

(25) 68.00 AC ML

(26) 15.00 AC ML

(28) 23.89 AC ML

(18) 9.62 AC ML

(29) 11.18 AC ML

(30) 3.14 AC ML

EX

(06) 3.57 AC ML

EX

C.V.C.W.D. STORMWATER CHANNEL

STATE HWY 86

FILLMORE ST

56TH AVE (AIRPORT BLVD)

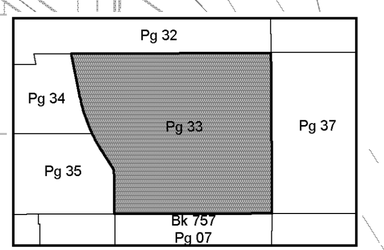
14

22

23

Data

RS 15/56, 16,56, 17/18, MB 4/53
MB 22/20-21, RS 5/18, CVCWD R/W
R/W XI-RIV-187-F
60' RDS. PER INST. 32692 4/59
RS 11/30, MB 4/69, 4/78, 9/21
LLA 2390, RS 78/46



Date	Old Number	New Number
4/1/1987	350-8	7
4/1/1987	3	8
4/1/1987	7, 8	9
4/1/1987	9	10, 11
3/1/1991	1	12, 13, ST
3/1/1991	4	14, ST
3/1/1991	5	15, ST
3/1/1991	11	16, 17, ST
8/1/1991	10	18, ST
2/1/2005	14	19, 20
2/1/2005	15	21, 22
2/1/2005	16	23, 24
12/1/2005	2, 12	25
12/1/2005	19, 21, 23	26
12/1/2005	20, 22, 24	27
12/1/2009	27	28, ST
5/1/2018	17	29, 30

ASSESSOR'S MAP BK763 PG. 33
Riverside County, Calif.

jasantos

May 2018

Get Latitude and Longitude

Latitude and Longitude are the units that represent the *coordinates at geographic coordinate system*. To make a search, use the name of a place, city, state, or address, or click the location on the map to **find lat long coordinates**.

Place Name

Type A Place Name

Find

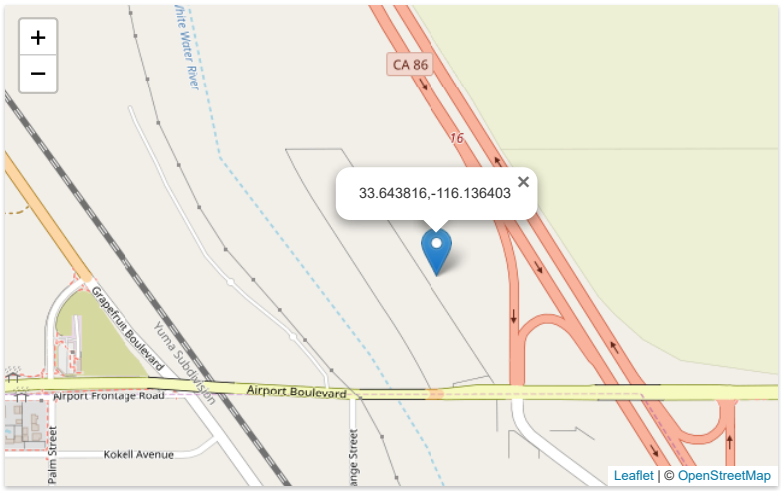
Add the country code for better results. Ex: London, UK

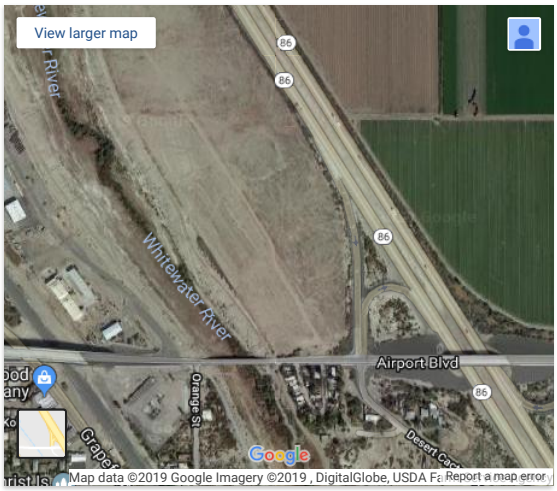
Latitude

33.643816

Longitude

-116.136403





Lat Long	GPS Coordinates
(33.643816, -116.136403)	33° 38' 37.7376'' N 116° 8' 11.0508'' W

Share this location link

<a href="https://www.latlong.net/c/?lat=33.643816&long=-116.136403" target="_blank">

Location page url

https://www.latlong.net/c/?lat=33.643816&long=-116.136403

Copy and paste the html code above in your website to share.

