
Temescal Canyon Self-Storage Drainage Study

21765 Temescal Canyon Road
Corona, CA 92883

Date Prepared:

May 30, 2025

Prepared for:

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Declaration of Responsible Charge:

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions code, and that the design is consistent with current standards. I understand that the check of the project drawings and specifications by the County of Riverside is confined to a review only and does not relieve me, as an engineer of work, of my responsibilities for project design.


Patric T. de Boer RCE 83583
Registration Expires 3-31-2027



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Site & Project Description

This drainage study has been prepared for the proposed development at 21765 Temescal Canyon Road, Corona, CA. The proposed development consists of the demo of the existing commercial development and the construction of a three-story self-storage building, drive aisles and a storm drain system. The total area of analysis will include portions of offsite area from the Interstate 15 and adjacent landscape areas. The total area of analysis is 4.83 acres.

The site is in the Bedford Sub-Area of the Lake Mathews Hydrologic Area of the Santa Ana River Hydrologic Unit (801.32). See Figure No. 1 for a Vicinity Map. See Figure 2 for the existing drainage limits. See Figure 3 for the proposed drainage limits.

The site is located in Zone X, an area of minimal flood hazard, per the National Flood Hazard Layer FIRMette (FIRM Panel No. 06065C1370G, Effective Date: 08/28/2008). See Appendix 6 for FEMA FIRMette exhibit.

Methodology

This analysis utilizes the Rational Method, as defined in the Riverside County Hydrology Manual, to determine peak flowrates generated by the existing and proposed conditions of the project site.

$$Q=CIA$$

Where:

- Q = peak discharge, in cubic feet per second (cfs)
- C = runoff coefficient, proportion of the rainfall that runs off the surface (no units)
County of Riverside Hydrology Manual, Plate D-5.5, D-5.6, and D-5.7
- I = average rainfall intensity for a duration equal to the Tc for the area, (in/hr)
Point Precipitation Frequency Estimate from NOAA Atlas 14, Volume 6, Version 2
County of Riverside Hydrology Manual, Plate D-4.1, D-4.7
- Tc = Time of Concentration (min)
County of Riverside Hydrology Manual, Plate D-3

The C-Value was determined by using the Plates provided in the Hydrology Manual, based on Type D soil and percentage of impervious cover for the specific drainage basin. Time of Concentration was determined by using Plate D-3 of the Hydrology Manual and considers the basin flow length, elevation difference, and type of cover. The Intensity was determined using Plate D-4.1 and D-4.7 of the Hydrology Manual, using the Tc value and the Point Precipitation Frequency Estimate from NOAA Atlas 14. Please see attached Appendices for more details regarding the Plates and graphs used.

The proposed storm drain pipes were sized using Manning's Equation as specified on page 7-78 & 7-18 of *The Handbook of Hydraulics*, by Brater & King.

The following references have been used in preparation of this report:

- (1) Handbook of Hydraulics, E.F. Brater & H.W. King, 6th Ed., 1976.
- (2) Modern Sewer Design, American Iron & Steel Institute, 1st Ed., 1980.
- (3) County of Riverside Hydrology Manual, 1978
- (4) NOAA Atlas 14, Volume 6, Version 2

Existing Conditions

The existing site consists of a commercial building with hardscape and landscape areas. The site is 72% impervious. There is an existing 54" pipe that runs through the site from west to east. The area of analysis for the existing conditions was broken down into separate sub-basins that encompass the entire site and portions of Interstate 15 just west of the site.

The northerly portion of the site accepts offsite flow from the adjacent portion Interstate 15 which then drains to the northeasterly corner of the site via surface flow, and ultimately on the public storm drain system on Temescal Canyon Rd. and Foster Rd via a curb inlet.

The center portion of the site accepts offsite flow from the adjacent portion of Interstate 15 which then drains to a localized grated inlet on the parking lot, thence to the gutter on Temescal Canyon Road, and ultimately on the public storm drain system on Temescal Canyon Rd. and Foster Rd via a curb inlet.

The southerly portion of the site accepts offsite flow from the adjacent portion of Interstate 15 which then drains to a ditch on the southerly corner of the site, thence to an existing 18" pipe that ultimately drains to the public storm drain system on Temescal Canyon Rd. and Foster Rd. This point is referred to as Discharge Point # 1 in this report.

Proposed Conditions

The project proposes the demo of the existing development and construct a 3-story self-storage building, drive aisles and a storm drain system. The area of analysis for the proposed conditions was broken down into separate sub-basins that encompass the self-storage development and offsite portions of the Interstate 15. No flow attenuation is proposed.

The northerly portion of the site and the entire building will drain via surface flow to the northeasterly corner of the site where a portion of the flow will be intercepted by a trench drain and the rest will drain to the gutter on Temescal Canyon Rd. The flow will then drain to the public storm drain system on Temescal Canyon Rd. and Foster Rd via an existing curb inlet.

The southerly portion of the site drains via surface flow to the gutter on Temescal Canyon Rd., thence to an existing curb inlet on Temescal Canyon Road and ultimately to the public storm drain system on Temescal Canyon Rd.

Existing Runoff Analysis

The existing conditions were modeled as three (3) drainage basins, referred to as E-1.1, E-1.2 & E-1.3 in this report. The area of analysis is 68% impervious.

Below is a summary of the Rational Method Calculations for the existing conditions:

Basin #	Area (ac)	Imp. (%)	Tc (mins)	C ₁₀₀	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)	DP-#
E-1.1	2.40	76%	7.0	0.87	4.07	8.51	DP-1
E-1.2	1.95	85%	5.5	0.89	4.58	7.94	
E-1.3	0.79	56%	5.0	0.88	4.78	3.31	

Below is a summary of the existing confluence flow calculations.

Existing Flow Junction 100-Year Calculations Summary

Confluence Pt.	Tributary Flows	Tc (mins)	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)	Confluence Flow (cfs)
CP-1	E-1.1	7.0	4.07	8.51	15.56
	E-1.2	5.5	4.58	7.94	
DP-1	CP-1	7.0	4.07	15.56	18.38
	E-1.3	5.0	3.31	3.31	

The total area of analysis generates 18.38 cfs for DP-1 in the 100-year storm for the existing conditions.

Proposed Runoff Analysis

The proposed conditions were modeled as four (4) drainage basins, referred to as basins P-1.1, P-1.2, O-1.1 & O-1.2 in this report. The area of analysis is 71% impervious.

Below is a summary Rational Method Calculations for the proposed conditions:

Basin #	Area (ac)	Imp. (%)	Tc (mins)	C ₁₀₀	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)	DP-#
P-1.1	1.74	74%	7.5	0.88	3.94	6.02	DP-1
P-1.2	0.48	58%	7.0	0.86	4.07	1.67	
O-1.1	1.12	41%	6.0	0.85	4.38	3.95	
O-1.2	1.86	62%	7.0	0.86	4.07	6.52	

Below is a summary of the proposed confluence flow calculations.

Proposed Flow Junction 100-Year Calculations Summary

Confluence Pt.	Tributary Flows	Tc (mins)	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)	Confluence Flow (cfs)
CP-1	P-1.1	7.5	3.94	6.02	9.57
	O-1.1	6.0	4.38	3.95	
CP-2	P-1.2	7.0	4.07	1.67	8.19
	O-1.2	7.0	4.07	6.52	
DP-1	CP-1	7.5	3.94	9.57	17.50
	CP-2	7.0	4.07	8.19	

The total area of analysis generates 17.50 cfs for DP-1 in the 100-year storm for the proposed conditions. The area of analysis experiences a decrease in the 100-year storm of 0.88 cfs for DP-1.

The proposed development will not be required to provide onsite detention because the proposed flow rates are lower than the existing conditions for the 100-yr storm. See Appendix 3 and 4 for time of concentration and intensity nomographs, respectively.

Offsite Flow

The existing site has a 54" RCP storm drain that runs through the site from West to East. The pipe connects to a Caltrans pipe of the same diameter at the west property line. This pipe conveys runoff from a catchment west of the Interstate-5. Per Riverside County Flood Control District Drawing 2-0446 sheet 6, this pipe has a Q_{100} of 293 cfs. The project will reroute the onsite portion of this pipe around the building footprint. This pipe is not included in the hydrology calculations, as the Q_{100} is provided by the RCFCDD as-built plans. Hydraulic calculations are provided in the pipe sizing calculations to demonstrate sufficient capacity.

