IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES
a Municipal Corporation,
Plaintiff,

vs.

CITY OF SAN FERNANDO
a Municipal Corporation, et al.,
Defendants.

No. 650079

SUPPLEMENT NO. 2

to

REPORT OF REFEREE

By

STATE WATER RIGHTS BOARD
REFEREE

OCTOBER, 1964

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APPROVAL AND ADOPTION BY
STATE WATER RIGHTS BOARD

The State Water Rights Board, Referee in the action entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, v. City of San Fernando, a Municipal Corporation, et al., Defendants, "before the Superior Court of the State of California in and for the County of Los Angeles, No. 650079, approves and adopts this "Supplement No. 2 to Report of Referee," dated October, 1964, pursuant to the Court Order dated August 29, 1963, and entitled "Rulings on Exceptions to Report of Referee, etc.," hereby adding to the two volumes constituting the Report of Referee, adopted by the Board on July 27, 1962, and filed with the Court on October 24, 1962.

Approved and adopted by the State Water Rights Board at a meeting duly called and held at Sacramento, California, on the 29th day of October, 1964.

/s/ Kent Silverthorne

Kent Silverthorne, Chairman

/s/ Ralph J. McGill

Ralph J. McGill, Member

/s/ W. A. Alexander

W. A. Alexander, Member

SUMMARY OF FINDINGS

The State Water Rights Board pursuant to paragraph VI of the written order dated August 29, 1963, entitled "Ruling on Exceptions to Report of Referee, etc.," reports herein its findings upon the safe yield and the effect thereon of the importation of foreign waters for Sylmar, Verdugo, Eagle Rock and San Fernando Hydrologic Subareas.

The safe yield of the ground water reservoir of the subareas has been determined as the maximum average annual ground water extractions which can be continually withdrawn for useful purposes under a given set of conditions without causing an undesired result. The conditions imposed for the determination of safe yield, as set forth in Chapter VII of the Report of Referee, have been adopted in this determination along with the historic subsurface outflows from Sylmar, Verdugo and Eagle Rock Subareas into San Fernando Subarea.

The safe yield of San Fernando Hydrologic Subarea derived from native sources, in acre-feet per year, was 54,390, 50,440, and 47,500 for the years 1949-50, 1954-55 and 1957-58 respectively. The effect of importation of foreign water was to increase the safe yield of the San Fernando Hydrologic Subarea, in acre-feet per year, in the amounts of 37,020, 40,470 and 40,300 for the years 1949-50, 1954-55 and 1957-58 respectively (see Table 8-S, page 25). The combined safe yield in acre-feet per year, of the San Fernando Hydrologic Subarea ground water reservoir determined under the conditions adopted was 91,410, 90,910 and 87,800 for the years 1949-50, 1954-55, and 1957-58 respectively.

The safe yield of Sylmar Hydrologic Subarea derived from native sources, in acre-feet per year, was 3,790, 3,630, and 3,560 for the years 1949-50, 1954-55, and 1957-58 respectively. The effect of importation of foreign water was to increase the safe yield of the Sylmar Hydrologic Subarea, in acre-feet per year, in the amounts of 1,680, 1,930, and 2,120 for the years 1949-50, 1954-55, and 1957-58 respectively (see Table 6-S, page 21). The combined safe yield in acre-feet per year, of the Sylmar Hydrologic Subarea ground water reservoir determined under the conditions adopted was 5,470, 5,560, and 5,680 for the years 1949-50, 1954-55, and 1957-58 respectively.

The safe yield of Verdugo Hydrologic Subarea derived from native sources, in acre-feet per year, was 3,880, 3,600, and 3,610 for the years 1949-50, 1954-55, and 1957-58 respectively. The effect of importation of foreign water was to increase the safe yield of the Verdugo Hydrologic Subarea, in acre-feet per year, in the amounts of 280 and 450 for the years 1954-55 and 1957-58 respectively with no change due to import for the 1949-50 safe yield conditions (see Table 6-S, page 22). The combined safe yield in acre-feet per year, of the Verdugo Hydrologic Subarea ground water reservoir determined under the conditions adopted was 3,880, 3,880, and 4,060 for the years 1949-50, 1954-55, and 1957-58 respectively.

The safe yield of Eagle Rock Hydrologic Subarea derived from native sources was 35 acre-feet per year for the years 1949-50, 1954-55, and 1957-58 respectively. The effect of importation of foreign water was to increase the safe yield of the Eagle Rock

Hydrologic Subarea, in acre-feet per year, in the amounts of 5, 19, and 26 for the years 1949-50, 1954-55, and 1957-58 respectively (see Table 7-S., page 24). The combined safe yield in acre-feet per year, of the Eagle Rock Hydrologic Subarea ground water reservoir determined under the conditions adopted was 40, 54, and 61 for the years 1949-50, 1954-55, and 1957-58 respectively.

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CHAPTER I. INTRODUCTION

Authorization and Scope

This Supplement No. 2 to the Report of Referee* has been prepared for and pursuant to an order of the Superior Court of the State of California in and for the County of Los Angeles entered in Action 650,079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, a Municipal Corporation, et al., Defendants," after the hearing of exceptions to said Report of Referee. Tentative oral rulings were confirmed by written order dated August 29, 1963, entitled "Rulings on Exceptions to Report of Referee, etc.," ordering the State Water Rights Board to prepare two reports designated as Supplement No. 1 and Supplement No. 2 to the Report of Referee.

Supplement No. 1 to the Report of Referee, dated December 1963, was made pursuant to paragraph V. of said order and sets forth corrections, additions, amendments and revisions to the Report of Referee. Supplement No. 1 was served on the parties on December 31, 1963, and filed with the Court on January 2, 1964.

Supplement No. 2, contained herein, is made pursuant to paragraph VI of the written order dated August 29, 1963, which provides:

> "VI. That the exceptions of the said above-named defendants to the effect that said Report of Referee as herein filed does not contain a separate safe yield study of each of the four sub-basins or sub-areas designated as

* The Report of Referee, dated July 1962, was filed with the Court on October 24, 1962.

> Sylmar Sub-area, Verdugo Sub-area, Eagle Rock Sub-area, and San Fernando Sub-area, as required in and by the order of reference herein, be, and the same are, hereby sustained to that extent and the referee herein (State Water Rights Board) is ordered and directed to prepare and file herein a supplement to said Report of Referee to be designated as Supplement No. 2 to said Report of Referee, setting forth therein separate safe-yield determinations or reports with reference to each of said sub-basins or sub-areas designated in said Report of Referee as the Sylmar Sub-area, Verdugo Sub-area, Eagle Rock Sub-area, and San Fernando Sub-area,...."

This supplement contains a separate evaluation of safe yield, and the effect thereon of the importation of foreign waters, for Sylmar, Verdugo, Eagle Rock and San Fernando Subareas for conditions existing during the years 1949-50, 1954-55, and 1957-58.

The basic data and computations concerning water supply and disposal by subareas, presented in the Report of Referee, are not repeated herein; however, when references are made to this information, the location and derivation are given. The supplement contains all additional data and information compiled and used for safe yield evaluation of subareas.

Nomenclature

All tables, figures, and plates contained in this supplement are followed by a hyphenated " -S"; for example, Table 1-S. All references not containing a hyphenated " -S" are to the Report of Referee unless otherwise indicated.

The terms "areas" and "subareas" are used herein instead of "basins" and "subbasins" in order to be consistent with terminology in the Report of Referee.

Objections to Draft

Objections to the Draft of Supplement No. 2 to Report of Referee dated May, 1964, were received from the following parties:

City of San Fernando

City of Glendale

City of Burbank

Crescenta Valley County Water District

La Canada Irrigation District

Aurora Carlson, aka Aurora Balko

Irene Minkler

Steve Urquidez

William Urquidez

Sparkletts Drinking Water Corporation

Defendants represented by Wm. Howard Nicholas

All objections by the parties have been considered and reviewed by the Referee. As a result of this review and/or on its own initiative the Board has changed the Draft of Supplement No. 2 to the Report of Referee for clarification, correction of errors and the addition of Summary of Findings. Attention is invited particularly to pages 10 and 10a. Tables of content for the appendixes have also been added.

CHAPTER II. SUPPLEMENTAL INFORMATION

Lack of data concerning ground water levels in Sylmar, Verdugo, and Eagle Rock Subareas during the early part of the 29-year base period, and other conditions, has required use of a special study period for determining the safe yield of the subareas. The 17-year period from 1940-41 through 1956-57 was adopted for this purpose. In consideration of these conditions and because of the paucity of surface runoff information for these subareas, safe yield computations are based on historic pumpage modified for change in storage and for the adopted safe yield conditions.

Additional investigation in the Eagle Rock Subarea and modification of procedure relating to change in storage computations for the Verdugo Subarea were necessary, to compensate for the lack of data and information, in order to achieve results comparable in accuracy with the Report of Referee.

Special Study Period

A desirable base period for a safe yield determination includes both wet and dry periods similar in magnitude and occurrence to the normal supply, during which there are sufficient measurements and observations to relate the hydrology to recent culture. The 17-year period beginning with the water year 1940-41 and ending with 1956-57 satisfies most of the prerequisites and is used as a base period in the evaluation of safe yield for Sylmar, Verdugo, and Eagle Rock Subareas. Table 1-S demonstrates

that this 17-year period is representative of a period of average native supply, the maximum percentage difference from the 85-year mean precipitation on any subarea being 4.4 per cent.

There was relatively little channel lining done during this period in Sylmar, Verdugo, and Eagle Rock Subareas and ground water extractions from these areas had a fairly uniform trend. No adjustment was therefore required for the effect of channel lining on ground water recharge under safe yield conditions and the average annual pumping draft used in evaluation of the yield, was compatible with the other available data used.

TABLE 1-S

COMPARISON OF AVERAGE ANNUAL PRECIPITATION IN PERCENT OF 85-YEAR NORMAL[a] BY SUBAREAS

Area	85-Year Normal (1)	29-Year[b] Average (2)	17-Year Average[c] (3)
Sylmar	100.0	106.6	104.4
Verdugo	100.0	100.2	97.9
Eagle Rock	100.0	103.3	98.0
San Fernando	100.0		101.6
Total valley fill	100.0	103.2	101.5
Hill and mountain	100.0	97.9	97.2
Upper Los Angeles River area	100.0	99.5	98.1

a. Normal based on 85-year period 1872-73 through 1956-57.
b. 29-year period 1928-29 through 1956-57.
c. 17-year period 1940-41 through 1956-57.

Source and derivation: All values are derived from Table 2 except the 17-year period for Eagle Rock and San Fernando Subareas which are derived from Table T-2.

Verdugo Subarea

The contour method of determining change in storage described in Appendix B was used because of relatively rapid changes in topographic elevations of the valley fill and a paucity of data with which to satisfactorily define the configuration of the underlying Basement Complex. Nearly all available well data concerns the relatively small portion of the area north of the Verdugo Mountains where most of the wells are located. Under this condition the storage unit method used in the Report of Referee for determination of change in storage would give too much weight to the higher specific yields and larger water table fluctuations, which occur primarily in the area along the south boundary of the subarea where the major water producing wells are located. At the same time insufficient weight would be given to the lower specific yields and lesser water level fluctuations found in the area north and east of the major producing wells.

Water level measurements at the beginning and at the end of the 17-year period used to evaluate the total change in ground water storage show that the ground water in storage in Verdugo Subarea had decreased a total of 6,500 acre-feet, or an average annual decrease of 380 acre-feet during the 17-year period 1940-41 through 1956-57.

Eagle Rock Subarea

Eagle Rock Subarea is an artesian basin where there is little data available with which to accurately determine the change in storage. To obtain additional information, nine shallow hand auger wells and one rotary 6-inch diameter cased well were dug. The location of the test borings

and all prior existing wells are shown on Plate 1-S. The purpose of drilling these wells was to obtain a correlation between available pressure level measurements in well 3986B to water table conditions in the forebay area, and to obtain information on the specific yield of the water-bearing material in the subarea.

The boundary of the clay cap as shown on Plate 1-S and a re-evaluation of change in storage in Eagle Rock Subarea were defined from the data collected. Analysis of the well logs indicates that there are two or possibly three aquifers within the pressure area (see Plate 2-S, Section T-T') with the shallow aquifer being continuous across the Raymond fault.

Information available prior to this supplemental investigation had indicated that the Raymond fault probably effectively cut off all aquifers at the south end of Eagle Rock Subarea and the subsurface outflow was negligible (see page xxxv, Report of Referee). However, shallow wells drilled by the Referee immediately above and below the fault penetrated to saturated water-bearing materials at shallow depths (see Appendix B), and the existing favorable hydraulic gradient indicate the possibility of subsurface outflow via these shallow materials. Data are not available for a direct evaluation of the amount of underflow. The order of magnitude of this underflow was estimated to be 50 acre-feet per year by a water inventory during the dry year 1960-61, when there was little or no rain recharge in the subarea and deliveries and sewage were measured. Other hydrologic information pertinent to the Eagle Rock Subarea, compiled primarily from the Report of Referee, is contained in Appendix A of this supplement.

Based on the information obtained concerning specific yield and change in ground water levels, the cumulative decrease of water in storage over the 17-year period 1940-41 through 1956-57 was estimated to be about 110 acre-feet, or an average annual decrease of water in storage of about six acre-feet (see Appendix B herein).

CHAPTER III. SAFE YIELD

Separate determinations have been made of the safe yield for Sylmar, Verdugo, Eagle Rock, and San Fernando Subareas for culture conditions existing during the water years 1949-50, 1954-55, and 1957-58. Effect on the safe yield of the importation of foreign waters to the subareas has also been evaluated.

General Conditions and Limitations on Safe Yield of Subareas

The general conditions imposed for the determination of safe yield discussed in Chapter VII of the Report of Referee, have been adopted. Further, the safe yield condition of subsurface outflows from Sylmar, Verdugo, and Eagle Rock Subareas into San Fernando Subarea was taken as the average annual amount historically occurring during the 17-year base period used in this report.

The ground water reservoir within each subarea has the capacity to regulate the ground water recharge from native and imported water sources under safe yield conditions.

Evaluation of Safe Yield

During the 17-year period of normal native supply, 1940-41 through 1956-57, heavy pumping occurred with a small average annual decrease of ground water in storage indicating that the historic pumpage approached the ground water yield in Sylmar, Verdugo, and Eagle Rock Subareas. Under these conditions the average amount pumped, adjusted

for change in storage, provides a measure of the ground water recharge which when adjusted for safe yield conditions provides a means for evaluating safe yield.

This principle is discussed by Oscar Edward Meinzer in Geological Survey Water-Supply Paper 638-C, "Outline of Methods for Estimating Ground Water Supplies," 1932, which states on pages 122 and 123 as follows:

> "... a study of the relations of the water levels to the amount of pumpage is likely to give more reliable information as to the safe yield than can be obtained by any method of studying an undeveloped reservoir. If the water levels in the wells remain virtually stationary during a considerable period of pumping it may be concluded that during this period the rate of recharge has been about equal to the rate of discharge, including both natural discharge and withdrawals from wells."

and,

> "Regardless of the manner in which the water levels fluctuate, if at the end of any period they return approximately to the position they had at the beginning of the period the record of pumpage furnishes a measure of the recharge during the same period minus the natural loss."

further,

> "If with a given rate of pumping the water table is approximately stabilized and the natural discharge is known to be small or to have been reduced nearly to the practicable limit, it may be concluded that the pumpage furnishes an approximate measure of the safe yield ..."

In order to conform with safe yield conditions of import, export, and delivered pumpage derived and adopted in Chapter VII of the Report of Referee, the net recharge remaining for use as delivered water on the valley area must equal that determined in Table 55*. This net recharge

*See item 8, Table 55, page 246b.

available for local use was allocated to each subarea in proportion to the net ground water recharge derived from normal native supply and import within that subarea. The balance of the total net safe yield recharge not used on the valley fill area of the Upper Los Angeles River is exported. The safe yield of each subarea is therefore equal to the sum of the net recharge remaining for use on the valley fill within that subarea converted to an equivalent pumpage plus the amount of pumpage designated for export. In other words, the consumptive demand which can be met under safe yield conditions is fixed and since aggregate import and export are fixed the ground water deliveries which can be made are fixed. The Referee considered an allocation of delivered pumpage to each subarea on the basis of the amount of recharge occurring within that subarea as the most equitable approach within the authorized scope of its activity. No legal implication is intended to be derived from this allocation.

