

Hydrology Study & Drainage Analysis

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Reclamation Plan 2006-01A2
County of Riverside, CA

APN(s)
389-200-35, 36, 37

Prepared For:

Nichols Road Partners, LLC.
P.O. Box 77850
Corona, CA 92877
Phone: (951) 277-3900
Fax: (951) 277-1341

Prepared By:



Joseph E. Bonadiman & Associates, Inc.
234 North Arrowhead Avenue
San Bernardino, CA 92408
Phone: (909) 885-3806
Insert Fax: (909) 535-2701
www.bonadiman.com

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A. Introduction

1.1 Purpose & Scope

The following Hydrology Study & Drainage Analysis has been prepared to determine existing and proposed peak tributary and on-site 100-year flow rates, runoff volumes, and hydraulics for the proposed Reclamation Plan 2006-01A2, in the City of Lake Elsinore in the County of Riverside, CA. This report has been prepared to satisfy the City of Lake Elsinore hydrology requirements per the Riverside County Flood Control Hydrology/Hydraulics requirements for developments of this type.

The scope of this Study is as follows:

- Identification of the tributary watershed to the project site.
- Identification of existing conditions tributary drainage areas and calculation of total peak flow rates and run-on/run-off volumes impacting the project site.
- Calculation of existing conditions tributary and on-site 100-year peak flow rates, runoff volumes, hydraulics, flood impacts, and sedimentation impacts.
- Calculation of final conditions (Reclamation Plan) on-site 100-year peak flow rates, runoff volumes, hydraulics, flood impacts/mitigation, and sedimentation impacts/mitigation.
- Identification of proposed on-site hydrologic conditions & site/drainage plan.
- Identification of floodplain(s) impacting the site.
- Summary of Findings & Conclusion

1.2 Project Overview

The subject property consists of approximately 200 acres with a proposed project site of approximately 140 acres. The remaining 60 acres will remain in its native condition. The project site is located directly east of Interstate 15, North and South of Nichols Road in the City of Lake Elsinore, CA. The site is located within the “Lake Elsinore”, “Alberhill”, “Lake Mathews” & “Steele Park” 7.5-minute quadrangles.

The project site is located within Sections 24 and 25 of Township 5 South, Range 5 West, and includes Assessor parcel numbers 389-200-35, 389-200-36 & 389-200-37.

The study watershed lies within the Lee Lake Hydrologic Subarea of the Lake Mathews Hydrologic Area of the Santa Ana River Hydrologic Unit.

The proposed project entails amendments to existing Reclamation Plan 2006-01 permits for extraction of mineral resources, the new Reclamation Plan 2006-01A2 will entails increasing the disturbance limits as well as an extension of time.

1.3 Existing Conditions Off-Site Areas

The project site is located east of Interstate 15, north and south of Nichols Road. The subject property is bounded to the west by Interstate 15, to the north and east by undeveloped land and to the south by residential development and a park. The mining limits only include a portion of the parcels. The area outside of the mining limits will remain in there native condition. The hills north and east of the mining limits result in small tributaries of run-on to the mining site.

Stovepipe Creek bisects a portion of the southern parcels and will remain in its natural condition. All disturbances will be set back as to not affect the banks of the creek or its natural flow path. The creek enters the property along the eastly property line via two 24" corrugate metal pips (Photo 3) and exits the property along the western property line via a 6'x14' concrete box culvert that crosses under Interstate 15 (Photo 6). 24" CMP's also exists to eliminate small ponding areas, installed as parts of the construction of the Interstate 15 and have been ignored for the purposes of site drainage due to there small capacity.



Photo 1 – East along Nichols Road



Photo 2 - South along I-15



Photo 3 – East PL along Stovepipe Creek



Photo 4 - East PL along Nichols Road



Photo 5 – Along I-15 at Stovepipe Creek



Photo 6 - 6'x14' Box Culvert at I-15 & Stovepipe Creek



Photo 7 – 24" CMP along I-15 north of Stovepipe Creek



Photo 8 - 24" CMP along I-15 south of Nichols Road



Photo 9 – two 48" RCP along I-15 North of Nichols Road.



Photo 10 - 48" RCP along I-15 North of Nichols Road

1.4 Exiting Conditions On-Site Area

The existing on-site project is hilly and slopes significantly to the southwest. The site is bare dirt and is actively being mined. In its present condition the site flows to the southwesterly corner of the project near the northeastern corner of the intersection of Nichols Road and Interstate 15 and into an on-site retention basin.

In its natural condition the northern portion of the property flow to the southwest and exits the property via two 48" reinforced concrete pipes with a head wall, a smaller flow exits via a 48" reinforced concrete pipes with a flared inlet. 24" CMP's also exists to eliminate small ponding areas, installed as parts of the construction of the Interstate 15. It should be noted that the current mining activities have diverted all run-off to an on site retention pond. In its current condition there is not significant run-off from the site for small storm events.



Photo 11 – Hills North of active site, near Easterly entrance.



Photo 12 - View to SW, near Easterly entrance Creek



Photo 13 – Hills North of active site, near Westerly corner of site.



Photo 14 - View to SW, near Westerly corner of site.

1.5 References

The following documents have been made part of this study by reference:

- 1.) Riverside County Hydrology Manual, Riverside County Flood Control & Water Conservation District (RCFCWCD) – April 1978.
- 2.) Soils Survey CA678 (Orange County & Part of Riverside County, CA), NRCS – Current (Web).
- 3.) Soils Survey CA679 (Western Riverside County, CA), NRCS – Current (Web).
- 4.) Flood Insurance Rate Map (FIRM) No. 06065C2026G & 06065C2028G, FEMA – Effective Date August 28, 2008.
- 5.) Reclamation Plan 2006-01A2, Provided by Nichols Road Partners, LLC. – Dated April 14, 2015.

B. Methodology

1.1 General Methodology

The general methodology, requirements, and recommendations outlined in the Riverside County Flood Control & Water Conservation District (RCFCWCD) Hydrology Manual (April 1978) were used as the basis for the hydrology calculations found in this report.

Unit Hydrograph Method calculations were performed for the 100-year, 1, 3, 6, and 24-hour events using the CivilDesign® UNRIV program for drainage areas larger than one square mile and/or for areas for which determination of both peak flow rates and runoff volumes were required. For all drainage areas, the 1-hour duration hydrographs resulted in the highest peak flow rates, and the 24-hour duration hydrograph yielded the highest runoff volumes.

1.2 Sources of Topography

Mapping of existing condition on-site and some tributary areas were established by 2-foot contour aerial topographic survey dated January 2015, prepared by Inland Aerial Surveys Inc. For areas outside of the mapping limits of the aerial topographic survey, USGS contours were used. This data was used for determination of drainage subarea delineations and elevations and for generation of 3D surfaces used in this report. For the developed conditions on-site areas, proposed grades provided by Nichols Road Partners, LLC were used.

1.3 FEMA Floodplain Identification & Considerations

Per FEMA Map No. 06065C2026G & 06065C2028G (Effective Date - August 28, 2008), the majority of the site is located in an unshaded “Zone X”, identified by FEMA as an area determined to be outside the 0.2% (500-Year) annual chance of flood. A portion of the site located along Stovepipe Canyon Creek is located in a shaded “Zone A” and is identified by FEMA as an area determined to be within a “Special Flood Hazard Area subject to inundation by the 1% annual chance flood” with on base flood elevation determined.

For the purposes of this report it was assumed that no activities would take place within the area shown on FEMA Map No. 06065C2028G as being within the shaded “Zone A”. All activities would be setback as to not disturb the existing banks of the creek.

Refer to Exhibit “C” for surrounding area FIRM map used in this report.

1.4 Watershed Precipitation

Precipitation values for this report were generated by interpolating the isohyetal values found in the RCFVWCD Hydrology Manual to determine a mean value for each drainage subarea. See Tables 1, on the following page, for the precipitation values used for the existing and proposed conditions drainage areas analyzed in this report.

Table 1 – Precipitation Values (Unit Hydrograph Calculations)

STORM	PRECIPITATION
2-YEAR, 1-HOUR	0.58
100-YEAR, 1-HOUR	1.47
2-YEAR, 3-HOUR	1.05
100-YEAR, 3-HOUR	2.51
2-YEAR, 6-HOUR	1.45
100-YEAR, 6-HOUR	3.51
2-YEAR, 24-HOUR	2.70
100-YEAR, 24-HOUR	6.65

Refer to Exhibit “D” for the Riverside County Hydrology Manual isohyetal maps used in this report.

1.5 Watershed Losses

Soil type classification for all drainage areas were derived from existing NRCS hydrologic soils group data, pursuant to RCFCWCD methods.

Type “D” soil is shown for the majority of the watershed area. Type “A” soil is shown for the bed of Stovepipe Creek, “B”. Small portion of Type “B” & “C” soil are also present. A detailed soils map can be found in Exhibit “D”.

The existing conditions study area is mostly undeveloped, consisting of a poor cover with annual grasses. A portion of the off-site tributary consists of large lot single family rural residential which mostly consist of native cover. The proposed mining area was assumed to be Barren. Per the Riverside County Hydrology Manual, Plate D-5.5., the SCS Curve Number (AMC II) and percent impervious used within this report are summarized in the table below.

Table 2 – Soil Loss Rates

COVER TYPE	SOIL TYPE	QUALITY OF COVER	RUNOFF INDEX (AMC II)	IMPERVIOUS (%)
BARREN	A	~	78	0
	B		86	
	C		91	
	D		93	
GRASS ANNUAL OR PERENNIAL	A	POOR	67	0
	B		78	
	C		86	
	D		89	

Refer to Exhibits “D” for the runoff index number, percent impervious, hydrologic soils groups and land cover classification/quality used in this report.

C. Historical Conditions Hydrology Calculations

1.1. Historical Conditions Unit Hydrograph Method Calculations

Input values for the existing conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 3 – Historical Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	4,106.19	1,823.16	798.2	0.035	213.98	A	22.43	0	67
						B	22.12		78
						C	3.32		86
						D	166.11		89
B	16,296.72	8,849.03	777.0	0.035	837.34	A	81.06	0.05	67
						B	1.78		78
						C	101.91		86
						D	652.59		89

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 4 – Historical Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	390.14	16.41	292.14	24.39	265.03	28.53	110.92	40.98
B	103.35	64.32	150.12	97.75	165.93	117.03	188.54	168.69

Table 5 – Historical Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	553.66	24.72	418.06	40.38	383.55	53.89	176.59	86.49
B	153.82	95.73	240.36	157.85	285.67	212.15	337.07	347.82

Refer to Attachment No. 1 & 2 for printouts of the Historical Conditions Unit Hydrograph calculations.
Refer to Exhibit "F" for the Historical Conditions Hydrology Study Map.

D. Existing Conditions Hydrology Calculations

1.2. Existing Conditions Unit Hydrograph Method Calculations

Input values for the existing conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 6 – Existing Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	4,276.23	1,768.91	798.2	0.035	213.98	A B C D	22.43 22.12 3.32 166.11	0	67 78 86 89
B	SEE HISTORICAL CONDITION								

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 7 – Existing Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	387.86	16.42	291.54	24.42	264.72	28.58	110.20	41.05
B	SEE HISTORICAL CONDITION							

Table 8 – Existing Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	550.49	24.72	380.48	40.40	383.04	53.91	104.86	86.57
B	SEE HISTORICAL CONDITION							

Refer to Attachment No. 3 & 4 for printouts of the existing conditions unit hydrograph calculations.
Refer to Exhibit "G" for the Existing Conditions Hydrology Study Map.