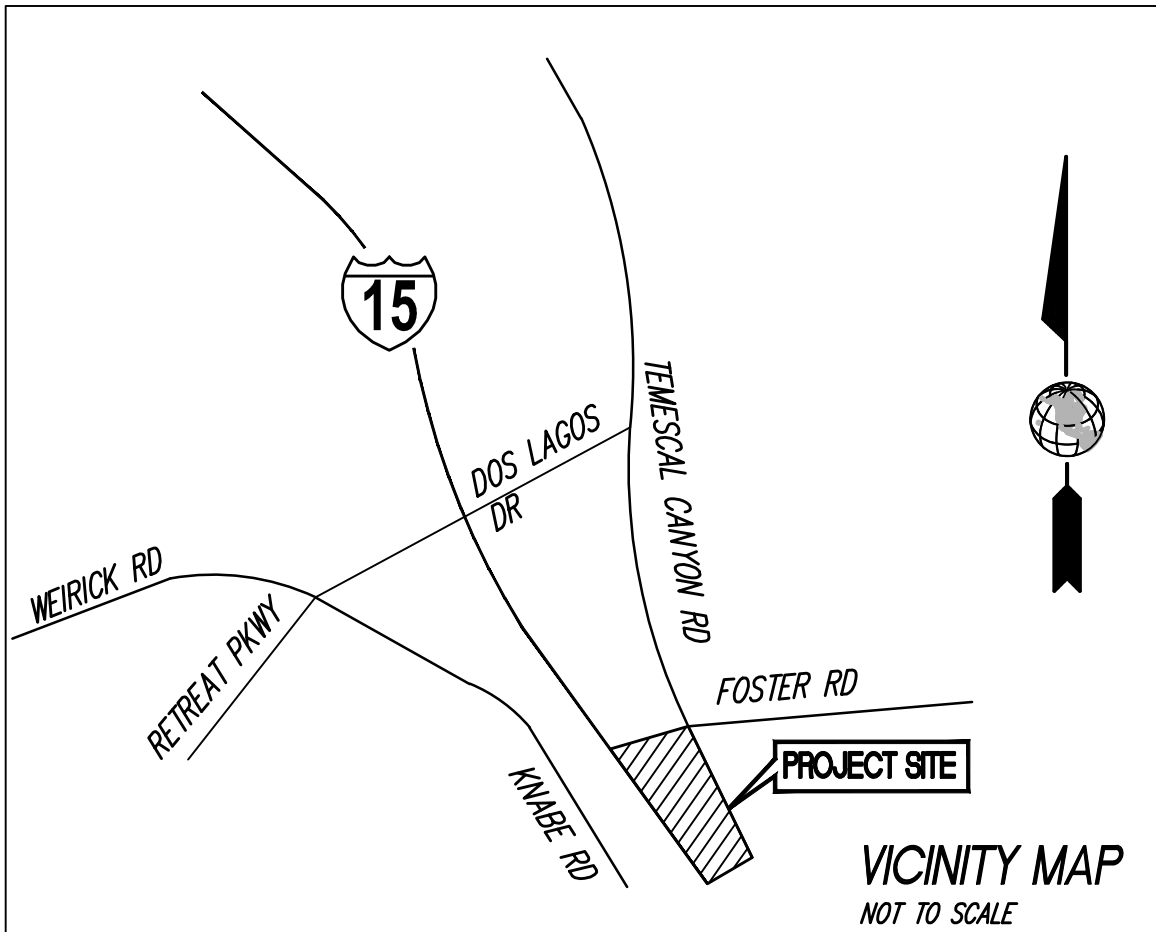
Results and Conclusions

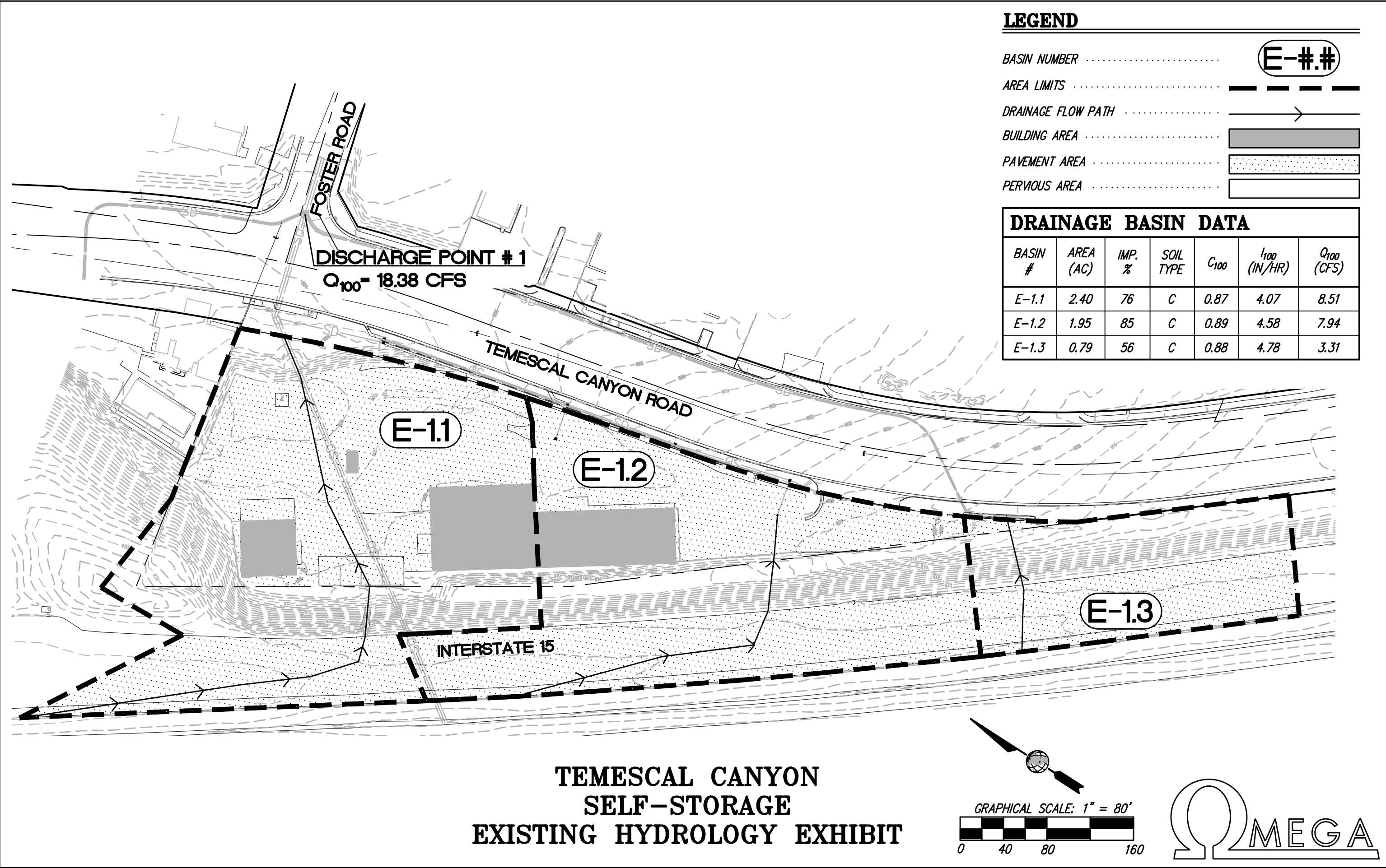
The analysis of the project site indicates that the peak flowrate generated by the site will decrease for the 100-year storm. This is due to the overall reduction in impervious area for the proposed conditions. Below is a summary of the existing and proposed peak flowrates.

