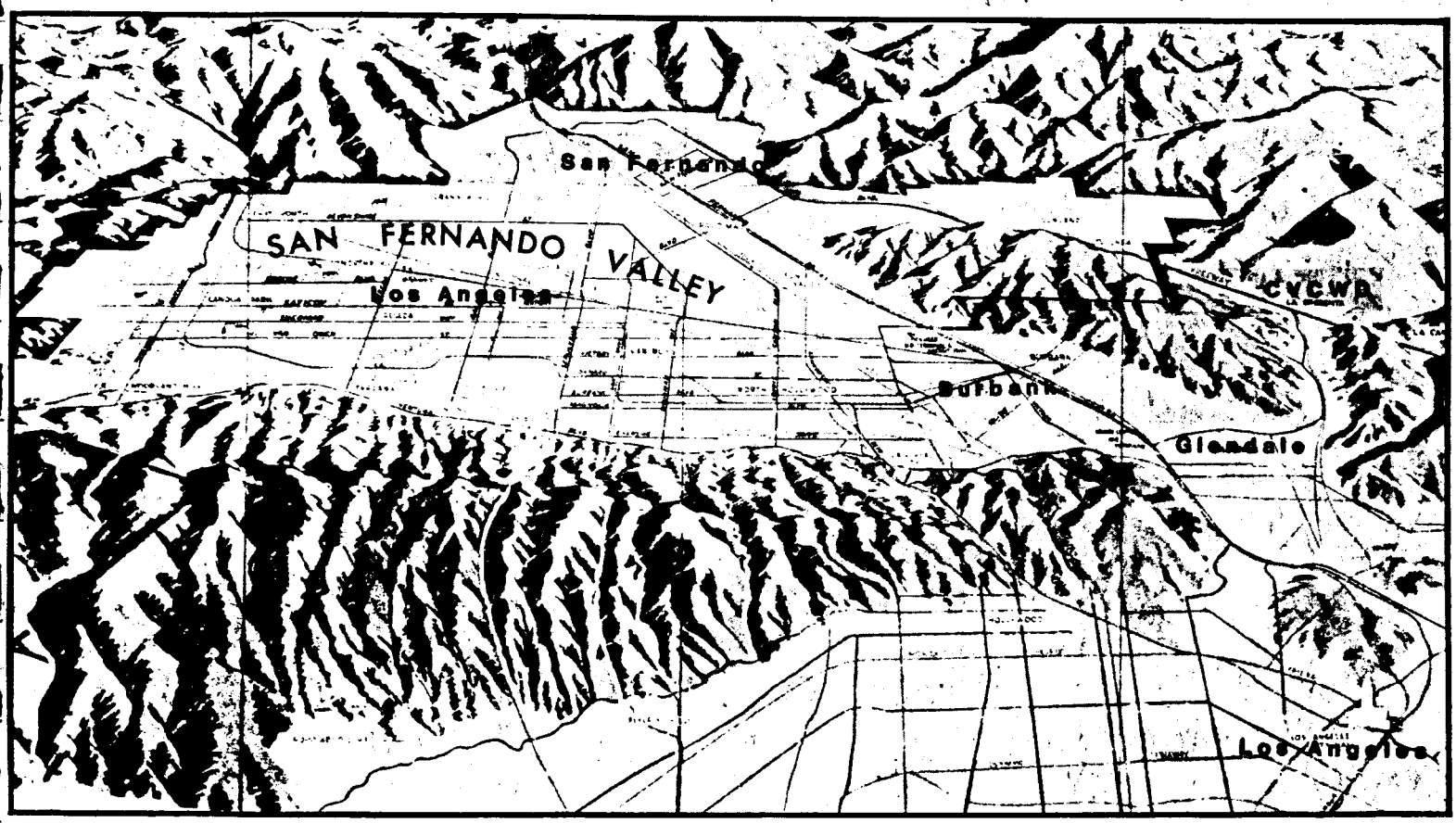
UPPER LOS ANGELES RIVER AREA WATERMASTER

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, 1984 - SEPTEMBER 30, 1985



MAY 1986

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IN THE

UPPER LOS ANGELES RIVER AREA

LOS ANGELES COUNTY

OCTOBER 1, 1984 - SEPTEMBER 30, 1985

MELVIN L. BLEVINS — WATERMASTER
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MAY 1986

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

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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 1984-85 Water Year. It was prepared in accordance with the provisions of the Final Judgment, signed by the Honorable Harry L. Hupp of the Los Angeles Superior Court on January 26, 1979. On April 30, 1985, Judge Vernon G. Foster replaced Judge Hupp as Judge of Record for the San Fernando Judgment.

This report describes the water rights in each basin, lists the allowable pumping for the water year 1985-86, and indicates the water in storage to the credit of each party as of October 1, 1985. 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.

As Watermaster, I have contacted Judge Foster regarding an amendment to the Upper Los Angeles River Area Judgment. This amendment would allow individuals other than those specified in the judgment to pump water from the ULARA for the purpose of evaluation and cleanup of the basin. I do not anticipate any problems in obtaining this amendment. All parties to the Judgment are expected to stipulate to this amendment.

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
Senior Hydrologic Engineer
and ULARA Watermaster
(Reg. C.E. No. 12863)

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UPPER LOS ANGELES RIVER AREA WATERMASTER

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ULARA WATERMASTER REPORT FOR WATER YEAR 1984-85

Report Prepared By:

Melvin L. Blevins	Sr. Hydrologic Engineer and Watermaster
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Richard Nagel	Hydrologic Engineering Assistant and Staff
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Amy Vershel	Hydrologic Engineering Assistant
George Mallakis	Hydrologic Engineering Assistant
Steve McBain	Office Engineering Technician B

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 (Plates 1 and 2). ULARA encompases 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 2).

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, it 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 occurence 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 groundwater 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 th 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.

On August 26, 1983, the Wastermaster reported to the Court pursuant to Section 10.2 of the Judgment that the Sylmar Basin was in a condition of overdraft. In response to the Watermaster's letter and a Minute Order of this Court, the Cities of Los Angeles and San Fernando responded by letters to the Court, agreeing with the Watermaster's report on overdraft. On March 22, 1984, Judge Harry L. Hupp signed a stipulation ordering, effective October 1, 1984, that the Cities of Los Angeles and San Fernando shall be limited in their pumping to bring the total pumping within the safe yield of the basin, less any rights exercised by the private parties.

Extraction Rights

The extraction rights under the Judgment and Sylmar Basin Stipulation are as follows:

San Fernando Basin

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

Imported Return Water. Los Angeles, Glendale, and Burbank 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.
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.	75 acre-feet per year

As to Burbank's Water:

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

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

Sylmar Basin

Native and Imported Return Water. San Fernando and Los Angeles have equal rights to pump the safe yield of the basin (6,210 acre-feet), with each party allowed to pump 3,105 acre-feet per year. 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. Pumping by the private parties will be subtracted from the safe yield, with Los Angeles and San Fernando pumping the remainder.

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

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 1984-85 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, 1985, are:

City of Burbank

Martindale Kile, Jr.
Thomas H. McCauley (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

Arthur Kidman
Rick Navarro (Alternate)

Crescenta Valley County Water District

Robert K. Argenio
Ray Marsden (Alternate)

Private Parties

Charles Meurer
Roger Meurer

Martindale (Dale) Kile, Jr., is President of the Committee and Steven Meyerhofer is Vice President. Dennis C. Williams succeeded Bruce Kuebler as committee member on August 1, 1985. Mr. Hopkins will succeed Mr. Meyerhofer as Glendale's representative and Vice President to the Committee, and Mr. Don Baker will be the alternate, succeeding Mr. Koontz.

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 1984-85 water year the Administrative Committee met on April 23, 1985. The following items were discussed at this meeting:

1. Amount of Groundwater Stored in San Fernando Basin by Parties.

2. Stipulation Between Los Angeles and San Fernando - Sylmar Basin (Judgment Amended).

3. Status of Groundwater Quality Studies in the San Fernando Valley - Parties' Needs.

4. AB 1803 - Programs on Water Quality Monitoring - Status.

5. Verdugo Basin Groundwater Development - Status.

6. Spreading Operations Related to Landfills - Tujunga and Hansen Spreading Grounds.

7. Pumping High Level TCE - Groundwater to Waste for Evaluation Purposes.

8. Review of Draft 1983-84 Watermaster Report.

A second meeting was held on October 17, 1985 to give a status report on the San Fernando Valley Superfund Study and to discuss what legal and/or accounting procedures should be used in pumping contaminated water to waste.

Summary of 1984-85 Operating Conditions

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

Rainfall on the valley fill area was 67 percent of normal as compared to 60 percent of normal the year before. Surface runoff leaving the valley at Gage F-57C-R for 1984-85 was 71,160 acre-feet. The amount conserved by the LACFCD in its spreading basins was 16,997 acre-feet, an increase of 42 percent over last year. Total precipitation falling on the San Fernando Valley and its tributary hill and mountain areas was estimated to be 361,120 acre-feet for the water year 1984-85. Of this total, approximately 49,560 acre-feet flowed from the valley as storm runoff and rising water, leaving 311,560 acre-feet which was beneficially used within the area (86 percent of the total).

TABLE I

UPPER LOS ANGELES RIVER AREA
SUMMARY OF OPERATING CONDITIONS
1983-84 AND 1984-85

Item		Water Year 1983-84	Water Year 1984-85
1. Parties		22	22
2. Active pumpers		19	19
3. Active nonpumpers (within valley fill)		0	0
4. Valley rainfall, in inches		9.97	11.00
5. Spreading operations, in acre-feet[a/]			
a. LACFCD		14,168	17,073
b. Los Angeles, City of		24,115	5,496
6. Extractions, in acre-feet		133,299	118,151
a. Used in ULARA		27,336	27,150
7. Gross imports, in acre-feet			
a. MWD water		72,955	73,406
b. Owens River water[b/]		498,738	595,807
	Total	571,693	669,213
8. Exports in acre-feet			
a. Owens River water		234,460	331,777
b. Groundwater by Los Angeles		104,797	90,727
	Total	339,257	422,504
9. Imports used in ULARA, in acre-feet		337,233	337,436
10. Reclaimed water, in acre-feet		12,413	15,853
a. Used in ULARA		2,499	2,492
11. Total delivered water used in ULARA, in acre-feet		367,068	367,078
12. Sewage export, in acre-feet[c/]		118,648	127,769

a/ Breakdown of spreading operations as to sources of water is shown in Table 6. 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.

Ground water extractions decreased in the San Fernando and Sylmar Basins and increased in the Verdugo and Eagle Rock Basins during 1984-85. Total ULARA extractions amounted to 118,051 acre-feet as compared to an allowable pumping of 116,910 acre-feet. Of this total, 113,483 acre-feet represents the 1984-85 extraction rights of parties in the San Fernando Basin (see 1984-85 Table 15) plus the safe yield values of Sylmar and Verdugo Basins. The remaining 3,427 acre-feet is non-consumptive use pumping (see Table 13). Extractions used within ULARA decreased by 1 percent (186 acre-feet) from last year.

For ULARA, gross imports increased by 97,520 acre-feet, or 17 percent, while imports used within ULARA increased less than 1 percent (203 acre-feet). Exports of Owens River water increased by 97,317 acre-feet, or 42 percent. The total amount delivered to water users within ULARA was about the same as last year (367,078 acre-feet).

Sewage export was 127,769 acre-feet in 1984-85, an increase of 8 percent. Total reclaimed water used in ULARA (cooling towers, irrigation, etc.) decreased less than 1 percent (7 acre-feet), while the total water reclaimed increased from 12,413 acre-feet to 15,853 acre-feet, an increase of 28 percent. Most of the reclaimed water is discharged to the Los Angeles River.

A total of 22,569 acre-feet of water, 16,997 native and 5,572 Owens River, was spread during the year, which was a 41 percent decrease from last year in spreading of imported and native water.

Ground water levels decreased and increased by an average of 10 and 5 feet in the central and southeastern part of the San Fernando Basin, respectively, decreased by 10 feet in the central portion of the Verdugo Basin, and decreased by an average of 5 feet in the Cities of San Fernando and Los Angeles pumping area of the Sylmar Basin.

Ground water storage for the San Fernando and Verdugo Basins decreased by 31,690 acre-feet and 3,220 acre-feet, respectively, and increased in the Sylmar Basin by 1,810 acre-feet during 1984-85.

Summary of Allowable Pumping for 1985-86

Table 2 gives a summary of allowable pumping for the Cities of Los Angeles, Burbank, Glendale, San Fernando and Crescenta Valley County Water District. Stored water is also shown as a credit for these parties as of October 1, 1985.

TABLE 2

SUMMARY OF ALLOWABLE PUMPING FOR ENSUING YEAR 1985-86

(In Acre-Feet)

	Extractions			Stored Water Credit*
	Native	Import Credit	Total	
San Fernando Basin				
Los Angeles	43,660	46,115	89,775	180,370
Burbank	--	4,728	4,728	24,781
Glendale	--	5,148	5,148	21,245
Sylmar Basin				
Los Angeles	--	--	3,105	--
San Fernando	--	--	3,105	--
Verdugo Basin				
Crescenta	--	--	3,294	--
Glendale	--	--	3,856	--

* As of October 1, 1985

Note: Calculation of these values shown in more detail in Tables 14 and 15.

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 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 1984-85 water year experienced below average rainfall. The Valley floor received 11.00 inches of rain, whereas the mountains received approximately 14.50 inches. The weighted average of both valley and mountain areas was 13.31 inches, an increase of 2.13 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 3 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 5 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; operational spills of imported water; industrial and sanitary waste discharges; and rising water.

TABLE 3

PRECIPITATION[a/]
(Inches)

LACFCD Number	Name	100-Year Mean	1983-84 Precipitation	1984-85 Precipitation	1984-85 Percent of 100-Year Mean
11C	Upper Franklin Canyon Reservoir	18.50	11.20	12.25	66
13C	Hollywood-Blix[b/]	16.63	9.31	12.11	73
14C	Roscow-Merrill[b/]	14.98	8.65	10.83	72
15A	Van Nuys[b/]	15.30	8.93	8.03	52
17	Sepulveda Canyon-Mulholland Highway	19.82	11.54	12.69	64
21B	Woodland Hills[b/]	14.60	8.24	9.69	66
23B-E	Chatsworth Reservoir[b/]	15.19	9.34	10.43	69
25C	Northridge-LADWP[b/]	15.16	9.67	9.83	65
33A-E	Pacoima Dam	19.64	10.65	13.00	66
47D	Clear Creek-City School	33.01	15.73	19.75	60
53D	Colby's Ranch	29.04	13.20	18.30	63
54C	Loomis Ranch-Alder Creek	18.62	11.52	14.28	77
210B	Brand Park	18.13	9.10	11.90	66
251C	LaCrescenta[b/]	23.31	13.46	14.85	64
259D	Chatsworth-Twin Lakes[b/]	18.70	11.02	13.08	70
293E	Los Angeles Reservoir[b/]	17.32	12.73	13.27	77
1190	Pacoima Canyon-North Park Ranger Station	23.06	14.62	18.14	79

Weighted average for valley stations - 11.00 inches (1984-85)
Weighted average for mountain stations - 14.50 inches (1984-85)

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

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 4 summarized the monthly runoff for these gaging stations and compares the 1983-84 water year with the 1984-85 year. The changes in runoff reflect the decrease 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 east 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 5. The mean daily discharge rates for these six gaging stations during 1984-85 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 5.

TABLE 4

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

Station	Water Year	Month												
		Oct.	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Total
F-57C-R	1983-84	10770	15520	18080	3700	3190	3970	2930	2600	2530	2190	2240	2150	69,870
Los Angeles River	1984-85	2750	8360	23900	5300	8040	5910	3230	3330	2440	2630	2480	2790	71,160
F-252-R	1983-84				-	Data Not Avaialble	-							
Verdugo	1984-85	237	820	2330	574	907	578	251	230	182	158	177	239	6,683
E285-R	1983-84	915	1150	1240	395	333	523	485	439	394	351	455	401	7,081
Burbank Storm Drain	1984-85	469	752	2200	612	696	548	352	349	402	203	228	172	6,983
F-300-R	1983-84				-	Data Not Available	-							
L.A. River Tujunga Ave.	1984-85	1040	4500	14320	2460	3960	2820	888	955	857	935	711	869	34,315
F-168-R	1983-84	1648	1758	2506	1320	814	732	579	257	292	69	444	896	11,315
Big Tujunga Dam	1984-85	334	43	2510	1100	657	880	488	797	95	18	17	17	6,956
118B-R	1983-84	221	25	12	1104	12	12	+	+	+	+	+	+	1,386
Pacoima Dam	1984-85	+	857	425	745	411	+	1029	+	+	+	+	+	3,467

* See Plate 5 for gaging station location.

+ - No measurable flow.

TABLE 5

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[d/]	16,450[d/]	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
1982-83	3,460[d/]	17,610	384,620	405,690
1983-84	3,000[d/]	17,780	49,090	69,870
1984-85	3,260	21,600	46,300	71,160
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
1982-83	5,330	0	21,384	26,714
1983-84	4,000[d/]	0	b/	b/
1984-85	2,710	0	3,970	6,680

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 discharge water and reclaimed water. Industrial discharge waters 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.

Urban development during the past years 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 2 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 6 summarized the spreading operations for the 1984-85 water year.

Ground Water Table Elevations

During the 1984-85 water year, the Watermaster collected and processed data to determine prevailing ground water conditions in ULARA during the spring and fall of 1985. Plates 7 and 8 show these conditions. Change in ground water surface elevation from fall of 1984 to fall of 1985 as presented in Plate 9 reflects the effects of variations in spreading, ground water extractions, and replenishment from rainfall. Plate 10 provides a diagrammatic sketch of the direction travel time for ground water flow in the San Fernando and Verdugo Basins in 1980.

TABLE 6

1984-85
SPREADING OPERATIONS
(In Acre-Feet)

Month	Native Water Spread by Los Angeles County Flood Control District					Water Spread by City of Los Angeles			Total San Fernando Basin Spreading
	Spreading Basins					Tujunga Spreading Grounds		Headworks Spreading Grounds	
	Branford	Hansen	Lopez	Pacoima		Native Water	Owens River Water		
				Native	Owens River				
Oct.	11	675	0	0	0	0	0	0	686
Nov.	73	622	57	458	0	0	0	0	1,210
Dec.	85	3,509	0	1,031	0	0	392	0	5,017
Jan.	13	2,131	0	474	76	0	310	0	2,928
Feb.	33	871	0	474	0	0	2,967	0	4,421
Mar.	29	1,559	38	189	0	0	1,827	0	3,642
Apr.	0	1,032	9	749	0	0	0	0	1,790
May	0	1,126	0	0	0	0	0	0	1,126
June	0	667	0	0	0	0	0	0	667
July	0	433	0	0	0	0	0	0	433
Aug.	0	365	0	0	0	0	0	0	365
Sept.	0	284	0	0	0	0	0	0	284
Totals	244	13,274	104	3,375	76	0	5,496	0	22,569

Due to two years of below normal rainfall, water levels decreased 5 to 10 feet in the North Hollywood/Burbank, Sylmar Basin, and Verdugo Basin well fields areas during 1984-85. In the vicinity of the Tujunga spreading grounds, water levels decreased approximately 20 feet because of a substantial decrease of spreading at the Tujunga spreading grounds. Water levels rose approximately 5 feet near the Crystal Springs and Headworks well fields because of decreased pumping.

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

Water Reclamation

Water reclamation presently provides a source of water for irrigation, industrial and recreational uses, and ground water recharge which occurs in the unlined section of the Los Angeles River. Five wastewater reclamation plants are in operation in ULARA. A tabulation of operating water reclamation plants is shown on Table 7.

Construction of the Donald C. Tillman (Sepulveda Basin) Water Reclamation Plant began in November 1980 and was completed in September of 1985. Currently, the plant effluent is 20 million gallons per day (mgd), with optimum capacity projected to be 40 mgd. The effluent is used to irrigate the Japanese Garden at the Plant as well as irrigating the Sepulveda Basin recreation area, with the residual discharged into the Los Angeles River. Future uses of the residual discharge may include industrial cooling, freeway landscape and golf course irrigation, recreational uses for lakes, and groundwater recharge. Direct groundwater recharge will be allowed only if the Department of Health Services permits it.

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 1984-85 are contained in Table 8.

An Interagency Coordinating Committee has been formed to coordinate the implementation of the Groundwater Quality Management Plan - San Fernando Valley Basin - in order to deal with the organic contaminants TCE and PCE found in the groundwater. Table 9 shows the total number of wells for 1984-85 exceeding the California DOHS action levels for these contaminants.