Because the total safe yield of the Upper Los Angeles River area ground water reservoir is equal to the sum of all its parts, the safe yield of San Fernando Subarea has been taken as the difference between the safe yield of the ground water reservoir of the Upper Los Angeles River area determined in the Report of Referee and the sum of the safe yields of Sylmar, Verdugo, and Eagle Rock Subareas determined herein.

Safe Yield Computations

The computations of safe yield for Sylmar and Verdugo Subareas are divided into five steps, as follows:

1. Evaluation of the historic gross ground water recharge derived from normal native supply.

2. Adjustment of the historic gross ground water recharge derived from normal native supply to the culture existing during the safe yield years 1949-50, 1954-55, and 1957-58.

3. Evaluation of net ground water recharge under safe yield conditions of normal native supply and average import.

4. Apportionment of safe yield delivered pumpage among the subareas.

5. Conversion of net ground water recharge to safe yield pumpage for export and use in subarea.

The safe yield of Eagle Rock Subarea has been computed as the historic 17-year average amount pumped, adjusted for change in ground water storage, and modified to reflect the average import under safe yield conditions (see Figure A-3-S). Minor changes in the factors affecting native recharge permit this item to be assumed constant in making the evaluation of safe yield on this basis.

Determination of the safe yield of San Fernando Subarea is made by subtraction of the safe yields computed for Sylmar, Verdugo, and Eagle Rock Subareas from the safe yield of the Upper Los Angeles River area.

The following tables show computations in the described sequence with the source and derivation of the various items in the tables shown in the parentheses following the item.

Evaluation of historic gross ground water recharge derived from normal native supply for Sylmar and Verdugo Subareas is shown in Table 2-S. The gross ground water recharge is equal to the net amount of pumpage consumed and/or exported plus subsurface outflow less the water withdrawn from ground water storage. Since sources of ground water recharge are from native and imported waters, deducting the recharge derived from average historic import leaves the amount derived from normal native supply.

IV-1, 2a, 2c ✓

TABLE 2-S

EVALUATION OF 17-YEAR AVERAGE ANNUAL HISTORIC GROSS GROUND WATER RECHARGE DERIVED FROM NORMAL NATIVE SUPPLY

In Acre-Feet

Item	Subarea			
	Sylmar		Verdugo	
1. Total ground water pumpage (Table A-5-S)		6,140		5,600
2. Export (Table A-5-S)	4,450		2,050	
3. Pumpage delivered to valley fill (Item 1 minus Item 2)	1,690		3,550	
4. Percent recharge from average delivered water (Table A-6-S)	30.1		33.9	
5. Deep percolation from delivered pumpage (Item 3 times Item 4)		510		1,200
6. Historic pumpage consumed in subarea and/or exported (Item 1 minus Item 5)		5,630		4,400
7. Subsurface outflow (Table A-5-S)		540		0
8. Historic gross ground water draft (Item 6 plus Item 7)		6,170		4,400
9. Historic change in storage (Table A-5-S)		- 360		- 380
10. Gross ground water recharge (Item 8 minus Item 9)		5,810		4,020
11. Gross ground water recharge derived from average historic import:				
a. Historic import (Table A-5-S) (Including ground water transfer)	5,320		1,160	
b. Percent recharge from average delivered water (Table A-6-S)	30.1		33.9	
c. Gross ground water recharge derived from average historic import (Item 11a times Item 11b)		1,600		390
12. Historic gross ground water recharge derived from normal native supply (Item 10 minus Item 11c)		4,210		3,630

Because channel improvements in Sylmar, Verdugo, and Eagle Rock Subareas have been relatively minor during the 17-year period, their relative effect on ground water recharge under safe yield conditions is minor and has been considered negligible. The only other influences on native recharge imposed by safe yield conditions are the effect of safe yield land use classes on the consumptive use of rain and their effect on the amount of residual rain leaving the area as surface runoff. An increase in either consumptive use or residual rain acts to reduce the yield because the amount of ground water recharge will be less and vice-versa. Adjustment for these influences in Sylmar and Verdugo Subareas is set forth in Table 3-8.

* II-1
II-24

TABLE 3-S

ADJUSTMENT OF AVERAGE HISTORIC GROSS GROUND WATER RECHARGE
DERIVED FROM NORMAL NATIVE SUPPLY FOR SAFE YIELD CULTURE

In Acre-Feet

Item	17-Year Average Period 1940-57	Safe Yield Year 1949-50 Safe Yield Average	1949-50 Adjustment	1954-55 Safe Yield Average	1954-55 Adjustment	1957-58 Safe Yield Average	1957-58 Adjustment
SYLMAR SUBAREA							
1. Items affecting recharge of native supply:							
a. Consumptive use of rain on land use areas (Tables A-5-S and R-4)	6,190	6,430	-240	6,300	-110	6,130	60
b. Residual rain available for runoff (Tables A-5-S and R-5)	870	930	- 60	1,140	-270	1,310	-440
2. Total adjustment (Sum of Items 1a and 1b)			-300		-380		-380
3. Average historic gross ground water recharge derived from normal native supply (Item 12, Table 2-S)	4,210						
4. Average gross ground water recharge of normal native supply under safe yield culture (Sum of Items 2 and 3)		3,910		3,830		3,830	
VERDUGO SUBAREA							
1. Items affecting recharge of native supply:							
a. Consumptive use of rain on land use areas (Tables A-5-S and R-4[a])	5,120	5,080	40	4,740	380	4,390	730
b. Residual rain available for runoff (Tables A-5-S and R-5[a])	1,410	1,540	-130	1,950	-540	2,220	-810
2. Total adjustment (Sum of Items 1a and 1b)			- 90		-160		- 80
3. Average historic gross ground water recharge derived from normal native supply (Table 2-S)	3,630						
4. Average gross ground water recharge of normal native supply under safe yield culture (Sum of Items 2 and 3)		3,540		3,470		3,550	

a. References to tables in Appendix R, Report of Referee, are for method only. Values utilized for safe yield are adjusted to exclude the portion of Monk Hill Basin within the Upper Los Angeles River area and correspond to the acreages shown in

The average ground water recharge under safe yield conditions is derived from percolation of native and import water. Deep percolation of import is determined from the percent of delivered water becoming recharge under conditions adopted for the safe yield year (see Appendix A herein). The average amount of import delivered to Sylmar, Verdugo, and Eagle Rock Subareas is taken from trend curves in Appendix A herein and is based on the historic amount of Owens and Colorado River water imported into these subareas.

The net ground water recharge of normal native and average import supply available for use in Sylmar and Verdugo Subareas is equal to the total average gross ground water recharge minus subsurface outflow and any other natural depletions from the subarea. The above computations are shown in Table 4-S. Also included in Table 4-S are computations deriving the percent of the total gross ground water recharge from normal native and average import supply.

TABLE 4-S

GROSS AND NET GROUND WATER RECHARGE OF NORMAL NATIVE SUPPLY AND AVERAGE IMPORT UNDER SAFE YIELD CONDITIONS

In Acre-Feet

Item	Safe Yield Year 1949-50		1954-55		1957-58	
SYLMAR SUBAREA						
1. Average gross ground water recharge of normal native supply (Table 3-S)		3,910		3,830		3,830
2. Average import (see trend curve for subarea, Appendix A herein)	5,700		5,800		5,900	
3. Percent of delivered water becoming recharge (Table A-7-S)	30.4		35.4		38.6	
4. Gross recharge of average import (Item 2 times Item 3)		1,730		2,050		2,280
5. Total average gross ground water recharge of normal native and average import supply (Sum of Items 1 and 4)		5,640		5,880		6,110
a. Percent of total gross ground water recharge derived from normal native supply (Item 1 divided by Item 5 expressed as a percentage)	69.3		65.2		62.7	
b. Percent of total gross ground water recharge derived from average import (Item 4 divided by Item 5 expressed as a percentage)	30.7		34.8		37.3	
6. Subsurface outflow (Table A-5-S)		540		540		540
7. Net ground water recharge of normal native and average import supply (Item 5 minus Item 6)		5,100		5,340		5,570
VERDUGO SUBAREA						
1. Average gross ground water recharge of normal native supply (Table 3-S)		3,540		3,470		3,550
2. Average import (see trend curve for subarea, Appendix A herein)	0		800		1,400	
3. Percent of delivered water becoming recharge (Table A-8-S)	36.8		34.3		32.3	
4. Gross recharge of average import (Item 2 times Item 3)		0		270		450
5. Total average gross ground water recharge of normal native and average import supply (Sum of Items 1 and 4)		3,540		3,740		4,000
a. Percent of total gross ground water recharge derived from normal native supply (Item 1 divided by Item 5 expressed as a percentage)	100.0		92 8		88.8	
b. Percent of total gross ground water recharge derived from average import (Item 4 divided by Item 5 expressed as a percentage)	0		7.2		11.2	
6. Subsurface outflow (Table A-5-S)		0		0		0
7. Net ground water recharge of normal native and average import supply (Item 5 minus Item 6)		3,540		3,740		4,000

The amount of net ground water recharge remaining for use as delivered water on the valley fill area under conditions adopted for the safe yield year has been established in Table 55 of the Report of Referee. The apportionment of this amount to Sylmar, Verdugo, and Eagle Rock Subareas is based on a ratio of the net ground water recharge of normal native and average import supply within these subareas and the total average net ground water recharge of the ground water reservoir of the Upper Los Angeles River area. The amounts of net recharge remaining for use as delivered water in Sylmar, Verdugo, and Eagle Rock Subareas are shown in Table 5-S.

TABLE 5-S

PROPORTIONING OF NET RECHARGE REMAINING FOR USE AS DELIVERED WATER ON VALLEY FILL AREA OF SYLMAR, VERDUGO AND EAGLE ROCK SUBAREAS

In Acre-Feet

Item	Safe Yield Year 1949-50	1954-55	1957-58
1. Total average gross ground water recharge of ground water reservoir, Upper Los Angeles River area Item 4, Table 55)	99,900	102,200	101,200
2. Average natural ground water depletions (Item 5, Table 55)	4,600	4,500	4,700
3. Total average net ground water recharge of ground water reservoir, Upper Los Angeles River area (Item 1 minus Item 2)	95,300	97,700	96,500
4. Ratio of total average net ground water recharge originating in:			
a. Sylmar Subarea (Item 7, Table 4-S divided by Item 3)	0.054	0.055	0.058
b. Verdugo Subarea (Item 7, Table 4-S divided by Item 3)	0.037	0.038	0.041
c. Eagle Rock Subarea	*	*	*
5. Net recharge remaining for use as delivered water on valley fill (Item 8, Table 55) used within:			
a. Sylmar Subarea (Item 8, Table 55 multiplied by Item 4a)	850	400	170
b. Verdugo Subarea (Item 8, Table 55 multiplied by Item 4b)	580	270	120
c. Eagle Rock Subarea*	0	0	0

* Less than one-tenth of one percent in calculation 4c and has been taken as equal to zero in item 5c

The computation of safe yield for Sylmar and Verdugo Subareas is shown in Table 6-S and for Eagle Rock in Table 7-S. The total safe yield of Sylmar and Verdugo Subareas is equal to export plus the net recharge remaining for use as delivered water converted to an equivalent amount of pumpage for the subarea. The relative amount of safe yield derived from native and import supply is equivalent to the percent recharge from each shown as items 5a and 5b, respectively, in Table 4-S.

The safe yield of San Fernando Subarea has been determined as the difference between the safe yield of the ground water reservoir of the Upper Los Angeles River area and the sum of the safe yield for Sylmar, Verdugo, and Eagle Rock Subareas determined herein (see Table 8-S).

TABLE 6-S

SAFE YIELD

In Acre-Feet

Item	Safe Yield Year 1949-50	1954-55	1957-58
SYLMAR SUBAREA			
1. Net ground water recharge (Item 7, Table 4-S)	5,100	5,340	5,570
2. Net recharge remaining for use as delivered water on valley fill (Item 5a, Table 5-S)	850	400	170
a. Converted to equivalent pumpage (Item 2 divided by the quantity 100.0 minus Item 11, Table A-7-S)	1,220	620	280
3. Average ground water export from the valley fill area (Item 1 minus Item 2)	4,250	4,940	5,400
4. Safe yield (Sum of Items 2a and 3) Prorated into:	5,470	5,560	5,680
a. Safe yield derived from average import (Item 4 multiplied by Item 5b, Table 4-S)	1,680	1,930	2,120
b. Safe yield derived from normal native supply (Item 4 multiplied by Item 5a, Table 4-S)	3,790	3,630	3,560

TABLE 6-S

SAFE YIELD
(continued)

In Acre-Feet

Item	Safe Yield Year 1949-50	1954-55	1957-58
VERDUGO SUBAREA			
1. Net ground water recharge (Item 7, Table 4-S)	3,540	3,740	4,000
2. Net recharge remaining for use as delivered water on valley fill area (Item 5a, Table 5-S)	580	270	120
a. Converted to equivalent pumpage (Item 2 divided by the quantity 100.0 minus Item 11, Table A-8-S)	920	410	180
3. Average ground water export from the valley fill area (Item 1 minus Item 2)	2,960	3,470	3,880
4. Safe yield (Sum of Items 2a and 3) Prorated into:	3,880	3,880	4,060
a. Safe yield derived from average import (Item 4 multiplied by Item 5b, Table 4-S)	0	280	450
b. Safe yield derived from normal native supply (Item 4 multiplied by Item 5a, Table 4-S)	3,880	3,600	3,610

TABLE 7-S

SAFE YIELD
EAGLE ROCK SUBAREA

In Acre-Feet

17-Year Average Historic Net Ground Water Recharge	Amount
1. Total ground water pumpage (Table A-5-S)	68
2. Historic Change in storage (Table A-5-S)	-6
3. Historic net ground water recharge (Item 1 minus Item 2)	62
a. Average percent deep percolation derived from rain. (Based on average deep percolation of rain (Table L-13) and adjusted deep percolation of delivered water derived from total unit delivered water (Table L-13) minus consumptive use of delivered water for San Fernando Subarea (Table R-1))	57%
b. Historic net ground water recharge derived from normal native supply (Item 3 multiplied by Item 3a)	35
c. Historic net ground water recharge derived from average import (Item 3 minus Item 3b)	27

TABLE 7-S

SAFE YIELD
EAGLE ROCK SUBAREA
(continued)

In Acre-Feet

Modification of Net Recharge for Safe Yield

Item	Safe Yield Year		
	1949-50	1954-55	1957-58
4. Safe yield derived from normal native supply (Item 3b)	35	35	35
5. Adjustment for average import			
a. Historic average import (Table A-5-S)	1,550	1,550	1,550
b. Average import (see trend curve for subarea, Appendix A herein)	270	1,110	1,500
c. Safe yield derived from average import (Item 5b divided by Item 5a multiplied by Item 3c)	5	19	26
6. Safe yield derived from normal native supply and average import (sum of Items 4 and 5c)	40	54	61

TABLE 8-S

SAFE YIELD
SAN FERNANDO SUBAREA

In Acre-Feet

Item	Safe Yield Year		
	1949-50	1954-55	1957-58
1. Safe yield of ground water reservoir Upper Los Angeles River area (Item 10, Table 55)	100,800	100,400	97,600
a. Safe yield derived from average import (Item 10a, Table 55)	38,700	42,700	42,900
b. Safe yield derived from normal native supply (Item 10b, Table 55)	62,100	57,700	54,700
2. Safe yield determined for Sylmar, Verdugo and Eagle Rock Subareas* (Sum of Items 4, Table 6-S plus Item 6, Table 7-S)	9,390	9,490	9,800
a. Safe yield derived from average import * (Sum of Items 4a, Table 6-S plus Item 5c, Table 7-S)	1,680	2,230	2,600
b. Safe yield derived from normal native supply * (Sum of Items 4b, Table 6-S plus Item 4, Table 7-S)	7,710	7,260	7,200
3. Safe yield of San Fernando Subarea Item 1 minus Item 2)	91,410	90,910	87,800
a. Safe yield derived from average import (Item 1a minus Item 2a)	37,020	40,470	40,300
b. Safe yield derived from normal native supply (Item 1b minus Item 2b)	54,390	50,440	47,500

* Rounded off to nearest 10 acre-feet.