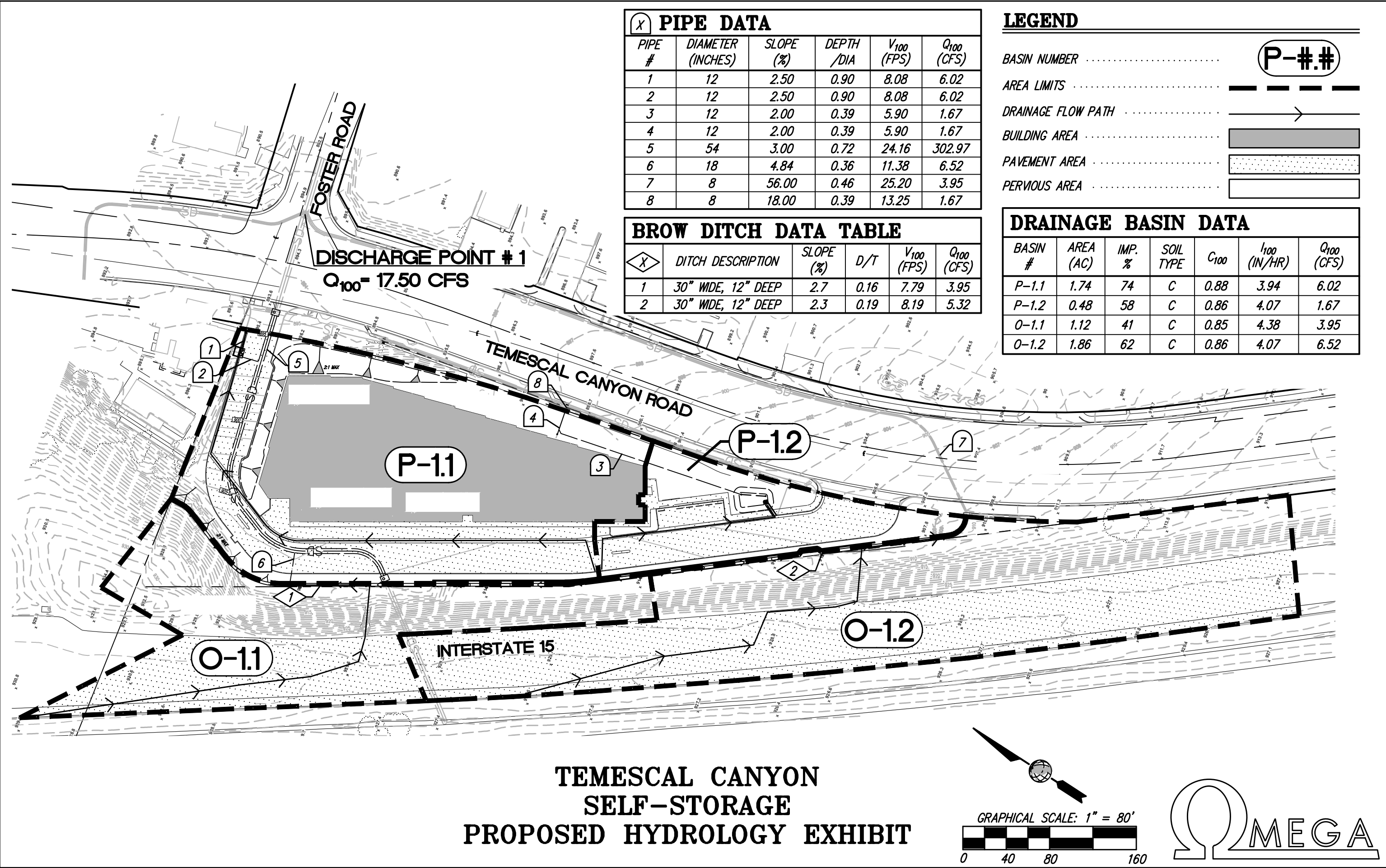
Conditions	Discharge Location	Tc (Mins)	I ₁₀₀ (in/hr)	Q ₁₀₀ (cfs)
Existing Conditions	DP-1	7.0	4.07	18.38
Proposed Conditions	DP-1	7.0	4.07	17.50

It is the opinion of Omega Engineering Consultants that the proposed development has been designed to safely convey the 100-year storm event and is not expected to create new adverse conditions to downstream conveyances or structures.

A separate Storm Water Quality Management Plan has been prepared to discuss the water quality impacts for the proposed development.







DISCHARGE POINT # 1
 $Q_{100} = 17.50$ CFS

X PIPE DATA					
PIPE #	DIAMETER (INCHES)	SLOPE (%)	DEPTH / DIA	V_{100} (FPS)	Q_{100} (CFS)
1	12	2.50	0.90	8.08	6.02
2	12	2.50	0.90	8.08	6.02
3	12	2.00	0.39	5.90	1.67
4	12	2.00	0.39	5.90	1.67
5	54	3.00	0.72	24.16	302.97
6	18	4.84	0.36	11.38	6.52
7	8	56.00	0.46	25.20	3.95
8	8	18.00	0.39	13.25	1.67

BROW DITCH DATA TABLE					
X	DITCH DESCRIPTION	SLOPE (%)	D/T	V_{100} (FPS)	Q_{100} (CFS)
1	30" WIDE, 12" DEEP	2.7	0.16	7.79	3.95
2	30" WIDE, 12" DEEP	2.3	0.19	8.19	5.32

LEGEND

BASIN NUMBER P-##

AREA LIMITS - - - - -

DRAINAGE FLOW PATH →

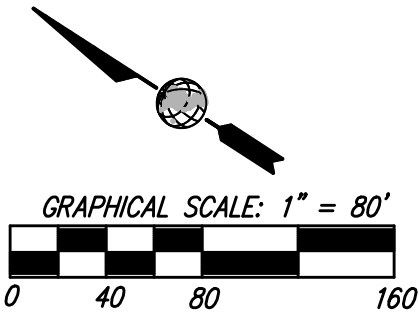
BUILDING AREA [Solid Gray Box]

PAVEMENT AREA [Dotted Box]

PERVIOUS AREA [Horizontal Line Box]

DRAINAGE BASIN DATA						
BASIN #	AREA (AC)	IMP. %	SOIL TYPE	C_{100}	I_{100} (IN/HR)	Q_{100} (CFS)
P-1.1	1.74	74	C	0.88	3.94	6.02
P-1.2	0.48	58	C	0.86	4.07	1.67
O-1.1	1.12	41	C	0.85	4.38	3.95
O-1.2	1.86	62	C	0.86	4.07	6.52

**TEMESCAL CANYON
 SELF-STORAGE
 PROPOSED HYDROLOGY EXHIBIT**



Temescal Canyon Self-Storage 100-YEAR STORM RATIONAL METHOD STUDY														
Drainage Area	Soil & Development	A Acres	I ₁₀₀ in/hr.	C ₁₀₀	Q cfs	ΣQ	T	Slope	Section	V fps	L ft.	T min	ΣT	Remarks
E-1.1	Type C Soil	2.40	4.07	0.87	8.51	8.51	7.0					7.0		
E-1.2	Type C Soil	1.95	4.58	0.89	7.94	7.94	5.5					5.5		
			4.07			15.56	7.0							
E-1.3	Type C Soil	0.79	4.78	0.88	3.31	3.31	5.0					5.0		
			Discharge Point # 1			18.38						7.0		
P-1.1	Type C Soil	1.74	3.94	0.88	6.02	6.02	7.5					7.5		
O-1.1	Type C Soil	1.06	4.38	0.85	3.95	3.95	6.0					6.0		
			3.94			9.57	7.5							
P-1.2	Type C Soil	0.48	4.07	0.86	1.67	1.67	7.0					7.0		
O-1.2	Type C Soil	1.86	4.07	0.86	6.52	6.52	7.0					7.0		
			4.07			8.19	7.0							
			Discharge Point # 1			17.50						7.5		

C Value per Plate D-5.3
Intensity selected from Plate D-4.1 & D-4.7

Calculated By: Rogelio Ruiz Date:
Checked By: Patric de Boer Date:

Junction Equation: T₁ < T₂ < T₃

$$Q_{T1} = Q_1 + \frac{T_1}{T_2} Q_2 + \frac{T_1}{T_3} Q_3$$

$$Q_{T2} = Q_2 + \frac{I_2}{I_1} Q_1 + \frac{T_2}{T_3} Q_3$$

$$Q_{T3} = Q_3 + \frac{I_3}{I_1} Q_1 + \frac{I_3}{I_2} Q_2$$

CONDUIT SIZING CALCULATIONS

The following chart details the sizing parameters and for conduits that convey runoff on the site.

Flow parameters from *Handbook of Hydraulics, King & Brater* were used, see following page.

K'= Discharge factor	=	$(Q*n)/(d^{8/3}*s^{1/2})$
n= Mannings coefficient	=	0.013 for PVC & HDPE
d=diameter of conduit (ft)	=	per chart
Q= Discharge	=	based off portions of basins tributary to outlet
s=Minimum Pipe Slope (ft/ft)	=	per chart
D=depth of flow	=	From table 7-4 of the <i>Handbook of Hydraulics, King & Brater</i> See right
C _a = Flow factor	=	From table 7-14 of the <i>Handbook of Hydraulics, King & Brater</i> See right
A=Cross sectional area of flow	=	C_a*d^2
V=Velocity	=	Q/A

Pipe Flow

[illegible]

Note: The slope on Pipe # 2 is assumed as the IE we are matching on the proposed 54" pipe is unknown.