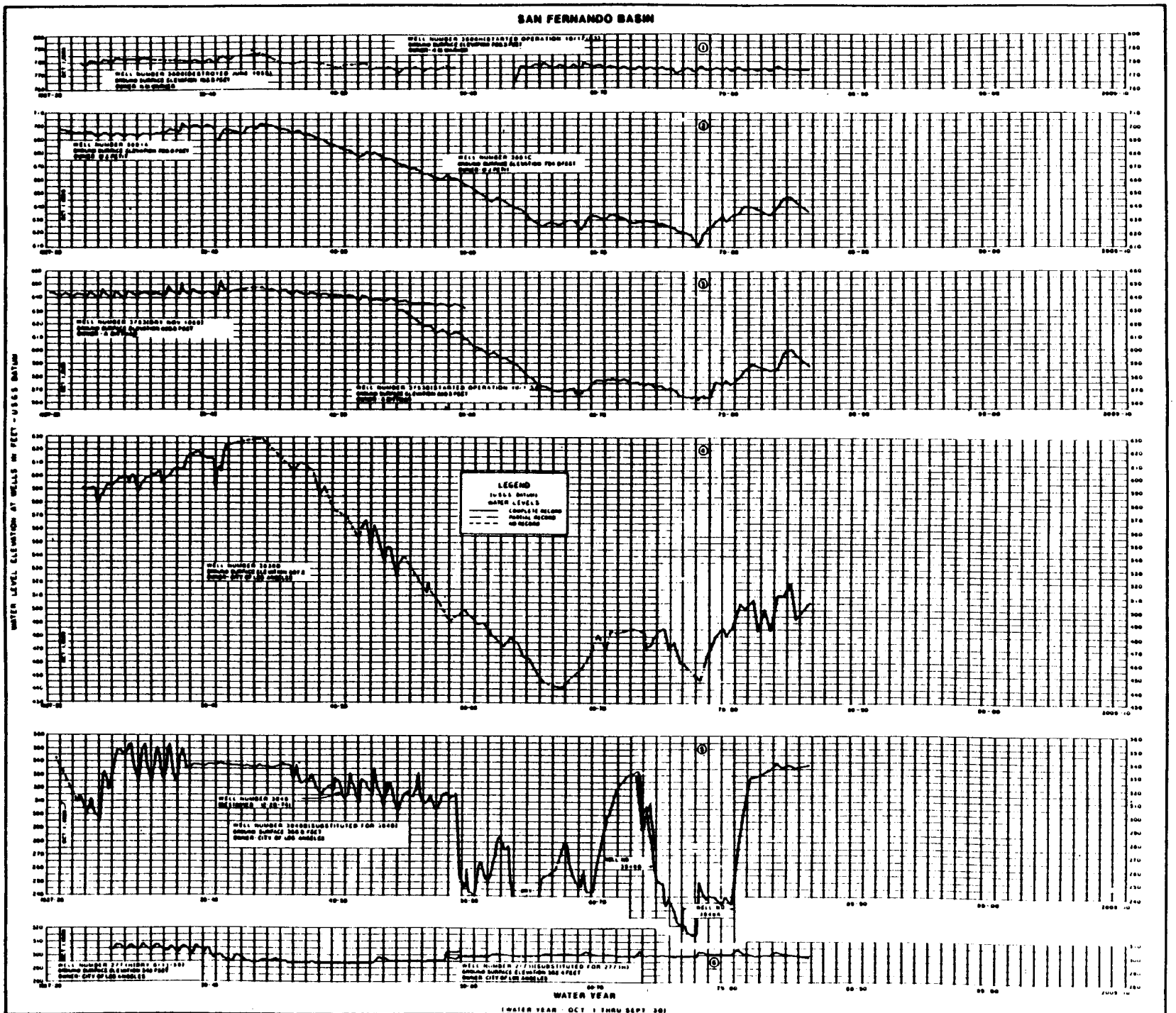

FIGURE 1 - FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO BASIN

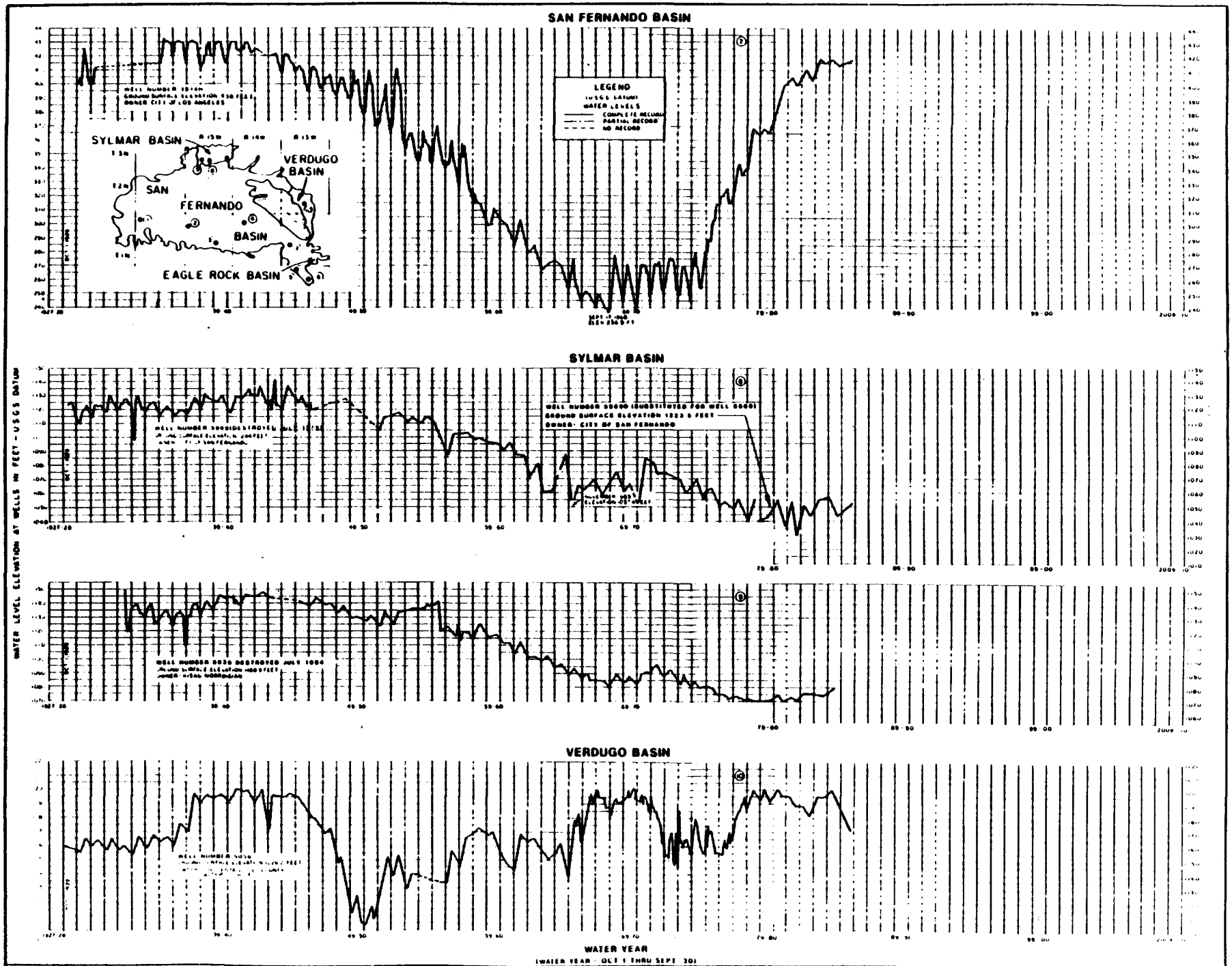

FIGURE 2 - **FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO, SYLMAR AND VERDUGO BASINS**

TABLE 7

WATER RECLAMATION PLANTS, 1984-85
(In Acre-Feet)

Plant	Treated	Used in ULARA	Discharged to Los Angeles River
San Fernando Basin			
City of Burbank	4,487	540[a/]	4,196
Los Angeles-Glendale	10,896	1,482[b/]	9,810
Donald C. Tillman	381	381[f/]	0
Indian Hills Mobile Homes[d/]	20	20[c/]	0
Rocketdyne (Santa Susana Field Laboratory)	47	47[c/]	0
The Independent Order of Foresters[e/]	22	22[c/]	0
Total	15,853	2,492	14,006

a/ This value is no longer estimated. Actual amount of reclaimed water discharged to the Los Angeles River is being metered by the City of Burbank.

b/ Total water delivered (71 AF) to phosphate plant in Glendale includes 50 percent evaporation and the rest to Los Angeles River; 1380 AF delivered to Griffith Park by City of Los Angeles for irrigation and to Los Angeles-Glendale plant for wash down, cooling, and irrigation; 31 AF used by Cal/Trans for freeway landscape irrigation.

c/ Land irrigation.

d/ Water supply from nearby well.

e/ Water supply from pipeline from LADWP.

f/ Water used for in plant use.

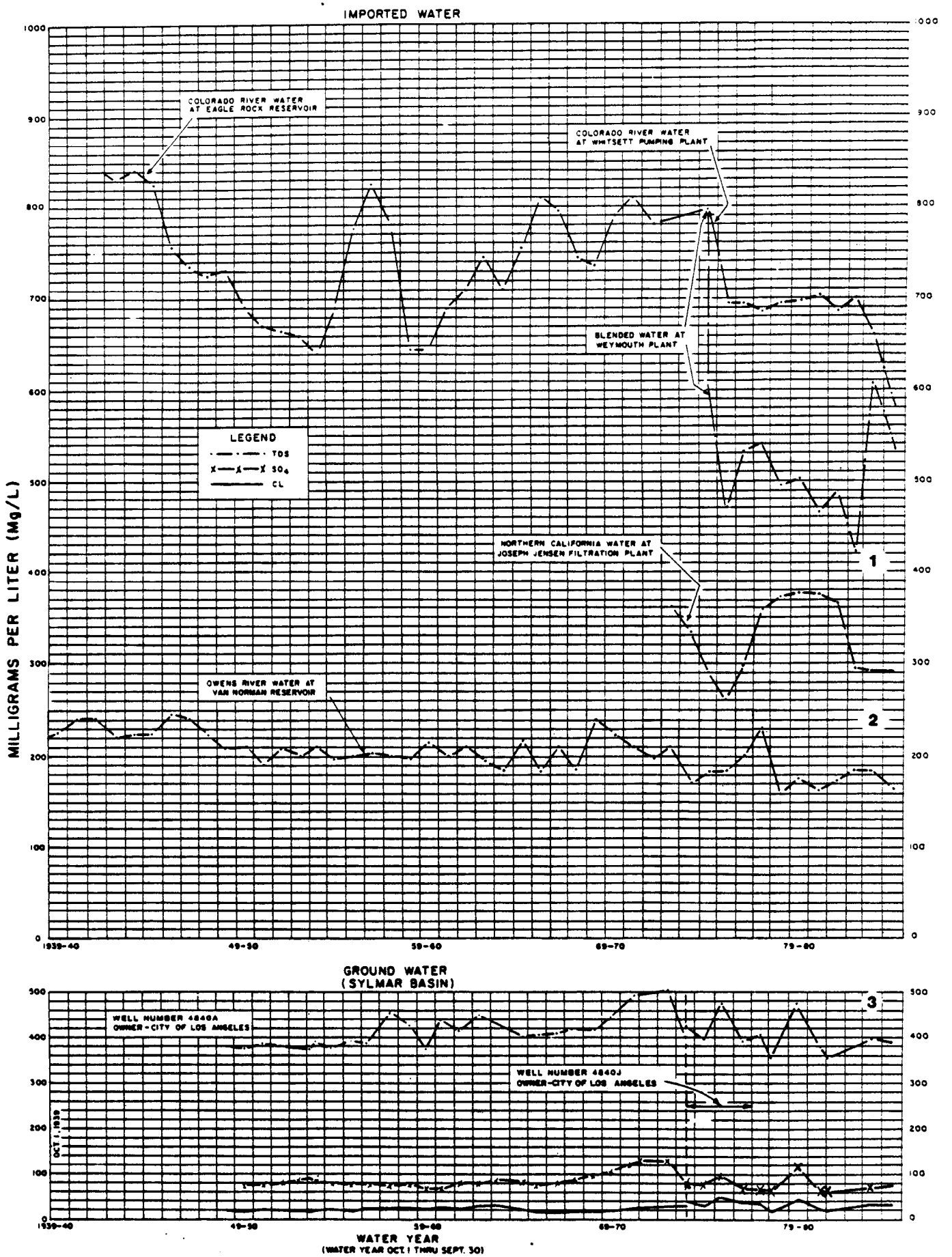

Figure 3— MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

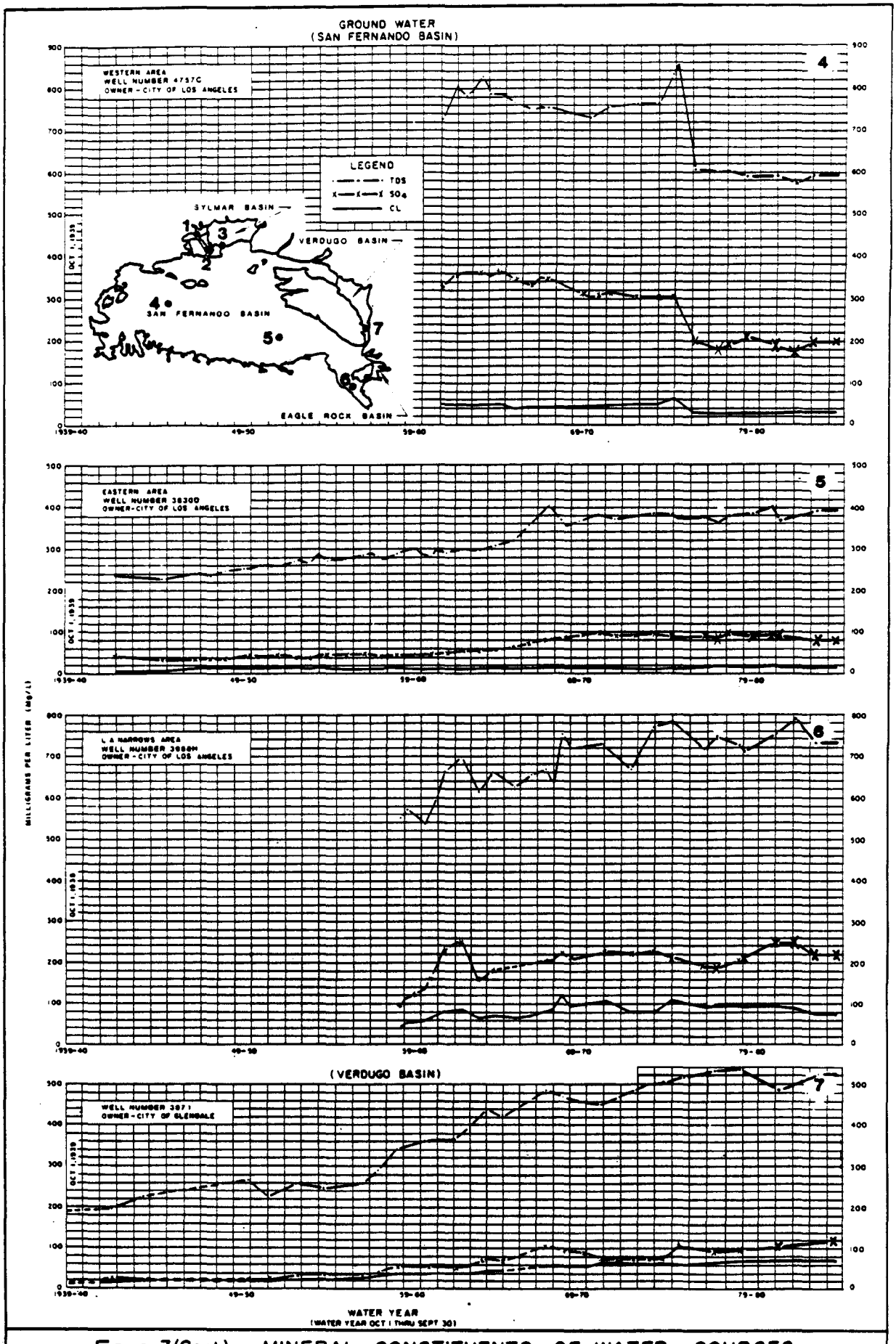

Figure 3(Cont.) — MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

TABLE 8

REPRESENTATIVE MINERAL ANALYSIS OF WATER

MINERAL CONSTITUENTS IN Milligrams per liter (mg/l)
Milliequivalents per liter (me/l)

Well Number or Source	Date Sampled	EC x 10^6 at 25°C	pH	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B	TDS Total Dissolved Solids mg/l	Total Hardness as $CaCO_3$ mg/l
Imported Water																
Blended State Project and Colorado River Water at Eagle Rock Reservoir	84-85	7.71	8.08	58 2.90	27 2.21	73 3.17	3.6 0.09	-- --	112 2.24	178 3.71	65 1.83	0.36 0.03	0.24 0.01	0.18 0.02	486	258
Owens River Water Upper Van Norman Reservoir Inlet	84-85	262	7.95	20 1.00	5.2 0.43	29 1.26	3.3 0.08	-- --	92 1.84	19 0.40	16 0.45	0.12 0.01	0.59 0.03	0.53 0.05	165	71
State Project Water at Joseph Jensen Filtration Plant (Influent)	84-85	488	8.16	40 2.00	14 1.67	37 1.61	2.0 0.05	0 0	117 1.91	92 1.92	32 0.90	1.25 0.09	0.31 0.02	0.20 0.06	291	158
Surface Water																
Los Angeles River at Sepulveda Blvd.	84-85	1077	8.74	98 4.90	40 3.28	100 4.35	6.4 0.16	8.3 0.17	194 3.88	309 6.44	103 2.90	1.7 0.12	0.67 0.04	0.67 0.04	679	411
Los Angeles River at Colorado Blvd.	84-85	1004	9.03	87 4.35	40 3.28	90 3.91	6.5 0.17	67 1.34	134 2.68	256 5.33	94 2.65	2.4 0.17	0.72 0.04	0.54 0.05	633	381
Burbank Western Wash at Los Angeles River	84-85	936	8.55	58 2.90	24 2.38	98 4.26	9.8 0.25	24 0.48	134 2.68	205 4.27	94 2.65	2.3 0.16	-- --	0.62 0.06	590	265
Burbank Reclamation Plant Discharge to Burbank-Western Wash	3-84	--	6.9	-- --	-- --	127 5.52	-- --	-- --	-- --	221 4.60	138 3.89	3.2 0.23	0.82 0.04	1.68 0.47	810	--
Los Angeles-Glendale Reclamation Plant Discharge to Los Angeles River	06/17/85	920	8.1	54 2.70	28 2.30	93 4.04	10 0.26	-- --	160 3.20	162 3.38	88 2.48	2.5 0.18	-- --	0.14 0.01	580	252
Groundwater																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	10/13/83	944	7.80	115 5.75	31 2.54	43 1.87	2.1 0.05	-- --	301 4.94	200 4.17	33 0.93	2.6 0.19	0.31 0.02	0.24 0.07	595	416
(San Fernando Basin - Eastern Portion)																
3820B (No. Hollywood No. 18)	02/14/84	625	7.49	70 3.50	18 1.48	27 1.17	3.3 0.08	-- --	238 3.90	80 1.67	17 0.48	4.0 0.29	0.50 0.03	0.22 0.06	394	248
3841G (Burbank No. 18)	07/23/85	490	7.90	58 2.90	10.8 0.88	32 1.39	-- --	-- --	-- --	68 1.42	21 0.59	11.4 0.95	0.34 0.02	0.22 0.06	314	190
3913H (Grandview No. 16)	09/10/85	515	7.80	52 2.6	12 1.00	39 1.70	3.2 0.08	0.87 0.03	218 3.57	48 1.00	20 0.56	2.6 0.19	9.57 0.03	-- --	310	180
(San Fernando Basin - L.A. Narrows)																
3958N (Pollock No. 4*)	01/10/84	1160	7.11	109 5.45	36 2.95	82 3.57	3.4 0.09	-- --	281 4.60	220 4.58	78 2.20	7.4 0.53	0.40 0.02	0.37 0.10	731	420
(Sylmar Basin)																
4840J (Mission No. 6**)	07/02/85	612	7.30	64 3.20	16 1.31	34 1.48	4.7 0.12	-- --	165 3.30	78 1.63	33 0.93	1.2 0.09	0.18 0.01	0.19 0.02	386	224
5959 (San Fernando No. 3)	02/13/85	850	7.60	100 5.0	17 1.39	30 1.30	3.1 0.08	-- --	-- --	65 1.35	32 0.90	21 1.75	0.31 0.02	-- --	400	319
(Verdugo Basin)																
3971 (Glorietta No. 3)	06/12/85	844	7.10	85 4.25	30 2.50	41 1.78	3.0 0.08	0.17 0.01	195 3.19	113 2.35	69 1.94	15 1.07	0.20 0.01	-- --	550	338
5069F (CVCWD No. 12***)	11/26/85	860	6.50	83.6 4.17	32.0 2.67	34.3 1.49	3.3 0.08	0.04 0.00	183 3.00	99.0 2.06	70.0 1.97	23.0 1.64	0.16 0.01	-- --	550	342

* Substituted for Pollock No. 6
** " " Mission No. 5
*** " " CVCWD No. 14

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/1) for 30 years before 1969, the highest record being 320 mg/1 on April 1, 1946, and the lowest, 150 mg/1 on September 17, 1941. Average TDS concentration for 1984-85 was 165 mg/1, which was 11 percent lower than the 185 mg/1 for 1983-84.

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/1 in August 1955 and a low of 625 mg/1 in April 1959. The average TDS over the 34-year period was approximately 740 mg/1. Tests conducted at the Whitsett Intake Pumping Plant showed an average TDS of 582 mg/1 for 1984-85, a decrease of 12 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/1 and a low of 247 mg/1. Tests of Northern California water are taken at the Joseph Jensen Filtration Plant. Average TDS concentration during 1984-85 was 291 mg/1, the same as last year.

D. Colorado River and Northern California water were first blended at the Weymouth Plant in May 1975. In the 1984-85 period, TDS had an average value of 534 mg/1 which was a 12 percent decrease from 1983-84. 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 1984-85, low flows in the Los Angeles River at Colorado Boulevard had an average TDS content of 633 mg/1 and a total hardness of 381 mg/1, a decrease over last year of 21 and 1 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 increased in the western part of the San Fernando Basin by 4 percent from 1982-83 to 1983-84; decreased by 3 percent in the eastern part over 1983-84; increased by 2 percent in the Sylmar Basin over 1982-83; and increased by 13 percent from 1981-82 to 1984-85 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.

Groundwater Quality Management Plan

During 1985, the Interagency Coordinating Committee (ICC) continued to implement the recommendations of the Groundwater Quality Management Plan - San Fernando Valley Basin (GWQMP-SFVB) which are to protect the groundwater basin and to reduce concentrations of Trichloroethylene (TCE) and Tetrachloroethylene (PCE). There were six active subcommittees during 1985 to implement the GWQMP recommendations. More than 20 state and local agencies are participating in the subcommittees, and several noteworthy accomplishments, described below, resulted from subcommittee activities.

Underground Tanks - The cities of Los Angeles and Glendale, and Los Angeles County have developed guidelines to direct implementation of ordinances to regulate underground storage tank construction and monitoring.

Private Sewage Disposal System - In 1985, the City Bureau of Engineering with assistance from the Department of Building and Safety and the City Attorney's Office prepared a City ordinance requiring industrial and commercial properties to connect to available City sewers and to properly abandon their private sewage disposal systems. The ordinance was passed by the Los Angeles City Council in September of 1985.