APPENDIX A

DEVELOPMENT AND ABSTRACT OF HYDROLOGIC INFORMATION REQUIRED FOR EVALUATION OF SAFE YIELD BY SUBAREAS

APPENDIX A

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APPENDIX A

DEVELOPMENT AND ABSTRACT OF HYDROLOGIC INFORMATION REQUIRED FOR EVALUATION OF SAFE YIELD BY SUBAREAS

Most of the available hydrologic information presented in Volumes I and II of the Report of Referee is tabulated by subareas and/or water service areas. Information concerning evaluation of safe yield of Eagle Rock, Sylmar, and Verdugo Subareas not heretofore set forth are contained herein.

Development of Hydrologic Information for Eagle Rock Subarea

Eagle Rock Subarea is located entirely within the City of Los Angeles Narrows water service area. Water delivered to the subarea by the City of Los Angeles comprises ground water extracted from San Fernando Subarea, Owens River water transported into Silver Lake Reservoir and Colorado River water from Eagle Rock Reservoir. The method used to determine the amounts of water delivered to the Narrows service area by the City of Los Angeles is discussed in Appendix M. The portion estimated to be delivered to the Eagle Rock Subarea has been based primarily on existing land use data and population censuses. Wherever possible, the procedures and values developed in the Report of Referee were utilized.

Areal Culture

Land use surveys for Eagle Rock Subarea are available for the years 1949, 1955, and 1958 for residential, commercial and industrial,

and native vegetation classifications only. For other years and other classifications, there are no land use surveys available. Residential acreage was estimated for other years by straightline interpolation between years of record and extrapolation on the basis of population estimates for the remaining years of the 17-year base period used in the calculations.

Estimates of commercial and industrial acreages are based on the average ratio of commercial and industrial acreage to residential acreage for the years of available land use data. The remaining acreage was assumed to be in native vegetation.

The estimated acreages of land use so determined for Eagle Rock Subarea are shown in Table A-1-S.

TABLE A-1-S

AREAL CULTURE
WITHIN BOUNDARY OF THE VALLEY FILL

EAGLE ROCK SUBAREA
(800 acres)

In Acres

Year	Residential	Commercial and industrial	Dry farm and native vegetation
1940-41	490	160	150
41-42	500	160	140
42-43	510	160	130
43-44	510	160	130
44-45	520	160	120
1945-46	530	170	100
46-47	530	170	100
47-48	540	170	90
48-49	540	170	90
49-50	550	170	80
1950-51	570	170	60
51-52	580	170	50
52-53	590	170	40
53-54	590	170	40
54-55	590	170	40
1955-56	610	170	20
56-57	610	180	10
57-58	620	180	0

Gross Delivered Water

The estimated amounts of water delivered to Eagle Rock Subarea by the City of Los Angeles are based on areal culture, (Table A-1-S), unit values of consumptive use and deep percolation determined for the combined San Fernando and Eagle Rock Subareas (Appendix L, Report of Referee), percent sewage from residential and commercial areas (Appendix N, Report of Referee), and mean percent water system losses (Appendix J, Report of Referee). A summary of the items which comprise the estimated gross water delivered by the City of Los Angeles is shown in Table A-2-S.

Gross water deliveries to the Eagle Rock Subarea were further estimated to be comprised of imported water from the Colorado and Owens Rivers in the same proportion as these imports have been brought into the Los Angeles River Narrows service area of the City of Los Angeles (see Tables M-2, M-3, and M-6). Total gross delivered water shown in Table A-3-S equals the sum of Owens and Colorado River import, groundwater transfer, and extraction in the Eagle Rock Subarea.

TABLE A-2-S

ESTIMATED DELIVERED WATER TO EAGLE ROCK
SUBAREA BY THE CITY OF LOS ANGELES

In Acre-Feet

Year	Consumptive Use	Deep Percolation	Sewage	Water System Losses	Total Delivered
1940-41	430	50	400	50	930
41-42	660	30	560	80	1,330
42-43	690	70	620	80	1,460
43-44	690	90	640	90	1,510
44-45	770	40	660	90	1,560
1945-46	690	100	640	90	1,520
46-47	630	80	580	80	1,370
47-48	710	50	620	80	1,460
48-49	740	50	650	90	1,530
49-50	730	60	650	90	1,530
1950-51	800	50	690	90	1,630
51-52	700	130	670	90	1,590
52-53	830	90	750	100	1,770
53-54	800	120	760	100	1,780
54-55	790	70	710	90	1,660
1955-56	790	100	730	100	1,720
56-57	890	100	810	110	1,910
57-58	780	80	700	90	1,650
17-Year Average 1940-57	720	70	660	90	1,550

TABLE A-3-S

GROSS DELIVERED WATER

EAGLE ROCK SUBAREA

In Acre-Feet

Year	Import*	Ground Water Transfer	Ground Water	Total
1940-41	0	930	30	960
41-42	0	1,330	30	1,360
42-43	0	1,460	30	1,490
43-44	0	1,510	40	1,550
44-45	30	1,530	40	1,600
1945-46	130	1,390	40	1,560
46-47	170	1,220	40	1,430
47-48	160	1,280	40	1,500
48-49	190	1,340	50	1,580
49-50	260	1,270	50	1,580
1950-51	410	1,220	50	1,680
51-52	480	1,110	110	1,700
52-53	510	1,260	120	1,890
53-54	920	860	120	1,900
54-55	1,220	440	120	1,780
1955-56	1,100	620	130	1,850
56-57	1,430	480	140	2,050
57-58	1,500	150	150	1,800
17-Year Average 1940-57	420	1,130	70	1,620

* From Owens and Colorado Rivers

Consumptive Use of Water System Losses

The computations for the consumptive use of water system losses shown in Table 36 are for the valley fill area of the Upper Los Angeles River area. The methods used for evaluating the consumptive use of water system losses are discussed on pages 179 and 183 of the Report of Referee. This same procedure was utilized in determining the consumptive use of water system losses for Sylmar, Verdugo and Eagle Rock Subareas. The water system losses and consumptive use of water system losses for Sylmar and Verdugo Subareas are shown in Table A-4-S.

TABLE A-4-S

WATER SYSTEM LOSSES AND CONSUMPTIVE USE OF WATER SYSTEM LOSSES

In Acre-Feet

Year	Sylmar Subarea		Verdugo Subarea	
	Water System Losses	Consumptive Use Water System Losses	Water System Losses	Consumptive Use Water System Losses
1940-41	190	40	220	90
41-42	240	50	270	130
42-43	180	40	250	90
43-44	290	60	240	90
44-45	350	100	290	130
1945-46	330	60	400	200
46-47	330	60	510	260
47-48	420	80	650	390
48-49	470	90	650	390
49-50	390	80	600	320
1950-51	470	130	680	390
51-52	410	110	650	330
52-53	520	160	920	540
53-54	420	120	1,060	590
54-55	440	120	1,290	860
1955-56	510	150	1,470	930
56-57	600	180	1,550	1,000
57-58	530	160	1,210	690
17-Year Average 1940-57	390	100	690	400

Summary of Average Historic Supply and Disposal

Table A-5-S contains a summary of average historic supply and disposal items based on the 17-year period 1940-41 through 1956-57 for Sylmar, Verdugo and Eagle Rock Subareas. These amounts are utilized in evaluating the safe yield of each of the three subareas and are calculated from various tables in the Report of Referee and herein. The source and derivation of these amounts are shown under the column heading "Reference Table No.".

TABLE A-5-S

SUMMARY OF AVERAGE HISTORIC SUPPLY AND DISPOSAL ITEMS FOR
17-YEAR AVERAGE PERIOD 1940-41 THROUGH 1956-57

In Acre-Feet

Item	Sylmar Subarea		Verdugo Subarea		Eagle Rock Subarea	
	Average Amount	Reference Table No.	Average Amount	Reference Table No.	Average Amount	Reference Table No.
SUPPLY						
1. Import:						
a. Owens and Colorado River water	5,320	21	270	T-5	420	A-3-S
b. Ground water from San Fernando Subarea	0		890	T-5	1,130	A-3-S
2. Total import to subarea	5,320		1,160		1,550	
3. Gross delivered water	7,030	21	4,720	T-5	1,620	A-3-S
4. Water from ground water storage	360	33	380	a	6	B-1-S
DISPOSAL						
5. Ground Water export:						
a. Out of Upper Los Angeles River area	0		550[c]	M-7		
b. To hill area	0		120	b		
c. To San Fernando Subarea	4,450	M-4	1,380	M-4		
6. Total export from subarea	4,450		2,050			
7. Sewage export	340	T-9	800	T-9		
8. Subsurface outflow	540	32	Nil	32	a	
9. Consumptive use:						
a. Delivered water on land use areas	4,470	T-11	1,920	T-11		
b. Water system losses	100	A-4-S	400	A-4-S		
c. Precipitation on land use areas	6,190	T-11	5,120	T-11		
10. Residual rain available for runoff	870	T-3	1,410	T-3		
11. Ground Water pumpage	6,140	T-6	5,600	T-6	68	

a. See Appendix B herein

b. Derived from Table J-13, sum of deliveries by C.V.C.W.D. and 26.3% of the deliveries by the City of Glendale. (Percent residential acreage in hill area within the City of Glendale in Verdugo Subarea based on 1958 land use survey).

c. Includes 400 acre-feet average annual e[illegible] to the portion of Monk Hill Basin within the Upper Los Angeles River area by the La Canada Irrigation Di[illegible]ct.

Average Historic Percent Recharge from Delivered Water

The 17-year period 1940-41 through 1956-57 represents a historic period within the 29-year base period in which the water supply from precipitation approximates normal for Sylmar and Verdugo Subareas. The evaluation of the 17-year average historic percent recharge from delivered water for these two subareas is shown in Table A-6-S.

TABLE A-6-S

DETERMINATION OF 17-YEAR AVERAGE
HISTORIC PERCENT RECHARGE FROM
DELIVERED WATER

In Acre-Feet

Item	Subarea	
	Sylmar	Verdugo
1. Gross delivered water	7,030	4,720
2. Consumptive use of delivered water on land use areas	4,470	1,920
3. Consumptive use of water system losses	100	400
4. Sewage export	340	800
5. Total consumptive use and outflow from delivered water	4,910	3,120
6. Gross recharge from delivered water	2,120	1,600
7. Percent recharge from delivered water	30.1	33.9

Source and derivation by item numbers:

1. Table A-5-S
2. Table A-5-S
3. Table A-5-S
4. Table A-5-S
5. Sum Items 2, 3, and 4
6. Item 1 minus Item 5
7. Item 6 divided by Item 1 expressed as a percent.

Percent Recharge from Average Delivered Water With Safe Yield Culture Water Requirements Satisfied

The percent recharge from average delivered water required by culture existing during the safe yield years 1949-50, 1954-55, and 1957-58 are determined in Table A-7-S and A-8-S for Sylmar and Verdugo Subareas respectively. The recharge from average delivered water for these subareas expressed as a percentage is derived from a ratio of the recharge from average delivered water and total average delivered water.

Total average delivered water for Sylmar and Verdugo Subareas is the sum of consumptive use and deep percolation of delivered water on land use areas, water system losses, cesspool recharge and sewage export.

Consumptive use and deep percolation of delivered water on land use areas for the subareas has been determined from mean weighted depths of consumptive use and deep percolation shown in Table R-2 and acreages of each culture existing during the safe yield year in the subarea. Trend curves as discussed in the Report of Referee were utilized to evaluate the remaining items, including consumptive use of water system losses. The trend curves used to evaluate these items are shown in Figure A-1-S, for Sylmar Subarea and Figure A-2-S for Verdugo Subarea. The recharge from average delivered water is the difference between the average delivered water and its consumptive uses and exports.

TABLE A-7-S

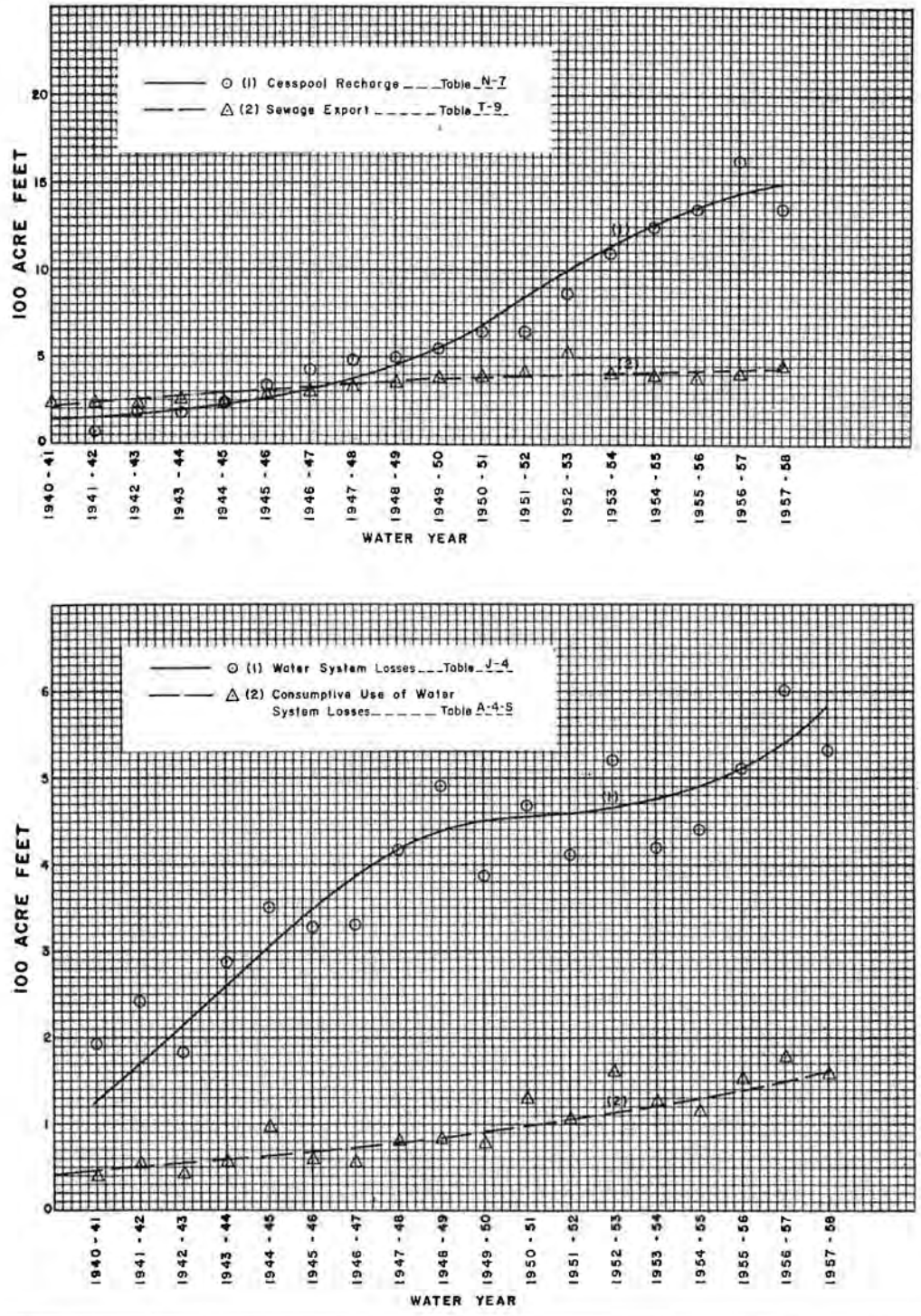
SYLMAR SUBAREA
DETERMINATION OF PERCENT RECHARGE
FROM AVERAGE DELIVERED WATER

In Acre-Feet

Item	Safe Yield Year		
	1949-50	1954-55	1957-58
1. Consumptive use and deep percolation on land use areas	5,550	4,940	4,580
2. Water system losses	450	490	580
3. Cesspool recharge	550	1,250	1,500
4. Sewage export	380	430	430
5. Total average delivered water	6,930	7,110	7,090
6. Consumptive use on land use areas	4,350	4,030	3,760
7. Consumptive use of water system losses	90	130	160
8. Sewage export	380	430	430
9. Total consumptive use and outflow	4,820	4,590	4,350
10. Recharge from average delivered water	2,110	2,520	2,740
11. Percent recharge from average delivered water	30.4	35.4	38.6

