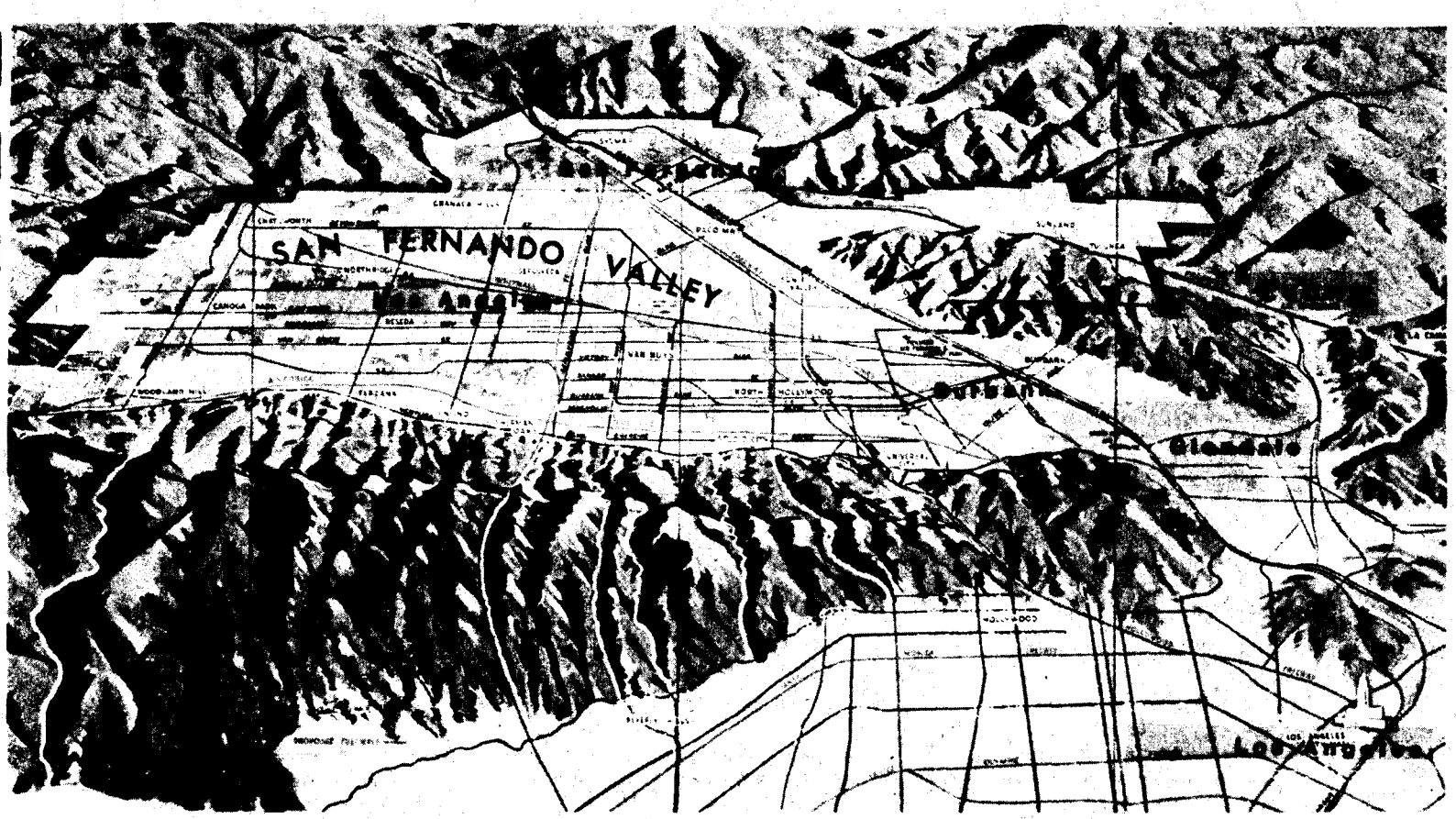
UPPER LOS ANGELES RIVER AREA WATERMASTER

CITY OF LOS ANGELES VS. CITY OF SAN FERNANDO, ET AL
CASE NO. 650079 — COUNTY OF LOS ANGELES

WATERMASTER SERVICE IN THE UPPER LOS ANGELES RIVER AREA LOS ANGELES COUNTY

OCTOBER 1, 1981 - SEPTEMBER 30, 1982



MAY 1983

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CONVERSION FACTORS

English to Metric System of Measurement

Quantity	English unit	Multiply by	To get metric equivalent
Length	feet (ft)	.3048	metres (m)
	miles (mi)	1.6093	kilometres (km)
Area	square feet (ft^2)	.092903	square metres (m^2)
	acres	4046.9	square metres (m^2)
		.40469	hectares (ha)
		.40469	square hectometres (hm^2)
		.0040469	square kilometres (km^2)
	square miles (mi^2)	2.590	square kilometres (km^2)
Volume	gallons (gal)	3.7854	litres (l)
		.0037854	cubic metres (m^3)
	million gallons (10^6 gal)	3785.4	cubic metres (m^3)
	cubic feet (ft^3)	.028317	cubic metres (m^3)
	cubic yards (yd^3)	.76455	cubic metres (m^3)
	acre-feet (ac-ft)	1233.5	cubic metres (m^3)
		.0012335	cubic hectometres (hm^3)
		1.233×10^{-6}	cubic kilometres (km^3)
Volume/Time (Flow)	cubic feet per second (ft^3/s)	28.317	litres per second (l/s)
		.028317	cubic metres per second (m^3/s)
	gallons per minute (gal/min)	.06309	litres per second (l/s)
		6.309×10^{-5}	cubic metres per second (m^3/s)
	million gallons per day (mgd)	.043813	cubic metres per second (m^3/s)
	miners inch*	.70792 (.56634)	litres per second (l/s)
Temperature	Degrees Fahrenheit (°F)	$\frac{tF - 32}{1.8} = tC$	Degrees Celsius (°C)

* Section 24 of Water Code = 1/40 ft^3/s

( ) 1/50 ft^3/s commonly used in Southern California

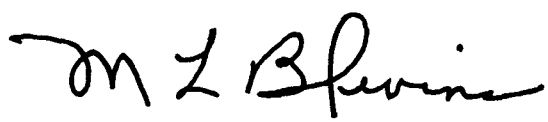
FOREWORD

As Watermaster for the Upper Los Angeles River Area (ULARA), I am pleased to submit this report of the water supply conditions in ULARA during the 1981-82 water year. It was prepared in accordance with the provisions of the Final Judgment, signed by the Honorable Harry L. Hupp of the Superior Court on January 26, 1979.

This report describes the water rights in each basin, lists the allowable pumping for the water year 1982-83, and indicates the water in storage to the credit of each party as of October 1, 1982. In addition, this report includes background information on the history of the San Fernando Case; information as to each basin and the ULARA in total on water supply, ground water extractions, ground water levels, quantities of imported water use, recharge operations including amounts thereof, water quality conditions; and other pertinent information occurring during the water year pursuant to the provisions of the Judgment.

I wish to acknowledge and express appreciation to all parties that have provided information and data which were essential to the completion of this report.

Sincerely,



MELVIN L. BLEVINS
Hydrologic Engineer and ULARA Watermaster
(Reg. C.E. No. 12863)

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UPPER LOS ANGELES RIVER AREA WATERMASTER

CITY OF LOS ANGELES VS. CITY OF SAN FERNANDO, ET AL
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ULARA WATERMASTER REPORT FOR WATER YEAR 1981-82

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I. INTRODUCTION

Upper Los Angeles River Area (ULARA) encompasses all the watershed of the Los Angeles River and its tributaries above a point in the river designated as Los Angeles County Flood Control District (LACFCD) Gaging Station F-57C-R, near the junction of the Los Angeles River and the Arroyo Seco (Plate 1). ULARA encompasses 328,500 acres, composed of 122,800 acres of valley fill, referred to as the ground water basins, and 205,700 acres of hills and mountains. ULARA is bounded on the north and northwest by the Santa Susana Mountains; on the north and northeast by the San Gabriel Mountains; on the east by the San Rafael Hills, which separate it from the San Gabriel Basin; on the south by the Santa Monica Mountains, which separate it from the Los Angeles Coastal Plain; and on the west by the Simi Hills.

ULARA has four distinct ground water basins. The water supplies of these basins are separate and are replenished by deep percolation from rainfall and from a portion of the water that is delivered for use within these basins. The four ground water basins in ULARA are the San Fernando, Sylmar, Verdugo, and Eagle Rock Basins (Plate 1).

The San Fernando Basin, the largest of the four basins, consists of 112,000 acres and comprises 91.2 percent of the total valley fill. It is bounded on the east and northeast by the San Rafael Hills, Verdugo Mountains, and San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south limb of the Little Tujunga syncline which separates it from the Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains.

The Sylmar Basin, in the northerly part of ULARA, consists of 5,600 acres and comprises 4.6 percent of the total valley fill. It is bounded on the north and east by the San Gabriel Mountains; on the west by a topographic divide in the valley fill between the Mission Hills and the San Gabriel Mountains; on the southwest by the Mission Hills; on the east by the Upper Lopez Canyon Saugus formation along the east bank of the Pacoima Wash; and on the south by the eroded south limb of the Little Tujunga syncline, which separates it from the San Fernando Basin.

The Verdugo Basin, north and east of the Verdugo Mountains in ULARA, consists of 4,400 acres and comprises 3.6 percent of the total valley fill. It is bounded on the north by the San Gabriel Mountains, on the east by a ground water divide separating it from the Monk Hill Subarea of the Raymond Basin, on the southeast by the San Rafael Hills, and on the south and southwest by the Verdugo Mountains.

The Eagle Rock Basin, the smallest of the four basins, is in the extreme southeast corner of ULARA. It comprises 800 acres and consists of 0.6 percent of the total valley fill.

History of Adjudication

The water rights in ULARA were established by the JUDGMENT AFTER TRIAL BY COURT in Superior Court Case No. 650079, entitled The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et al., Defendants, signed March 14, 1968 by the Honorable Edmund M. Moor, Judge of the Superior Court. Prior to the judgment, numerous pretrials were held subsequent to the filing of the action by the City of Los Angeles in 1955 and before the trial commenced on March 1, 1966.

On March 19, 1958, an Interim Order of Reference was entered by the Court directing the State Water Rights Board, now known as the State Water Resources Control Board (SWRCB), to study the availability of all public and private records, documents, reports, and data relating to a proposed order of reference in the case. The Court subsequently entered on June 11, 1958 an "Order of Reference to State Water Rights Board to Investigate and Report upon the Physical Facts (Section 2001, Water Code)."

A final Report of Referee was approved on July 27, 1962 and filed with the Court. The Report of Referee made a complete study of the geology, insofar as it affects the occurrence and movement of ground water and the surface and ground water hydrology of the area. In addition, investigations were made of the history of the horizontal and vertical locations of the beds, banks, and channels of the Los Angeles River and its tributaries; the areas, limits, and directions of flow of all ground water within the area; the historic extractions of ground water in the basin and their quality; and all sources of water, whether they be diverted, extracted, or imported, etc. Said Report of Referee served as the principal basis for geological and hydrological facts for the original Trial Court Judgment in 1968 and Decision of the Supreme Court in 1975 (14 Cal 3d 199, 123 Cal Rept 1) and the Trial Court Judgment on remand on January 26, 1979.

The City of Los Angeles filed an appeal from the Judgment of the Trial Court with the Court of Appeals, which held a hearing on November 9, 1972, and issued its opinion on November 22, 1972. The opinion, prepared by Judge Compton and concurred in by Judges Roth and Fleming, reversed, with direction, the original judgment handed down by Judge Moor. In essence, the City of Los Angeles was given rights to all water in ULARA including the use of the underground basins. The defendants, however, were given the right to capture "return water," which is water purchased from the Metropolitan Water District of Southern California (MWD) that percolates into the basin.

A petition for rehearing was filed on December 7, 1972, but was denied by the Court of Appeals. On January 2, 1973, the defendants filed a petition for hearing with the State Supreme Court. The Court on March 2, 1973 advised the parties it would hear the case. The hearing was held on January 14, 1975.

On May 12, 1975, the California Supreme Court filed its opinion on the 20-year San Fernando Valley water litigation. This opinion, which became final on August 1, 1975, upheld the Pueblo Water Rights of the City of Los Angeles to all ground water in the San Fernando Basin derived from precipitation within ULARA. The City of Los Angeles' Pueblo Water Rights were not allowed to extend to the ground waters of the Sylmar and Verdugo Basins.

The City of Los Angeles was also given rights to all San Fernando Basin ground water derived from water imported by it from outside ULARA and either spread or delivered within ULARA. The Cities of Glendale and Burbank each were given rights to all San Fernando Basin ground water derived from water that each imports from outside ULARA and delivered within ULARA. San Fernando was not a member of MWD until the end of 1971, and had never prior thereto imported any water from outside ULARA.

The Supreme Court reversed the principal judgment of the Trial Court and remanded the case back to the Superior Court for further proceedings consistent with the Supreme Court's opinion. On remand the case was assigned to the Honorable Harry L. Hupp, Judge of the Superior Court of Los Angeles County.

The Final Judgment, signed by the Honorable Harry L. Hupp, was entered on January 26, 1979. Copies of the Final Judgment are available from the ULARA Watermaster, Post Office Box 111, Room 1466, Los Angeles, California 90051. The water rights set forth in the judgment are consistent with the opinion of the Supreme Court described above. In addition, the Final Judgment includes provisions and stipulations regarding water rights, the calculation of imported return water credit, storage of water, stored water credit, and arrangements for a physical solution for certain parties as suggested by the Supreme Court. The extraction rights under the Judgment are as follows:

San Fernando Basin

Native Water. Los Angeles has an exclusive right to extract and utilize all the native waters which, under the judgment, are evaluated to be 43,660 acre-feet per year.

Imported Return Water. Los Angeles, Glendale, Burbank, and San Fernando each have a right to extract from the San Fernando Basin the following amounts:

Los Angeles: 20.8 percent of all delivered water (including reclaimed water) to valley fill lands of San Fernando Basin.

San Fernando: 26.3 percent of all imported and reclaimed water delivered to valley fill lands of San Fernando Basin.

Burbank: 20.0 percent of all delivered water (including reclaimed water) to San Fernando Basin and its tributary hill and mountain areas.

Glendale: 20.0 percent of all delivered water (including reclaimed water) to San Fernando Basin and its tributary hill and mountain areas (i.e., total delivered water [including reclaimed water] less 105 percent of total sales by Glendale in Verdugo Basin and its tributary hills).

Physical Solution Water. Several parties are granted limited rights to extract water chargeable to the rights of others upon payment of specified charges. The parties and their maximum physical solution quantities are as follows:

As to Los Angeles' Water:

Glendale	5,500 acre-feet per year
Burbank	4,200 acre-feet per year
Van de Kamp	120 acre-feet per year
Toluca Lake	100 acre-feet per year
Sportsmens Lodge	25 acre-feet per year

As to Glendale's Water:

Forest Lawn	400 acre-feet per year
Environmentals Inc. (was Southern Service Co.)	75 acre-feet per year

As to Burbank's Water:

Valhalla	300 acre-feet per year
Lockheed	25 acre-feet per year

As to San Fernando's Water:

San Fernando may extract ground water from the Sylmar Basin in a quantity sufficient to utilize its San Fernando Basin import return water credit, and Los Angeles shall reduce its Sylmar Basin extractions by an equivalent amount and receive an offsetting entitlement for additional San Fernando Basin extractions.

Stored Water. Los Angeles, Glendale, Burbank, and San Fernando each have rights to store water in the San Fernando Basin and the right to extract equivalent amounts.

Sylmar Basin

Native Water. San Fernando and Los Angeles have rights of 3,580 and 1,560 acre-feet per year, respectively, to extract native water of Sylmar Basin. Private parties Meurer Engineering and Kisag Moordigian have overlying rights to extract and use on their lands overlying the Sylmar Basin all native water reasonably necessary for the acreage owned by them to meet beneficial uses.

Imported Return Water. Los Angeles and San Fernando have a right to extract imported return water equal to 35.7 percent of the preceding water year's imported water delivered to lands overlying Sylmar Basin.

Stored Water. Los Angeles and San Fernando each have a right to store water in the Sylmar Basin.

Physical Solution Water - Refer to physical solution provisions under San Fernando Basin as to San Fernando's water.

Verdugo Basin

Glendale and Crescenta Valley own mutually prescriptive rights to extract 3,856 acre-feet and 3,294 acre-feet per year, respectively.

Eagle Rock Basin

Native Water. The Eagle Rock Basin has no significant native safe yield.

Imported Return Water. Los Angeles has the right to extract or cause to be extracted the recharge to the basin.

Physical Solution Water. Sparkletts and Deep Rock have rights to extract water chargeable to Los Angeles.

Watermaster Service

In preparing the 1981-82 annual report, Watermaster collected and reported all information affecting and relating to the water supply and disposal within ULARA. Such information includes the following items:

1. Water supply

    a. Precipitation and runoff
    b. Imports and exports

2. Water use and disposal

    a. Extractions
        (1) Used in valley fill area
        (2) Exported from each basin

b. Water outflow
   (1) Surface
   (2) Subsurface
   (3) Sewers

3. Water levels

4. Water quality

5. Ownership and location of new wells

Administrative Committee

Section 8, Paragraph 8.3 of the ULARA judgment established an Administrative Committee for the purpose of advising the Watermaster in the administration of his duties. The duly appointed members of the Committee, as of September 30, 1982, are:

City of Burbank

Martindale Kile, Jr.
Ronald O. Snyder (Alternate)

City of Glendale

Steven J. Meyerhofer
Norman C. Koontz (Alternate)

City of Los Angeles

Le Val Lund
Bruce W. Kuebler (Alternate)

City of San Fernando

Neville R. Lewis
Rick Navarro (Alternate)

Crescenta Valley County Water District

Robert K. Argenio
Robert Sloan (Alternate)

Private Parties

Charles Meurer
Roger Meurer
Kisag Moordigian

Martindale (Dale) Kile, Jr., is President of the Committee and Steven Meyerhofer is Vice President.

The Administrative Committee may be convened by the Watermaster at any time in order to seek its advice. In addition, the Committee is responsible for reviewing with the Watermaster the proposed annual report.

During the 1981-82 water year the Administrative Committee met on April 20, 1982. The following items were discussed at this meeting:

1. Status of Watermaster activities within ULARA.
2. Update of ground water quality study for San Fernando Basin.
3. Overdraft in Sylmar Basin.
4. Physical solution pumping by nonparties.
5. Hansen Dam storage problem update.
6. Administrative Committee members update.
7. Discharging TCE-contaminated ground water to waste.
8. Annual report for 1980-81.

Summary of 1981-82 Operating Conditions

Table 1 compares statistics for this period of record and the prior water year.

Rainfall on the valley fill area was 104 percent of normal as compared to 67 percent of normal the year before. Surface runoff leaving the valley at Gage F-57C-R for 1981-82 was 99,460 acre-feet. The amount conserved by the LACFCD in its spreading basins was 20,400 acre-feet, an increase of 12 percent over last year. Total precipitation falling on the San Fernando Valley and its tributary hill and mountain areas was estimated to be 554,000 acre-feet for the water year 1981-82. Of this total, approximately 81,000 acre-feet flowed from the valley as storm runoff and rising water, leaving 473,000 acre-feet which was beneficially used within the area (85 percent of the total).

Ground water extractions decreased in the San Fernando and Sylmar Basins and increased in the Verdugo and Eagle Rock Basins. Total ULARA extractions amounted to 100,237 acre-feet as compared to an allowable pumping of 108,247 acre-feet. Of this total, 105,911 acre-feet represents the 1981-82 extraction rights of parties in the San Fernando Basin (see 1981-82 Table 10) plus the safe yield values of Sylmar and Verdugo Basins. The remaining 2,336 acre-feet is nonconsumptive use pumping (see Table 9A). Extractions used within ULARA decreased by 2 percent (540 acre-feet) from last year.

TABLE 1

UPPER LOS ANGELES RIVER AREA
SUMMARY OF OPERATING CONDITIONS
1980-81 AND 1981-82

Item		Water Year 1980-81	Water Year 1981-82
1. Parties		22	22
2. Active pumpers		19	19
3. Active nonpumpers (within valley fill)		0	0
4. Valley rainfall, in inches		11.04	17.18
5. Spreading operations, in acre-feet[a/]			
a. LACFCD		18,219	20,400
b. Los Angeles, City of		13,672	3,853
6. Extractions, in acre-feet		109,730	100,237
a. Used in ULARA		25,145	24,605
7. Gross imports, in acre-feet			
a. MWD water		70,533	63,516
b. Owens River water[b/]		475,197	469,453
	Total	545,730	532,969
8. Exports in acre-feet			
a. Owens River water		236,544	238,069
b. Groundwater by Los Angeles		84,585	75,454
	Total	321,129	313,523
9. Imports used in ULARA, in acre-feet		309,186	294,900
10. Reclaimed water, in acre-feet		14,377	12,440
a. Used in ULARA		1,664	1,454
11. Total delivered water used in ULARA, in acre-feet		335,995	320,959
12. Sewage export, in acre-feet[c/]		115,479	115,179

a/ Breakdown of spreading operations as to sources of water is shown in Table 5. Values include native and imported water.

b/ This value represents the summation of the gross amount of water delivered to and exported from ULARA. It does not include operational releases, reservoir evaporation, and water spread during the year.

c/ Total of sewage outflow from all four basins, including reclaimed water which is discharged into flood control channel and flows out of basin.

For ULARA, gross imports decreased by 12,761 acre-feet, or 2 percent, while imports used within ULARA decreased by 5 percent (14,286 acre-feet). Exports of Owens River water increased by 1,525 acre-feet, or 1 percent. The total amount delivered to water users within ULARA was 4 percent less (15,036 acre-feet) than last year.

Sewage export was 115,179 acre-feet in 1981-82, a decrease of less than 1 percent. Total reclaimed water used in ULARA (cooling towers, irrigation, etc.) decreased by 13 percent (210 acre-feet), while the total reclaimed water use decreased from 14,377 acre-feet to 12,440 acre-feet, a decrease of 13 percent. Most of the reclaimed water is discharged to the Los Angeles River.

A total of 24,253 acre-feet of water, 24,253 native and 0 Owens River, was spread during the year, which was a 24 percent decrease from last year in spreading of imported and native water.

Ground water levels changed by an average of 5 feet in the central part of the San Fernando Basin (-5 feet in the spreading grounds area and +5 feet in the North Hollywood area), decreased by 5 to 10 feet in the southern portion of the Verdugo Basin, and increased by an average of 5 feet in the southeastern area of the San Fernando Basin.

Ground water storage for the San Fernando, Sylmar, and Verdugo Basins decreased by 530 acre-feet, 2,960 acre-feet, and 2,660 acre-feet, respectively, during 1981-82.

Summary of Allowable Pumping for 1982-83

Table 1A gives a summary of allowable pumping for the Cities of Los Angeles, Burbank, Glendale, and San Fernando and Crescenta Valley County Water District. Stored water is also shown as a credit for these parties as of October 1, 1982.

TABLE 1A

SUMMARY OF ALLOWABLE PUMPING FOR ENSUING YEAR 1982-83
(In Acre-Feet)

	Extractions			Stored Water Credit*
	Native	Import Credit	Total	
San Fernando Basin				
Los Angeles	43,660	40,398	84,058	135,219
Burbank	-	4,424	4,424	16,876
Glendale	-	4,471	4,471	12,900
San Fernando	-	0	0	94
Sylmar Basin				
Los Angeles	1,560	2,380	3,940	-
San Fernando	3,580	-	3,580	-
Verdugo Basin				
Crescenta	-	-	3,294	-
Glendale	-	-	3,856	-

* As of October 1, 1982

Note: Calculation of these values shown in more detail in Tables 10 and 11.

II. WATER SUPPLY CONDITIONS

The present water supply of ULARA consists of ground water recharge from imported water, hill and mountain runoff, and direct precipitation on the valley floor area. This includes runoff from precipitation falling on portions of the San Gabriel, Verdugo, Santa Monica, and Santa Susana Mountains; imports from the Mono Basin-Owens River system; imports from the Colorado River; imports from Northern California made available by the State Water Project; and reclaimed water.

Precipitation

ULARA has the climate of an interior valley and is hotter in the summer and wetter in the winter than the coastal areas.

Precipitation varies considerably throughout ULARA, depending on topography and elevation. Mean seasonal precipitation ranges from about 14 inches at the western end of the San Fernando Valley to 35 inches in the San Gabriel Mountains. Approximately 80 percent of the annual rainfall occurs from December through March.

The 1981-82 water year experienced slightly above average rainfall. The valley floor received 17.18 inches of rain, whereas the mountains received approximately 22.05 inches. The weighted average of both valley and mountain areas was 20.16 inches, an increase of 7.27 inches from last year. The 100-year (1881-1981) average precipitation for the valley and mountains is 16.48 inches and 21.91 inches, respectively. Table 2 presents a record of rainfall at 17 key precipitation stations which were used to develop the 100-year average rainfall and are described in the Report of Referee.

In the safe yield evaluation, precipitation on the valley is determined separately from that on the hills and mountains. The valley is made up of the four ground water basins, whereas the hills and mountains comprise the remaining areas in ULARA. Precipitation in the hills and mountains is evaluated to relate the runoff from the watersheds of Big Tujunga, Pacoima Creek, and Sycamore Canyon to the runoff records which are included in this report and also to calculate the ground water recharge. (See Plate 4 for location of precipitation stations.)