The Bureau of Engineering has completed the design of three sewer projects and will issue a contract for the design of a fourth project as part of a program to construct sewers in presently unsewered areas in the City of Los Angeles. Sewer construction has been implemented in the La Crescenta area of Los Angeles County and has been reported to be nearly 100 percent connection to sewers.

Monitoring - The Los Angeles Department of Water and Power (LADWP) and the Los Angeles City Bureau of Sanitation continued a program of groundwater quality monitoring at several San Fernando Valley landfills. This program included constructing new monitoring wells at Sheldon-Arleta, Hewitt, Penrose, and Strathern Landfills and taking well water samples at Sunland, Bradley, and Sheldon-Arleta Landfills. Bids were issued for new wells in the Toyon and Lopez Canyon Landfills. New wells have been proposed for Pendleton and Penrose Landfills.

Wells located in and around the Sheldon-Arleta Landfill were used to determine if there was evidence of water intrusion into the landfill from the nearby Tujunga Spreading Grounds.

SFVB cities continued to monitor the volatile organic contamination in their production well fields. Table 9 shows the results of this monitoring and the scope of the contamination by listing the ULARA wells that are contaminated above the California State Department of Health Services action levels of 5 ppb for TCE and 4 ppb for PCE.

Water Treatment - The LADWP retained James M. Montgomery Consulting Engineers to proceed with the design of an aeration facility which would remove volatile organic chemicals from groundwater. The facility would treat 2000 gpm which would be obtained from several shallow wells. No significant health risks could be associated with the facility according to a South Coast Air Quality Management District's (AQMD) computerized emissions model. Although an AQMD permit to construct was issued for the facility, the siting was changed to the Lankershim Yard for aesthetic reasons. Because of the change in location, another permit application had to be submitted. In compliance with S.B. 1640 (Robbins), the LADWP conducted a public workshop for the aeration facility on November 26 in North Hollywood.

The LADWP investigated a water treatment system using ultraviolet radiation and ozonation. This process decomposes the volatile organic chemicals, leaving only harmless by-products such as carbon dioxide, water, and chloride ions. An AQMD permit would not be required for such a process since no discharge would be made to the atmosphere. Testing of the UV-0_3 treatment unit achieved a 70 percent removal rather than the 90 percent claimed by the manufacturer. It became apparent that more research and development was needed. The LADWP applied for a cooperative agreement with the U.S. Environmental Protection Agency (EPA) to fund further laboratory and pilot testing of the UV-0_3 process. It was proposed that James M. Montgomery, Consulting Engineers in cooperation with Dr. William Glaze of UCLA perform the investigative work.

The LADWP continued to test well packers in two North Hollywood wells to determine if the upper and lower zone aquifers could be isolated from each other. Test results indicated that the use of the well packers was an effective means of confining TCE and PCE in the upper zone in the North Hollywood area.

U.S. EPA Superfunding - In an effort to remove the TCE and PCE from the SFV groundwater basin, the LADWP filed an application with the U.S. EPA Superfund (CERCLA) Program. Four sites, the North Hollywood, Crystal Springs, Pollock, and Verdugo areas, have been included on the National Priority List which is the first step in the Superfund process. The process then requires a Remedial Investigation of the sites.

In July 1985 the EPA released its Scope of Work report for the Remedial Investigation phase of the Superfund process. A Superfund Technical Committee composed of state and local agencies was organized to review and comment on the Work Plan. Since there is extensive information on the North Hollywood/Burbank area, it was suggested that a Fast Track study be performed to speed up the clean-up process. The final Work Plan was completed and distributed in November.

Also in July the EPA released its draft of a Community Relations Plan for the SFVB for comments. The Community Relations Plan was finalized and distributed in December.

Following the release of the final Work Plan, the LADWP in September submitted a $2.3 million proposal to perform the Remedial Investigation and Fast Track project. On November 14, 1985 a revised $2.8 million final application was submitted for the Remedial Investigation and Fast Track project.

Other Activities - Other accomplishments of the subcommittees included the development of a San Fernando Valley Groundwater Basin information brochure, aimed at residents and small businesses, which describes the contamination problem in the SFVB and the steps that are being taken to correct the situation. The Southern California Association of Government completed its feasibility study for a pilot program for the disposal of small quantities of hazardous waste. All of these efforts are designed to protect and enhance the groundwater quality in the SFVB.

TABLE 9

1984-85
ULARA WELL FIELDS* -
WELLS EXCEEDING CALIFORNIA DOHS ACTION LEVELS
FOR TCE AND PCE

	Number of Wells											
	City of Los Angeles								Others			Total
	NH	CS	P	HW	E	W	V	Total	B	G	CVCWD	
TCE Levels (ppb)												
5-20	7	2**	1	0	2	2**	1	15	4	2	0	21
20-100	6**	0	0	6**	1	2**	0	15	2	2	0	19
100	6**	0	0	0	0	0	0	6	1	0	0	7
Total	19	2	1	6	3	4	1	36	7	4	0	47
PCE Levels (ppb)												
4-20	7**	0	2**	5**	0	1	0	15	3	3	5	26
20-100	0	0	0	0	0	0	0	0	1	0	0	1
100	0	0	0	0	0	0	0	0	2	0	0	2
Total	7	0	2	5	0	1	0	15	6	3	5	29

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.

**Since several wells in the well fields were not pumped during year, a previous year's TCE annual average value was used for the unpumped wells in order to compile this table.

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 1984-85 water year, the total amount delivered to water users in ULARA was 367,078 acre-feet. Of this total, 27,150 acre-feet was ground water, 337,436 acre-feet was imported, and 2,492 acre-feet was reclaimed water. Refer to Figure 5 for a monthly breakdown. The basin contains 535 wells, of which 126 are active and 409 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 1984-85, the difference has increased to between 110,000 and 220,000 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 3).

Ground Water Extractions

Appendix A is the record of groundwater extractions for the 1984-85 water year, and Plate 6 shows the approximate location of the well fields which pumped this water. A total of 105,782 acre-feet was pumped from the San Fernando Basin compared to an allowable pumping of 103,550 acre-feet. Of this total, 100,123 acre-feet is extraction rights by parties in the San Fernando Basin (see 1984-85 Table 15), with its remaining 3,427 acre-feet

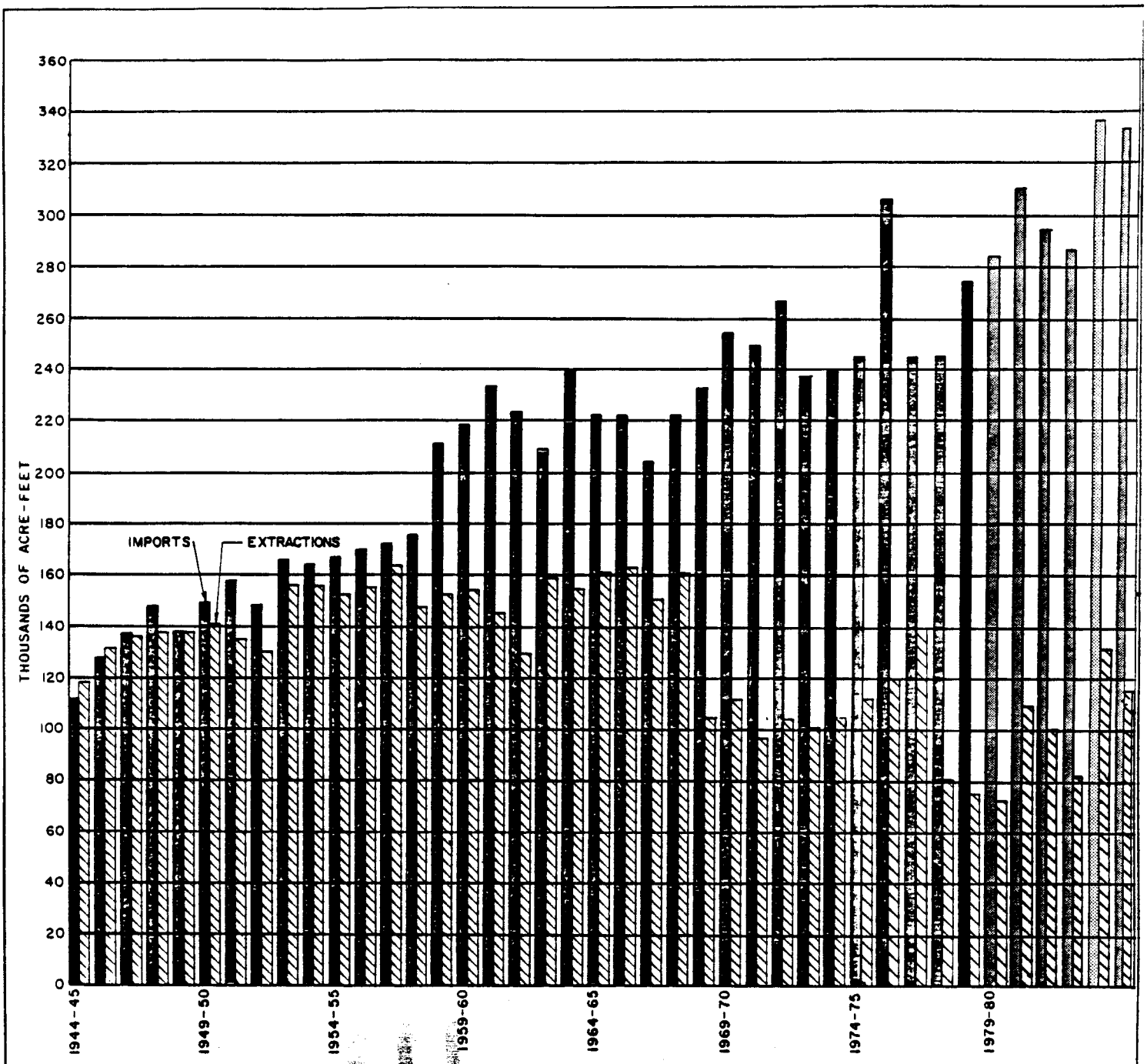

Figure 4. GROUND WATER EXTRACTIONS AND USE OF IMPORTED WATER IN UPPER LOS ANGELES RIVER AREA

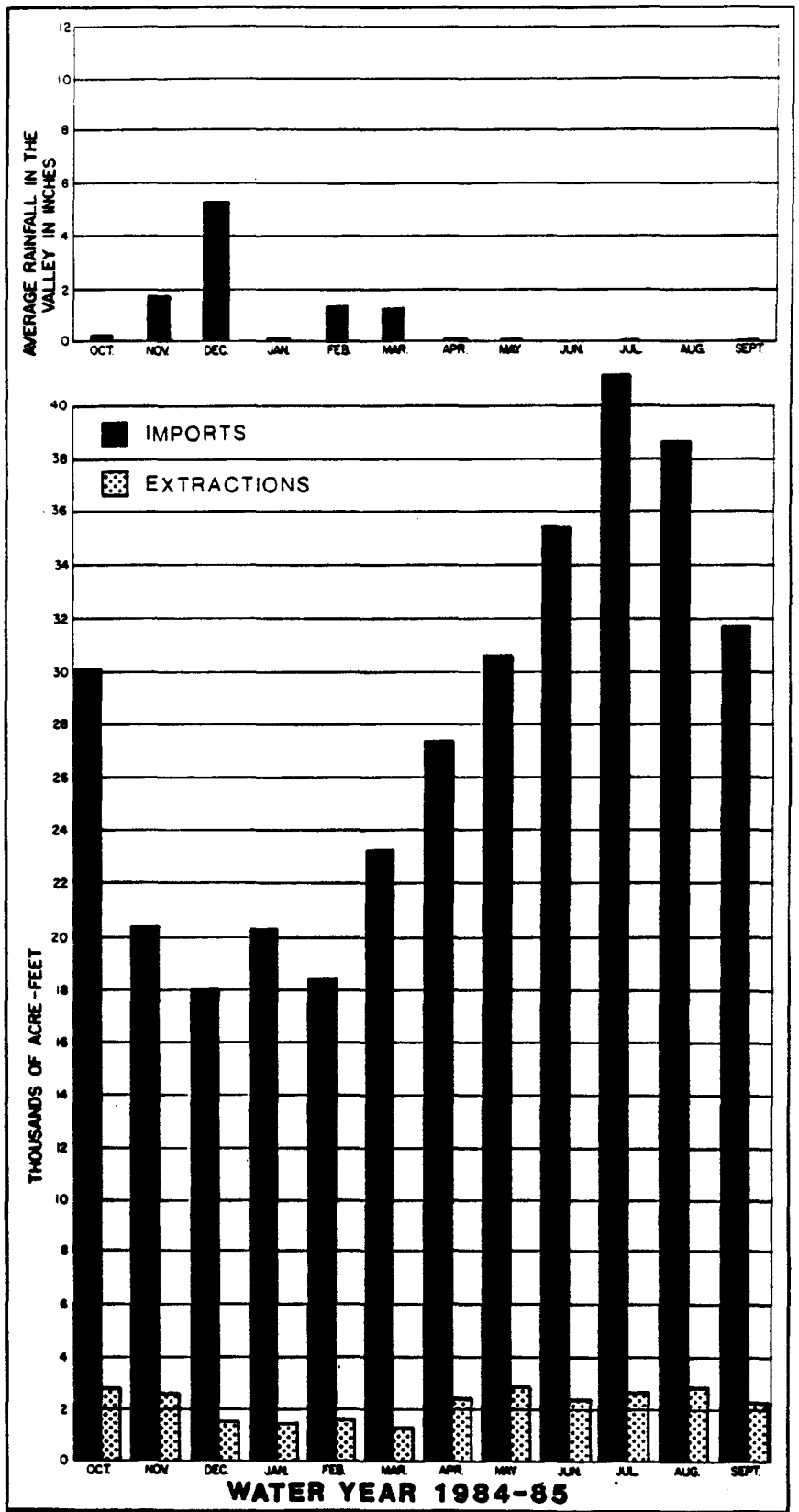

Figure 5 – MONTHLY WATER DEMAND AND AVERAGE RAINFALL IN UPPER LOS ANGELES RIVER AREA

(Used within the ULARA)

being nonconsumptive use pumping (see Table 13). A total of 6,232 acre-feet was pumped from the Sylmar Basin and 5,834 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 10 summarized the nontributary imports and exports from ULARA. Ground water imports and exports in and out of ULARA are listed in Table 12.

Physical Data by Basins

The Watermaster has collected and summarized data in Table 12 which show the water supply and disposal in each of the basins.

The information for Table 12 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 13.

San Fernando Basin Allowable Extractions

Table 14 lists San Fernando Basin extraction rights for the Cities of Burbank, Glendale, Los Angeles, and San Fernando for the water year 1985-86. Table 15 shows San Fernando Basin stored water as of October 1, 1984 and October 1, 1985. 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 1984-85 was -31,690 acre-feet, and the cumulative change in storage from 1954-55 through 1984-85 was -178,800 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 1984-85 was 18.51 inches, compared to a long-term average of 16.48 inches of rainfall. During that time, the basin gained approximately 267,000 acre-feet of stored water. Of this total, 226,400 acre-feet was stored through spreading and in-lieu recharge activities. Thus, the natural change in storage due to an above normal rainfall period was 41,000 acre-feet. Refer to Table 11 for the annual precipitation and change in storage.

Sylmar Basin. The change in storage for 1984-85 was +1,810 acre-feet, and the cumulative change in storage from 1954-55 through 1984-85 was -23,180 acre-feet.

Verdugo Basin. The change in storage for 1984-85 was -3,220 acre-feet, and the cumulative change in storage from 1954-55 through 1984-85 was +19,490 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 10

ULARA - NONTRIBUTARY WATERS,
IMPORTS AND EXPORTS

(In Acre-Feet)

Source and Agency	1983-84	1984-85
Imports		
MWD water[a/]		
Burbank, City of	22,735	20,238
Crescenta Valley County Water District	2,906	2,777
Glendale, City of	25,104	22,992
Los Angeles, City of	6,671	10,163
La Canada Irrigation District	1,016	1,001
Las Virgenes Municipal Water District (nonparty)	14,492	15,811
San Fernando, City of	31	424
	72,955	73,406
Owens River water		
Los Angeles, City of	498,738[b/]	595,807[b/]
Total	571,693	669,213
Exports		
Owens River water		
Los Angeles, City of	-234,460	-331,777
Net Import	337,233	337,436

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 11

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
1982-83	39.64	+121090	+361990
1983-84	9.97	-63180	+298810
1984-85	11.00	-31690	+267120
17-yr. average	18.51		

Note:
(1) 100-year mean precipitation = 16.48 inches.
(2) Stored water through spreading and in-lieu pumping = 226,400 AF.
(3) Natural change in storage = +267,120 AF - 226,400 AF = 40,720 AF.

TABLE 12

1984-85
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	2,863	3,086 d/	95,676	0 d/	4,157 e/	105,780 f/
Used in valley fill	2,863		4,949			
Imports						
MWD water	20,238	22,992	5,344 f/	424	15,811	64,809
Owens River water	--	--	584,835 f/	--	--	584,835
Ground water from Sylmar Basin	--	--	3,130	2,823	0	5,954
Ground water from Verdugo Basin	--	2,255	--	--	--	2,255
Reclaimed water	540 g/	71 e/	1,792 c/	--	89 e/	2,492
Exports						
Ground water:						
to Verdugo Basin	--	0	0	--	0	0
out of ULARA	--	--	90,727	--	0	90,705
Owens River water:						
to Eagle Rock Basin	--	--	153	--	--	153
out of ULARA	--	--	331,777	--	0	331,777
MWD:						
to Verdugo Basin	--	2,662	0	--	--	2,662
Total net delivered water	23,641	25,742 a/	268,120	3,247	20,057	340,807
Water delivered to hill and mountain areas						
Ground water	d/	d/	0	0	0	d/
Owens River water	--	--	43,339	--	--	43,339
MWD water	d/	d/	3,076	0	15,811	d/
Verdugo Basin water	--	d/	--	--	--	d/
Water outflow						
Surface	--	--	--	--	--	71,160 b/
Subsurface	--	--	--	--	--	420
Sewers	18,867	16,774	74,395	1,756	--	107,792
Reclaimed	4,196	4,905	4,905	--	--	14,006

* See Table 13 for parties included.

a/ Total delivered water to the City of Glendale was 29,986 AF. Verdugo Basin metered sales times 105 percent equaled 4,244 AF. Therefore, the San Fernando Basin delivered water was 25,742 AF (29,986 AF minus 4,244 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, Crystal Springs picnic area, and freeway landscaping. Also used for wash down, cooling, and irrigation at the Los Angeles-Glendale plant and Tillman Water Reclamation Plant.

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

e/ Delivered to cooling towers of the phosphate plant in Glendale. Assumed 50 percent evaporation and 50 percent to Los Angeles River. Refer to Table 7 for all others.

f/ Includes Owens River water exported to Eagle Rock Basin and exported out of ULARA.

g/ This value is no longer estimated. Actual amount of reclaimed water is being metered by the City of Burbank.

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

TABLE 12

1984-85
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	3,130	3,102	29	6,261
Used in valley fill	0	279	29	308
Imports				
Owens River water	10,375	--	--	10,375
MWD water	--	424	--	424
Exports				
Groundwater:				
to San Fernando Basin	3,130	2,823	0	5,953
Water delivered to hill and mountain area				
Owens River	489	--	--	489
Water outflow				
Surface	--	--	--	5,000[i/]
Subsurface:				
to San Fernando Basin[h/]	--	--	--	--
Sewers	800	198	0	998

h/ Computation not possible, well destroyed.

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

TABLE 12

1984-85
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	1,997	3,837	0	0	5,834
Used in valley fill	1,944	1/	0	0	1/
Imports					
MWD water	2,777	2,662	1,001	0	6,440
Owens River water	--	--	--	597	597
Groundwater from:					
San Fernando Basin	--	--	--	--	--
Reclaimed water	--	--	--	--	--
Exports					
Groundwater to:					
San Fernando Basin	--	2,255	--	--	2,255
Water delivered to hill and mountain areas					
MWD water	73	1/	0	0	1/
Owens River water	--	--	--	70	70
Groundwater from:					
Verdugo Basin	53	1/	--	0	1/
San Fernando Basin	--	0	--	0	0
Water outflow					
Surface	--	--	--	--	Data j/ Not Available
Subsurface:					
to Monk Hill Basin	--	--	--	--	300 k/
to San Fernando Basin	--	--	--	--	70
Sewage	1,341	1,602	0	120	3,063

j/ Information obtained from Station F-252C-R
k/ Based on 29-year average (1929-57)
l/ These values are no longer required

TABLE 12

1984-85
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	3	170	173
Used in valley fill	0	0	0	0
Imports				
Owens River water	153	--	--	153
MWD water	4,819	--	--	4,819
Groundwater	0	0	0	0
Exports				
Groundwater	0	3	170	173
Water delivered to hill and mountain areas				
MWD water	2,731	--	--	2,731
Owens River water	153	--	--	153
Water outflow				
Surface[m/]	--	--	--	--
Subsurface[n/]	--	--	--	--
Sewers	1,910	0	0	1,910

m/ Information not available

n/ Estimated in Supplement No. 2 to Report of Referee 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 13

1984-85
PUMPING BY NONCONSUMPTIVE USE, PHYSICAL SOLUTION,
AND PARTIES WITHOUT RIGHTS
SAN FERNANDO BASIN

(In Acre-Feet)

I.	Nonconsumptive Use Parties	
1.	Conrock Co.	1,902
2.	Livingston-Graham, Inc.	4
3.	Sears, Roebuck and Company	19
4.	Sportsmen's Lodge, Inc.	20
5.	Toluca Lake Property Owners Assn.	0
6.	Walt Disney Productions	1,482
7.	Total	3,427
II.	Physical Solution Parties	
1.	Environmentals Inc.	63
2.	Forest Lawn Cemetery Assn.	375
3.	Sportsmen's Lodge, Inc.	1
4.	Toluca Lake Property Owners Assn.	28
5.	Valhalla Memorial Park	261
6.	Total	728
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	4,157

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

TABLE 14

1985-86
SAN FERNANDO BASIN EXTRACTION RIGHTS
(In Acre-Feet)

Item	Cities of		
	Burbank (1)	Glendale (2)	Los Angeles (3)
1. Delivered water 1984-85	23,641	25,742	268,120
2. Import delivered 1984-85	--	--	--
3. Delivered to hill & mountain 1984-85	--	--	46,415
4. Delivered to valley fill 1984-85	--	--	221,705
5. Percent recharge	20%	20%	20.8%
6. Return water extraction right 1985-86	4,728	5,148	46,115
7. Native safe yield	0	0	43,660
8. Total extraction right 1985-86	4,728	5,148	89,775

Items 1, 2 & 3 = Table 12
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
Item 7 = Article 4.2.4, page 11 of Judgment
Item 8 = Item 6 + Item 7
-- = Data not required

TABLE 15

STORED WATER
SAN FERNANDO BASIN
(In Acre-Feet)

	Cities of		
	Burbank (1)	Glendale (2)	Los Angeles (3)
1983-84			
1. Stored water as of Oct. 1, 1983	19,298	16,343	185,667
2. Delivered water 1982-83	22,118	22,541	188,208
3. Return water extraction right 1983-84	4,424	4,508	39,147
4. Native safe yield	0	0	43,660
5. Total extraction right for 1983-84	4,424	4,508	82,807
6. Extractions for year	1,063	1,708	112,855
7. Physical solution extractions	(201)	(476)	31
8. Spread water	0	0	26,318
9. Stored water as of Oct. 1, 1984	22,659	19,143	181,229
1984-85			
10. Delivered water 1983-84	24,927	25,941	222,549
11. Return water extraction right 1984-85	4,985	5,188	46,290
12. Native safe yield	0	0	43,660
13. Total extraction right for 1984-85	4,985	5,188	89,950
14. Extractions for year	2,863	3,086	95,654
15. Physical solution extractions	(261)	(438)	29
16. Spread water	0	0	5,573
17. Stored water as of Oct. 1, 1985*	24,781	21,245	180,370

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
* = Does not include return flow occurring during water year 1984-85.

