HYDROLOGY STUDY

50-YEAR STORM FREQUENCY

PREPARED FOR:

CANYON HILLS PROJECT

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Undeveloped and Developed Drainage Maps in 1" = 400' Scale in Back Pocket of the Report.	

INTRODUCTION:

This Hydrology Study is prepared for the proposed Canyon Hills project. The project site is located on the north and south sides of Foothill Freeway (I-210), which is approximately three-quarter mile west of the La Tuna Canyon Road off-ramp. The north side of the project site includes 211 lots. The south side of the project site includes 69 lots. The overall proposed development for the project site is 280 lots.

In its undeveloped state, the project site drains to several existing storm drain culverts crossing the I-210 Freeway. All these storm drain structures are within Caltrans right-of-way and easements. The cumulative runoffs are then discharged to La Tuna Canyon Wash.

The undeveloped drainage basin on the north side is subdivided by existing terrain ridges into subareas, including Area "B", Area "B-4", Area "B-5", Area "C-1", Area "D" and minor areas of 7, 8, 9, 10, 11, 12, and 13. The south side drainage areas are subdivided into subareas "1A", "2A", "3A", "4A", "5-A", "6-A", "7A", "8-A" and "9-A". These drainage area separations are shown on the undeveloped drainage map.

The main areas of proposed development are largely situated in the undeveloped areas "C-1" and "D" on the north side. The proposed development within these two areas is represented in the developed drainage map and Hydrology table as North Area "C" and North Area "A" respectively.

The proposed south side development is within the undeveloped subareas "4-A" through "7A", which are designated in the developed drainage map and Hydrology table as south area "A", "B", "C", "D", and "E".

This Hydrology Study analyzes fifty-year storm frequency for the project site for both undeveloped and developed conditions. The calculations used are based on a method adopted by the County of Los Angeles Department of Public Works. This new method computer program "F0601A" is called "MORA". A sub-program is also included to calculate the time of concentration (TC) on all subarea basins by regression TC method.

The complete calculations printouts, Drainage Maps and reference figures are attached to this report.

HYDROLOGY TABLE 1

NORTHSIDE UNDEVELOPED HYDROLOGY - 50 YEAR FREQUENCY

Area Designation	Area in Acres	Q50 (UD Clr) (UD CLR. CFS	Q50 (UD) Burned CFS	**Q50 (UD) URNED & BULKED CFS	Q ALLOWABLE BURNED FLOW TO EXISTING CALTRANS S.D. STRUCTURES CFS	
Area "B-5"	4	17	19	34	17	Basin runoff drains to Caltrans Ex. 36" RCP culvert
Area "C-1"	28	110	123	223	111	Basin runoff drains to Caltrans Ex. 60" CSP culvert
Area "D"	318	879	1019	1844	938	Basin runoff drains to Caltrans Ex. 96" PSCP culvert
Total	350	1006	1161	**2101	*1066	Total undeveloped site hydrology data crossing I-210 Freeway

*ALLOWABLE FLOW IS DESIGNED AS NINETY PERCENT (90%) - UNDEVELOPED & BURNED RUNOFF (Q50 UD-BURNED)