Runoff and Outflow from ULARA

The drainage area of ULARA contains 328,500 acres, of which 205,700 acres are hills and mountains. The drainage system, in turn, is made up of the Los Angeles River and its tributaries. Surface flow originates as storm runoff from the hills and mountains; storm runoff from the impervious areas of the valley;

TABLE 2

PRECIPITATION[a/]
(Inches)

Station		100-Year Mean	1980-81 Precipitation	1981-82	
LACFCD Number	Name			Precipitation	Percent of 100-Year Mean
11D	Upper Franklin Canyon Reservoir	18.50	13.02	18.80	102
13C	Hollywood-Blix[b/]	16.63	12.26	17.66	106
14C	Roscoe-Merrill[b/]	14.98	10.37	17.71	118
15A	Van Nuys[b/]	15.30	10.32	15.45	101
17	Sepulveda Canyon-Mulholland Highway	19.82	12.59	19.10	96
21B	Woodland Hills[b/]	14.60	10.42	16.40	112
23B-E	Chatsworth Reservoir[b/]	15.19	9.44	14.24	94
25C	Northridge-LADWP[b/]	15.16	9.29	14.65	97
33A-E	Pacoima Dam	19.64	11.84	18.21	93
47D	Clear Creek-City School	33.01	17.64	33.87	103
53D	Colby's Ranch	29.04	15.60	29.60	102
54C	Loomis Ranch-Alder Creek	18.62	10.15	18.23	98
210B	Brand Park	18.13	18.20	19.20	106
251C	LaCrescenta[b/]	23.31	14.09	22.79	98
259D	Chatsworth-Twin Lakes	18.70	12.13	17.25	92
293E	Los Angeles Reservoir[b/]	17.32	11.99	18.98	110
1190	Pacoima Canyon-North Park Ranger Station	23.06	15.06	27.16	118

Weighted average for valley stations - 17.18 inches (1981-82)
Weighted average for mountain stations - 22.05 inches (1981-82)

a/ Data furnished by Los Angeles County Flood Control District (LACFCD)
b/ Valley Station

operational spills of imported water; industrial and sanitary waste discharges; and rising water.

A number of stream-gaging stations are maintained throughout ULARA, either by LACFCD or United States Geological Survey (USGS). The Watermaster has selected six key gaging stations which, in effect, record runoff from hydrologic areas in ULARA.

Table 3 summarizes the monthly runoff for these gaging stations and compares the 1980-81 water year with the 1981-82 year. The changes in runoff reflect the increase in rainfall in the valley and in the mountains.

Station F-57C-R registers all surface outflow from ULARA.

Station F-252-R registers flow from Verdugo Canyon plus flows from Dunsmore and Pickens Canyons.

Station E-285-R registers flow from the westerly slopes of the Verdugo Mountains and some flow east of Lankershim Boulevard. It also records any releases of reclaimed wastewater discharged by the City of Burbank.

Station F-300-R registers all flow west of Lankershim Boulevard plus outflow from Hansen Dam that is not spread. These records also include releases from Sepulveda Dam, which may include extractions from Reseda wells.

Station F-168-R registers all releases from Big Tujunga Dam, which collects runoff from Tujunga Canyon northeast of the dam. Runoff below this point flows to Hansen Dam.

Station 118B-R registers all releases from Pacoima Dam that originate in Pacoima Canyon. Runoff below this point flows to the Lopez and Pacoima spreading grounds and on down to the Los Angeles River through lined channels.

The locations of these key gaging stations are shown on Plate 4. The mean daily discharge rates for these six gaging stations during 1980-81 are summarized in Appendix B.

The Watermaster has computed the surface flow of the Los Angeles River at Gaging Station F-57C-R as to the sources, i.e., storm runoff from precipitation, Owens River water, rising water, and industrial and reclaimed wastewater discharges. The Watermaster utilized the procedures outlined in the Report of Referee for estimating the approximate flow rates and sources of water passing Gaging Station F-57C-R. A similar calculation was made for Station F-252-R. A summary of the procedures used follows, and a tabulation of the computed flows is shown in Table 4.

TABLE 3

MONTHLY RUNOFF AT SELECTED GAGING STATIONS*
(In Acre-Feet)

Station	Water Year	Month												Total
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	
F-57C-R	1980-81	2720	1580	5740	16580	7430	24490	3780	4400	2810	2260	2480	1960	76,230
Los Angeles River	1981-82	2660	12550	3620	13460	4090	32310	16830	3450	2210	1980	1990	4310	99,460
F-252-R	1980-81	652	577	518	2020	606	1800	651	612	497	186	363	215	8,697
Verdugo Channel	1981-82	267	1130	793	1340	394	2180	1400	262	364	255	121	571	9,077
E285-R	1980-81	806	1060	1050	1720	949	2380	896	602	484	566	635	819	11,967
Burbank Storm Drain	1981-82	631	1450	320	1510	588	3430	1700	528	371	637	534	816	12,515
F-300-R	1980-81					- Data Not Available -								
L.A. River Tujunga Ave.	1981-82	1160	7000	1810	10180	1880	15070	10020	2190	956	728	708	747	52,449
F-168-R	1980-81	688	759	806	1780	918	2780	1370	1682	421	325	256	298	12,083
Big Tujunga Dam	1981-82	367	481	524	693	800	3910	6368	1611	856	368	314	265	16,557
118B-R	1980-81	209	64	+	188	708	641	1250	204	20	12	132	12	3,440
Pacoima Dam	1981-82	12	15	74	12	12	866	2438	12	1391	12	12	12	4,868

* See Plate 4 for gaging station location.

TABLE 4

SEPARATION OF SURFACE FLOW AT STATIONS F-57C-R AND F-252-R
(In Acre-Feet)

Period	Base Low Flow		Storm Runoff	Total Measured Outflow
	Rising Water[a/]	Waste Discharge		
Station F57C-R				
1971-72	3,602	8,219	35,049	46,870
1972-73	4,596	8,776	100,587	113,959
1973-74	2,694	6,366	79,818	88,878
1974-75	427	7,318	56,396	64,141
1975-76	261	6,741	32,723	39,725
1976-77	839	7,128	58,046	66,013
1977-78	1,331	7,449	357,883	366,663
1978-79	2,840	16,450	119,810	139,100
1979-80	5,500[d/]	16,500[d/]	[b/]	[b/]
1980-81	4,710	19,580	51,940	76,230
1981-82	1,280	18,180	80,000	99,460
29-year average 1929-57	6,810	770	30,790	39,950
Station F252-R				
1971-72	2,050	0	2,513	4,563
1972-73	1,706	0	7,702	9,408
1973-74	1,772	0	5,613	7,385
1974-75	1,333	0	4,255	5,588
1975-76	2,170	0	2,380	4,550
1976-77	1,683	0	2,635	4,318
1977-78	1,168	0	23,571	24,739
1978-79	2,470	0	[b/]	[b/]
1979-80	5,150[c/]	0	7,752	12,902
1980-81	5,780	0	2,917	8,697
1981-82	3,710	0	5,367	9,077

a/ Includes rising water past rubber dam at Headworks Spreading Grounds, Verdugo Channel, and Los Angeles River Narrows.

b/ Data not available.

c/ Verdugo Basin. Large increase in 1979-80 due to more accurate measurements.

d/ Estimated.

The base low flows were separated from the surface runoff by the use of the hydrographs of Station F-57C-R. Base flows consist of rising water and industrial waste plus reclaimed water. Separation of base flow from surface runoff is based on the following assumptions:

> Rising water equals base low flow minus the sum of industrial waste and reclaimed water. Industrial wastes are estimated from City of Los Angeles waste permits, Los Angeles-Glendale reclamation plant discharges, and low flows in the Burbank-Western storm drain which include wastewater from the Burbank reclamation plant.
>
> When the City of Los Angeles diverts water at the Headworks spreading grounds, most of the rising water is diverted.
>
> When there is no diversion, a portion of the rising water may percolate upstream from Station F-57C-R.

Historically, the surface runoff obtained from the hydrographs of Station F-57C-R consisted primarily of storm runoff and Owens River water. The last releases of Owens River water into the Los Angeles River occurred in February 1971 due to the San Fernando earthquake. Releases in the future are expected to be minimal, but if they do occur, separation of surface runoff will be based on the following assumptions:

> Net storm runoff equals surface runoff minus Owens River water.
>
> If the Headworks diversion structure is used, all releases of Owens River waters are diverted to the Headworks spreading grounds. If the Headworks diversion structure does not divert water, all releases of Owens River waters are considered as passing Station F-57C-R.

Ground Water Recharge

Local precipitation can have a marked influence on the ground water supply and water in storage. However, there is a wide variation in the annual amount of runoff as a result of changes in both precipitation and retentive characteristics of the watershed.

Continued urban development in ULARA has resulted in much of the rainfall being collected and routed into paved channels, which discharge into the Los Angeles River, and subsequently being carried out of the basin.

To somewhat overcome the increased runoff due to urbanization, Pacoima and Hansen Dams, originally built for flood protection,

were utilized to regulate storm flows to recapture the flow in downstream spreading basins operated by LACFCD, as well as the City of Los Angeles. Operation of Hansen Dam for the purpose of spreading water for recharge has become increasingly more difficult due to the sand and gravel that has accumulated within the forebay of the dam.

LACFCD operates the Branford, Hansen, Lopez, and Pacoima spreading grounds. The City of Los Angeles, in turn, operates the Tujunga and Headworks spreading grounds. Plate 1 shows the locations of these spreading basins. The spreading grounds operated by LACFCD are utilized for spreading native water and imported water under contract. The spreading grounds operated by the City of Los Angeles are utilized to spread Owens River and native waters, ground water, and the discharge from the Reseda wells. Table 5 summarizes the spreading operations for the 1981-82 water year.

Ground Water Table Elevations

During the 1981-82 water year, the Watermaster collected and processed data to determine prevailing ground water conditions in ULARA during the spring and fall of 1982. Plates 5 and 6 show these conditions. Change in ground water surface elevation from fall of 1981 to fall of 1982 as presented in Plate 7 reflects the effects of variations in spreading, ground water extractions, and replenishment from rainfall. Plate 8 provides a diagrammatic sketch of the direction and travel time for ground water flow in the San Fernando and Verdugo Basins in 1980.

TABLE 5

SPREADING OPERATIONS
(In Acre-Feet)

Month	Native Water Spread by Los Angeles County Flood Control District				Water Spread by City of Los Angeles				
	Spreading Basins				Tujunga Spreading Grounds		Headworks Spreading Grounds		
	Branford	Hansen	Lopez	Pacoima	Native Water	Owens River Water	Owens River Water	Reseda Wells	Surface Runoff[a]
1981									
Oct.	11	757	0	0	0	0	0	0	397
Nov.	19	480	0	885	0	0	0	0	222
Dec.	16	1,118	26	13	0	0	0	0	524
1982									
Jan.	38	574	0	325	0	0	0	0	93
Feb.	21	789	0	73	0	0	0	0	250
Mar.	139	3,028	2	1,354	0	0	0	0	188
Apr.	74	4,282	215	1,694	0	0	0	0	198
May	0	720	0	0	0	0	0	0	276
June	0	1,049	0	1,076	0	0	0	0	162
July	0	625	0	0	0	0	0	0	641
Aug.	0	432	0	0	0	0	0	0	597
Sept.	27	463	0	75	0	0	0	0	305
Totals	345	14,317	243	5,495	0	0	0	0	3,853

a/ Includes industrial discharge, ground water effluent, and surface runoff diverted from Los Angeles River

Due to decreased spreading at Hansen and Tujunga spreading grounds during 1981-82, water levels declined from 5 to 10 feet in the vicinity of these spreading grounds. Water levels increased by approximately 5 feet in the North Hollywood area due to decreased pumping and declined by approximately 5 feet in the Headworks spreading grounds area due to a decrease in spreading. An increase of 5 feet in the southeastern portion of the valley was caused by a decrease in pumping, and an average decline of 5 to 10 feet occurred in the southern portion of the Verdugo Basin due to increased pumping by Glendale and Crescenta Valley County Water District.

Figures 1 and 2 depict the water levels at key wells; their approximate locations are indicated by numbers shown on map on Figure 2.

Water Reclamation

Water reclamation presently provides a source of water for irrigation, industrial and recreational uses, and ground water recharge. Six wastewater reclamation plants are in operation in ULARA. A tabulation of operating water reclamation plants is shown on Table 6.

Construction of the Sepulveda Basin Water Reclamation Plant began in November 1980, with completion expected in July 1983. A portion of the effluent from the 40 million gallons per day (mgd) plant will be used to irrigate the Sepulveda Basin recreation area and the residual will be discharged to the Los Angeles River. In the future this residual discharge may be used for industrial cooling, freeway landscape irrigation, and ground water recharge.

The City of Los Angeles, along with other local agencies, participated in the development of a regional water reclamation "Orange and Los Angeles Counties Water Reuse Study Facilities Plan." This facilities plan was completed in April 1982 and describes how to incorporate water reuse into the water supply program of Southern California. As a result, the Metropolitan Water District of Southern California has established a local projects program to pursue the development of additional local supplies, including water reclamation projects.

Water Quality

Water resources management must take into account water quality as well as water supply. The total dissolved solids (TDS) concentration in water is the quality indicator that is generally used. A comparison of the TDS content in the various water sources is shown in Figure 3. Representative mineral analyses of imported, surface, and ground waters for 1981-82 are contained in Table 7.

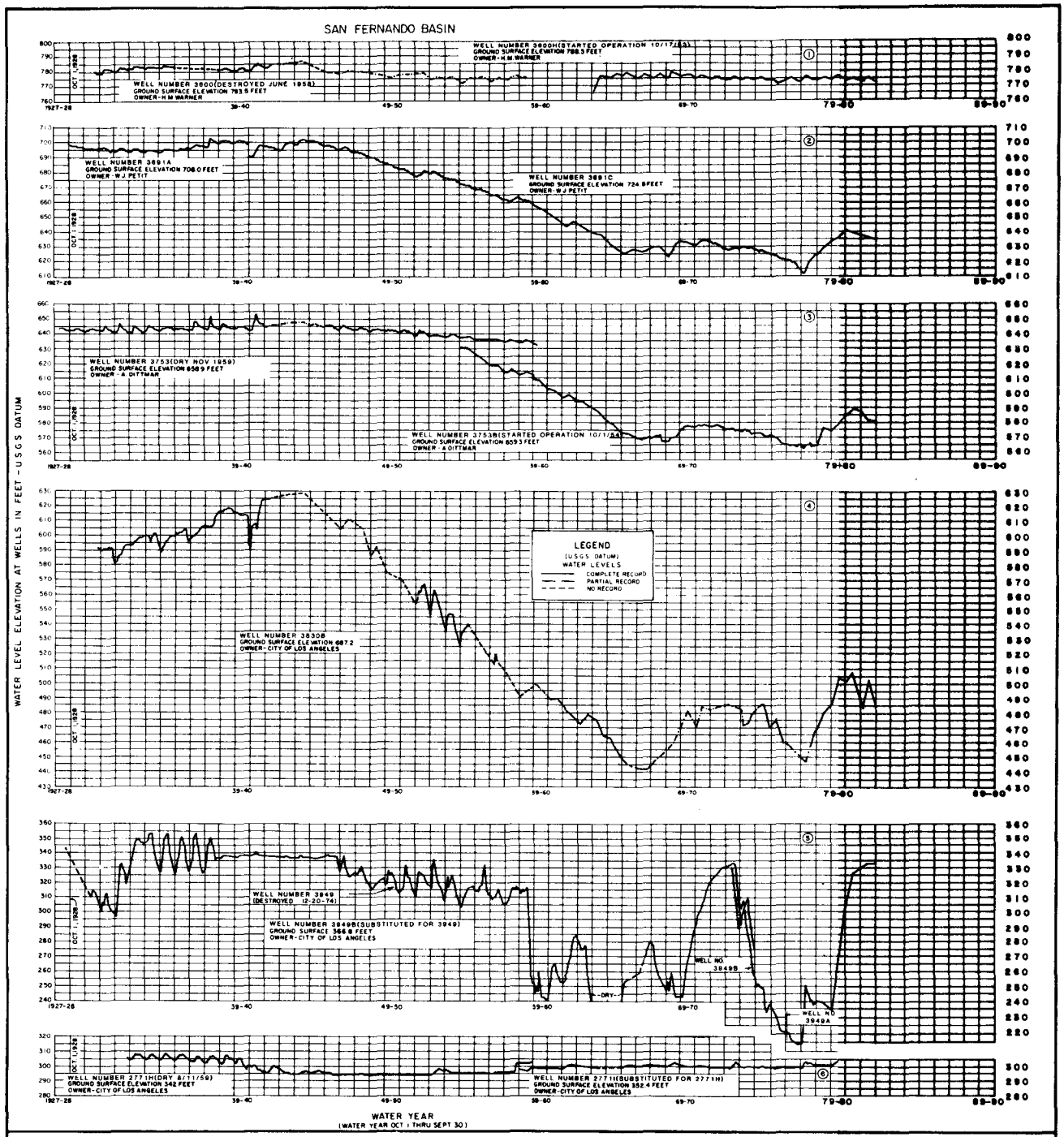

Figure 1—FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO BASIN

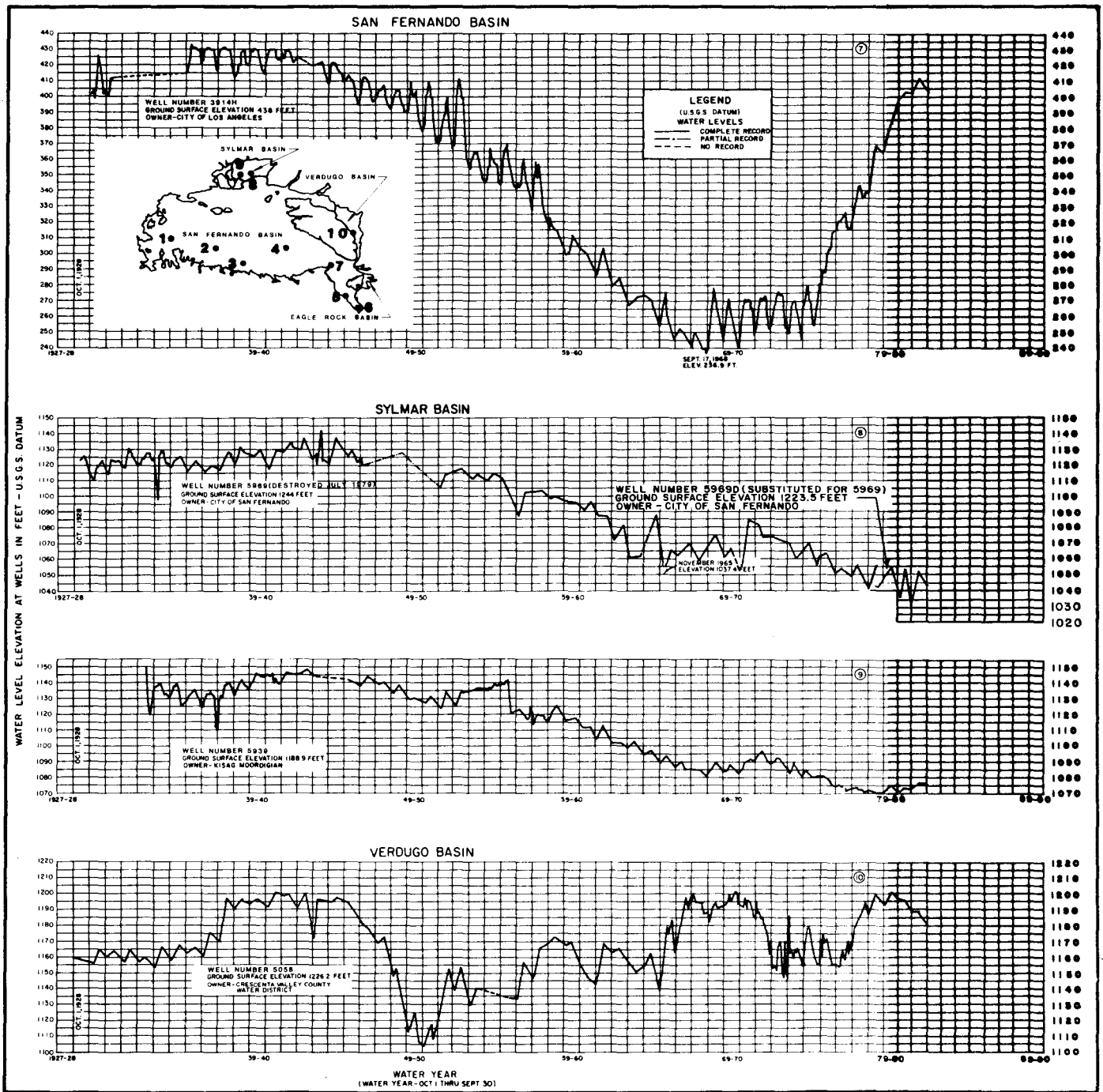

Figure 2 – FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO, SYLMAR AND VERDUGO BASINS

TABLE 6

WATER RECLAMATION PLANTS, 1981-82
(In Acre-Feet)

Plant	Treated	Delivered	Discharged to Los Angeles River
San Fernando Basin			
City of Burbank	5,787	639[a]	5,467
Los Angeles-Glendale	6,530	692[b]	5,960
Indian Hills Mobile Homes[d]	21	21[c]	0
Rocketdyne (Santa Susana Field Laboratory)	60	60[c]	0
The Independent Order of Foresters[e]	12	12[c]	0
Total	12,410	1,424	11,427
Verdugo Basin			
Crescenta Valley County Water District[f]	30	30[c]	0
ULARA Total	12,440	1,454	11,427

a/ Total water delivered to Burbank cooling towers includes 50 percent evaporation and the rest to Los Angeles River.

b/ Total water delivered (251 AF) to phosphate plant in Glendale includes 50 percent evaporation and the rest to Los Angeles River; 441 AF delivered to Griffith Park by City of Los Angeles for irrigation and to Los Angeles-Glendale plant for wash down, cooling, and irrigation.

c/ Land irrigation.

d/ Water supply from nearby well.

e/ Water supply from pipeline from LADWP.

f/ Plant closed as of January 1, 1982. All sewage now flowing to Los Angeles-Glendale plant through new sewage export facilities constructed for CVCWD and the City of Glendale.