TABLE 16

STORED WATER AND
1985-86 EXTRACTION RIGHTS
SYLMAR BASIN
(In Acre-Feet)

	Cities of		All Others
	San Fernando (1)	Los Angeles (2)	(3)
1983-84			
1. Stored water as of Oct. 1, 1983	0	0	0
2. Total extraction right for 1983-84	--[a]	--[a]	--[c]
3. Extractions for year	3,907	3,106	0
4. Stored water as of Oct. 1, 1984	0	0	0
1984-85			
5. Total extraction right for 1984-85	3,105[b]	3,105[b]	--[c]
6. Extraction for year	3,102	3,130	29
7. Stored water as of Oct. 1, 1985	(11)[d]	(40)	--
1985-86			
8. Total extraction right for 1985-86	3,094	3,065	--[c]

a/ Appropriative right to extract and put to reasonable beneficial use for the needs of each city.

b/ Effective October 1, 1984 the safe yield of the Sylmar Basin is 6,210 acre-feet. The safe yield less pumping by others is equally shared by Los Angeles and San Fernando.

c/ Entitled to reasonable overlying landowner pumping amount.

d/ Parenthesis indicates deficit pumping.

APPENDIX A

GROUNDWATER EXTRACTIONS

1984-1985 WATER YEAR

GROUND WATER EXTRACTIONS

Acre-Feet

LACFCD well No	Owners Designation	Extractions Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
San Fernando Basin														
City of Burbank														
3841C	6A	130.53	176.10	0.00	102.81	62.59	49.25	177.25	150.02	93.06	107.66	139.80	101.28	1290.35
3851E	12	68.01	132.79	0.00	52.35	43.50	5.96	0.00	0.00	0.00	0.00	0.00	0.00	302.61
3851K	13A	100.33	217.99	48.29	26.70	57.18	21.12	133.54	0.00	0.00	0.00	0.00	0.00	605.15
3841G	18	47.81	106.98	4.55	55.34	42.42	4.57	56.68	93.00	62.17	62.28	104.93	24.52	605.25
Party Total		346.68	633.86	52.84	237.20	205.69	80.90	367.27	243.02	155.23	169.94	244.73	125.80	2863.16
Conrock Co.														
4916A	2	136.74	109.74	72.03	19.92	62.60	66.49	77.57	33.72	103.91	77.19	55.67	2.29	817.87
4916	3	73.52	59.93	35.48	73.88	73.92	73.92	121.95	166.49	72.44	85.00	123.77	123.44	1083.74
Party Total		210.26	169.67	107.51	93.80	136.52	104.41	199.52	200.21	176.35	162.19	179.44	125.73	1901.61
Environmentals Inc.														
3934A	MD50A	10.76	13.05	12.31	13.94	5.20	0.00	3.15	2.01	0.34	2.56	0.00	0.00	63.32
Forest Lawn Cemetery Assn.														
3947A	2	8.74	2.50	0.19	0.44	1.09	3.14	6.20	14.28	7.62	0.00	3.42	18.68	66.30
3947B	3	26.23	6.53	0.28	0.95	2.56	8.17	21.60	38.88	35.99	40.98	33.89	31.83	247.69
3958K	7	0.11	2.14	0.21	0.48	1.33	0.86	1.19	5.27	0.00	18.95	16.08	14.63	61.25
Party Total		35.08	11.17	0.68	1.87	4.98	12.17	28.79	58.43	43.61	59.93	53.39	65.14	375.24
City of Glendale														
3926N	STPT 1	18.79	14.92	2.13	4.87	0.14	0.52	10.55	26.57	32.25	35.24	37.95	29.25	213.18
3926R	STPT 2	2.09	0.26	0.02	0.30	0.45	0.34	0.40	0.16	1.87	6.91	0.78	0.56	14.14
GVENT	GVENT	443.47	97.29	239.38	188.13	41.74	63.22	335.44	247.98	223.73	303.52	264.55	410.33	2858.78
Party Total		464.35	112.47	241.53	193.30	42.33	64.08	346.39	274.71	257.85	345.67	303.28	440.14	3086.10
Harper, Cecelia DeMille														
4960A	North	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	0.10E	1.20
Livingston-Graham, Inc.														
4916B	SnVal	0.00	0.00	0.00	0.64	0.50	0.49	0.43	0.48	0.14	0.87	0.22	0.14	3.91
City of Los Angeles														
3914M	CS-46	323.42	315.54	177.23	170.07	1.47	21.76	86.13	1.10	214.40	332.67	331.91	319.88	2295.58
3831E	E-1	223.49	210.17	96.21	105.12	208.01	120.25	223.19	198.00	202.57	188.96	169.86	159.30	2105.13
3821I	E-2A	163.06	154.11	161.62	152.99	128.17	90.13	167.59	138.09	134.34	130.99	122.75	110.19	1654.03
3831G	E-3	169.12	162.03	171.28	161.69	136.71	85.12	155.67	123.28	144.88	141.90	141.81	136.09	1729.58
3921F	E-4	120.26	115.77	0.00	0.00	0.00	0.00	0.07	71.12	140.31	144.10	150.39	144.79	896.81
3831F	E-5	0.00	0.07	2.71	0.00	1.10	10.12	88.11	0.83	0.00	0.00	0.00	0.00	102.94
3821H	E-6	231.34	222.77	232.44	229.78	201.33	111.91	205.81	183.82	195.27	195.75	204.11	199.61	2413.95
3811F	E-10	117.34	95.78	85.79	79.50	69.44	35.58	47.08	36.98	30.97	13.04	0.00	0.00	611.70
E Total		1032.81	960.70	750.05	729.00	744.76	453.12	887.52	752.12	868.34	814.74	788.97	749.98	9512.14

E - Estimated

1984-1985 WATER YEAR

GROUND WATER EXTRACTIONS

(Acre-Feet)

LACFCD Well No.	Owners Designation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
		Extractions												
		San Fernando Basin (Cont'd)												
3894BB	N-25	395.96	376.75	217.61	23.60	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.34	1016.12
3893L	N-26	0.00	0.00	0.05	16.21	0.00	8.40	72.70	0.00	0.00	0.00	0.00	0.21	97.57
3893K	N-27	0.00	0.00	0.11	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.14	103.83
3893M	N-28	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.46
3893N	N-29	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.43
3893P	N-30	0.00	0.14	0.00	36.69	0.00	17.52	1.65	0.00	0.00	0.00	0.00	0.48	56.48
N Total		395.96	377.14	217.77	78.08	1.86	25.92	74.35	0.00	0.00	0.00	0.00	103.81	1274.87
3800	MW-2	292.26	266.63	88.71	165.63	155.72	0.00	216.60	256.29	272.78	221.51	271.26	274.50	2479.85
3780A	MW-4	160.45	156.36	66.10	127.30	80.58	0.00	0.21	85.97	122.20	19.77	118.46	0.00	933.40
3810S	MW-5	0.00	3.56	9.36	0.00	6.86	0.00	0.05	0.00	0.05	0.00	0.00	0.00	19.88
3770	MW-7	188.71	176.84	0.00	0.00	0.00	0.00	0.00	0.00	33.17	20.13	0.00	0.00	418.85
3810	MW-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.59	230.16	275.75
3810A	MW-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	0.00	0.00	0.00	1.49
3810B	MW-14A	0.00	0.00	0.00	55.21	0.60	0.00	0.00	0.00	0.00	0.00	49.29	264.52	369.62
3790B	MW-15	124.82	125.44	135.88	134.37	66.00	0.00	121.33	113.34	114.21	96.19	102.34	0.00	1133.92
3820D	MW-16	299.59	291.71	99.66	228.79	156.13	0.00	216.26	231.18	284.80	289.33	288.96	273.49	2657.88
3820B	MW-18	356.48	319.33	130.33	185.42	0.00	0.00	68.55	276.08	341.44	119.79	349.86	329.09	2478.37
3830D	MW-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.12	373.33	423.45
3830C	MW-20	273.30	19.93	0.00	146.01	0.00	0.00	8.82	0.00	176.31	270.16	268.44	248.58	1411.55
3830B	MW-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	0.00	0.00	0.00	0.00	1.29
3790C	MW-22	289.12	286.57	113.96	239.81	152.55	0.00	212.21	253.17	267.22	180.92	183.38	260.86	2439.77
3800C	MW-24	333.11	325.23	141.58	130.37	189.07	0.00	0.00	58.98	322.45	41.87	0.00	0.00	1542.66
3790F	MW-25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.33	263.00	218.87	263.80	272.82	1101.82
3790E	MW-26	347.89	18.55	86.00	234.44	149.20	0.00	217.22	244.65	256.84	209.14	254.98	259.94	2278.87
3820F	MW-27	0.00	0.00	6.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.41	203.35	251.05
3800D	MW-30	263.11	251.77	72.43	219.47	139.10	0.00	193.44	267.43	259.48	211.07	254.18	257.12	2368.80
3810T	MW-31	338.66	308.22	120.91	155.58	179.59	0.00	77.37	304.04	327.07	40.63	0.00	0.00	1852.07
3770C	MW-32	94.65	94.67	30.42	80.53	47.31	0.00	0.09	17.65	316.49	44.53	311.96	325.09	1363.37
3780C	MW-33	263.78	244.06	76.13	209.83	132.37	0.00	0.00	161.58	211.18	24.66	197.64	0.00	1481.25
3790G	MW-34	258.95	259.57	290.80	285.08	135.72	0.00	256.11	256.34	220.04	193.44	213.18	240.47	2609.90
3830H	MW-35	210.01	193.67	0.00	87.97	112.01	0.00	6.61	97.61	177.99	207.67	207.37	194.70	1495.61
3790H	MW-36	425.60	415.18	435.13	323.21	218.73	0.00	397.36	426.84	398.51	326.93	380.17	406.98	4154.64
3790J	MW-37	433.98	407.85	434.12	338.57	222.50	0.00	377.34	405.70	382.51	311.71	361.89	388.85	4065.02
3810H	MW-38	450.82	35.77	0.00	0.00	0.00	0.00	0.00	290.22	482.42	496.34	489.16	465.57	2710.40
3810N	MW-39	476.70	373.49	3.83	252.53	192.20	31.35	476.52	421.70	462.06	471.38	464.21	464.06	4090.03
3810Q	MW-41	260.63	368.83	178.24	281.61	212.46	37.14	352.80	463.57	502.69	512.84	501.59	185.06	3877.26
3810R	MW-42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	306.07	435.47	411.92	1151.46
3790K	MW-43A	476.08	464.88	286.55	388.02	266.47	0.00	437.86	472.25	444.40	362.17	420.04	469.59	4466.31
3790L	MW-44	0.00	0.00	0.00	0.00	0.00	0.00	276.36	393.58	507.49	418.53	466.33	499.09	2561.38
MW Total		6606.68	5606.31	2806.41	4269.37	2793.15	108.49	3909.31	5744.50	7146.80	5615.85	6991.27	7230.12	58633.21
3904J	CS-52(#1)	0.35	0.27	0.35	0.75	0.42	0.78	0.74	0.56	0.74	0.80	0.51	0.57	6.84
3904J	CS-52(#2)	0.32	0.24	0.32	0.68	0.39	0.93	0.44	0.50	0.67	0.73	0.46	0.52	6.20
CS Total		0.67	0.51	0.67	1.43	0.81	1.71	1.18	1.06	1.41	1.53	0.97	1.09	13.04
3959E	P-4	52.11	60.95	65.20	62.90	58.31	67.95	58.08	44.08	35.81	1.72	0.62	0.00	507.73
3958H	P-6	0.00	0.00	0.00	69.79	0.00	0.00	0.00	18.41	0.00	0.00	0.00	0.00	88.20
3958J	P-7	88.50	95.85	15.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.01
P Total		140.61	156.80	80.86	132.69	58.31	67.95	58.08	62.49	35.81	1.72	0.62	0.00	795.94

1984 - 985 WATER YEAR

GROUND WATER EXTRACTIONS

Acre-Feet

Well No.	Owners Tabulation	Extractions												
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
4758	R-5	1.14*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14*
4759	R-5	5.53*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.53*
4756	R-6	5.67*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.67*
4756C	R-8	0.00	7.53*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.53*
4758A	R-9	0.00	0.90*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90*
4759D	R-10	1.19*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19*
R Total		13.53*	8.43*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.36*
4992A	TCPLT	76.91	75.53	10.22	0.00	0.00	0.00	0.00	0.00	6.36	42.15	12.60	0.00	223.77
3863H	V-1	155.10	145.89	143.44	135.65	115.47	16.90	129.11	129.62	118.23	118.09	110.38	102.41	1420.19
3853F	V-2	107.49	101.54	106.06	101.06	94.01	11.06	110.91	115.01	111.75	116.09	115.36	111.34	1201.66
3863J	V-4	129.64	118.21	122.43	118.41	106.96	16.83	133.77	112.60	134.23	138.27	129.64	120.18	1381.17
3863L	V-11	283.84	262.70	286.89	317.08	281.61	41.76	302.23	309.99	297.16	306.61	307.03	294.54	3291.44
3853G	V-13	50.14	47.96	46.46	45.41	38.41	5.79	47.06	47.52	43.62	42.08	38.75	37.35	490.55
3843F	V-16	133.66	122.84	116.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	373.35
3854F	V-22	46.26	50.28	51.77	51.24	44.54	6.52	45.59	46.49	44.88	47.31	44.93	43.11	522.92
V Total		906.13	849.42	873.90	768.85	681.00	98.84	768.67	761.23	749.87	768.45	746.09	708.93	8681.38
3820E	W-1	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
3871B	W-2	121.28	0.11	3.33	0.00	0.94	0.00	1.01	1.65	0.00	0.00	0.00	0.00	128.32
3821D	W-4	383.68	373.58	401.56	397.32	353.19	52.11	371.56	390.06	363.25	363.82	349.15	325.90	4125.18
3821E	W-5	152.92	144.90	150.16	140.04	120.20	19.61	158.29	84.50	0.00	0.00	0.00	0.00	970.62
3831J	W-6A	301.36	286.11	297.75	293.67	261.76	139.37	273.07	284.94	262.38	263.27	253.47	247.66	3164.79
3832K	W-7	213.07	198.65	203.65	102.71	0.92	6.34	191.25	207.30	189.17	185.31	171.42	161.80	1826.56
3832L	W-8	264.67	235.26	235.26	207.05	161.71	24.79	213.63	227.21	198.96	180.28	137.90	0.00	2086.50
3832M	W-9	136.30	128.81	134.67	129.25	106.98	15.66	126.63	120.16	118.73	101.54	92.49	78.70	1289.92
3842E	W-10	76.88	72.59	76.29	72.65	60.79	9.21	75.14	71.35	68.64	49.17	0.00	0.00	632.51
W Total		1650.11	1440.08	1502.67	1342.49	1066.49	267.09	1410.38	1382.17	1201.11	1143.39	1004.43	814.06	14224.45
City of Los Angeles Total		11146.91	9588.46	6617.78	7497.06	5347.85	1066.88	7195.62	8704.67	10704.10	8720.50	9876.76	9936.85	95676.44
Rena, John & Barbara														
4973J	4973J	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.96
Sears Roebuck & Co.														
3945	3945	1.98	0.07	0.15	0.06	1.82	3.27	3.27	0.58	0.58	1.87	1.88	3.30	18.83
Sportsmen's Lodge, Inc.														
3785A	1	5.28	5.07	3.46	0.45	0.47	0.87	4.58	0.14	0.14	0.09	0.12	0.13	20.80
Toluca Lake Property Owners Assn.														
3845F	3845F	2.94	1.02	0.00	0.00	0.00	1.80	2.62	2.41	3.15	2.75	3.15	7.99	27.83
Valhalla Memorial Park														
3840K	4	12.18	11.72	0.00	0.79	9.92	3.80	21.11	30.16	34.60	54.38	53.72	18.45	260.83

* Extractions not chargeable against City of Los Angeles' Water Right Entitlement, but included in Basin Total Extractions.

1984-1985 WATER YEAR

GROUND WATER EXTRACTIONS

Acre Feet

LOCATION Well No.	Owners Designation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Walt Disney Productions														
3874E	East	27.09	98.00	77.02	22.36	80.78	0.09	30.60	62.98	0.00	0.00	112.82	118.33	630.17
3874F	West	104.35	22.16	0.21	103.60	20.18	100.80	0.00	132.36	167.49	179.05	34.91	5.63	851.64
Party Total		131.44	121.16	77.23	125.96	100.96	100.89	30.60	195.34	167.49	179.05	147.73	123.96	1481.81
Basin Total		12368.06	10667.90	6913.67	8160.25	5856.42	1453.76	8203.53	9712.36	11023.76	9699.93	10666.60	10857.86	105782.36
							Sylmar Basin							
City of Los Angeles														
Plant	Mission	302.64	368.85	27.11	117.70	1.86	0.00	208.08	467.87	418.30	471.01	389.81	377.07	3130.30
Maurer Engineering Co.														
5996	3	0.01[E]	1.4[E]	3.4[E]	3.7[E]	3.6[E]	3.5[E]	3.7[E]	2.6[E]	0.01[E]	0.60[E]	3.7[E]	3.4[E]	29.42
City of San Fernando														
5969D	2A	162.77	174.91	180.66	176.86	175.73	196.65	179.90	68.67	0.00	51.22	172.23	99.93	1637.33
5959	3	109.65	62.61	50.89	67.22	55.76	62.53	99.27	118.97	122.47	136.56	63.72	17.55	967.18
5969	4	21.73	12.58	10.12	9.21	5.89	4.42	11.90	13.61	27.73	32.96	7.61	9.45	166.79
5968	7A	40.26	23.03	16.75	15.91	11.83	15.07	32.88	32.71	56.82	54.58	17.73	12.90	330.45
Party Total		336.39	273.13	258.22	269.20	249.19	276.67	323.95	233.76	207.02	275.30	261.09	139.83	3101.75
Basin Total		637.06	643.38	288.73	390.60	256.45	280.17	535.73	704.23	625.33	746.91	654.60	520.30	6261.67
							Verdugo Basin							
Crescenta Valley County														
5058B	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97	6.33	26.69	26.44	21.71	82.14
5058B	5	0.36	0.00	0.00	0.00	0.01	0.00	1.22	9.19	36.47	36.91	30.86	3.79	118.79
5058	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02
5047B	7	14.23	0.00	0.00	0.00	3.57	0.00	13.06	13.17	3.38	1.65	4.36	0.05	52.27
5069J	8	17.47	6.80	21.48	0.91	14.66	10.62	15.72	15.21	16.76	36.49	41.36	32.58	225.98
5047D	9	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02
5058D	10	72.23	52.07	19.63	45.11	32.26	58.06	63.98	55.60	63.26	85.65	90.57	73.52	770.97
5058J	12	0.93	0.00	2.31	2.30	0.81	0.00	0.63	3.16	6.07	5.02	8.10	7.76	36.87
5069F	14	66.71	60.66	60.57	63.95	52.07	63.49	59.88	56.26	55.58	56.70	51.02	67.68	690.55
	Pick	6.46	6.09	6.22	6.16	5.69	6.02	5.67	5.77	5.57	5.62	5.52	4.98	69.53
Party Total		176.37	125.60	110.21	118.41	108.79	138.19	159.97	158.31	191.63	250.53	267.21	192.07	1997.09
City of Glendale														
3961-3971	GL3-6	0.00	33.21	83.32	76.68	72.89	32.81	0.00	0.00	41.77	13.81	0.00	0.00	352.29
3970	GL-6	151.58	151.88	107.05	126.63	122.97	165.32	136.82	163.20	95.16	128.98	134.61	142.16	1586.26
-	MH-1	195.68	207.36	146.85	115.67	68.66	181.35	199.42	160.05	120.61	167.41	176.53	159.16	1898.51
Party Total		347.26	392.43	337.22	318.78	264.38	379.48	336.24	323.25	257.53	310.12	311.14	301.32	3837.06
Basin Total		523.63	518.03	447.43	435.19	373.09	497.67	496.21	481.56	448.95	560.65	578.35	493.39	5834.15
							Eagle Rock Basin							
Deep Rock Water Co.														
-	3	0.30	0.40	0.26	0.48	0.31	0.33	0.17	0.27	0.19	0.18	0.16	0.26	3.27
Sparkletts Drinking Water														
3987A	1	7.42	6.56	6.23	7.17	5.98	6.69	7.13	7.27	6.95	7.81	6.60	6.26	82.05
3987B	2	7.50	6.15	6.30	7.31	5.97	6.91	6.72	6.90	6.38	6.50	6.21	5.83	78.76
3987F	3	0.03	0.08	0.00	0.00	0.26	0.29	0.35	0.22	0.58	2.99	2.07	2.60	9.27
Party Total		15.03	12.79	12.53	14.48	12.21	13.89	14.20	14.39	13.91	17.30	14.88	14.67	170.08
Basin Total		15.33	13.19	12.79	14.96	12.52	14.22	14.37	14.66	14.10	17.38	15.02	14.71	173.35
ULARA Total		13566.06	11062.50	7662.62	9080.81	6696.48	2245.88	9240.86	10877.79	12118.91	11010.95	12119.53	11886.76	118050.53