**PROJECT SITE BULKING FACTOR = 1.81

HYDROLOGY TABLE 2										
A. NORTHSIDE UNDEVELOPED AND DEVELOPED HYDROLOGY - 50 YEAR FREQUENCY										
Area Designation	Area in Acres	Q50 (DV Clr) CFS	Q50 (UD) CFS	Q50 (UD-Burned) CFS	**Q50 (UD-BURNED & BULKED) CFS	*Allowable flow to to existing structure CFS	Detained flow @ detention basin CFS	Remarks		
North Area ""B-5"	3	13	13	14	25	*13	0	Outlet flow drains to 36 RCP		
North Area "C"	30	116	105	119	215	*107	9	Basin outlet flow drains to Caltrans		
(Area "C-1")								60" CSP culvert. Basin outlet		
North Area "A"	327	1096	879	1042	1886	*938	158	flow drains to Caltrans 96" PSCP		
(Area "D")								culvert		
A. Subtotal	360	1225	997	1175	**2126	*1058	167			
B. SOUTHSIDE UNDEVELOPED AND DEVELOPED HYDROLOGY - 50 YEAR FREQUENCY										
Area Designation	Area in Acres	Q50 (DV Clr) CFS	Q50 (UD) CFS	Q50 Ud Burn CFS	**Q50 (UD-BURNED & BULKED) CFS	Allowable flow to outlet at existing structure CFS	Detained flow @ detention basin CFS	Remarks		
South Area "A"	31	114	102	115	208	*104	10	Basin outlet flow drains to La Tuna		
								Canyon Channel		
South Area "B"	22	78	73	83	150	*75	3	"	"	
South Area "C"	8	35	34	38	69	*34	1	"	"	
South Area "D"	13	56	53	60	109	*54	2	"	"	
South Area "E"	5	24	22	24	43	*22	2	"	"	
B. Subtotal	79	307	284	320	**579	*289	18			
Overall Total (North & South)	439	1532	1281	1495	**2,705	1347	185	Total flow to outlet at La Tuna Canyon Channel		
*Allowable flow is designed as ninety percent (90%) of the undeveloped and burned runoff (Q50 UD-Burned)										
**Project site peak bulking factor = 1.81										

HYDROLOGY DATA SUMMARY

1. 439 Acres: Tributary drainage area in which the project development areas are located.

2. 1532 cfs: Total calculated developed runoff at the north side and south side areas of development.

3. 1495 cfs: Total undeveloped burn runoff to La Tuna Canyon Wash.

4. 1347 cfs: Proposed allowable post-development runoff to La Tuna Canyon Wash.

5. 148 cfs: Proposed maximum reduction of storm runoff to existing areas downstream of La Tuna Canyon Wash.

   Thus: 1495 cfs (pre-development Q50)
   - 1347 cfs (post-development Q50), allowable outlet flow.
   Diff: 148 cfs

6. 185 cfs: Total runoff flow to be detained at various upstream locations of detention basins. There are six (6) proposed detention basins at the north side and five (5) at the south side.

   Thus: 1532 cfs (Q50 Dev. Clear)
   - 1495 cfs (Q50 Clear) Proposed allowable outlet flow
   Diff: 185 cfs

7. 111 cfs: Reduced flow at Caltrans 60 " csp storm drain culvert
   Pre-developed Q50 = 123 cfs (Area "C-1")

8. 938 cfs: Reduce flow at Caltrans 96" P.S.C.P. storm drain culvert
   Pre-developed Q50 = 1019 cfs. (Area "D")