Source and derivation by item number:

1. From Table R-3
2. Figure A-1-S
3. Figure A-1-S
4. Figure A-1-S
5. Sum of Items 1, 2, 3, and 4
6. From Table R-3
7. Figure A-1-S
8. Figure A-1-S
9. Sum of Items 6, 7, and 8
10. Item 5 minus Item 9
11. Item 10 divided by Item 5



SYLMAR SUBAREA
TREND CURVES FOR SEWAGE AND WATER SYSTEM LOSSES

TABLE A-8-S

VERDUGO SUBAREA
DETERMINATION OF PERCENT RECHARGE
FROM AVERAGE DELIVERED WATER

In Acre-Feet

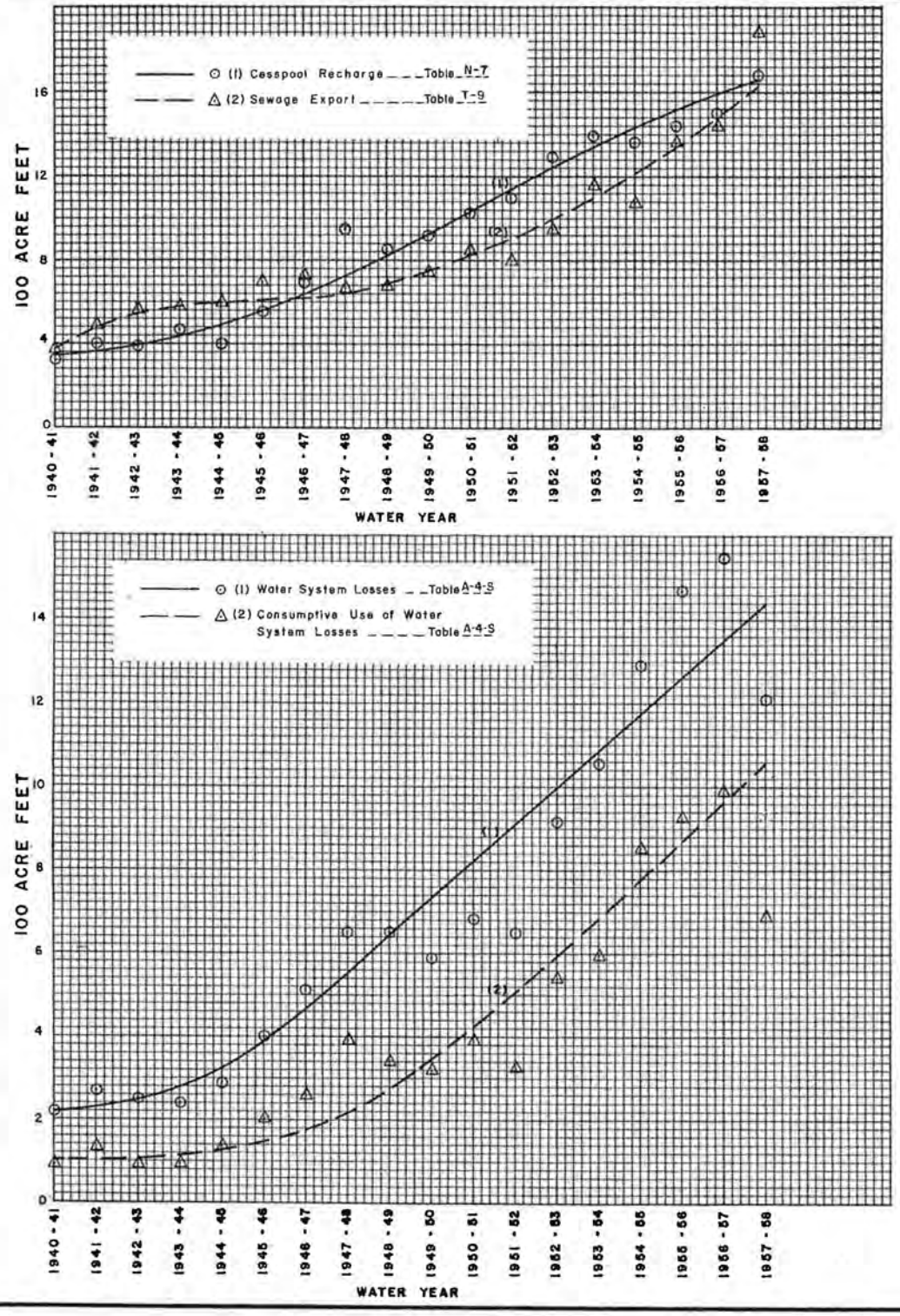
Item	Safe Yield Year		
	1949-50	1954-55	1957-58
1. Consumptive use and deep percolation on land use areas	2,580	3,390	4,040
2. Water system losses	730	1,170	1,440
3. Cesspool recharge	940	1,440	1,660
4. Sewage Export	750	1,220	1,630
5. Total average delivered water	5,000	7,220	8,770
6. Consumptive use on land use areas	2,070	2,730	3,250
7. Consumptive use of water system losses	340	790	1,060
8. Sewage export	750	1,220	1,630
9. Total consumptive use and outflow	3,160	4,740	5,940
10. Recharge from average delivered water	1,840	2,480	2,830
11. Percent of recharge from average delivered water	36.8	34.3	32.3

Source and derivation by item number:

1. From Table R-3*
2. Figure A-2-S
3. Figure A-2-S
4. Figure A-2-S
5. Sum of Items 1, 2, 3, and 4
6. From Table R-3*
7. Figure A-2-S
8. Figure A-2-S
9. Sum of Items 6, 7, and 8
10. Item 5 minus Item 9
11. Item 10 divided by Item 5

* References to tables in Appendix R, Report of Referee, are for method only. Land and water use values used for safe yield exclude use in the portion of Monk Hill Basin within the Upper Los Angeles River area. See Table T-10 for acreages used.

FIGURE A-2-S

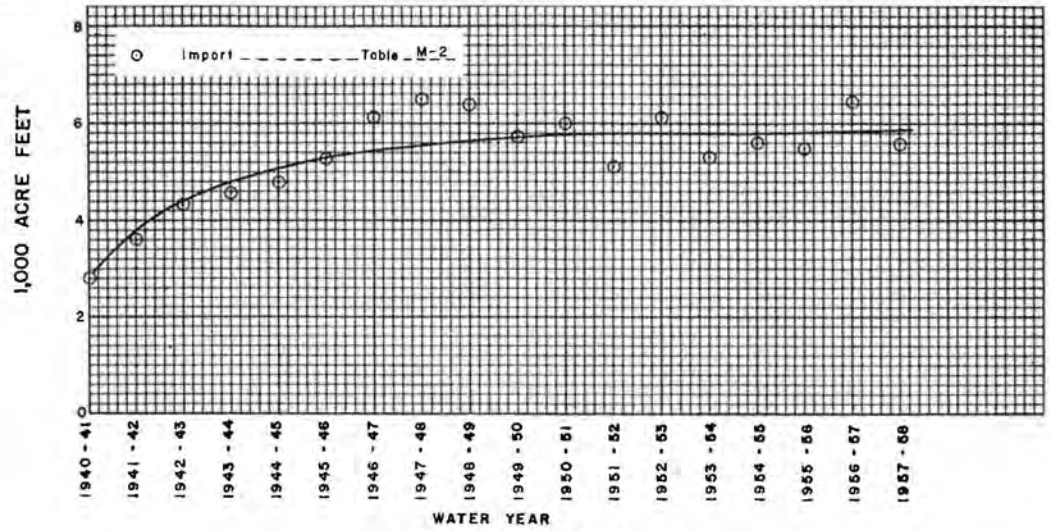


VERDUGO SUBAREA

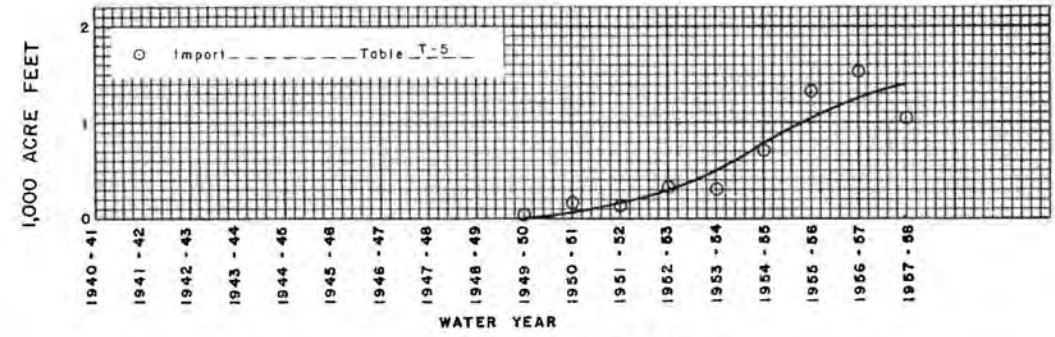
TREND CURVES FOR SEWAGE AND WATER SYSTEM LOSSES

Average Import Conditions for Safe Yield Determination

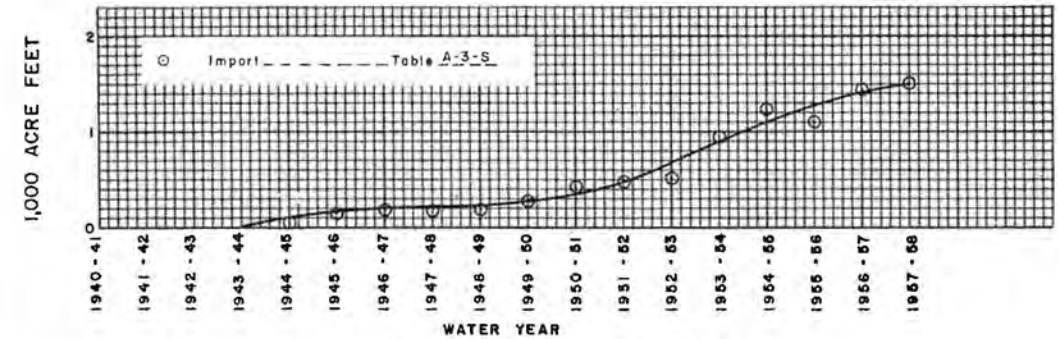
Average amounts of water imported from Owens and Colorado River to Sylmar, Verdugo, and Eagle Rock Subareas are used as a safe yield condition. The historic amounts of import are plotted in Figure A-3-S and trend curves are utilized to determine the average amounts for the safe yield years.



SYLMAR SUBAREA



VERDUGO SUBAREA



EAGLE ROCK SUBAREA

Note: The ordinate scale shown herein is for the purpose of this presentation only. Values used in safe yield computations have been taken from larger scale figures.

TREND CURVES FOR IMPORT

APPENDIX B

SPECIAL STUDIES AND INVESTIGATION
VERDUGO AND EAGLE ROCK SUBAREAS

APPENDIX B

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APPENDIX B

SPECIAL STUDIES AND INVESTIGATION VERDUGO AND EAGLE ROCK SUBAREAS

INTRODUCTION

A review was made of the procedures used to evaluate the hydrologic inventory in order to ascertain which, if any, should be modified in the treatment of individual subareas as required for Supplement No. 2. This was necessary so that the results for each subarea would be as equivalent in accuracy to the results already reported for the entire Upper Los Angeles River area as the adequacy of available data and information would allow.

Verdugo Hydrologic Subarea

Change in Storage

In this subarea refinement in the method of calculation of change in ground water storage was necessary because of relatively rapid changes in topographic elevations of the valley fill and of the apparent configuration of the underlying basement complex. The main source of data is found in the relatively small portion of the area where most of the wells were drilled. This results in the storage unit method for determination of change in storage giving too large a weight to the higher specific yields and greater water table fluctuations which occur primarily in the area along the south boundary of the subarea, and insufficient weight to the lower specific yields and lesser water level fluctuations found in the area north and east of the major producing wells. Under these circumstances it was concluded that the contour method of computing change in storage would give more accurate results in the Verdugo Subarea.

The net change in water level elevations at each well for the 17-year period 1940-41 through 1956-57 was superimposed at the well location as shown on Plate 18, and contours of equal net change in the water table were drawn. From the specific yield storage unit work sheets, specific yield for each 25-foot layer was determined at individual wells. Specific yields were then calculated for the net zone at each well that was watered or dewatered between elevations existing at the beginning and end of the 17-year period. These values were then superimposed on the counterpart of Plate 18 along with the change in water level contours. Lines of equal percentage specific yield were drawn at each five percent change. Where there was insufficient well log data the location and limits of fill material having similar storage characteristics were postulated by considering the general influence of the alluviation processes on porosity and specific yield.

Change in storage was then calculated by planimetering each area enclosed within change in water table and specific yield contours and multiplying this value by the product of the average specific yield times the average change in water table within each planimetered area. The aggregate change in all areas equals the total change in storage, which amounted to a decrease of 6,500 acre-feet of ground water in storage during the 17-year period 1940-41 through 1956-57.

Eagle Rock Hydrologic Subarea

Change in Storage

To more accurately determine the limit of the pressure area and correlation of pressure levels at well 3986B to water table conditions in the forebay area, and thus the change in storage, nine shallow hand auger and one rotary well were dug. The latter was drilled below the base of the valley fill with the contact of the nonwater-bearing series being at 108 feet. This well has been numbered 3986F. The rotary boring and five of the hand auger borings were made near the edge of the forebay area above the Raymond fault. The remaining hand auger borings were located below the fault to determine if the shallow water-bearing sand encountered upstream also existed at this downstream location. Location of the test borings and all prior wells are shown on Plate 1-S. Drilling logs of all test holes and the electric log of the rotary hole are reproduced in Appendix C herein.

These data indicate that there are two and possibly three aquifers within the pressure area (see Plate 2-S, Section T-T') with the shallow aquifer being continuous across the fault. Water level measurements also indicate that levels in the forebay area are relatively constant. Test well 3986G near York Boulevard and test well 3977 on Delevan Drive near West Avenue 41, both located in the forebay area, have water levels within five and seven feet of the surface, respectively, indicating that even after 17 years of below normal precipitation, the water table elevations in this part of the forebay area are relatively near the surface and do not reflect the present fluctuations in pressure surface indicated at well 3986B.

Hydrographs of water levels measured at these test wells indicate that there is very little fluctuation of the water table in the forebay area, being about one foot for the period of July, 1963, through February, 1964, compared to fluctuations of over five feet in the piezometric surface for the same period in well 3986B which taps the pressure aquifer and is located about half way between the producing wells on York Boulevard and the forebay area to the north. It was also noted that if the recorder charts on well 3986F are used together with known pumping conditions, static water levels at well 3986B taken late on Sundays or after holidays when there is no pumping, indicate that the change in levels are for all practical purposes equal to the changes in test well 3986F. From the foregoing it is concluded that the long-time record of water levels in 3986B could be used as an indication of water level fluctuations in the forebay area if adjustments are made for the effect of pumping.