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 19 84 19 85

Station No: F 57 CR

Drainage Area: 511 Square Miles (H. EL DESA (Observer)

Gage Read: EVERY 15 MINUTES

Rating Table No: 69 I

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH		
	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		30.	e		36.5	2.70		50.	0.71		51.5	0.69		48.6	0.76		59.
2			30.			36.5	0.68		47.3	0.68		47.3	1.18		188.	0.72		53.
3			32.			37.8	1.09		136.	0.76		59.	0.74		56.	0.76		59.
4			34.			37.8	0.74		56.	0.73		54.5	0.69		48.6	0.72		53.
5			36.			37.8	0.69		48.6	0.74		56.	0.69		48.6	0.71		51.5
6			38.			37.8	0.67		48.6	0.75		57.5	0.67		45.9	0.76		59.
7			40.	e		37.8	0.72		52.5	1.12		152.	0.74		56.	1.24		235.
8			42.	1.70		839.	1.97		1300.	1.21		208.	1.23		224.	0.70		50.
9			44.	0.75		57.5	0.76		59.	0.74		56.	2.36		2090.	0.63		40.5
10			47.°	0.98		47.3	1.88		1140.	0.92		68.3	0.93		97.8	0.63		40.5
11			40.	0.57		45.9	1.23		250.	0.74		56.	0.83		70.2	0.93		91.1
12				0.66		44.6	0.79		63.5	0.67		45.9	0.79		63.5	0.68		47.3
13				1.87		1120.	0.71		51.5	0.66		44.6	0.80		65.	0.70		50.
14				0.73		54.5	0.68		47.3	0.70		50.	0.79		63.5	0.74		56.
15			40	0.69		48.6	1.00		108.	0.71		51.5	0.73		54.5	0.78		62.
16			40	e		70.7	1.88		1140	0.72		53.	0.73		54.5	0.83		70.2
17			225			79.1	0.81		66.7	0.72		53.	0.76		57.	0.84		72.
18			50.			47.3	1.94		1240	0.73		54.5	0.80		65.	1.27		265.
19			40			47.3	2.90		3380	0.73		54.5	0.82		68.5	0.86		75.4
20				e		71.9	1.71		846	0.70		50.	0.91		83.9	0.73		54.5
21				1.11		145.	0.95		95.4	0.71		51.5	0.75		57.5	0.75		57.5
22				0.75		57.5	0.78		62.	0.73		54.5	0.71		51.5	0.77		60.5
23				0.64		41.9	0.74		56.	1.24		233.	0.72		53.	0.79		63.5
24				1.64		749.	0.71		51.5	0.68		78.9	0.74		56.	0.82		68.5
25			40	1.01		110.	0.70		50.	0.71		51.5	0.74		56.	0.84		72.
26			36	0.71		51.5	1.24		233.	0.71		51.5	0.73		54.5	0.85		73.7
27				0.66		44.6	1.88		1130.	0.71		51.5	0.99		106.	1.68		796.
28				0.97		101.	0.95		96.4	1.50		539.	0.83		69.5	1.04		121.
29				0.75		57.5	0.76		59.	1.05		123.				0.69		48.6
30				0.71		51.5	0.72		53.	0.79		63.5				0.61		37.8
31	e		36.				0.72		53.	0.71		51.5				0.60		36.5
1	1384.			4214.2			12050.3			2672.5			4055.1			2979.6		
2	44.6			140.			389.			86.2			145.			96.1		
3	2750.			8360.			23900.			5300.			8040.			5910.		
4	22.5			1120.			3380.			539.			2090.			796.		
5	30.			36.5			47.3			44.6			45.9			36.5		

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	0.61		37.8	0.72		53.	0.67		43.2	e		40	e		47	e		42	1
2	0.64		41.9	0.73		54.5	0.69		48.6						47				2
3	0.65		43.2	0.73		54.5	0.67		45.9						41				3
4	0.69		48.6	0.75		57.5	0.63		45.5						45				4
5	0.74		56.	0.74		56.	0.62		39.2						43				5
6	0.74		56.	0.73		54.5	0.65		43.2						42				6
7	0.73		54.5	0.73		54.5	0.68		45.9						41				7
8	0.72		53.	0.72		53.	0.32		35.5						41				8
9	0.72		53.	0.89		80.	0.68		32						37				9
10	0.71		51.5	0.70		50.	e		53						37			42	10
11	0.71		51.5	0.68		47.3			37.8						35			41	11
12	0.74		56.	0.67		45.9			37.5						35				12
13	0.75		57.5	0.68		47.3			36.5						31.°				13
14	0.77		60.5	0.70		50.									33				14
15	0.78		62.	0.71		50.						40.°			35				15
16	0.80		65.	0.70		50.						40			36				16
17	0.84		72.5	0.72		53.						41			37			41°	17
18	0.86		74.7	0.73		54.5						41			38				18
19	0.70		50.	0.74		56.						70			37				19
20	0.67		45.9	0.74		56.						42			40				20
21	0.65		43.2	0.74		56.						43			41.°				21
22	0.68		47.3	0.78		62.						43			41				22
23	0.70		50.	0.78		62.						43			41				23
24	0.72		53.	0.72		53.						43.'			42				24
25	0.71		51.5	0.75		57.5						43			42			41	25
26	0.69		48.6	0.75		57.5						44			43			74	26
27	0.71		51.5	0.73		54.5						45			43			74°	27
28	0.83		70.2	0.72		53.						46			43.°			74	28
29	0.81		66.7	0.70		50.						47			43			74	29
30	0.72		53.	0.69		48.6	e		36.5			48			43	e		74	30
31				0.69		48.6				e		49.°	e		43				31
1	1626.1			1680.9			1229.4			1328.			1252.			1405.			1
2	54.2			54.2			41.			42.8			40.4			46.8			2
3	3230.			3330.			2440.			2630.			2480.			2790.			3
4	74.7			80.7			68.5			70.			47.			74.			4
5	37.8			45.9			36.5			40.			31.			41.			5

REMARKS

1 — Total CFS
2 — Average Daily Flow in CFS
3 — Total Monthly Acre Feet
4 — Maximum Average Daily Flow in CFS
5 — Minimum Average Daily Flow in CFS

YEARLY TOTALS

1	35877.1
2	98.3
3	71160
4	3380.
5	30.

Maximum stage 4.69 feet at 16.45 on 12-19-84 Discharge 9270 Second-feet.

Minimum stage INC. feet at on Discharge Second-feet.

*Measured Q

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description VERDUGO WASH
@ ESTELLE AVE. for Water-Year 19 84 19 85

Station No. F 252 R

Drainage Area 26.8 Square Miles (H. EL DEEB Observer)

Gage Read EVERY 15 MINUTES

Rating Table No 47 I

Day	October Gage Height	October Discharge	November Gage Height	November Discharge	December Gage Height	December Discharge	January Gage Height	January Discharge	February Gage Height	February Discharge	March Gage Height	March Discharge
1	0.22	5.0	0.19	2.5	0.18	2.3	0.23	6.2	0.21	3.9	0.23	6.2
2	0.20	2.8	0.18	2.3	0.18	2.3	0.23	6.2	0.25	8.4	0.23	6.2
3	0.20	2.8	0.18	2.3	0.20	2.8	0.24	7.3	0.19	2.5	0.23	6.2
4	0.21	3.9	0.18	2.3	0.19	2.5	0.24	7.3	0.17	2.0	0.23	6.2
5	0.21	3.9	0.18	2.3	0.19	2.5	0.24	7.3	0.20	2.8	0.23	6.2
6	0.19	2.5	0.18	2.3	0.20	2.8	0.24	7.3	0.21	3.9	0.24	7.3
7	0.19	2.5	0.18	2.3	0.32	18.7	0.49	75.9	0.22	5.0	0.25	8.4
8	0.19	2.5	0.62	144.	0.54	119.	0.39	36.1	0.30	14.0	0.17	2.0
9	0.19	2.5	0.21	3.9	0.23	6.2	0.21	3.9	0.75	275.	0.17	2.0
10	0.19	2.5	0.15	1.5	0.37	351	0.22	5.0	0.23	6.2	0.18	2.3
11	0.20	2.8	0.15	1.5	0.37	217	0.22	5.0	0.23	6.2	0.20	2.8
12	0.22	5.0	0.15	1.5	0.21	3.9	0.24	7.3	0.23	6.2	0.18	2.3
13	0.22	5.0	0.54	104.	0.17	2.0	0.25	8.4	0.22	5.0	0.19	2.5
14	0.24	7.3	0.19	2.5	0.15	1.5	0.23	6.2	0.24	7.3	0.20	2.8
15	0.23	6.2	0.19	2.5	0.38	32.4	0.23	6.2	0.24	7.3	0.20	2.8
16	0.22	5.0	0.23	6.2	0.60	139.	0.22	5.0	0.24	7.3	0.19	2.5
17	0.26	9.5	0.21	3.9	0.23	6.2	0.23	6.2	0.25	8.4	0.20	2.8
18	0.22	5.0	0.20	2.8	0.41	41.7	0.25	8.4	0.24	7.3	0.43	51.0
19	0.22	5.0	0.19	2.5	0.72	245	0.26	9.5	0.25	8.4	0.20	2.8
20	0.21	3.9	0.18	2.3	0.47	64.	0.24	7.3	0.27	10.6	0.21	3.9
21	0.20	2.8	0.42	44.5	0.23	6.2	0.23	6.2	0.24	7.3	0.22	5.0
22	0.20	2.8	0.16	1.8	0.19	2.5	0.22	5.0	0.24	7.3	0.22	5.0
23	0.20	2.8	0.13	1.0	0.18	2.3	0.21	3.9	0.25	8.4	0.21	3.9
24	0.19	2.5	0.41	42.5	0.18	2.3	0.21	3.9	0.25	8.4	0.22	5.0
25	0.18	2.3	0.31	15.8	0.18	2.3	0.22	5.0	0.25	8.4	0.23	6.2
26	0.18	2.3	0.19	2.5	0.53	99	0.21	3.9	0.24	7.3	0.23	6.2
27	0.18	2.3	0.19	2.5	0.76	279	0.20	2.8	0.23	6.2	0.56	118.
28	0.18	2.3	0.19	2.5	0.25	8.2	0.29	12.9	0.23	6.2	0.22	5.0
29	0.20	2.8	0.19	2.5	0.22	5.0	0.25	8.4			0.19	2.5
30	0.21	3.9	0.19	2.5	0.22	5.0	0.20	2.8			0.19	2.5
31	0.24	7.3			0.22	5.0	0.20	2.8			0.20	2.8
1		119.7		413.5		1176.4		289.6		457.2		291.3
2		3.9		13.8		37.9		9.3		16.3		9.4
3		237.		820.		2330.		574.		907.		578.
4		9.5		144.		279.		75.9		275.		118.
5		2.3		1.0		1.5		2.8		2.0		2.

Day	April Gage Height	April Discharge	May Gage Height	May Discharge	June Gage Height	June Discharge	July Gage Height	July Discharge	August Gage Height	August Discharge	September Gage Height	September Discharge	Yearly Totals
1	0.20	2.8	0.21	3.9	0.22	5.0	0.21	3.9	b	2.8	0.21	3.9	
2	0.20	2.8	0.22	5.0	0.21	3.9	0.21	3.9	b	2.5	0.21	3.9	
3	0.21	3.9	0.20	2.8	0.22	5.0	0.21	3.9	0.19	2.5	0.20	2.8	
4	0.22	5.0	0.20	2.8	0.20	2.8	0.21	3.9	0.19	2.5	0.20	2.8	
5	0.23	6.2	0.22	5.0	0.21	3.9	0.20	2.8	0.19	2.5	0.21	3.9	
6	0.23	6.2	0.21	3.9	0.20	2.8	0.18	2.3	0.19	2.5	0.22	5.0	
7	0.23	6.2	0.20	2.8	0.20	2.8	0.18	2.3	0.19	2.5	0.21	3.9	
8	0.23	6.2	0.21	3.9	0.20	2.8	0.17	2.0	0.20	2.8	0.21	3.9	
9	0.23	6.2	0.34	23.7	0.20	2.8	0.16	1.8	0.19	2.5	0.21	3.9	
10	0.23	6.2	0.18	2.3	0.20	2.8	0.16	1.8	0.19	2.5	0.21	3.9	
11	0.22	5.0	0.19	2.5	0.20	2.8	0.16	1.8	0.19	2.5	0.21	3.9	
12	0.22	5.0	0.19	2.5	0.20	2.8	0.16	1.8	0.19	2.5	0.21	3.9	
13	0.22	5.0	0.19	2.5	0.20	2.8	0.16	1.8	0.19	2.5	0.21	3.9	
14	0.20	2.8	0.20	2.8	0.20	2.8	0.18	2.3	0.20	2.8	0.21	3.9	
15	0.21	3.9	0.20	2.8	0.20	2.8	0.18	2.3	0.20	2.8	0.21	3.9	
16	0.21	3.9	0.20	2.8	0.20	2.8	0.18	2.3	0.20	2.8	b	3.9	
17	0.21	3.9	0.20	2.8	0.20	2.8	0.22	5.0	0.20	2.8		3.9	
18	0.21	3.9	0.20	2.8	0.20	2.8	0.20	2.8	0.20	2.8		3.9	
19	0.21	3.9	0.20	2.8	0.20	2.8	0.20	2.8	0.20	2.8		3.9	
20	0.20	2.8	0.20	2.8	0.20	2.8	0.18	2.3	0.20	2.8		3.9	
21	0.20	2.8	0.22	5.0	0.20	2.8	0.18	2.3	0.20	2.8		3.9	
22	0.21	3.9	0.20	2.8	0.20	2.8	0.19	2.5	0.20	2.8		3.9	
23	0.21	3.9	0.20	2.8	0.19	2.5	b	2.5	0.20	2.8		3.9	
24	0.20	2.8	0.20	2.8	0.19	2.5		2.3	0.20	2.8		3.9	
25	0.20	2.8	0.20	2.8	0.19	2.5		2.3	0.20	2.8	b	3.9	
26	0.21	3.9	0.20	2.8	0.20	2.8		2.5	0.20	2.8	0.26	9.5	
27	0.21	3.9	0.20	2.8	0.20	2.8		2.0	0.21	3.9	0.21	3.9	
28	0.22	5.0	0.20	2.8	0.19	2.5		2.0	0.21	3.9	0.20	2.8	
29	0.20	2.8	0.20	2.8	0.21	3.9		2.3	0.21	3.9	0.21	3.9	
30	0.20	2.8	0.20	2.8	0.21	3.9		2.5	0.21	3.9	0.21	3.9	
31			0.20	2.8			b	2.5	0.21	3.9			
1		126.4		116.2		91.6		79.5		89.		120.4	3370.8
2		2.4		3.7		3.1		2.6		2.9		4.	9.2
3		251.		230.		182.		158.		177.		239.	6680.
4		6.2		23.7		5.0		5.0		3.9		9.5	279.
5		2.8		2.3		2.5		1.8		2.5		2.8	1.0

REMARKS

Maximum stage 2.02 feet at 1515 on 12-19-84 Discharge 2430 Second-feet.
Minimum stage 0.18 feet at 0200 on 11-23-84 Discharge 0.7 Second-feet

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description: BURBANK WESTERN STORM DRAIN
● RIVERSIDE DRIVE for Water-Year 19 84 - 19 85

Station No.: E 285 R

Drainage Area: 25 Square Miles (H. EL DEEB Observer)

Gage Read: EVERY 15 MINUTES

Rating Table No.: 59 I

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH		
	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	0.07		6.7	0.09		6.7	0.38		5.6	0.08		5.6	0.09		6.7	0.08		5.6
2	0.07		6.7	0.09		6.7	0.08		5.6	0.07		5.6	0.12		16.9	0.08		5.6
3	0.10		7.9	0.09		6.7	0.10		7.9	0.12		10.6	0.38		5.6	0.07		5.6
4	0.10		7.9	0.09		6.7	0.07		5.6	0.09		6.7	0.09		6.7	0.08		5.6
5	0.09		6.7	0.09		6.7	0.07		5.6	0.09		6.7	0.09		6.7	0.08		5.6
6	0.09		6.7	0.09		6.7	0.07		5.6	0.09		6.7	0.09		6.7	0.09		6.7
7	0.09		6.7	0.09		6.7	0.25		52.1	0.25		31.9	0.09		6.7	0.17		16.6
8	0.09		6.7	b		58.7	0.35		59.9	0.12		11.	0.33		52.8	0.10		7.9
9	0.10		7.9			9.1	0.07		5.6	0.09		6.7	0.47		111.	0.09		6.7
10	0.11		9.1			9.1	0.42		87.5	0.07		6.7	0.09		6.7	0.08		5.6
11	0.11		9.1			9.1	0.08		5.6	0.09		6.7	0.07		6.7	0.12		7.9
12	0.10		7.9			9.1	0.07		5.6	0.07		5.6	0.09		6.7	0.10		7.9
13	0.10		7.9			97.6	0.06		4.5	0.08		5.6	0.09		6.7	0.09		6.7
14	0.10		7.9			6.7	0.08		5.6	0.07		5.6	0.09		6.7	0.09		6.7
15	0.11		9.1			6.7	0.34		58.	0.07		5.6	0.09		6.7	0.09		6.7
16	0.10		7.9			6.7	0.25		33.3	0.07		5.6	0.09		6.7	0.09		6.7
17	0.11		9.1			6.7	0.09		6.7	0.07		5.6	0.09		6.7	0.09		6.7
18	0.10		7.9			6.7	0.56		155.	0.11		9.1	0.09		6.7	b		23.9
19	0.10		7.9			6.7	0.94		363.	0.10		7.9	0.07		6.7			18.5
20	0.10		7.9	b		6.7	b		26.1	0.09		6.7	0.10		7.9			13.1
21	0.10		7.9	0.12		10.6			7.9	0.09		6.7	0.09		6.7			6.7
22	0.11		9.1	0.09		6.7			7.9	0.09		6.7	0.10		7.9			5.0
23	0.10		7.9	0.09		6.7			6.7	0.09		6.7	0.10		7.9			5.0
24	0.08		5.6	0.25		32.5			6.7	0.09		6.7	0.10		7.9			5.0
25	0.08		5.6	0.09		6.7			6.7	0.09		6.7	0.10		7.9			5.0
26	0.09		6.7	0.08		5.6			61.3	0.09		6.7	0.10		7.9			5.0
27	0.09		6.7	0.07		5.0			104.	0.08		5.6	0.10		7.9			43.0
28	0.10		7.9	0.09		6.7	b		7.9	0.34		58.9	0.10		7.9			9.1
29	0.10		7.9	0.08		5.6	0.09		6.7	0.25		33.1						6.7
30	0.10		7.9	0.09		6.7	0.08		5.6	0.08		5.6						5.0
31	0.10		7.9				0.08		5.6	0.09		6.7				b		5.0
1	236.7			379.3			1108.4			308.7			350.7			276.2		
2	7.6			12.6			35.8			10.			12.5			8.9		
3	469.			752.			2200.			612.			696.			548.		
4	9.1			97.6			363.			58.9			111.			43.		
5	5.6			5.0			4.5			5.0			5.6			5.0		

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER		
	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		5.6	0.08		5.6	0.07		5.6	0.07		5.6	0.00		1.1	0.03		2.8
2	b		5.6	0.10		5.6	0.08		5.6	0.08		5.6	0.00		1.1	0.03		2.8
3	0.08		5.6	0.08		5.6	0.08		5.6	0.05		3.9	0.00		1.1	0.02		2.2
4	0.08		5.6	0.08		5.6	0.08		5.6	0.05		3.9	0.00		1.1	0.02		2.2
5	0.08		5.6	0.03		5.6	0.09		6.7	0.05		3.9	0.00		1.1	0.02		2.2
6	0.08		5.6	0.08		5.6	0.09		6.7	0.04		3.4	0.03		2.8	0.02		2.2
7	0.08		5.6	0.08		5.6	0.08		5.6	0.04		3.4	0.06		4.5	0.01		1.7
8	0.08		5.6	0.10		8.4	0.08		5.6	0.04		3.4	0.06		4.5	0.01		1.7
9	0.08		5.6	0.10		7.9	0.09		6.7	0.05		3.9	0.05		3.9	0.01		1.7
10	0.07		5.0	b		5.0	0.09		6.7	0.05		3.9	0.05		3.9	0.01		1.7
11	0.07		5.0			5.0	0.08		5.6	0.04		3.4	0.05		3.9	0.02		1.1
12	0.08		5.6			5.0	0.08		5.6	0.04		3.4	0.06		4.5	0.00		1.1
13	0.08		5.6			5.0	0.09		6.7	0.04		3.4	0.06		4.5	0.00		1.1
14	0.09		6.7			5.0	0.12		10.6	0.04		3.4	0.06		4.5	0.00		1.1
15	0.10		7.9			5.0	0.13		11.9	0.05		3.1	0.07		5.0	0.00		1.1
16	0.09		6.7			5.0	0.12		10.6	0.05		3.9	0.07		5.0	0.00		1.1
17	0.15		14.3			5.0	0.09		6.7	0.05		3.9	0.07		5.0	0.00		1.1
18	0.08		5.6			5.0	0.08		5.6	0.05		3.9	0.06		4.5	0.00		1.1
19	0.08		5.6			5.0	0.09		6.7	0.05		3.9	0.07		5.0	0.00		1.1
20	0.08		5.6			5.0	0.09		6.7	0.04		3.4	0.07		5.0	0.00		1.1
21	0.08		5.6	b		5.6	0.09		6.7	0.04		3.4	0.05		3.9	0.00		1.1
22	0.08		5.6	0.09		6.7	0.09		6.7	0.04		3.4	0.05		3.9	0.00		1.1
23	0.06		4.5	0.08		5.6	0.09		6.7	0.04		3.4	0.06		4.5	0.00		1.1
24	0.08		5.6	0.09		6.7	0.09		6.7	0.03		2.8	0.06		4.5	0.05		3.9
25	0.08		5.6	0.08		5.6	0.09		6.7	0.03		2.8	0.06		4.5	0.10		7.9
26	0.07		5.0	0.08		5.6	0.08		5.6	0.03		2.8	0.05		3.9	0.11		9.1
27	0.08		5.6	0.08		5.6	0.09		6.7	0.02		2.2	0.05		3.9	0.10		7.9
28	0.08		5.6	0.09		6.7	0.10		7.9	0.02		2.2	0.04		3.4	0.10		7.9
29	0.08		5.6	0.09		6.7	0.09		6.7	0.01		1.7	0.04		3.4	0.09		6.7
30	0.08		5.6	0.08		5.6	0.08		5.6	0.01		1.7	0.04		3.4	0.10		7.9
31				0.07		5.0				0.00		1.1	0.04		3.4			
1	177.7			175.9			202.5			102.1			114.7			86.8		
2	5.9			5.7			6.7			3.3			3.7			2.9		
3	352.			349.			402.			203.			228.			172.		
4	14.3			8.4			11.9			5.0			5.0			9.1		
5	4.5			5.0			5.0			1.1			1.1			1.1		

REMARKS

YEARLY TOTALS: 3519.7 / 9.6 / 6980. / 363. / 1.1

Maximum stage 2.48 feet at 1145 on 12-19-84 Discharge 2640 Second-feet.
Minimum stage 0.00 feet at VARIOUS on TIMES Discharge 1.1 Second-feet.