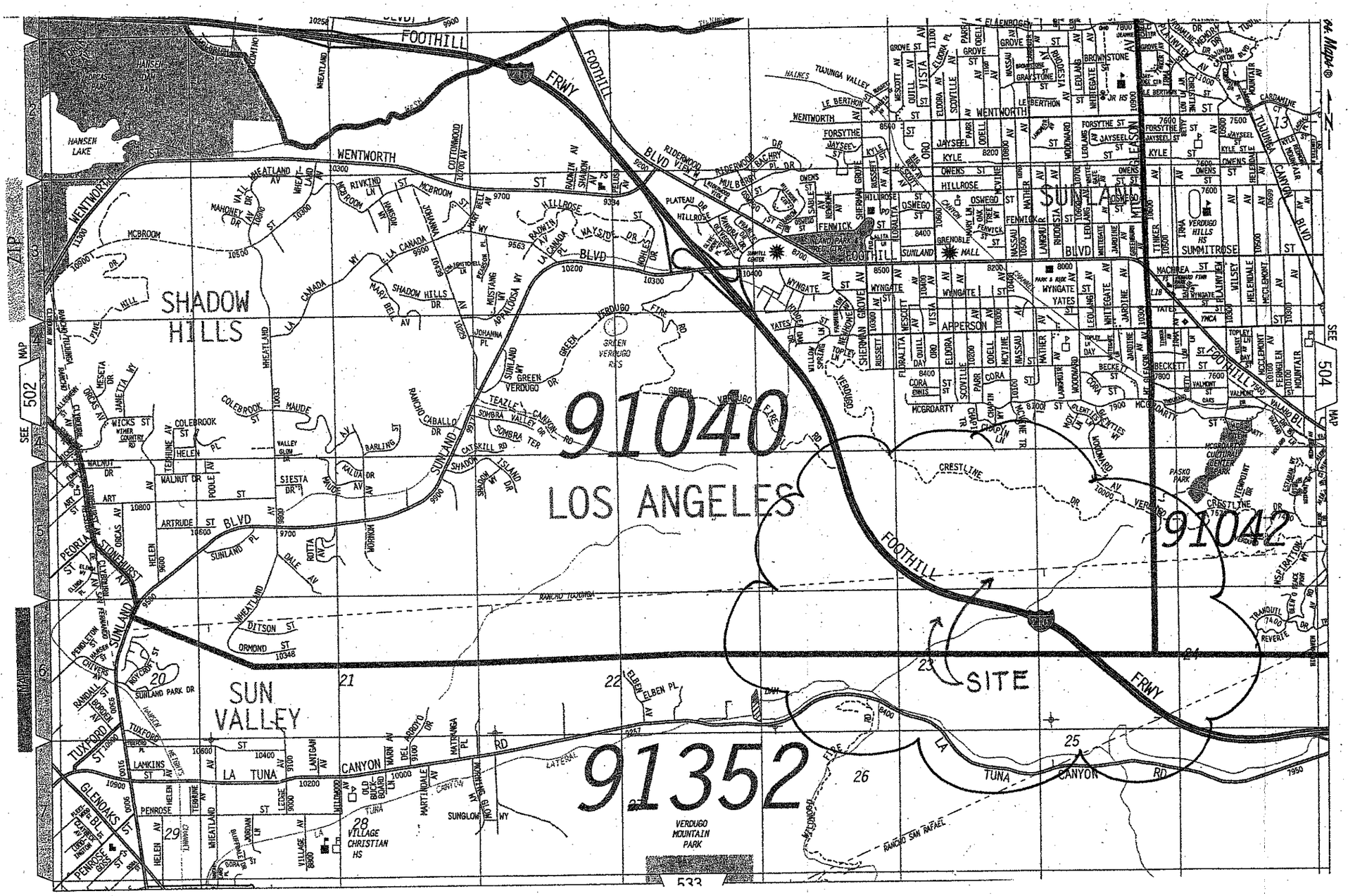
9. 17 cfs: Reduced flow at Caltrans 36" RCP storm drain culvert pre-developed Q50 = 19 cfs. (Area "B-5).