E. Reclamation Conditions Hydrology Calculations

1.1. Reclamation Conditions Unit Hydrograph Method Calculations

Input values for the reclamation conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 9 – Reclamation Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	6,061.21	2,995.65	310.83	0.035	209.55	A	23.34	0	67
						B	17.19		78
						C	~		86
						D	169.02		89
B	16,296.72	8,849.03	777.0	0.035	803.24	A	81.06	0.05	67
						B	0.49		78
						C	88.36		86
						D	633.33		89
C	2,796.49	1,408.17	70.99	0.035	39.49	A	1.14	0	67
						B	6.20		78
						C	18.10		86
						D	14.05		89

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 10 – Reclamation Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	325.96	16.10	262.26	23.97	243.12	28.08	106.58	40.35
B	99.13	61.69	143.91	93.70	159.02	112.12	180.66	161.60
C	66.29	3.03	52.13	4.48	47.70	5.22	20.23	7.50

Table 11 – Reclamation Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	466.38	24.22	377.82	39.59	353.71	52.86	170.15	84.97
B	147.58	91.84	230.52	151.38	273.93	203.42	323.17	333.29
C	94.64	4.57	74.97	7.46	69.35	9.96	32.42	16.00

Refer to Attachment No. 5 & 6 for printouts of the Reclamation Conditions Unit Hydrograph calculations.
Refer to Exhibit "H" for the Reclamation Conditions Hydrology Study Map.

F. Sedimentation Basins

1.1 Sedimentation Basin Analysis

Due to the rocky nature of the northern portion of the site the potential for sedimentation is considered to be low. However, sedimentation basins are proposed to provide sediment control. Sediment basins shall be constructed and maintained in accordance with the California Stormwater Quality Association (CSQA), Sedimentation Basin requirements to provide 3,600 cf of storage per acre. Depth vs. volume for sedimentation basins are tabulated as follows:

Table 12 – Northern Sediment Basins System Depth vs. Volume

BASIN AREA	AREA (AC)	ELEVATION (FT)	DEPTH (FT)	TOTAL VOLUME (CF)	REQUIRED VOLUME (CF)
A	209.55	1284.5	0	0	754,380
		1286.5	2	12,209	
		1288.5	4	49,225	
		1290.5	6	111,632	
		1292.5	8	200,013	
		1294.5	10	314,953	
		1296.5	12	456,704	
		1298.5	14	624,651	
		1300	15.5	767,423	

Table 13 – Southern Sediment Basins System Depth vs. Volume

BASIN AREA	AREA (AC)	ELEVATION (FT)	DEPTH (FT)	TOTAL VOLUME (CF)	REQUIERED VOLUME (CF)
C	39.49	1275	0	0	142,164
		1277	2	6,608	
		1279	4	26,791	
		1281	6	61,076	
		1283	8	109,992	
		1285	10	174,069	
		1286	11	211,950	

All basins shall be design based on the following design criteria:

- When feasible no more than 50% of the basins volume shall be above natural grade.
- For above grade basins the top width of the levee shall be a minimum of 15'
- 3:1 maximum slope on wet side and 2:1 maximum slope on dry side.
- A spillway shall be design to pass the fully developed 1000 year peak flow rate ($Q_{1000} = 1.35 Q_{100}$).
- A minimum of 1-foot of freeboard above the 1000-year HWL or 2-feet of freeboard above the 100 –year HWL, whichever is more stringent.
- Access to the basin shall be gated and locked.

G. Summary & Conclusion

1.1 Summary

Areas “B” & “C” have been combined in the table below to allow for comparison of the computed data. A summary of the results of the unit hydrograph calculations are tabulated below:

Table 14 –Unit Hydrograph Calculations Summary-20 Year

AREA	STORM EVENT	HISTORICAL CONDITIONS PEAK Q (CFS)	EXISTING CONDITIONS PEAK Q (CFS) **	FINAL CONDITIONS PEAK Q (CFS)	INCREASE (CFS)	EXISTING CONDITIONS VOLUME (AF)	RECLAMATION CONDITIONS VOLUME (AF)	INCREASE (AF)
A	1	390.14	387.86	325.96	-64.18	16.41	16.10	-0.31
	3	292.14	291.54	262.26	-29.88	24.39	23.47	-0.92
	6	265.03	264.72	243.12	-21.91	28.53	28.08	-0.45
	24	110.92	110.20	106.58	-4.34	40.98	40.35	-0.63
B vs. B & C	1	103.35	~	99.13*	-4.22	64.32	64.72*	0.40
	3	150.12		143.91*	-22.02	97.75	98.18*	0.43
	6	165.93		159.02*	-6.91	117.03	117.34*	0.31
	24	188.54		181.04*	-7.50	168.69	169.08*	0.39

* Above listed values are results of combined Hydrograph routing for Areas “B” & “C”.

** Existing Condition values are shown for reference only and are not reflected in the increase on flow or volumes.

Table 15 –Unit Hydrograph Calculations Summary-100 Year

AREA	STORM EVENT	HISTORICAL CONDITIONS PEAK Q (CFS)	EXISTING CONDITIONS PEAK Q (CFS) **	FINAL CONDITIONS PEAK Q (CFS)	INCREASE (CFS)*	EXISTING CONDITIONS VOLUME (AF)	RECLAMATION CONDITIONS VOLUME (AF)	INCREASE (AF)*
A	1	553.66	550.49	466.38	-87.28	24.72	24.22	-0.50
	3	418.06	380.48	377.82	-40.24	40.38	39.59	-0.79
	6	383.55	383.04	353.71	-29.84	53.89	52.86	-1.03
	24	176.59	104.86	170.15	-6.44	86.49	84.97	-1.52
B vs. B & C	1	153.82	~	147.58*	-6.24	95.73	96.41*	0.68
	3	240.36		230.52*	-9.84	157.85	158.85*	1.00
	6	285.67		273.93*	-11.74	212.15	213.38*	1.23
	24	337.07		325.98*	-11.09	347.82	349.28*	1.46

* Above listed values are results of combined Hydrograph routing for Areas “B” & “C”.

** Existing Condition values are shown for reference only and are not reflected in the increase on flow or volumes.

As indicated above, a decrease in runoff flow rates is expected as a result of the reclamation. This decrease in flow rate is a result of longer flow path lengths which in turn reduce peak flow rates. However, a slight increase in runoff volume is expected from areas B & C due to a shift in drainage area as a result of the proposed reclamation.

1.2 Conclusion

The site shall be design to accommodate storm water sedimentation basins as shown on Exhibit "H2" and be design to provide the minimum required capacities as shown on Table s 12 & 13. As the basins are not required to reduce peak flow rates, spillways capable of passing the 1000-year flow rates shall be incorporated in the outlet of the basins. If basin infiltration rates do not allow for percolation of the basin volume within 72 hours an outflow pipe may be required and shall be design in accordance with CSQA Sedimentation Basin requirements (see Attachment 8). It is recommended that the basin side slope be design at 3:1 or less. Paved slope interceptor drain shall be provided along the top of cut slopes where the drainage path is greater than 40 feet towards the cut slope in accordance with local requirements.

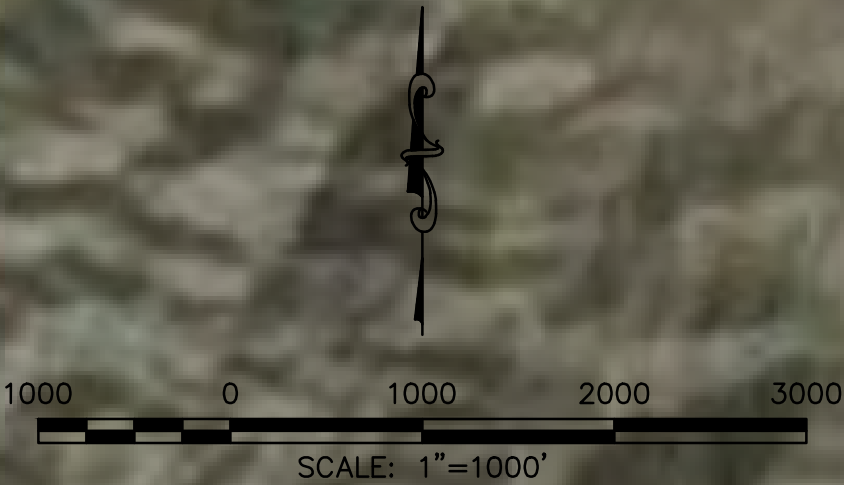
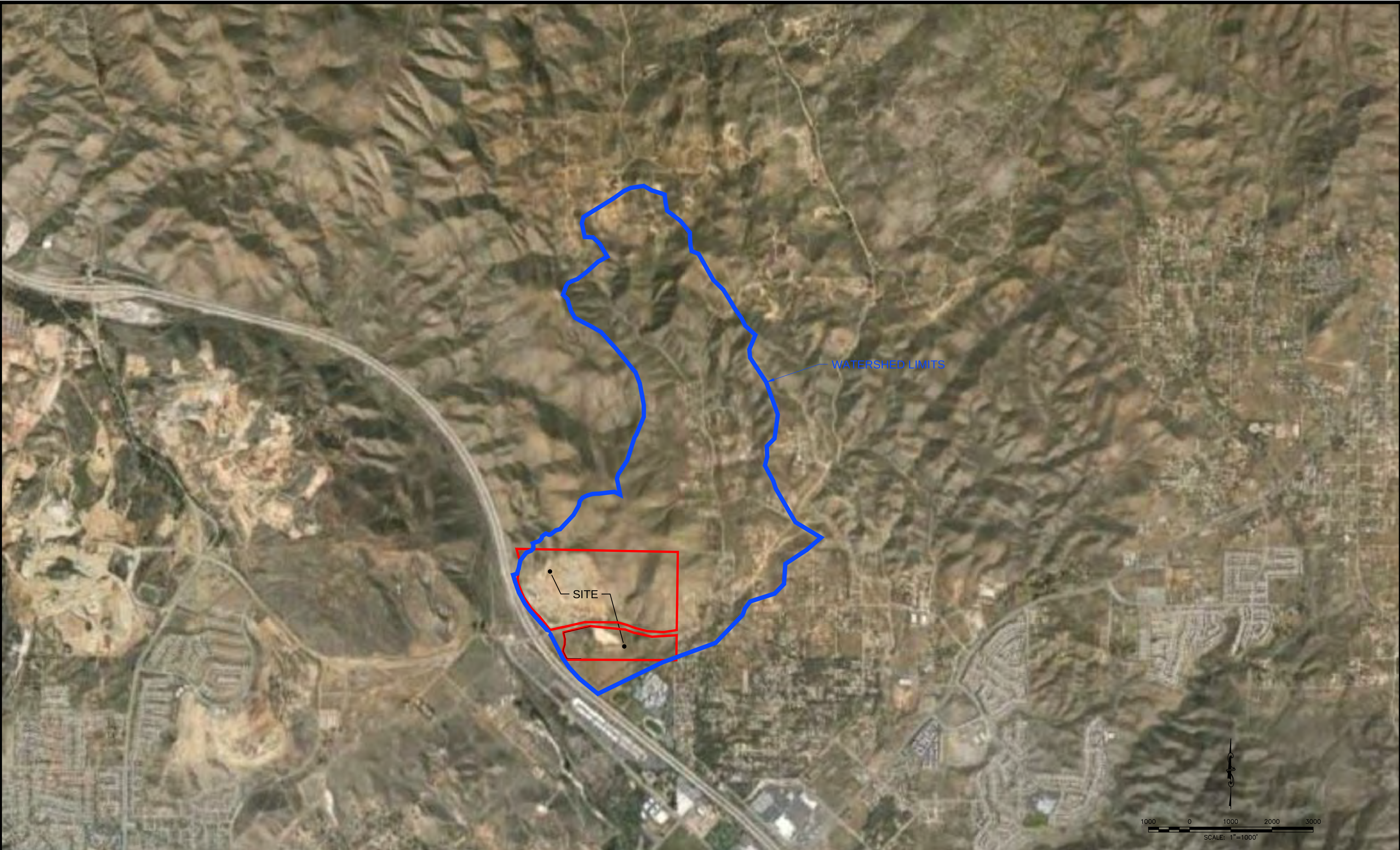
With the above mitigation measure the reclamation of the Nichols Road Partners, LLC. Reclamation Plan 2006-01A2 will not have a negative impact on down stream properties or facilities.

Refer to Attachment No. 8 for a CD of this complete document (PDF) and all study calculations input/output files.