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description LOS ANGELES RIVER @ TUJUNGA AVE. for Water-Year 19 84_ 19_85 Station No F 300 R

Drainage Area 401 Square Miles (L. EL. 1528 Observer) Gage Read EVERY 15 MINUTES Rating Table No 62 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	0.69		11.6	0.71		12.0	0.58		9.1	0.77		13.5	0.77		13.4	0.84		15.2	1
2	0.69		11.6	0.69		11.6	0.58		9.1	0.72		12.3	2.73		14.1	0.86		15.8	2
3	0.67		11.1	0.71		12.0	2.61		108.	0.76		13.2	0.87		16.	0.90		15.8	3
4	0.71		12.0	0.76		13.2	0.67		11.2	0.81		14.4	0.79		14.	0.73		12.5	4
5	0.73		12.5	0.75		13.0	0.62		10.0	0.91		14.4	0.75		13.	0.75		13.	5
6	0.72		12.3	0.71		12.0	0.63		10.2	0.88		16.2	0.81		14.4	0.86		15.7	6
7	0.73		12.5	0.74		12.8	1.42		34.2	2.82		130.	0.79		14.	3.11		175.	7
8	0.76		13.2	3.52		183.	3.71		759.	1.77		49.7	3.28		240	1.11		22.7	8
9	0.74		12.8	0.82		14.6	0.88		16.1	0.85		15.4	3.92		1050	0.63		14.9	9
10	0.69		11.6	0.64		10.9	3.74		789.	1.55		39.4	1.77		499	0.73		13.7	10
11	0.68		11.3	0.64		10.9	2.42		91.2	0.84		15.2	1.38		32.5	1.52		38.4	11
12	0.75		13.0	0.76		13.2	0.94		17.8	0.68		11.3	1.24		27.2	0.77		13.5	12
13	0.65		10.7	3.69		730.	0.67		11.1	0.63		10.2	1.23		26.9	0.77		13.5	13
14	0.66		10.9	0.80		14.3	0.61		9.7	0.70		11.8	1.06		21.1	0.75		13.	14
15	0.56		8.7	0.71		12.0	2.54		102.	0.86		15.6	0.88		16.1	0.77		13.5	15
16	0.53		8.1	2.04		65.1	3.55		530.	0.82		14.7	0.86		15.7	0.76		13.2	16
17	3.11		176.	1.05		20.9	0.96		18.3	0.82		14.7	1.13		23.5	0.75		13.	17
18	0.63		10.2	0.82		14.6	4.03		1210.	0.80		14.2	1.20		25.8	2.86		135.	18
19	0.65		10.2	0.69		11.6	4.10		1820	0.81		14.4	1.09		22.2	1.05		20.9	19
20	0.63		10.2	0.58		9.1	3.70		743.	0.81		14.4	1.15		35.4	0.79		14.	20
21	0.62		10.0	2.11		69.6	1.88		55.8	0.85		15.5	0.76		13.2	0.72		12.3	21
22	0.71		12.0	0.65		10.6	1.21		26.2	1.60		41.9	0.76		13.2	0.71		12.	22
23	0.76		13.3	0.55		8.4	1.08		21.8	3.15		186.	0.84		15.2	0.74		12.8	23
24	0.67		11.2	3.55		526.	0.99		19.1	1.26		28.1	0.83		14.9	0.83		14.9	24
25	0.65		10.6	1.32		30.0	0.92		17.2	0.79		14.	0.81		14.4	0.87		15.9	25
26	0.63		10.2	0.63		10.2	3.20		201.	0.79		14.	0.83		15.	0.82		14.7	26
27	0.71		12.0	0.56		8.7	3.51		480	0.78		13.7	2.20		75.8	b		564.	27
28	0.72		12.3	2.36		87.1	1.62		42.6	3.43		373.	0.96		18.2	2.75		122.	28
29	0.76		13.2	0.70		11.7	0.96		18.3	1.98		61.3				1.07		21.6	29
30	0.79		13.9	0.58		9.1	0.85		15.4	1.19		25.3				0.78		13.7	30
31	0.74		12.8				0.84		15.2	0.81		14.4				0.77		13.5	31
1	522.			2268.2			7221.6			1242.2			1995.			1420.7			1
2	16.8			75.6			233.			40.1			71.2			45.8			2
3	1040.			4500.			14320.			2460.			3960.			2820.			3
4	176.			730.			1820.			373.			1050.			564.			4
5	8.1			8.4			9.1			10.2			13.			12.			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	0.77		13.5	0.93		17.4	0.76		13.2	0.77		13.5	0.70		11.8	b		9.1	1
2	0.82		14.7	0.81		14.4	0.77		13.5	0.86		15.6	0.72		12.3	b		9.1	2
3	0.88		16.1	0.95		18.1	0.72		12.3	0.97		18.6	0.68		11.3	b		9.7	3
4	0.78		13.7	2.86		15.7	0.76		13.2	0.91		17.0	0.69		11.6	0.96		18.4	4
5	0.77		13.5	0.82		14.7	0.77		13.5	0.88		16.1	0.68		11.3	1.23		26.8	5
6	0.77		13.5	0.83		14.9	0.75		13.0	0.86		14.2	0.74		12.8	0.72		12.3	6
7	0.77		13.5	0.84		15.2	0.94		17.7	0.78		13.7	0.75		13.0	0.67		11.1	7
8	0.82		14.7	1.06		21.3	1.14		23.7	0.73		12.5	0.71		12.0	0.69		11.6	8
9	0.75		13.2	1.33		30.7	0.81		15.2	0.96		18.4	0.70		11.8	0.70		11.8	9
10	0.75		13.	0.78		13.7	0.83		14.9	0.80		14.2	0.67		11.1	0.63		10.2	10
11	0.72		13.2	0.81		14.4	0.84		15.2	0.76		13.7	0.67		11.1	0.61		9.7	11
12	0.78		13.7	0.71		12.8	0.81		14.4	0.80		14.2	0.68		11.3	0.80		14.2	12
13	0.77		13.5	0.74		12.8	0.85		15.4	0.75		13.0	0.67		11.1	0.68		11.3	13
14	0.78		13.7	0.78		13.7	0.85		15.4	0.77		13.5	0.65		10.6	0.69		11.6	14
15	0.74		12.8	0.72		12.2	0.79		14.0	0.78		13.7	0.65		10.6	0.70		11.8	15
16	0.71		12.	0.69		11.6	0.79		14.0	0.78		13.7	0.66		10.9	0.70		11.8	16
17	1.27		21.4	0.70		11.8	0.84		15.1	0.73		12.5	0.74		12.7	0.63		10.2	17
18	b		24.7	0.71		12.0	0.78		13.7	0.77		13.4	0.70		11.8	0.59		9.3	18
19			13.	0.73		12.5	0.77		13.5	1.88		55.8	0.80		14.1	0.63		10.2	19
20			11.8	0.71		12.0	0.82		14.7	0.81		14.4	0.68		11.3	0.61		9.7	20
21			12.3	1.02		20.0	0.78		13.7	0.78		13.7	0.72		12.3	0.68		11.3	21
22			13.7	1.45		35.2	0.76		13.2	2.75		13.0	0.66		10.9	0.68		11.3	22
23			14.2	1.14		23.9	0.77		13.5	0.72		12.3	0.72		12.3	0.69		11.6	23
24			12.3	0.71		12.1	0.81		14.4	0.73		12.5	0.73		12.5	0.74		12.8	24
25	b		9.3	0.73		12.5	0.80		14.1	0.72		12.3	0.74		12.8	0.82		14.6	25
26	0.56		8.7	0.74		12.8	0.76		13.2	0.76		13.2	0.76		13.2	1.13		23.4	26
27	0.92		17.3	0.69		11.6	0.79		14.0	0.72		12.3	0.71		12.1	1.35		31.2	27
28	1.45		35.3	0.72		12.3	0.78		13.7	0.71		12.0	b		10.4	1.22		26.5	28
29	1.09		22.	0.74		12.8	0.79		14.0	0.74		12.8			9.1	1.30		29.4	29
30	0.76		13.2	0.73		12.5	0.74		12.8	0.74		12.8			9.1	1.21		26.2	30
31				0.79		14.0				0.75		13.0	b		9.1				31
1	447.5			481.6			432.2			471.6			358.3			438.2			1
2	14.9			15.5			14.4			15.2			11.6			14.6			2
3	888.			955.			857.			935.			711.			869.			3
4	35.3			35.2			23.7			55.8			14.1			31.2			4
5	8.7			11.6			12.3			12.0			9.1			9.1			5

Maximum stage	6.50	feet at	2300	on	12-18-84	Discharge 6740 Second-feet
Minimum stage	0.42	feet at	1215	on	11-30-84	Discharge 5.9 Second-feet

YEARLY TOTALS

1	17299.1
2	47.4
3	34320.
4	1820.
5	8.1

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description ..... BIG TUJUNGA CREEK .....
BELOW BIG TUJUNGA DAM ..... for Water-Year 19 84 19 85
Station No F 169 R
Drainage Area ..... 82.7 ..... Square Miles ..... R.J. SARASUA ..... Observer(s)
Gage Read ..... EVERY 15 MINUTES .....
Rating Table No 79 I

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			22.6			2.5			0.9			16.3			6.0			51.0	1			16.0			5.3			16.8			0.3			0.3			1
2			20.0			2.4			0.9			16.3			6.2			62.3	2			15.6			5.3			15.8			0.3			0.3			2
3			19.6			2.5			0.9			16.2			6.3			52.5	3			15.6			5.3			7.1			0.3			0.2			3
4			18.4			2.5			0.9			16.2			6.6			54	4			15.5			5.3			0.4			0.3			0.2			4
5			18.0			2.5			13.1			16.2			6.6			53.5	5			15.6			5.3			0.3			0.3			0.2			5
6			15.6			2.5			23.4			16.2			12.8			4.7	6			10.2			5.3			0.3			0.3			0.4			6
7			15.2			2.5			15.4			16.4			41.1			4.9	7			7.4			5.3			0.3			0.3			0.2			7
8			13.4			2.9			1.4			16.4			56.7			4.9	8			7.2			6.3			0.3			0.2			0.2			8
9			13.0			2.8			1.0			16.0			35.8			5.0	9			7.2			5.3			0.3			0.2			0.2			9
10			1.0			2.5			1.1			15.4			5.2			5.2	10			7.2			5.3			0.3			0.3			0.3			10
11			1.0			2.5			13.7			15.4			5.2			5.2	11			6.9			5.3			0.3			0.3			0.3			11
12			2.8			2.5			68			16.1			5.2			5.2	12			6.9			6.3			0.3			0.3			0.3			12
13			2.6			6.0			68			17.2			5.5			5.2	13			6.9			11.2			0.3			0.3			0.3			13
14			2.6			2.8			21.6			18.0			5.5			5.2	14			6.6			21.2			0.3			0.3			0.3			14
15			2.8			2.6			22			18.4			5.5			5.2	15			6.6			21.2			0.3			0.3			0.3			15
16			2.8			2.6			56.4			19.2			5.5			5.2	16			6.3			19.6			0.3			0.3			0.3			16
17			2.8			2.6			64.3			19.6			5.5			5.2	17			6.3			19.0			0.3			0.3			0.3			17
18			2.8			2.6			52.6			20.0			5.9			5.2	18			6.3			19.0			0.3			0.3			0.3			18
19			2.6			2.6			108			19.6			4.2			5.5	19			6.3			18.0			0.3			0.3			0.3			19
20			2.6			2.9			145			19.6			2.8			5.5	20			6.3			18.0			0.3			0.3			0.3			20
21			2.6			4.1			67.5			19.6			2.8			5.5	21			6.3			19.1			0.3			0.3			0.3			21
22			2.6			4.0			39.4			19.6			3.0			5.5	22			6.3			16.0			0.3			0.3			0.3			22
23			2.6			3.8			39.4			19.6			3.0			5.5	23			6.3			16.0			0.3			0.3			0.3			23
24			2.6			4.0			38.2			19.6			3.0			5.5	24			6.3			16.0			0.3			0.3			0.3			24
25			2.6			4.1			37			19.2			3.0			5.5	25			6.3			16.0			0.3			0.3			0.3			25
26			2.6			3.9			33.9			19.2			21.4			5.5	26			6.3			16.0			0.3			0.3			0.3			26
27			2.6			3.8			28.7			18.9			58.5			6.0	27			6.3			16.0			0.3			0.3			0.3			27
28			2.6			3.9			124			18.8			19.3			11.4	28			6.3			16.0			0.3			0.3			0.3			28
29			2.5			3.7			113			18.0						16.0	29			6.3			15.6			0.3			0.3			0.3			29
30			2.5			3.9			104			17.8						16.0	30			6.3			16.4			0.3			0.3			0.3			30
31			2.5						34.1			11.6						16.0	31						16.8						0.3						31
1	168.5		21.8			1266.6			552.6			331.0			443.7	1		245.8			401.9			47.9			9.2			8.6			8.3	1	3506	
2	5.4		.7			40.9			17.8			11.8			14.3	2		8.2			13			1.6			0.3			0.3			0.3	2	9.6	
3	334		42.2			2510			1100.0			657.0			880	3		488			797			95			18.2			17.1			16.5	3	6956	
4	22.6		1.1			145			20.0			56.7			61.2	4		16			21.7			16.8			0.3			0.4			0.3	4	61.2	
5	0.5		0.5			0.9			11.6			2.8			4.7	5		6.3			6.3			0.3			0.2			0.2			0.2	5	0.2	

Maximum stage 7.67 feet at 0011 on 12-19-84 Discharge 853 Second-feet.
Minimum stage feet at TIMES on Discharge 0.2 Second-feet.

REMARKS

1 = Total Flow
2 = Average Daily Flow in CFS
3 = Total Monthly Flow in AF
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 PACOIMA CREEK FLUME
BELOW PACOIMA DAM for Water-Year 19 84 19 85
Drainage Area 28.2 Square Miles (R.J. SARASUA Observer)
Station No. F 118 BR
Gage Read CONTINUOUSLY Rating Table No 44 I

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH		
	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			+			+			+			+			+			+
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10															+			
11													H		66.6			
12													H		109			
13												+	H		38.2			
14										H		141			+			
15										H		170						
16										H		64.8						
17												+						
18																		
19						+			+									
20						+	H		12.2									
21				H		39.0	H		122									
22				H		55.3	H		518									
23				H		113			+									
24				H		113			+									
25				H		56.9			+									
26						+			+									
27						+			+									
28						+			+						+			
29						+			+									
30						+			+									
31			+						+			+						+
TOTALS			+			432.1			314.5			375.8			207.4			+
MEAN			+			14.4			6.9			12.1			7.4			+
MAX			+			85.7			95.5			74.5			41.1			+
MIN			+			11.3			12.3			17.0			16.9			+
AC-FT			+			+			+			+			+			+

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			+			+			+			+			+			+	1
2																			2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10
11																			11
12																			12
13																			13
14			+																14
15	H		99.2																15
16	H		71																16
17	H		79.2																17
18	1.81	1.61	107																18
19	1.71	1.71	98																19
20	1.74	1.61	95																20
21	H		93.7																21
22			+																22
23																			23
24																			24
25																			25
26																			26
27																			27
28																			28
29																			29
30			+						+									+	30
31						+						-			-				31
TOTALS			518.6			+			+			+			+			+	YEARLY TOTALS
MEAN			17.3			+			+			+			+			+	1748.4
MAX			107.9			+			+			+			+			+	48
MIN			102			+			+			+			+			+	2467
AC-FT			+			+			+			+			+			+	170
																			0

Maximum stage _____ feet at _____ on _____ Discharge _____ Second-feet
Minimum stage _____ feet at _____ on _____ Discharge _____ Second-feet

REMARKS

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

APPENDIX C

WELLS DRILLED AND DESTROYED

WELLS DESTROYED 1984-85

Party	LACFCD Well No.	Owner No.	Purpose
--	--	--	--

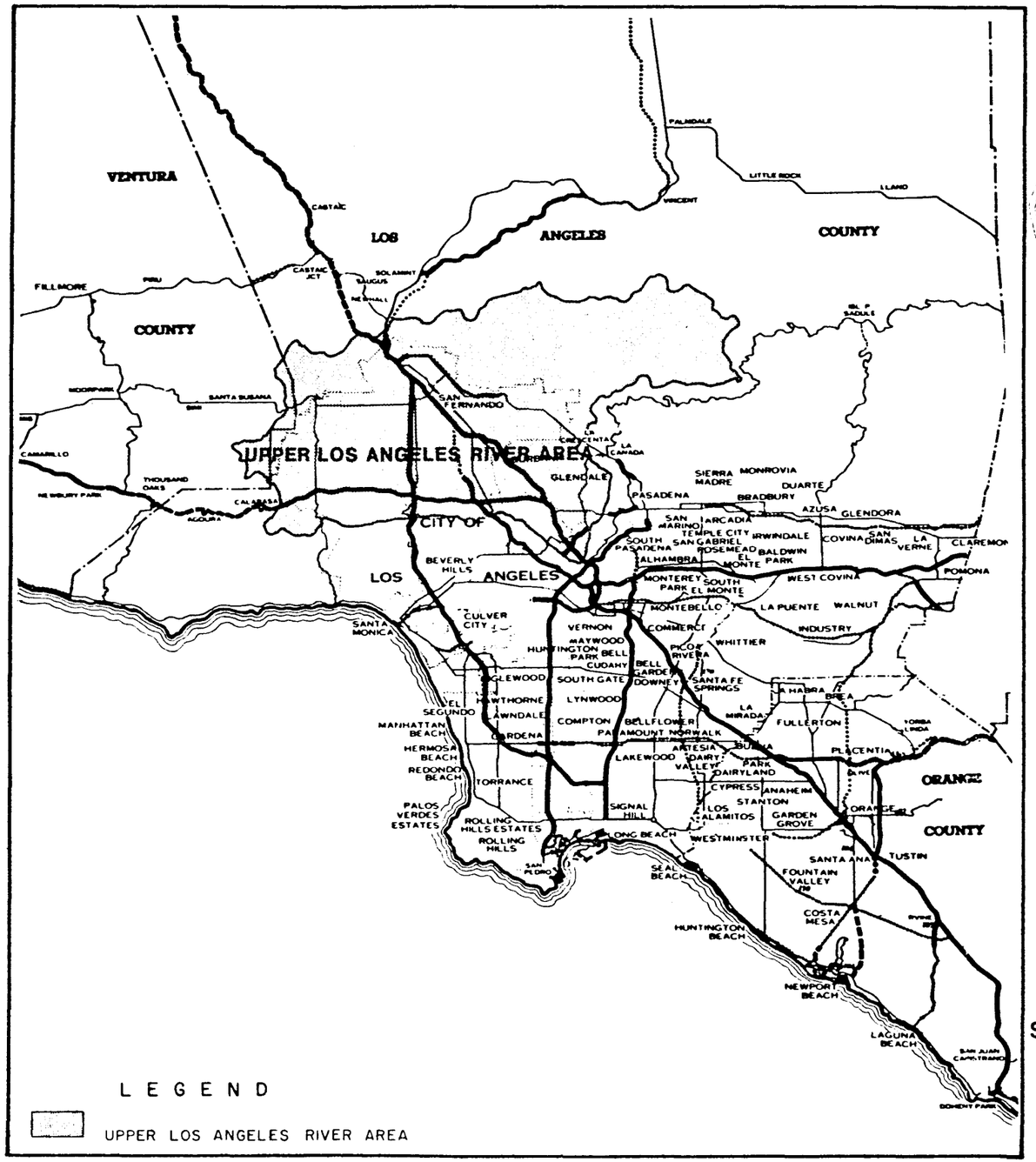
WELLS DRILLED 1984-85

Party	LACFCD Well No.	Owner No.	Purpose
LADWP	3790L	NH 44	Production
LADWP	3790M	NH 45	"
L.A. By-Products	4899	Hewitt Landfill	Water Quality
LADWP	4909C	" "	" "
L.A. By-Products	4918	Strathern Landfill	" "
LADWP	4918A	Penrose Landfill	" "
LADWP	4919D	--	" "
L.A. By-Products	4927	Penrose Landfill	" "
L.A. By-Products	4928B	Strathern Landfill	" "

