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UNITED STATES DEPARTMENT OF THE INTERIOR

**WATER LEVELS AND ARTESIAN PRESSURE
IN OBSERVATION WELLS IN THE
UNITED STATES IN 1942**

**PART 6. SOUTHWESTERN STATES AND
TERRITORY OF HAWAII**

Prepared in cooperation with the States of
ARIZONA, CALIFORNIA, and NEW MEXICO, the Territory of HAWAII
and other agencies

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HYDROLOGY

UNITED STATES DEPARTMENT OF THE INTERIOR

Harold L. Ickes, Secretary

GEOLOGICAL SURVEY

W. E. Wrather, Director

Water-Supply Paper 949

**WATER LEVELS AND ARTESIAN PRESSURE
IN OBSERVATION WELLS IN THE
UNITED STATES IN 1942**

**PART 6. SOUTHWESTERN STATES AND
TERRITORY OF HAWAII**

BY

**O. E. MEINZER, L. K. WENZEL
and others**

**Prepared in cooperation with the States of
ARIZONA, CALIFORNIA, and NEW MEXICO
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and other agencies**



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WATER LEVELS AND ARTESIAN PRESSURE IN OBSERVATION WELLS IN THE UNITED STATES IN 1942

Part 6. SOUTHWESTERN STATES

INTRODUCTION

By O. E. Meinzer and L. K. Wenzel

The rock formations of the earth are great natural underground reservoirs in which a part of the water derived from rain and snow is stored to supply wells and springs and to maintain the flow of streams during periods of fair weather. Water levels in wells register the stages of these natural reservoirs; they show the extent to which water supplies are depleted by drought or by heavy pumping for public waterworks, irrigation, or industrial uses and the extent to which they are replenished in seasons of abundant rainfall or melting snow. The changes in pressure recorded on flowing wells indicate depletion or replenishment of the artesian reservoirs.

The regular publication of records of water level and artesian pressure in the United States was begun by the Geological Survey in 1935 and has continued yearly since. The records for the entire country were published in a single volume each year through 1939. Beginning with 1940 the records have been published in six volumes, covering the northeastern, southeastern, north-central, south-central, northwestern, and southwestern sections of the country. Hawaii is included in the southwestern section. (See fig. 1). The following table gives the numbers of these reports. This series of water-supply papers is in a sense an inventory, year by year, of the ground-water supplies of such parts of the country as have been covered.

Water-supply papers on water levels and artesian pressure
in observation wells in the United States

Year	North- eastern States	South- eastern States	North- central States	South- central States	North- western States	South- western States and Hawaii
1935	777	777	777	777	777	777
1936	817	817	817	817	817	817
1937	840	840	840	840	840	840
1938	845	845	845	845	845	845
1939	886	886	886	886	886	886
1940	906	907	908	909	910	911
1941	936	937	938	939	940	941
1942	944	945	946	947	948	949

The present volume covers the southwestern States and the Territory of Hawaii and gives records of water level and artesian head in about 2,364 observation wells of the Geological Survey and cooperating agencies in Arizona, California, Hawaii, and New Mexico. Of these wells, 71 are equipped with automatic water-stage recorders. For some wells not previously reported complete records of water level are given in this volume, including those for the years before 1942. For wells whose previous records have been published, this volume gives only the current records. If a complete description of a well has been published in a previous report, only the well number or the well number and a brief identifying description are given in this report. The numbers in parentheses immediately following a well number are those of the water-supply papers in which earlier records of that well are given and the pages on which they appear. An asterisk indicates that a description of the well is given in the paper whose number is so marked. This report includes about 12,622 individual determinations of water level and artesian pressure.

The water levels in this report are given with reference to datum planes of different kinds. Some are given in depths below the measuring point, which is a recognized reference mark at or near the top of the well from which the depth to water level is usually measured; others are given in height above an assumed datum plane; and still others are given in feet below the land-surface datum, which is a precise plane that approximates the land surface in the vicinity of the well.

Acknowledgments for effective services in the preparation of this report are due Misses Dorothy M. Ireland and Thelma Walls, who typed the offset copy, and to Mrs. Bertha Dele, who prepared the illustrations.

Network of key observation wells

During 1942 the Geological Survey established a network of key observation wells in order to make available current information on general ground-water conditions over the country. The wells were selected because the fluctuations of water level in them are believed to be typical and representa-

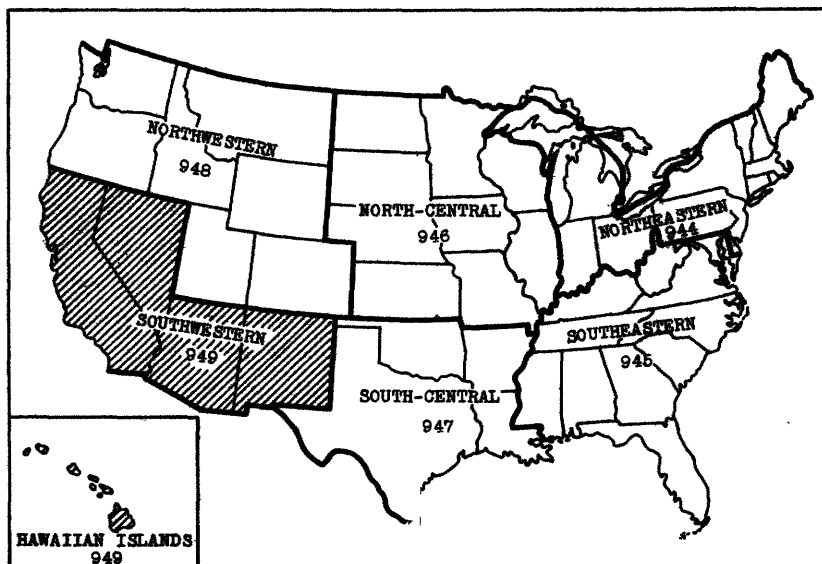


Figure 1.--Outline map of the United States, showing sections of the country covered by the six water-supply papers on water levels and artesian pressure in observation wells in 1942. The shaded section represents the part of the country covered by this volume.

tive of the general fluctuations that occur in the parts of the country in which the wells are situated. At the end of 1942 the network included about 130 wells in 40 States. About 40 of the wells were established expressly for the network in 1942; the other 90 were selected from wells measured regularly in connection with cooperative ground-water investigations. The coverage of the country is still far from adequate, and it is expected that some wells not now included will be added to the network from time to time.

GENERAL SUMMARY OF CHANGES IN GROUND-WATER LEVEL IN 1942
IN THE SOUTHWESTERN PART OF THE UNITED STATES

In 1942 the precipitation was below normal in Arizona and New Mexico, normal in California, and somewhat above normal in Hawaii. As would be expected from this difference in precipitation from place to place, the fluctuations of water level during 1942 also differed from place to place. The fluctuations of water level and artesian head in wells depend, however, on many factors besides the amount of precipitation. Consequently, it is usually not possible to find a simple relation between the changes in water level or artesian head and the departure from normal precipitation.

The following statements are taken chiefly from the interpretive texts that appear in this volume under the three States covered and the Territory of Hawaii. They summarize the changes in ground-water level and artesian head that occurred in 1942 in the parts of the underground reservoirs in the southwestern States and Hawaii that are tapped by the observation wells.

Arizona.--The ground-water level in Graham County, Safford Valley, was about 0.4 foot higher at the end of 1942 than at the end of 1941. The pumpage for irrigation during the year was 18,900 acre-feet, or more than twice the pumpage during 1941. The fact that the water levels were higher at the end of 1942 than at the end of 1941 in spite of the greatly increased pumpage may be explained as the delayed effect of the recharge that occurred in the wet winter of 1940-41 and in September 1941.