(END)

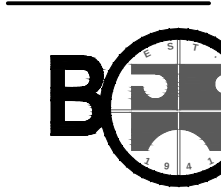
EXHIBIT “A”

Project Watershed
Aerial Orthophoto



AERIAL ORTHOPHOTO EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:



BONADIMAN
JOSEPH E. BONADIMAN & ASSOCIATES, INC.
ENGINEERS • U.L.S. • SURVEYING • PLANNING
TEL. (909) 885-3006
FAX (909) 381-1721
www.bonadiman.com



CIVIL DESIGN
Sustainable Site Development, Inc.
www.civildesign.com

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

BY	MARK	REVISION DESCRIPTION	DATE

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
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NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

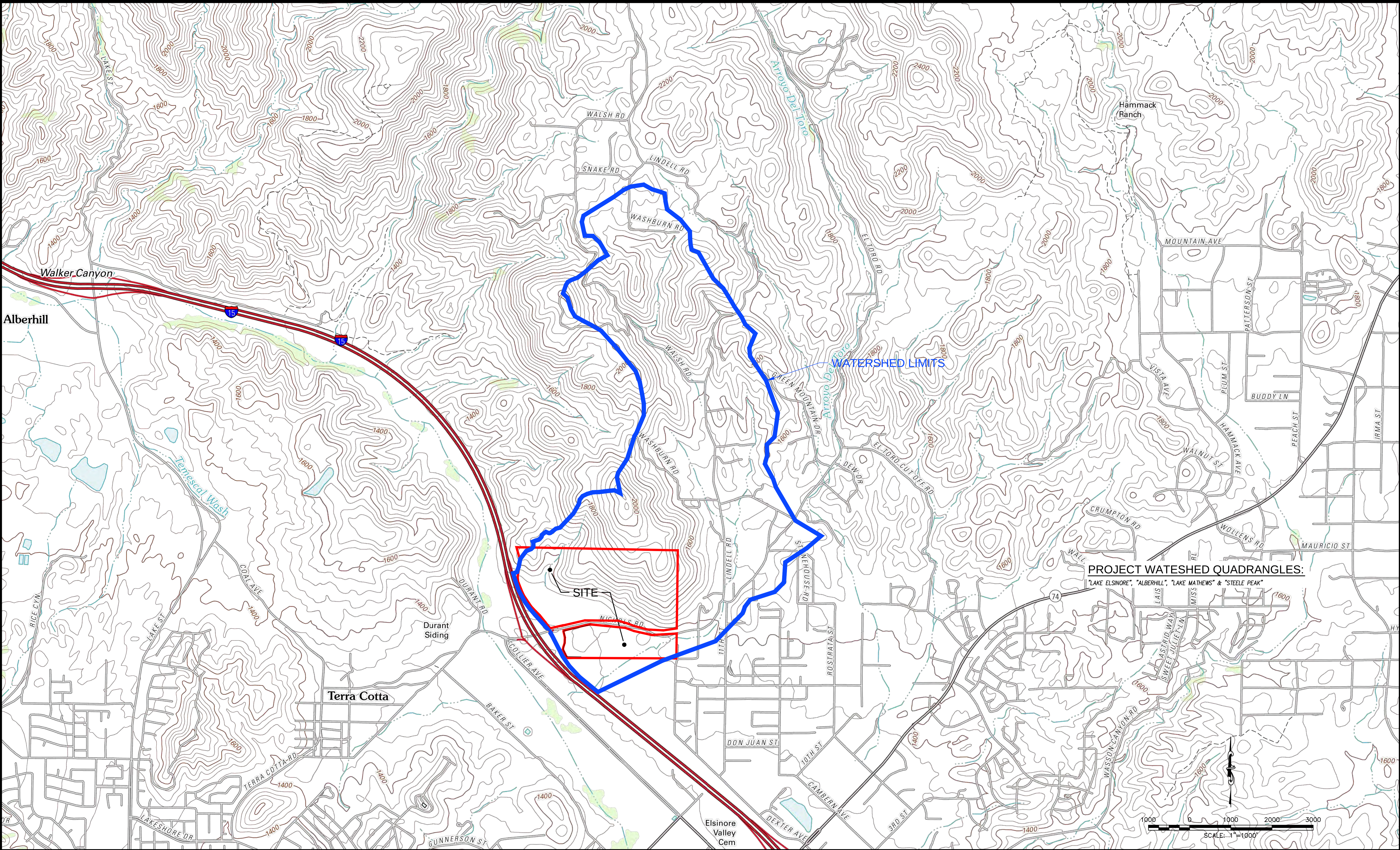
DISREGARD PRINTS BEARING
EARLIER REVISION DATES

05-11-15

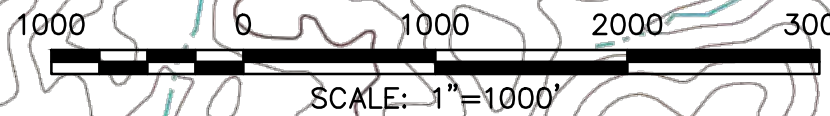
A
SHEET 1 OF 1

EXHIBIT “B”

Project Watershed
USGS Quadrangle



PROJECT WATSHED QUADRANGLES:
"LAKE ELSINORE", "ALBERHILL", "LAKE MATHEWS" & "STEELE PEAK"



USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:



TEL. (909) 885-3006
311 NORTH BROADWAY
SUITE 200
LAKE ELSINORE, CA 92529
FAX (909) 381-1721
www.bonadiman.com



CIVILDESIGN
SOLUTIONS FOR THE CONSTRUCTION INDUSTRY

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

BY	MARK	REVISION DESCRIPTION	DATE		

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
JOB NO: 154159
PREPARED BY: SG
CHECKED BY: JTS

NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE
ACCURACY OF THE G.I.S. DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY
CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.

USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

05-11-15

B

SHEET 1 OF 1

EXHIBIT “C”

FEMA Floodplain Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS12
National Geodetic Survey
SSMC-3 #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

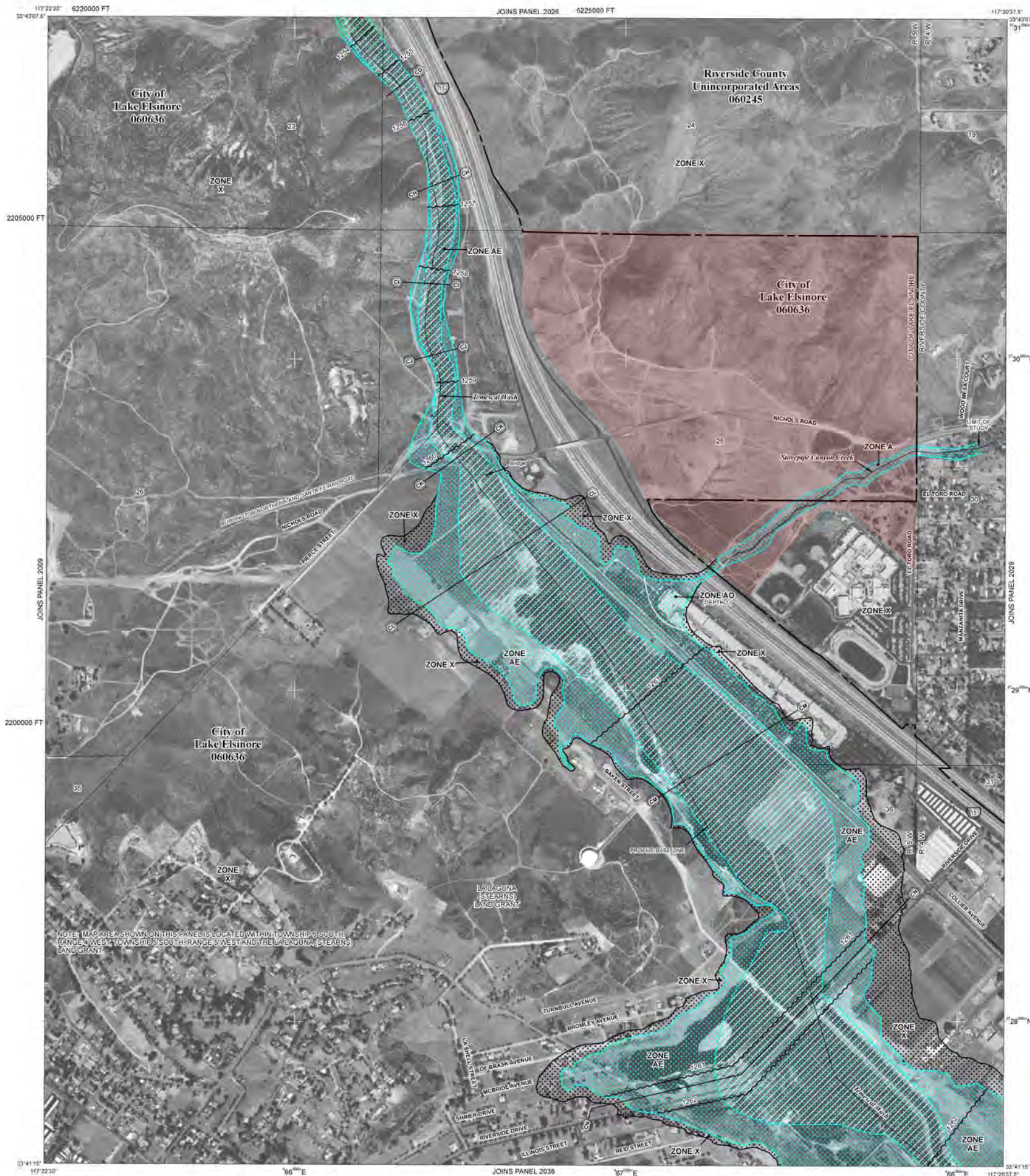
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, VE, and V. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually street flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently destroyed. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE AR9 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Base Flood Elevation line and value, elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

— Cross section line

— Truncated line

87°07'45", 32°22'30"

76°N

600000 FT

DX5510 X

• M1.5

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance Agent or call the National Flood Insurance Program at 1-800-638-6655.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

PANEL 2028G

FIRM

FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 2028 OF 3805

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
LAKE ELSINORE, CITY OF	060636	2028	D
RIVERSIDE COUNTY	060245	2028	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