The hydrograph of well 3986B was plotted for the period 1935 through 1960 with notations as to the day of week the water level observations were made. Recorder charts of this well are available for the year 1938 and daily observations are available for a portion of 1963. Based on Sunday observations these data indicate that during 1938 pumpage produced an average net drawdown from static water levels of two feet and in 1963 weekday readings were from four to five feet lower than Sunday observations. Therefore, the available weekday water levels in well 3986B were adjusted to static conditions based on available data concerning the rate of annual ground water extractions and assuming the drawdown was proportional to pumping rate. Under these conditions, discrepancies

caused by pressure effect are considered to be negligible in the overall computations for change in storage.

A pumping test was conducted on well 3986F during development. A discharge of 50 gallons per minute was maintained for four hours. Curves of time versus recovery indicate that the well produces from a two-aquifer system. This condition also is indicated by the well log and the electric log filed in the basic data. The water level in test well 3986E, located about 1,000 feet southwesterly from the pumped well, went down 0.1 foot during the first part of the pump test. Computations indicate that the specific yield is greater than five per cent and average permeability of the wetted sediments is about 100 Meinzer units. Drilling logs of four of the test holes in the forebay and samples of the materials indicate that specific yield within the probable zone of water table fluctuations would be at most 10 per cent, when compared to the table of materials in Appendix D of the Report of Referee. A value of 10 per cent was taken as representative of the forebay materials.

Using the adjusted change in pressure levels in well 3986B as an indication of change in water table elevation in the 536-acre forebay and an average specific yield of 10 per cent, the yearly change and cumulative change in storage for the period 1928-29 through 1959-60 were computed and are set forth in Table B-1-S. The cumulative change in storage for the 17-year period, 1940-41 through 1956-57, was minus 108 acre-feet. It is noted that even though the specific yield has been adjusted from 17.3 per cent as used for this subarea in the Report of Referee to 10 per cent, there is little or no variance in yearly net change in storage.

TABLE B-1-S

CHANGE IN GROUND WATER STORAGE IN THE VALLEY
FILL FOR PERIOD 1928-29 THROUGH 1959-60

EAGLE ROCK SUBAREA

Year	Pressure Surface Elevation for Well 3986B in feet	Change In Feet	Estimated Annual Change in Storage, Acre-Feet	Cumulative Change in Storage, Acre-Feet
1928-29	519	-1	- 54	- 54
29-30	518	-1	- 54	-108
1930-31	517	-1	- 54	-162
31-32	520	+3	+162	0
32-33	519	-1	- 54	- 54
33-34	518	-1	- 54	-108
34-35	518	0	0	-108
1935-36	518*	0	0	-108
36-37	519*	+1	+ 54	- 54
37-38	522*	+3	+162	+108
38-39	521*	-1	- 54	+ 54
39-40	520*	-1	- 54	0
1940-41	522*	+2	+108	+108
41-42	521*	-1	- 54	+ 54
42-43	520	-1	- 54	0
43-44	521	+1	+ 54	+ 54
44-45	521	0	0	+ 54
1945-46	519	-2	-108	- 54
46-47	520	+1	+ 54	0
47-48	519*	-1	- 54	- 54
48-49	516*	-3	-162	-216
49-50	516*	0	0	-216
1950-51	516*	0	0	-216
51-52	518	+2	+108	-108
52-53	517	-1	- 54	-162
53-54	519	+2	+108	- 54
54-55	518	-1	- 54	-108
1955-56	517	-1	- 54	-162
56-57	518	+1	+ 54	-108
57-58	519	+1	+ 54	- 54
58-59	517	-2	-108	-162
59-60	518	+1	+ 54	-108
17-Year Average 1940-57			-6.4	
29-Year Average 1928-57			-3.7	

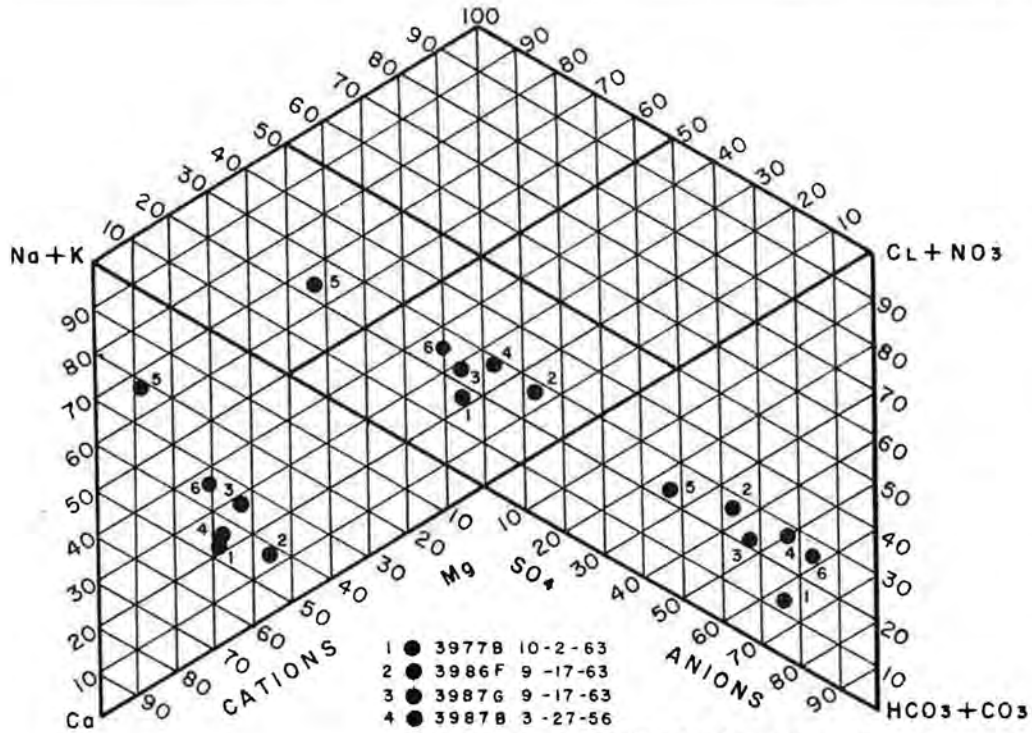
*Elevation of water table adjusted or taken from measurements to reflect nonpumping conditions (See pages B-4 and B-5)

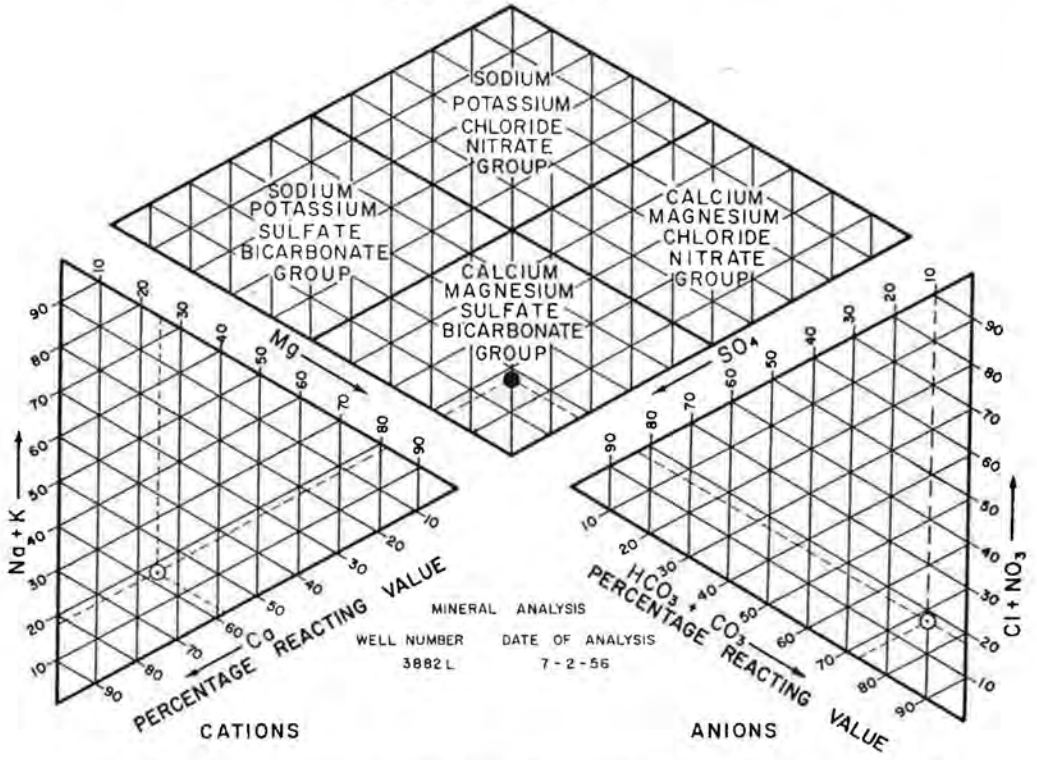
Water Quality

Samples of water were obtained from well 3987G in the forebay above the Raymond fault, test well 3977B in the upper aquifer below the fault, and well 3986F above Colorado Boulevard. Analyses were compared with analyses of water extracted from the pressure aquifers near York Boulevard and from Colorado River water and are shown on Figure B-1-S. As can be seen, the water from all wells is comparable in type and presumably has the same source and is not related to Metropolitan Water District water.

Of particular interest is the relatively high ABS (Syndets) of 1.3 ppm shown in the analysis of well 3987G in the forebay and 0.5 ppm at test well 3977B in the upper aquifer below the fault.

FIGURE B-I-S





EXAMPLE OF TRILINEAR PLOT AND DETERMINATION OF TYPE OF WATER

LEGEND

⊙ Computed from mineral analysis of water from well No. 3882L

● Mineral character of water determined by intersection

EAGLE ROCK SUBAREA
MINERAL CHARACTER OF WATER

APPENDIX C

BASIC DATA

APPENDIX C

TABLE OF CONTENTS

WELL LOGS

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Roc

DWR NO. ____ : ____ B & K

OTHER NOS #2 Eagle Rock Text Hole - LA Grid 3977

LOCATION In South Parkway of Delevan Dr. 6' N. of S.P.L. and 30' E. of East Pl on W Ave 41

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/19/63

SIZE OF CASING DEPTH 2"x2" Thinwall Galv 19' STRUCK WATER AT 9.2 feet

PERFORATIONS Entire length SIZE 1/32"to1/8" NO. -

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS

SURFACE ELEV. 475.49 DATUM SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %
0 - 4		Dry dark brown compact gravelly silty sand		
4 - 8		Moist red brown compact gravelly silty sand		
8 - 13½		Wet to saturated red brown gravelly silty sand w/some clay		
13½ - 14		Saturated red brown silty clay		
14 - 15-1/3		Saturated red brown clayey sandy silt		
15-1/3 - 16½		Saturated red brown coarse sand		
16½ - 20		Saturated red brown silty sand w/lenses of pea gravel		

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/19/63 SHEET 1 OF 1

FORM 263, 65981 11-57 10M △ SPO

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Rock

DWR NO. _____ : _____ B & M

OTHER NOS. #5 Eagle Rock Test Hole LA Grid 3977A

LOCATION Center line of Central Parkway Eagle Rock Blvd. 160' N. of B.C. of Alumni Avenue

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/25/63

SIZE OF CASING DEPTH 2"x2" Thinwell Galv. 19' STRUCK WATER AT 7 feet

PERFORATIONS Entire length SIZE 1/32" to 1/8" No. -

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS -

SURFACE ELEV. 485.47 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
0 - 2		Sandy gravel and rock fill O.G. at 2'			
2 - 5		Damp red brown silty sand			
5 - 8½		Damp to saturated red brown silty clay			
8½ - 10		Wet blue clayey silt w/some sand			
10 - 10-3/4		Wet blue black clayey silt			
10¾ - 16-1/3		Wet black organic silty clay			
16 - 16-1/3		Saturated clean gray sand			
16-1/3 - 17½		Saturated black to blue black silty clay			
17½ - 20		Saturated water-bearing clean gray sand			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/25/63 SHEET 1 OF 1

FORM 263. 65981 11-57 10M △ SPO

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Rock

DWR NO. ____ B & M

OTHER NOS. #6 Eagle Rock Test Hole LA Grid 3977B

LOCATION In West Parkway of Toland Rd. 1' E. of W. Sidewalk and 2.5' S. of Centerline of Ave 44

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/26/63

SIZE OF CASING DEPTH 2"x2" Thinwall Galv. STRUCK WATER AT 15 feet

PERFORATIONS Entire length SIZE 1/32" to 1/8" NO. -

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS -

SURFACE ELEV. 466.30 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
0 - 3		Dry gray brown silty clay			
3 - 6½		Damp to wet gray brown silty clay			
6½ x 9		Wet plastic gray brown silty clay			
9 - 9-1/3		Wet blue clay			
9-3/4 - 13½		Wet plastic gray brown silty clay			
13½ - 14-3/4		Wet dark gray organic clay			
14-3/4 - 15		Saturated silty sand			
15 - 16		Wet dark gray organic clay			
16 - 19		Saturated clean water-bearing sand			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/26/63 SHEET 1 OF 1

FORM 263. 65981 11-57 10M △ SPO

WELL LOG

STATE WATER RIGHTS BOARD

Well Number or Name 3977C (Myslik No. 1)

LOCATION 15' west of back property line at 4340 Eagle Rock Blvd. in low point (visual) MAP No.

WORK STARTED 4-1-64 WORK COMPLETED 4-1-64

ft. of in. lb./ga. casing left in well

" " " " " " "

" " " " " " "

" " " " " " "

Type of perforator used

Perforated ft. to ft. holes per ft.

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

Diameter of perforations in., length in.

Depth at which water was first found 16.7 ft.

Standing level ~~before perforating~~ 4-2-64 13.75 ft.

Standing level after perforating ft.

Note your observation of any change in water level while drilling

Date tested , 19

Water level when first started test ft.

Draw down from standing level ft.

A. P. M. at beginning of test

A. P. M. at completion of test

Draw down at completion of test ft.

If reducing strings of casing were cut off, state how cut

Depth from surface cut ft.

Size of casing cut in.

Lap in larger casing ft.

Was adapter or cement used?

If casing was swedged or repaired, state depth, describe repairs and condition in which casing was left and probable future effect:

Is well straight top to bottom, if not, what is the variation?

Will there be any detrimental effect on pump, and if so, what?

Give any additional data which may be of future value Owner of property-Mrs. Myslik, 3406 Eagle Rock Blvd. Elevation ground surface 463.5

Total depth of well 16.9 ft.

Formation: Mention size of water gravel—

0	ft. to	0.5	ft. Decomposed granite & silty topsoil
0.5	"	1.5	" Decomposed granite
1.5	"	4.75	" Sandy clay
4.75	"	5.0	" Sandy clay (less clay)
5.0	"	7.0	" Black sandy clay
7.0	"	8.0	" Red sandy clay
8.0	"	8.9	" Same (less clay)
8.9	"	10.75	" Red sand (no clay)
10.75	"	12.0	" Yellow clay
12.0	"	13.5	" Yellow sand (little clay)
13.5	"	14.0	" Coarse sand - minor gravel
14.0	"	15.75	" Dark gravelly sand- intermittent gravel to ½"
15.75	"	16.2	" Fine silty sand with gravel to 1"- Saturated
16.2	"	16.9	" Coarse sand with gravel to 1"
	"		" Free water at 16.7'
	"		"
	"		" Advance halted by rock
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"
	"		"

Date of Report 4-1-64, 19 64

A. Friedman & D. Leve Driller.

In charge

WELL LOG

STATE WATER RIGHTS BOARD

Well Number or Name 3977D (Myslik No. 3)

CATION: About 25' from rear property line at 4340 Eagle Rock Blvd. About 10' from 3977D.

MAP No.

RK STARTED 4-7-64 WORK COMPLETED 4-7-64

ft. of in lb./ga. casing left in well
" " " " " " "
" " " " " " "
" " " " " " "

e of perforator used

ated ft. to ft. holes per ft.
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "
" " " " "

ter of perforations in., length in.

at which water was first found 15.5 ft.

ng level before perforating ft.

ng level after perforating ft.

your observation of any change in water level while drilling

tested , 19

level when first started test ft.

down from standing level ft.