California.--The water level in well 42a at Baldwin Park, a key observation well in the San Gabriel River Basin, declined from a mean daily altitude of 312.82 feet, the highest of the year, reached on January 1, to a low mean daily altitude of 295.16 feet, reached on December 30. On December 31, 1942, the mean daily altitude of the water level was 295.17 feet--17.65 feet below the high stage of the year and 17.70 feet below the stage of December 31, 1941. The water level in the Williams well, a key well in the Santa Ana Basin, showed a net decline of 11.50 feet. Water levels in 10 wells distributed over the San Jacinto Valley indicate a mean decline of 4.2 feet. The change ranged from a rise of 3.54 feet to a decline of 15.39 feet. Water levels in five observation wells in the Tia Juana River Basin registered an average decline of 1.24 feet.

In the San Diego River Basin water levels declined from October 1941 to November 1942. In a well at El Monte Park the decline was 9.54 feet; in six wells above Vicente Creek the net average decline was 2.43 feet, in 8 wells below San Vicente Creek it was 1.89 feet; and in 6 wells in Mission Valley it was 1.38 feet.

The water levels in four observation wells in the San Dieguito River Basin showed a net average decline of 2.04 feet from November 1941 to November 1942.

Water levels in the Mojave River Basin declined generally throughout the year, except in the valley between Victorville and Hodge and in the Lenwood-Barstow area, where no definite changes were noticeable.

In Antelope Valley, the downward trend of the water levels which has been in effect for several years continued during 1942. The stages reached in December 1942 ranged from 1 to 8 feet lower than those reached in December 1941 and averaged about 4 feet lower.

The water levels in 24 observation wells in the Mokelumne area, San Joaquin County, rose an average of 2.02 feet during the period January 1 to May 31 and declined an average of 1.30 feet during the period June 1 to December 31. At the end of the year they averaged 0.72 foot higher than at the end of 1941.

Territory of Hawaii.--Water levels in most wells on Oahu, Hawaii, Lanai, and leeward Maui showed a net rise in 1941; those in wells on Kauai, Molokai, and windward Maui showed a decline. The average rainfall for the Territory was 92.10 inches, which is 13.40 inches above the average for 1941 and 7.7 inches above normal. The drought that started in 1940 ended in 1942. The total pumpage during 1942 was 184,462.67 million gallons, which is 20,238.21 million gallons less than during 1941.

New Mexico.--In the eastern part of the State the year 1942 was marked by a readjustment of water levels following the very heavy precipitation of 1941. In Portales Valley, Roosevelt County, and in the House area, Quay County, water levels declined somewhat in areas in which they rose considerably during the preceding year but continued to rise somewhat in areas in which their rises in the preceding year were small. In northern Lea County, where there are few irrigation wells, rises in water level that

began in 1941 continued in 1942; in the pumped areas the water levels declined. The shallow water table in the Roswell artesian basin declined in the heavily pumped areas but rose slightly in the margins of those areas. The artesian head of the water in the San Andres limestone in the Roswell artesian basin at the end of 1942 was at about the same level as at the end of the preceding year. In most of the heavily pumped Deming area, in the southwestern part of the State, water levels declined during 1942, indicating withdrawals of water in excess of recharge.

ARIZONA

INTRODUCTION

By S. F. Turner

The program of water-level measurements in Arizona, which forms part of a general investigation of the ground-water resources of the State, was continued during 1942 by the Geological Survey, United States Department of the Interior, in cooperation with the State Land Commissioner of Arizona, the United States Engineer Office of the War Department, and the Office of Indian Affairs of the Department of the Interior. The program in 1942 covered the Santa Cruz Valley, in Pima, Pinal, and Santa Cruz Counties; the Queen Creek area, in Maricopa and Pinal Counties; Safford Valley, in Graham County, and Duncan Valley, in Greenlee County.

Because of the reduction in personnel due to the war, the number of measurements in each observation well and, consequently, the total number in the State, were less in 1942 than in 1941. But the number of wells observed was greater, owing to the addition of some, not heretofore included, in the lower part of the Santa Cruz River Basin and in the Gila River Basin in the stretch from the Ashurst-Hayden Dam to the mouth of Santa Cruz River.

Since the beginning of the war there has been intermittent cooperation between the Geological Survey and the United States Engineer Office on the problem of water supply for the various existing and proposed camps and airfields. In order to determine the fluctuations of water level in wells at camps and airfields and to study the effect of these additional withdrawals on the water levels and total ground-water supplies of the areas in which they are situated, routine measurements of wells at the camps and airfields have been and will continue to be made.

During 1942 pumpage for irrigation increased in all the areas studied, the increases over the preceding year ranging from about 15 percent in Duncan Valley to about 115 percent in Safford Valley. These increases were the result of a dry year in 1942 as compared to 1941.

Records of all measurements of water level in Arizona in 1942, totaling 2,374 in 414 observation wells, are given in this report.

Preliminary tabulations containing information on the ground-water resources in several of the areas under investigation were released in mimeographed form during 1942. They are as follows:

Records of wells and springs, well logs, water analyses, and map showing location of wells and springs in Safford Valley, Graham County, Ariz., by R. B. Morrison, H. R. McDonald, and W. T. Stuart. July 10, 1942.

Records of wells and springs, well logs, water analyses, and map showing location of wells and springs in the Duncan-Virden Valley, Greenlee County, Ariz., and Hidalgo County, N. Mex., by R. B. Morrison and H. M. Babcock. September 1, 1942.

Records of wells and springs, well logs, water analyses, and map showing location of wells and springs in the Queen Creek area, Maricopa and Pinal Counties, Ariz., by H. M. Babcock and L. C. Halpenny. September 25, 1942.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

Observation wells in Arizona are listed alphabetically by counties and numerically within each county. If appropriate, the ground-water area is added after the county name. Complete descriptions are given only for newly added wells. The numbers in parentheses immediately following a well number indicate the water-supply papers in which earlier records of that well are given and the pages on which they appear. An asterisk indicates that a description of the well is given in that paper. The water level in each well is expressed in feet below a fixed measuring point unless otherwise indicated.

GRAHAM COUNTY (SAFFORD VALLEY)

By W. T. Stuart and R. L. Cushman

The observation-well program in Safford Valley, Graham County, begun in 1939, was continued during 1942 by the Federal Geological Survey in cooperation with the State Land Commissioner of Arizona and the Federal Office of Indian Affairs, although somewhat curtailed by the wartime reduction in personnel. The work included collecting data on the quantity of water pumped for irrigation and records on the experimental station, which was operated throughout the year.

In all, 1,636 measurements of water level were made in 189 wells, in one of which a weekly water-stage recorder was maintained. The average of these measurements shows that the ground-water level was about 0.4 foot higher at the end of 1942 than at the end of 1941. The pumpage for irrigation during the year was found to be 18,900 acre-feet, or more than

twice the pumpage during 1941. The fact that the water levels were higher at the end of 1942 than at the end of 1941 in spite of the greatly increased pumpage may be explained as the delayed effect of the recharge that occurred in the wet winter of 1940-41 and in September 1941.