Brow Ditch

[illegible]

Table 7-4. For Determining the Area a of the Cross Section of a Circular Conduit Flowing Part Full

Let $\frac{\text{depth of water}}{\text{diameter of channel}} = \frac{D}{d}$ and C_a = the tabulated value. Then $a = C_a d^2$.

$\frac{D}{d}$	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0000	.0013	.0037	.0069	.0105	.0147	.0192	.0242	.0294	.0350
.1	.0409	.0470	.0534	.0600	.0668	.0739	.0811	.0885	.0961	.1039
.2	.1118	.1199	.1281	.1365	.1449	.1535	.1623	.1711	.1800	.1890
.3	.1982	.2074	.2167	.2260	.2355	.2450	.2546	.2642	.2739	.2836
.4	.2934	.3032	.3130	.3229	.3328	.3428	.3527	.3627	.3727	.3827
.5	.393	.403	.413	.423	.433	.443	.453	.462	.472	.482
.6	.492	.502	.512	.521	.531	.540	.550	.559	.569	.578
.7	.587	.596	.605	.614	.623	.632	.640	.649	.657	.666
.8	.674	.681	.689	.697	.704	.712	.719	.725	.732	.738
.9	.745	.750	.756	.761	.766	.771	.775	.779	.782	.784

Table 7-14. Values of K' for Circular Channels in the Formula

$$Q = \frac{K'}{n} d^{3/4} s^{1/2}$$

D = depth of water d = diameter of channel

[illegible]

Appendix 1



[PF_tabular](#) | [PF_graphical](#) | [Maps & aerals](#)

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	0.095 (0.079-0.115)	0.136 (0.114-0.165)	0.191 (0.159-0.231)	0.236 (0.195-0.288)	0.298 (0.237-0.377)	0.346 (0.270-0.448)	0.395 (0.301-0.525)	0.447 (0.330-0.612)	0.518 (0.366-0.741)	0.574 (0.391-0.851)
10-min	0.136 (0.114-0.164)	0.195 (0.163-0.236)	0.274 (0.228-0.331)	0.338 (0.279-0.413)	0.427 (0.340-0.540)	0.496 (0.387-0.642)	0.567 (0.431-0.753)	0.641 (0.473-0.877)	0.743 (0.525-1.06)	0.823 (0.561-1.22)
15-min	0.165 (0.138-0.199)	0.236 (0.197-0.285)	0.331 (0.276-0.401)	0.409 (0.338-0.499)	0.516 (0.412-0.653)	0.600 (0.468-0.776)	0.686 (0.521-0.911)	0.775 (0.572-1.06)	0.899 (0.635-1.28)	0.996 (0.679-1.48)
30-min	0.243 (0.203-0.293)	0.348 (0.291-0.421)	0.488 (0.407-0.591)	0.603 (0.499-0.737)	0.761 (0.608-0.964)	0.885 (0.690-1.14)	1.01 (0.769-1.34)	1.14 (0.845-1.56)	1.33 (0.937-1.90)	1.47 (1.00-2.18)
60-min	0.353 (0.296-0.426)	0.507 (0.424-0.612)	0.710 (0.592-0.860)	0.877 (0.725-1.07)	1.11 (0.884-1.40)	1.29 (1.00-1.67)	1.47 (1.12-1.96)	1.66 (1.23-2.28)	1.93 (1.36-2.76)	2.14 (1.46-3.17)
2-hr	0.529 (0.443-0.638)	0.713 (0.596-0.862)	0.963 (0.803-1.17)	1.17 (0.969-1.43)	1.47 (1.17-1.86)	1.70 (1.33-2.20)	1.94 (1.48-2.58)	2.20 (1.62-3.01)	2.56 (1.81-3.66)	2.85 (1.94-4.22)
3-hr	0.656 (0.549-0.792)	0.868 (0.726-1.05)	1.16 (0.964-1.40)	1.40 (1.16-1.71)	1.75 (1.39-2.21)	2.02 (1.58-2.62)	2.31 (1.76-3.07)	2.62 (1.94-3.58)	3.06 (2.16-4.37)	3.40 (2.32-5.05)
6-hr	0.924 (0.774-1.12)	1.20 (1.00-1.45)	1.58 (1.32-1.92)	1.90 (1.58-2.33)	2.36 (1.89-2.99)	2.74 (2.14-3.54)	3.13 (2.38-4.15)	3.54 (2.62-4.85)	4.14 (2.93-5.92)	4.62 (3.15-6.85)
12-hr	1.21 (1.02-1.46)	1.59 (1.33-1.92)	2.10 (1.76-2.55)	2.54 (2.10-3.10)	3.15 (2.52-3.99)	3.64 (2.84-4.72)	4.16 (3.16-5.52)	4.71 (3.48-6.44)	5.48 (3.87-7.83)	6.10 (4.16-9.05)
24-hr	1.60 (1.42-1.85)	2.14 (1.89-2.48)	2.87 (2.53-3.33)	3.48 (3.04-4.06)	4.33 (3.67-5.22)	5.01 (4.15-6.16)	5.71 (4.62-7.19)	6.45 (5.08-8.35)	7.48 (5.67-10.1)	8.31 (6.09-11.6)
2-day	1.96 (1.74-2.26)	2.66 (2.35-3.07)	3.59 (3.16-4.16)	4.37 (3.82-5.10)	5.45 (4.62-6.58)	6.31 (5.23-7.76)	7.19 (5.83-9.06)	8.13 (6.40-10.5)	9.42 (7.13-12.7)	10.4 (7.65-14.6)
3-day	2.10 (1.86-2.43)	2.88 (2.54-3.32)	3.92 (3.45-4.54)	4.78 (4.18-5.58)	5.99 (5.07-7.22)	6.94 (5.76-8.54)	7.93 (6.42-9.98)	8.96 (7.06-11.6)	10.4 (7.88-14.0)	11.5 (8.46-16.1)
4-day	2.28 (2.02-2.63)	3.14 (2.77-3.62)	4.30 (3.78-4.98)	5.26 (4.60-6.14)	6.61 (5.59-7.97)	7.67 (6.36-9.44)	8.77 (7.11-11.1)	9.94 (7.83-12.9)	11.6 (8.74-15.6)	12.8 (9.40-17.9)
7-day	2.60 (2.30-3.00)	3.62 (3.19-4.18)	4.99 (4.40-5.78)	6.14 (5.37-7.17)	7.76 (6.57-9.36)	9.05 (7.50-11.1)	10.4 (8.41-13.1)	11.8 (9.30-15.3)	13.8 (10.4-18.6)	15.4 (11.3-21.4)
10-day	2.79 (2.47-3.22)	3.90 (3.44-4.50)	5.41 (4.77-6.27)	6.69 (5.85-7.81)	8.50 (7.19-10.2)	9.94 (8.24-12.2)	11.5 (9.28-14.4)	13.1 (10.3-16.9)	15.3 (11.6-20.6)	17.1 (12.5-23.9)
20-day	3.32 (2.94-3.83)	4.68 (4.13-5.41)	6.57 (5.79-7.61)	8.19 (7.16-9.56)	10.5 (8.90-12.7)	12.4 (10.3-15.3)	14.4 (11.7-18.1)	16.6 (13.0-21.4)	19.6 (14.9-26.4)	22.1 (16.2-30.8)
30-day	3.94 (3.48-4.54)	5.55 (4.90-6.41)	7.82 (6.89-9.06)	9.78 (8.55-11.4)	12.6 (10.7-15.2)	15.0 (12.4-18.4)	17.5 (14.2-22.0)	20.2 (15.9-26.1)	24.1 (18.3-32.5)	27.3 (20.0-38.1)
45-day	4.66 (4.12-5.38)	6.53 (5.77-7.55)	9.19 (8.10-10.6)	11.5 (10.1-13.5)	15.0 (12.7-18.0)	17.8 (14.8-21.9)	20.9 (16.9-26.3)	24.3 (19.1-31.4)	29.2 (22.1-39.4)	33.3 (24.4-46.4)
60-day	5.37 (4.75-6.20)	7.44 (6.57-8.60)	10.4 (9.18-12.1)	13.1 (11.4-15.3)	17.0 (14.4-20.5)	20.3 (16.8-24.9)	23.8 (19.3-30.0)	27.8 (21.9-36.0)	33.6 (25.4-45.3)	38.4 (28.1-53.6)

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.