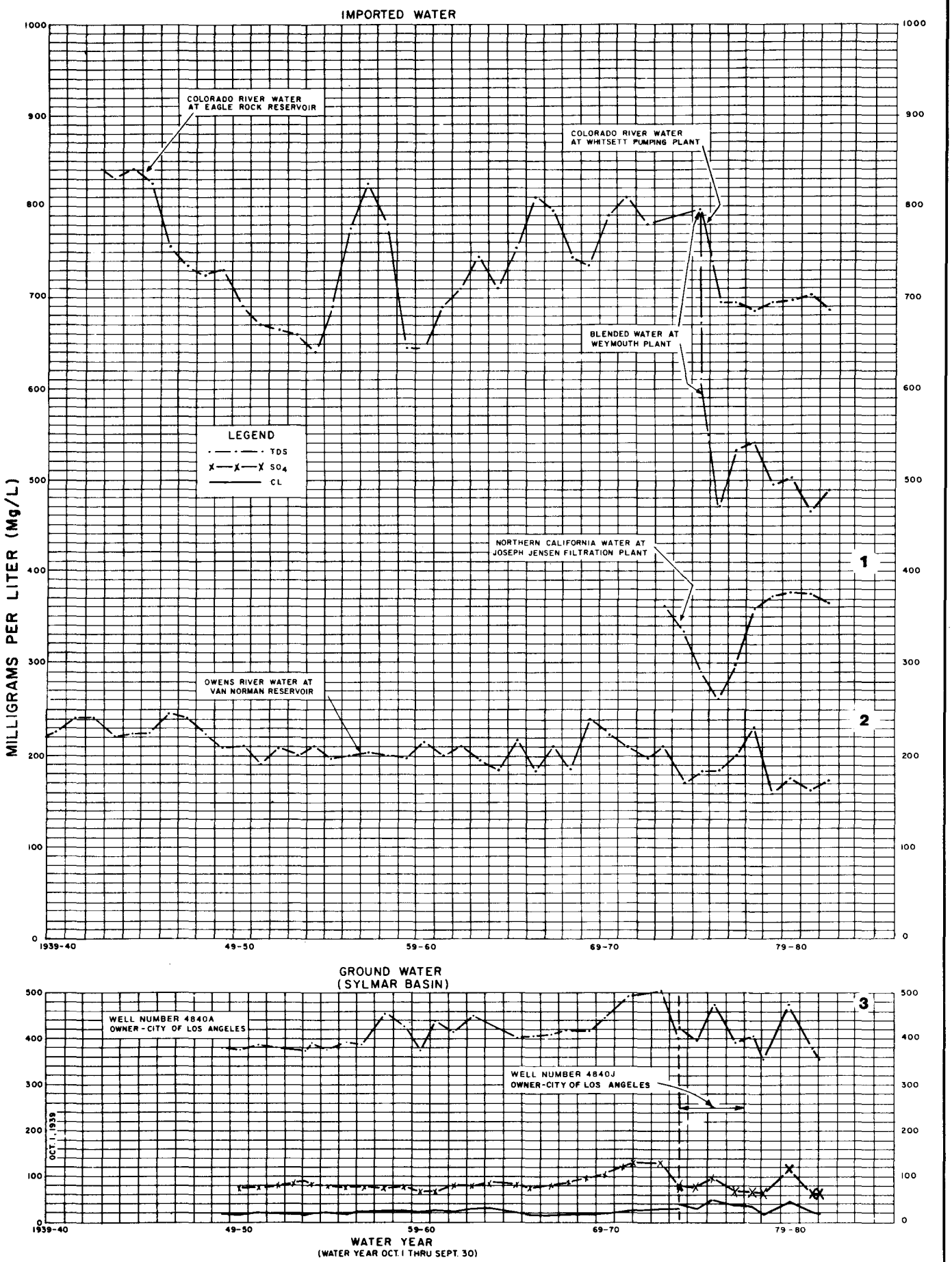

Figure 3— MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

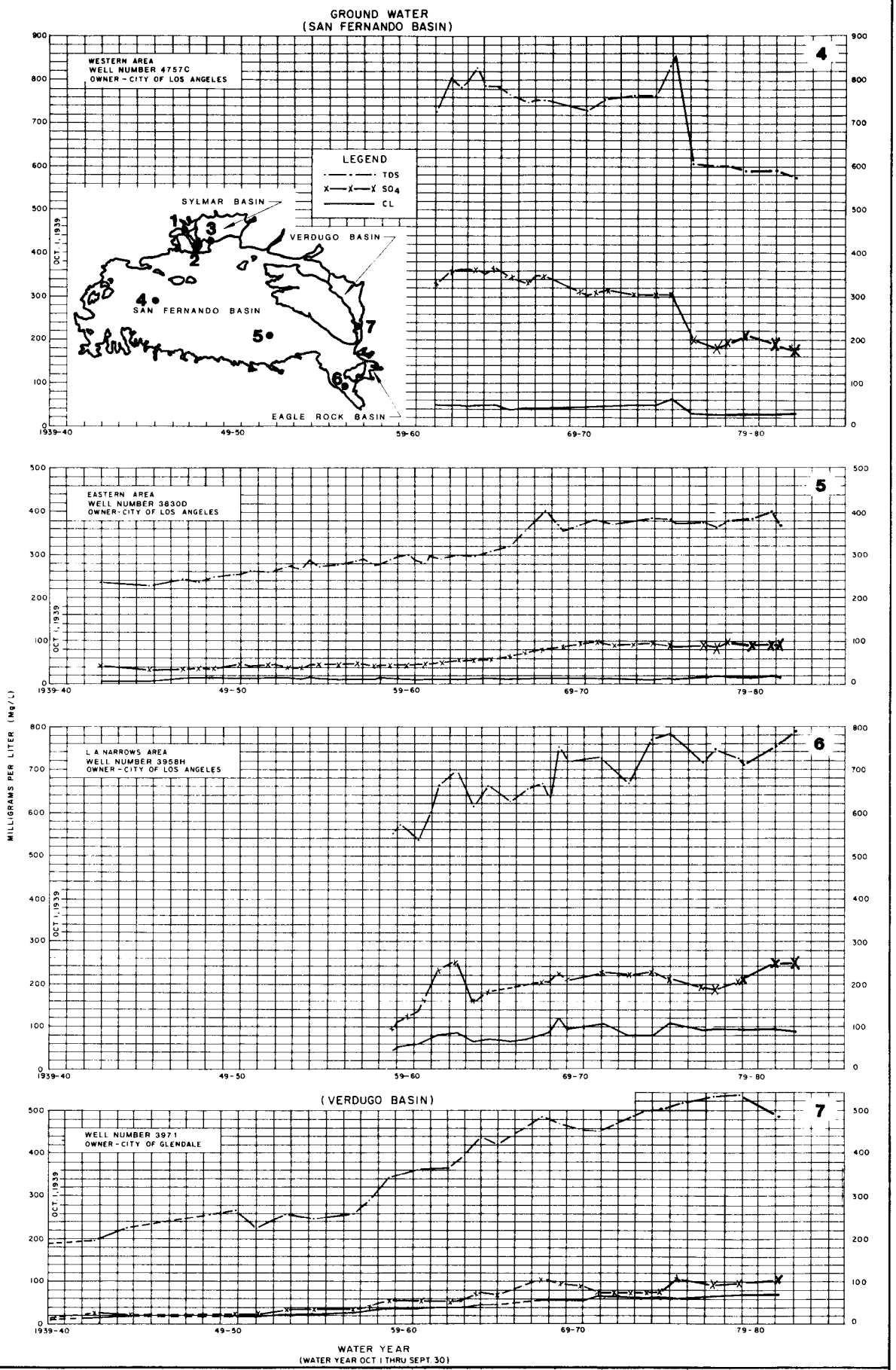

Figure 3(Cont.) — MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

TABLE 7

REPRESENTATIVE MINERAL ANALYSIS OF WATER

Well Number or Source	Date Sampled	EC x 10^6 at 25°C	PH	Mineral Constituents in Millegrams per liter (mg/l) / Milliequivalents per liter (me/l)											TDS Total Dissolved Solids mg/l	Total Hardness as $CaCO_3$ mg/l
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B		
Imported Waters																
Blended State Project and Colorado River Water at Eagle Rock Reservoir	81-82	900	7.8	59 2.95	25 2.08	87 3.78	4.6 0.12	0 0	105 1.72	206 4.29	84 2.37	0.53 0.01	0.26 0.01	0.21 0.06	540	250
Owens River water at Upper Van Norman Reservoir Inlet	81-82	288	7.7	21 1.05	4.9 0.40	31 1.35	3.6 0.09	0 0	97 1.59	20 0.42	16 0.45	0.17 0.00	0.57 0.03	0.40 0.11	173	72
State Project Water at Joseph Jensen Filtration Plant (Influent)	81-82	628	8.12	44 2.20	18.5 1.54	53 2.30	2.8 0.07	0 0	130 2.13	109 2.27	58 1.63	1.6 0.03	0.35 0.02	0.30 0.08	366	185
Surface Water																
Los Angeles River at Sepulveda Blvd.	11/4/81	1522	8.45	114 5.70	40 3.33	106 4.61	-- --	-- --	200 3.28	288 6.00	97 2.73	2.4 0.04	-- --	-- --	913	200
	6/2/82	1655	8.60	111 5.50	46 3.83	119 5.17	-- --	20 0.67	140 2.30	370 7.71	126 3.55	2.5 0.04	-- --	-- --	993	160
Burbank Western Wash at Los Angeles River	11/4/81	1127	7.78	53 2.65	17 1.42	116 5.04	-- --	-- --	150 2.46	171 3.56	106 2.99	3.7 0.06	-- --	-- --	676	150
	6/2/82	1135	7.89	42 2.10	20 1.67	144 6.26	-- --	5 0.17	170 2.79	132 2.75	155 4.37	3.1 0.05	-- --	-- --	681	175
Los Angeles River at Colorado Blvd.	11/4/81	1260	8.20	84 4.20	26 2.17	82 3.56	-- --	-- --	205 3.36	160 3.33	71 2.00	3.7 0.06	-- --	-- --	756	205
	6/2/82	1113	8.45	64 3.20	27 2.25	100 4.35	-- --	5 0.17	170 2.79	150 3.12	105 2.96	3.5 0.06	-- --	-- --	668	175
Burbank Reclamation Plant Discharge to Burbank-Western Wash	11/11/82	--	6.59	-- --	-- --	106 4.61	-- --	-- --	-- --	50 1.04	110 3.10	-- --	0.25 0.01	0.48 0.13	475	--
L. A.-Glendale Reclamation Plant Discharge to L. A. River	7/82	--	--	34 1.70	13 1.08	104 4.52	11.1 0.28	-- --	-- --	-- --	-- --	0.5 0.01	1.0 0.05	0.74 0.21	560	--
Groundwater																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	10/27/82	956	7.38	115 5.75	34 2.83	40 1.74	1.9 0.05	0 0	-- --	176 3.67	31 0.87	8.1 0.13	0.30 0.02	0.28 0.08	574	428
(San Fernando Basin - Eastern Portion)																
3820B (No. Hollywood No. 18)*	11/30/81	616	7.45	62 3.10	20 1.67	31 1.35	3.3 0.08	0 0	176 2.89	92 1.92	17 0.48	18 0.29	0.52 0.03	0.17 0.05	370	236
3841C (Burbank No. 6A)	2/18/82	435	7.80	53 2.63	9.2 0.76	30 1.31	3.3 0.08	0 0	207 3.40	41 0.85	15 0.43	-- --	0.57 0.03	0.20 0.06	224	173
3913H Grandview No. 16	1/19/82	519	7.60	57 2.83	10 0.82	38 1.65	3.5 0.09	0 0	211 3.47	46 0.96	33 0.93	-- --	0.45 0.02	-- --	321	185
(San Fernando Basin - L. A. Narrows)																
3958H (Pollock No. 6)	10/27/82	1320	7.40	130 6.50	46 3.83	69 3.00	3.1 0.08	0 0	-- --	248 5.17	87 2.45	5.1 0.08	0.29 0.02	0.47 0.13	792	505
(Sylmar Basin)																
4840J (Mission No. 5)	10/6/81	594	7.55	68 3.40	16 1.33	28 1.22	3.4 0.09	0 0	195 3.20	62 1.29	18 0.51	18 0.29	0.34 0.02	0.27 0.08	356	236
5959 (San Fernando No. 3)	1/14/82	599	7.50	71 3.56	19 1.59	31 1.35	2.8 0.07	0 0	232 3.81	82 1.71	32 0.89	-- --	0.37 0.02	-- --	392	267
(Verdugo Basin)																
3971 (Glorietta No. 3)	1/19/82	790	6.70	91 4.57	28 2.30	33 1.44	3.0 0.08	0 0	191 3.13	104 2.17	69 1.95	-- --	0.22 0.01	-- --	486	351
5069F (CVCWD No. 14)	11/24/82	640	7.26	76 3.80	23 1.9	29 1.26	2.9 0.07	0 0	189 3.1	55 1.1	48 1.35	-- --	0.3 0.02	-- --	393	285

(*) - Replaces NH-19 for this year only.

Imported Water

A. Owens River-Mono Basin water is sodium bicarbonate in character and is the highest quality water available to ULARA. Its TDS concentration averaged about 210 milligrams per liter (mg/l) for 30 years before 1969, the highest record being 320 mg/l on April 1, 1946, and the lowest, 150 mg/l on September 17, 1941. Average TDS concentration for 1981-82 was 173 mg/l, which was higher than the 164 mg/l for 1980-81. This increase in TDS was caused by a small decrease in export of stream flows (90 TDS average) and a slight increase in export of pumped ground waters (195 TDS average) from the Owens Valley.

B. Colorado River water is predominantly sodium-calcium sulfate in character, changing to sodium sulfate after treatment to reduce total hardness. Samples taken at the Burbank turnout between 1941 and 1975 indicated a TDS concentration high of 875 mg/l in August 1955 and a low of 625 mg/l in April 1959. The average TDS over the 34-year period was approximately 740 mg/l. Tests conducted at the Whitsett Intake Pumping Plant showed an average TDS of 687 mg/l for 1981-82, a decrease of 2 percent from last year.

C. Northern California water (State Water Project water) is sodium bicarbonate-sulfate in character. It generally contains less TDS and is softer than local and Colorado River water. Since its arrival in Southern California in April 1972, the water had a high TDS concentration of 390 mg/l and a low of 247 mg/l. Tests of Northern California water are taken at the Joseph Jensen Filtration Plant. Average TDS concentration during 1981-82 was 366 mg/l, a 3 percent decrease from last year.

D. Colorado River and Northern California water were first blended at the Weymouth Plant in May 1975. In the 1981-82 period, TDS had an average value of 490 mg/l which was a 5 percent increase from 1980-81. Blending ratios vary at the Weymouth Plant and tests are taken from the effluent.

Surface Water

Surface runoff contains salts dissolved from rocks in the tributary areas. Surface water is sodium-calcium, sulfate-bicarbonate in character. In 1981-82, low flows in the Los Angeles River at Colorado Boulevard had an average TDS content of 710 mg/l and a total hardness of 190 mg/l, a decrease over last year of 7 and 47 percent, respectively.

Ground Water

Ground water in ULARA is moderately hard to very hard. The character of ground water from the major water-bearing formations is of two general types, each reflecting the composition of the surface runoff in the area. In the western part of ULARA, it is calcium sulfate-bicarbonate in character, while in the eastern part, including Sylmar and Verdugo Basins, it is calcium bicarbonate. TDS decreased in the western part of the San Fernando Basin by 3 percent over 1980-81; decreased by 8 percent in the eastern part; decreased by 6 percent in the Sylmar Basin; and decreased by 9 percent from 1977-78 in the Verdugo Basin.

Ground water is generally within the recommended limits of the United States Public Health Service Drinking Water Standards, except perhaps for wells in the western end of the San Fernando Basin having excess concentrations of sulfate and those in the lower part of the Verdugo Basin having abnormally high concentrations of nitrate.

Ground Water Quality Management Plan

The Ground Water Quality Management Plan - San Fernando Valley Basin (GWQMP-SFVB) study was commenced in July 1981 to investigate the contamination of wells within the San Fernando Basin by priority pollutants. This two-year study will develop a recommended plan for long-term corrective action to eliminate and prevent ground water contamination. A continuing investigation of the above ground water quality problem in the basin has been carried on since early 1980 by the Los Angeles Department of Water and Power in cooperation with the California State Department of Health Services (DOHS). A summary of the number of wells with TCE and PCE above the California DOHS action levels is presented in Table 7A for the water year 1981-82, with the well field locations shown on Plate 4A. At the present time the DOHS allowable limits are 5 ppb for TCE and 4 ppb for PCE. The water utilities providing ground water to public water supplies are required to maintain the level of TCE and PCE in that water to below the allowable DOHS action levels. Blending or other means are employed to maintain DOHS water quality requirements in delivered supplies.

In conjunction with the study, Advisory Committees were formed to assure that the concerns of all interested parties will be incorporated into the final plan. The Citizens' Advisory Committee (CAC) is composed of representatives from local governments, public interest groups, economic interest groups, and private citizens. A major function of the CAC is to obtain input from all segments of the general public. The Technical Advisory Committee (TAC) is composed of representatives from local and regional agencies that play key roles in the water

TABLE 7A

1981-82
ULARA WELL FIELDS* -
WELLS EXCEEDING CALIFORNIA DOHS ACTION LEVELS
FOR TCE AND PCE

	Number of Wells									
	City of Los Angeles							Others		
	NH	CS	P	HW	E	W	V	B	G	CVCWD
TCE Levels (ppb)										
5-20	5	3	0	3	1	2	1	2	3	0
20-100	9	0	0	0	0	1	0	2	1	0
100	2	0	0	0	0	0	0	1	0	0
PCE Levels (ppb)										
4-20	1	0	1	0	0	2	0	1	1	3
20-100	0	0	0	0	0	0	0	2	0	1
100	0	0	0	0	0	0	0	0	0	0

Well Fields: NH - North Hollywood
CS - Crystal Springs
P - Pollock
HW - Headworks
E - Erwin
W - Whitnall
V - Verdugo
B - City of Burbank
G - City of Glendale
CVCWD - Crescenta Valley County Water District

* Values in table represent an average for year.

industry. Representatives from the DWP, SCAG, County Flood Control District, Regional Water Quality Control Board, State and County Departments of Health Services, Upper Los Angeles River Area Watermaster's office, as well as from various other City Departments, meet bimonthly to discuss and guide the technical and institutional developments in the study.

Nearly three-fourths of the study is complete and development of the proposed final plan is now in progress. The study, which began in July 1981, will be completed in July 1983.

At this time there are several important conclusions that can be made from the study. The major contaminant present today is TCE. It was heavily used until 1966 when the Air Pollution Control District put restrictions on its use. A survey made during this study showed that very little TCE is in use today in the San Fernando Valley. The survey also revealed that there are many small but potentially significant sources of contamination existing today throughout the critical eastern portion of the San Fernando Valley Basin. However, it has not been possible to quantify the amount of contamination that is occurring today or that has accumulated over the last 10 to 30 years. Because there may be a lag time of between 5 and 30 years between a spill incident and detection of contamination in a well, it is not possible to determine how much of a problem current disposal practices will create in the future. The best way to protect ground water is to take all reasonable steps to prevent contaminants from entering the ground.

Some of the potential sources of ground water contamination by industrial chemicals are listed below:

- Accidental spills and illicit dumping
- Improper industrial disposal practices
- Inadequately designed landfills
- Urban runoff
- Disposal to septic tank and leach lines
- Leaking storage tanks and pipelines

Preliminary recommendations are proposed to prevent further contamination of the basin and to ensure that safe water is available to the consumer at all times:

- Increase the public's awareness of the problem through educational programs;
- Expand ground water monitoring capabilities to increase the technical understanding of the problem;

- Eliminate private disposal systems (e.g., septic tanks, leach fields, etc.) in commercial/ industrial zones in the east San Fernando Valley;

- Focus industrial inspection efforts in areas critical to ground water recharge.

- Require inspection and testing of all storage tanks, waste sumps, and piping holding hazardous materials to detect leaks;

- Initiate a program for the collection of industrial wastes for small quantity generators;

- Place restrictions on landfill siting and develop design criteria to protect ground water; and

- Reduce or remove contaminants from delivered water through blending or treatment.

III. WATER USE AND DISPOSAL

Water delivered for use in ULARA is either imported water, local ground water, local surface diversions, reclaimed, or a mixture of local and imported water, depending on the area and water system operation. During the 1981-82 water year, the total amount delivered to water users in ULARA was 320,959 acre-feet. Of this total, 24,605 acre-feet was ground water, 294,900 acre-feet was imported, and 1,454 acre-feet was reclaimed water. Refer to Figure 5 for a monthly breakdown. The basin contains 521 wells, of which 128 are active and 393 are inactive, observation, test, capped, etc.

The original trial court adjudication of ground water rights in ULARA (no longer in effect) restricted all ground water extractions, effective October 1, 1968. On that date, extractions were restricted to approximately 104,000 acre-feet per water year. This amounted to a reduction of approximately 50,000 acre-feet below the previous six-year average. The State Supreme Court's opinion, as implemented on remand in the Final Judgment entered on January 26, 1979, provides a similar restriction in ground water pumping. Refer to the previous section entitled "History of Adjudication" for details of allowed pumping.

Sparkletts Drinking Water Corporation and Deep Rock Water Company are the only parties that extract water from the Eagle Rock Basin.

Figure 4 illustrates the annual ground water extractions and total water imported in ULARA, beginning with the 1944-45 water year. Note the change from 1968-69 through the present.

It can also be noted that for 10 years before pumping was restricted, imports exceeded extractions from 50,000 to 90,000 acre-feet per year and that, for the water years 1968-69 to 1981-82, the difference increased to between 110,000 and 210,000 acre-feet.

Figure 5 provides an analysis of the monthly relationship between rainfall, ground water extractions, and imported supply. Data relates to all ULARA and not to any one specified ground water basin. The precipitation values were obtained from stations on the valley floor (Table 2).

Ground Water Extractions

Appendix A is the record of ground water extractions for the 1981-82 water year, and Plate 4A shows the approximate location of the well fields which pumped this water. A total of 87,674 acre-feet was pumped from the San Fernando Basin compared to an

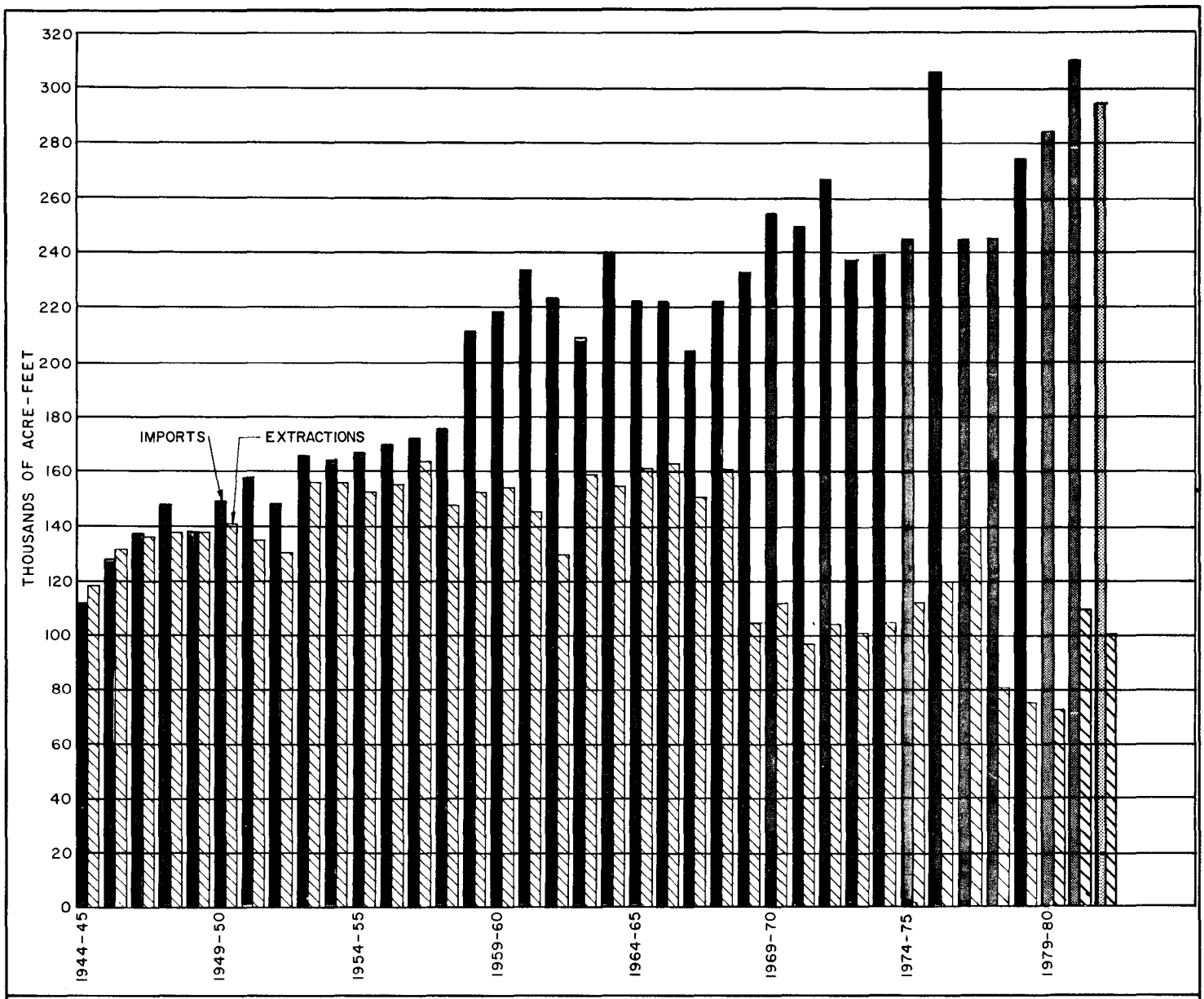

Figure 4- GROUND WATER EXTRACTIONS AND USE OF IMPORTED WATER IN UPPER LOS ANGELES RIVER AREA

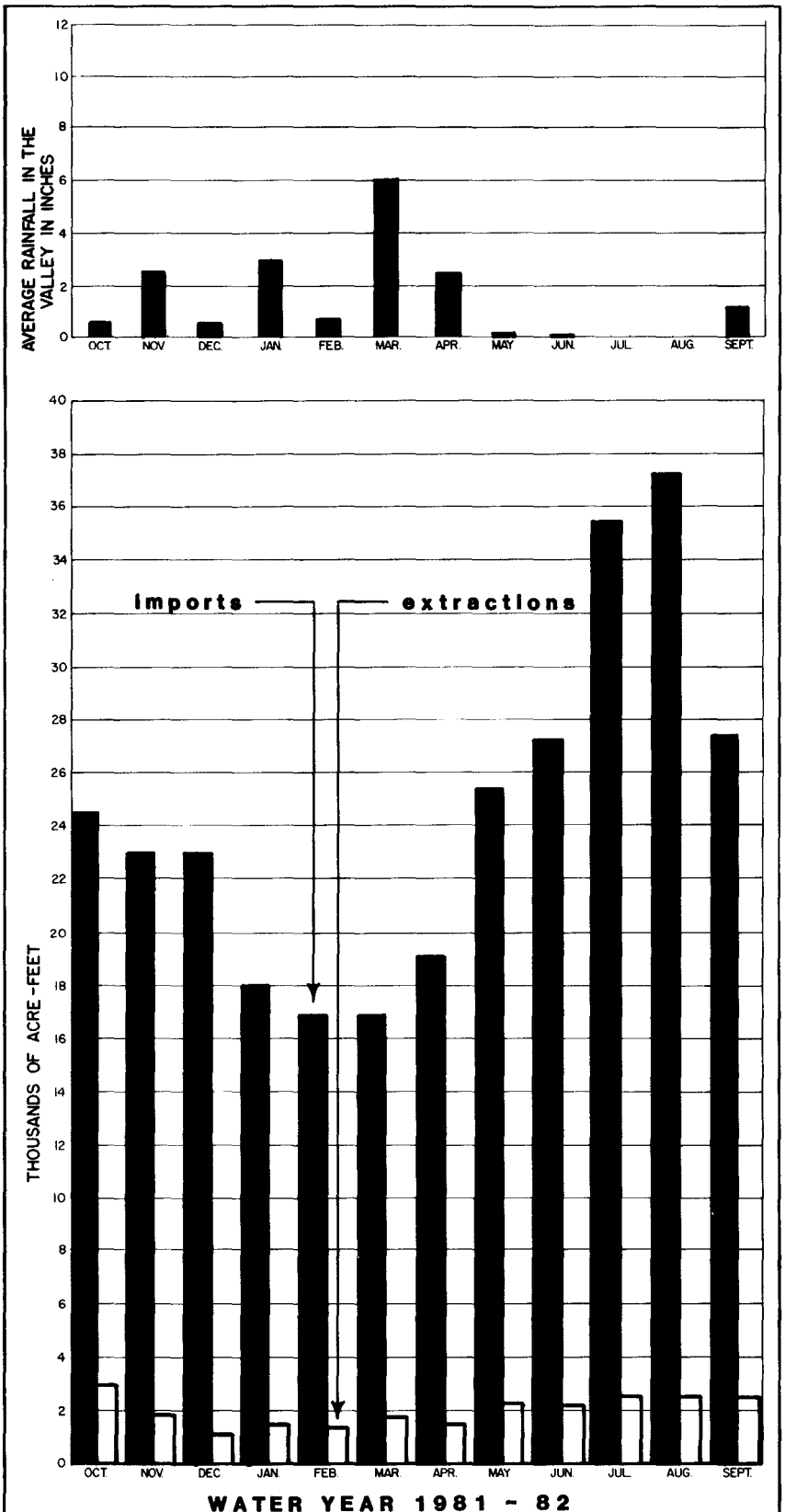

Figure 5 – MONTHLY WATER DEMAND AND AVERAGE RAINFALL IN UPPER LOS ANGELES RIVER AREA

(Used within ULARA)

allowable pumping of 97,223 acre-feet. Of this total, 94,887 acre-feet is extraction rights by parties in the San Fernando Basin (see 1981-82 Table 10), with its remaining 2,336 acre-feet being nonconsumptive use pumping (see Table 9A). A total of 6,776 acre-feet was pumped from the Sylmar Basin and 5,607 acre-feet from the Verdugo Basin. The respective safe yield values for these three basins are 90,680, 6,210, and 7,150 acre-feet. Pumping in the Verdugo Basin is less than safe yield due to water quality problems. Construction of water blending facilities in the Verdugo Basin by the City of Glendale was completed in September 1981. This allows poorer quality Verdugo Basin ground water to be blended with MWD water and now enables Glendale to pump its prescriptive right in the Verdugo Basin.