The fluctuations of the water levels in several typical observation wells for the period of record, the total pumpage by months, and the monthly precipitation at Safford are shown by graphs in figure 2. The graphs show that the fluctuations in 1941 and 1942 were similar but that they were more pronounced in 1942. The greater fluctuations in the later year were caused by the combination of heavier pumping and good recharge. The graph for well 662, which is in the eastern and upper part of the valley, shows the fluctuations in a well isolated from pumping. This well was substituted in the program for well 433, a nearby well that went dry at the end of June 1942. (Graphs of well 433 appear in Water-Supply Papers 911 and 941.) In well 597, which is 2 miles west of Solomonsville, the fluctuations in 1942 are typical of those in a heavily pumped area near a canal. The graph for this well indicates a rise in water level in April as the result of irrigation recharge at the beginning of the growing season and a decline during the summer months as the result of heavy pumping. In well 616, which is south of Safford and near a canal, the fluctuations, as shown by the graph, reflect the effects of recharge from the canal and from the underflow of Stockton Creek and its tributary washes. The graph for well 282, which is near a canal west of Pima, shows the effect of canal and irrigation recharge on water level without the counter effect of nearby pumping. The graph for well 76, which is at the western end of the cultivated part of the valley, also shows fluctuations in an area away from pumped wells. In this well there was little change in the water level until June, and then there was a decline, owing to ground-water percolation into the river during low flow.

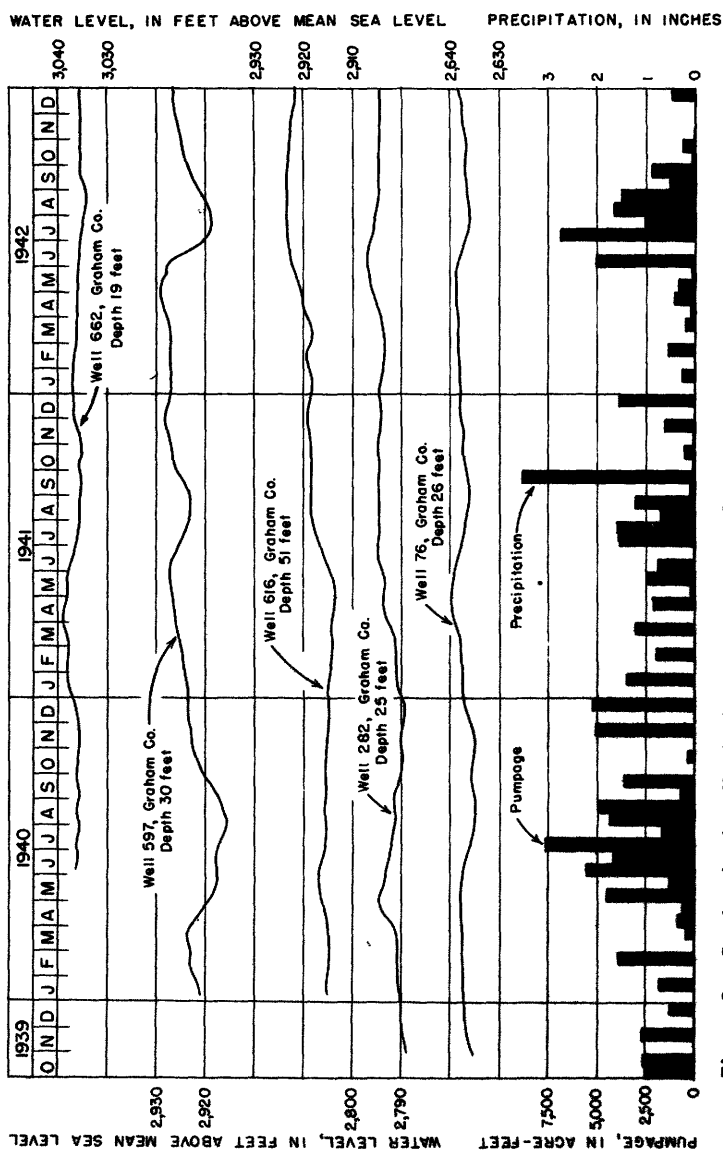


Figure 2.--Graphs showing fluctuations of water level in observation wells in Safford Valley, Graham County, Ariz.

Water-level measurements

1 (*911, p. 11; 941, p. 9). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

2 (*911, p. 11; 941, p. 9). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

3 (*911, p. 11; 941, p. 9). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

4 (*911, p. 11; 941, p. 9). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

5 (*911, p. 12; 941, p. 9). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

6 (*911, p. 12; 941, p. 11). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

7 (*911, p. 12; 941, p. 11). U. S. Indian Service. No measurements made in 1942; well covered by rising waters of San Carlos Reservoir.

8 (*911, p. 13; *941, p. 11). U. S. Indian Service on San Carlos Indian Reservation, at Calva, 840 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	7.03	May 29	8.32	Aug. 27	8.90	Nov. 27	8.56
Feb. 3	7.30	June 30	8.95	Sept. 28	8.70	Dec. 31	8.28
Mar. 3	7.48	July 29	9.14	Nov. 2	8.80		

9 (*911, p. 13; *941, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 400 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	6.09	May 1	6.67	July 29	8.04	Nov. 2	7.65
Feb. 3	6.30	28	7.35	Aug. 27	7.81	27	7.41
Mar. 3	6.43	June 30	7.90	Sept. 28	7.52	Dec. 31	7.17
Apr. 1	6.70						

10 (*911, p. 13; 941, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 250 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	4.67	May 1	5.94	July 30	6.92	Nov. 2	8.49
Feb. 3	5.07	29	6.22	Aug. 27	7.10	27	8.32
Mar. 3	5.37	June 30	6.59	Sept. 28	6.88	Dec. 31	7.35
Apr. 1	5.65						

11 (*911, p. 14; *941, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 160 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	4.86	May 1	5.35	July 29	6.63	Nov. 2	6.24
Feb. 3	5.09	29	5.96	Aug. 27	6.53	27	6.08
Mar. 3	5.15	June 30	6.60	Sept. 28	6.10	Dec. 31	5.84
Apr. 1	5.55						

12 (*911, p. 14; *941, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 155 feet north of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

12. U. S. Indian Service--Continued.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	4.70	May 1	5.05	July 29	6.35	Nov. 2	5.94
Feb. 3	4.84	29	5.95	Aug. 27	6.19	27	5.80
Mar. 3	4.85	June 30	6.25	Sept. 28	5.83	Dec. 31	5.59
Apr. 1	5.45						

13 (#911, p. 14; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation at Calva, 665 feet north of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	10.93	May 1	11.35	July 29	12.84	Nov. 2	12.36
Feb. 3	11.03	29	12.18	Aug. 27	12.44	27	12.18
Mar. 3	11.12	June 30	12.69	Sept. 28	12.21	Dec. 31	11.98
Apr. 1	11.45						

14 (#911, p. 14; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation at Calva, 1,065 feet north of Gila River, 0.4 mile east from Wild Horse Canyon, 0.6 mile east from railroad bridge.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	10.20	May 1	10.74	July 29	12.19	Nov. 2	11.81
Feb. 3	10.34	29	11.44	Aug. 27	11.77	27	11.60
Mar. 3	10.47	June 30	12.03	Sept. 28	11.59	Dec. 31	11.33
Apr. 1	10.68						

16 (#911, p. 15; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation at Bylas, 640 feet north of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	11.85	Apr. 1	12.60	May 29	12.33	July 29	14.70
Feb. 3	11.95	May 1	12.87	June 30	14.10		(a)
Mar. 3	12.35						

17 (#911, p. 15; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation at Bylas, 220 feet north of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	6.77	May 1	7.35	July 29	9.08	Nov. 2	8.07
Feb. 3	6.92	29	7.27	Aug. 27	8.74	27	7.88
Mar. 3	6.98	June 30	8.75	Sept. 28	8.24	Dec. 31	7.72
Apr. 1	7.82						

18 (#911, p. 15; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 210 feet south of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	7.40	May 1	7.88	July 29	9.45	Nov. 2	8.68
Feb. 3	7.57	29	9.00	Aug. 27	9.14	27	8.49
Mar. 3	7.68	June 30	9.41	Sept. 28	8.66	Dec. 31	8.32
Apr. 1	8.26						

19 (#911, p. 15; #941, p. 12). U. S. Indian Service. On San Carlos Indian Reservation at Bylas, 485 feet south of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	3.09	May 1	5.29	July 29	6.11	Nov. 2	6.03
Feb. 3	4.21	29	5.58	Aug. 27	5.55	27	7.06
Mar. 3	4.73	June 30	6.00	Sept. 28	5.28	Dec. 31	(b)
Apr. 1	5.01						

a Well full of silt; on Aug. 27, Sept. 28, Nov. 2 and 27, Dec. 3.

b Dry at 7.5 feet below measuring point.