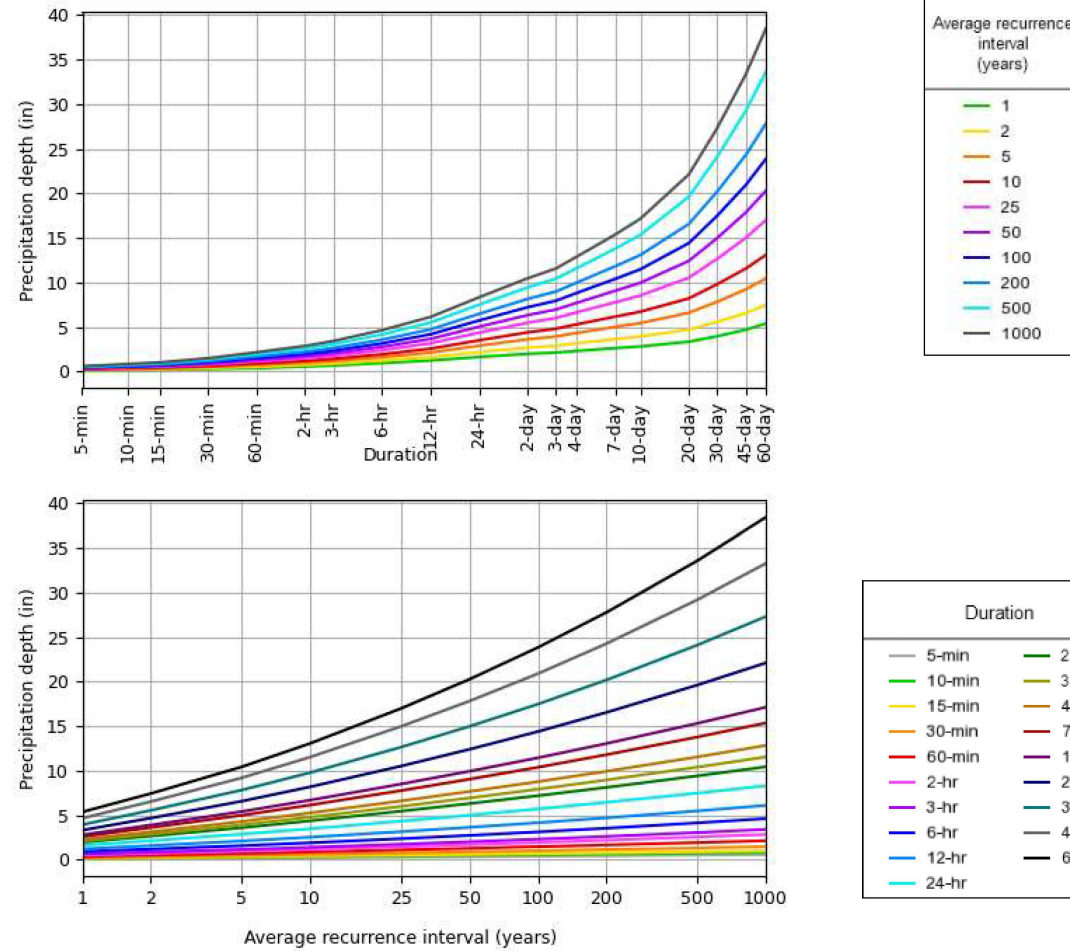
Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

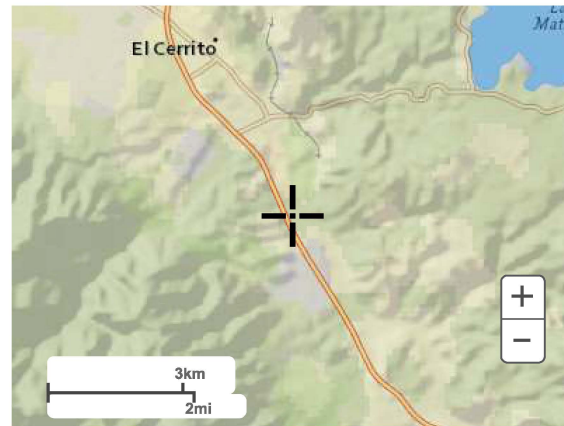
Latitude: 33.8039°, Longitude: -117.5042°



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Maps & aerals

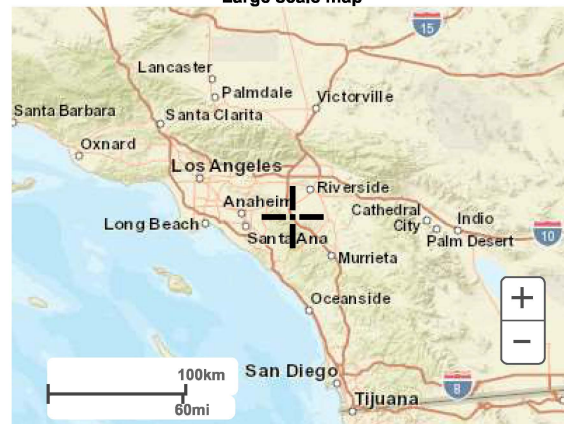
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