APPENDIX D

PLATES

UPPER LOS ANGELES RIVER AREA WATERMASTER

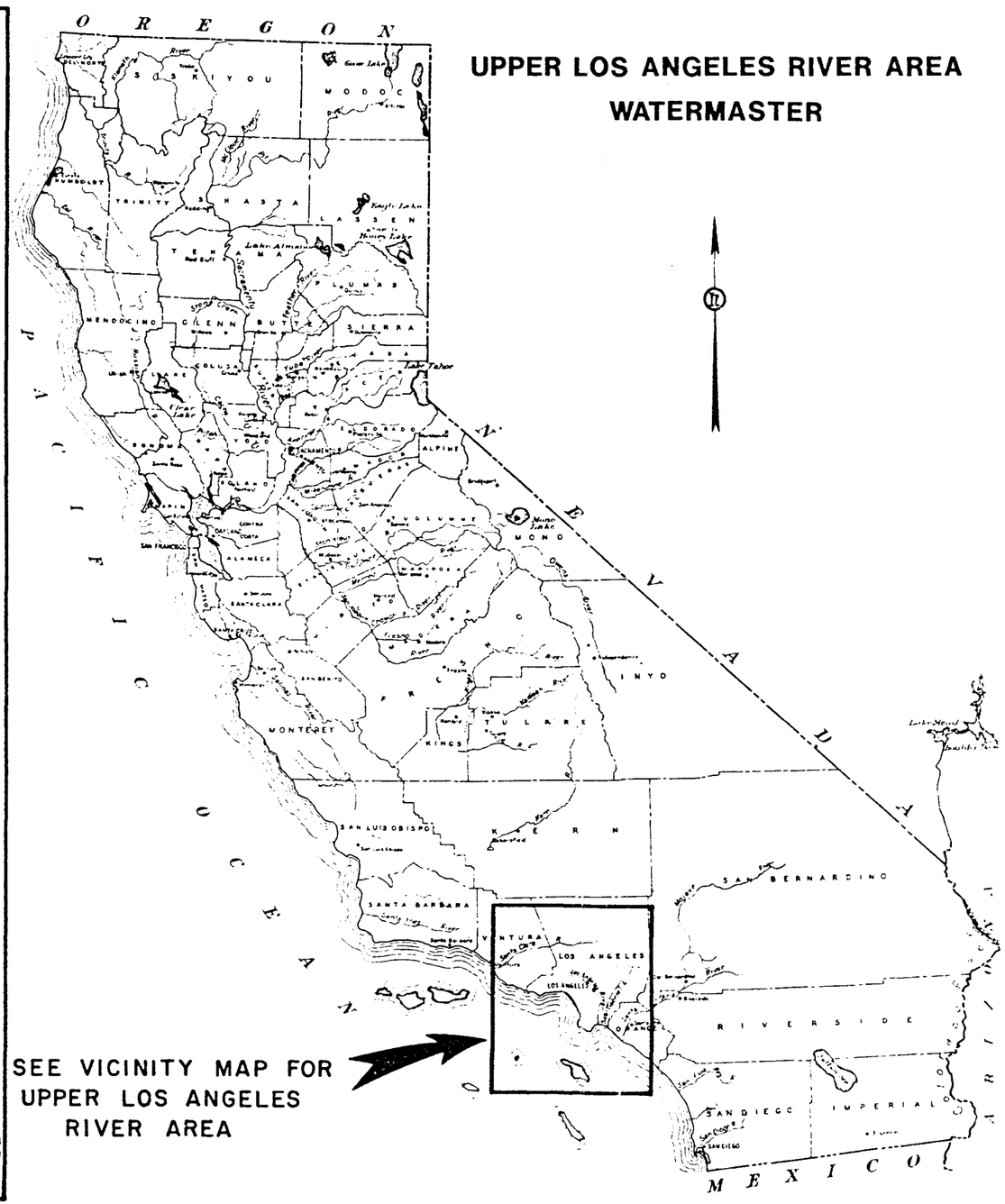


VICINITY MAP

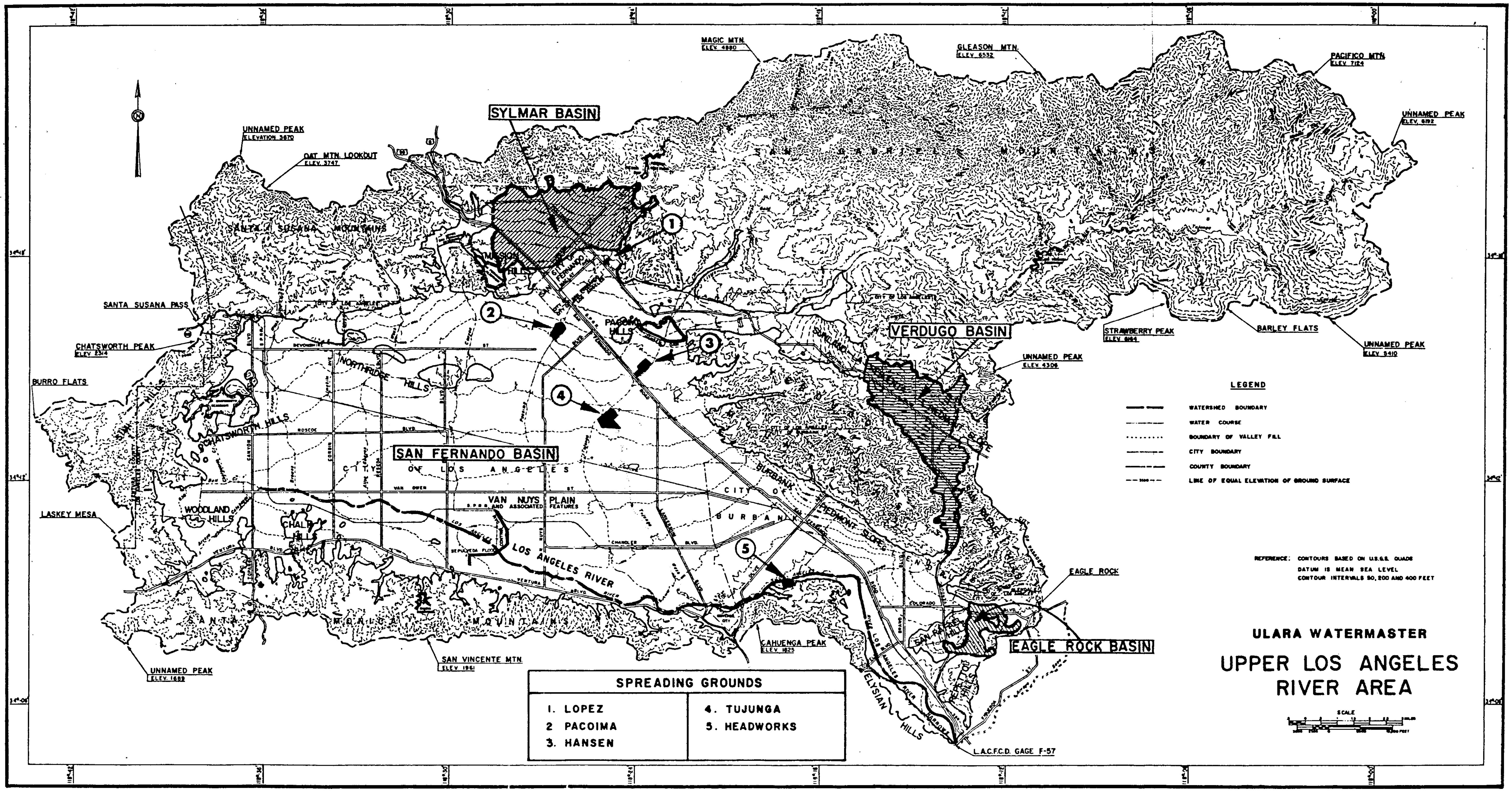
SCALE

0 5 10 15 Miles

SEE VICINITY MAP FOR UPPER LOS ANGELES RIVER AREA



LOCATION MAP


SYLMAR BASIN
VERDUGO BASIN
SAN FERNANDO BASIN
EAGLE ROCK BASIN
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
SANTA SUSANA PASS
CHATSWORTH PEAK
ELEV. 2314
BURRO FLATS
LASKEY MESA
UNNAMED PEAK
ELEV. 1699
SAN VINCENTE MTN.
ELEV. 1961
CAHUENGA PEAK
ELEV. 1825
STRAWBERRY PEAK
ELEV. 6164
BARLEY FLATS
UNNAMED PEAK
ELEV. 5410
UNNAMED PEAK
ELEV. 4306
EAGLE ROCK
L.A.C.F.C.D. GAGE F-57
SANTA SUSANA MOUNTAINS
SANTA MONICA MOUNTAINS
NORTHRIDGE HILLS
CHATSWORTH HILLS
WOODLAND HILLS
VAN NUYS PLAIN
LOS ANGELES RIVER
CITY OF LOS ANGELES
CITY OF BURBANK
PACOIMA HILLS
MISSION HILLS
ELYSIAN HILLS
SAN RAFAEL HILLS
PIEDMONT SLOPE
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

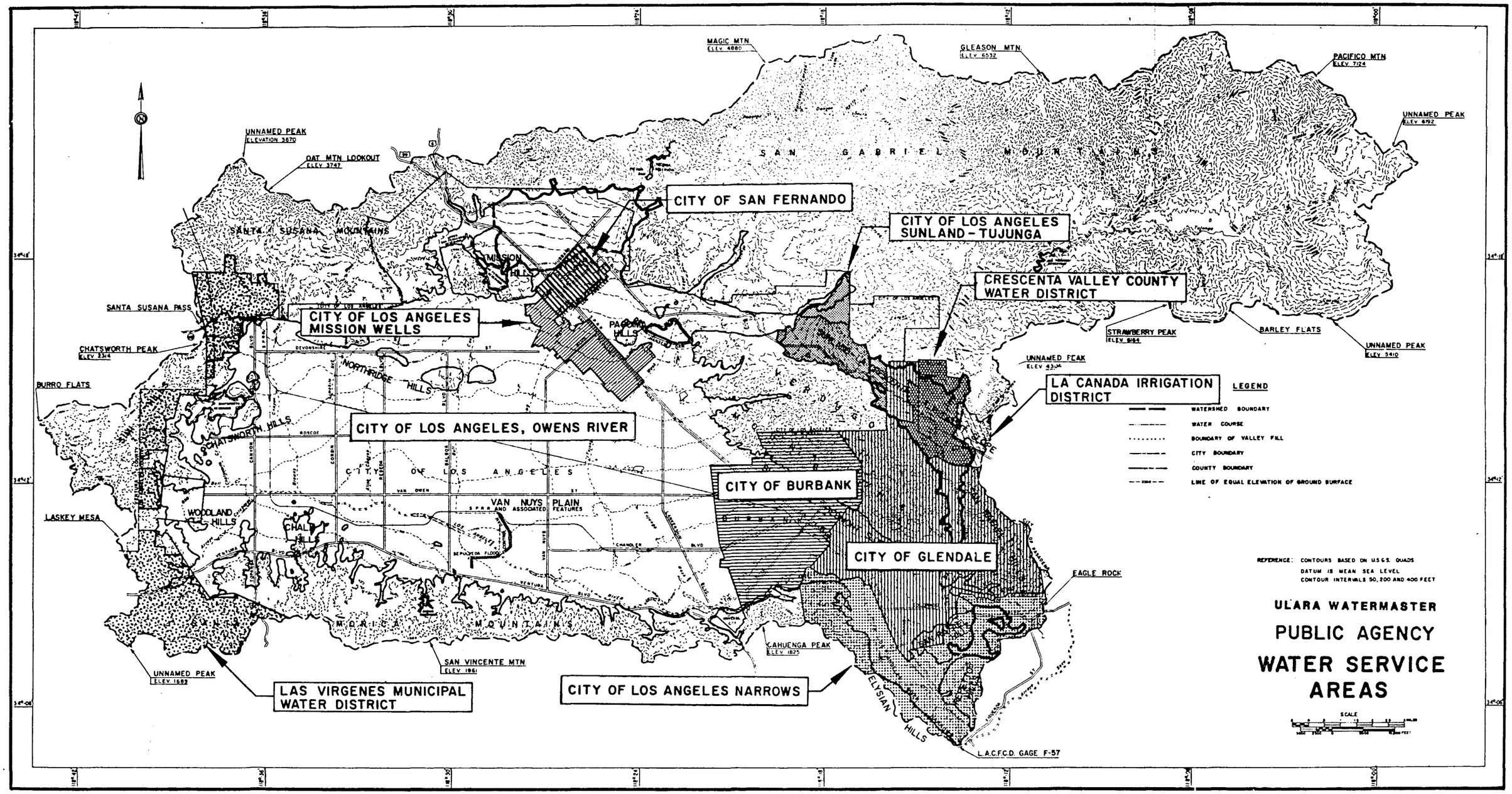
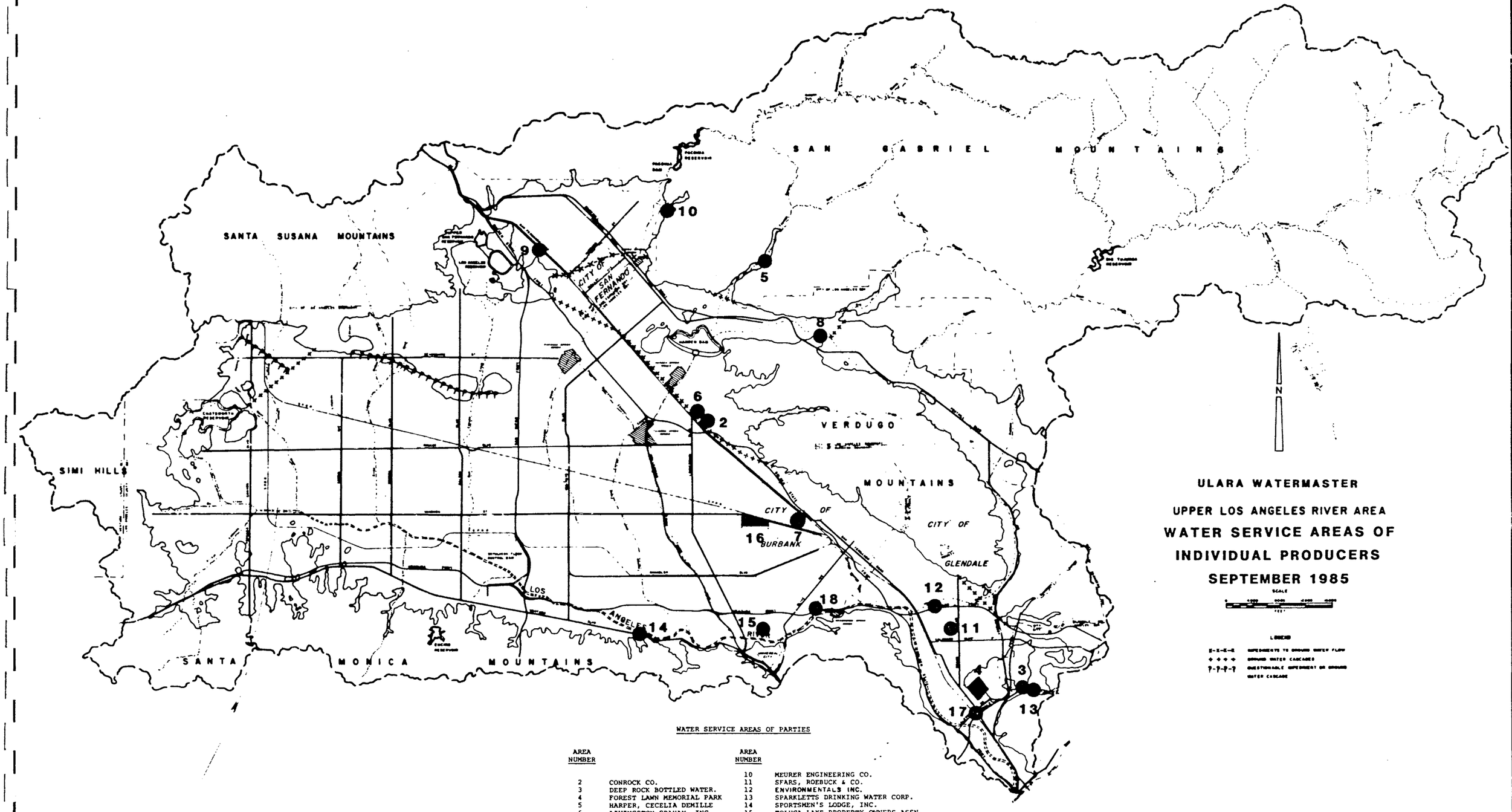

MAGIC MTN
ELEV 4880
GLEASON MTN
ELEV 6532
PACIFICO MTN
ELEV 7124
UNNAMED PEAK
ELEV 6192
UNNAMED PEAK
ELEVATION 3670
OAT MTN LOOKOUT
ELEV 3747
SANTA SUSANA MOUNTAINS
SAN GABRIEL MOUNTAINS
CITY OF SAN FERNANDO
CITY OF LOS ANGELES
SUNLAND - TUJUNGA
CRESCENTA VALLEY COUNTY
WATER DISTRICT
MISSION HILLS
PACOIMA HILLS
SANTA SUSANA PASS
CITY OF LOS ANGELES
MISSION WELLS
CHATSWORTH PEAK
ELEV 2314
STRAWBERRY PEAK
ELEV 6164
BARLEY FLATS
UNNAMED PEAK
ELEV 5410
UNNAMED PEAK
ELEV 4304
BURRO FLATS
LA CANADA IRRIGATION
DISTRICT
NORTHRIDGE HILLS
CHATSWORTH HILLS
CITY OF LOS ANGELES, OWENS RIVER
CITY OF LOS ANGELES
CITY OF BURBANK
LASKEY MESA
WOODLAND HILLS
CHALK HILL
VAN NUYS PLAIN
S.P.R.R. AND ASSOCIATED FEATURES
CITY OF GLENDALE
EAGLE ROCK
SANTA MONICA MOUNTAINS
CAHUENGA PEAK
ELEV 1825
SAN VINCENTE MTN
ELEV 1961
UNNAMED PEAK
ELEV 1692
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

PLATE 4



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

WATER SERVICE AREAS OF INDIVIDUAL PRODUCERS

SEPTEMBER 1985

SCALE

LEGEND

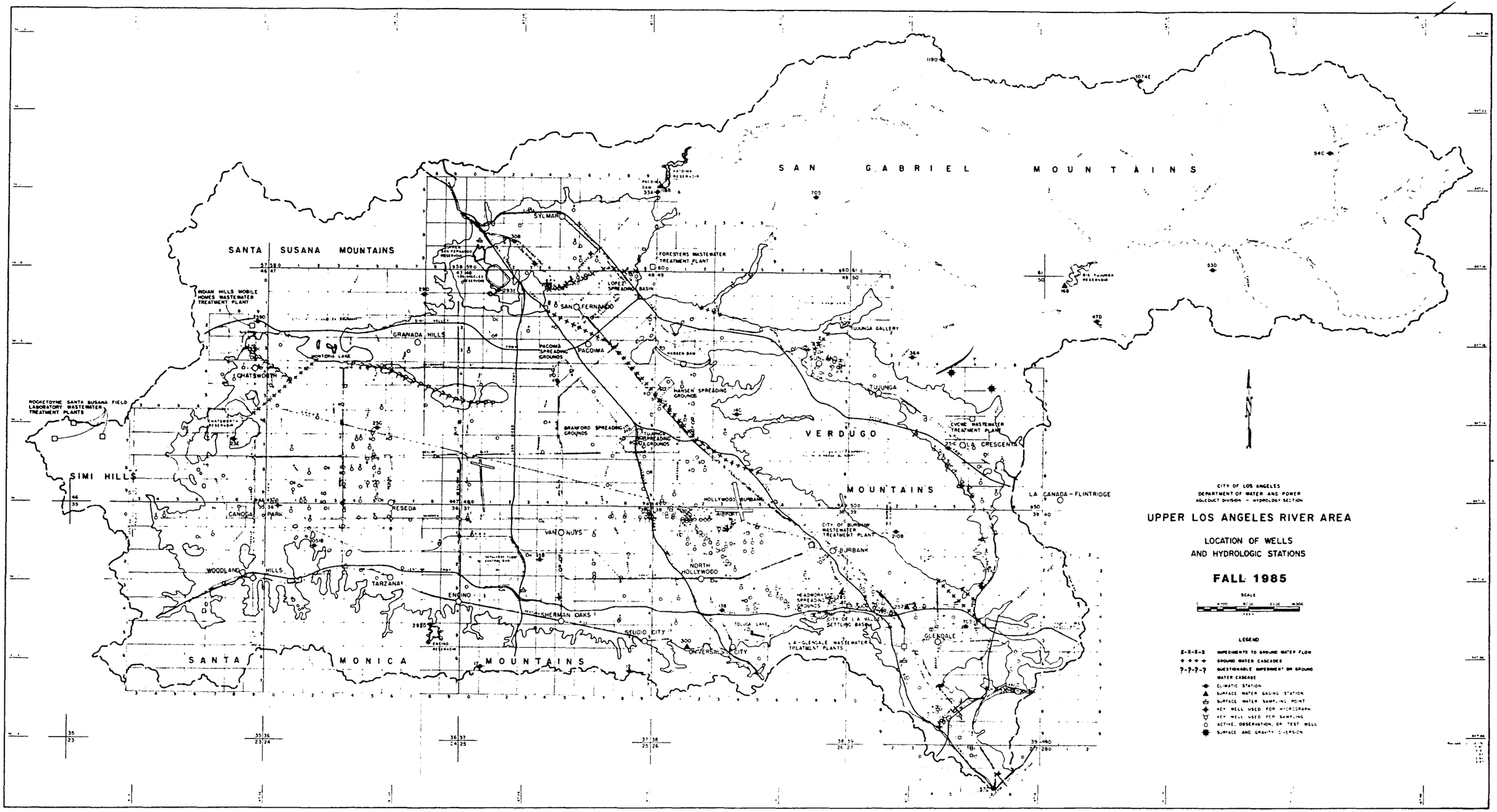
E-E-E-E GROUNDWATER TO GROUND WATER FLOW