M. at beginning of test

M. at completion of test

down at completion of test ft.

cing strings of casing were cut off, state how cut

from surface cut ft.

casing cut in.

larger casing ft.

apter or cement used?

ng was swedged or repaired, state depth, describe repairs and

on in which casing was left and probable future effect:

straight top to bottom, if not, what is the variation?

there be any detrimental effect on pump, and if so, what?

any additional data which may be of future value:

ration ground surface 463.7

Total depth of well 16.8 ft.

Formation: Mention size of water gravel—

0	ft. to	0.8	ft.	Decomposed granite
0.8	"	1.5	"	Decomposed granite-gravel to ½"
1.5	"	4.0	"	Fine tight black clayey soil
4.0	"	4.8	"	Clay soil changing from black to brown
4.8	"	9.6	"	Brown sandy clay with gravel to ½"
9.6	"	10.5	"	Gravelly sand - clay trace
10.5	"	12.0	"	Yellow-brown clay
12.0	"	12.4	"	Fine- yellow-brown sand
12.4	"	14.0	"	Same-but damp with clay and coarser sand traces
14.0	"	15.3	"	Clean coarse brown sand-gravel to ½"
15.3	"	15.5	"	Same-gravel to 2"-Free water
15.5	"	16.8	"	Same
	"		"	
	"		"	Advance halted by rock

Date of Report 4-7 , 19 64

A. Friedman & D. Leve
Driller.

In charge

WELL LOG

STATE WATER RIGHTS BOARD

Well Number or Name 3977E (Myslik No. 2)

LOCATION 4' in front of garage at 4340 Eagle Rock Blvd. on property belonging to Mrs. Myslik who lives at 4306 Eagle Rock Blvd. MAP No.

WAS STARTED 4-2-64 WORK COMPLETED 4-3-64

_____ ft. of _____ in. _____ lb./ga. casing _____ left in well
" " " " " " "
" " " " " " "
" " " " " " "

Kind of perforator used

Perforated _____ ft. to _____ ft. _____ holes per ft.
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "

Number of perforations _____ in., length _____ in.

Depth at which water was first found 16.8 ft.

Standing level ~~before perforating~~ 13.8 ft.

Standing level after perforating _____ ft.

Describe your observation of any change in water level while drilling

_____

_____

Pump tested _____, 19____

Water level when first started test _____ ft.

Drawdown from standing level _____ ft.

G.P.M. at beginning of test _____

G.P.M. at completion of test _____

Drawdown at completion of test _____ ft.

If casing strings of casing were cut off, state how cut

_____

Depth from surface cut _____ ft.

Diameter of casing cut _____ in.

Was larger casing _____ ft.

Was adapter or cement used?

If casing was swedged or repaired, state depth, describe repairs and condition in which casing was left and probable future effect:

_____

_____

Was well straight top to bottom, if not, what is the variation?

_____

Will there be any detrimental effect on pump, and if so, what?

_____

Give any additional data which may be of future value:

Elevation of ground surface 475.2

_____

_____

Total depth of well 24 ft.

Formation: Mention size of water gravel—

0	ft. to	1.5	ft.	Decomposed granite Topsoil
1.5	"	3.5	"	Silty red-brown soil
3.5	"	5.0	"	Red-brown soil with clay
5.0	"	10.0	"	Dry adobe clay with sand traces
10.0	"	10.2	"	Clayey sand-gravel to $\frac{1}{4}$"
10.2	"	10.4	"	Yellow clay - sand traces
10.4	"	15.0	"	Clayey sand with occasional
	"		"	pockets of gravel surrounded
	"		"	by clay
15.0	"	16.5	"	Decomposed moist organic
	"		"	material- gravel to 1/8"
16.5	"	17.0	"	Same, but saturated
17.0	"	17.9	"	Water-bearing sand -
	"		"	gravel to 1/8"
17.9	"	19.0	"	Sandy brown clay
19.0	"	19.1	"	Same, but drier
19.1	"	20.1	"	Adobe clay
20.1	"	20.6	"	Water-bearing sand-No clay
20.6	"	22.8	"	Moist brown clay with sand
	"		"	traces
22.8	"	24	"	Same, but drier
	"		"	
	"		"	Progress halted because hand
	"		"	auger no longer manageable
	"		"	at this depth
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	

Date of Report 4-3- , 1964

A. Friedman & D. Leve Driller.

In charge _____

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Rock

DWR NO. ____ T ____ S & M

OTHER Nos #3 Eagle Rock Test Hole LA Grid 3986D

LOCATION South Parkway Yosemite Dr. 18" N. of Sidewalk 100' W. of P/L Maywood Ave & Yosemite intersection NW Corner

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/22/63

SIZE OF CASING DEPTH 2"x2" Thinwall Galv. 30' STRUCK WATER AT 25 feet

PERFORATIONS Bottom 20 feet SIZE 1/32"to 1/8" No. -

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS -

SURFACE ELEV. 565.33 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICKNESS	SP. YIELD %
0 - 2		Dry hard brown silty sand w/some gravel		
2 - 9½		Damp hard brown silty sand w/some gravel		
9½ - 10½		Damp red brown silty sandy clay		
10½ - 18		Damp red brown cheezey clayey sandy silt		
18 - 19		Damp red brown clayey silty sand		
19 - 21½		Damp red brown silty sand w/some gravel		
21½ - 22½		Wet red brown silty sand w/some gravel		
22½ - 23½		Saturated red brown silty clay		
23½ - 30		Saturated red brown silty sand		

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/22/63 SHEET 1 OF 1

FORM 263. 65981 11-57 10M △ SPO

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Rock

DWR No. ____ : ____ B & M

OTHER Nos. #4 Eagle Rock Test Hole LA Grid 3986E

LOCATION North Parkway Merton Dr. 5.5' S. of W. P/L and 279' E. of Fire Hydrant on NE Corner of Ellenwood Dr. & Merton Dr.

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/29/63

SIZE OF CASING DEPTH 2" x 2" Thinwell Galv. 27' STRUCK WATER AT 17.0 feet

PERFORATIONS Bottom 20 feet SIZE 1/32" to 1/8" No. -

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS -

SURFACE ELEV. 551.80 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
0 - 3		Dry very hard brown silty sand w/some gravel			
3 - 16½		Dry to damp hard red brown silty sand w/some gravel			
16½ - 17		Wet blue silty clay			
17 - 21-1/4		Saturated red brown silty sand w/some gravel			
21-1/4 - 23		Saturated brown green silty clay			
23 - 24½		Saturated red brown clayey silty sand			
24½ - 28		Saturated highly pervious red brown gravelly silty sand			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/24/63 SHEET 1 OF 1

FORM 263 65981 11-57 10M △ SPO

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN Eagle Rock

DWR NO. ____ S & M

OTHER NOS #7 Eagle Rock
LA Grid 3986F

LOCATION 160' N. of N. P.L. Colorado Blvd. & 25' E. Centerline Eagle Rock Blvd.

OWNER SWRB ADDRESS

DRILLED BY Keeler Drilling Co. ADDRESS

DRILLING METHOD Rotary GRAVEL PACKED DATE COMPLETED 9/16/63

SIZE OF CASING DEPTH 6" STRUCK WATER AT

PERFORATIONS 60.5' to 109' SIZE NO.

WATER LEVEL BEFORE PERFORATING AFTER

TEST DATA: DISCHARGE G. P. M. DRAWDOWN FT. HOURS RUN

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS SWRB

SURFACE ELEV. 577.50 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
0 - 13		Arkosic silty sand w/some gravel & clay			
13 - 14		Brown silty clay			
14 - 19		Arkosic silty sand w/some gravel & clay			
19 - 20		Lense of brown silty clay			
20 - 30½		Arkosic silty sand w/lenses of red brown silty clay			
30½ - 31		Hard pan			
31 - 31-¼		Blue silty clay			
31-¼ - 40		Brown silty sand w/some gravel & lenses of silty clay			
40 - 41		Brown silty clay			
41 - 46½		Brown silty sand w/some gravel & lenses of silty clay			
46½ - 49½		Silty clay			
49½ - 60		Brown silty sand w/some gravel & lenses of silty clay			
60 - 62		Silty clay w/some sand			
62 - 63½		Silty sand w/lenses of clay			
63½ - 65		Silty clay very little sand			
65 - 65½		Gravel			
65½ - 68		Silty sand w/lenses of sandy silty clay to silty clay			
68 - 73		Silty clay w/some sand & small gravel			
73 - 75		Silty clayey sand			
75 - 86		Sandy silty clay			
86 - 86¼		Gravel			
86¼ - 91		Sandy silty clay			
91 - 91¼		Gravel			
91¼ - 94		Sandy silty clay to silty sand			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 9/10/63 SHEET 1 OF 2

FORM 263, 65981 11-57 10M △ SPO

REGION _____ STATE WATER RIGHTS BOARD BASIN _____

COUNTY _____ STATE OF CALIFORNIA DWR No. _____ B & M

NEAR _____ OTHER Nos. #7 Eagle Rock

LA Grid 3986F

(Continued)

WELL LOG

LOCATION _____

OWNER _____ ADDRESS _____

DRILLED BY _____ ADDRESS _____

DRILLING METHOD _____ GRAVEL PACKED _____ DATE COMPLETED _____

SIZE OF CASING DEPTH _____ STRUCK WATER AT _____

PERFORATIONS _____ SIZE _____ No. _____

WATER LEVEL BEFORE PERFORATING _____ AFTER _____

TEST DATA: DISCHARGE G. P. M. _____ DRAWDOWN FT. _____ HOURS RUN _____

OTHER DATA AVAILABLE: WATER LEVEL RECORD _____ ANALYSIS _____

SURFACE ELEV. _____ DATUM _____ SOURCE OF INFORMATION _____

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
94 - 94½		Gravel			
94¼ - 97½		Sandy silt clay to silty sand			
97½ - 97-3/4		Gravel			
97-3/4 - 101		Sandy silty clay			
101 - 102		Fragments of black shale			
102 - 104		Coarse sand - boring taking drilling fluid			
104 - 108		Gravel to sandy gravel			
108 - 112		Cemented conglomerate very hard drilling			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 9/10/63 SHEET 2 OF 2

FORM 263. 65981 11-57 10M △ SPO

REGION

COUNTY Los Angeles

NEAR Eagle Rock

STATE WATER RIGHTS BOARD

STATE OF CALIFORNIA

WELL LOG

BASIN San Fernando-Eagle Rock

DWR No. ____ B & M

OTHER Nos. #1 Eagle Rock Test Hole - LA Grid 3987E

LOCATION In South Parkway N. Ave 47 8' W. of Curbline and 130' N. of York Blvd. P.L.

OWNER SWRB ADDRESS

DRILLED BY SWRB ADDRESS

DRILLING METHOD 3" Hand Auger GRAVEL PACKED - DATE COMPLETED 7/18/63

SIZE OF CASING DEPTH 2" x 2" Thinwall Galv. 16# STRUCK WATER AT 6.5'

PERFORATIONS Entire length SIZE 1/32"to1/8" No.

WATER LEVEL BEFORE PERFORATING - AFTER -

TEST DATA: DISCHARGE G. P. M. - DRAWDOWN FT. - HOURS RUN -

OTHER DATA AVAILABLE: WATER LEVEL RECORD SWRB ANALYSIS -

SURFACE ELEV. 506.18 DATUM USGS SOURCE OF INFORMATION SWRB Levels

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICK-NESS	SP. YIELD %	
0 - 5		Dry red-brown gravelly silty sand			
5 - 6½		Wet red-brown gravelly silty sand			
6½ - 11		Saturated red-brown silty sand			
11 - 11½		Saturated red-brown silty sand w/about 5 percent clay			
11½ - 12½		Saturated red-brown loose gravelly silty sand			
12½ - 13½		Saturated red-brown silty sand w/about 30 percent clay			
13½ - 15		Saturated red-brown gravelly silty sand			
15 - 17		Saturated clean sand w/some gravel			

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY ALF DATE 7/18/63 SHEET 1 OF 1

FORM 263, 65981 11-57 10M △ SPO

ELECTRIC LOG

WELL: EAGLE ROCK No.7 (3986F)

DATE: SEPT. 16, 1963

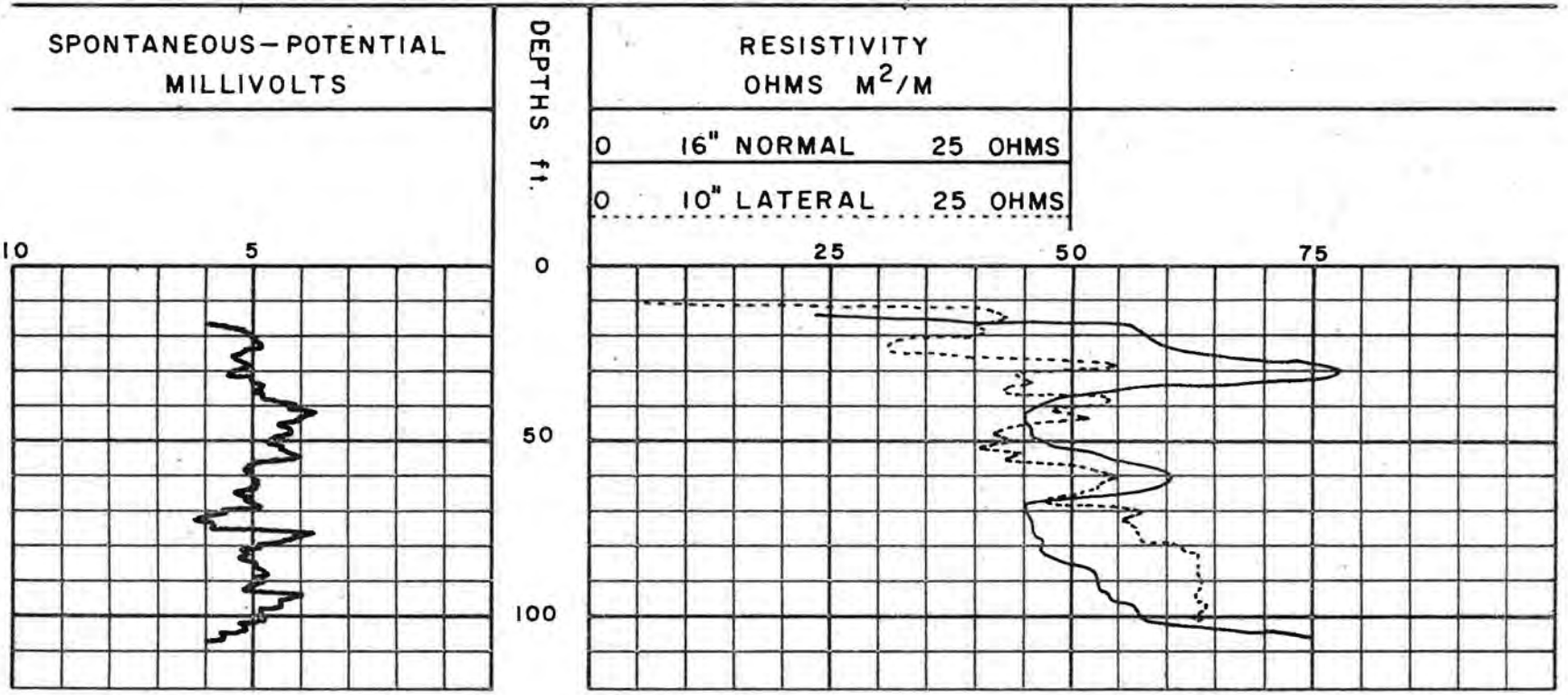
LOGGED BY: L.A.C.F.C.D.

OPERATOR: C.C.C.

LOCATION OF WELL: 130'± N'ly Colorado Blvd.
25'± E'ly of centerline of Eagle Rock Blvd.
(between curb and sidewalk).

REF. ELEV. 578.63

Rm = 12 OHMS M^2/M at 77° F.