What is Latitude and Longitude?

Just like every actual house has its address (which includes the number, the name of the street, city, etc), every single point on the surface of earth can be specified by the *latitude and longitude coordinates*. Therefore, by using latitude and longitude we can specify virtually any point on earth.

NOAA Atlas 14, Volume 6, Version 2
Location name: Coachella, California, USA*
Latitude: 33.6438°, Longitude: -116.1364°
Elevation: -118.92 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.061** (0.051-0.074)	**0.098** (0.081-0.118)	**0.148** (0.123-0.180)	**0.192** (0.158-0.235)	**0.254** (0.203-0.322)	**0.305** (0.238-0.395)	**0.360** (0.274-0.478)	**0.419** (0.310-0.573)	**0.504** (0.357-0.719)	**0.575** (0.393-0.849)
10-min	**0.087** (0.073-0.106)	**0.140** (0.117-0.169)	**0.212** (0.177-0.258)	**0.275** (0.227-0.336)	**0.364** (0.290-0.462)	**0.438** (0.341-0.567)	**0.516** (0.392-0.685)	**0.601** (0.444-0.821)	**0.723** (0.512-1.03)	**0.824** (0.563-1.22)
15-min	**0.106** (0.088-0.128)	**0.169** (0.141-0.205)	**0.257** (0.214-0.312)	**0.332** (0.274-0.407)	**0.441** (0.351-0.559)	**0.529** (0.413-0.685)	**0.624** (0.475-0.828)	**0.726** (0.537-0.993)	**0.874** (0.619-1.25)	**0.997** (0.681-1.47)
30-min	**0.147** (0.123-0.178)	**0.235** (0.196-0.285)	**0.358** (0.297-0.434)	**0.463** (0.381-0.567)	**0.614** (0.489-0.778)	**0.737** (0.575-0.954)	**0.869** (0.661-1.15)	**1.01** (0.748-1.38)	**1.22** (0.862-1.74)	**1.39** (0.949-2.05)
60-min	**0.207** (0.172-0.250)	**0.330** (0.275-0.400)	**0.501** (0.417-0.609)	**0.649** (0.535-0.795)	**0.861** (0.686-1.09)	**1.03** (0.806-1.34)	**1.22** (0.927-1.62)	**1.42** (1.05-1.94)	**1.71** (1.21-2.43)	**1.95** (1.33-2.88)