20 (*911, p. 16; *941, p. 13). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 690 feet south of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	7.94	May 1	8.48	July 29	10.00	Nov. 2	9.44
Feb. 3	8.12	29	9.40	Aug. 27	9.77	27	9.20
Mar. 3	8.27	June 30	9.86	Sept. 28	9.31	Dec. 31	9.00
Apr. 1	8.63						

21 (*911, p. 16; *941, p. 13). U. S. Indian Service. On San Carlos Indian Reservation at Bylas, 1,150 feet south of Gila River, 300 feet east of Indian rodeo grounds.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	10.65	May 1	11.21	July 29	12.87	Nov. 2	12.24
Feb. 3	10.80	29	12.00	Aug. 27	12.51	27	12.02
Mar. 3	10.93	June 30	12.50	Sept. 28	12.10	Dec. 31	11.77
Apr. 1	11.24						

51 (*911, p. 16; 941, p. 13). Bert Hinton. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 17.22; Oct. 26, 19.35.

52 (*911, p. 17; 941, p. 13). Bert Hinton. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 16.66; May 27, 18.02; Oct. 26, 18.66.

54 (*911, p. 17; 941, p. 13). Mrs. R. S. Knowles. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 45.05; May 27, 40.67; Oct. 26, 42.50.

56 (*911, p. 17; 941, p. 13). Eliza Allen. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 44.39; May 27, 42.04; Oct. 26, 42.35.

60 (*941, p. 13). Pat Hinton. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 23.65; May 27, 21.90; Oct. 26, 21.40.

71 (*911, p. 18; *941, p. 14). Ed McEuen. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	17.30	May 1	17.66	July 30	19.15	Nov. 2	19.10
Feb. 3	17.37	29	18.50	Aug. 27	19.15	27	18.85
Mar. 3	17.45	June 30	18.94	Sept. 28	18.86	Dec. 31	18.72
Apr. 1	17.86						

72 (*911, p. 18; *941, p. 14). Ed McEuen. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	3.77	May 1	3.95	July 30	5.47	Nov. 2	5.22
Feb. 3	4.85	29	5.00	Aug. 27	5.44	27	4.92
Mar. 3	3.84	June 30	5.20	Sept. 28	5.14	Dec. 31	4.75
Apr. 1	4.40						

73 (*911, p. 18; 941, p. 14). Graham County. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	9.94	May 1	9.58	July 30	11.72	Nov. 2	11.34
Feb. 3	10.00	29	11.04	Aug. 27	11.68	27	10.82
Mar. 3	10.03	June 30	11.61	Sept. 28	11.35	Dec. 31	10.60
Apr. 1	10.19						

a Well 51, which is nearby, pumping.

74 (*911, p. 19; 941, p. 14). Graham County. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	6.10	May 1	5.45	July 30	8.10	Nov. 2	8.18
Feb. 3	6.20	29	7.03	Aug. 27	8.00	27	7.04
Mar. 3	6.27	June 30	7.84	Sept. 28	7.81	Dec. 31	6.50
Apr. 1	6.26						

75 (*911, p. 19; 941, p. 14). Graham County. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	3.64	May 1	2.88	July 30	5.29	Nov. 2	5.73
Feb. 3	24.45	29	4.70	Aug. 27	5.44	27	4.42
Mar. 3	3.70	June 30	5.34	Sept. 28	5.10	Dec. 31	4.15
Apr. 1	3.66						

76 (*911, p. 19; 941, p. 15). E. W. Black. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 4 S., R. 23 E. New measuring point, top of wood curbing on east side, at red pencil mark, 3.3 feet above land surface and 2,663.15 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	24.62	Apr. 17	23.92	May 29	24.08	Sept. 28	25.83
Feb. 3	24.45	27	23.49	June 30	25.50	Oct. 28	25.56
Mar. 3	24.26	May 1	23.29	July 30	26.05	Nov. 27	24.35
23	24.08	12	23.37	Aug. 27	26.17	Dec. 28	23.73
Apr. 1	23.95	25	23.85				

77 (*911, p. 20; 941, p. 15). E. M. Claridge. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 37.86; May 26, 34.34; Oct. 26, 36.21.

79 (*911, p. 20; 941, p. 15). Fay Rabb. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	23.49	May 1	21.70	July 30	23.47	Nov. 2	24.35
Feb. 3	23.02	29	22.50	Aug. 27	23.50	27	24.30
Mar. 3	22.55	June 30	23.12	Sept. 28	23.32	Dec. 31	24.23
Apr. 3	22.97						

80 (*911, p. 20; 941, p. 15). Fay Rabb. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 17, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 15.51; May 27, 15.76; Oct. 26, 16.35.

81 (*911, p. 20; 941, p. 15). Mrs. J. B. Blessing. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 28.78; May 27, 27.10; Oct. 26, 28.45.

88 (*911, p. 20; 941, p. 15). W. F. Bolinger. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 8, 13.53; June 1, 13.59; Oct. 27, 13.84.

90 (*911, p. 21; 941, p. 15). Church of Latter Day Saints. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 22.85; May 27, 22.25; Oct. 26, 23.85.

91 (*911, p. 21; 941, p. 15). Ben Montierth. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 48.00; May 27, 47.39; Oct. 26, 51.80.

92 (*911, p. 21; 941, p. 15). Wendell Montierth. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 5 S., R. 23 E. No measurements made in 1942.

93 (*911, p. 21; 941, p. 16). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	12.09	May 1	11.99	July 30	13.98	Nov. 2	14.60
Feb. 3	12.35	28	12.77	Aug. 27	14.28	27	14.35
Mar. 3	12.54	June 30	13.38	Sept. 28	14.37	Dec. 31	14.05
Apr. 1	12.69						

94 (*911, p. 21; 941, p. 16). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	7.52	May 1	8.77	July 30	9.57	Nov. 2	9.95
Feb. 3	7.80	29	8.48	Aug. 27	9.76	27	9.70
Mar. 3	7.96	June 30	9.10	Sept. 28	9.78	Dec. 31	9.38
Apr. 1	8.23						

95 (*911, p. 22; 941, p. 16). Graham County. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	8.70	May 1	9.14	July 30	11.10	Nov. 2	11.10
Feb. 3	8.98	29	10.19	Aug. 27	11.20	27	10.85
Mar. 3	8.96	June 30	10.65	Sept. 28	11.13	Dec. 31	10.58
Apr. 1	9.54						

96 (*911, p. 22; 941, p. 16). Graham County. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 26, T. 4 S., R. 23 E. No measurements made in 1942.