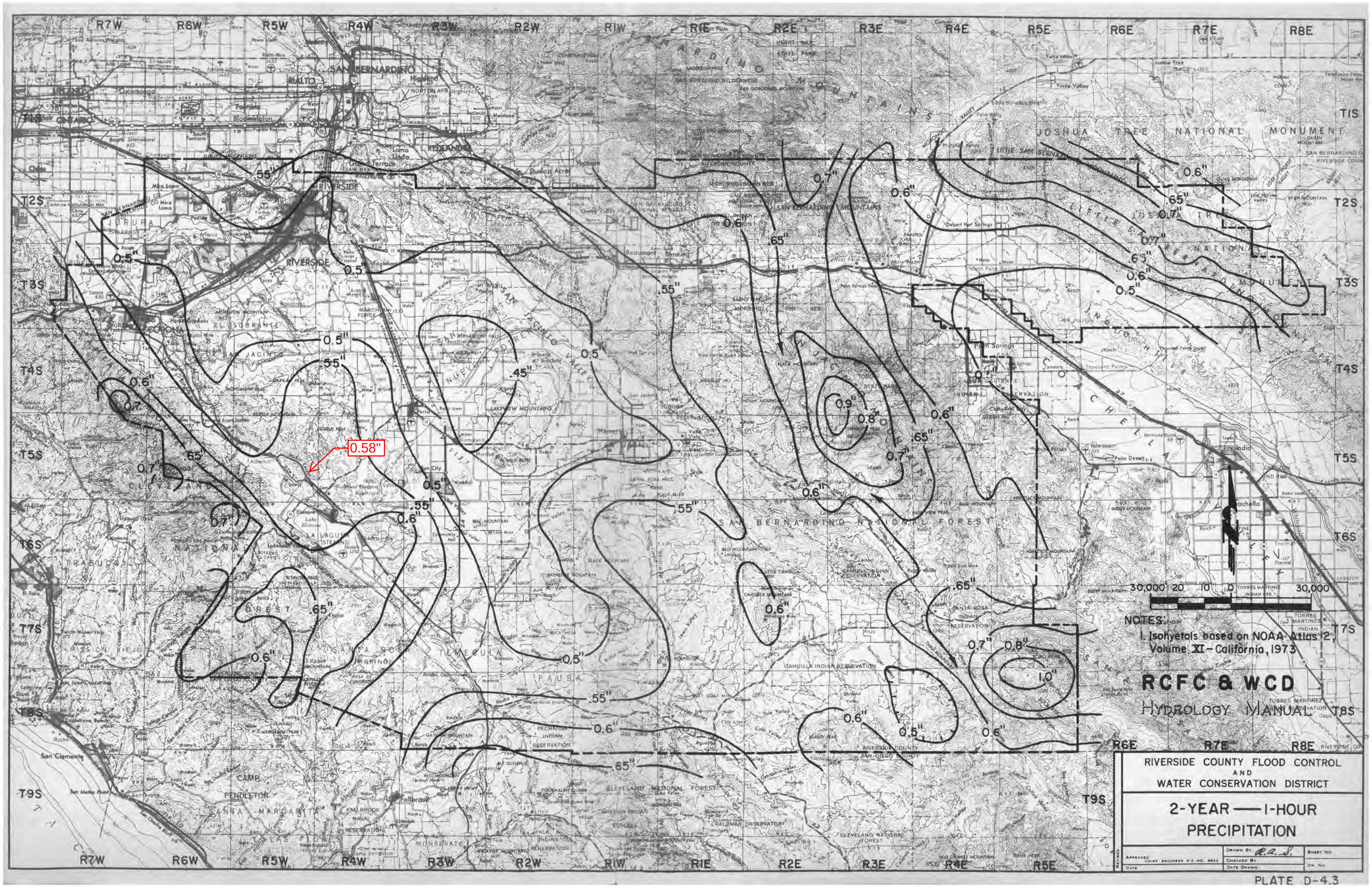
MAP NUMBER
06065C2028G

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

EXHIBIT “D”

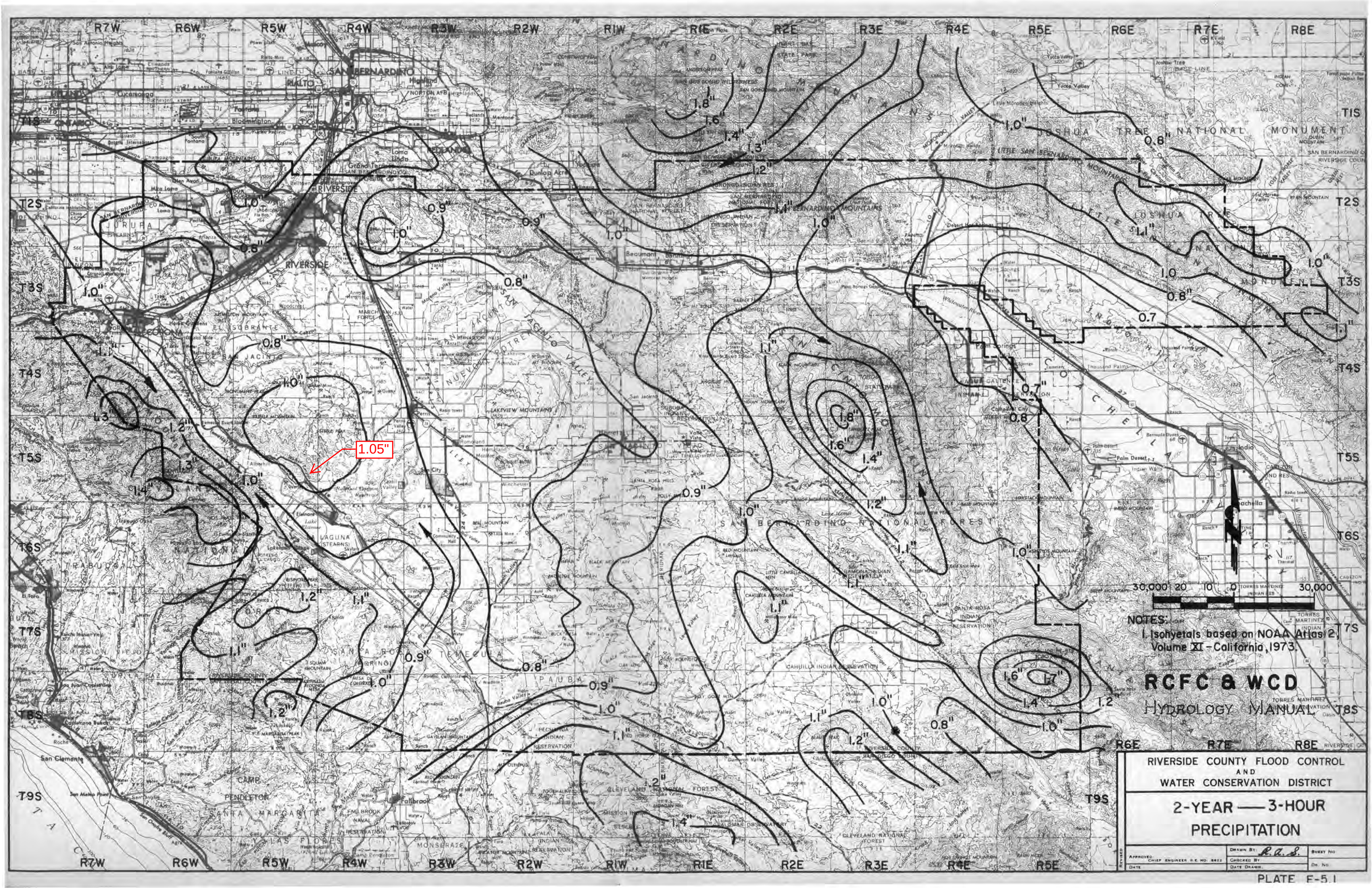
Riverside County
Hydrology Manual
Isohyetal Maps



NOTES:
1. Isohyets based on NOAA Atlas 12,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
2-YEAR — 1-HOUR PRECIPITATION		
APPROVED: CHIEF ENGINEER P.E. NO. 8822 DATE	DRAWN BY: C.E.S. CHECKED BY: DATE DRAWN:	SHEET NO. OF NO.



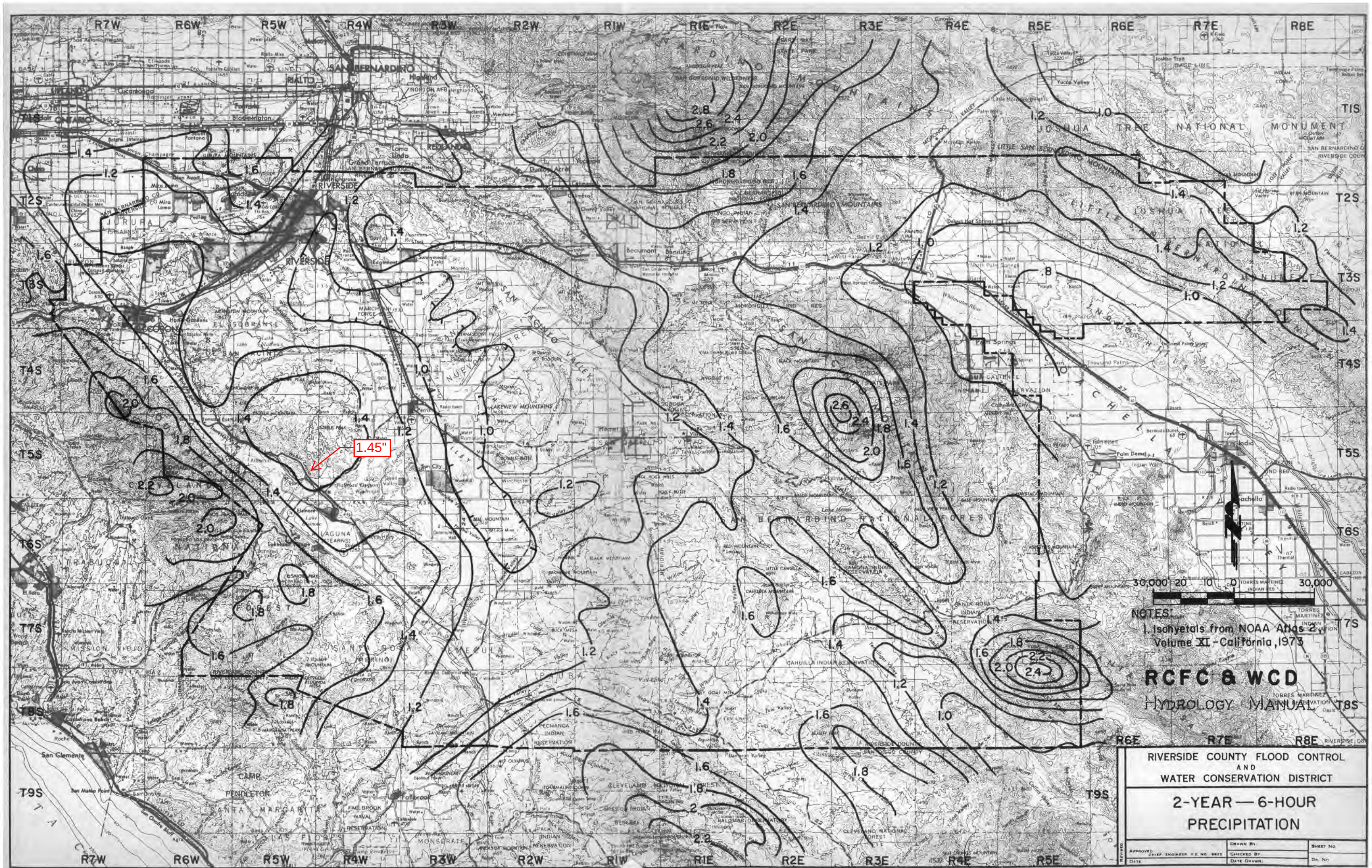
NOTES:
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Volume XI - California, 1973.