III. CONCLUSION

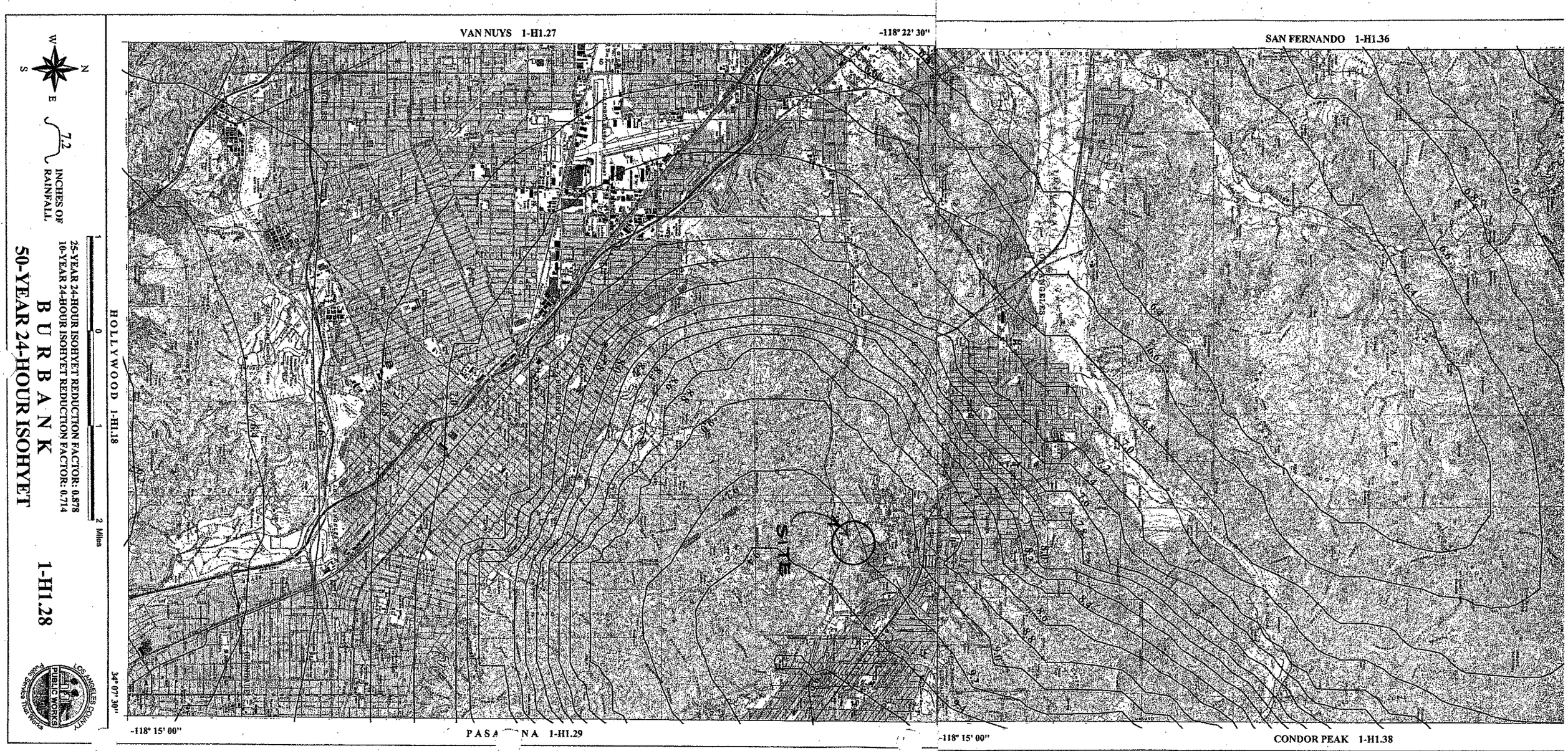
The Hydrology study for the proposed Canyon Hills project concludes that the overall drainage concept for the project is feasible to develop 280 buildable lots.

The proposed reduction of 148 cfs of storm runoff is an added relief to La Tuna Canyon Wash flow and other suspected floodings to downstream areas.