+ + + + GROUND WATER CASCADES

?-?-?-? QUESTIONABLE GROUNDWATER 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	ENVIRONMENTALB 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



CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER
AQUEDUCT DIVISION - HYDROLOGY SECTION

UPPER LOS ANGELES RIVER AREA

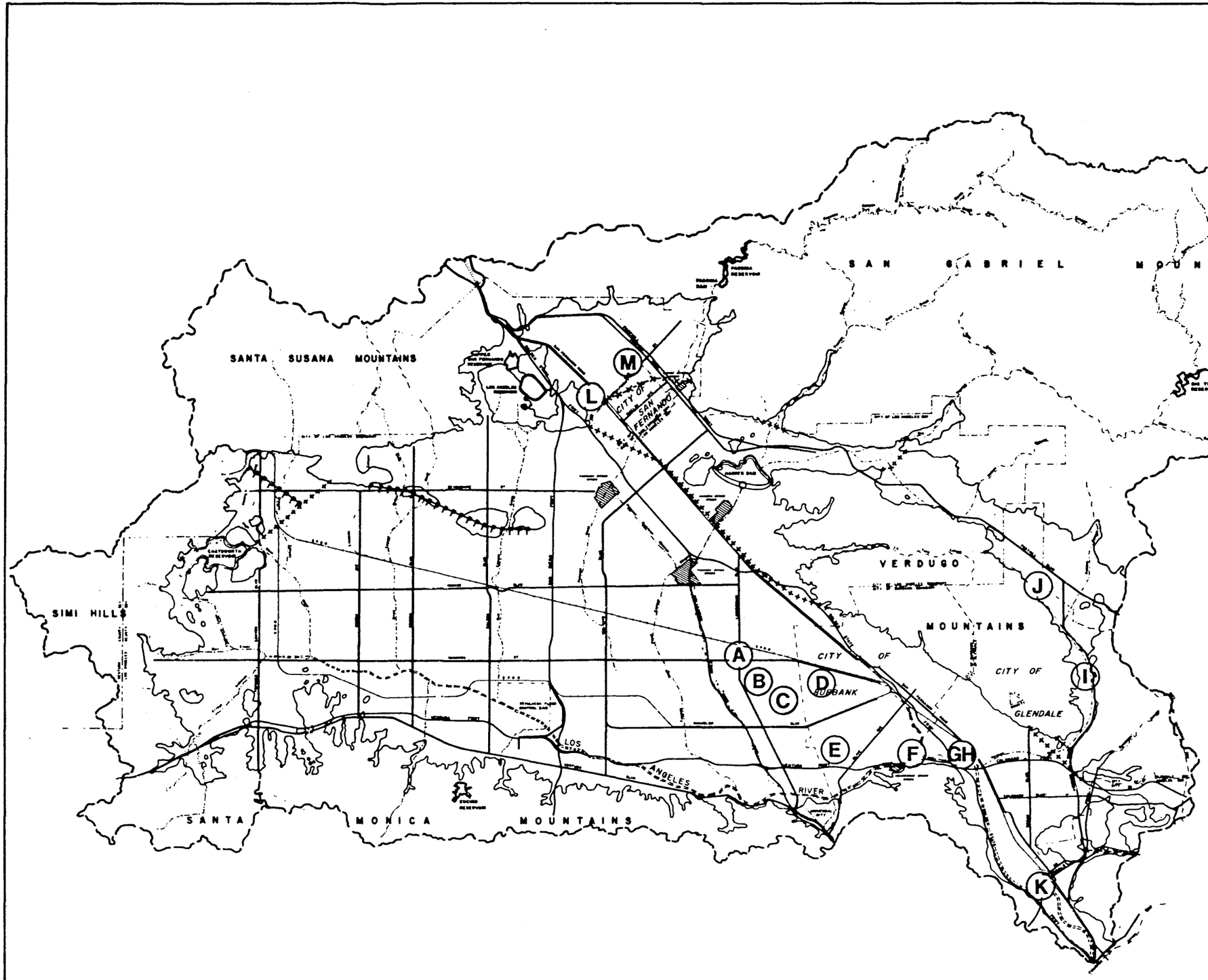
LOCATION OF WELLS AND HYDROLOGIC STATIONS

FALL 1985

SCALE

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



N

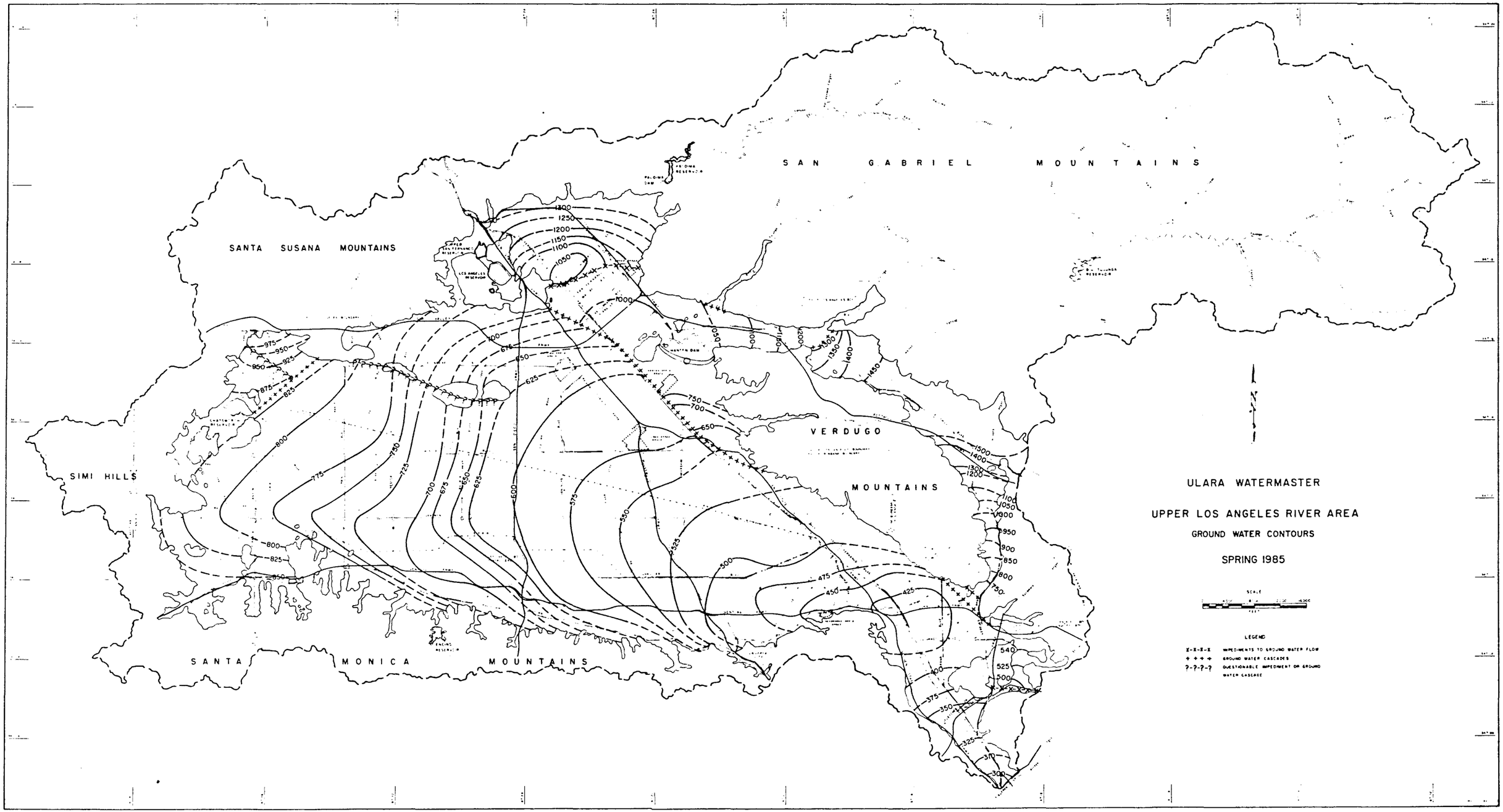
ULARA WATERMASTER

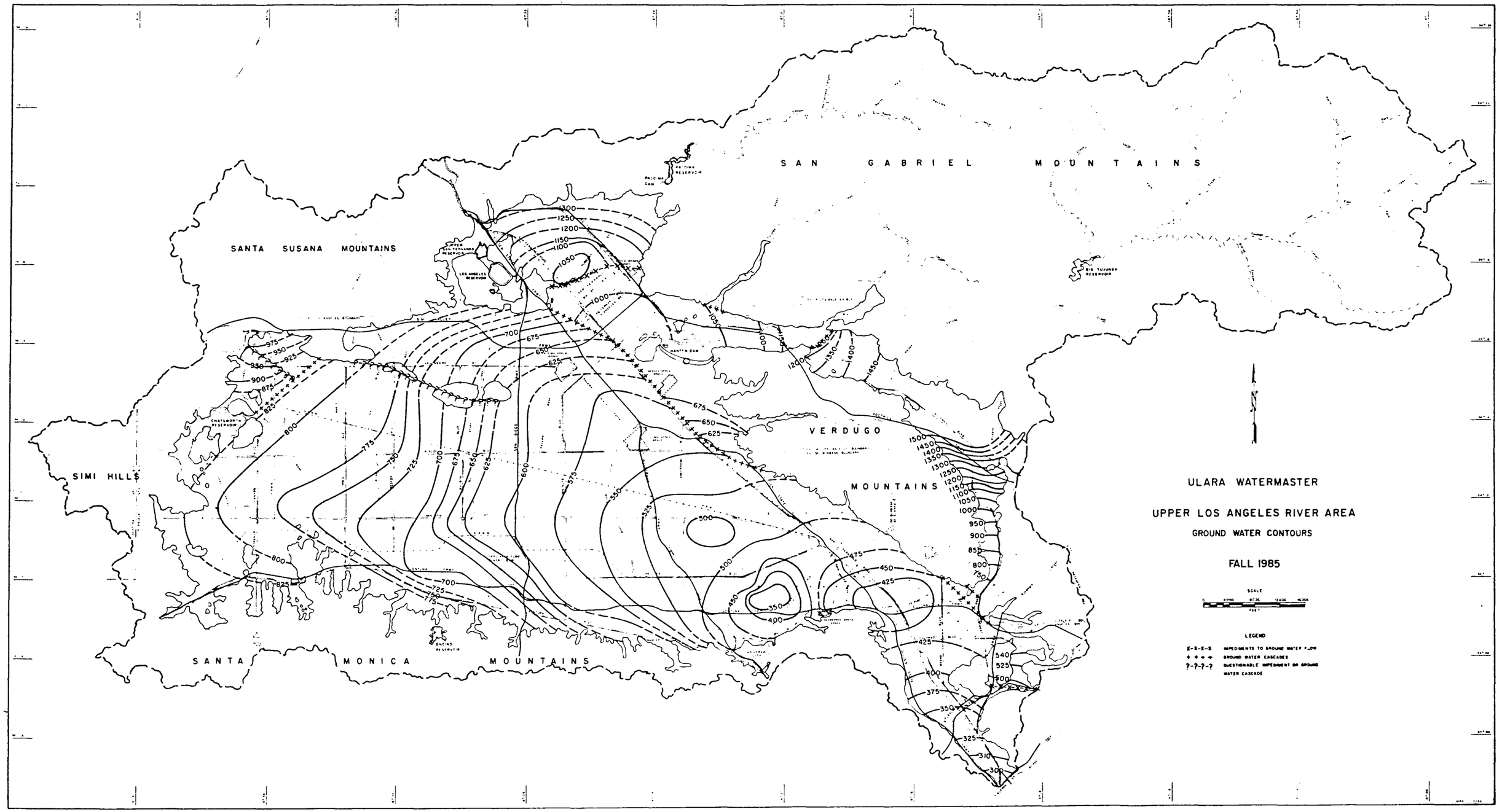
UPPER LOS ANGELES RIVER AREA

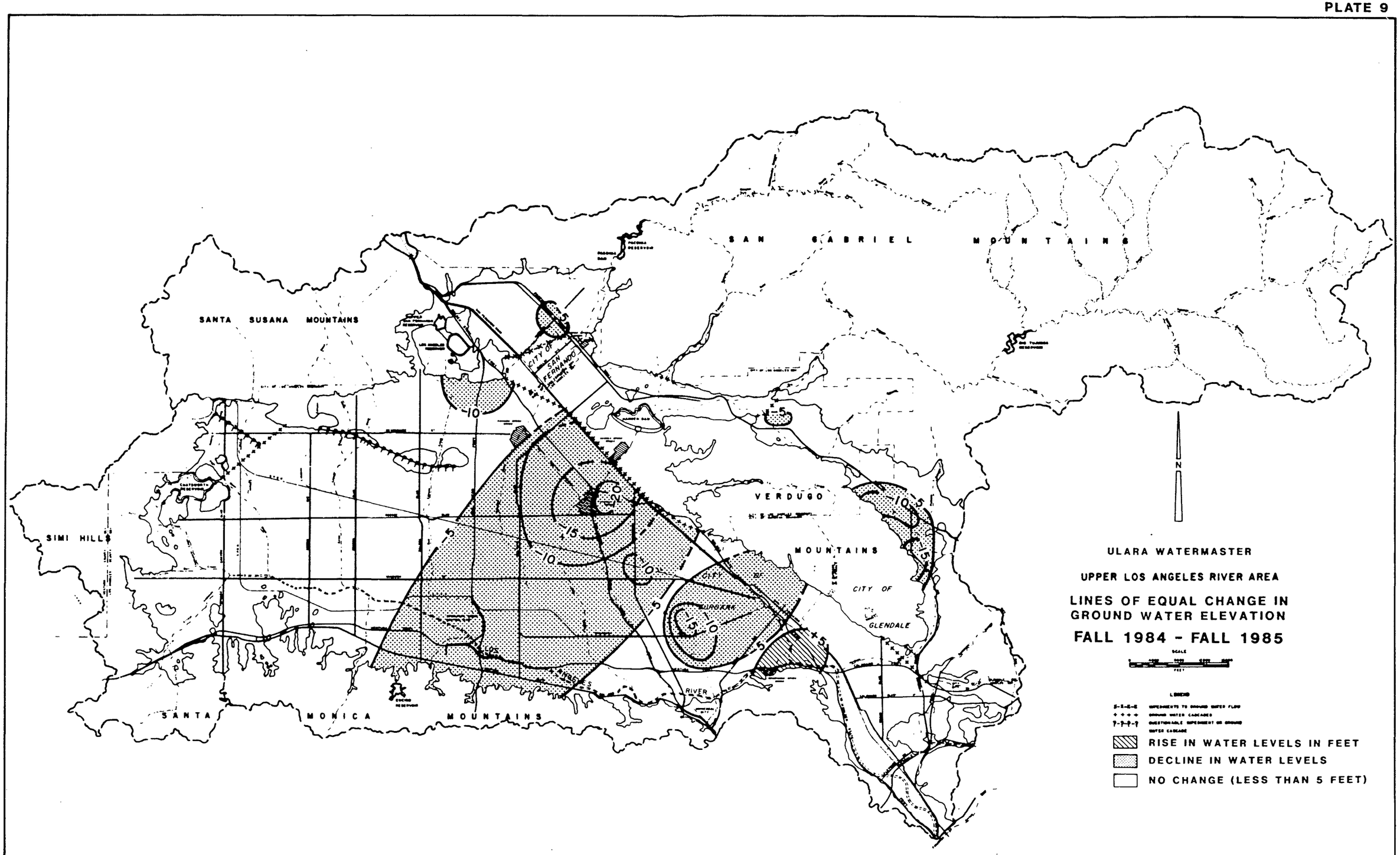
WELL FIELD LOCATIONS

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


SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
SANTA MONICA MOUNTAINS
VERDUGO MOUNTAINS
PACOIMA DAM
SAN GABRIEL RESERVOIR
LOS ANGELES RESERVOIR
HANSEN DAM
ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
GROUND WATER CONTOURS
SPRING 1985
SCALE
LEGEND
IMPEDIMENTS TO GROUND WATER FLOW
GROUND WATER CASCADES
QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE


SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
SANTA MONICA MOUNTAINS
VERDUGO MOUNTAINS
PACOIMA RESERVOIR
UPPER LOS ANGELES RESERVOIR
LOS ANGELES RESERVOIR
BIG TUJUNGA RESERVOIR
HANSEN DAM
ENCINO RESERVOIR
ENCINO RESERVOIR
1300
1250
1200
1150
1100
1050
1000
975
950
925
900
875
850
825
800
775
750
725
700
675
650
625
600
575
550
525
500
475
450
425
400
375
350
325
310
300
1500
1450
1400
1350
540
490
N
ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
GROUND WATER CONTOURS
FALL 1985
SCALE
LEGEND
X-X-X-X IMPEDIMENTS TO GROUND WATER FLOW
+ + + + GROUND WATER CASCADES
?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE


SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
VERDUGO MOUNTAINS
SANTA MONICA MOUNTAINS
CITY OF SAN FERNANDO
CITY OF BURBANK
CITY OF GLENDALE
RIVER
-10
-5
-15
+5
N
ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
LINES OF EQUAL CHANGE IN GROUND WATER ELEVATION
FALL 1984 - FALL 1985
SCALE
LEGEND
RISE IN WATER LEVELS IN FEET
DECLINE IN WATER LEVELS
NO CHANGE (LESS THAN 5 FEET)

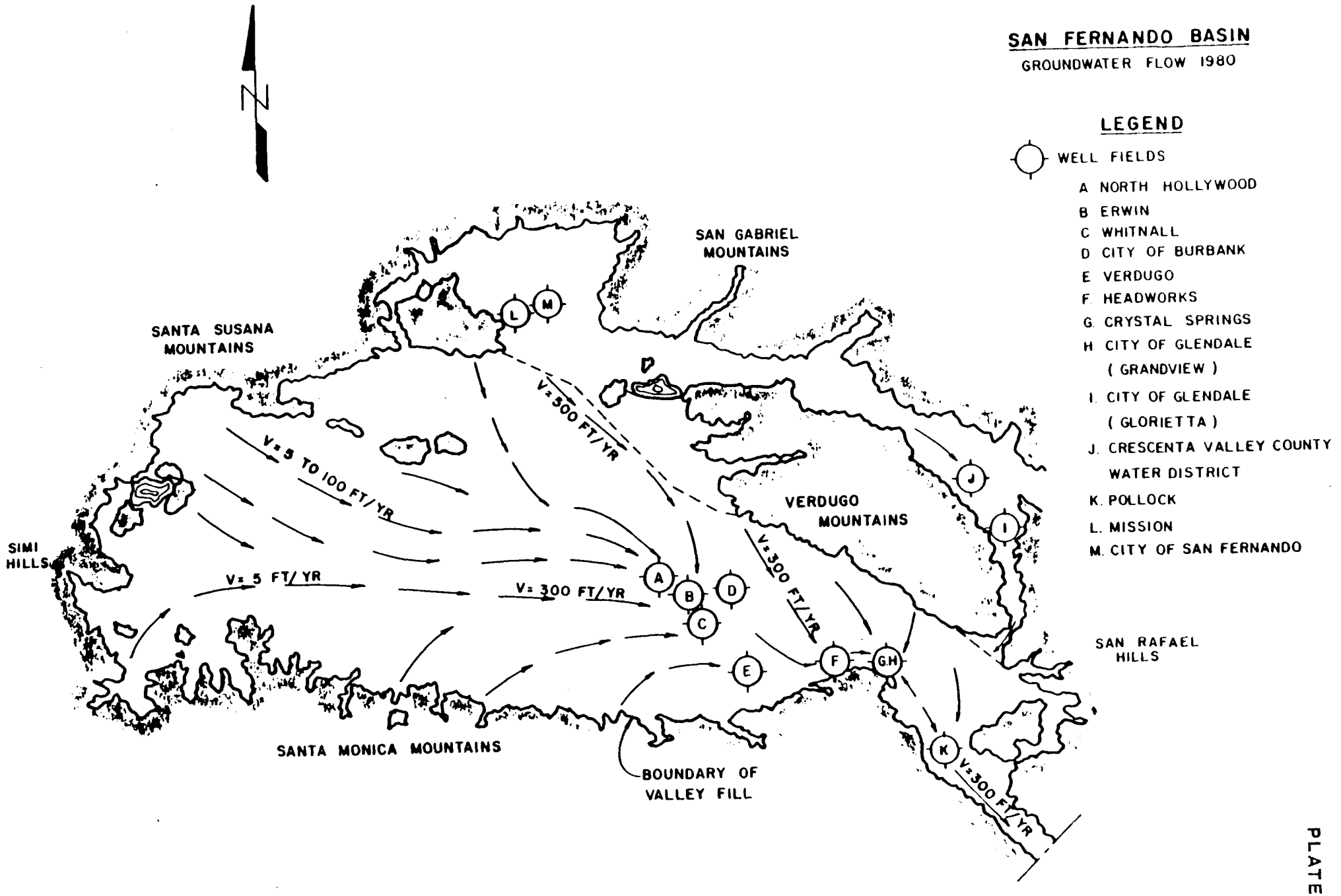

N
SAN FERNANDO BASIN
GROUNDWATER FLOW 1980
LEGEND
WELL FIELDS
A NORTH HOLLYWOOD
B ERWIN
C WHITNALL
D CITY OF BURBANK
E VERDUGO
F HEADWORKS
G CRYSTAL SPRINGS
H CITY OF GLENDALE (GRANDVIEW)
I CITY OF GLENDALE (GLORIETTA)
J. CRESCENTA VALLEY COUNTY WATER DISTRICT
K. POLLOCK
L. MISSION
M. CITY OF SAN FERNANDO
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
VERDUGO MOUNTAINS
SAN RAFAEL HILLS
SANTA MONICA MOUNTAINS
BOUNDARY OF VALLEY FILL
V=5 TO 100 FT/YR
V=300 FT/YR
V=5 FT/YR
V=300 FT/YR
V=300 FT/YR
V=300 FT/YR

PLATE 10