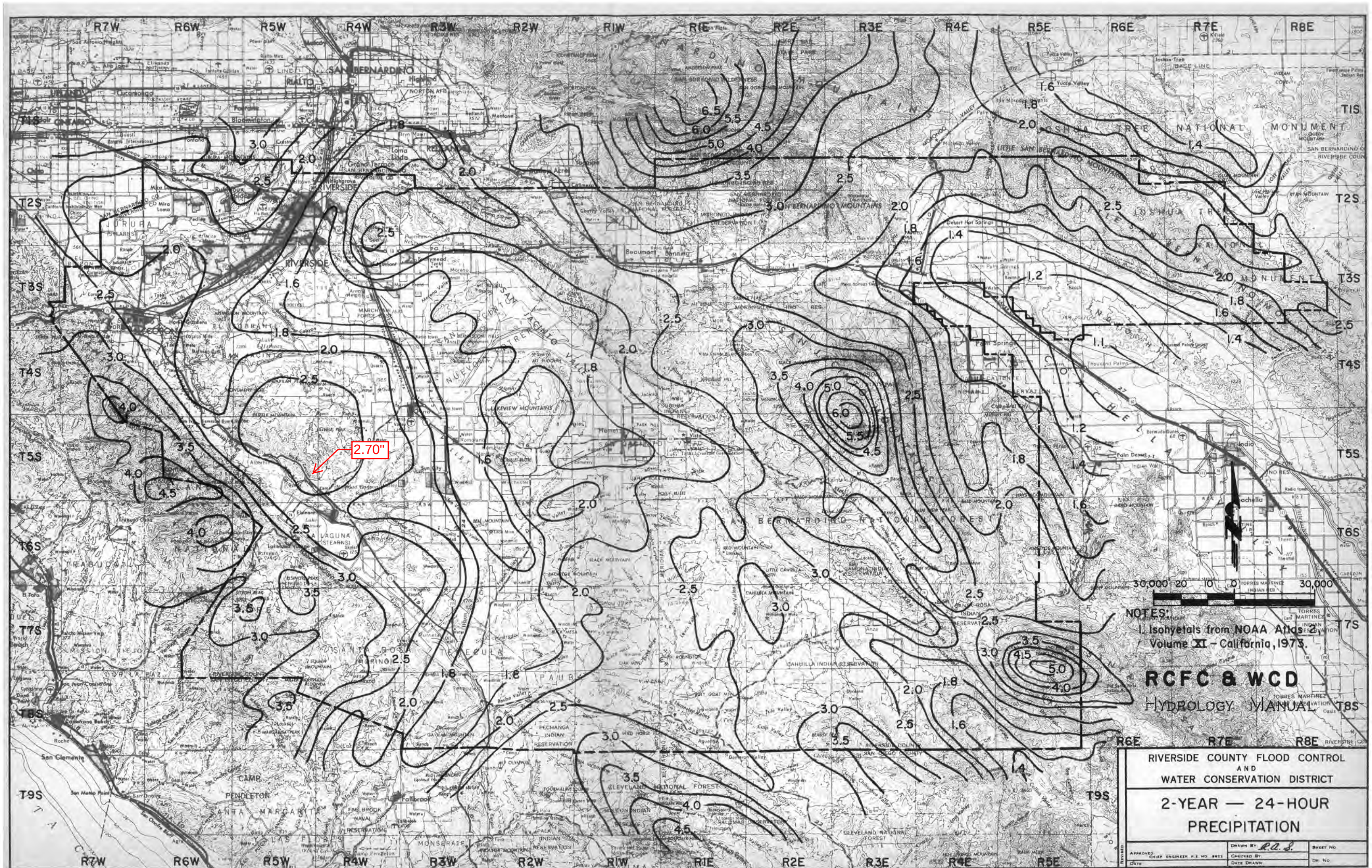
RCFC & WCD HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR
PRECIPITATION

APPROVED	CHIEF ENGINEER R.C. NO. 8622	DRAWN BY	R.A.S.	SHEET NO.	
DATE		CHECKED BY		DATE DRAWN	

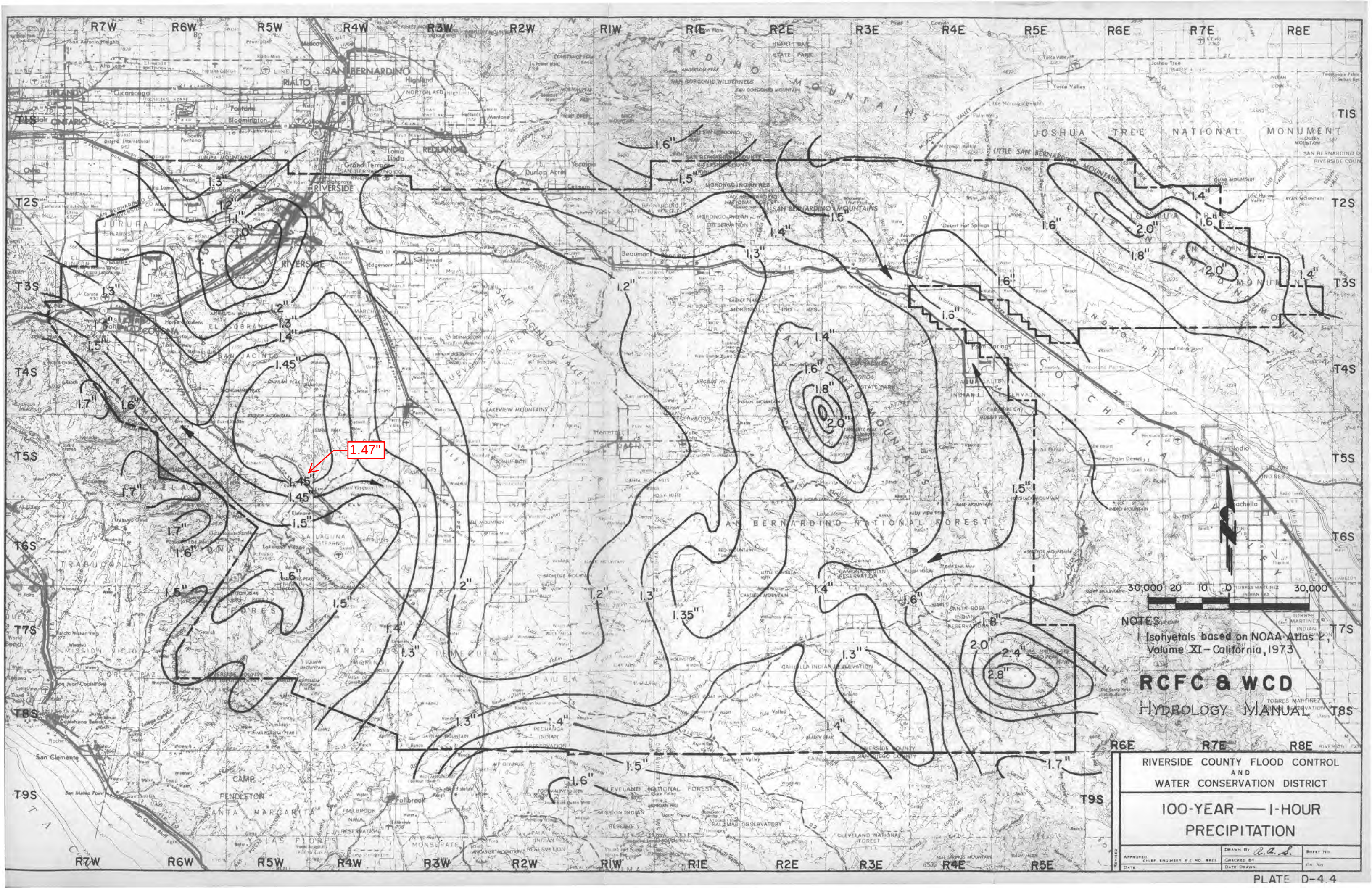




NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

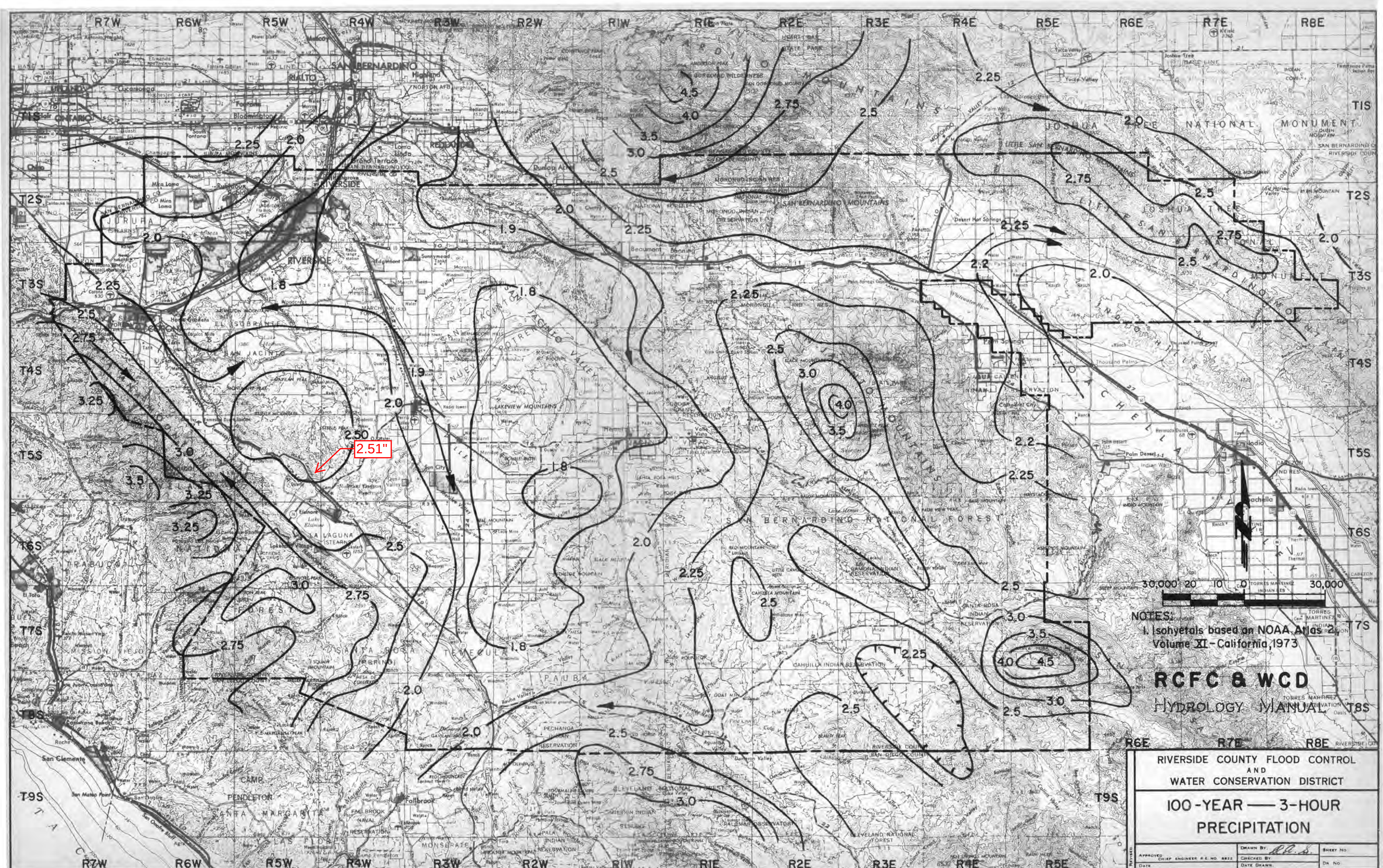
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT			
2-YEAR — 24-HOUR PRECIPITATION			
APPROVED DATE	CHIEF ENGINEER R.E. NO. 8833	DRAWN BY DATE <i>R.A.S.</i>	CHECKED BY DATE
SHEET NO.			DW. NO.