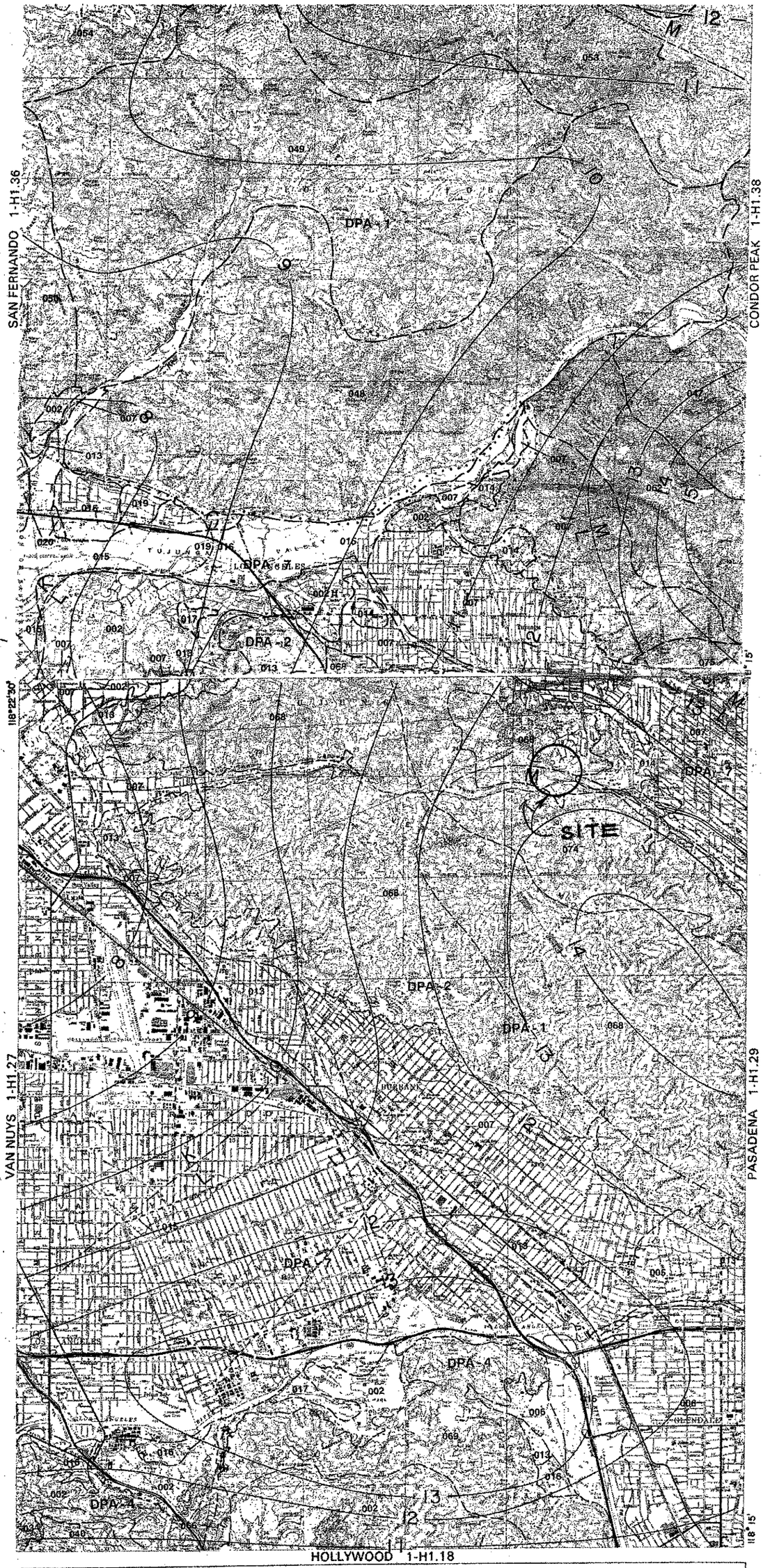
REFERENCE MAPS & FIGURES



VICINITY MAP

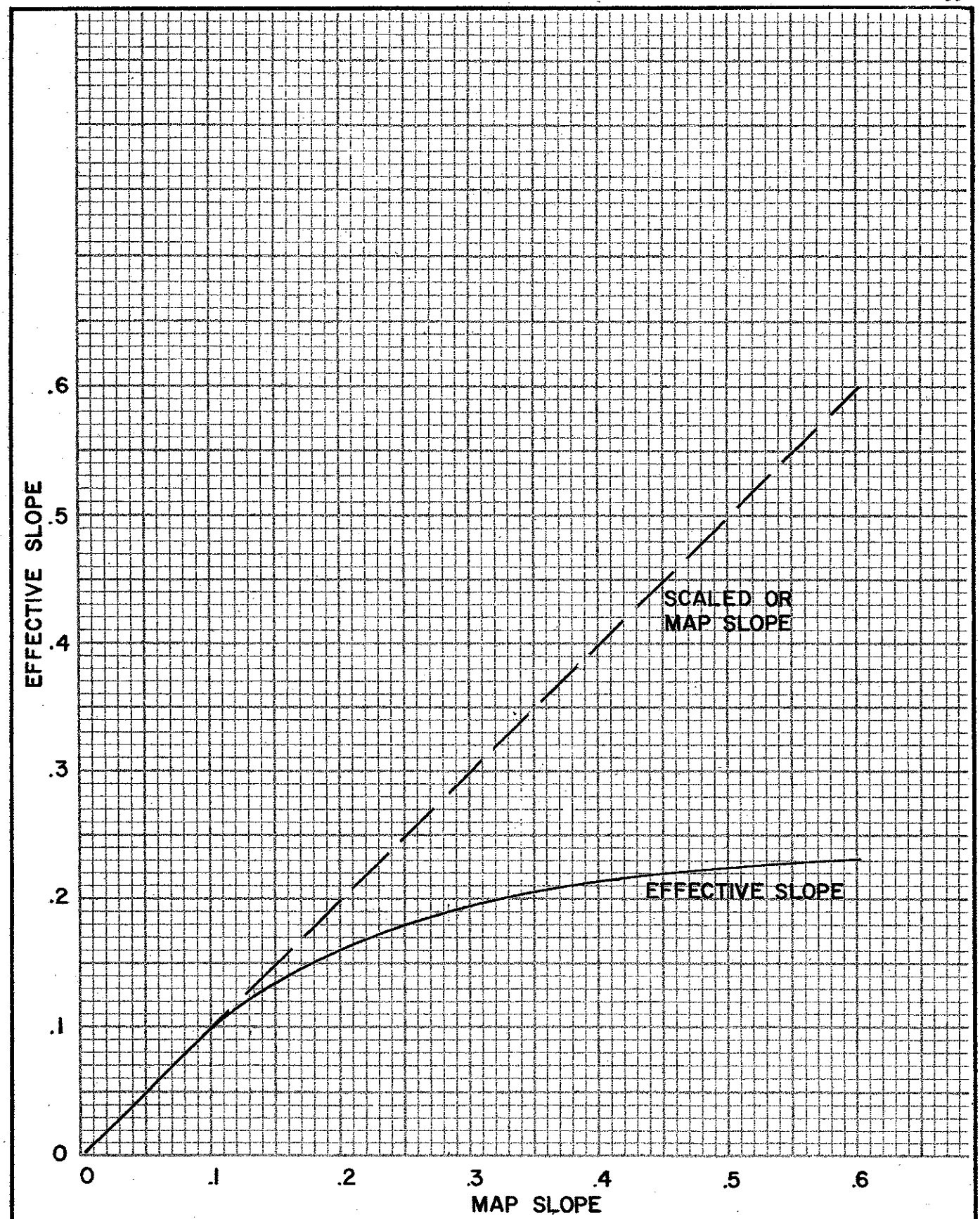


50-YEAR 24-HOUR ISOHYET



SOIL CLASSIFICATION NUMBER 068