Imports and Exports of Water

Residential, commercial, and industrial expansions in ULARA require the importation of additional water supplies to supplement that provided by the ground water basins.

The imported supplies to ULARA are from the City of Los Angeles' Owens-Mono Basin aqueduct and through the MWD distribution system, which consists of California and Colorado River Aqueduct waters.

Exports from ULARA, exclusive of sewage, are limited to the City of Los Angeles, which exports imported and ground water. Table 8 summarizes the nontributary imports and exports from ULARA. Ground water imports and exports in and out of ULARA are listed in Table 9.

Physical Data by Basins

The Watermaster has collected and summarized data in Table 9 which show the water supply and disposal in each of the basins.

The information for Table 9 was submitted by the parties. In instances where estimates were made by the parties, such as water delivered to hill and mountain areas, sewage exported, etc., these were based upon methods consistent with previous estimates computed by SWRCB for the San Fernando Valley reference. The Watermaster also made computations of subsurface outflows based on similar computations made by SWRCB.

Pumping by private parties is summarized in Table 9A.

San Fernando Basin Allowable Extractions

Table 10 lists San Fernando Basin extraction rights for the Cities of Burbank, Glendale, Los Angeles, and San Fernando for the water year 1982-83. Table 11 shows San Fernando Basin stored water as of October 1, 1981 and October 1, 1982. All rights are based on the City of Los Angeles vs. City of San Fernando, et al., judgment, dated January 26, 1979.

Facts Relevant to Ground Water Storage Capacity*

San Fernando Basin. The total ground water storage capacity of San Fernando Basin is approximately 3,200,000 acre-feet, with a regulatory storage capacity of 350,000 acre-feet required by the judgment. As of 1954-55, the temporary surplus in the basin had been exhausted by the overextraction of approximately 520,000 acre-feet.

Sylmar Basin. Sylmar Basin consists of confined aquifers with ground water storage space of approximately 310,000 acre-feet.

Verdugo Basin. The ground water storage capacity of Verdugo Basin is approximately 160,000 acre-feet.

Change in Ground Water Storage

San Fernando Basin. The change in storage for 1981-82 was -530 acre-feet, and the cumulative change in storage from 1954-55 through 1981-82 was -205,020 acre-feet. A comparison is made between the annual precipitation and the cumulative change in storage since the commencement of Watermaster activities for the San Fernando Basin. The average precipitation for the period 1968-69 through 1981-82 was 18.15 inches, compared to a long-term average of 16.48 inches of rainfall. During that time, the basin gained approximately 241,000 acre-feet of stored water. Of this total, 165,000 acre-feet was stored through spreading and in-lieu pumping activities. Thus, the natural change in storage due to an above normal rainfall period was 76,000 acre-feet. Refer to Table 8A for the annual precipitation and change in storage.

Sylmar Basin. The change in storage for 1981-82 was -2960 acre-feet, and the cumulative change in storage from 1954-55 through 1981-82 was -27,880 acre-feet.

Verdugo Basin. The change in storage for 1980-81 was -2,660 acre-feet, and the cumulative change in storage from 1954-55 through 1981-82 was +22,530 acre-feet.

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* Information obtained from the City of Los Angeles vs. City of San Fernando, et al., Findings of Fact and Conclusions of Law dated January 26, 1979.

TABLE 8

ULARA - NONTRIBUTARY WATERS,
IMPORTS AND EXPORTS

(In Acre-Feet)

Source and Agency	Quantity, in acre-feet			
	1980-81		1981-82	
Imports				
MWD water[a/]				
Burbank, City of	23,428		20,958	
Crescenta Valley County Water District	2,565		2,405	
Glendale, City of	25,669		21,787	
Los Angeles, City of	6,624		2,282	
La Canada Irrigation District	931		782	
Las Virgenes Municipal Water District (nonparty)	11,292		15,302	
San Fernando, City of	24		0	
	70,533		63,516	
Owens River water				
Los Angeles, City of	475,197[b/]		469,453[b/]	
Total	545,730	545,730	532,969	532,969
Exports				
Owens River water				
Los Angeles, City of	-236,544	-236,544	-238,069	-238,069
Net Import		309,186		294,900

a/ Colorado River and Northern California waters combined.

b/ This value represents the summation of the gross amount of water delivered to and exported from ULARA. It does not include operational releases, reservoir evaporation, and water spread during the year.

TABLE 8A

SAN FERNANDO BASIN
PRECIPITATION COMPARED TO
CHANGE IN STORAGE

Water Year	Valley Floor Precipitation (Inches)	Change in Storage (AF)	Cumulative Change in Storage (AF)
1968-69	29.00	+79240	+79240
1969-70	10.50	-9740	+69500
1970-71	15.57	+15340	+84840
1971-72	8.10	-17090	+67750
1972-73	20.65	+17020	+84770
1973-74	15.75	-21820	+62950
1974-75	14.74	-22580	+40370
1975-76	9.90	-30090	+10280
1976-77	14.19	-50490	-40210
1977-78	35.43	+136150	+95940
1978-79	21.76	+78080	+174020
1979-80	30.25	+99970	+273990
1980-81	11.04	-32560	+241430
1981-82	17.18	-530	+240900
14-yr. average	18.15		

Note:
(1) 100-year mean precipitation = 16.48 inches.
(2) Stored water through spreading and in-lieu pumping = 165,090.
(3) Natural change in storage = +240,900 AF - 165,090 AF = 75,810 AF.

TABLE 9

1981-82
SUMMARY OF WATER SUPPLY AND DISPOSAL
SAN FERNANDO BASIN
(In Acre-Feet)

Water Source and Use	City of Burbank	City of Glendale	City of Los Angeles	City of San Fernando	All Others	Total
Extractions						
Total quantity extracted	523	952	83,221	0	2,979*	87,675
Used in valley fill	d/	d/	7,767	d/	d/	d/
Imports						
MWD water	20,958	21,787	970	0	15,302	59,017
Owens River water	--	--	461,579	--	--	461,579
Ground water from Sylmar Basin	--	--	3,486	2,994	0	6,480
Ground water from Verdugo Basin	--	2,393	--	--	--	2,393
Reclaimed water	639e/	251e/	441c/	--	93e/	1,424
Exports						
Ground water:						
to Verdugo Basin	--	0	0	--	0	0
out of ULARA	--	--	75,454	--	0	75,454
Owens River water:						
to Eagle Rock Basin	--	--	2,421	--	--	2,421
out of ULARA	--	--	238,069	--	0	238,069
MWD:						
to Verdugo Basin	--	3,029	0	--	--	3,029
Total net delivered water	22,120	22,354a/	233,753	2,994	18,374	299,595
Water delivered to hill and mountain areas						
Ground water	d/	d/	0	0	0	d/
Owens River water	--	--	38,832	--	--	38,832
MWD water	d/	d/	700	0	15,302	16,002
Verdugo Basin water	--	d/	--	--	--	d/
Water outflow						
Surface	--	--	--	--	--	99,460b/
Subsurface	--	--	--	--	--	430
Sewers	8,780	13,020	74,860	2,007	--	98,667
Reclaimed	5,467	2,980	2,980	--	--	11,427

* See Table 9A for parties included.

a/ Total delivered water to the City of Glendale was 26,740 AF. Verdugo Basin metered sales times 105 percent equaled 4,386 AF. Therefore, the San Fernando Basin delivered water was 22,354 AF (26,740 AF minus 4,386 AF). Refer to Section 5.2.1.3 of Judgment.

b/ At Station F-57C-R where 29-year mean (1929-57) base low flow is 7,580 acre-feet.

c/ Used for irrigation at the Harding and Wilson Golf Courses and Crystal Springs picnic area. Also used for wash down, cooling, and irrigation at the Los Angeles-Glendale plant.

d/ These values are no longer calculated as per Judgment.

e/ Delivered to cooling towers of steam plant in Burbank and phosphate plant in Glendale. Assumed 50 percent evaporation and 50 percent to Los Angeles River. Refer to Table 6 for all others.

Note: Colorado River and Northern California waters now combined and listed as MWD water.

TABLE 9

1981-82
SUMMARY OF WATER SUPPLY AND DISPOSAL
SYLMAR BASIN
(In Acre-Feet)

Water Source and Use	City of Los Angeles	City of San Fernando	All Others	Total
Extractions				
Total quantity	3,486	3,290	0	6,776
Used in valley fill	0	296	0	296
Imports				
Owens River water	7,059	--	--	7,059
Exports				
Groundwater: to San Fernando Basin	3,486	2,994	0	6,480
Water delivered to hill and mountain area				
Owens River	393	--	--	393
Water outflow				
Surface	--	--	--	5,000[g/]
Subsurface: to San Fernando Basin[f/]	--	--	--	--
Sewers	790	198	0	988

f/ Computation not possible, well destroyed.

g/ Surface outflow is not measured. Calculated average surface outflow by Mr. Laverty - SF Exhibit 57.

TABLE 9

1981-82
SUMMARY OF WATER SUPPLY AND DISPOSAL
VERDUGO BASIN
(In Acre-Feet)

Water Source and Use	Crescenta Valley County Water District	City of Glendale	La Canada Irrigation District	City of Los Angeles	Total
Extractions					
Total quantity	1,876	3,732	0	0	5,608
Used in valley fill	1,827	k/	0	0	k/
Imports					
MWD water	2,405	3,029	782	0	6,216
Owens River water	--	--	--	815	815
Groundwater from:					
San Fernando Basin	--	0	--	--	0
Reclaimed water	30	--	--	--	30
Exports					
Groundwater to:					
San Fernando Basin	--	2,393	--	--	2,393
Water delivered to hill and mountain areas					
MWD water	63	k/	0	0	k/
Owens River water	--	--	--	270	270
Groundwater from:					
Verdugo Basin	49	k/	--	0	k/
San Fernando Basin	--	0	--	0	0
Water outflow					
Surface	--	--	--	--	8,697 h/
Subsurface:					
to Monk Hill Basin	--	--	--	--	300 i/
to San Fernando Basin	--	--	--	--	70
Sewage	0	2,027	0	170	2,197

h/ Information obtained from Station F-252C-R
i/ Based on 29-year average (1919-57)
j/ Measured
k/ These values are no longer required

TABLE 9

1981-82
SUMMARY OF WATER SUPPLY AND DISPOSAL
EAGLE ROCK BASIN
(In Acre-Feet)

Water Source and Use	City of Los Angeles	Deep Rock[o/] Water Company	Sparkletts Drinking[o/] Water Corporation	Total
Extractions				
Total quantity	0	6	175	181
Used in valley fill	0	0	0	0
Imports				
Owens River	2,421	--	--	2,421
MWD water	1,312	--	--	1,312
Groundwater	0	0	0	0
Exports				
Groundwater	0	6	175	181
Water delivered to hill and mountain areas				
MWD water	764	--	--	764
Owens River water	1,259	--	--	1,259
Water outflow				
Surface[m/]	--	--	--	--
Subsurface[n/]	--	--	--	--
Sewers	1,900	0	0	1,900

m/ Information not available

n/ Estimated in Supplement No. 2 to Report of Reference for dry years 1960-61. Currently, data not available for direct evaluation.

o/ Deep Rock Water Company and Sparkletts Drinking Water Corporation under a stipulated agreement with the City of Los Angeles; extract limited to 500 AF/year, and export given amount.

TABLE 9A

1981-82
PUMPING BY NONCONSUMPTIVE USE, PHYSICAL SOLUTION,
AND PARTIES WITHOUT RIGHTS
SAN FERNANDO BASIN

(In Acre-Feet)

I.	Nonconsumptive Use Parties	
1.	Conrock Co.	1,161
2.	Livingston-Graham, Inc.	180
3.	Sears, Roebuck and Company	12
4.	Sportsmen's Lodge, Inc.	10
5.	Toluca Lake Property Owners Assn.	24
6.	Walt Disney Productions	949
7.	Total	2,336
II.	Physical Solution Parties	
1.	Environmentals Inc.	76
2.	Forest Lawn Cemetery Assn.	343
3.	Sportsmen's Lodge, Inc.	1
4.	Toluca Lake Property Owners Assn.	30
5.	Valhalla Memorial Park	191
6.	Total	641
III.	Parties Without Rights	
1.	Harper, Cecelia De Mille	1
2.	Mena, John and Barbara	1
3.	Total	2
IV.	Total Pumping by Private Parties	2,979

Note: Sportsmen's Lodge and Toluca Lake pumping is part nonconsumptive and part physical solution.

TABLE 10

1982-83
SAN FERNANDO BASIN EXTRACTION RIGHTS
(In Acre-Feet)

Item	Cities of			
	Burbank	Glendale	Los Angeles	San Fernando
	(1)	(2)	(3)	(4)
1. Delivered water 1981-82	22,120	22,354	233,753	--
2. Import delivered 1981-82	--	--	--	0
3. Delivered to hill & mountain 1981-82	--	--	39,532	--
4. Delivered to valley fill 1981-82	--	--	194,221	--
5. Percent recharge	20%	20%	20.8%	26.3%
6. Return water extraction right 1982-83	4,424	4,471	40,398	0
7. Native safe yield	0	0	43,660	0
8. Total extraction right 1982-83	4,424	4,471	84,058	0

Items 1, 2 & 3 = Table 9
Item 4 = Item 1 minus Item 3
Item 5 = Article 5.2.1.3, page 17 of Judgment
Item 6, cols. (1) & (2) = Item 1 x Item 5
col. (3) = Item 4 x Item 5
col. (4) = Item 2 x Item 5
Item 7 = Article 4.2.4, page 11 of Judgment
Item 8 = Item 6 + Item 7
-- = Data not required

TABLE 11

STORED WATER
SAN FERNANDO BASIN
(In Acre-Feet)

		Cities of			
		Burbank	Glendale	Los Angeles	San Fernando
		(1)	(2)	(3)	(4)
	1980-81				
1.	Stored water as of Oct. 1, 1980	8,117	5,844	134,383	32
2.	Delivered water 1979-80	24,184	21,840	185,577	214
3.	Return water extraction right 1980-81	4,837	4,368	38,600	56
4.	Native safe yield	0	0	43,660	0
5.	Total extraction right for 1980-81	4,837	4,368	82,260	56
6.	Extractions for year	595	1,129	91,124	0
7.	Physical solution extractions	(305)	(430)	31	-
8.	Spread water	0	0	9,020	0
9.	Stored water as of Oct. 1, 1981	12,359	9,083	133,773	88
	1981-82				
10.	Delivered water 1980-81	25,202	23,846	199,126	24
11.	Return water extraction right 1981-82	5,040	4,769	41,418	6
12.	Native safe yield	0	0	43,660	0
13.	Total extraction right for 1981-82	5,040	4,769	85,078	6
14.	Extractions for year	523	952	82,991*	0
15.	Physical solution extractions	(191)	(419)	31	-
16.	Spread water	0	0	0	0
17.	Stored water as of Oct. 1, 1982**	16,876	12,900	135,219	94

Items 3 & 11 = Items 2 & 10 x percent recharge
Items 5 & 13 = Items 3 + 4 & 11 + 12, respectively
Item 9 = Items 1 + 5 - 6 - 7 + 8
Items 7 & 15 = All subtracted from Los Angeles
col. (1) = Valhalla pumping
col. (2) = Forest Lawn & Environmentals Inc. pumping
col. (3) = Toluca Lake & Sportsmens Lodge pumping. Only consumptive use portion charged to Los Angeles.
Item 17 = Items 9 + 13 - 14 - 15 + 16
* = Excludes 225 AF of North Hollywood pumping discharged to Los Angeles River while testing for TCE and 5 AF of Sunland Wells pumping discharged to Haines Canyon channel while testing water quality.
** = Does not include return flow occurring during water year 1981-82.

Appendix A

GROUNDWATER EXTRACTIONS

1981-82 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

LACFCD Well No.	Owners Designation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
							San Fernando Basin							
City of Burbank														
3841C	6A	12.05	0.00	0.00	0.00	5.65	0.00	19.17	1.81	11.27	10.35	21.03	102.03	183.36
3851J	11A	0.00	0.00	0.00	0.00	0.00	0.00	8.14	0.00	0.00	1.59	0.00	0.00	9.73
3851E	12	0.00	0.00	0.00	0.00	0.00	0.00	8.94	0.00	0.00	0.00	7.42	40.36	56.72
3851K	13A	9.87	1.39	0.00	0.00	2.04	0.00	18.12	8.56	9.39	8.53	17.26	60.44	135.60
3841F	17	7.73	0.00	0.00	0.00	6.80	0.00	13.91	6.81	7.12	6.38	13.99	39.89	102.00
3841G	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.01	24.96	35.97
	Party Total	29.65	1.39	0.00	0.00	14.49	0.00	68.28	16.55	27.78	26.85	70.71	267.68	523.38
Conrock Co.														
4916A	2	62.23	47.81	27.19	54.51	53.98	33.77	2.32	29.10	43.24	37.28	39.96	58.29	489.68
4916	3	80.85	60.66	64.06	48.61	63.16	41.34	3.61	38.32	68.26	57.67	61.83	82.96	671.33
	Party Total	143.08	108.47	91.25	103.12	117.14	75.11	5.93	67.42	111.50	94.95	101.79	141.25	1161.01
Environmentals Inc.														
3934A	M050A	0.00	0.00	0.00	0.00	0.00	9.08	12.11	9.97	11.12	10.88	11.25	11.09	75.50
Forest Lawn Cemetery Assn.														
3947A	2	12.12	20.17	17.12	5.88	11.35	8.84	13.26	16.30	18.96	19.58	23.09	15.53	182.20
3947B	3	1.12	0.00	0.00	0.00	0.00	0.02	0.41	22.53	29.16	32.58	38.77	25.69	150.28
3958K	7	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.21	0.11	0.89	9.30	10.53
	Party Total	13.24	20.18	17.13	5.88	11.35	8.86	13.67	38.83	48.33	52.27	62.75	50.52	343.01
City of Glendale														
3924N	STPT1	12.22	4.05	1.97	10.08	4.33	1.03	4.70	22.47	14.89	19.77	0.87	4.49	100.87
3924R	STPT2	1.62	0.24	0.41	1.16	1.73	0.41	0.63	1.86	19.12	21.00	1.21	1.49	50.88
GVENT	GVENT	116.93	47.57	35.29	64.14	19.33	0.00	58.62	75.25	84.34	102.20	82.56	114.17	800.40
	Party Total	130.77	51.86	37.67	75.38	25.39	1.44	63.95	99.58	118.35	142.97	84.64	120.15	952.15
Harper, Cecelia DeMille														
4940A	North	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	1.20
Livingston-Graham, Inc.														
4916B	SnVal	18.84	20.16	16.58	10.77	21.06	14.41	0.00	10.35	21.49	13.57	11.28	21.03	179.54
City of Los Angeles														
3914L	CS-45	200.78	98.35	0.00	181.52	158.01	146.33	198.44	206.80	203.12	210.63	204.87	196.83	2005.68
3914M	CS-46	308.63	170.64	9.85	317.89	255.28	225.69	317.29	325.48	315.77	324.84	321.60	309.46	3202.42
3914S	CS-50	215.57	107.76	0.00	200.00	124.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	647.41
	CS Total	724.98	376.75	9.85	699.41	537.37	372.02	515.73	532.28	518.89	535.47	526.47	506.29	5855.51
3831H	E-1	154.34	144.10	0.00	269.42	236.62	214.56	50.69	0.00	78.56	43.92	0.00	201.47	1393.68
3821I	E-2A	45.25	66.51	0.00	33.72	104.09	143.60	118.41	211.87	71.81	238.55	225.71	190.80	1450.32
3831G	E-3	63.45	83.33	42.24	207.46	176.54	165.01	38.84	0.00	0.00	35.22	0.00	159.28	971.37
3821F	E-4	185.65	110.03	0.00	226.82	199.96	207.62	41.23	0.00	0.00	36.18	0.00	146.86	1154.35
3831F	E-5	97.70	129.96	0.00	76.38	234.35	179.06	128.83	238.98	0.00	276.06	262.93	243.73	1867.98
3821H	E-6	186.50	120.29	38.11	15.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	359.94
3811F	E-10	67.93	95.89	33.47	191.19	165.59	170.27	83.20	162.10	0.00	187.81	168.96	78.47	1404.88
	E Total	800.82	750.11	113.82	1020.03	1117.15	1080.12	461.20	612.95	150.37	817.74	657.60	1020.61	8602.52
3894BB	H-25	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	318.00	389.35	279.34	986.74
3893L	H-26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	132.14	272.64	266.48	230.33	901.59
3893K	H-27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	332.42	332.42
3893M	H-28	438.04	250.39	0.00	250.76	0.21	271.99	301.93	232.76	495.60	509.05	502.18	481.59	3734.50
3893N	H-29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.09	0.00	0.00	0.71
3893P	H-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	515.50	555.44	1070.94
	H Total	438.09	250.39	0.00	250.76	0.21	271.99	301.93	232.76	628.36	1099.78	1673.51	1879.12	7026.90
3800	NH-2	160.31	156.36	0.00	0.76	0.00	146.08	0.00	0.00	30.92	260.95	299.82	291.44	1346.64
3780A	NH-4	152.20	62.88	15.29	0.46	0.00	93.73	36.32	5.92	0.00	11.39	195.27	164.05	737.51
3810S	NH-5	179.80	31.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	211.43
3770	NH-7	108.45	116.32	0.00	0.00	0.00	97.36	0.00	80.14	157.49	25.73	59.02	44.10	688.61
3810	NH-11	136.94	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	137.05
3810A	NH-13	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
3810B	NH-14A	279.55	52.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	331.62
3790B	NH-15	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.78
3820D	NH-16	184.67	64.85	0.00	114.17	97.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	461.60
3820C	NH-17	190.67	53.99	0.00	132.65	316.03	304.59	0.00	0.00	0.00	259.16	348.40	328.42	1923.91
3820B	NH-18	178.77	126.72	0.00	116.37	326.38	315.52	57.97	324.29	0.00	59.41	361.73	326.47	2193.63
3820D	NH-19	194.51	58.15	0.00	36.20	361.94	169.88	0.00	339.40	411.96	300.03	101.47	89.95	2063.49
3830C	NH-20	136.89	94.77	0.00	24.56	246.26	178.17	0.00	0.00	0.00	0.00	0.00	0.00	680.65
3830B	NH-21	256.84	0.00	19.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	276.54
3890C	NH-22	152.02	24.89	0.00	0.00	0.00	94.61	0.00	69.63	135.06	0.00	30.28	173.16	679.65
3890D	NH-23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.28
3800C	NH-24	0.00	0.00	0.00	40.24	106.66*	315.87*	105.92	369.22	362.38	301.31	357.05	338.36	2297.01

*Testing for TCE. Discharged to L.A. River (224.84 AF)

1981-82 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

San Fernando Basin Cont'd.