2-hr	**0.285** (0.238-0.345)	**0.429** (0.358-0.519)	**0.640** (0.532-0.778)	**0.832** (0.686-1.02)	**1.13** (0.896-1.43)	**1.38** (1.07-1.78)	**1.66** (1.26-2.21)	**1.99** (1.47-2.71)	**2.48** (1.76-3.53)	**2.91** (1.99-4.29)
3-hr	**0.348** (0.290-0.420)	**0.510** (0.425-0.617)	**0.756** (0.629-0.918)	**0.984** (0.812-1.21)	**1.34** (1.07-1.70)	**1.66** (1.30-2.15)	**2.03** (1.54-2.69)	**2.45** (1.81-3.35)	**3.12** (2.21-4.44)	**3.71** (2.54-5.48)
6-hr	**0.461** (0.385-0.558)	**0.666** (0.556-0.807)	**0.983** (0.818-1.19)	**1.28** (1.06-1.57)	**1.77** (1.41-2.24)	**2.20** (1.72-2.85)	**2.71** (2.06-3.60)	**3.32** (2.45-4.53)	**4.28** (3.03-6.11)	**5.17** (3.53-7.63)
12-hr	**0.545** (0.455-0.659)	**0.801** (0.668-0.970)	**1.19** (0.993-1.45)	**1.56** (1.29-1.92)	**2.15** (1.72-2.73)	**2.68** (2.09-3.47)	**3.30** (2.51-4.38)	**4.02** (2.97-5.50)	**5.17** (3.66-7.37)	**6.21** (4.25-9.18)
24-hr	**0.693** (0.613-0.799)	**1.05** (0.925-1.21)	**1.58** (1.39-1.83)	**2.07** (1.81-2.41)	**2.82** (2.39-3.40)	**3.49** (2.90-4.29)	**4.24** (3.44-5.34)	**5.11** (4.04-6.61)	**6.46** (4.90-8.69)	**7.65** (5.62-10.6)
2-day	**0.785** (0.695-0.906)	**1.21** (1.07-1.39)	**1.82** (1.60-2.11)	**2.37** (2.07-2.76)	**3.19** (2.70-3.84)	**3.89** (3.23-4.77)	**4.66** (3.78-5.86)	**5.52** (4.36-7.14)	**6.82** (5.18-9.17)	**7.93** (5.82-11.0)
3-day	**0.846** (0.748-0.975)	**1.31** (1.16-1.51)	**1.97** (1.73-2.28)	**2.55** (2.23-2.97)	**3.41** (2.89-4.10)	**4.12** (3.43-5.07)	**4.91** (3.98-6.17)	**5.78** (4.56-7.46)	**7.06** (5.36-9.49)	**8.14** (5.97-11.3)