NOTES:
Isohyets based on NOAA Atlas 2,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

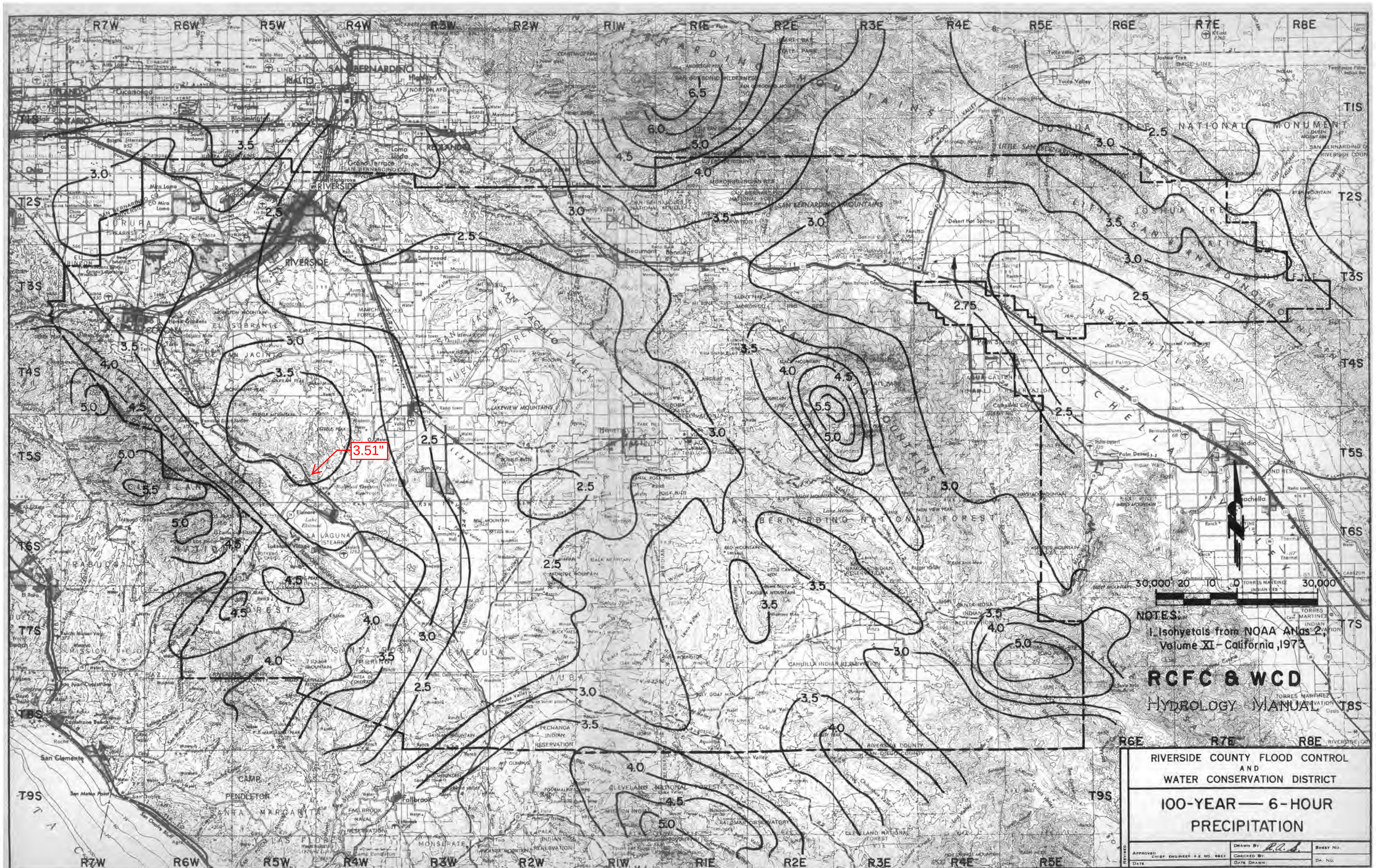
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
100-YEAR — 1-HOUR PRECIPITATION		
APPROVED CHIEF ENGINEER R.E. NO. 8821	DRAWN BY C.A.S.	SHEET NO.
DATE	CHECKED BY	DATE



NOTES:
1. Isohyets based on NOAA Atlas 2,
Volume XI-California, 1973

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HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT			
100-YEAR — 3-HOUR PRECIPITATION			
APPROVED DATE	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY CHECKED BY DATE	SHEET NO. DR. NO.



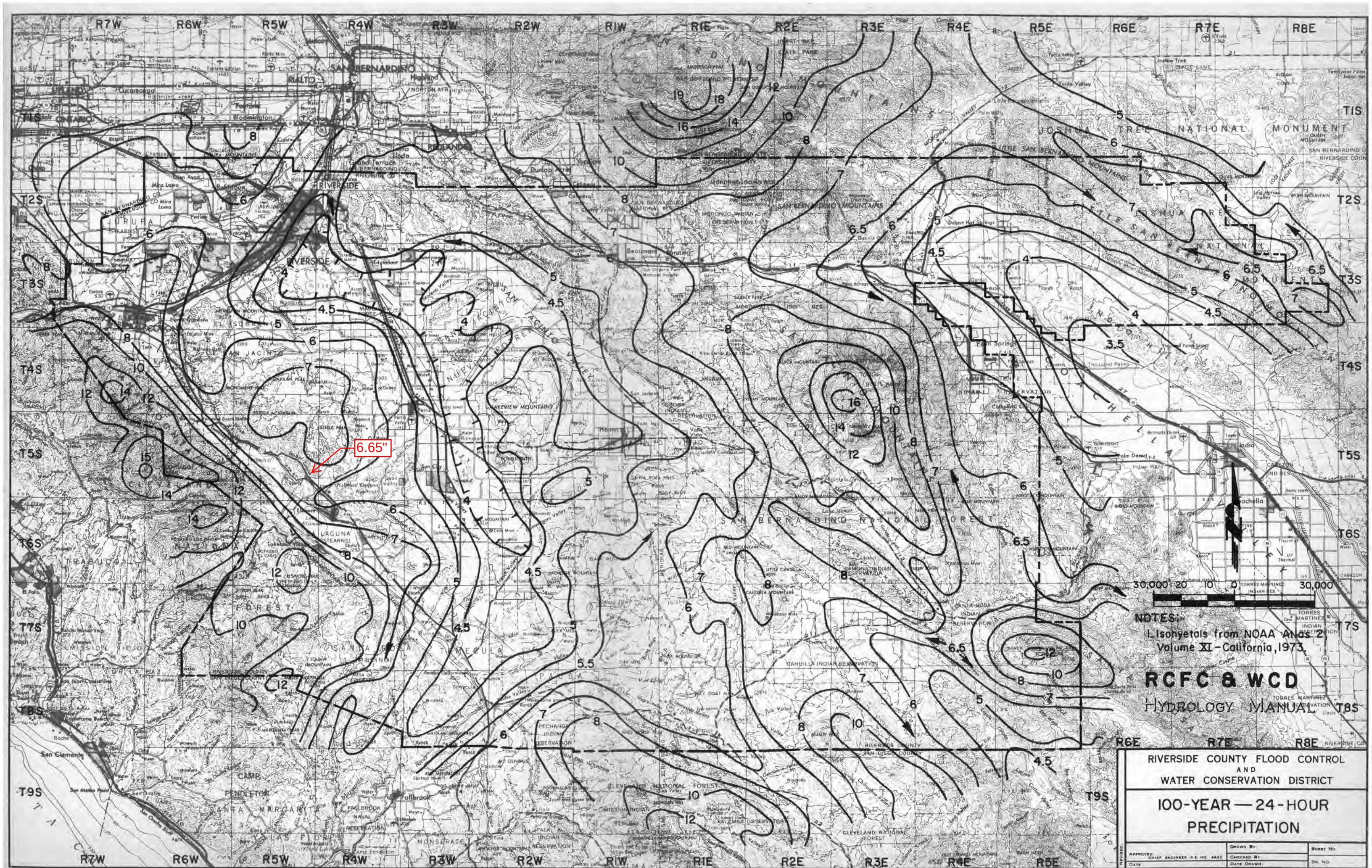
NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973

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HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**100-YEAR — 6-HOUR
PRECIPITATION**

APPROVED DATE	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY DATE	DR. NO.
		DR. NO.	



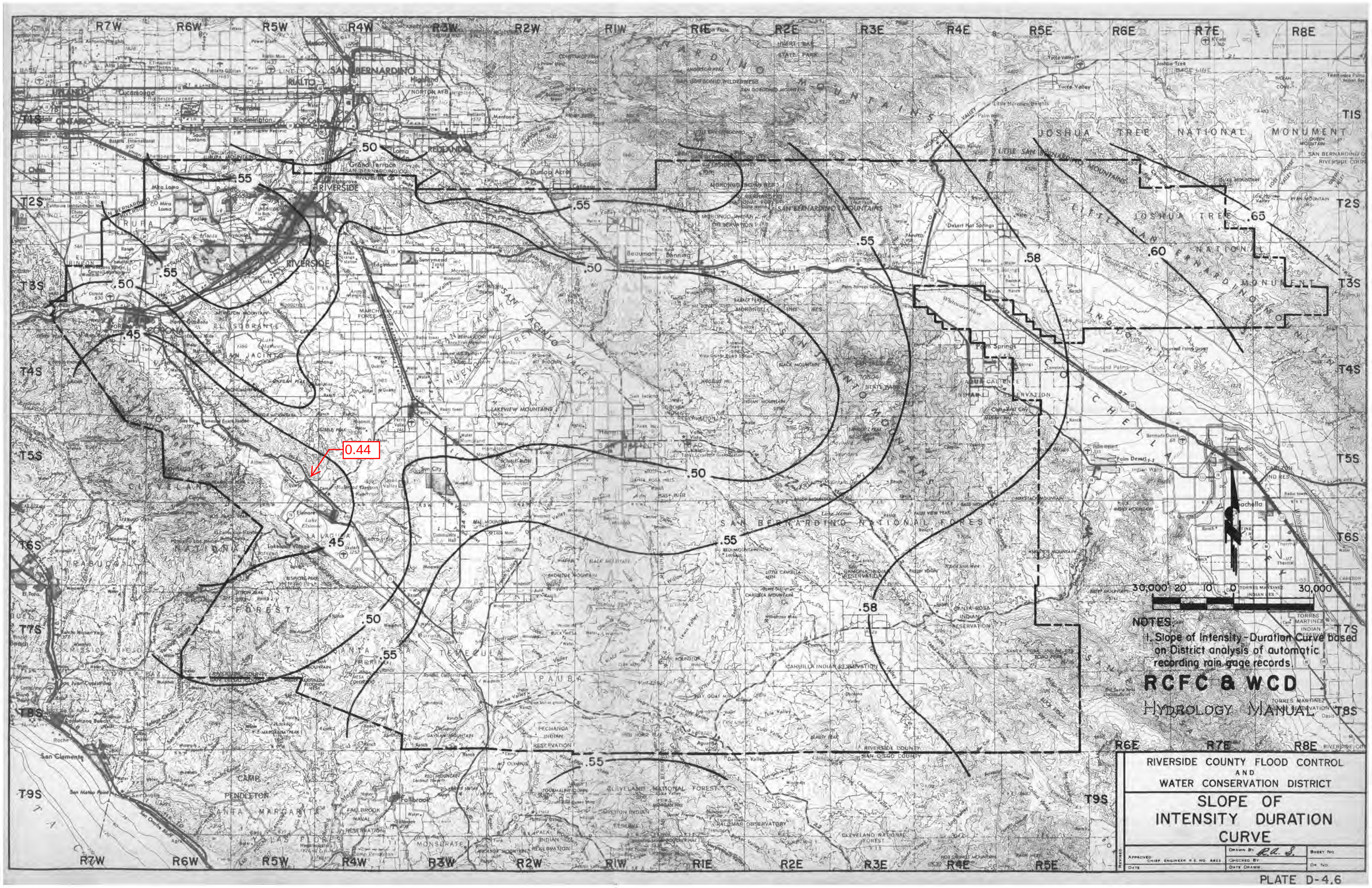
NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973.

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HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**100-YEAR — 24-HOUR
PRECIPITATION**

APPROVED: CHIEF ENGINEER R.E. NO. 4822	DRAWN BY:	SHEET NO.
DATE:	CHECKED BY:	Dt. No.
	DATE DRAWN:	



0.44

NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records.

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HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
**SLOPE OF
INTENSITY DURATION
CURVE**

APPROVED	CHIEF ENGINEER R.E. NO. 4825	DRAWN BY	DATE	CHECKED BY	DATE	SHEET NO.	OF NO.
		RAJ					

EXHIBIT “E”

Runoff Index Numbers,
Impervious Cover
& NRCS Soils Maps

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
<u>NATURAL COVERS -</u>					
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
<u>URBAN COVERS -</u>					
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
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS
FOR
PERVIOUS AREA

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
<u>AGRICULTURAL COVERS</u> (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:
 Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
 Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
 Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Plate C-2 for a detailed description of cover types.
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.
5. Reference Bibliography item 17.

RCFC & WCD
HYDROLOGY MANUAL

**RUNOFF INDEX NUMBERS
FOR
PERVIOUS AREA**

COVER TYPE DESCRIPTIONS

NATURAL COVERS -

Barren - Areas with 15 percent or less of the ground surface covered by plants or litter. It includes rockland, eroded land, and shaped or graded land. Barren land does not include fallow land.

Chaparral, Broadleaf - Areas on which the principal vegetation consists of evergreen shrubs with broad, hard, stiff leaves such as manzonita, ceanothus and scrub oak. The brush cover is usually dense or moderately dense.