LACFD Well Number	Owners Desig-nation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Total
3790F	NH-25	206.89	187.28	0.00	73.21	0.00	186.46	63.29	397.39	290.80	327.21	378.31	328.88	2439.72
3790E	NH-26	211.62	58.47	0.00	0.90	0.00	175.55	59.50	193.83	275.14	225.46	363.80	324.66	1888.93
3820F	NH-27	180.65	40.17	0.00	0.00	0.48	101.13	0.00	0.00	0.00	0.00	0.00	0.00	322.43
3810K	NH-28	0.00	0.18	16.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.92	0.00	31.38
3810L	NH-29	0.00	0.28	13.87	0.00	0.00	0.00	0.00	0.00	0.00	107.85	255.95	0.00	377.95
3800D	NH-30	143.09	131.15	0.00	72.70	0.00	158.61	0.48	292.22	208.38	174.96	274.08	268.78	1724.45
3810T	NH-31	0.00	0.21	24.68	0.00	0.00	96.19	0.00	0.00	0.00	0.00	0.00	0.00	121.08
3770C	NH-32	130.19	35.40	0.00	0.00	0.00	52.73	0.00	223.49	111.69	0.00	30.92	43.04	627.46
3780C	NH-33	148.33	142.86	0.00	85.86	0.00	133.72	49.89	0.00	0.00	33.79	76.29	248.95	919.69
3790G	NH-34	250.05	143.07	0.00	0.00	0.00	160.03	0.48	0.00	0.00	191.58	302.41	66.37	1113.99
3830N	NH-35	161.27	72.91	0.00	18.73	188.71	183.20	0.00	0.00	0.00	0.00	0.00	0.00	624.82
3790H	NH-36	283.54	224.40	0.00	124.04	0.00	253.97	0.76	445.18	415.96	396.44	462.01	406.50	3012.80
3790J	NH-37	361.50	216.58	0.00	120.02	0.00	244.38	0.69	161.96	344.99	383.73	449.73	102.43	2383.01
3810M	NH-38	421.56	77.89	0.00	131.96	0.00	245.53	0.00	0.00	0.00	369.31	419.68	5.42	1671.35
3810N	NH-39	0.00	0.00	0.00	0.00	0.00	0.00	83.72	38.84	0.00	202.11	0.00	0.00	324.67
3810P	NH-40	395.73	70.64	0.00	116.58	0.00	101.91	71.07	33.08	0.00	299.80	0.00	0.00	1088.81
3810Q	NH-41	412.84	73.46	0.00	261.25	0.00	124.38	0.00	0.00	0.00	291.14	394.91	15.27	1573.25
3810R	NH-42	366.76	70.57	0.00	246.65	58.15	415.48	412.01	419.45	314.53	134.30	420.20	409.35	3267.45
	NH Total	5975.64	2388.40	89.82	1720.09	1702.52	4349.08	942.10	3394.32	3056.30	4355.66	5596.25	3975.60	37545.78
	*Testing for TCE. Discharged to L.A. River													
3904J	CS-52(#1)	1.36	1.29	1.22	0.98	0.15	0.25	0.41	0.18	0.37	0.51	0.18	0.34	7.24
3904J	CS-52(#2)	1.22	1.16	1.07	0.91	0.14	0.24	0.37	0.16	0.34	0.45	0.17	0.31	6.54
	CS Total	2.58	2.45	2.29	1.89	0.29	0.49	0.78	0.34	0.71	0.96	0.35	0.65	13.78
3959E	P-4	138.89	126.03	25.71	76.56	37.44	31.54	116.16	115.24	106.86	101.13	81.96	101.24	1058.76
3958H	P-6	242.43	232.90	51.54	143.94	79.82	16.30	0.00	0.00	0.00	0.00	47.66	0.00	814.59
	P Total	381.32	358.93	77.25	220.50	117.26	47.84	116.16	115.24	106.86	101.13	129.62	101.24	1873.35
4983F	Fenwick 1	0.00	0.00	0.00	2.43**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.43
4994B	Foothill 3	0.00	0.00	0.00	2.66**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66
	F Total	0.00	0.00	0.00	5.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.09
4992A	TGPLT	0.00	0.00	0.00	0.37	0.00	23.49	60.35	33.29	0.00	0.00	0.00	0.00	117.50
3853F	V-2	82.51	148.33	11.73	23.88	94.54	108.66	50.39	0.00	0.00	128.54	129.16	116.23	893.97
3863J	V-4	205.01	146.58	30.00	179.27	135.47	155.67	170.55	167.93	153.56	151.72	143.92	122.20	1761.88
3863L	V-11	273.72	165.73	53.83	316.94	186.62	229.89	311.02	321.51	305.70	52.46	0.00	222.09	2439.51
3853G	V-13	5.12	23.83	0.00	56.47	33.40	13.27	11.32	0.00	0.00	57.51	55.90	43.69	300.51
3844R	V-24	236.07	241.30	213.16	228.49	186.73	213.41	242.89	251.68	243.73	255.90	252.87	226.54	2792.77
	V Total	802.43	725.77	308.72	805.05	636.76	720.90	786.17	741.12	702.99	646.13	581.85	730.75	8188.64
3820E	W-1	287.72	257.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	147.02	0.00	0.00	691.90
3821B	W-2	285.70	280.01	254.39	158.45	315.59	335.75	0.00	0.00	0.00	318.80	347.02	314.92	2610.63
3821C	W-3	211.69	222.57	202.55	127.87	252.60	265.77	0.00	0.00	0.00	222.57	282.39	253.38	2041.39
3821D	W-4	289.42	258.15	300.37	180.46	316.67	335.65	0.00	279.98	0.00	320.41	353.58	317.77	2952.46
3821E	W-5	237.38	272.29	222.59	130.17	217.43	202.92	0.00	202.04	0.00	211.30	250.12	209.09	2155.33
3831J	W-6A	337.61	365.59	0.00	312.70	357.30	380.72	37.40	0.00	0.00	0.00	0.00	0.00	1791.32
3832K	W-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.89	111.89
3832L	W-8	306.06	336.04	72.45	50.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	764.92
3832M	W-9	111.18	51.79	0.00	7.16	76.15	45.18	0.00	0.00	0.00	12.92	0.00	53.79	358.17
3842E	W-10	9.39	56.02	103.31	50.87	99.13	64.65	10.54	26.54	0.00	18.37	18.62	56.24	513.59
	W Total	2076.06	2099.62	1155.66	1018.05	1034.87	1630.64	47.94	508.56	0.00	1251.39	1251.73	1317.08	13991.60
City of Los Angeles Total		11201.92	6952.42	1757.41	5741.24	5746.43	9496.57	3232.36	6170.86	5164.48	8808.26	10417.38	9531.34	83220.67
Mena, John & Barbara														
4973J	4973J	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.96
Sears Roebuck & Co.														
3945	3945	3.01	0.67	0.76	0.04	0.06	0.06	0.05	0.07	0.07	0.55	3.60	2.82	11.76
Sportsmen's Lodge, Inc.														
3785A	1	0.64	0.93	1.27	0.34	0.90	0.53	0.63	0.38	0.51	1.71	0.40	2.73	10.97
Toluca Lake Property Owners Assn.														
3845F	3845F	5.13	5.51	1.76	1.23	2.08	3.95	3.54	5.76	6.77	6.83	9.60	1.49	53.65
Valhalla Memorial Park														
3840K	4	0.19	14.77	4.88	5.24	1.99	5.70	12.43	18.25	26.76	43.12	51.28	6.16	190.77
Walt Disney Productions														
3874E	East	115.33	0.00	0.00	0.00	4.02	29.75	4.70	65.93	51.98	90.35	100.43	87.99	550.48
3974F	West	66.21	84.31	73.71	58.71	22.05	6.93	54.00	0.01	10.72	20.59	0.00	1.66	398.90
	Party Total	181.54	84.31	73.71	58.71	26.07	36.68	58.70	65.94	62.70	110.94	100.43	89.65	949.38
	Basin Total	11728.19	7260.35	2002.60	6002.13	5967.14	8652.57	3471.83	6504.14	5600.04	9313.08	10925.29	10246.09	87673.95

E-Estimated

**Discharged to Haines Canyon Channel

1981-82 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

LACFCD Well No.	Owners Designation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
						Sylmar Basin								
City of Los Angeles														
Plant	Mission	461.09	76.17	0.00	25.34	0.00	446.38	428.93	407.85	424.25	426.24	418.60	370.85	3485.70
Meurer Engineering Co.														
5998	3	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.12
City of San Fernando														
5969D	2A	178.42	174.69	172.46	142.40	157.71	124.42	121.98	73.63	170.01	200.87	205.98	173.77	1896.34
5959	3	66.97	45.83	29.47	62.17	21.31	47.21	57.65	46.72	72.74	112.12	111.74	85.50	759.43
5969	4	13.94	21.47	21.57	21.55	16.95	24.96	23.34	23.61	22.69	24.72	30.68	19.79	265.27
5968	7A	36.92	33.91	32.80	10.66	27.97	32.75	21.68	28.73	32.20	40.64	39.94	30.52	368.72
	Party Total	296.25	275.90	256.30	236.78	223.94	229.34	224.65	172.69	297.64	378.35	388.34	309.58	3289.76
	Basin Total	757.35	352.08	256.31	262.13	223.95	675.73	653.59	580.55	721.90	804.60	806.95	680.44	6775.58
						Verdugo Basin								
Crescenta Valley County														
5058B	1	1.04	2.65	1.64	0.00	0.00	0.00	0.01	8.22	2.83	25.46	23.54	11.73	77.17
5036A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
5058H	5	0.03	0.07	0.02	0.00	0.01	0.00	2.60*	0.01	0.00	0.06	0.01	0.00	2.81
5058	6	0.03	0.00	0.04	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.15
5047B	7	0.02	0.12	0.07	0.00	0.00	0.00	0.01	0.07	0.01*	0.02*	0.04	0.42	1.14
5069J	8	24.51	22.41	14.83	5.11	14.36	5.48	0.90	11.38	32.68	38.88	40.43	23.54	234.51
5047D	9	0.21	0.10	0.00	0.00	0.00	0.00	0.00	0.87	0.45	3.30	3.28	2.33	10.54
5058D	10	76.26	74.03	57.38	53.46	50.79	52.36	65.15	68.25	69.77	94.96	96.11	74.98	833.50
5058J	12	4.27	3.09	2.34	0.60	5.51	4.01	15.22	8.65	6.76	8.30	9.45	6.21	74.41
5069F	14	41.33	43.77	50.07	52.89	43.94	47.88	56.01	47.21	47.02	47.26	45.73	45.31	568.42
	Pick	5.63	5.73	5.94	6.01	5.31	5.88	6.60	6.50	6.44	6.46	6.03	6.75	73.28
	Party Total	153.33	151.97	132.33	118.07	119.92	115.69	146.50	151.16	165.96	224.70	224.99	171.27	1875.89
City of Glendale														
3970	GL-6	107.05	99.04	127.20	69.85	78.26	76.22	82.06	153.23	138.26	145.64	146.70	133.84	1357.35
--	MM-1	225.90	212.19	220.80	207.02	183.56	203.45	187.31	204.44	162.33	193.57	183.14	190.44	2374.15
	Party Total	332.95	311.23	348.00	276.87	261.82	279.67	269.37	357.67	300.59	339.21	329.84	324.28	3731.50
	Basin Total	486.28	463.20	480.33	394.94	381.74	395.36	415.87	508.83	466.55	563.91	554.83	495.55	5607.39
						Eagle Rock Basin								
Deep Rock Water Co.														
--	3	0.56	0.57	0.48	0.44	0.41	0.58	0.45	0.41	0.46	0.50	0.51	0.44	5.81
Sparkletts Drinking Water														
3987A	1	8.26	6.55	7.58	6.70	5.60	6.83	6.09	2.84	7.41	7.22	8.14	8.07	81.29
3987B	2	9.16	7.22	8.85	8.00	5.95	7.04	6.20	6.25	7.15	7.71	8.20	7.53	89.26
3987F	3	0.32	0.43	0.00	0.00	0.11	0.19	0.34	0.34	0.24	0.70	0.54	0.83	4.04
	Party Total	17.74	14.20	16.43	14.70	11.66	14.06	12.63	9.43	14.80	15.63	16.88	16.43	174.59
	Basin Total	18.30	14.77	16.91	15.14	12.07	14.64	13.08	9.84	15.26	16.13	17.39	16.87	180.40
	ULARA Total	12990.12	8090.90	2756.15	6674.34	6584.90	9738.30	4554.37	7603.36	6803.75	10697.72	12304.46	11438.95	100237.32
	Cumulative Total		21081.02	23837.17	30511.51	37096.41	46834.71	51389.08	58992.44	65796.19	76493.91	88798.37	100237.32	

*Testing for TCE.
E-Estimated

Appendix B

KEY GAGING STATIONS SURFACE RUNOFF

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description LOS ANGELES RIVER
ABOVE ARROYO SECO for Water-Year 1981 1982

Station No. F57C-R

Drainage Area 511 Square Miles (H. ELDEEB Observer)

Gage Read (15 MIN. PUNCH TAPE

Rating Table No. 69-1

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge		Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj	Discharge	Gage Height	Adj.	Discharge	
1	1.32		313	0.45		20.3	0.64		41.7	1.60		686	0.62		39.2	0.94		91.4	1	2.99		3630	0.96		97.8	0.47		22.6	0.65		43.6	0.60		36.2	0.55		30.9	1
2	0.79		63.4	0.46		20.9	0.53		28.4	1.05		122	0.67		45.9	1.17		179.	2	1.48		509	0.96		97.8	0.38		14.2	0.61		37.8	0.58		34.3	0.53		28.4	2
3	0.58		34.2	0.70		50.3	0.45		20.3	0.60		36.5	0.69		48.6	0.70		49.8	3	1.16		175	0.92		87.5	0.39		14.7	0.50		25.0	0.54		29.4	0.54		29.6	3
4	0.52		27.3	0.66		44.6	0.55		30.5	0.56		31.9	0.66		44.6	0.55		30.7	4	1.00		109	1.06		126.	0.41		16.5	0.50		25.0	0.53		28.4	0.54		29.6	4
5	0.53		28.4	0.65		43.2	0.49		24.1	1.77		955	0.61		38.5	0.50		25.	5	1.04		121	0.94		92.6	0.48		23.1	0.49		24.1	0.57		33.4	0.57		33.0	5
6	0.71		51.8	0.65		43.2	0.48		23.1	0.97		101.	0.58		34.1	0.52		27.3	6	0.92		67.8	0.89		80.7	0.51		26.1	0.66		44.6	0.61		37.8	0.58		34.2	6
7	0.71		51.5	0.59		35.3	0.50		25.	0.75		57.5	0.63		40.5	0.54		29.6	7	0.67		45.9	0.86		75.4	0.66		44.4	0.61		38.5	0.57		33.0	0.59		35.3	7
8	0.74		56.	0.56		31.9	0.47		22.2	0.59		35.3	0.69		49.2	0.69		48.6	8	0.64		41.9	0.85		73.7	0.85		73.7	0.76		59.0	0.60		36.4	1.11		142.0	8
9	0.73		54.5	0.57		33.	0.45		20.3	0.51		26.1	0.71		51.5	0.59		35.3	9	0.68		47.8	0.82		68.5	0.86		75.4	0.68		47.3	0.67		45.9	0.95		95.1	9
10	0.63		40.5	0.58		34.2	0.52		27.3	0.55		30.7	1.70		63.0	0.64		41.9	10	1.00		109.	0.83		70.2	0.84		72.0	0.63		40.5	0.62		39.2	0.67		45.9	10
11	0.58		34.2	0.60		36.5	0.52		27.3	0.63		41.2	1.14		16.3	1.92		1200	11	2.28		1910	1.03		117.	0.57		32.8	0.60		36.5	0.65		42.6	0.65		43.2	11
12	0.60		36.5	0.55		30.7	0.52		27.3	0.57		33.	0.74		56.	1.42		440	12	1.17		180	0.96		97.4	0.54		29.6	0.59		35.3	0.65		42.9	0.62		39.2	12
13	0.54		29.8	0.52		27.3	0.51		26.1	0.50		25.	0.79		63.5	0.67		45.9	13	0.71		51.5	0.84		72.	0.52		27.3	0.53		28.4	0.60		36.8	0.58		34.2	13
14	0.44		19.2	0.45		20.3	0.56		32.	0.52		27.3	0.64		41.9	2.39		2150	14	0.53		28.4	0.84		72.	0.53		28.4	0.49		23.9	0.58		34.2	0.56		31.9	14
15	0.38		14.	0.44		19.4	0.57		32.5	0.58		34.2	0.65		43.2	1.26		810	15	0.50		25.0	0.83		70.2	0.49		24.1	0.51		26.5	0.59		35.3	0.71		51.5	15
16	0.42		17.4	0.41		16.3	0.54		29.6	0.78		62.6	0.88		79.1	1.99		1330	16	0.56		31.4	0.82		68.5	0.52		27.2	0.53		28.4	0.54		29.2	0.71		51.5	16
17	0.38		14.4	0.44		19.6	0.55		30.7	0.77		60.5	0.76		56.	3.72		5870	17	0.47		22.2	0.80		65.	0.62		38.6	0.52		27.3	0.57		33.3	0.65		42.6	17
18	0.49		24.1	0.52		27.3	0.51		26.1	0.77		60.5	0.61		37.8	1.90		1180	18	0.50		25.0	0.80		65.	0.60		36.5	0.54		29.6	0.50		25.0	1.20		197.0	18
19	0.47		22.2	0.46		20.8	1.00		107.	0.74		55.7	0.58		34.2	1.84		1060	19	1.03		118.	0.59		35.3	0.54		29.6	0.51		26.1	0.45		20.0	0.57		33.0	19
20	0.46		21.2	0.50		25.	0.74		56.4	2.82		3180	0.55		30.7	b		295	20	1.16		175.	0.56		31.8	0.53		28.4	0.54		29.6	0.53		28.4	0.50		25.0	20
21	0.38		14.2	1.06		126.	0.67		46.5	1.47		502	0.55		36.7	b		87.5	21	1.06		126.	0.49		24.1	0.55		30.7	0.55		30.7	0.53		28.4	0.45		20.3	21
22	0.40		15.6	0.83		70.8	0.51		26.3	0.80		65.5	0.58		33.8	b		72.	22	1.02		114.	0.40		15.6	0.56		31.9	0.54		29.6	0.61		37.8	0.41		16.5	22
23	0.44		19.4	0.59		35.2	0.61		37.8	0.74		56.	0.60		36.5	b		63.5	23	1.00		108.	0.39		14.9	0.61		37.8	0.53		28.4	0.58		34.2	0.51		26.3	23
24	0.45		20.3	0.65		42.9	0.49		24.1	0.69		48.6	0.56		31.9	0.69		48.6	24	1.06		108.	0.42		17.5	0.60		36.5	0.55		30.7	0.57		33.0	0.59		35.7	24
25	0.43		18.7	0.44		19.4	0.49		24.1	0.70		50.	0.52		27.3	0.85		74.3	25	0.99		105.	0.41		16.5	0.61		37.8	0.53		28.4	0.53		28.4	0.72		53.2	25
26	0.49		24.1	1.57		644	0.49		24.5	0.73		54.5	0.52		27.3	1.37		373	26	[illegible]		100.	0.40		15.6	0.63		40.5	0.53		28.3	0.49		24.1	1.68		801.3	26
27	0.50		25.	2.14		1620	0.53		28.4	0.69		48.6	0.51		26.1	0.79		64.2	27	0.95		95.7	0.41		16.5	0.66		41.6	0.53		28.2	0.52		27.3	0.78		62.1	27
28	0.96		98	2.75		3010	0.53		28.4	1.10		139.	0.51		26.1	0.97		101.	28	0.93		90.1	0.41		16.5	0.71		51.5	0.51		26.1	0.51		25.8	0.62		39.8	28
29	0.97		100.	0.96		99.	0.51		26.1	0.85		74.4				1.62		707	29	0.98		103.	0.37		13.5	0.78		62.	0.57		33.0	0.53		28.4	0.57		33.0	29
30	0.55		30.7	0.76		59.	1.71		846	0.63		40.5				1.32		311	30	0.94		92.6	0.33		11.0	0.73		54.5	0.49		24.1	0.52		27.4	0.55		30.7	30
31	0.46		21.2				0.73		54.2	0.65		43.2				0.74		56.	31				0.34		11.6				0.59		35.3	0.51		26.1				31
1	1340.6			6326.4			1824.3			6784.3			2061.2			16287.6			1	8485.3			1737.7			1113.			999.8			1002.6			2171.7			1
2	43.3			211			58.8			219			73.6			525			2	283.			56.1			37.1			32.3			32.3			72.4			2
3	2660.			12550			3620			13460			4090			32310			3	16830			3450.			2210			1980.			1990.0			4310.0			3
4	313.			3010			846			3180			830			5870			4	3630			126.0			75.4			59.			45.9			801.0			4
5	14.			16.3			20.3			25.			26.1			25			5	22.2			11.0			14.2			23.9			20.0			16.5			5

Maximum stage	8.00	feet at	1351	on 03-14-82	Discharge 22,800 Second-feet.
Minimum stage	0.48	feet at	1535	on 10-17-81	Discharge 5.4 Second-feet.

REMARKS:

1. Total CFS
2. Average Daily Flow in CFS
3. Total Monthly Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

YEARLY TOTALS

1	50134.7	1
2	137.4	2
3	99,460.0	3
4	5,870.0	4
5	11.0	5

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description: PACOIMA DAM FLUME
IN PACOIMA CANYON for Water-Year 19 81 19 82

Station No.: F 118 R

Drainage Area: 28.2 Square Miles

Observer: R.J. SARASUA

Gage Read: CONTINUOUSLY

Rating Table No.: 44 I

DAY	OCTOBER Gage Height	Adj.	Discharge	NOVEMBER Gage Height	Adj.	Discharge	DECEMBER Gage Height	Adj.	Discharge	JANUARY Gage Height	Adj.	Discharge	FEBRUARY Gage Height	Adj.	Discharge	MARCH Gage Height	Adj.	Discharge	DAY
1			0.2			0.2			0.2			0.2			0.2			0.2	1
2									0.2										2
3									0.6										3
4									0.2										4
5									0.2										5
6									0.2										6
7									0.2										7
8									1.7										8
9									9.2										9
10						1.4			15.4										10
11									0.5										11
12									0.2										12
13									0.2										13
14									0.2										14
15									0.2										15
16									0.2										16
17									0.2										17
18									0.2										18
19									0.2										19
20									0.2										20
21									0.2										21
22									0.2										22
23									0.2										23
24									0.2										24
25									0.2									0.2	25
26									0.2										26
27									0.2										27
28									0.2										28
29									0.2						0.2				29
30					0.2				0.2										30
31			0.2						0.2			0.2							31

DAY	APRIL Gage Height	Adj.	Discharge	MAY Gage Height	Adj.	Discharge	JUNE Gage Height	Adj.	Discharge	JULY Gage Height	Adj.	Discharge	AUGUST Gage Height	Adj	Discharge	SEPTEMBER Gage Height	Adj.	Discharge	DAY
1			0.2			0.2			56.8			0.2			0.2			0.2	1
2			0.2				1.09	-0	89.4										2
3			0.2				1.08	-0	86.1										3
4			0.2				1.08	-0	86.1										4
5			0.2				1.08	-0	86.1										5
6			80.1				1.07	-0	87.2										6
7	1.36	-0.4	122.				1.07	-0	87.2										7
8	1.37	-0.4	124.				1.07	-0	87.2										8
9	1.37	-0.4	124.						31.3										9
10	1.34	-0.4	2.						0.2										10
11	1.33	-0.5	118.						0.2										11
12	1.33	-0.5	118.						0.2										12
13	1.33	-0.5	119.						0.2										13
14	1.32	-0.5	117						0.2										14
15	1.28	-0.4	114						0.2										15
16			77.6						0.2										16
17			0.2						0.2										17
18			0.2						0.2										18
19			0.2						0.2										19
20			0.2						0.2										20
21			0.2						0.2										21
22			0.2						0.2										22
23			0.2						0.2										23
24			0.2						0.2										24
25			0.2						0.2										25
26			0.2						0.2										26
27			0.2						0.2										27
28			0.2						0.2										28
29			0.2						0.2										29
30			0.2						0.2									0.3	30
31			0.2			0.2						0.2			0.2				31

REMARKS:

1. Total CFS
2. Average Daily Flow in CFS
3. Total Yearly Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

	1	2	3	4	5	6	7	8	9	10	11	YEARLY TOTALS
1	1.2	7.4	37.2	1.2	6.2	456.5	1269.4	6.2	701.2	6.2	6.2	6.0	2055
2	0.2	0.2	1.2	0.2	0.2	14.1	39.7	0.2	23.4	0.2	0.2	.2	6.7
3	12.3	14.7	73.6	12.3	12.3	866	2476	12.3	1391	12.3	12.3	11.9	4869
4	0.2	1.4	15.4	0.2	0.2	131	12.2	0.2	89.0	0.2	0.2	.2	131
5	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	.2	0.2

Maximum stage: 1.52 feet at 1018 on 3-26-82 Discharge: 135 Second-feet.

Minimum stage: feet at TIDES on Discharge: 0.2 Second-feet.

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description: BIG TUJUNGA CREEK DAM OUTFLOW

for Water-Year 19 81 19 82

Station No.: F 168 R

Drainage Area: 82.7 Square Miles

(R.J. SARASUA Observer)

Gage Read: EACH 15 MINUTES

Rating Table No.: 78 II

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1		a	5.9		a	6.5		a	6.7		a	6.3		a	C	H-H	a	19.9	1
2			5.9			6.5			6.7			6.3				H-H		18.4	2
3			5.9			6.4			6.7			6.3						8.6	3
4			5.9			6.5			6.7			6.3						7.1	4
5			5.9	M		6.5			6.7			6.3						6.2	5
6			5.9			6.4			6.7			6.3						6.2	6
7			5.9			6.4			6.7			6.3						6.2	7
8			5.9			6.4			6.7			6.3						6.2	8
9			5.9			6.4			6.7			6.3						6.2	9
10			5.9			6.4			6.7			6.3						6.2	10
11			5.9			6.4			6.7	H-H		7.3			C			6.2	11
12			5.9	M		8.4			8.7	H-H		7.4	H-H		16.1	H-H		11.6	12
13			5.9			8.4			8.7			7.4			21.8			15.4	13
14			5.9			8.4			9.7			7.4	H-H		27.8	H-H		61.7	14
15	M		5.9			8.4			8.7			7.4	H-H		27.8	H-H		76.7	15
16			6.1			8.4			8.7			7.4			27.8	H-H		72.2	16
17			6.1			8.4	M		8.7			7.4			27.8	H-H		41.1	17
18			6.1			8.4			8.7			7.4			27.8	H-H		29.9	18
19			6.1			8.4			8.7			7.4			27.8	H-H		26.7	19
20			6.1			8.4			8.7	H-H		8.9			27.8	H-H		60.2	20
21			6.1			8.4			8.7	H-H		10Z			27.8	H-H		71.1	21
22	M		6.1			8.4			8.7			C			27.8			110.	22
23			6.0			8.4			8.7			C			27.8			110.	23
24			6.0			8.4			8.7			C			27.8			110.	24
25			6.0			8.4			8.7	H-H		5.4	H-H		22.9	H-H		103.	25
26			6.0			8.4			8.7	H-H		8.4	H-H		14.6	H-H		71.	26
27			6.0			8.4			8.7			C			9.0			51.7	27
28			6.0			8.4			8.7			C		o	8.6			47.7	28
29	M		6.0			8.4	M		8.3	H-H						H-H		40.	29
30			6.0		a	8.4			8.3									42.	30
31		a	6.0					a	8.3		a	C					a	42.	31

	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH
1. Total CFS	185.2	242.3	264.1	349.6	401.4	1971.3
2. Average Daily Flow in CFS	6.0	8.1	8.5	11.3	14.4	63.6
3. Total Monthly Flow in A.F.	367	481	524	693	800	3910
4. Maximum Average Daily Flow in CFS	6.1	8.4	8.7	102	27.8	110.
5. Minimum Average Daily Flow in CFS	5.9	6.5	8.3	0	0	6.2

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	H-H	a	176		a	22.3		a	18.2		a	6.8		a	5.1		a	5.1	1
2			266			22.3			18.2			6.8			5.1			5.1	2
3			250			22.3			18.2			6.8			5.1			5.1	3
4			240	M		22.3			18.2			6.8			5.1			6.1	4
5			217						18.2			6.8			5.1			6.1	5
6			195			22.3			18.2			6.8			5.1			5.1	6
7			181			22.3			18.2			6.8			5.1			5.1	7
8			175			22.3			18.2			6.8			5.1			5.1	8
9	H-H		107			22.3			18.2			6.8			5.1			5.1	9
10			125			22.3	M		18.2			6.8			5.1			5.1	10
11	H-H		156			22.3			14.9			6.8			5.1			5.1	11
12	H-H		473			22.3			14.9			6.8			5.1			5.1	12
13	H-H		726	M		32.4			14.9			6.8			5.1			5.1	13
14			108			32.4			14.9			6.8			5.1			5.1	14
15	H-H		107			32.4			14.9			6.8			5.1			5.1	15
16	H-H		106			32.4			14.9	M		6.8			5.1	M		7.6	16
17	H-H		643			32.4			14.9			5.1			5.1			3.8	17
18	H-H		118			32.4			14.9			5.1			5.1			3.8	18
19	H-H		250			32.4			14.9			5.1			5.1			3.8	19
20			147			32.4			14.9			5.1			5.1			3.8	20
21			124			32.4			14.9			5.1			5.1			3.8	21
22			124			32.4			14.9			5.1			5.1			3.8	22
23			124			32.4			14.9			5.1			5.1			3.8	23
24			124			32.4	P		14.9			5.1			5.1			3.8	24
25			124			32.4			6.8			5.1			5.1			3.8	25
26			124			32.4			6.8			5.1			5.1			3.8	26
27	M		124			15.2			6.8			5.1			5.1			3.8	27
28			124			18.2			6.8			5.1			5.1			3.8	28
29			124			18.2			6.8	M		5.1			5.1			3.8	29
30			124		a	18.2		a	6.8		a	5.1		a	5.1		a	3.8	30
31					a	18.2					a	5.1		a	5.1				31

	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	YEARLY TOTALS
1. Total CFS	3216.7	812.2	431.4	185.2	158.1	133.5	8347
2. Average Daily Flow in CFS	107	26.2	14.4	6.0	5.1	4.5	22.9
3. Total Monthly Flow in A.F.	6378	1611	856	368	314	265	16557
4. Maximum Average Daily Flow in CFS	256	32.4	18.2	6.8	5.1	5.1	393
5. Minimum Average Daily Flow in CFS	22.3	18.2	6.8	5.1	5.1	3.8	0

Maximum stage: feet at on 3-16-82 Discharge: 470 * Second-feet.