4-day	**0.897** (0.794-1.03)	**1.39** (1.23-1.60)	**2.08** (1.84-2.41)	**2.69** (2.35-3.14)	**3.58** (3.03-4.31)	**4.32** (3.59-5.31)	**5.12** (4.16-6.44)	**6.01** (4.74-7.76)	**7.30** (5.54-9.81)	**8.38** (6.15-11.6)
7-day	**0.962** (0.851-1.11)	**1.47** (1.30-1.70)	**2.19** (1.93-2.54)	**2.82** (2.46-3.29)	**3.73** (3.16-4.49)	**4.48** (3.72-5.50)	**5.29** (4.29-6.65)	**6.18** (4.88-7.98)	**7.47** (5.67-10.0)	**8.54** (6.27-11.9)
10-day	**0.995** (0.881-1.15)	**1.52** (1.34-1.75)	**2.25** (1.98-2.60)	**2.88** (2.52-3.36)	**3.81** (3.23-4.58)	**4.57** (3.79-5.61)	**5.38** (4.37-6.77)	**6.28** (4.96-8.11)	**7.57** (5.74-10.2)	**8.64** (6.35-12.0)
20-day	**1.07** (0.947-1.23)	**1.64** (1.45-1.89)	**2.43** (2.15-2.82)	**3.12** (2.73-3.64)	**4.11** (3.48-4.95)	**4.92** (4.08-6.04)	**5.78** (4.69-7.27)	**6.72** (5.31-8.69)	**8.08** (6.13-10.9)	**9.20** (6.76-12.8)
30-day	**1.14** (1.01-1.32)	**1.77** (1.56-2.04)	**2.64** (2.33-3.06)	**3.39** (2.96-3.95)	**4.47** (3.79-5.38)	**5.35** (4.44-6.57)	**6.29** (5.10-7.91)	**7.31** (5.77-9.44)	**8.78** (6.66-11.8)	**9.99** (7.33-13.9)
45-day	**1.25** (1.11-1.44)	**1.97** (1.74-2.27)	**2.96** (2.61-3.43)	**3.82** (3.34-4.45)	**5.04** (4.27-6.07)	**6.04** (5.02-7.42)	**7.11** (5.77-8.94)	**8.26** (6.53-10.7)	**9.92** (7.53-13.3)	**11.3** (8.29-15.7)
60-day	**1.32** (1.17-1.52)	**2.10** (1.86-2.42)	**3.18** (2.81-3.68)	**4.11** (3.60-4.80)	**5.45** (4.61-6.56)	**6.53** (5.42-8.02)	**7.69** (6.24-9.67)	**8.94** (7.06-11.6)	**10.7** (8.15-14.4)	**12.2** (8.97-17.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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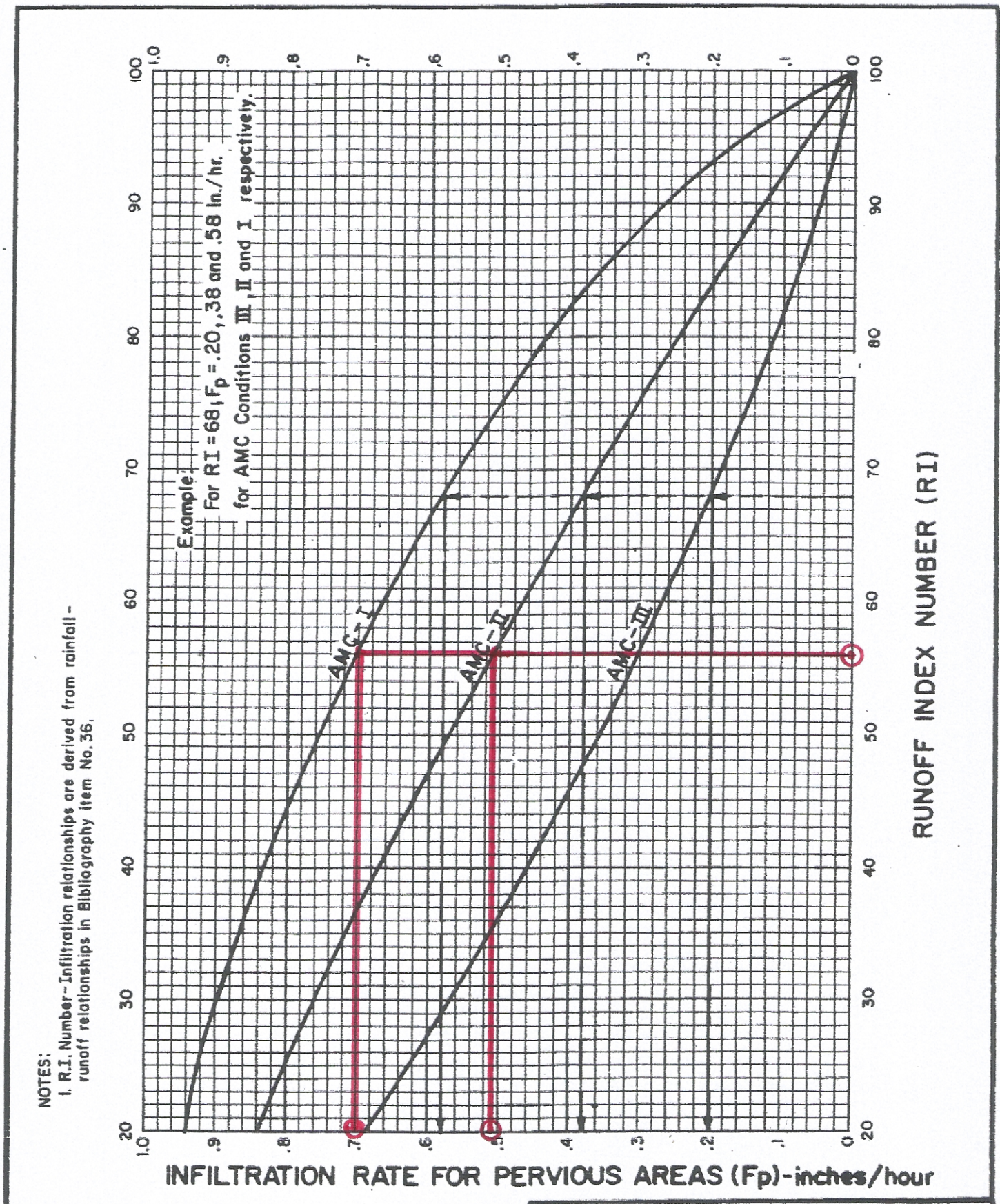
PF graphical