Chaparral, Narrowleaf - Land on which the principal vegetation consists of diffusely branched evergreen shrubs with fine needle-like leaves such as chamise and redshank. The shrubs are usually widely spaced and low in growth. If the narrowleaf chaparral shrubs are dense and high; the land should be included with broadleaf chaparral cover.

Grass, Annual - Land on which the principal vegetation consists of annual grasses and weeds such as annual bromes, wild barley, soft chess, ryegrass and filaree.

Grass, Perennial - Areas on which the principal vegetation consists of perennial grass, either native or introduced, and which grows under normal dryland conditions. Examples are Stipa or needle grass, Harding grass and wheat grass. It does not include irrigated and meadow grasses.

Meadow - Land areas with seasonally high water table, often called cienegas. Principal vegetation consists of sod-forming grasses interspersed with other plants.

Open Brush - Principal vegetation consists of soft wood shrubs, usually grayish in color. Examples include California buckwheat, California sagebrush, black sage, white sage and purple sage. It also includes vegetation on desert facing slopes where broadleaf chaparral predominate in an open shrub cover.

Woodland - Areas on which coniferous or broadleaf trees predominate. The crown or canopy density, the amount of ground surface shaded at high noon, is at least 50 percent. Open areas may have a cover of annual or perennial grasses or of brush. Plant cover under the trees is usually sparse because of leaf or needle litter accumulation.

Woodland, Grass - Areas with an open cover of broadleaf or coniferous trees usually live oak and pines, with the intervening ground space occupied by annual grasses or weeds. The trees may occur singly or in small clumps. Canopy density, the amount of ground surface shaded at high noon, is from 20 to 50 percent.

URBAN COVERS -

Residential or Commercial Landscaping - The pervious portions of commercial establishments, single and multiple family dwellings, trailer parks and schools where the predominant land cover is lawn, shrubbery and trees.

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HYDROLOGY MANUAL

COVER TYPE
DESCRIPTIONS

COVER TYPE DESCRIPTIONS

URBAN COVERS (cont.) -

Turf - Golf courses, parks, cemeteries, and similar lands where the predominant cover is irrigated mowed close-grown turf grass. Parks in which trees are dense may be classified as woodland.

AGRICULTURAL COVER -

Fallow - Fallow land is land plowed but not yet seeded or tilled. It is more effective than barren land in reducing storm runoff.

Legumes, Close Seeded - Alfalfa, sweetclover, timothy, etc. and combinations, either planted in close rows or broadcast.

Orchards, Deciduous - Land planted to such deciduous trees as apples, apricots, pears, walnuts and almonds. The ground cover during the rainy season alters the hydrologic response to storm rainfall. Ground cover may be annual grass or perennial grass with or without legumes. Occasionally legumes are used alone. Use runoff index numbers which apply to the land use or the kind and condition of cover during storm periods. If orchards are kept bare by disking, or through the use of herbicides, fallow applies.

Orchards, Evergreen - Land planted to evergreen trees which include citrus and avocado orchards and coniferous plantings. The effectiveness of this kind of land use is in part determined by the tree, the litter and the ground cover. In these groves the ground cover may be legumes alone or annual or perennial grasses with or without legumes. The ground cover may be entirely litter if the tree canopy is sufficiently dense to produce a substantial quantity of fallen leaves or needles. As with deciduous orchards, management practices affect the runoff potential of evergreen orchards.

Pasture, Dryland - Equivalent to annual grass. Land on which the principal vegetation consists of annual grasses and weeds such as annual bromes, wild barley, soft chess, ryegrass and filaree.

Pasture, Irrigated - Irrigated land planted to perennial grasses and legumes for production of forage and which is cultivated only to establish or renew the stand of plants.

Row Crops - Lettuce, tomatoes, sugar beets, tulips or any field crop planted in rows far enough apart that most of the soil surface is exposed to rainfall impact throughout the growing season. At plowing, planting and harvest times it is equivalent to fallow.

Small Grain - Wheat, oats, barley, flax, etc. planted in rows close enough that the soil surface is not exposed except during planting and shortly thereafter.

Vineyards - As with orchards, ground cover and land condition must be considered in estimating runoff potential. Use runoff index numbers which apply to the kind and condition of cover. For example either annual grass or fallow may apply.

Reference: Bibliography item No. 17.

RCFC & WCD

HYDROLOGY MANUAL

COVER TYPE
DESCRIPTIONS

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. ($\frac{1}{2}$ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

**IMPERVIOUS COVER
FOR
DEVELOPED AREAS**

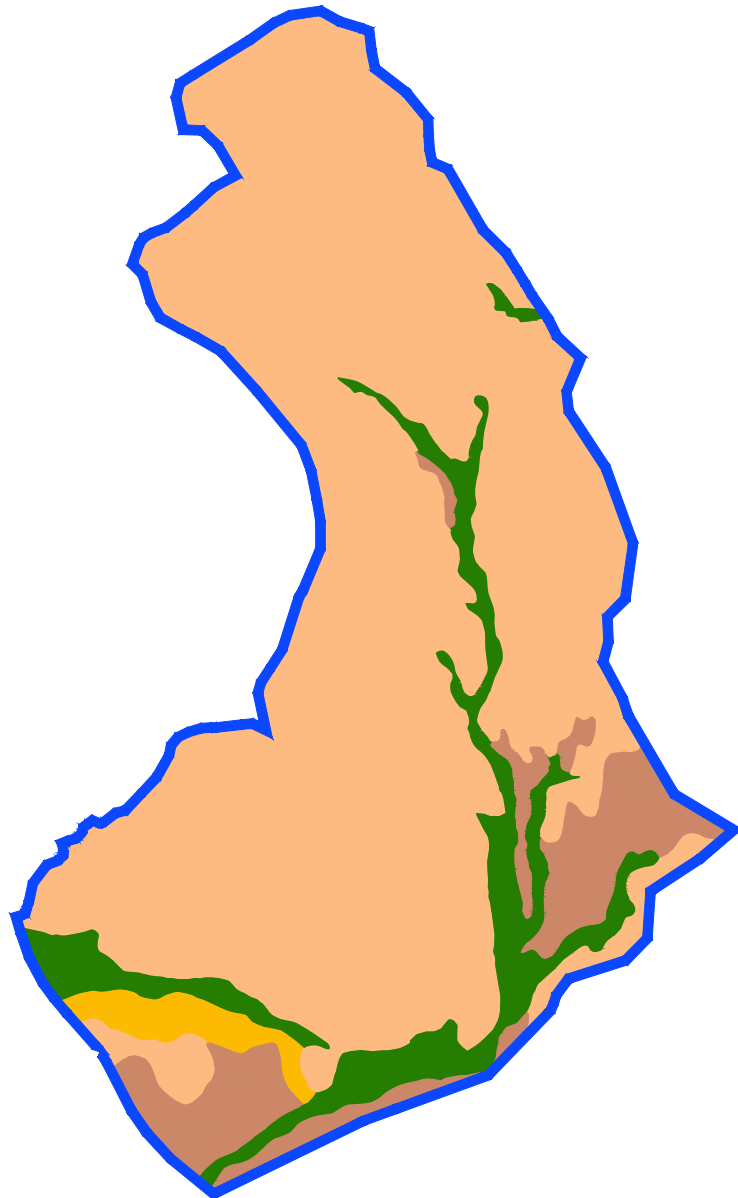
EXHIBIT "E.1"

WATERSHED HYDROLOGIC SOIL GROUPS

(SOURCE: NRCS WEB SOIL SURVEY)

HYDROLOGIC SOILS GROUPS

-  A
-  B
-  C
-  D



PREPARED BY:

BONADIMAN
JAMES A. BONADIMAN & ASSOCIATES, INC.
ENGINEERING - E.I.T. - SURVEYING - PLANNING

TEL: (951) 965-3000
WWW.BONADIMAN.COM



USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES →

03-27-15

E.1

SHEET 1 OF 1

EXHIBIT “F”

Historical Hydrologic Conditions Study Map

NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

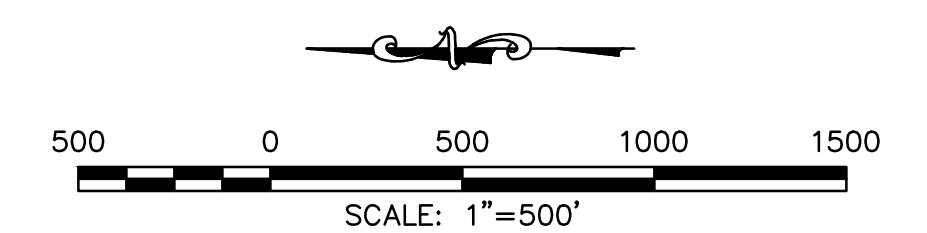


**DRAINAGE AREA,
SIZE, % IMPERVIOUS,
& CLOSEST APPROXIMATED
CLASSIFICATION**

DRAINAGE AREA LIMITS

→ → → → →
FLOW PATHS

~~☒~~ DRAINAGE AREA CENTROIDS



HISTORICAL CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:	
--------------	--



NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

					PREPARED FOR:	NICHOLS ROAD PARTNERS, LLC.
					JOB NO:	154159
					PREPARED BY:	JTS
					CHECKED BY:	JTS
					NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE ACCURACY OF THE G.I.S. DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.	
BY	MARK	REVISION	DESCRIPTION	DATE		

HISTORICAL CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING EARLIER REVISION DATES	05-11-15
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05-11-15

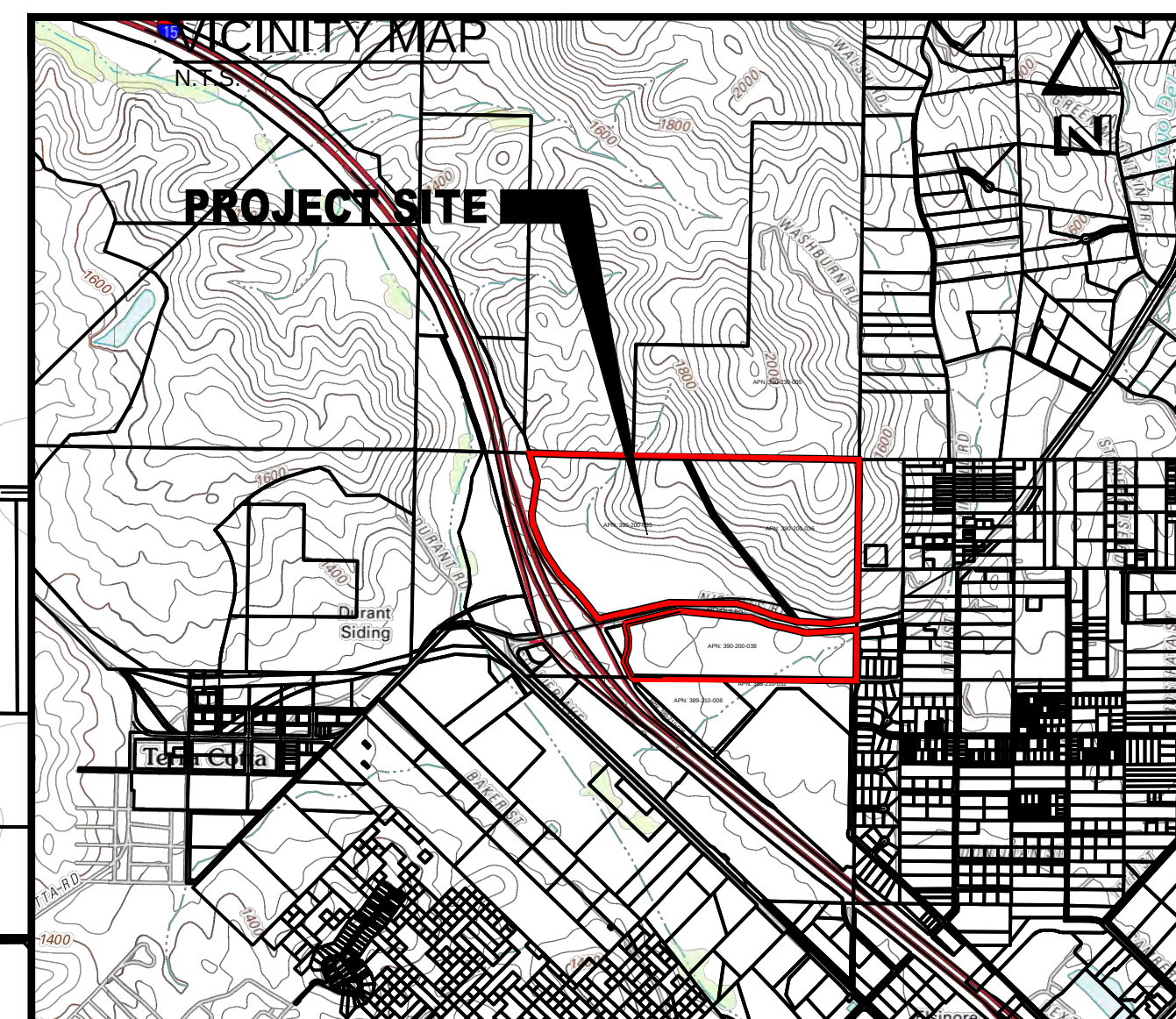
F

SHEET 1 OF

EXHIBIT “G”