Minimum stage: DRY feet at TIMES on Discharge: Second-feet.

REMARKS:

* TAKEN FROM DAM DISCHARGE VALVE CURVE

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description VERDUGO WASH AT ESTELLE AVE for Water-Year 1981 1982

Station No. F252-R

Drainage Area 26.8 Square Miles (H. ELDEEB Observer)

Gage Read 15 MIN. PUNCH TAPE

Rating Table No. 47 I

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	0.33		20.	0.18		2.3	0.21		5.	0.47		33.9	0.23		6.2	e		11.8	1
2	0.23		6.2	0.19		2.5	0.22		5.	0.31		16.4	0.23		6.2			18.8	2
3	0.22		5.	0.19		2.5	0.21		3.9	0.27		10.6	0.23		6.2			2.8	3
4	0.22		5	0.19		2.5	0.19		2.5	0.27		10.6	0.22		5.0			2.5	4
5	0.22		5	0.21		3.9	0.21		3.9	0.46		62.7	0.21		3.9			2.5	5
6	0.21		3.9	0.18		2.3	0.23		6.2	0.22		5.	0.21		3.9			2.5	6
7	0.20		2.8	0.18		2.3	0.23		6.2	0.22		5.	0.21		3.9			2.5	7
8	0.20		2.8	0.18		2.3	0.22		5.	0.21		3.9	0.21		3.9			2.8	8
9	0.20		2.8	0.19		2.5	0.26		9.5	0.22		5.	0.21		3.9			2.8	9
10			2.8	0.21		3.9	0.24		7.3	0.21		3.9	0.50		80.1	e		2.8	10
11			2.8	0.21		3.9	0.24		7.3	0.22		5.	0.23		6.2	0.65		181	11
12			2.8	0.22		5.	0.24		7.3	0.24		7.3	0.20		2.8	0.35		262	12
13			2.8	0.23		6.2	0.24		7.3	0.25		8.4	0.19		2.5	0.15		1.5	13
14			2.8	0.24		7.3	0.29		12.9	0.25		8.4	0.19		2.5	0.62		162	14
15			2.8	0.23		6.2	0.37		30.8	0.24		7.3	0.19		2.5	0.29		12.9	15
16			2.8	0.26		9.5	0.35		26.	0.23		6.2	0.26		9.5	0.60		145	16
17			2.8	0.26		9.5	0.33		21.2	0.24		7.3	0.21		3.9	0.81		33.	17
18			2.8	0.27		10.6	0.33		21.2	0.26		9.5	0.19		2.5	0.28		12.1	18
19			2.8	0.27		10.6	0.33		21.2	0.32		18.7	0.19		2.5	e		2.5	19
20	0.20		2.8	0.28		11.8	0.33		21.2	0.79		307	0.19		2.5			2.5	20
21	0.21		3.9	0.27		10.6	0.39		35.6	0.36		27.8	0.22		5.0			2.5	21
22	0.20		2.8	0.27		10.6	0.27		10.6	0.23		6.2	0.22		5.0			2.5	22
23	0.21		3.9	0.28		11.8	0.24		7.3	0.22		5.0	0.22		5.0			2.5	23
24	0.21		3.9	0.31		16.4	0.24		7.3	0.23		6.2	0.22		5.0			2.5	24
25	0.22		5.	0.31		16.4	0.24		7.3	0.24		7.3	0.22		5.0	e		7.3	25
26	0.22		5.	0.53		100.	0.25		8.4	0.25		8.4	0.21		3.9	0.25		8.4	26
27	0.22		5.	0.61		151	0.26		9.5	0.24		7.3	0.21		3.9	0.20		2.8	27
28	0.30		14.2	0.59		135	0.26		9.5	0.30		14.	0.22		5.0	0.31		17.1	28
29	0.20		2.8	0.23		6.2	0.28		11.8	0.25		8.4				0.55		111.	29
30	0.17		2.	0.21		3.9	0.44		532	0.22		5.				0.25		8.4	30
31	0.17		2				0.25		8.4	0.23		6.2				0.22		5.0	31
	134.8			569.5			399.8			676.9			198.4			1100.5			
	4.3			19			12.9			21.8			7.1			35.5			
	267			1130			793			1340			394			2180			
	20			151			53.2			307			80.1			333			
	2.			23			2.5			3.9			2.5			1.5			

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	0.76		280	0.30		14.0	0.17		2.0	0.28		11.8	0.17		2.0	0.18		2.3	1
2	0.30		14	0.29		12.9	0.18		2.3	0.30		14.0	0.17		2.0	0.19		2.5	2
3	0.27		10.6	0.29		12.9	0.19		2.5	0.27		10.6	0.17		2.0	0.19		2.5	3
4	0.26		9.5	0.32		19.3	0.19		2.5	0.26		9.5	0.17		2.0	0.20		2.8	4
5	0.26		9.5	0.21		3.9	0.20		2.8	0.27		10.6	0.16		1.8	0.20		2.8	5
6	0.26		9.5	0.21		3.9	0.21		3.9	0.27		10.6	0.16		1.8	0.22		5.0	6
7	0.26		9.5	0.21		3.9	0.22		5.0	0.26		9.5	0.16		1.8	0.22		5.0	7
8	0.26		9.5	0.19		2.5	0.22		5.0	0.23		6.2	0.16		1.8	0.26		9.5	8
9	0.26		9.5	0.19		2.5	0.23		6.2	0.21		3.9	0.16		1.8	0.21		3.9	9
10	0.26		9.5	0.20		2.8	0.24		7.3	0.21		3.9	0.16		1.8	0.22		5.0	10
11	0.45		50.8	0.24		7.4	0.24		7.3	0.21		3.9	0.17		2.0	0.21		3.9	11
12	0.28		11.8	0.17		2.0	0.25		8.4	0.20		2.8	0.17		2.0	0.23		6.2	12
13	0.27		10.6	0.18		2.3	0.25		8.4	0.18		2.3	0.16		1.8	0.22		5.0	13
14	0.28		11.8	0.17		2.0	0.26		9.5	0.18		2.3	0.16		1.8	0.20		2.8	14
15	0.29		12.9	0.16		1.8	0.24		7.3	0.16		1.8	0.16		1.8	0.22		5.0	15
16	0.29		12.9	0.19		2.5	0.22		5.0	0.15		1.5	0.16		1.8	0.24		7.3	16
17	0.27		10.6	0.18		2.3	0.22		5.0	0.15		1.5	0.16		1.8	0.24		7.3	17
18	0.28		11.8	0.22		5.0	0.17		2.0	0.15		1.5	0.16		1.8	0.33		21.3	18
19	0.28		11.8	0.22		5.0	0.13		1.0	0.14		1.2	0.16		1.8	0.20		2.8	19
20	0.28		11.8	0.16		1.8	0.14		1.2	0.14		1.2	0.17		2.0	0.21		3.9	20
21	0.32		18.8	0.16		1.8	0.15		1.5	0.14		1.2	0.17		2.0	0.21		3.9	21
22	0.34		23.6	0.15		1.5	0.16		1.8	0.14		1.2	0.17		2.0	0.20		2.8	22
23	0.33		21.2	0.16		1.8	0.17		2.0	0.14		1.2	0.17		2.0	0.20		2.8	23
24	0.31		16.4	0.17		2.0	0.25		8.4	0.15		1.5	0.17		2.0	0.20		2.8	24
25	0.31		16.4	0.18		2.3	0.28		11.8	0.15		1.5	0.17		2.0	0.43		51.5	25
26	0.32		18.8	0.18		2.3	0.27		10.6	0.16		1.8	0.18		2.3	0.54		106.	26
27	0.32		18.8	0.17		2.0	0.26		9.5	0.16		1.8	0.18		2.3	0.21		3.9	27
28	0.30		14.0	0.17		2.0	0.29		12.9	0.16		1.8	0.18		2.3	0.19		2.5	28
29	0.31		16.4	0.16		1.8	0.31		16.4	0.16		1.8	0.18		2.3	0.19		2.5	29
30	0.30		14.0	0.17		2.0	0.30		14.0	0.17		2.0	0.18		2.3	0.19		2.5	30
31				0.17		2.0				0.17		2.0	0.18		23				31
	706.3			132.2			183.5			128.4			61.2			288			
	23.5			4.3			6.1			4.1			2.			9.6			
	1400			262			364			255			121			571			
	260			19.3			16.4			14.			2.3			106			
	9.5			1.5			1.0			1.2			1.8			2.3			

REMARKS:

1. Total CFS
2. Average Daily Flow in CFS
3. Total Acrefeet Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

YEARLY TOTALS	
1	4579.5
2	12.5
3	9100.
4	333
5	1.0

Maximum stage 1.79 feet at 0500 on 4/11/82 Discharge 1960 Second-feet.

Minimum stage 0.17 feet at VARIOUS TIMES Discharge 0.5 Second-feet.

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description BURBANK WESTERN STORM DR. AT RIVERSIDE DR. for Water-Year 1981 1982

Station No. E285-R

Drainage Area 25.0 Square Miles (H. EL-DEEB Observer)

Gage Read 15 MIN PUNCH TAPE

Rating Table No. 59 1

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge		Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	e		25.5	0.12		12.1	e		7.9	0.35		60.2	0.17		5.6	0.15		14.2	1	0.87		389.0	0.14		13.1	0.04		3.4	0.10		7.9	0.15		14.6	0.08		5.6	1
2			18.5	0.12		10.6	0.07		5.6	0.17		17.1	0.08		5.6	0.12		10.6	2	0.24		30.3	0.14		13.1	0.04		3.4	0.10		7.9	0.15		14.6	0.08		5.6	2
3			15.7	e		11.9	0.06		4.5	0.09		6.7	0.09		6.7	0.11		9.1	3	0.16		15.7	0.14		13.1	0.03		2.8	0.10		7.9	0.15		14.6	0.08		5.6	3
4			2.6			10.6	0.06		4.5	0.06		4.5	0.15		7.9	0.11		9.1	4	0.14		13.1	0.16		17.8	0.03		2.8	0.10		7.9	0.11		9.1	0.08		5.6	4
5			2.2			9.1	0.07		5.0	e		45.2	0.16		7.9	0.10		7.9	5	0.13		11.9	0.13		11.9	0.03		2.8	0.09		6.7	0.12		10.6	0.08		5.6	5
6			15.7			10.6	0.07		5.6	e		28.	0.11		9.1	0.10		7.9	6	0.12		10.6	0.11		9.1	0.02		2.2	0.10		7.9	0.12		10.6	0.09		6.7	6
7			13.1			10.6	e		5.6	e		11.9	0.11		9.1	0.10		7.9	7	0.12		10.6	0.12		10.6	0.02		2.2	0.10		7.9	0.11		9.1	0.09		6.7	7
8			10.6			7.9			4.5	0.06		4.5	0.11		9.1	0.10		7.9	8	0.12		10.6	0.13		11.9	0.06		4.5	0.10		7.9	0.11		9.1	0.13		11.4	8
9			10.6			9.1			4.5	0.06		4.5	0.11		9.1	0.09		6.7	9	0.12		10.6	0.13		11.9	0.08		5.6	0.11		9.1	0.11		9.1	0.10		7.9	9
10			10.6			7.9			4.5	0.06		4.5	e		6.7	0.10		7.9	10	0.12		10.6	0.13		11.9	0.09		6.7	0.10		7.9	0.10		7.9	0.09		6.7	10
11			9.1			9.1			4.5	0.06		4.5	e		15.7	0.48		114.0	11	b		144.0	0.13		11.9	0.09		6.7	0.10		7.9	0.10		7.9	0.10		7.9	11
12			9.1			5.6			4.5	0.06		4.5	0.11		9.1	0.54		147.0	12			23.5	0.13		11.9	0.09		6.7	0.10		7.9	0.10		7.9	0.10		7.9	12
13			7.9			5.6			4.5	0.06		4.5	0.11		9.1	0.38		72.0	13			9.1	0.12		10.6	0.09		6.7	0.10		7.9	0.10		7.9	0.11		9.1	13
14			7.9			2.2			4.5	0.08		5.6	0.10		7.9	0.69		241.0	14			7.9	0.12		10.6	0.09		6.7	0.10		7.9	0.10		7.9	0.10		7.9	14
15			7.9			5.6			4.5	0.08		5.6	0.11		9.1	0.55		152.0	15			9.1	0.11		9.1	0.09		6.7	0.11		9.1	0.09		6.7	0.09		6.7	15
16			7.9			2.2	e		5.0	0.07		5.0	0.12		10.6	0.63		199.0	16	b		6.7	0.10		7.9	0.09		6.7	b		13.1	0.10		7.9	0.10		7.9	16
17			6.7			2.2	0.05		4.5	0.07		5.0	0.11		9.1	b		425.0	17	0.08		5.6	0.09		6.7	0.10		7.9			10.6	0.10		7.9	0.21		22.8	17
18			5.6			2.2	0.05		5.6	0.08		5.6	0.11		9.1			15.7	18	0.09		6.7	0.09		6.7	0.10		7.9			10.6	0.10		7.9	0.20		21.2	18
19			5.6			3.4	0.04		4.5	0.34		63.6	0.11		9.1			15.7	19	0.11		9.1	0.09		6.7	0.10		7.9			10.6	0.10		7.9	0.11		9.1	19
20			4.5			7.9	0.06		4.5	e		31.4	0.10		7.9			15.7	20	0.09		6.7	0.08		5.6	0.09		6.7	b		11.9	0.10		7.9	0.09		6.7	20
21			4.6			13.7	0.06		4.5			47.5	0.11		9.1			14.6	21	0.10		7.9	0.08		5.6	0.09		6.7	0.13		11.9	0.10		7.9	0.09		6.7	21
22			3.9			23.5	0.07		5.0			30.3	0.11		9.1			14.6	22	0.11		9.1	0.08		5.6	0.09		6.7	0.14		13.1	0.09		6.7	0.09		6.7	22
23			3.4	e		16.6	0.07		5.0			18.7	0.10		7.9			14.6	23	0.12		10.6	0.07		5.0	0.10		7.9	0.14		13.1	0.10		7.9	0.08		5.6	23
24			2.8	0.07		5.0	0.06		4.5			15.7	0.10		7.9	b		10.6	24	0.12		10.6	0.07		5.0	0.10		7.9	0.14		13.1	0.10		7.9	0.09		6.7	24
25			2.8	0.07		5.0	0.08		5.6	e		9.1	0.11		9.1	0.13		12.1	25	0.12		10.6	0.07		5.0	0.10		7.9	0.13		11.9	0.10		7.9	0.26		35.1	25
26			3.4	0.47		111.	0.07		5.0	0.06		4.5	0.10		7.9	0.16		16.2	26	0.14		13.1	0.07		5.0	0.10		7.9	0.14		13.1	0.10		7.9	b		127.	26
27			3.2	0.23		23.	0.07		5.0	0.06		4.5	0.09		6.7	0.11		9.1	27	0.14		13.1	0.07		5.0	0.10		7.9	0.14		13.1	0.10		7.9			21.2	27
28			3.2	E		20.	0.07		5.0	0.13		11.3	0.12		10.6	0.14		12.8	28	0.15		14.6	0.07		5.0	0.11		9.1	0.14		13.1	0.10		7.9			11.9	28
29			3.8	e		47.5	0.16		4.5	0.06		4.5				0.45		100.0	29	0.15		14.6	0.06		4.5	0.11		9.1	0.14		13.1	0.09		6.7			9.1	29
30			17.1	e		17.1	0.16		15.5	0.06		4.5				0.20		21.2	30	0.13		11.9	0.06		4.5	0.11		9.1	0.15		14.6	0.09		6.7	b		6.7	30
31			14.6				0.05		3.9	0.06		4.5				0.19		19.7	31				0.05		3.9				0.15		14.6	0.09		6.7				31
1	317.9			729.8			161.1			761.1			296.6			1731.8			1	857.5			266.2			187.2			321.2			269.2			411.3			1
2	10.3			24.3			5.2			24.6			10.6			55.9			2	28.6			8.6			6.2			10.4			8.7			13.7			2
3	631			1450			320			1510			588			3430			3	1700.			528.			371.			637.			534.			816.			3
4	20.8			200.			15.5			314.			62.1			425.			4	389.			17.8			9.1			14.6			14.6			12.7			4
5	2.2			2.2			3.9			4.5			5.0			6.7			5	5.6			3.9			2.2			6.7			6.7			5.6			5

Maximum stage 2.68 feet at 2400 on 1-19-82 Discharge 3010. Second-feet

Minimum stage 0.07 feet at VARIOUS TIMES Discharge 1.7 Second-feet

REMARKS:

1 - Total CFS
2 - Average Daily Flow in CFS
3 - Total Monthly Flow in A.F.
4 - Maximum Average Daily Flow in CFS
5 - Minimum Average Daily Flow in CFS

YEARLY TOTALS

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description LOS ANGELES RIVER AT TUJUNGA AVE for Water-Year 1981 1982

Station No. F300-R

Drainage Area 401 Square Miles (H. ELDEEB Observer)

Gage Read 15 MIN. PUNCH TAPE

Rating Table No. 62-1

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	3.03		160	0.48		7.1	0.70		11.8	3.44		386	0.96		18.3	1.32		30.2	1
2	2.87		16	0.74		12.7	0.60		9.5	1.60		41.8	0.71		17.8	2.08		67.5	2
3	0.68		11.3	0.89		16.4	0.59		9.3	0.72		12.3	0.97		18.5	0.83		14.9	3
4	0.60		9.5	0.87		16.4	0.58		9.1	0.62		10.0	0.95		18.0	0.64		10.4	4
5	0.61		9.8	0.80		16.2	0.60		9.5	b		561	0.91		17.0	0.50		7.5	5
6	2.93		17.5	0.86		15.7	0.65		10.7			627	0.83		14.9	0.55		8.4	6
7	2.91		17.	0.56		8.7	0.62		10.0			51.6	0.84		15.2	0.58		9.1	7
8	0.89		16.4	0.58		9.1	0.56		8.7			20.5	0.89		16.4	0.53		10.5	8
9	0.86		15.7	0.55		8.4	0.54		8.2			10.1	0.83		14.9	0.50		9.5	9
10	0.66		10.9	0.55		8.4	0.55		8.4			18.3	3.53		503	0.61		9.7	10
11	0.66		10.9	0.54		8.2	0.55		8.4			24.5	2.01		63.5	3.45		67.2	11
12	0.61		9.7	0.55		8.4	0.54		8.2			20.6	1.15		24.1	3.03		160	12
13	0.69		11.6	0.52		7.8	0.65		10.6	b		10.4	1.26		28.1	0.11		16.9	13
14	0.61		9.7	0.58		9.1	0.75		13.1	0.54		8.2	0.70		11.8	4.36		1260	14
15	0.64		10.5	0.55		8.4	0.64		10.4	0.76		13.2	0.69		11.5	2.32		130	15
16	0.67		11.1	0.59		9.2	0.57		8.9	1.47		37.8	1.16		24.5	2.34		121	16
17	0.58		9.1	0.57		8.9	0.55		8.4	b		46.4	0.71		12.1	5.32		381	17
18	0.55		8.4	0.52		7.8	0.51		7.6			46.4	0.56		8.7	1.64		43.3	18
19	0.53		9.1	0.49		7.2	1.92		58.3			41.8	0.57		8.9	e		64.7	19
20	0.63		10.2	0.53		8.0	0.67		11.2			2940	0.62		10.0			134	20
21	0.63		11.3	2.88		138.	0.70		11.9			400	0.67		11.1			210	21
22	0.62		10.0	0.68		11.4	0.50		7.4			76.9	0.67		11.1			45	22
23	0.62		10.0	0.62		10.	0.43		6.1			45.9	0.69		11.6	e		29.6	23
24	0.58		9.1	0.57		8.9	0.43		6.1			34.9	0.66		10.9	1.10		62.3	24
25	0.61		9.7	0.71		12.1	0.47		6.8			36.2	0.66		10.9	1.23		26.7	25
26	0.67		11.6	3.43		376	0.54		8.2			33.5	0.63		10.2	1.35		61.6	26
27	0.63		11.3	3.82		902	0.59		9.3	b		28.8	0.67		11.1	1.24		29.5	27
28	2.49		90.3	4.39		1800	0.56		8.7	1.64		43.8	0.68		11.3	1.24		27.3	28
29	b		27.3	1.60		41.9	0.55		8.4	1.34		31.0				1.56		31.7	29
30	b		6.7	1.16		24.4	3.59		584	1.05		20.9				1.73		41.5	30
31			5.				0.86		15.8	1.02		20.							31
	236.7			3526.8			913.			5134.3			945.5			7513.7			
	1.89			118			29.5			166.			33.8			242			
	1162			7000			1810.			10180			1880			15077			
	160			1800			584			2940.			503			3612			
	5			7.1			6.1			10.			5.7			8.4			

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj	Discharge	Gage Height	Adj.	Discharge	
1	b		2100	b		67.	0.83		14.9	0.67		11.1	0.65		10.6	0.65		10.6	1
2			410			53.	0.82		14.6	0.72		12.3	0.65		10.6	0.64		10.4	2
3			110			50.	0.79		13.9	0.68		11.3	0.66		10.9	0.66		10.9	3
4			60			70.	0.86		15.6	0.65		10.6	0.65		10.6	0.69		11.6	4
5			75			60.	0.80		14.3	0.62		100	0.67		11.1	0.69		11.6	5
6			42			55.	0.82		14.3	0.63		10.2	0.68		11.3	0.67		11.1	6
7			20			50	1.13		23.4	0.79		13.9	0.68		11.3	0.66		10.9	7
8			15			50.	1.32		30.1	0.93		17.5	0.67		11.1	b		13.5	8
9			22			45.	1.31		29.8	0.87		15.9	0.67		11.1			15.5	9
10			80			55.	1.35		31.5	0.63		11.3	0.67		11.1			12.5	10
11			1200			85.	0.91		17.0	0.66		10.9	0.67		11.1			9.7	11
12			110			70.	0.87		15.9	0.65		10.6	0.66		10.9			10.0	12
13			25			50	0.87		15.9	0.65		10.6	0.66		10.9	b		11.1	13
14			6.			50.	0.81		14.4	0.67		11.1	0.66		10.9	0.64		10.4	14
15			5.			50	0.79		14.0	0.73		12.5	0.67		11.1	0.92		17.2	15
16			8.			50.	0.76		13.2	0.73		12.5	0.66		10.7	0.68		11.4	16
17			6			47.	0.76		13.2	0.71		12.0	0.67		11.1	0.66		10.8	17
18			5			45	0.79		14.0	0.69		11.6	0.67		11.1	1.28		28.8	18
19			85.			13.	0.77		13.5	0.71		12.0	0.67		11.1	0.58		9.1	19
20			120			19	0.79		14.0	0.73		12.5	0.63		11.3	0.54		8.2	20
21			80			12.	0.79		13.9	0.73		12.5	0.80		14.2	0.54		8.2	21
22			75			6.	0.81		14.4	0.74		12.8	0.82		14.7	0.53		8.0	22
23			70			5.	0.85		15.4	0.72		12.3	0.81		14.4	0.53		8.0	23
24			70			8.	0.77		13.5	0.69		11.6	0.75		13.0	0.66		10.9	24
25			65			5	0.75		13.0	0.67		11.1	0.70		11.8	0.87		16.0	25
26			20			5.	0.76		13.2	0.65		10.6	0.70		11.8	1.60		42.0	26
27			52			5.	0.75		13.0	0.67		11.1	0.69		11.6	0.81		14.5	27
28			50			5.	0.77		13.4	0.67		11.2	0.70		11.8	0.58		9.1	28
29			70			5.	0.75		13.1	0.64		10.4	0.68		11.3	0.53		8.0	29
30	b		55			5.	0.67		11.1	0.70		11.7	0.68		11.3	0.47		6.5	30
31				b		5.				0.67		11.1	0.66		10.9				31
	5151			1105.			482.			366.8			356.9			376.8			
	171.7			35.6			16.1			11.8			11.5			12.6			
	10020			2190.			956.			728.			708.			747.			
	2122			35.			31.5			17.5			14.7			42.			
	5.			11.1			10.0			10.6			6.8			5.			

REMARKS:

1. Total CFS
2. Average Daily Flow in CFS
3. Total Monthly Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

YEARLY TOTALS

1	26543.5					
2	72.7					
3	52450.					
4	3612.					
5	5.					