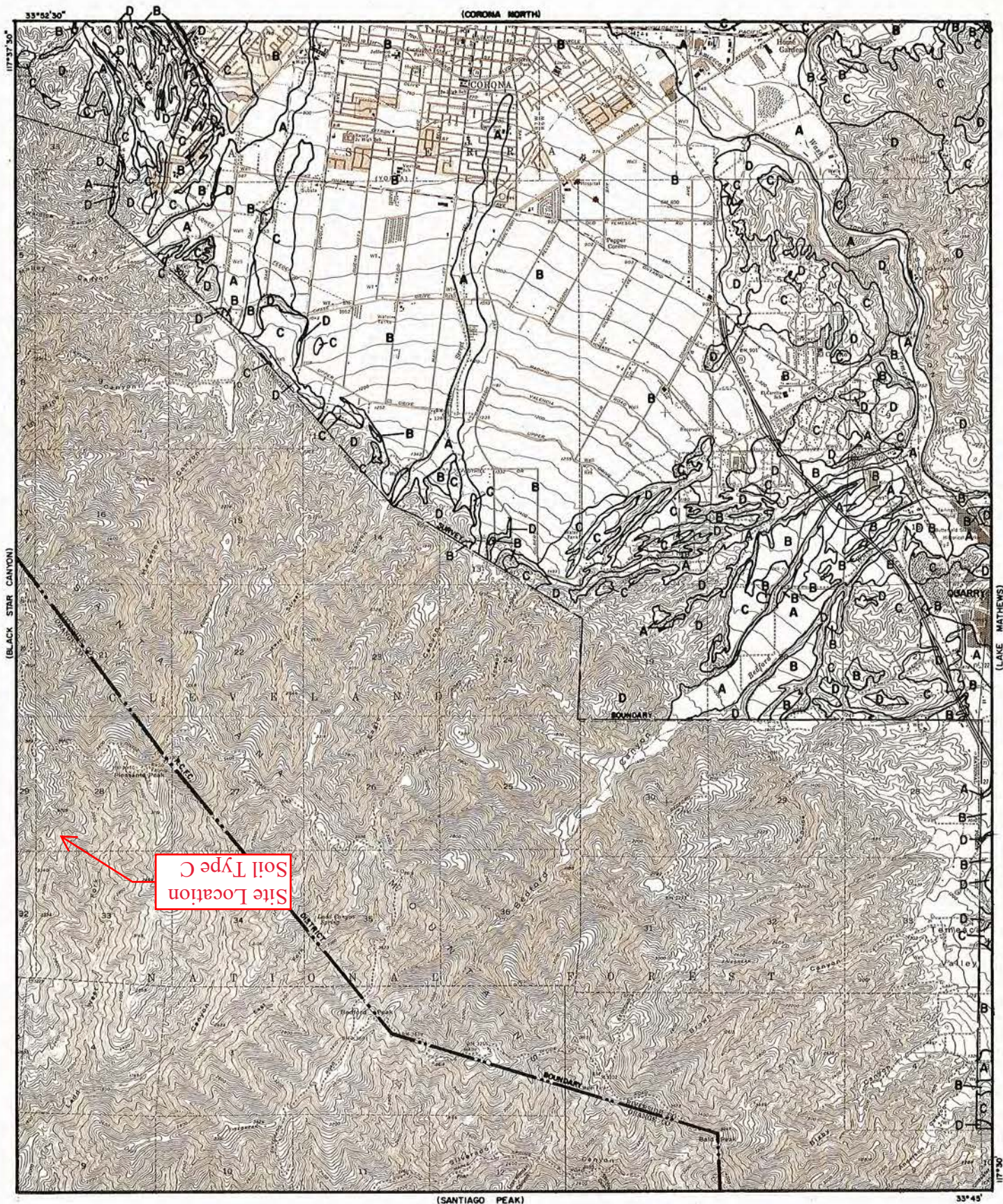


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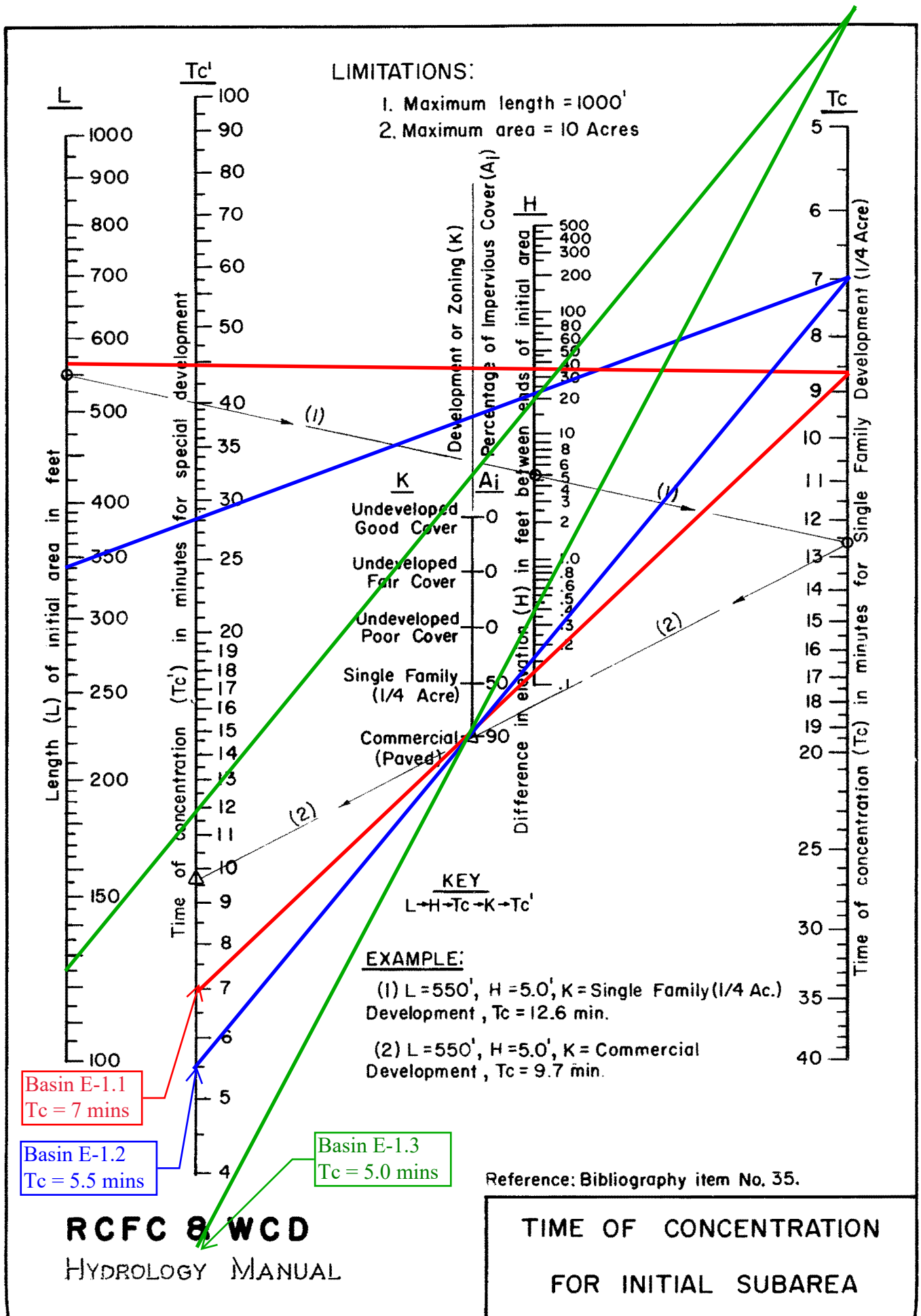
Appendix 2

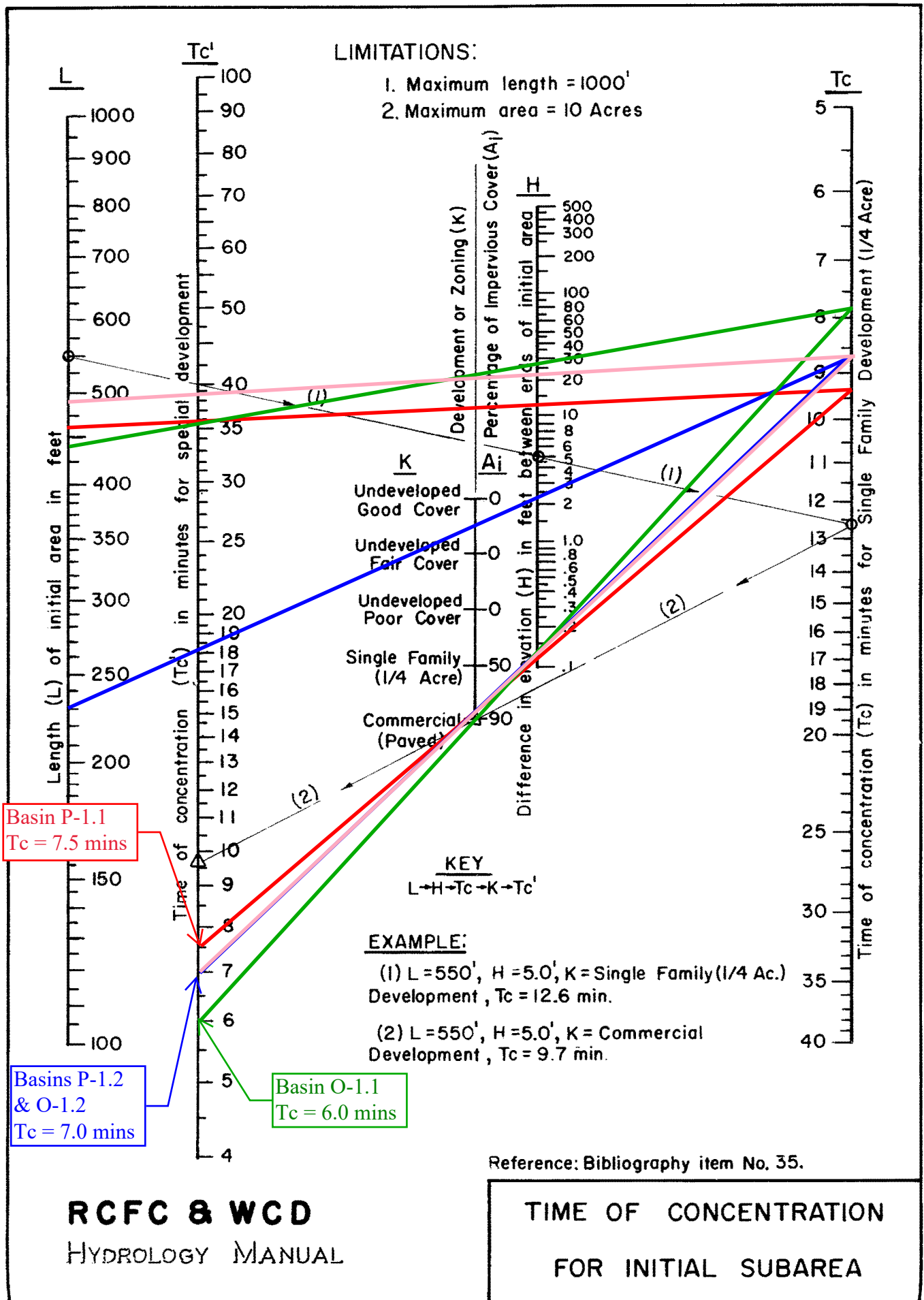


LEGEND — SOILS GROUP BOUNDARY A SOILS GROUP DESIGNATION RCFC&WCD HYDROLOGY MANUAL	HYDROLOGIC SOILS GROUP MAP FOR CORONA-SOUTH
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0 FEET 5000