98 (*911, p. 23; 941, p. 16). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	3.00	May 1	3.51	July 30	5.55	Nov. 2	5.44
Feb. 3	3.52	29	4.53	Aug. 27	5.70	27	5.00
Mar. 3	3.45	June 30	5.38	Sept. 28	5.54	Dec. 31	4.70
Apr. 1	3.80						

99 (*911, p. 23; 941, p. 17). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	0.59	May 1	0.72	July 30	3.11	Nov. 2	2.78
Feb. 3	.99	29	1.66	Aug. 27	3.03	27	2.35
Mar. 3	.90	June 30	2.68	Sept. 28	2.92	Dec. 31	2.06
Apr. 1	.91						

100 (*911, p. 23; 941, p. 17). C. N. Higgins. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	9.51	Apr. 4	10.73	June 30	12.30	Sept. 28	12.86
Feb. 3	10.92	May 1	10.24	July 30	12.68	Nov. 2	12.75
Mar. 3	10.85	29	11.04	Aug. 27	12.90	Dec. 31	11.90

101 (*911, p. 24; 941, p. 17). D. C. Kempton. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 4 S., R. 23 E. No measurements made in 1942; well obstructed with trash.

105 (*911, p. 24; 941, p. 17). Edward McEuen. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 44.94; May 27, 44.13; Oct. 26, 44.48.

106 (*911, p. 24; 941, p. 17). L. L. Morrison. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 41.27; May 27, 41.86; Oct. 26, 41.53.

107 (*911, p. 24; 941, p. 17). Port McEuen. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	46.93	May 1	42.58	July 30	46.75	Nov. 2	46.00
Feb. 3	45.39	29	44.30	Aug. 27	46.93	27	45.51
Mar. 3	44.86	June 30	45.87	Sept. 28	46.94	Dec. 31	45.34

108 (*911, p. 25; 941, p. 17). W. O. Miller. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 4 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 6, 18.55; May 27, 18.57; Oct. 26, 18.76.

126 (*911, p. 25; 941, p. 17). YL Ranch. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, T. 5 S., R. 21 E. Water levels, in feet below measuring point, 1942: Jan. 7, 26.27; May 26, 22.74; Oct. 26, 47.60.

a Irrigation water near well.

- 129 (#911, p. 25; 941, p. 18). Hinton Ranch. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 5 S., R. 21 E. No measurements made in 1942.
- 132 (#911, p. 25; 941, p. 18). Mr. Hinton. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 4 S., R. 21 E. No measurements made in 1942.
- 143 (#911, p. 25; 941, p. 18). R. S. Snedigar. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 25, T. 5 S., R. 22 E. Water levels, in feet below measuring point, 1942: Jan. 7, 26.15; May 27, 26.90; Oct. 26, 35.24.
- 156 (#911, p. 25; 941, p. 18). Roy Layton. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 5 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 8, 11.36; May 27, 10.49; Oct. 26, 12.46.
- 158 (#911, p. 26; 941, p. 18). W. C. Rhodes. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 5 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 45.43; May 27, 41.48; Oct. 26, 40.13.
- 160 (#911, p. 26; #941, p. 18). W. O. Tyler. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 5 S., R. 23 E. No measurements made in 1942; casing sealed by pump. Last measurement made Oct. 15, 1941.
- 164 (#911, p. 26; #941, p. 18). Don Steele. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 11, T. 5 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 7, 62.82; May 27, 59.68; Oct. 26, 54.93.
- 166 (#911, p. 26; #941, p. 18). O. D. Hall. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 5 S., R. 23 E. New measuring point, top of wood curb, at center on east side, 0.55 foot above land surface and 2,720.70 feet above mean sea level. Water level, in feet below measuring point, 1942: Jan. 8, 17.21; May 27, 16.13; Oct. 26, 18.90.
- 194 (#911, p. 27; 941, p. 18). Virgil McEuen. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 21.10; May 26, 20.52; Oct. 27, 22.30.
- 195 (#911, p. 27; #941, p. 18). Fay Rabb. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 5 S., R. 23 E. Water levels, in feet below measuring point, 1942: Jan. 8, 16.12; May 27, 16.52; Oct. 26, 17.77.
- 200 (#911, p. 27; 941, p. 18). J. R. Thatcher. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 20, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 20.49; May 6, 16.35; Oct. 27, 19.18.
- 202 (#911, p. 27; #941, p. 19). A. D. Nelson. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 36.50; May 26, 35.30; Oct. 27, 34.95.
- 205 (#911, p. 27; 941, p. 19). W. B. Marshall. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 28, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 26.46; May 26, 23.80; Oct. 27, 25.00.
- 206 (#911, p. 28; 941, p. 19). J. D. Colvin. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 22.09; Oct. 27, 20.51.
- 207 (#911, p. 28; #941, p. 19). Lamar Kempton. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 5 S., R. 24 E. Water levels, in feet, with reference to measuring point, 1942: Jan. 8, -0.36; May 26, +0.86; Oct. 27, -1.20.
- 208 (#911, p. 28; 941, p. 19). L. W. Farrington. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 23.06; May 27, 23.68; Oct. 26, 24.94.
- 210 (#911, p. 28; #941, p. 19). Boyd Hawkins. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 32.96; May 27, 33.25; Oct. 27, 39.55.
- 211 (#911, p. 28; 941, p. 19). Producers Ginning Co. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	23.62	May 1	25.80	July 30	25.34	Nov. 27	24.96
Mar. 2	23.77	29	24.53	Nov. 2	25.29	Dec. 31	24.55
Apr. 4	24.16	June 30	25.02				

212 (*911, p. 28; 941, p. 20). Graham County. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	20.45	May 1	20.64	July 30	22.04	Nov. 2	22.00
Feb. 2	20.57	29	21.34	Aug. 27	22.10	27	21.68
Mar. 2	20.67	June 30	21.84	Sept. 28	21.73	Dec. 31	21.33
Apr. 4	21.00						

213 (*911, p. 29; 941, p. 20). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	19.97	May 1	20.13	July 30	21.57	Nov. 2	21.45
Feb. 2	20.06	29	20.97	Aug. 27	21.62	27	21.10
Mar. 2	20.06	June 30	21.42	Sept. 28	21.21	Dec. 31	20.81
Apr. 4	20.54						

214 (*911, p. 29; 941, p. 20). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	12.98	May 1	13.20	July 30	14.68	Nov. 2	14.38
Feb. 2	13.11	29	14.16	Aug. 27	14.62	27	14.08
Mar. 2	13.11	June 30	14.60	Sept. 28	14.20	Dec. 31	13.80
Apr. 4	13.17						

216 (*911, p. 30; 941, p. 20). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	5.14	May 1	7.16	July 30	8.87	Nov. 2	8.38
Feb. 2	7.20	29	8.12	Aug. 27	8.65	27	8.10
Mar. 2	7.19	June 30	8.77	Sept. 28	8.14	Dec. 31	7.74
Apr. 4	7.81						

217 (*911, p. 30; 941, p. 20). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	4.23	May 1	3.96	July 30	6.00	Nov. 2	5.50
Feb. 2	4.20	29	4.87	Aug. 27	5.59	27	5.18
Mar. 2	4.26	June 30	5.80	Sept. 28	5.03	Dec. 31	4.72
Apr. 4	4.66						

218 (*911, p. 30; *941, p. 21). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 2	4.49	June 30	5.68	Sept. 28	4.84	Nov. 27	5.17
Apr. 4	4.72	July 30	6.08	Nov. 2	5.60	Dec. 31	4.60
May 29	4.55	Aug. 27	5.44				

219 (*911, p. 30; 941, p. 21). H. C. Kempton. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 32, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 11.12; May 26, 8.86; Oct. 27, 11.60.

220 (*911, p. 30; 941, p. 21). Lionel Hancock. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 17.07; May 26, 11.90; Oct. 27, 14.80.

222 (*911, p. 31; 941, p. 21). Dave Hawkins. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 26.77; May 26, 24.43; Oct. 27, 25.45.