Maximum stage 9.48 feet at 1015 on 3-17-82 Discharge 17800 Second-feet.

Minimum stage INC feet at on Discharge Second-feet.

Appendix C

WELLS DRILLED AND DESTROYED

WELLS DESTROYED 1981-82

Party	LACFCD Well No.	Owner No.
	- None -	

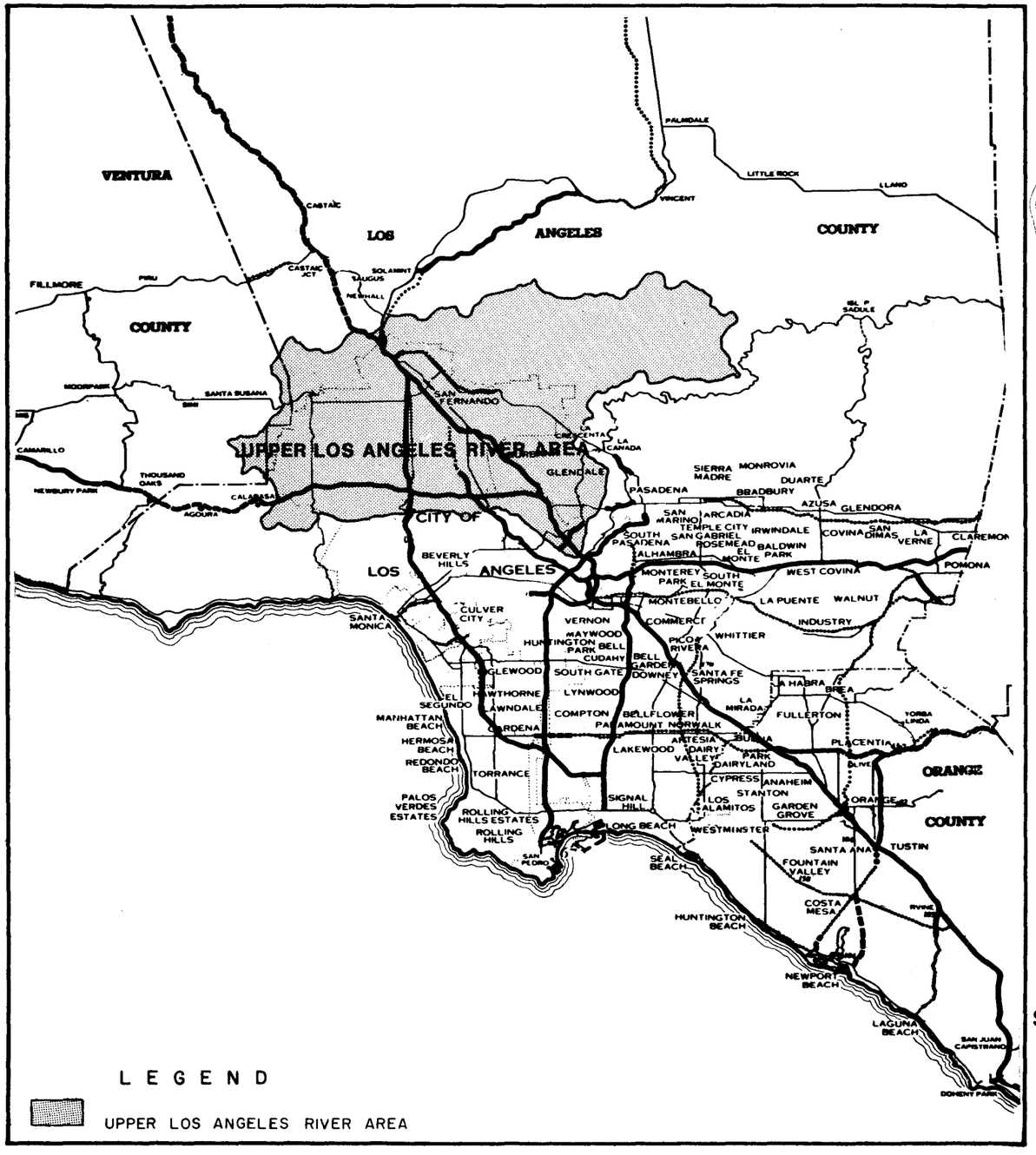
WELLS DRILLED 1981-82

Conrock	4915A	-
LACFCD	3575C	-
LACFCD	3575D	-

Appendix D

PLATES

UPPER LOS ANGELES RIVER AREA WATERMASTER



LEGEND

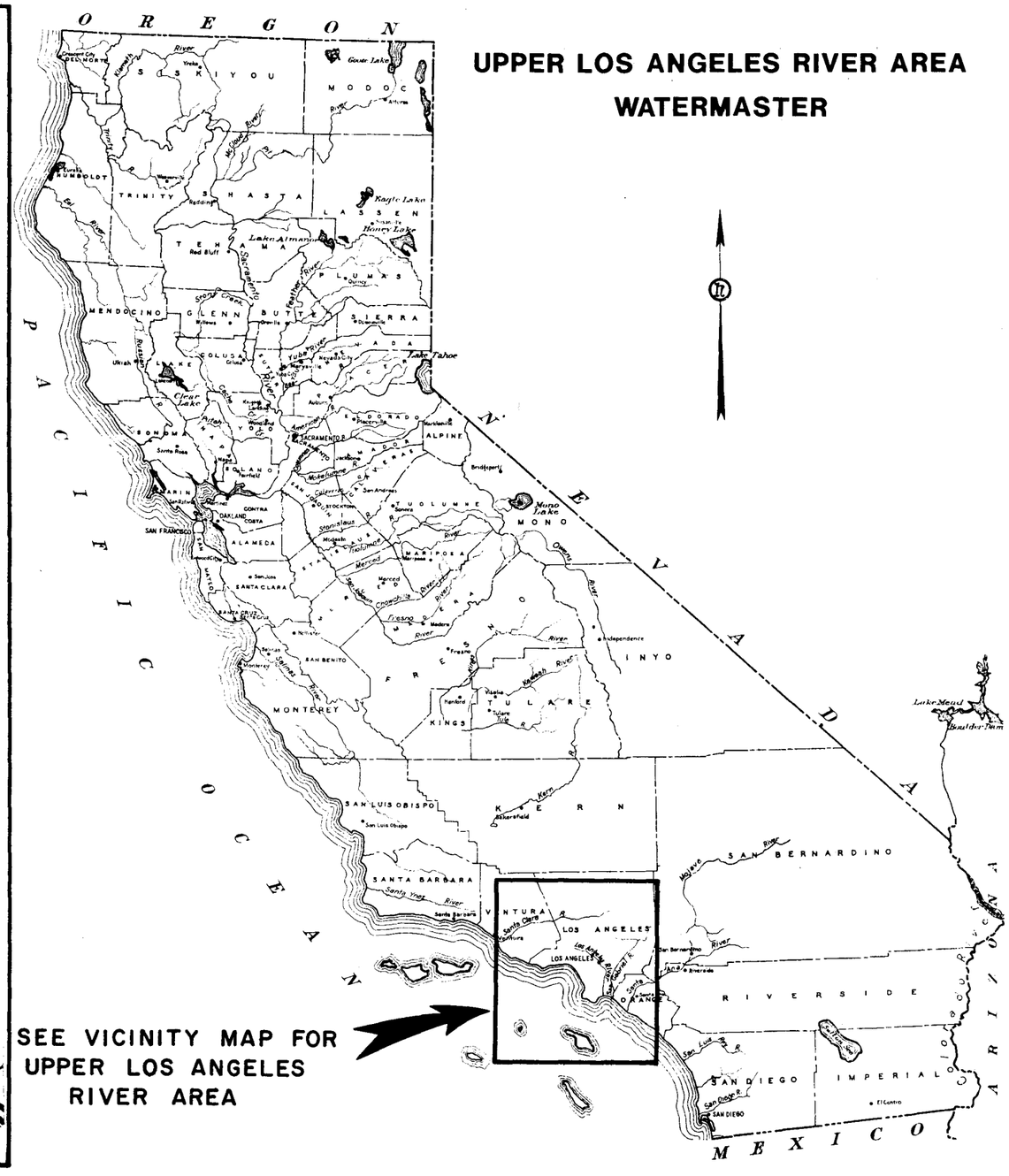
UPPER LOS ANGELES RIVER AREA

VICINITY MAP

SCALE

0 5 10 15 Miles

SEE VICINITY MAP FOR UPPER LOS ANGELES RIVER AREA



LOCATION MAP

PLATE 1

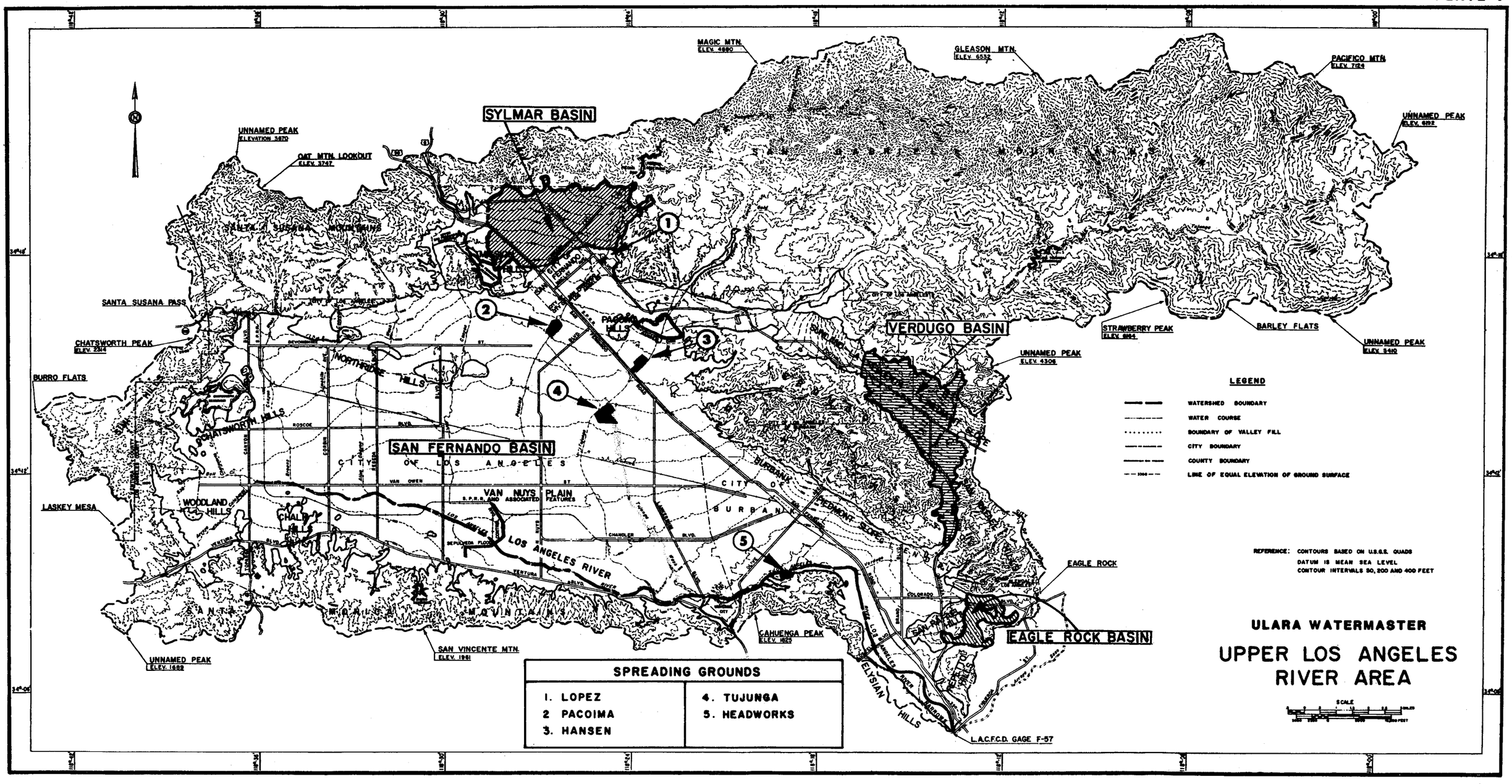
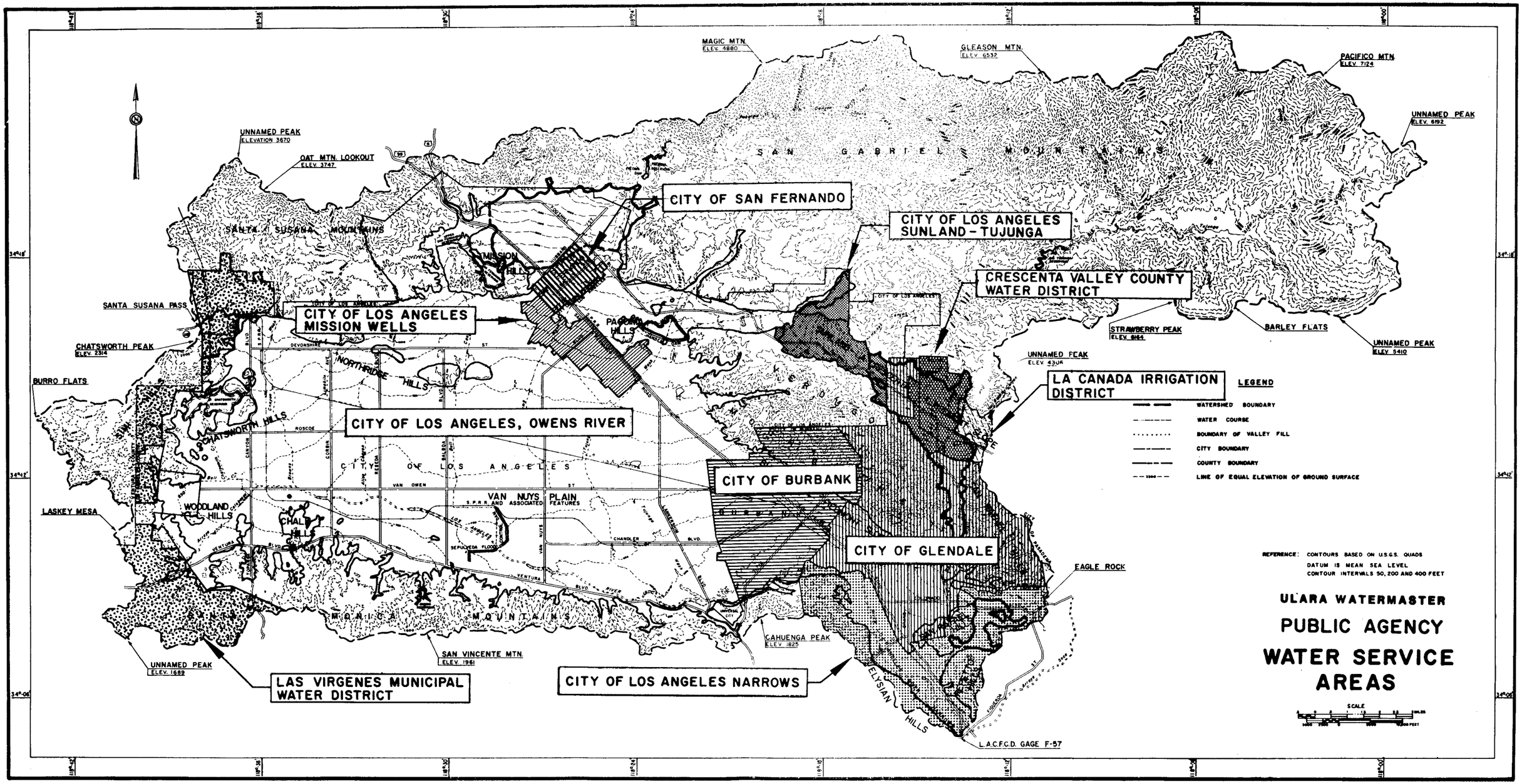
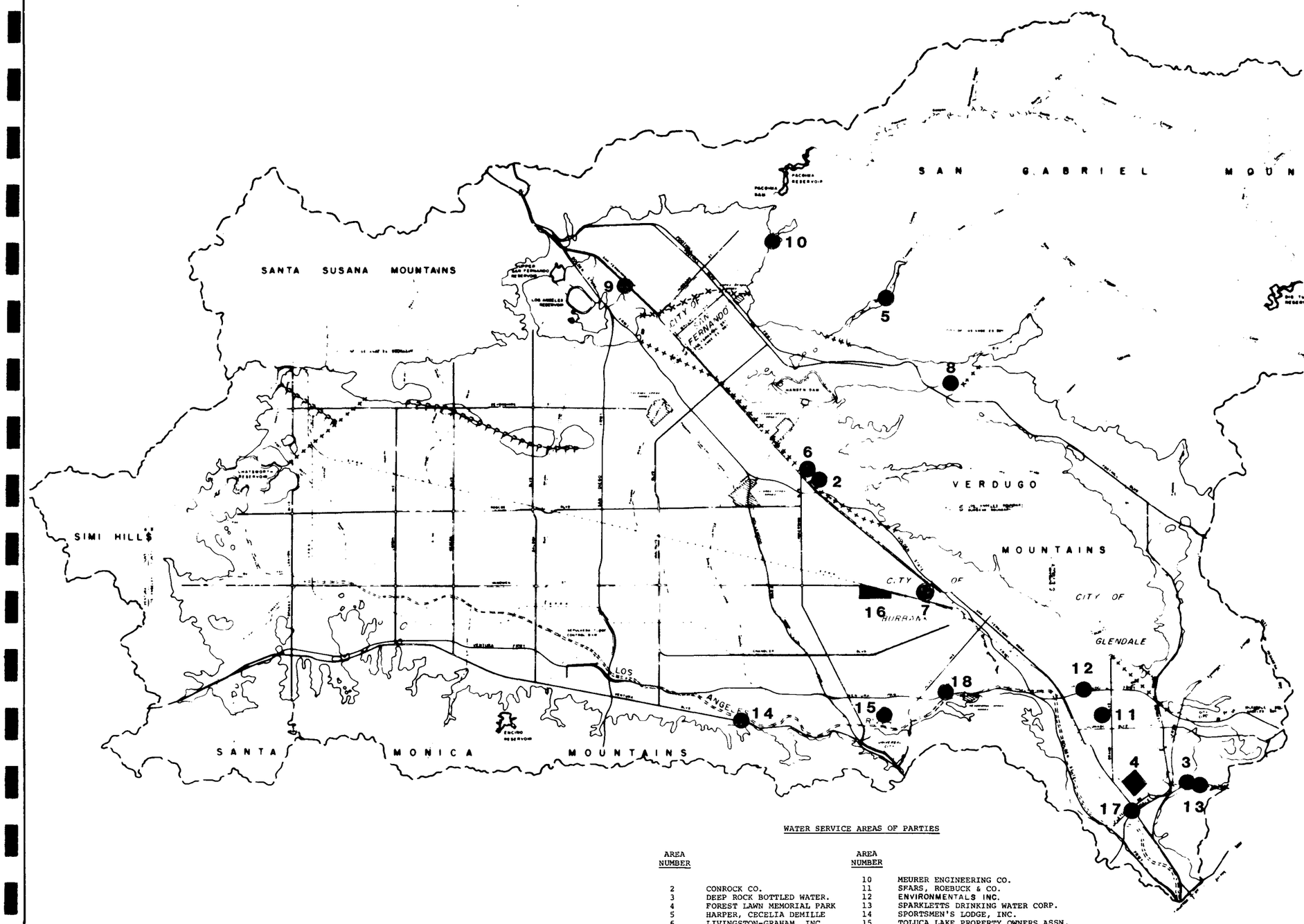

MAGIC MTN.
ELEV. 4880
GLEASON MTN.
ELEV. 6532
PACIFICO MTN.
ELEV. 7124
UNNAMED PEAK
ELEV. 6192
SYLMAR BASIN
UNNAMED PEAK
ELEVATION 3870
OAT MTN. LOOKOUT
ELEV. 3747
SANTA SUSANA MOUNTAINS
SANTA SUSANA PASS
CHATSWORTH PEAK
ELEV. 2824
BURRO FLATS
SAN FERNANDO BASIN
VERDUGO BASIN
STRAWBERRY PEAK
ELEV. 6864
BARLEY FLATS
UNNAMED PEAK
ELEV. 6440
UNNAMED PEAK
ELEV. 4306
LASKEY MESA
WOODLAND HILLS
CHALK HILLS
VAN NUYS PLAIN
S.P.R.R. AND ASSOCIATED FEATURES
LOS ANGELES RIVER
SANTA MONICA MOUNTAINS
BURBANK
CITY OF BURBANK
EAGLE ROCK
EAGLE ROCK BASIN
CAHUENGA PEAK
ELEV. 1823
SAN VINCENTE MTN.
ELEV. 1901
UNNAMED PEAK
ELEV. 1682
L.A.C.F.C.D. GAGE F-57
LEGEND
WATERSHED BOUNDARY
WATER COURSE
BOUNDARY OF VALLEY FILL
CITY BOUNDARY
COUNTY BOUNDARY
LINE OF EQUAL ELEVATION OF GROUND SURFACE
REFERENCE: CONTOURS BASED ON U.S.G.S. QUADS
DATUM IS MEAN SEA LEVEL
CONTOUR INTERVALS 50, 200 AND 400 FEET
SPREADING GROUNDS
1. LOPEZ
2 PACOIMA
3. HANSEN
4. TUJUNGA
5. HEADWORKS
ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
SCALE

PLATE 2


MAGIC MTN.
ELEV. 4880
GLEASON MTN.
ELEV. 6532
PACIFICO MTN.
ELEV. 7124
UNNAMED PEAK
ELEV. 6192
UNNAMED PEAK
ELEVATION 3670
OAT MTN. LOOKOUT
ELEV. 3747
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
CITY OF SAN FERNANDO
CITY OF LOS ANGELES
SUNLAND-TUJUNGA
CRESCENTA VALLEY COUNTY
WATER DISTRICT
CITY OF LOS ANGELES
MISSION WELLS
SANTA SUSANA PASS
CHATSWORTH PEAK
ELEV. 2314
BURRO FLATS
STRAWBERRY PEAK
ELEV. 6164
BARLEY FLATS
UNNAMED PEAK
ELEV. 5410
UNNAMED PEAK
ELEV. 4306
LA CANADA IRRIGATION
DISTRICT
CITY OF LOS ANGELES, OWENS RIVER
CITY OF BURBANK
CITY OF GLENDALE
EAGLE ROCK
LASKEY MESA
VAN NUYS PLAIN
S.P.R.R. AND ASSOCIATED FEATURES
SEPULVEDA FLOOD CONTROL BASIN
MONICA MOUNTAINS
SAN VINCENTE MTN.
ELEV. 1961
CAHUENGA PEAK
ELEV. 1825
UNNAMED PEAK
ELEV. 1689
LAS VIRGENES MUNICIPAL
WATER DISTRICT
CITY OF LOS ANGELES NARROWS
ELYSIAN HILLS
L.A.C.F.C.D. GAGE F-57
LEGEND
WATERSHED BOUNDARY
WATER COURSE
BOUNDARY OF VALLEY FILL
CITY BOUNDARY
COUNTY BOUNDARY
LINE OF EQUAL ELEVATION OF GROUND SURFACE
REFERENCE: CONTOURS BASED ON U.S.G.S. QUADS
DATUM IS MEAN SEA LEVEL
CONTOUR INTERVALS 50, 200 AND 400 FEET
ULARA WATERMASTER
PUBLIC AGENCY
WATER SERVICE
AREAS
SCALE