Appendix 3





Appendix 4

RAINFALL INTENSITY—INCHES PER HOUR

STANDARD
INTENSITY—DURATION
CURVES DATA

PLATE D-4.1 (2 of 6)

CATHEDRAL CITY			CHERRY VALLEY			CORONA			DESERT HOT SPRINGS			ELSINORE - WILDOMAR		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	4.14	6.76	5	3.65	5.49	5	3.10	4.78	5	4.39	6.76	5	3.23	4.94
6	3.73	6.08	6	3.30	4.97	6	2.84	4.38	6	3.95	6.08	6	2.96	4.53
7	3.41	5.56	7	3.03	4.56	7	2.64	4.07	7	3.62	5.56	7	2.75	4.21
8	3.15	5.15	8	2.82	4.24	8	2.47	3.81	8	3.35	5.15	8	2.58	3.95
9	2.95	4.81	9	2.64	3.97	9	2.34	3.60	9	3.13	4.81	9	2.44	3.73
10	2.77	4.52	10	2.49	3.75	10	2.22	3.43	10	2.94	4.52	10	2.32	3.54
11	2.62	4.28	11	2.36	3.56	11	2.12	3.27	11	2.78	4.28	11	2.21	3.39
12	2.49	4.07	12	2.25	3.39	12	2.04	3.14	12	2.65	4.07	12	2.12	3.25
13	2.38	3.88	13	2.16	3.25	13	1.96	3.02	13	2.53	3.88	13	2.04	3.13
						14	1.89	2.92	14	2.42	3.72	14	1.97	3.02
						15	1.83	2.82	15	2.32	3.58	15	1.91	2.92
						16	1.77	2.73	16	2.24	3.44	16	1.85	2.83
						17	1.72	2.66	17	2.16	3.32	17	1.80	2.75
						18	1.68	2.58	18	2.09	3.22	18	1.75	2.67
						19	1.63	2.52	19	2.03	3.12	19	1.70	2.60
						20	1.59	2.46	20	1.97	3.03	20	1.66	2.54
						22	1.52	2.35	22	1.86	2.86	22	1.59	2.43
						24	1.46	2.25	24	1.77	2.72	24	1.52	2.33
						26	1.40	2.17	26	1.69	2.60	26	1.46	2.24
						28	1.36	2.09	28	1.62	2.49	28	1.41	2.16
						30	1.31	2.02	30	1.55	2.39	30	1.37	2.09
						32	1.27	1.96	32	1.50	2.30	32	1.33	2.03
						34	1.23	1.90	34	1.45	2.22	34	1.29	1.97
						36	1.20	1.85	36	1.40	2.15	36	1.25	1.92
						38	1.17	1.81	38	1.36	2.09	38	1.22	1.87
38	1.28	2.09	38	1.20	1.80									
40	1.24	2.02	40	1.16	1.75	40	1.14	1.76	40	1.32	2.02	40	1.19	1.82
45	1.16	1.89	45	1.09	1.64	45	1.08	1.66	45	1.23	1.89	45	1.13	1.72
50	1.09	1.78	50	1.03	1.55	50	1.03	1.58	50	1.16	1.78	50	1.07	1.64
55	1.03	1.68	55	.98	1.47	55	.98	1.51	55	1.09	1.68	55	1.02	1.56
60	.98	1.60	60	.93	1.40	60	.94	1.45	60	1.04	1.60	60	.98	1.50
65	.94	1.53	65	.89	1.34	65	.90	1.40	65	.99	1.53	65	.94	1.44
70	.90	1.46	70	.85	1.29	70	.87	1.35	70	.95	1.46	70	.91	1.39
75	.86	1.41	75	.82	1.24	75	.84	1.30	75	.91	1.41	75	.88	1.35
80	.83	1.35	80	.79	1.20	80	.82	1.26	80	.88	1.35	80	.85	1.31
85	.80	1.31	85	.77	1.16	85	.80	1.23	85	.85	1.31	85	.83	1.27
SLOPE = .580			SLOPE = .550			SLOPE = .480			SLOPE = .580			SLOPE = .480		

Basin E-1.3
T_c = 5.0 mins
I₁₀₀ = 4.78 in/hr

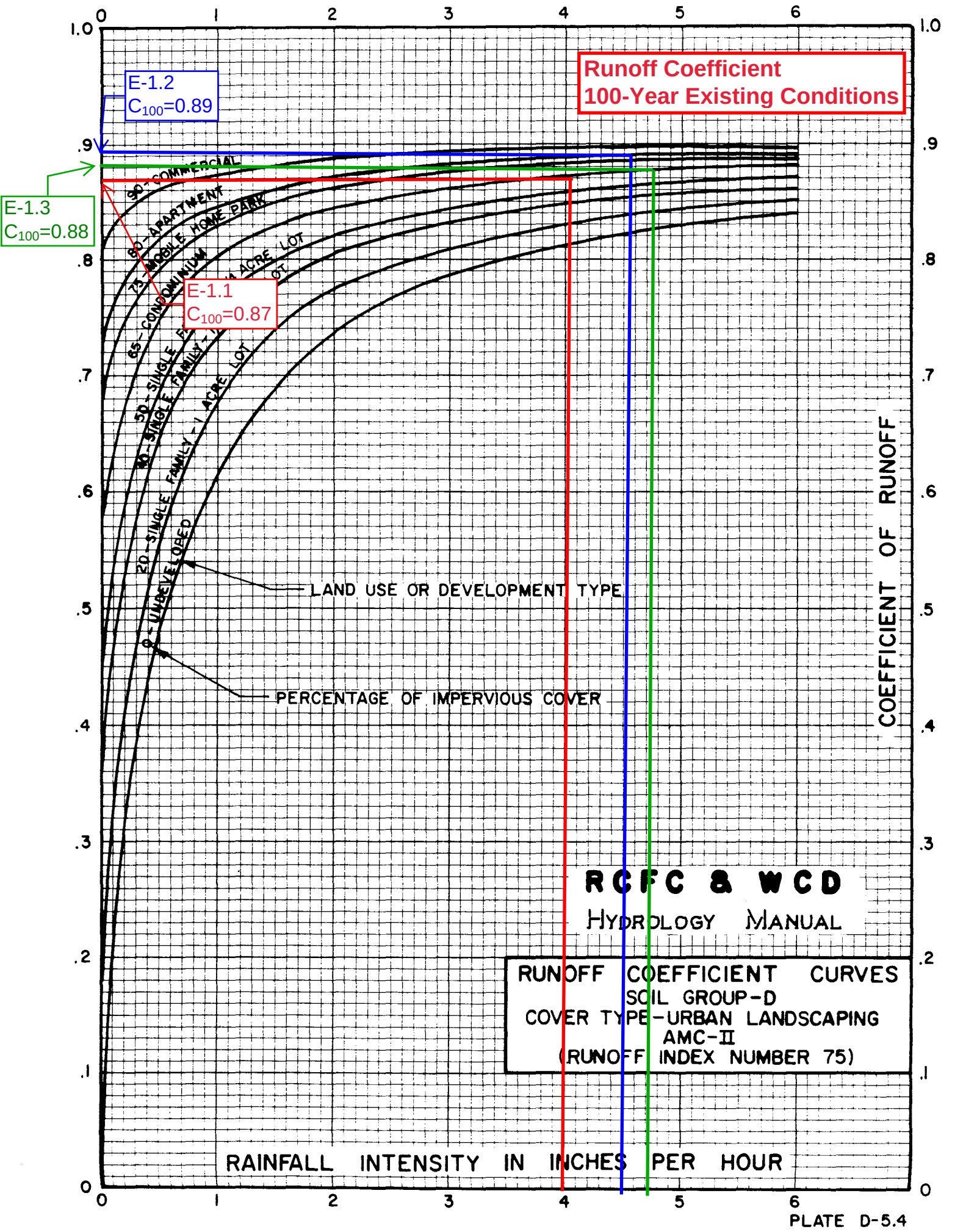
Basin E-1.2 (Interpolation)
T_c = 5.5 mins
I₁₀₀ = 4.58 in/hr