223 (*911, p. 31; 941, p. 21). E. E. Hancock. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 5 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 28.30; May 26, 26.76; Oct. 27, 27.25.

262 (*911, p. 31; 941, p. 21). J. Hancock. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 17.14; May 26, 17.79; Oct. 27, 19.46.

a Well 211, 100 yards east, pumping.

264 (*911, p. 31; 941, p. 21). J. Hancock. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 6 S., R. 24 E. (erroneously published in Water-Supply Paper 941 as SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 3). Water levels, in feet below measuring point, 1942: Jan. 8, 13.96; May 26, 14.14; Oct. 27, 15.74.

267 (*911, p. 32; 941, p. 21). Wm. Carpenter. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 22.85; May 26, 23.98; Oct. 27, 25.44.

269 (*911, p. 32; 941, p. 21). Frank Matthews. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 27.36; May 27, 27.02; Oct. 27, 27.78.

270 (*911, p. 32; 941, p. 22). Frank Matthews. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 6 S., R. 24 E. Measurements discontinued after January 1942; casing obstructed with trash. Water level, in feet below measuring point, 1942: Jan. 8, 25.20.

273 (*911, p. 32; *941, p. 22). Eldon Palmer. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 41.36; May 27, 41.57; Oct. 27, 43.65.

274 (*911, p. 32; *941, p. 22). Mr. Dean. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 6 S., R. 24 E. New measuring point, bottom of hole at north side of pump base, 1.9 feet above land surface and 2,618.88 feet above mean sea level. Water levels, in feet below measuring point, 1942: Jan. 8, 47.70; May 27, 45.35; Oct. 26, 46.31.

275 (*911, p. 33; 941, p. 22). Lamar Bellman. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 10, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 23.17; May 28, 20.43; Oct. 27, 23.42.

279 (*911, p. 33; 941, p. 22). Howard McBride. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 6.54; May 28, 5.53; Oct. 23, 7.65.

280 (*911, p. 33; *941, p. 22). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 12, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 6, 12.08; May 26, 10.02; Oct. 27, 13.64.

282 (*911, p. 33; 941, p. 22). Guy Anderson. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	19.58	Apr. 17	18.16	May 29	17.46	Sept. 28	19.30
Feb. 2	20.98	27	18.19	June 30	17.84	Oct. 28	19.59
Mar. 2	19.93	May 1	17.87	July 30	18.49	Nov. 27	19.63
23	20.22	12	17.78	Aug. 27	18.77	Dec. 28	19.58
Apr. 4	20.47	25	17.49				

285 (*911, p. 33; 941, p. 22). Guy Anderson. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 27.48; May 28, 21.50; Oct. 23, 26.02.

289. W. J. Preston. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 6 S., R. 24 E., at first house on county road, 0.1 mile south from U. S. Highway 70, and 0.8 mile east from Glenbar store. Used drilled domestic well, diameter 5 inches, depth 48 feet. Measuring point, red arrow at top of casing, 1.25 feet above land surface and 2,828.47 feet above mean sea level. Equipped with windmill.

Water level, in feet below measuring point, 1939-42

Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1939	42.18	Feb. 6, 1940	40.23	May 28, 1942	30.35
Dec. 9	40.67	Mar. 28	38.94	Oct. 23	34.40

292 (*911, p. 34; 941, p. 22). Dick Bryce Estate. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 14, T. 6 S., R. 24 E. No measurements made in 1942; casing filled with trash. Last measurement made Oct. 14, 1941. (For other measurements made in this area see well 289.)

298 (*911, p. 34; 941, p. 23). Joe Rogers. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 25, T. 6 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 15.78; May 28, 13.20; Oct. 23, 17.20.

a Well nearby pumping.

313 (*911, p. 34; 941, p. 23). Jack Bryce. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 56.28; May 26, 53.68; Oct. 27, 58.37.

315 (*911, p. 34; 941, p. 23). Dick Bryce Estate. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 27.40; May 26, 25.62; Oct. 27, 26.84.

317 (*911, p. 34; *941, p. 23). Wm. Wanslee. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 19.20; May 26, 16.30; Oct. 23, 17.88.

318 (*941, p. 23). Vance Marshall. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 17, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 19.50; May 26, 15.60; Oct. 23, 21.21.

320 (*911, p. 35; 941, p. 23). Vance Marshall. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 17, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 14.28; May 26, 13.64; Oct. 23, 15.56.

321 (*911, p. 35; 941, p. 23). Graham County. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	8.02	Mar. 2	8.37	May 1	7.29	June 30	9.20
Feb. 2	8.30	Apr. 3	7.74	May 29	8.36		

322 (*911, p. 35; *941, p. 24). Bryce Bros. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	8.34	May 1	8.17	July 30	10.05	Nov. 2	8.95
Feb. 2	8.52	May 29	9.18	Aug. 27	9.60	Nov. 28	8.68
Mar. 2	8.52	June 30	9.78	Sept. 28	9.62	Dec. 31	8.52
Apr. 4	8.25						

323 (*911, p. 35; 941, p. 24). Graham County. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	9.73	May 1	8.74	July 30	10.39	Nov. 2	9.30
Feb. 2	8.94	May 29	9.74	Aug. 27	9.92	Nov. 28	8.98
Mar. 2	8.92	June 30	10.25	Sept. 28	9.94	Dec. 31	8.83
Apr. 3	8.90						

324 (*911, p. 36; 941, p. 24). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	5.78	May 1	5.27	July 30	7.26	Nov. 2	5.60
Feb. 2	5.83	May 29	6.28	Aug. 27	6.81	Nov. 28	5.70
Mar. 2	5.72	June 30	6.85	Sept. 28	6.32	Dec. 31	5.42
Apr. 3	5.69						

325 (*911, p. 36; 941, p. 24). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	6.30	May 1	5.50	July 30	7.78	Nov. 2	5.90
Feb. 2	6.26	May 29	6.22	Aug. 27	7.29	Nov. 28	6.05
Mar. 2	6.01	June 30	7.00	Sept. 28	6.45	Dec. 31	5.64
Apr. 3	5.84						

326 (*911, p. 36; 941, p. 24). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	6.23	May 1	4.54	July 30	7.27	Nov. 2	5.29
Feb. 2	6.06	May 29	5.55	Aug. 27	7.07	Nov. 28	5.60
Mar. 3	5.75	June 30	6.16	Sept. 28	5.93	Dec. 31	5.10
Apr. 3	5.35						

a Well 328, which is nearby, pumping.

328 (*911, p. 36; *941, p. 25). Dodge-Nevada Canal Co. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	5.48	Apr. 3	4.48	June 30	5.35	Nov. 28	4.55
Feb. 2	6.49	May 1	3.21	Sept. 28	5.60	Dec. 31	4.38
Mar. 2	5.03	29	3.99	Oct. 28	5.08		

329 (*911, p. 37; 941, p. 25). Art Lines. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 8, 18.02; May 28, 13.88; Oct. 23, 16.74.

330 (*911, p. 37; 941, p. 25). W. W. Crockett. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 8, 14.60; June 2, 13.29; Oct. 27, 16.07.

335 (*911, p. 37; 941, p. 25). E. B. McBride. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 20, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 14.34; May 28, 11.05; Oct. 23, 13.28.

342 (*911, p. 37; 941, p. 25). Ed Howard. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 25.25; May 26, 21.77; Oct. 23, 26.00.

344 (*911, p. 37; 941, p. 25). J. M. Talley. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 26, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 21.99; May 26, 19.85; Oct. 23, 23.98.