N

ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

WATER SERVICE AREAS OF INDIVIDUAL PRODUCERS SEPTEMBER 1982

SCALE

4000 2000 0 2000 4000 FEET

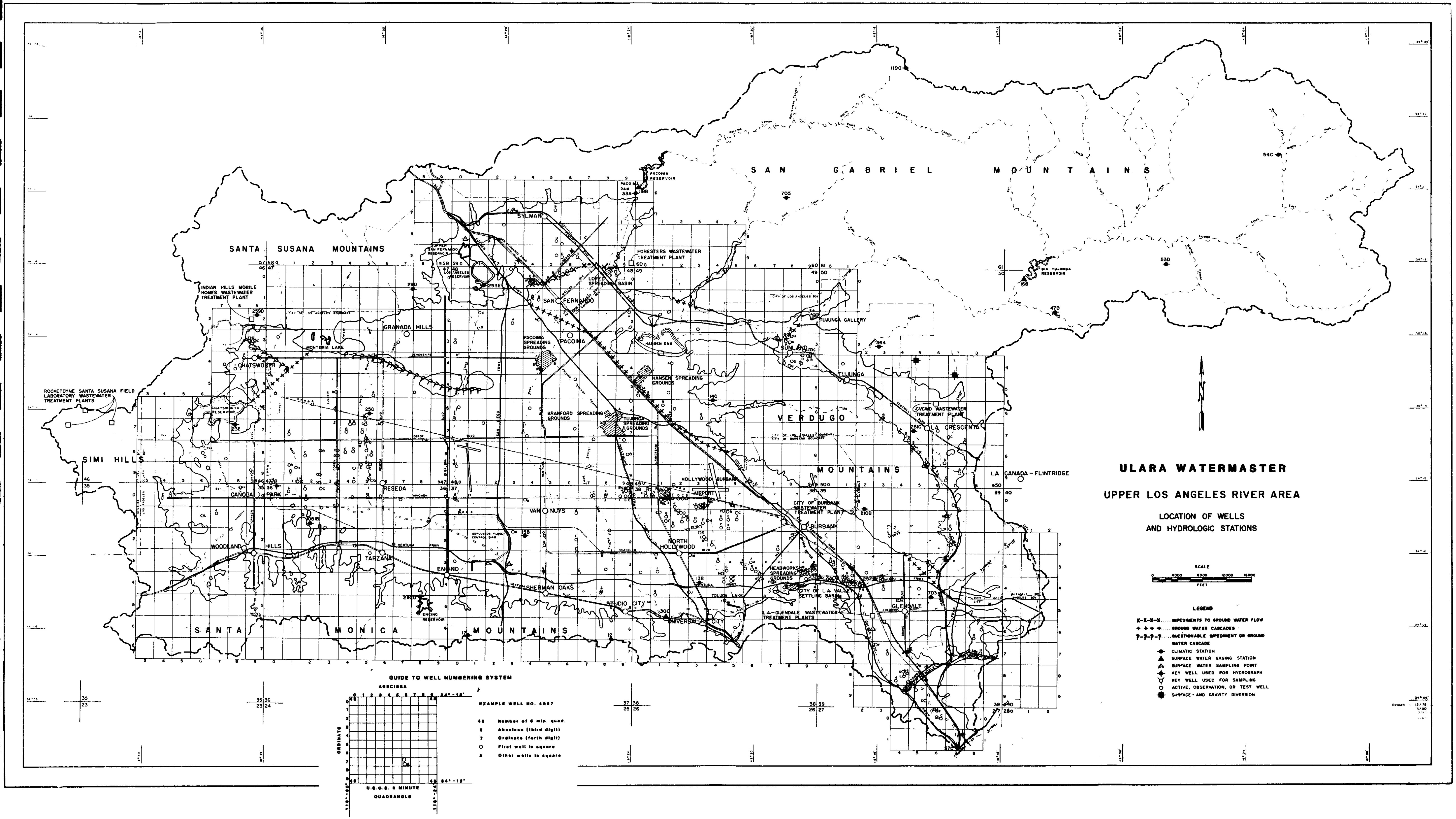
LEGEND

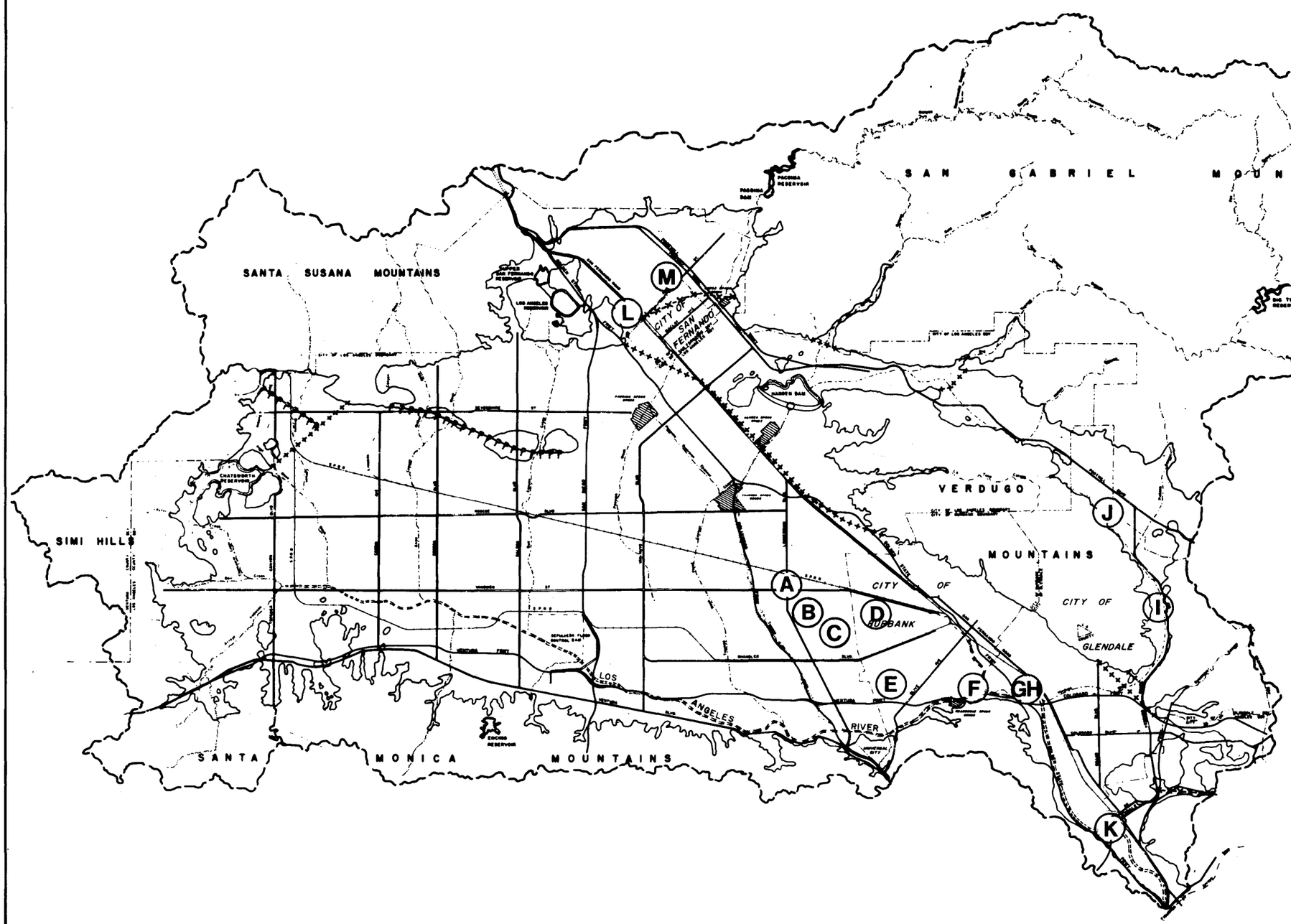
- E-E-E-E IMPEDIMENTS TO GROUND WATER FLOW
- + + + + GROUND WATER CASCADES
- ?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE

WATER SERVICE AREAS OF PARTIES

AREA NUMBER		AREA NUMBER	
2	CONROCK CO.	10	MEURER ENGINEERING CO.
3	DEEP ROCK BOTTLED WATER.	11	SEARS, ROEBUCK & CO.
4	FOREST LAWN MEMORIAL PARK	12	ENVIRONMENTALS INC.
5	HARPER, CECELIA DEMILLE	13	SPARKLETTS DRINKING WATER CORP.
6	LIVINGSTON-GRAHAM, INC.	14	SPORTSMEN'S LODGE, INC.
7	LOCKHEED AIRCRAFT CORP.	15	TOLUCA LAKE PROPERTY OWNERS ASSN.
8	MENA, JOHN & BARBARA	16	VALHALLA MEMORIAL PARK
9	MOORDIGIAN, KISAG	17	VAN DE KAMP'S DUTCH BAKERS, INC.
		18	WALT DISNEY PRODUCTIONS

PLATE 4


ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
LOCATION OF WELLS
AND HYDROLOGIC STATIONS
SCALE
0 4000 8000 12000 16000
FEET
LEGEND
IMPEDIMENTS TO GROUND WATER FLOW
GROUND WATER CASCADES
QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE
CLIMATIC STATION
SURFACE WATER GAGING STATION
SURFACE WATER SAMPLING POINT
KEY WELL USED FOR HYDROGRAPH
KEY WELL USED FOR SAMPLING
ACTIVE, OBSERVATION, OR TEST WELL
SURFACE - AND GRAVITY DIVERSION
GUIDE TO WELL NUMBERING SYSTEM
ABSCISSA
ORDINATE
U.S.G.S. 6 MINUTE QUADRANGLE
EXAMPLE WELL NO. 4867
48 Number of 6 min. quad.
6 Abscissa (third digit)
7 Ordinate (forth digit)
First well in square
A Other wells in square
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SANTA MONICA MOUNTAINS
VERDUGO MOUNTAINS
SIMI HILLS
SYLMAR
SAN FERNANDO
PACOIMA
GRANADA HILLS
CHATSWORTH
CANOGA PARK
RESEDA
VAN NUYS
WOODLAND HILLS
TARZANA
ENCINO
SHERMAN OAKS
STUDIO CITY
UNIVERSAL CITY
NORTH HOLLYWOOD
BURBANK
GLENDALE
LA CRESCENTA
LA CANADA - FLINTRIDGE
SUNLAND
TUJUNGA
TOLUCA LAKE
PACOIMA RESERVOIR
PACOIMA DAM
BIG TUJUNGA RESERVOIR
UPPER SAN FERNANDO RESERVOIR
LOS ANGELES RESERVOIR
CHATSWORTH RESERVOIR
ENCINO RESERVOIR
HANSEN DAM
SEPULVEDA FLOOD CONTROL BASIN
FORESTERS WASTEWATER TREATMENT PLANT
LOPEZ SPREADING BASIN
PACOIMA SPREADING GROUNDS
HANSEN SPREADING GROUNDS
BRANFORD SPREADING GROUNDS
TUJUNGA SPREADING GROUNDS
HEADWORKS SPREADING GROUNDS
INDIAN HILLS MOBILE HOMES WASTEWATER TREATMENT PLANT
ROCKETDYNE SANTA SUSANA FIELD LABORATORY WASTEWATER TREATMENT PLANTS
CVCWD WASTEWATER TREATMENT PLANT
CITY OF BURBANK WASTEWATER TREATMENT PLANT
CITY OF L.A. VALLEY SETTLING BASIN
L.A.-GLENDALE WASTEWATER TREATMENT PLANTS
HOLLYWOOD BURBANK AIRPORT
TUJUNGA GALLERY
MONTERIA LAKE



ULARA WATERMASTER

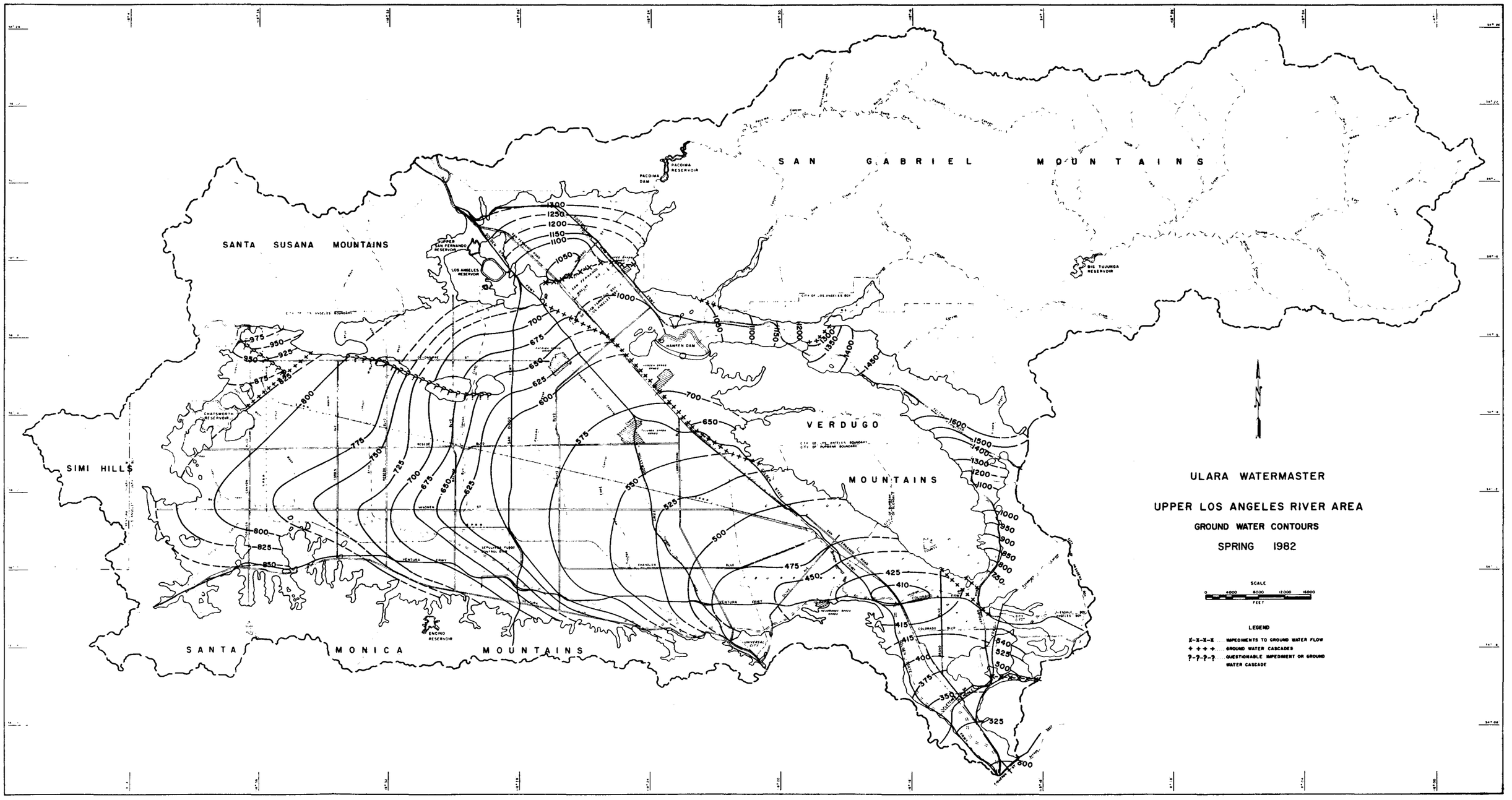
UPPER LOS ANGELES RIVER AREA

WELL FIELD LOCATIONS

SCALE

A - NORTH HOLLYWOOD
B - ERWIN
C - WHITNALL
D - CITY OF BURBANK
E - VERDUGO
F - HEADWORKS
G - CRYSTAL SPRINGS
H - CITY OF GLENDALE (GRANDVIEW)
I - CITY OF GLENDALE (GLORIETTA)
J - C.V.C.W.D.
K - POLLOCK
L - MISSION
M - CITY OF SAN FERNANDO

PLATE 5



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

GROUND WATER CONTOURS

SPRING 1982

SCALE

0 4000 8000 12000 16000

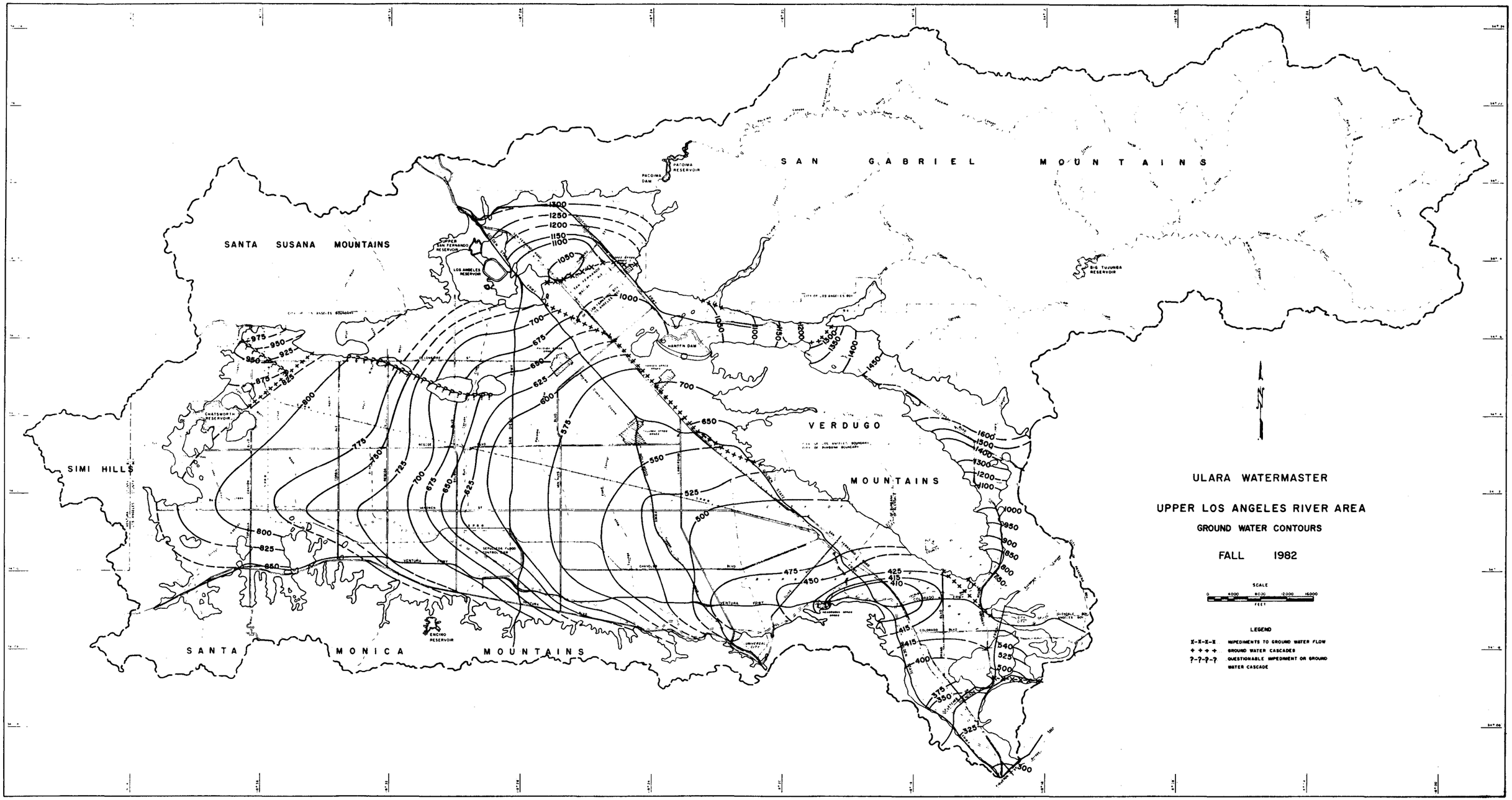
FEET

LEGEND

X-X-X-X IMPEDIMENTS TO GROUND WATER FLOW

+ + + + GROUND WATER CASCADES

?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

GROUND WATER CONTOURS

FALL 1982

SCALE

0 4000 8000 12000 16000

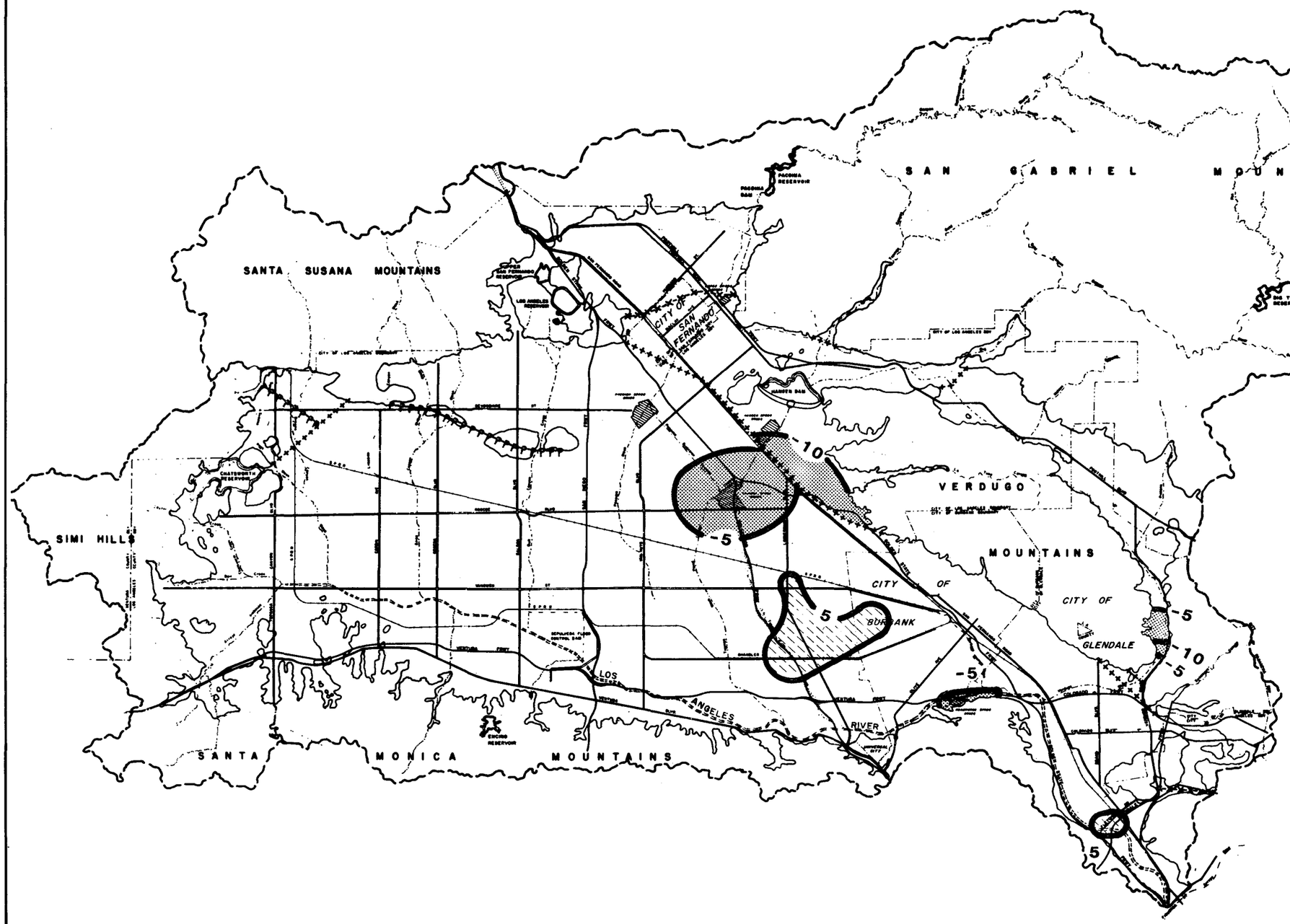
FEET

LEGEND

X-X-X-X IMPEDIMENTS TO GROUND WATER FLOW

+ + + + GROUND WATER CASCADES

?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE



N

ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

LINES OF EQUAL CHANGE IN GROUND WATER ELEVATION

FALL 1981 - FALL 1982

SCALE

0 4000 8000 12000 16000

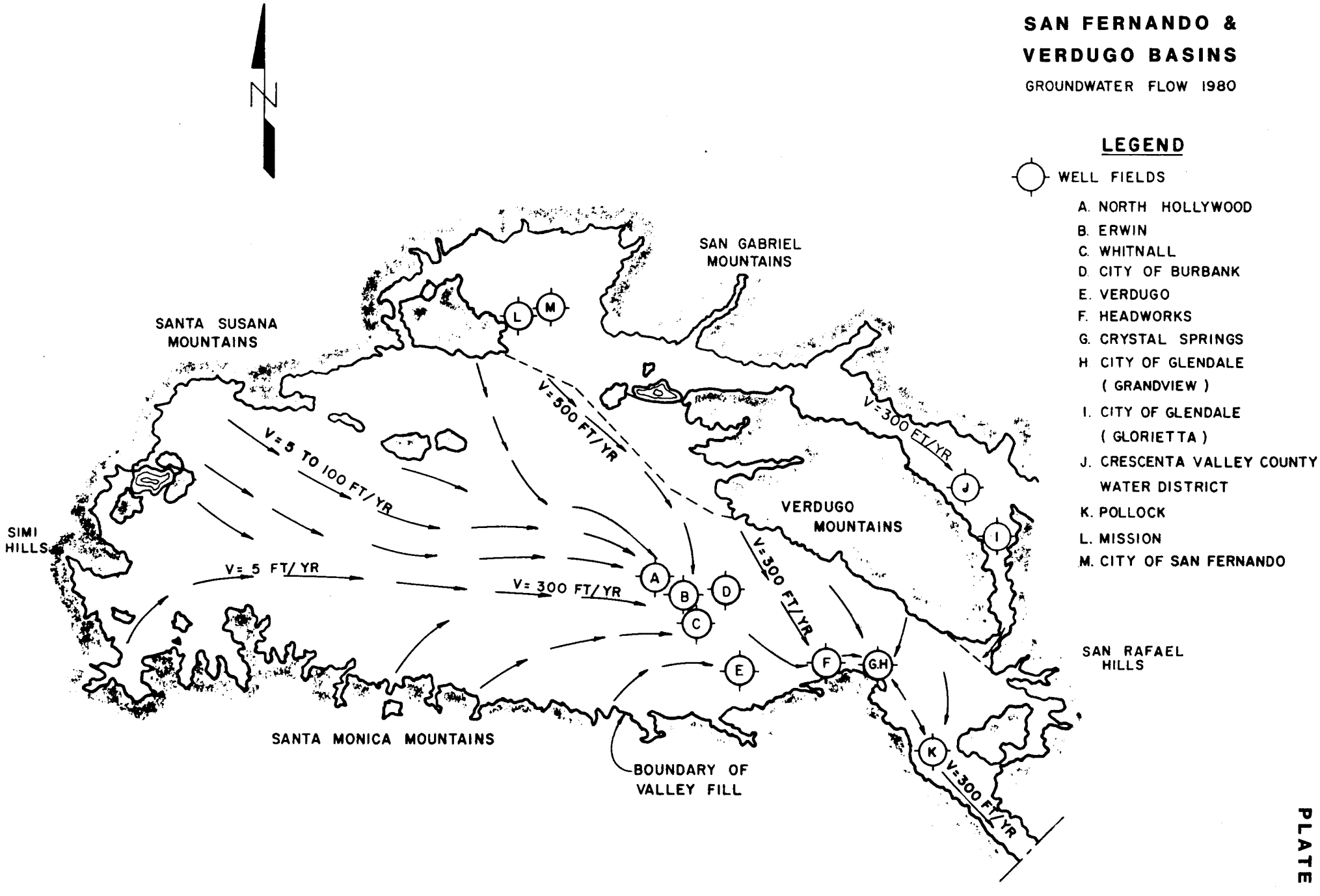
FEET

LEGEND

- E-E-E-E IMPEDIMENTS TO GROUND WATER FLOW
- + + + + GROUND WATER CASCADES
- ?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE
- RISE IN WATER LEVELS IN FEET
- DECLINE IN WATER LEVELS
- NO CHANGE (LESS THAN 5 FEET)

SAN FERNANDO & VERDUGO BASINS

GROUNDWATER FLOW 1980



LEGEND

WELL FIELDS

A. NORTH HOLLYWOOD
B. ERWIN
C. WHITNALL
D. CITY OF BURBANK
E. VERDUGO
F. HEADWORKS
G. CRYSTAL SPRINGS
H. CITY OF GLENDALE (GRANDVIEW)
I. CITY OF GLENDALE (GLORIETTA)
J. CRESCENTA VALLEY COUNTY WATER DISTRICT
K. POLLOCK
L. MISSION
M. CITY OF SAN FERNANDO

PLATE 8