GROUND WATER LEVELS AT WELLS

State Water Rights Board

#2 Eagle Rock Test Hole 3977

Log SWRB Files

Description So.Pkwy.Delevon Dr.
6' N.of S.P/L - 30' E. of E.P/L
West Ave 41

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch reducer

Elevation of Reference Point: 475.49 Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-19-63	3:00 P	Al. F.	7.40		
7-21-63	9:15 P	"	7.50		
7-23-63	9:15 A	"	7.38		
7-24-63	9:15 A	"	7.40		
7-25-63	3:40 P	"	7.38		
7-26-63	2:15 P	"	7:41		
7-27-63	10:20 A	"	7.39		
7-28-63	5:39 P	"	7.39		
7-29-63	1:10 P	"	7.39		
7-30-63	10:15 A	"	7.39		
7-31-63	3:50 P	W.C.	7.35		
8- 1-63	3:45 P	D.J.L.	7.39		
8- 2-63	3:55 P	W.C.	7.30		
8- 5-63	8:50 A	W.C.	7.45		
8- 5-63	3:10 P	W.C.	7.45		
8- 6-63	3:43 P	D.J.L.	7.43		
8- 9-63	2:45 P	W.C.	7.43		
8-15-63	2:35 P	D.J.L.	7.42		
8-27-63	4:08 P	D.J.L.	7.44		
9- 5-63	3:30 P	D.J.L.	7.57		
9-16-63	9:05 A	W.C.	7.54		

#2 Eagle Rock Test Hole 3977

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9-25-63	12:00 P	W.C.	7.60		
10- 9-63	10:23 A	D.J.L.	7.69		
10-16-63	11:30 A	D.J.L.	7.69		Rained preceding night
10-22-63	1:35 P	W.C.	7.74		
10-30-63	2:05 P	W.C.	7.77		
11- 6-63	4:07 P	D.J.L.	7.78		Rained preceding morning
11-13-63	3:58 P	D.J.L.	7.82		
11-20-63	2:35 P	D.J.L.	7.62		Rained previous night
11-27-63	12:45 P	W.C.	7.74		
12- 4-63	4:15 P	D.J.L.	7.76		
12-11-63	1:55 P	D.J.L.	7.89		
12-18-63	2:00 P	W.C.	7.98		
12-26-63	3:30 P	D.J.L.	8.00		
1- 2-64	2:10 P	W.C.	8.10		
1- 9-64	11:35 A	D.J.L.	8.11		
1-16-64	11:30 A	D.J.L.	8.18		

State Water Rights Board

#5 Eagle Rock Test Hole 3977A

Log SWRB Files

Description CL of Pkwy of Eagle Rock Blvd. 160' of BC Alumni Ave.

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch reducer

Elevation of Reference Point: 485.47

Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-25-63	2:45 P	ALF	9.40		
7-26-63	2:08 P	"	5.94		
7-27-63	10:15 A	"	7.72		
7-28-63	5:30 P	"	8.01		
7-29-63	1:00 P	"	5.51		
7-30-63	10:10 A	"	7.69		
7-31-63	3:10 P	WC	5.80		
8- 1-63	2:35 P	DJL	5.46		
8- 2-63	2:50 P	WC	5.35		
8- 5-63	8:25 A	WC	3.91	- - - - -	Area recently watered
8- 5-63	2:40 P	WC	5.56		
8- 6-63	3:35 P	DJL	7.58		
8- 9-63	3:50 P	WC	7.95		
8-15-63	3:40 P	DJL	4.42	- - - - -	Area recently watered (Fill in hole very wet)
8-26-63	3:57 P	DJL	7.09		Rain on 9- 4-63
9- 5-63	3:16 P	DJL	4.61	- - - - -	New RP top of 1" pipe ca
9-16-63	8:40 A	WC	7.66		

#5 Eagle Rock Test Hole 3977A

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9-24-63	10:25 A	W.C.	8.46		
10- 9-63	10:00 A	D.J.L.	6.46		
10-16-63	11:05 A	D.J.L.	1.66- - - - - - - -		Ground in immediate area saturated from preceding night's rain which ceased 2-3 hrs. before obs.
10-23-63	1:55 P	W.C.	4.67		
10-30-63	1:25 P	W.C.	5.49		
11- 6-63	4:00 P	D.J.L.	1.55- - - - - - - -		Rained preceding morning Ground saturated.
11-13-63	3:53 P	D.J.L.	7.13		
11-20-63	2:30 P	D.J.L.	3.05- - - - - - - -		Rained previous night
11-27-63	12:00	W.C.	7.26		
12- 4-63	4:10 P	D.J.L.	7.80		
12-11-63	3:50 P	D.J.L.	8.13		
12-18-63	2:05 P	W.C.	7.64		
12-26-63	3:15 P	D.J.L.	8.25		
1- 2-64	1:40 P	W.C.	8.40		
1- 9-64	11:30 A	D.J.L.	8.60		
1-16-64	11:35 A	W.C.	8.55		

State Water Rights Board

#6 Eagle Rock Test Hole 3977B

Log SWRB Files

Description W. Pkwy Toland Rd. 1' E. of W. Sidewalk & 2.5' So. of E. Ave 44

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch Reducer

Elevation of Reference Point: 466.30 Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-26-63	2:20 P	ALF	8.63		
7-27-63	9:40 A	"	8.38		
7-28-63	5:00 P	"	8.47		
7-29-63	12:01 P	"	8.42		
7-30-63	9:30 A	"	8.35		
7-31-63	2:55 P	WC	8.36		
8- 1-63	3:57 P	DJL	8.47		
8- 2-63	2:30 P	WC	8.36		
8- 5-63	8:10 A	WC	8.30		
8- 5-63	2:25 P	WC	8.43		
8- 6-63	3:52 P	DJL	8.12		
8- 9-63	2:30 P	WC	8.04		
8-15-63	2:45 P	DJL	8.56		
8-27-63	3:10 P	DJL	8.90		
9- 5-63	2:38 P	DJL	8.98	- - - - - - - - -	New RP. Top of 1" Pipe Cap Also Rained 9-4-63
9-16-63	8:30 A	WC	8.58		

#6 Eagle Rock Test Hole 39778

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9-25-63	9:40 A	W.C.	7.96		
10- 9-63	10:16 A	D.J.L.	7.82		
10-16-63	11:15 A	D.J.L.	7.82	- - - - - - -	Rained preceding night.
10-23-63	1:50 P	W.C.	7.69		
10-30-63	1:10 P	W.C.	7.80		
11- 6-63	3:00 P	D.J.L.	7.89	- - - - - - -	Rained intermittently for 6 hrs. Ceased 3 hrs. before obs.
11-13-63	1:00 P	D.J.L.	7.44		
11-20-63	1:30 P	D.J.L.	7.53	- - - - - - -	Rained previous night
11-27-63	12:50 P	W.C.	6.48	- - - - - - -	Double checked
12- 4-63	1:00 P	D.J.L.	6.78	- - - - - - -	Double checked
12-11-63	2:55 P	D.J.L.	6.94		
12-18-63	2:40 P	W.C.	7.18		
12-26-63	3:25 P	D.J.L.	7.38		
1- 2-64	1:30 P	W.C.	7.64		
1- 9-64	10:35 A	D.J.L.	7.82		
1-16-64	12:05 P	W.C.	7.80		

3986B — R.P. Top of 1" Pipe
El. R.P. 523.85

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
7-24-63	9:40 A	ALF	6.22		
7-25-63	5:30 P	"	7.66		
7-26-63	2:00 P	"	7.05		
7-27-63	10:08 A	"	6.62		
7-28-63	5:35 P	"	3.70		
7-29-63	12:55 P	"	4.02		
7-30-63	10:00 A	"	5.17		
7-31-63	3:40 P	WC	7.35		
8- 1-63	2:45 P	DJL	7.75		
8- 2-63	3:50 P	WC	7.37		
8- 5-63	8:55 A	WC	3.55		
8- 5-63	3:15 P	WC	4.53		
8- 6-63	3:25 P	DJL	6.28		
8- 9-63	3:10 P	WC	7.45		
8-15-63	3:05 P	DJL	8.37		
8-27-63	3:48 P	DJL	6.68		
9-15-63	3:10 P	DJL	8.39		
9-16-63	9:00 A	WC	4.12		
10- 9-63	9:50 A	DJL	7.71		
10-16-63	11:00 A	DJL	7.50		Rained preceding night
10-23-63	2:25 P	WC	7.41		
10-30-63	1:30 P	WC	7.33		
11- 6-63	3:55 P	DJL	8.18		Rained preceding morning
11-13-63	3:45 P	DJL	7.07		
11-20-63	2:25 P	DJL	6.80		Rained preceding night
11-27-63	12:40 P	WC	6.50		
12- 4-63	4:05 P	DJL	6.69		
12-11-63	3:45 P	DJL	7.69		
12-18-63	2:10 P	WC	7.63		
12-26-63	2:10 P	DJL	5.14		Day after holiday
1- 2-64	1:45 P	WC	5.43		
1- 9-64	11:25 A	DJL	6.43		
1-17-64	11:40 A	WC	5.28		

State Water Rights Board

#3 Eagle Rock Test Hole 3986D

Log SWRB Files

Description S.Pkwy Yosemite Dr. 18" N. of Sidewalk- 100' West of W.P/L Maywood Ave at Yosemite

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch Reducer

Elevation of Reference Point: 565.33 Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-22-63	4:00 P	ALF	23.00		
7-23-63	9:30 A	"	22.99		
7-24-63	9:48 A	"	22.90		
7-25-63	3:05 P	"	22.90		
7-26-63	1:20 P	"	22.92		
7-27-63	9:55 A	"	23.02		
7-28-63	5:18 P	"	22.95		
7-29-63	12:25 P	"	22.76		
7-30-63	9:45 A	"	22.91		
7-31-63	3:25 P	WC	22.96		
8- 1-63	3:12 P	DJL	22.95		
8- 2-63	3:00 P	WC	22.95		
8- 5-63	8:35 A	WC	22.35		
8- 5-63	2:45 P	WC	22.97		
8- 6-63	3:08 P	DJL	22.95		
8- 9-63	3:00 P	WC	23.00		
8-15-63	3:25 P	DJL	23.02		
8-27-63	3:30 P	DJL	22.98		

#3 Eagle Rock Test Hole 3986D

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9- 5-63	2:55 P	D.J.L.	- - - - - - - - - - - - - - - -		Hole is blocked (dirt)
9-16-63	8:40 A	W.C.	21.3 - - - - - - - - - -		Dry
10- 9-63	11:43 A	D.J.L.	21.27- -	- - - - - - - -	Dry
10-16-63	10:55 A	D.J.L.	21.25- -	- - - - - - - -	Dry (damp dirt at bottom)
10-23-63	2:00 P	W.C.	21.25- -	- - - - - - - -	Dry
11- 6-63	3:50 P	D.J.L.	21.25- -	- - - - - - - -	Dry (damp dirt at bottom)
11-13-63	3:15 P	D.J.L.	21.27- -	- - - - - - - -	Dry (damp dirt at bottom)
11-20-63	1:45 P	D.J.L.	21.27- -	- - - - - - - -	Dry (damp dirt at bottom)
11-27-63	12:08 P	W.C.	21.27- -	- - - - - - - -	Dry (damp dirt at bottom)
12- 4-63	3:20 P	D.J.L.	21.32- -	- - - - - - - -	Dry (damp dirt at bottom)
12-11-63	3:05 P	D.J.L.	21.32- -	- - - - - - - -	Dry (damp dirt at bottom)
12-26-63	3:10 P	D.J.L.	21.3 - -	- - - - - - - -	Dry (damp dirt at bottom)
1- 9-64	10:46 A	D.J.L.	21.32- -	- - - - - - - -	Dry (damp dirt at bottom)

State Water Rights Board

#4 Eagle Rock Test Hole 3986E

Log SWRB Files

Description N.Pkwy Merton Dr. 5.5' S. of N. PL & 279' E.of Fire Hydrant NE Cor.Ellenwood Dr. & Merton Dr.

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch Reducer

Elevation of Reference Point: 551.80 Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-24-63	3:30 P	ALF	17.01		
7-25-63	3:15 P	"	12.81		
7-26-63	1:50 P	"	12.78		
7-27-63	10:02 A	"	12.81		
7-28-63	5:25 P	"	12.81		
7-29-63	12:35 P	"	12.93		
7-30-63	9:55 A	"	12.9		
7-31-63	3:35 P	WC	12.9		
8- 1-63	3:55 P	DJL	12.81		
8- 2-63	3:10 P	WC	12.81		
8- 5-63	8:40 A	WC	12.9		
8- 5-63	2:50 P	WC	12.94		
8- 6-63	3:15 P	DJL	12.88		
8- 9-63	3:00 P	WC	12.88		
8-15-63	3:15 P	DJL	12.95		
8-27-63	3:39 P	DJL	12.95		
9- 5-63	3:03 P	DJL	12.97	- - - - - - -	New RP top of 1" Pipe Cap Rained on 9- 4-63
9-16-63	8:45 A	WC	13.40		

#4 Eagle Rock Test Hole 3986E

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9-24-63	10:05 A	W.C.	13.05		
10- 9-63	9:43 A	D.J.L.	13.19		
10-16-63	10:45 A	D.J.L.	13.19- - - - - - - -		Rained preceding night
10-23-63	2:20 P	W.C.	13.14		
10-30-63	1:35 P	W.C.	13.25		
11- 6-63	3:45 P	D.J.L.	13.21- - - - - - - -		Rained preceding morning
11-13-63	3:40 P	D.J.L.	13.34- - - - - - - -		
11-20-63	2:15 P	D.J.L.	12.58- - - - - - - -		Rained all previous night
11-27-63	12:30 P	W.C.	12.98		
12- 4-63	3:55 P	D.J.L.	13.16		
12-11-63	3:38 P	D.J.L.	13.30		
12-18-63	2:15 P	W.C.	13.40		
12-26-63	2:23 P	D.J.L.	13.32		
1- 2-64	1:50 P	W.C.	13.35		
1- 9-64	11:20 A	D.J.L.	13.51		
1-16-64	11:45 A	W.C.	13.55		

State Water Rights Board

#7 Eagle Rock 3986F

Log SWRB

Description 160' N. of N.P/L Colorado Blvd. and 25' E. of C/L Eagle Rock Blvd.