346 (*911, p. 37; 941, p. 25). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Jan. 2	7.83	May 1	4.97	July 30	7.40	Nov. 2	7.73
Feb. 2	5.75	28	5.82	Aug. 27	7.61	28	7.32
Mar. 2	5.94	June 30	6.69	Sept. 28	7.42	Dec. 30	7.04
Apr. 3	5.14						

347 (*911, p. 38; 941, p. 26). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Jan. 2	7.23	May 1	7.16	July 30	8.66	Nov. 2	9.18
Feb. 2	7.22	29	8.20	Aug. 27	9.05	28	8.84
Mar. 2	7.34	June 30	8.67	Sept. 28	8.94	Dec. 30	8.62
Apr. 3	7.57						

349 (*911, p. 38; 941, p. 26). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E. No measurements made in 1942.

350 (*911, p. 38; 941, p. 26). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Jan. 3	5.75	May 1	6.14	July 30	7.85	Nov. 2	7.32
Feb. 2	5.87	28	7.26	Aug. 27	7.77	28	6.84
Mar. 2	5.88	June 30	7.69	Sept. 28	7.35	Dec. 30	6.70
Apr. 3	6.40						

352 (*911, p. 39; 941, p. 27). Graham County. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Jan. 3	6.28	May 1	6.56	July 30	8.36	Nov. 2	7.72
Feb. 2	6.32	28	7.71	Aug. 27	8.20	28	7.20
Mar. 2	6.31	June 30	8.08	Sept. 28	7.80	Dec. 30	7.14
Apr. 3	7.80						

354 (*911, p. 40; *941, p. 27). Ned Daley. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 9, 8.33; May 28, 8.70; Oct. 23, 9.37.

356 (*911, p. 40; 941, p. 27). W. T. Watson. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 27, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 9, 11.00; May 28, 10.58; Oct. 23, 12.94.

366 (*911, p. 40; 941, p. 27). Charles M. Beals. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 18.20; May 26, 13.39; Oct. 23, 18.06.

368 (*911, p. 40; 941, p. 27). G. Chavez. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 6, 41.20; May 26, 38.03; Oct. 23, 41.20.

372 (*911, p. 41; 941, p. 28). George Layton. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 6 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 8, 35.20; May 28, 30.75; Oct. 23, 35.30.

379 (*911, p. 41; *941, p. 28). Smithville Canal Co. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 6 S., R. 25 E. Water level, in feet below measuring point, 1942: Jan. 9, 7.49.

380 (*911, p. 41; 941, p. 28). Smithville Canal Co. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	5.91	Apr. 3	6.16	Sept. 28	6.72	Nov. 28	6.28
Feb. 2	4.89	May 1	4.06	Nov. 2	6.49	Dec. 30	5.27
Mar. 2	4.82						

429 (*911, p. 41; 941, p. 28). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	8.49	May 1	7.71	July 29	10.63	Oct. 31	9.75
Feb. 2	8.47	28	8.20	Aug. 28	9.55	Nov. 27	9.81
Mar. 2	8.64	July 1	9.62	Sept. 28	9.50	Dec. 30	9.47
Apr. 3	7.24						

430 (*911, p. 42; 941, p. 28). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	4.39	Apr. 3	3.21	July 1	5.44	Aug. 28	5.45
Feb. 2	4.40	May 1	4.23	29	6.00	Sept. 28	5.40
Mar. 2	4.59	28	4.03				

431 (*911, p. 42; *941, p. 28). Jesse Tyler. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	4.67	May 1	4.67	July 29	5.92	Oct. 31	5.79
Feb. 2	4.74	28	5.29	Aug. 28	5.51	Nov. 27	5.87
Mar. 2	4.82	July 1	5.70	Sept. 28	5.60	Dec. 30	5.47
Apr. 3	4.22						

432 (*911, p. 42; *941, p. 29). Roy Layton. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 6 S., R. 27 E. Measurements discontinued after August 1942; well destroyed.

Water level, in feet below measuring point, 1942

Jan. 3	13.18	Apr. 3	11.90	May 28	13.75	July 29	14.53
Feb. 2	13.15	May 1	11.98	July 1	14.35	Aug. 28	14.31
Mar. 2	13.30						

433 (*911, p. 43; 941, p. 29). W. H. Baker (erroneously published in Water-Supply Paper 941 as W. H. Bates). SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 36, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	17.80	Apr. 3	16.32	May 1	17.86	May 28	18.55
Feb. 2	17.80	16	17.77	14	18.15	June 8	18.80
Mar. 2	18.20	27	17.80	25	18.40	July 1	(b)
23	17.89						

a Irrigation water standing nearby.

b Dry.

434 (*911, p. 43; *941, p. 29). Abel Sanchez. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 6 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 6, 21.06; May 26, 20.64; Oct. 23, 22.03.

451 (*941, p. 43; *941, p. 29). S. A. Clontz. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 31, T. 6 S., R. 28 E. Measurements discontinued after May 1942; well partially filled with debris. Water levels, in feet below measuring point, 1942: Jan. 6, 22.90; May 25, 23.05.

452 (*911, p. 43; *941, p. 29). S. A. Clontz. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 31, T. 6 S., R. 28 E. Water levels, in feet below measuring point, 1942: Jan. 6, 20.18; May 25, 20.20; Oct. 23, 22.54.

454 (*911, p. 43; *941, p. 29). Brown Canal Co. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 6 S., R. 28 E. Water levels, in feet below measuring point, 1942: Jan. 6, 19.48; Oct. 23, 21.19.

491 (*911, p. 44; *941, p. 29). Jim Smith. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 17, T. 7 S., R. 24 E. Water levels, in feet below measuring point, 1942: Jan. 8, 6.65; May 28, 7.03; Oct. 23, 14.16.

508 (*911, p. 44; *941, p. 29). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 7 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 9, 13.40; May 28, 10.95; Oct. 23, 13.48.

509 (*911, p. 44; *941, p. 30). Ellis Welker and Eldon Palmer. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 7 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 9, 34.06; May 28, 30.40; Oct. 23, 31.85.

510 (*911, p. 44; *941, p. 30). Ted Fergerson. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 3, T. 7 S., R. 25 E. Water levels, in feet below measuring point, 1942: Jan. 9, 21.03; May 28, 16.31; Oct. 23, 19.95.

516 (*911, p. 45; *941, p. 30). Roy Layton. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 10, T. 7 S., R. 25 E. No measurements made in 1942; well destroyed. Last measurement made Sept. 26, 1941.

554 (*911, p. 45; *941, p. 30). Graham Canal Co. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 8.94; May 26, 12.69; Oct. 23, 14.22.

557 (*911, p. 45; *941, p. 30). R. A. Smith. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 6, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 26.51; May 26, 26.04; Oct. 23, 29.64.

562 (*911, p. 46; *941, p. 30). Bill Morris. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 7 S., R. 26 E. Measurements discontinued after January 1942; casing sealed. Water level, in feet below measuring point, 1942: Jan. 5, 22.90.

564-A (*941, p. 31). Rose E. Golding. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E. Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	9.88	May 1	8.18	July 29	11.90	Oct. 31	10.67
Feb. 2	9.65	28	8.22	Aug. 28	11.63	Nov. 28	10.36
Mar. 2	9.58	June 30	9.78	Sept. 29	11.23	Dec. 30	10.05
Apr. 3	8.92						

565-A (*941, p. 31). Z. C. Prina. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	9.27	May 1	7.56	July 29	10.76	Oct. 31	10.07
Feb. 2	9.05	28	7.60	Aug. 28	10.47	Nov. 28	9.70
Mar. 2	9.00	June 30	8.80	Sept. 29	10.58	Dec. 30	9.40
Apr. 3	8.14						

566-A (*941, p. 31). Z. C. Prina. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	8.35	May 1	6.79	July 29	9.76	Oct. 31	9.23
Feb. 2	8.12	28	6.80	Aug. 28	9.65	Nov. 28	8.84
Mar. 2	8.11	June 30	7.62	Sept. 29	9.72	Dec. 30	8.55
Apr. 3	7.27						

567-A (*941, p. 32). Z. C. Prina. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E.