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA



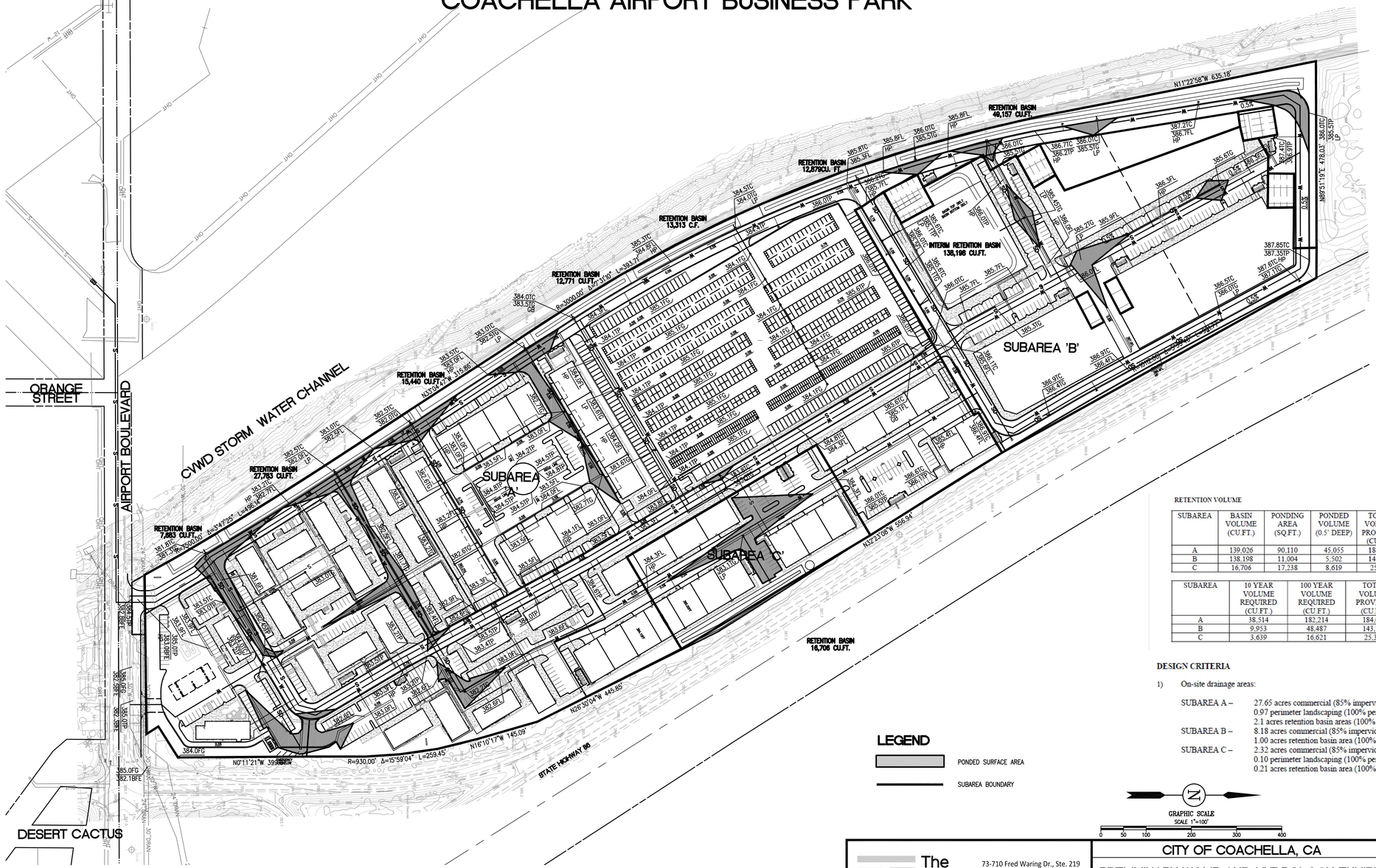
RCFC & WCD 10 YR 100 YR
HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

PLATE E-6.2

IN THE CITY OF COACHELLA, STATE OF CALIFORNIA

PRELIMINARY WQMP AND HYDROLOGY EXHIBIT
COACHELLA AIRPORT BUSINESS PARK



RETENTION VOLUME

SUBAREA	BASIN VOLUME (CU.FT.)	PONDING AREA (SQ.FT.)	PONDED VOLUME (0.5' DEEP)	TOTAL VOLUME PROVIDED (CU.FT.)
A	139,026	90,110	45,055	184,081
B	138,198	11,004	5,502	143,700
C	16,706	17,238	8,619	25,325

SUBAREA	10 YEAR VOLUME REQUIRED (CU.FT.)	100 YEAR VOLUME REQUIRED (CU.FT.)	TOTAL VOLUME PROVIDED (CU.FT.)
A	38,514	182,214	184,081
B	9,953	48,487	143,700
C	3,639	16,621	25,325

DESIGN CRITERIA

1) On-site drainage areas:

SUBAREA A – 27.65 acres commercial (85% impervious)
0.97 perimeter landscaping (100% pervious)
2.1 acres retention basin areas (100% impervious)

SUBAREA B – 8.18 acres commercial (85% impervious)
1.00 acres retention basin area (100% impervious)

SUBAREA C – 2.32 acres commercial (85% impervious)
0.10 perimeter landscaping (100% pervious)
0.21 acres retention basin area (100% impervious)

LEGEND

PONDED SURFACE AREA

SUBAREA BOUNDARY

GRAPHIC SCALE
SCALE 1"=100'
0 50 100 200 300 400

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TheAltumGroup.com
ENGINEERING | PLANNING | SURVEY | ENVIRONMENTAL

CITY OF COACHELLA, CA

PRELIMINARY WQMP AND HYDROLOGY EXHIBIT
COACHELLA AIRPORT BUSINESS PARK
BEING A PORTION OF THE SOUTH HALF OF SECTION 15, T6S, R8E, SBM

FOR: HAAGEN COMPANY, LLC

SHEET NO. 1 OF 1