Existing Hydrologic Conditions Study Map

NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA



AREA "A"
1.00 AC
20% IMP
1 AC LOTS

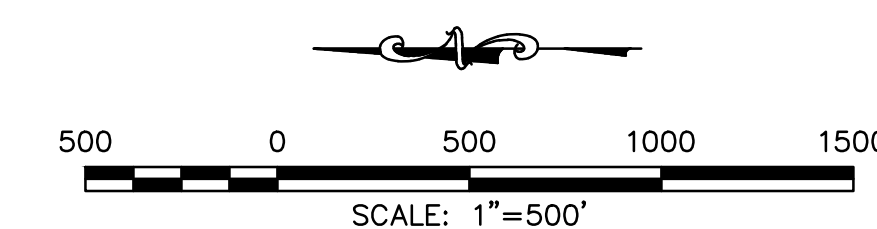
**DRAINAGE AREA,
SIZE, % IMPERVIOUS,
& CLOSEST APPROXIMATED
CLASSIFICATION**

NODE LOCATION, ELEVATION, & TOTAL PEAK Q_{100} FLOW

DRAINAGE AREA LIMITS

→ → → → →
FLOW PATHS

☒ DRAINAGE AREA CENTROIDS



EXISTING CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:	
--------------	--



TEL. (909) 885-3806
234 NORTH ARROWHEAD AVE.
SAN BERNARDINO, CA 92408
FAX (909) 381-1721
www.bornedman.com



PREPARED FOR:	
---------------	--

NICHOLS ROAD PARTNERS, LLC
P.O. Box 77850
Corona CA 92877

PREPARED FOR:	NICHOLS ROAD PARTNERS, LLC.
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JOB NO:	154159
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PREPARED BY:	JTS
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CHECKED BY:	JTS
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EXISTING CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES 

06-03-15

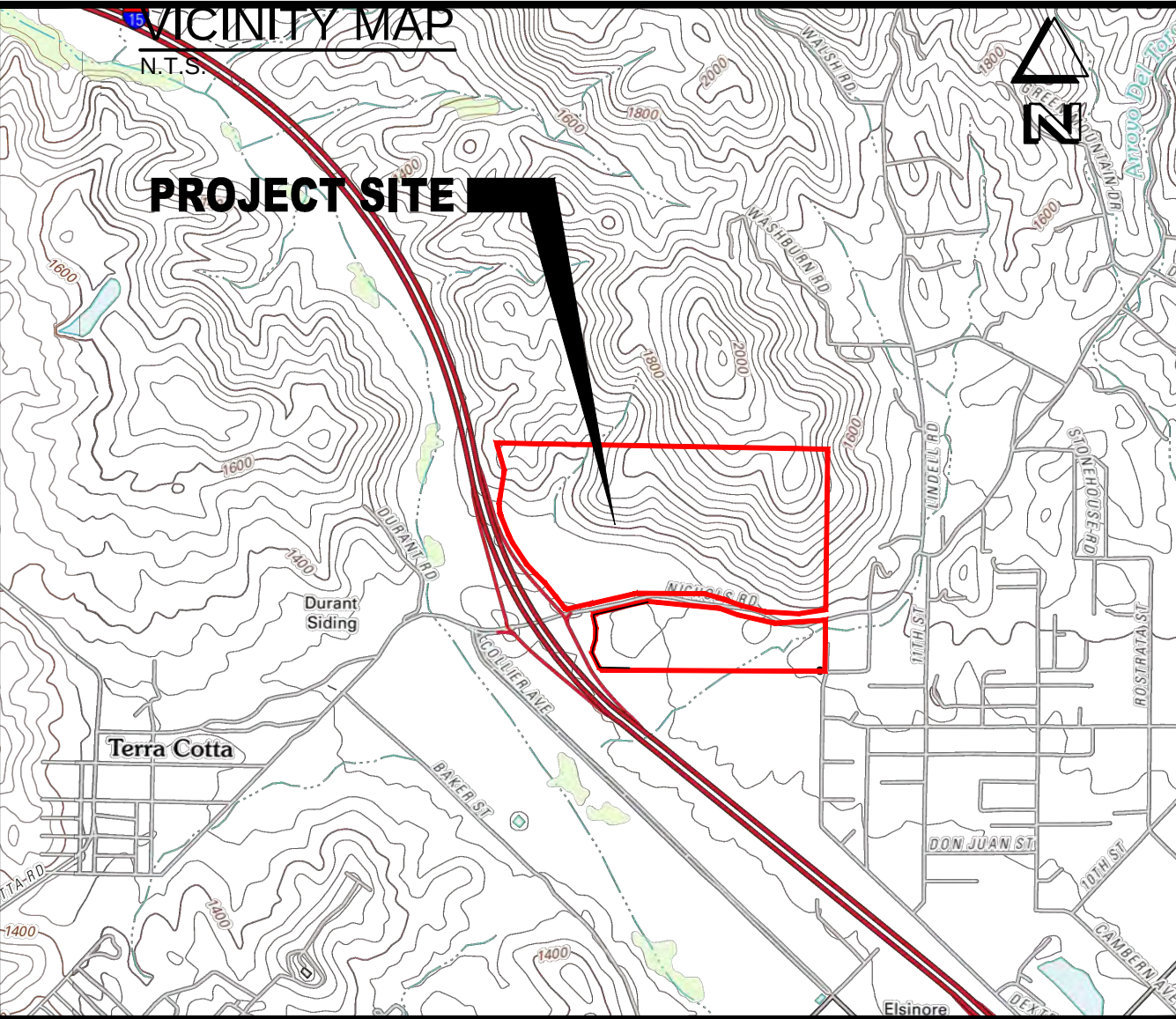
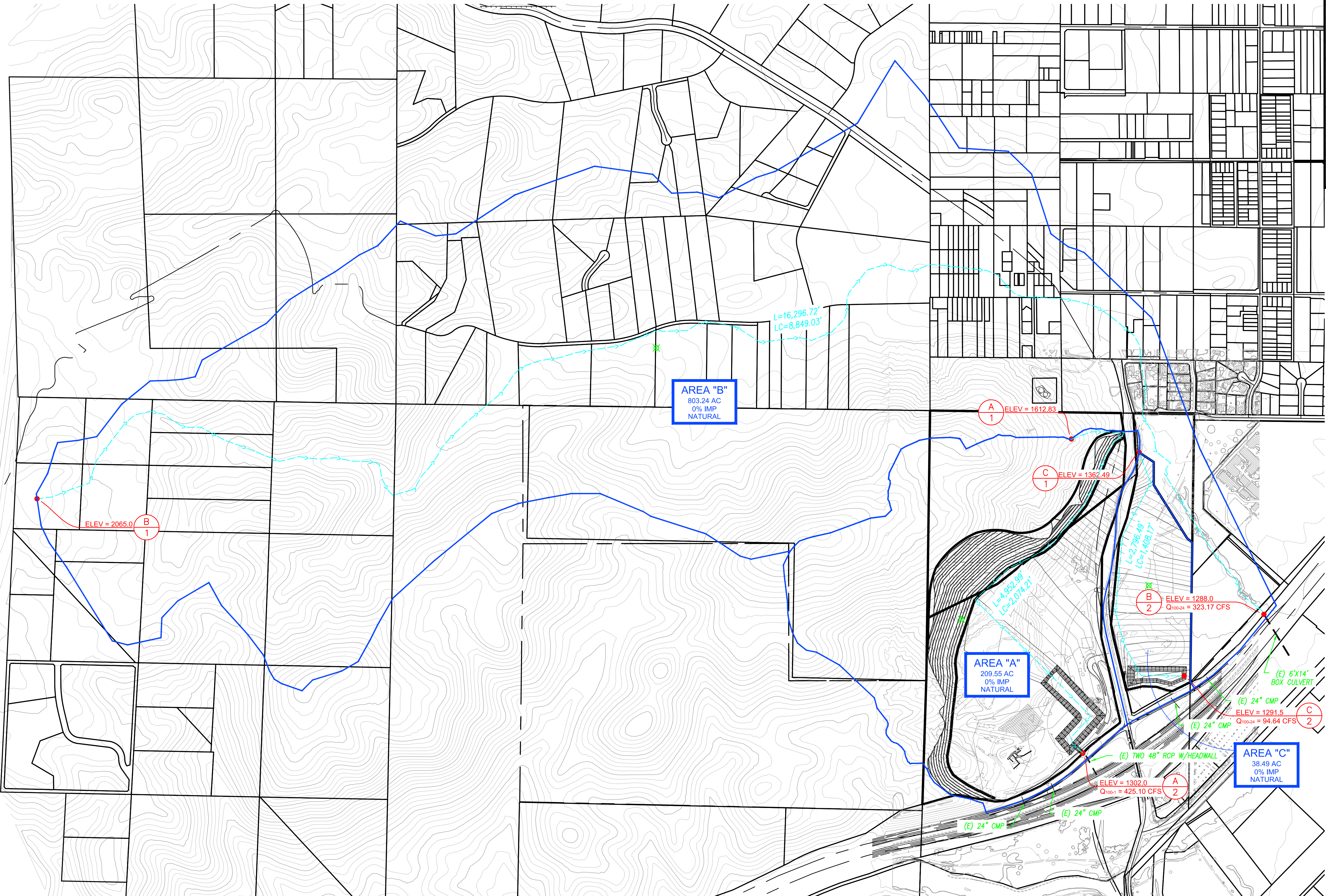
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SHEET 1 OF 1

EXHIBIT “H”

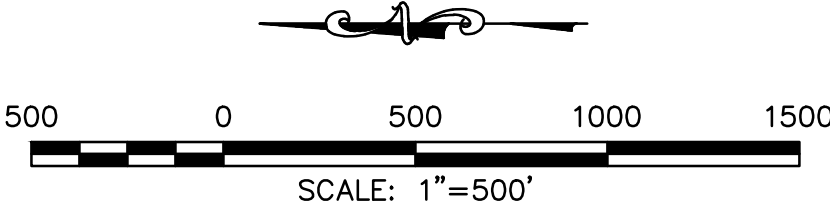
Reclamation Hydrologic Conditions Study Map

EXHIBIT "H"
RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA



MAP LEGEND

- AREA "A"
1.00 AC
20% IMP
1 AC LOTS
- DRAINAGE AREA, SIZE, % IMPEROUS, & CLOSEST APPROXIMATED CLASSIFICATION
- Node A 1
ELEV = 1600.00
Q₁₀₀ = 1.0 CFS
- Node Location, Elevation, & Total Peak Q_{100-year}
- DRAINAGE AREA LIMITS
- FLOW PATHS
- X DRAINAGE AREA CENTROIDS



RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:



PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
JOB NO: 154159
PREPARED BY: JTS
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RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

06-15-15

H

SHEET 1 OF 1