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 6" Casing

Elevation of Reference Point: 578.63 Datum:

Elevation of Ground Surface:

NOTE: Recorder Charts are available beginning 9-25-63

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
1963					
9-24	9:30 A	WC	36.8		
9-25	1:30 P	JF&JS	36.70		
10- 2	10:30 A	DJL	36.80		
10- 9	11:30 A	DJL	36.78		
10-16	10:30 A	DJL	36.96		
10-23	2:05 P	WC	36.94		
10-30	1:45 P	WC	36.95		
11- 6	3:30 P	DJL	36.82		
11-13	3:25 P	DJL	36.89		
11-20	2:00 P	DJL	36.76		
12- 4	3:35 P	DJL	36.98		
12-11	3:20 P	DJL	37.12		
12-18	2:15 P	WC	37.20		
12-26	2:45 P	DJL	37.11		
1964					
1- 2	1:55 P	WC	37.14		
1- 9	11:00 A	DJL	37.41		
1-16	11:50 P	WC	37.41		
1-23	3:25 P	DJL	37.40		
1-30	1:25 P	WC	37.36		
2- 6	3:15 P	DJL	37.42		
2-13	3:35 P	DJL	37.41		

State Water Rights Board

#1 Eagle Rock Test Hole 3987G

Log SWRB Files

Description W.Pkwy N.Ave 47- 8' W. of Curbline- 130' N. of York Blvd. Pl

Character of Soil

Surface:

Vegetation:

Description of Reference Point: Top of 3/4 inch Reducer

Elevation of Reference Point: 506.18 Datum:

Elevation of Ground Surface:

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION TO WATER SURFACE	REMARKS
7-18-63	2:40 P	ALF	5.4		
7-19-63	9:00 A	"	5.22		
7-21-63	9:00 A	"	5.05		
7-23-63	9:25 A	"	5.21		
7-25-63	3:25 P	"	5.28		
7-26-63	1:35 P	"	5.28		
7-27-63	9:47 A	"	5.29		
7-28-63	5:05 P	"	5.29		
7-29-63	12:15 P	"	5.24		
7-30-63	9:38 A	"	5.23		
7-31-63	3:00 P	WC	5.30		
8- 1-63	3:34 P	DJL	5.28		
8- 2-63	2:40 P	WC	5.24		
8- 5-63	8:20 A	WC	5.32		
8- 5-63	2:35 P	WC	5.44		
8- 6-63	2:45 P	DJL	5.34		
8- 9-63	2:35 P	WC	5.36		
8-15-63	2:53 P	DJL	5.39		
8-26-63	3:20 P	DJL	5.39		
9- 5-63	2:45 P	DJL	5.25	- - - - - - - -	Rained day before. New RP-Top of 1" Pipe Cap.
9-16-63	8:35 A	WC	5.37		

#1 Eagle Rock Test Hole 3987G

(Continued)

DATE	TIME	OBSERVER	DEPTH TO WATER SURFACE	ELEVATION OF WATER SURFACE	REMARKS
9-24-63	11:20 A	WC	5.38		
10- 9-63	10:09 A	DJL	5.49		
10-16-63	11:22 A	DJL	5.43		Rained previous night
10-23-63	1:45 P	WC	5.45		
10-30-63	1:15 P	WC	5.55		
11- 6-63	3:13 P	DJL	5.51		Rained intermittently for about 8 hrs. Ceased 2 hrs. before.
11-13-63	3:08 P	DJL	5.47		
11-20-63	1:40 P	DJL	5.07		Rained previous night
11-27-63	12:55 P	WC	5.31		
12- 4-63	3:10 P	DJL	5.48		
12-11-63	3:00 P	DJL	5.59		
12-18-63	2:35 P	WC	5.60		
12-26-63	3:20 P	DJL	5.72		
1- 2-64	1:35 P	WC	5.80		
1- 9-64	10:40 A	DJL	5.85		
1-16-64	12:05 P	WC	5.88		

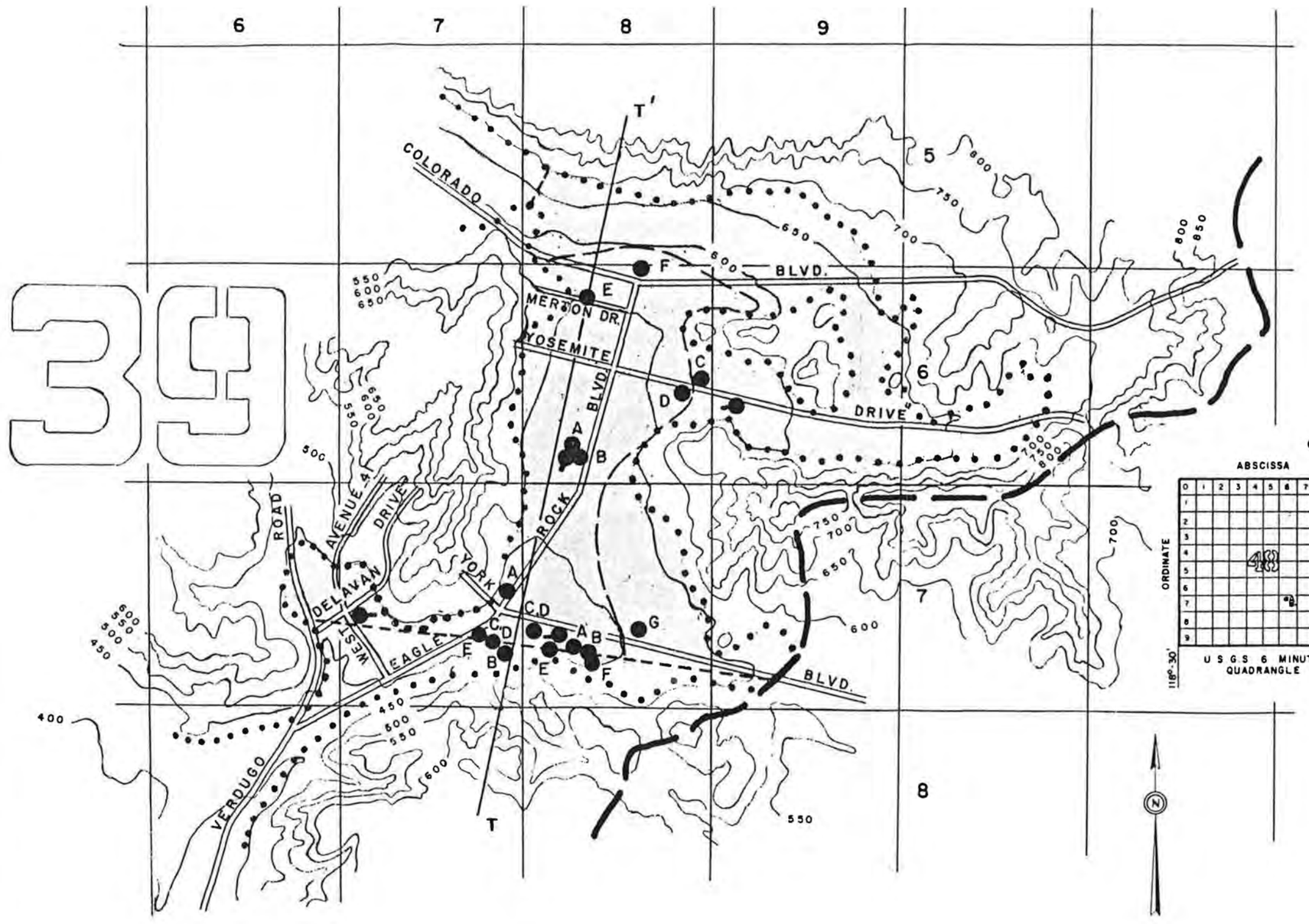
MINERAL ANALYSES OF
GROUND WATER

MINERAL ANALYSES OF GROUND WATER-EAGLE ROCK SUBAREA

Well Number	Date Sampled	ECx10^6 at 25°C	pH	Mineral Constituents in Parts per Million / Equivalents per Million												Total Dissolved Solids ppm	Source of Analysis
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B	ABS		
3977B[a]	9-17-63	1825	7.3	194 9.72	79 6.51	102 4.43	1.1 0.03	0 0	721 11.81	266 5.55	124 3.50	0 0	0.8 0.04	0.18	0.5	1236	SWRB
3986F[a]	9-19-63	1289	7.8	122 6.09	79 6.51	44 1.90	1.6 0.04	0 0	312 5.12	257 5.36	110 3.10	42 0.68	0.7 0.04	0.05	0.0	937	SWRB
	3-3 -64	1120	8.1	134 6.68	67 5.49	46 2.00	1.2 0.03	0 0	329 5.40	264 5.51	106 3.00	31 0.50	0.2 0.01	0.09		980	SWRB
3987G[a]	9-17-63	1220	7.2	86 4.29	56 4.64	80 3.47	2.5 0.06	0 0	341 5.59	192 3.99	94 2.66	0 0	0.4 0.02	0.10	1.3	822	SWRB
3987D[b]	8-4-64	638	7.3	48 2.40	24 1.97	52 2.26	0.1 0.03	0 0	240 3.94	53 1.10	45 1.27	27 0.44	0.9 0.05	0.08	0.0	380	SWRB

[a] Test hole drilled by Referee in 1963.

[b] Deep Rock Artesian Water Company well.



LEGEND

- LOCATION OF WELL (A B)
- UPPER LOS ANGELES RIVER AREA WATERSHED BOUNDARY
- BOUNDARY OF CLAY CAP
- BOUNDARY OF HYDROLOGIC SUBAREA
- T—T' LOCATION OF GEOLOGIC CROSS SECTION. (See Plate 2S)
- BOUNDARY OF VALLEY FILL
- 400 LINE OF EQUAL ELEVATION OF GROUND SURFACE
- EAGLE ROCK SUBAREA

REFERENCE: CONTOURS BASED ON U.S.G.S. QUADS
DATUM IS MEAN SEA LEVEL
CONTOUR INTERVALS 50 FEET

GUIDE TO WELL NUMBERING SYSTEM

EXAMPLE WELL Nº 4867

48	Represents number of 6 minute quadrangle
6	Represents abscissa (third digit)
7	Represents ordinate (fourth digit)
⊕	Represents basic or first well in square
⊕A,B,etc	Represents other wells in square

STATE OF CALIFORNIA
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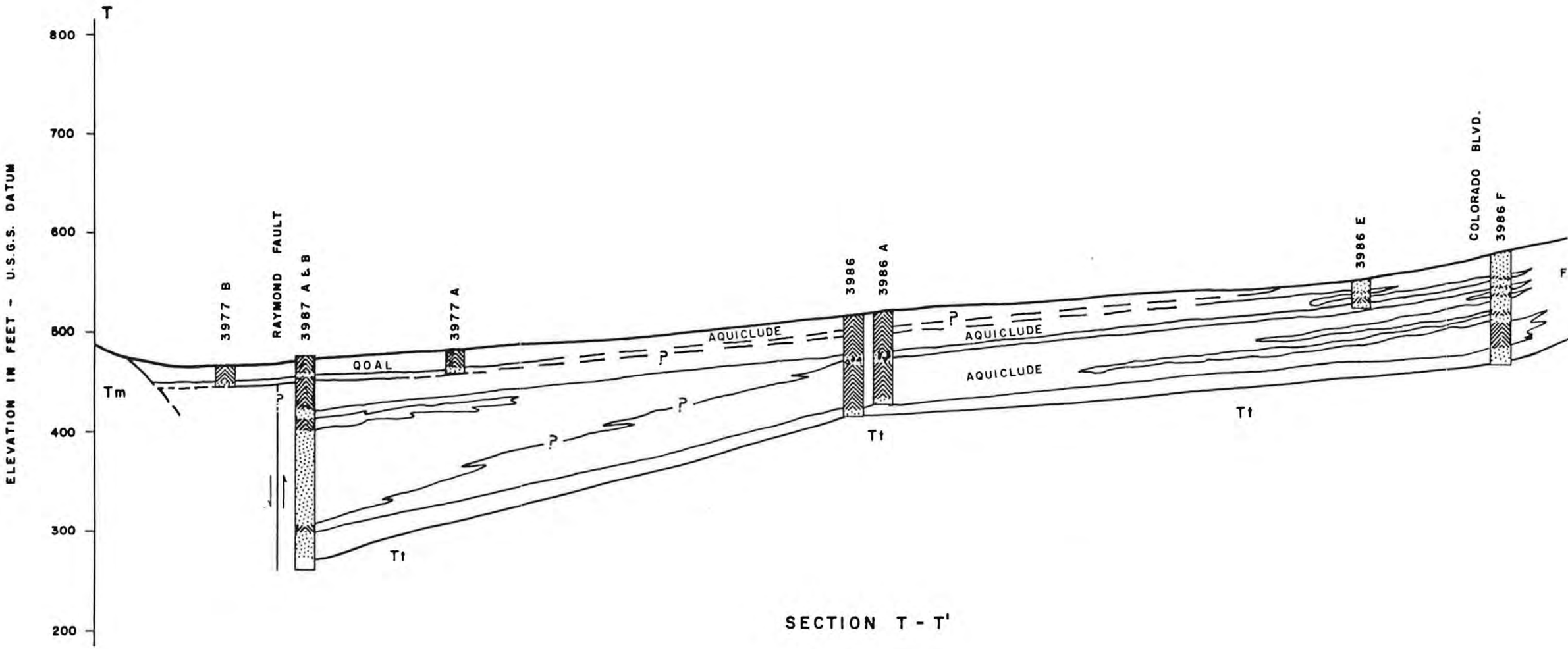
SAN FERNANDO VALLEY REFERENCE

EAGLE ROCK SUBAREA

LOCATION OF WELLS

SCALE

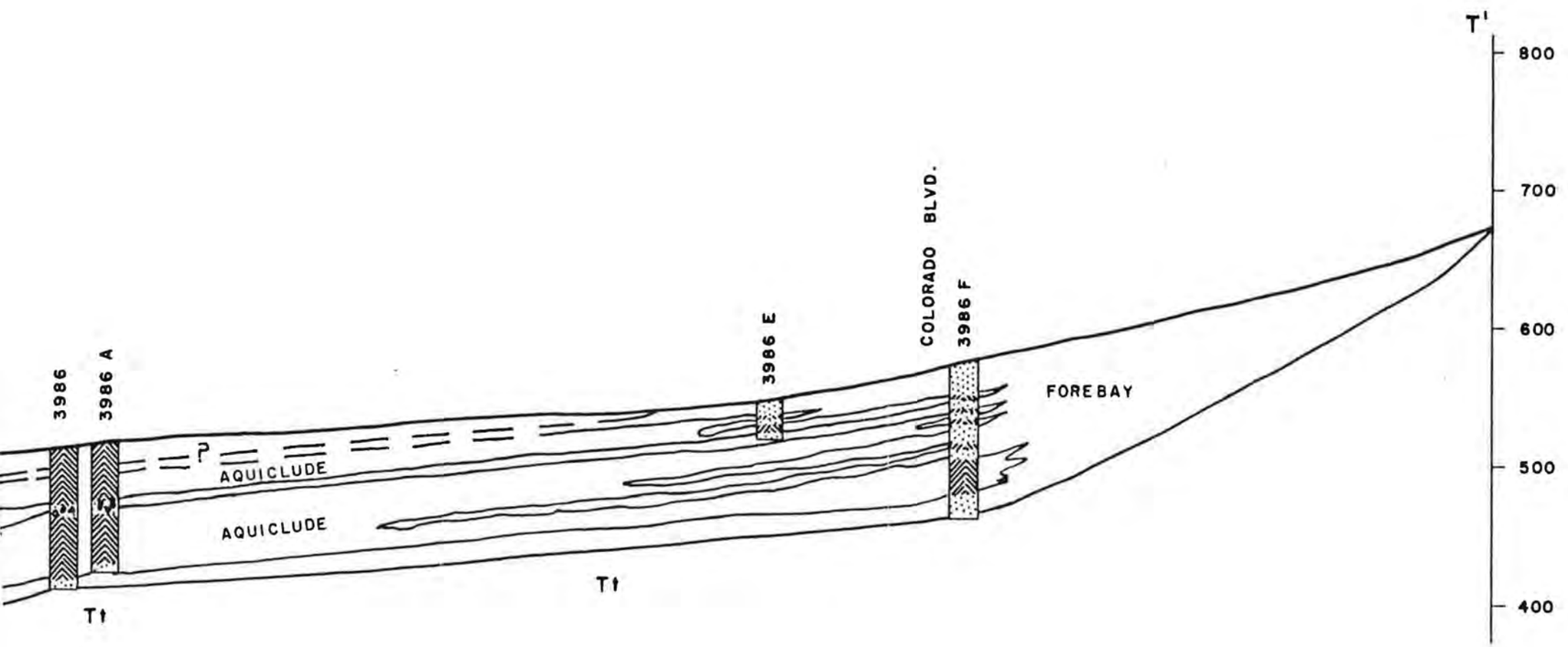
0 1/2 MILE
1000 0 1000 4000 FEET



SECTION T - T'

HORIZONTAL SCALE

0 500 1,000 FEET



CTION T - T'

ZONTAL SCALE

500 1,000 FEET

LEGEND

- CLAY
- SAND
- GRAVEL
- SAND AND GRAVEL

WATER-BEARING
- Qal RECENT ALLUVIUM
- Qoal OLDER ALLUVIUM - TERRACE DEPOSITS
- Qs SAUGUS FORMATION

NONWATER-BEARING
- Tp PICO FORMATION
- Tr REPETTO FORMATION
- Tm MODELO (PUENTE) FORMATION
- Tt TOPANGA FORMATION
- Bc BASEMENT COMPLEX

NOTE:
SEE PLATE 1-S FOR LOCATIONS

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GEOLOGIC CROSS SECTION T-T', EAGLE ROCK SUBAREA