8

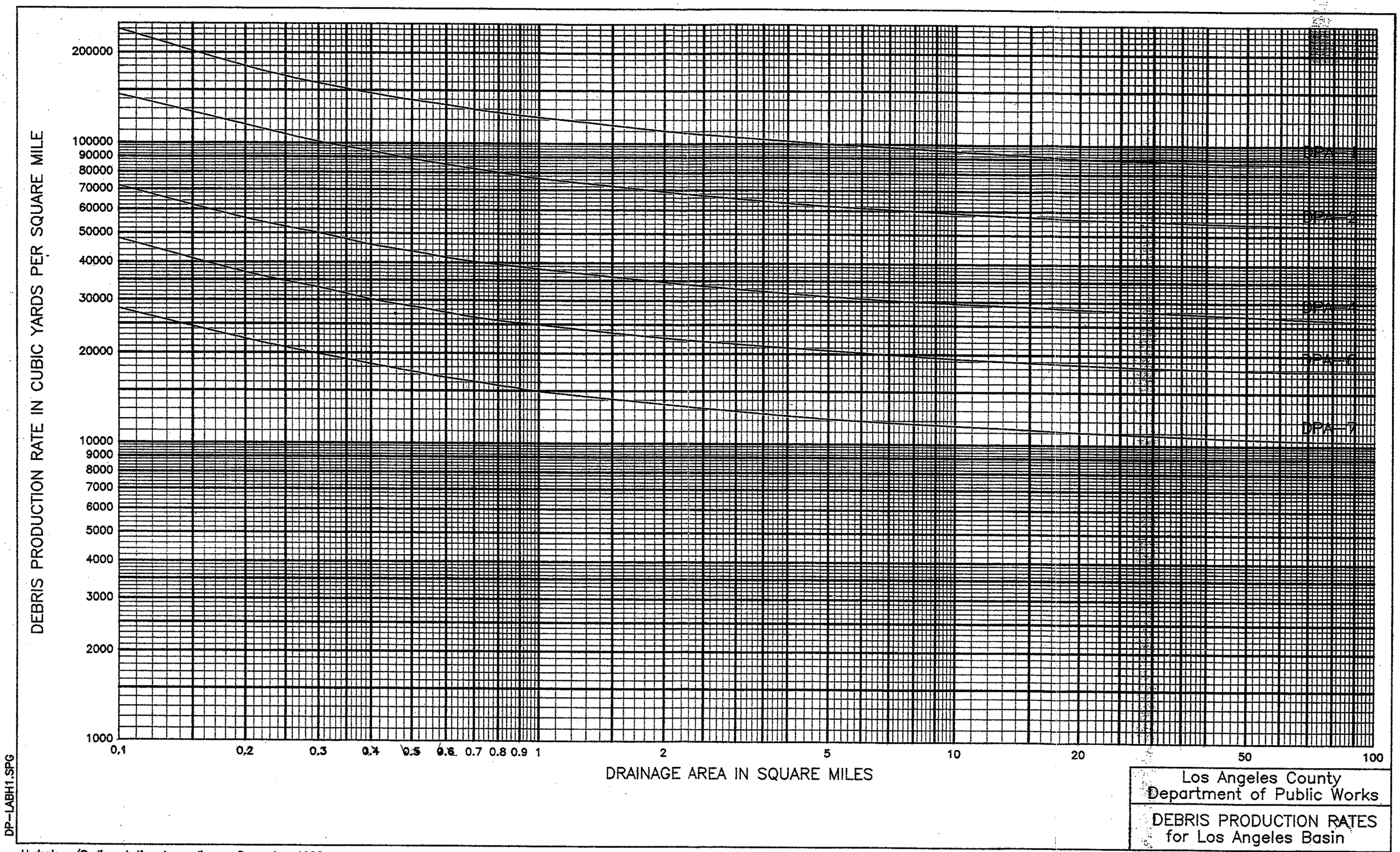


L A C F C D

hydrology manual

SLOPE CORRECTION CURVE
MOUNTAIN CHANNELS

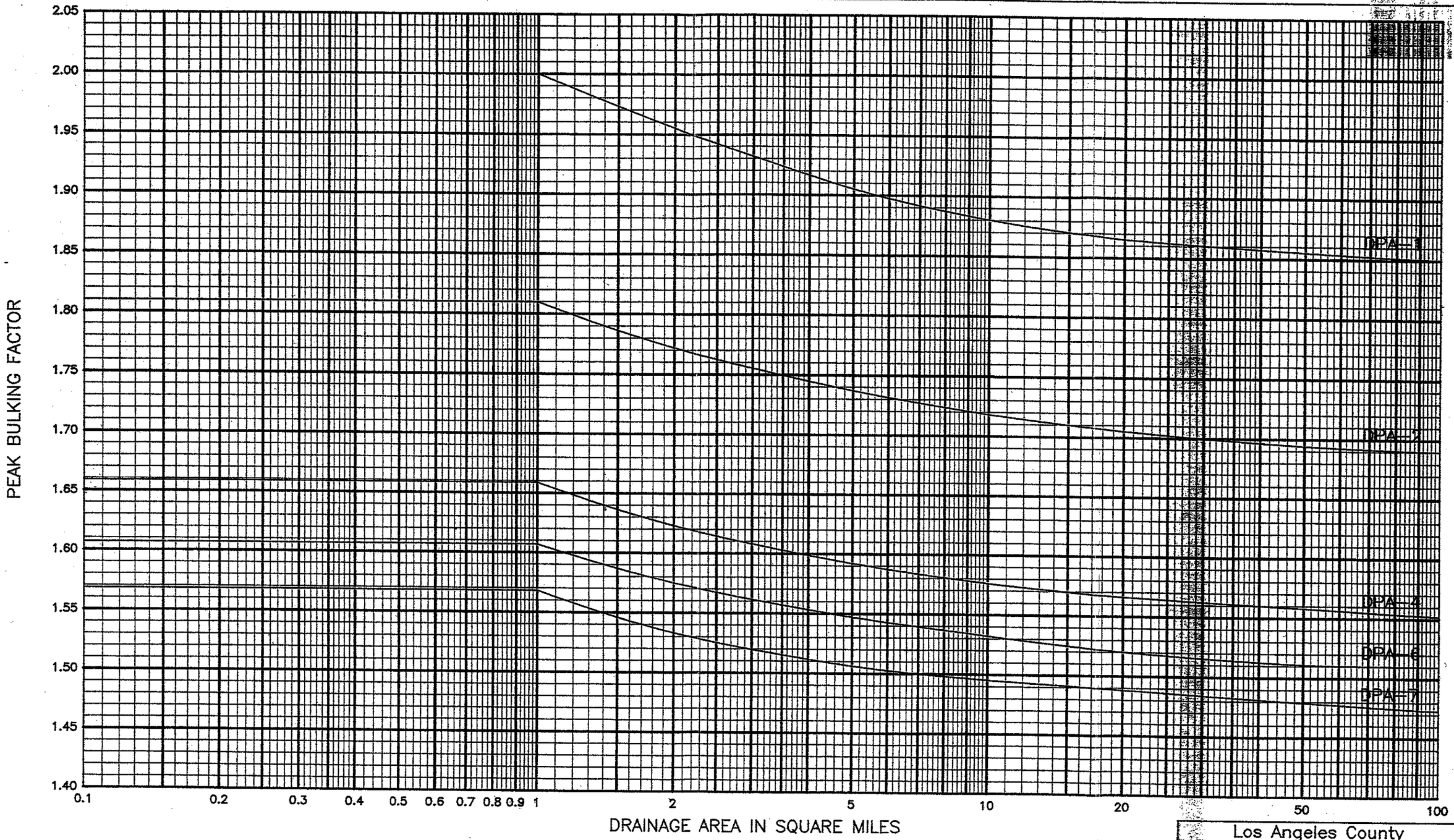
Figure C-11



DP-LABH1.SPG

Los Angeles County
Department of Public Works

DEBRIS PRODUCTION RATES
for Los Angeles Basin



PB-LABH1.SPG

Los Angeles County
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PEAK BULKING FACTOR
for Los Angeles Basin

UNDEVELOPED AND DEVELOPED
DRAINAGE MAPS

(*400 SCALE MAPS IN BACK POCKET OF THE REPORT)