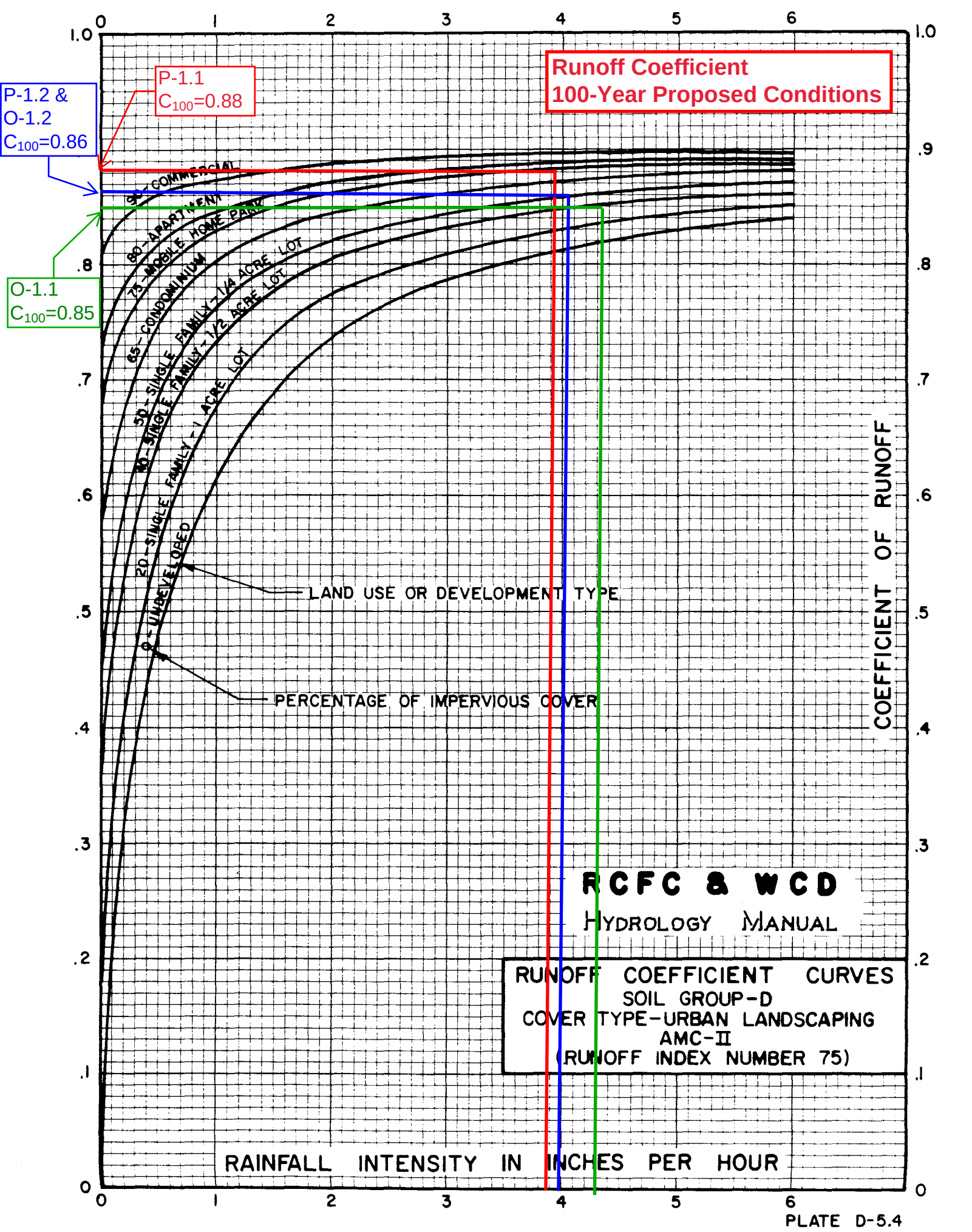
Basin O-1.1
T_c = 6.0 mins
I₁₀₀ = 4.38 in/hr

Basin E-1.1, P-1.2 & O-2.1
T_c = 7.0 mins
I₁₀₀ = 4.07 in/hr

Basin P-1.1 (Interpolation)
T_c = 7.5 mins
I₁₀₀ = 3.94 in/hr

Appendix 5



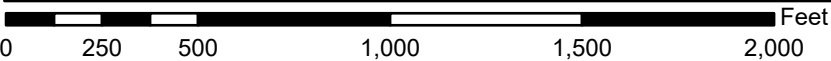
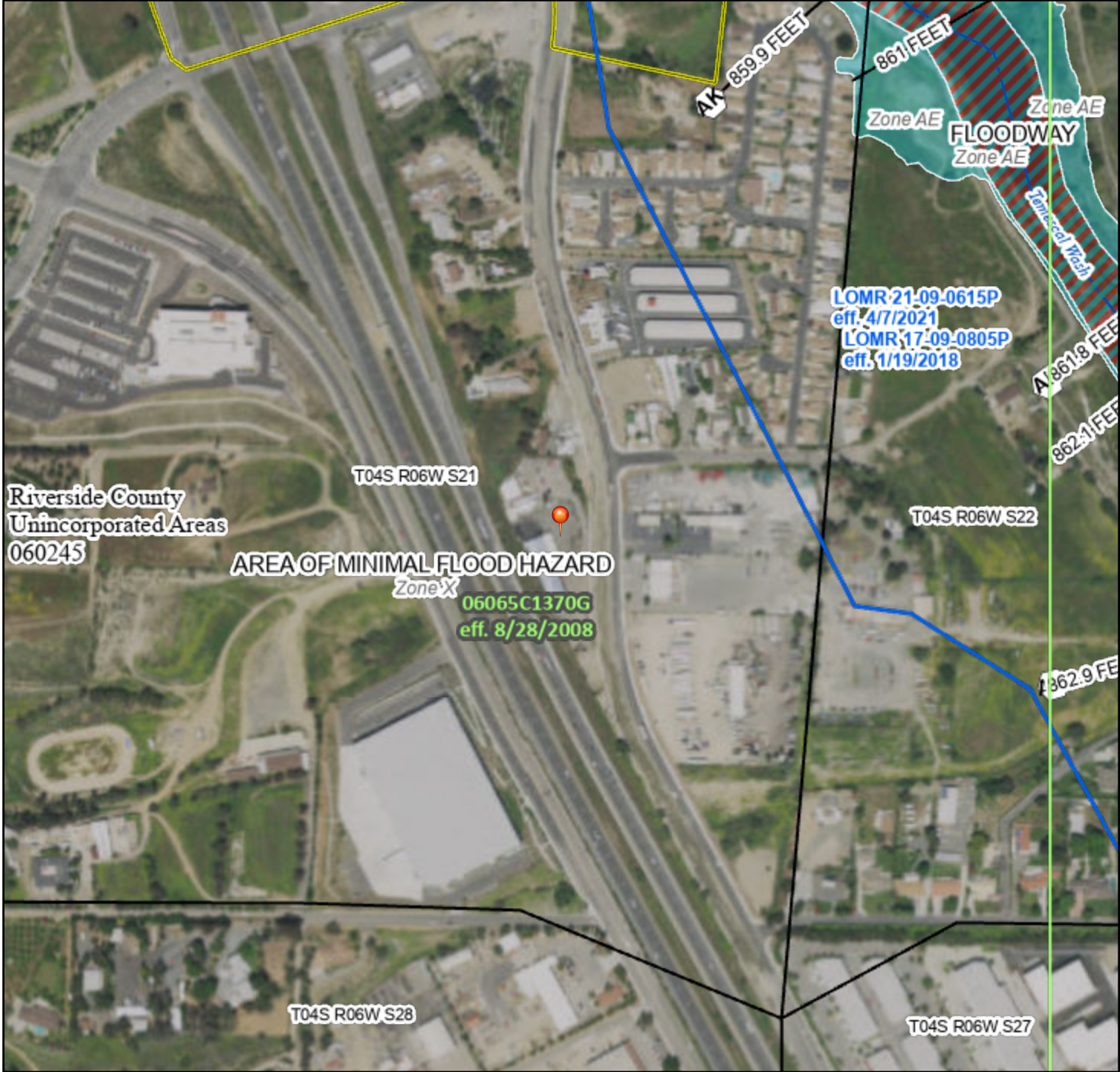


Appendix 6

National Flood Hazard Layer FIRMMette



117°30'35"W 33°48'27"N



1:6,000

117°29'58"W 33°47'57"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/25/2024 at 12:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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