567-A. Z. C. Prina--Continued.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	5.97	May 1	4.64	July 29	6.63	Oct. 31	6.92
Feb. 2	5.79	28	4.70	Aug. 28	7.38	Nov. 28	6.54
Mar. 2	5.77	June 30	5.25	Sept. 29	7.36	Dec. 30	6.27
Apr. 3	5.08						

568-A (*941, p. 32). Z. C. Prina. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Jan. 3	6.02	Apr. 3	5.33	July 29	7.35	Oct. 31	7.03
Feb. 2	5.86	May 1	5.00	Aug. 28	7.40	Nov. 28	6.89
Mar. 2	5.88	28	5.13	Sept. 29	7.35	Dec. 30	6.64
	5.05	June 30	6.11				

569-A (*941, p. 33). Graham County. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Jan. 3	5.70	May 1	4.90	July 29	7.24	Oct. 31	6.80
Feb. 2	5.57	28	5.15	Aug. 28	7.32	Nov. 28	6.30
Mar. 2	5.61	June 30	6.20	Sept. 29	7.23	Dec. 30	6.10
Apr. 3	5.19						

570 (*911, p. 48; *941, p. 33). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Jan. 3	3.56	May 1	3.36	July 29	5.96	Oct. 31	6.12
Feb. 2	3.60	28	4.22	Aug. 28	6.02	Nov. 28	4.67
Mar. 2	3.67	June 30	5.07	Sept. 29	6.02	Dec. 30	4.35
Apr. 3	3.53						

573 (*911, p. 48; *941, p. 33). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Jan. 3	4.31	May 1	4.78	July 29	5.85	Oct. 31	6.67
Feb. 2	4.40	28	5.32	Aug. 28	6.00	Nov. 28	5.89
Mar. 2	4.46	June 30	5.60	Sept. 29	6.15	Dec. 30	5.50
Apr. 3	4.55						

574 (*911, p. 48; *941, p. 33). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Jan. 3	5.02	May 1	5.01	July 29	6.74	Oct. 31	6.37
Feb. 2	5.27	28	5.64	Aug. 28	6.86	Nov. 28	5.51
Mar. 2	5.34	June 30	6.28	Sept. 29	6.45	Dec. 30	5.23
Apr. 3	5.41						

575 (*911, p. 49; *941, p. 34). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E.

Daily noon water level, in feet below measuring point, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.96	5.92	6.00	6.18	6.10	7.30	7.91	8.41	8.32	7.73	7.27	6.89
2	5.94	5.93	5.94	6.22	6.16	7.34	7.78	8.44	8.35	7.78	7.25	6.87
3	5.93	5.95	5.93	6.25	6.10	7.35	7.63	8.48	8.36	7.73	7.23	6.86
4	5.93	5.97	5.99	6.27	6.14	7.35	7.68	8.37	8.24	7.65	7.21	6.84
5	5.94	5.99	6.04	6.23	6.27	7.37	7.71	8.42	8.07	7.69	7.19	6.83
6	5.96	6.00	6.03	6.18	6.36	7.43	7.75	8.41	7.88	7.74	7.17	6.80
7	5.98	5.99	6.10	6.07	6.44	7.39	7.80	8.34	7.95	7.79	7.18	6.77
8	5.99	6.00	6.12	5.99	6.51	7.38	7.84	8.20	8.09	7.69	7.18	6.74
9	6.00	6.00	6.13	5.98	6.58	7.37	7.86	7.80	8.19	7.70	7.16	6.71
10	5.96	5.96	6.16	5.99	6.61	7.38	7.84	7.81	8.23	7.72	7.16	6.68
11	5.95	5.95	6.18	6.04	6.63	7.42	7.85	7.83	8.24	7.67	7.15	6.66
12	5.94	5.95	6.18	6.07	6.69	7.48	7.87	7.85	8.00	7.61	7.14	6.64
13	5.93	5.93	6.17	5.98	6.74	7.51	7.92	7.96	7.86	7.54	7.13	6.62
14	5.92	5.94	6.18	5.91	6.75	7.55	7.92	7.99	7.34	7.60	7.11	6.61

a Lowest water level in period between tape measurements.

575. Z. C. Prina--Continued.

Daily noon water level, in feet below measuring point, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
15	5.85	5.94	6.16	5.90	6.79	7.59	7.92	8.04	7.15	7.69	7.10	6.59
16	5.79	5.95	6.14	5.90	6.86	7.63	7.96	8.07	7.17	7.75	7.10	6.57
17	5.76	5.95	6.13	5.75	6.90	7.65	7.97	7.89	6.99	7.72	7.09	6.56
18	5.76	5.96	6.12	5.65	6.94	7.69	8.06	7.78	7.05	7.71	7.06	6.56
19	5.78	5.99	6.16	5.81	6.94	7.72	8.09	7.71	7.00	7.68	7.04	6.56
20	5.80	6.02	6.22	5.90	6.97	7.73	8.13	7.74	6.77	7.67	7.04	6.56
21	5.81	6.03	6.23	5.98	7.01	7.75	8.18	7.90	6.85	7.68	7.04	6.55
22	5.82	6.04	6.04	6.04	7.04	7.76	8.26	8.00	6.96	7.66	7.03	6.56
23	5.84	6.08	5.99	6.06	7.02	7.77	8.33	8.10	7.06	7.65	7.02	6.55
24	5.86	6.04	5.99	6.02	7.07	7.74	8.36	8.02	7.14	7.55	7.01	6.55
25	5.88	6.05	5.99	6.00	7.12	7.76	8.32	8.14	7.20	7.52	6.98	6.55
26	5.90	6.06	5.93	5.96	7.14	7.82	8.42	8.19	7.30	7.47	6.96	6.57
27	5.90	6.06	5.94	5.96	7.16	7.86	8.44	8.07	7.44	7.32	6.95	6.59
28	5.91	6.03	5.99	5.97	7.10	7.90	8.52	8.06	7.54	7.31	6.92	6.56
29	5.92	....	6.04	5.96	7.15	7.90	8.52	8.16	7.63	7.30	6.91	6.56
30	5.93	....	6.09	6.01	7.20	7.92	8.55	8.21	7.69	7.29	6.90	6.56
31	5.91	....	6.15	....	7.25	....	8.56	8.29	....	7.29	....	6.58

576 (*911, p. 50; *941, p. 35). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	5.03	May 1	5.48	July 29	6.03	Oct. 31	6.30
Feb. 2	5.16	28	5.62	Aug. 28	5.99	Nov. 28	6.51
Mar. 2	5.27	June 30	5.60	Sept. 29	6.18	Dec. 30	5.84
Apr. 3	5.39						

580 (*911, p. 51; *941, p. 35). City of Safford. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 11.09; May 26, 9.30; Oct. 23, 12.88.585 (*911, p. 51; *941, p. 36). Graham Canal Co. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 13.33; May 26, 15.68; Oct. 23, 17.40.586 (*911, p. 51; 941, p. 36). Ted Tidwell. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 20.52; May 25, 21.10.587 (*911, p. 51; 941, p. 36). Graham County. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	7.53	Apr. 3	7.76	July 1	9.08	Oct. 31	9.16
Feb. 2	7.72	23	7.55	29	9.13	Nov. 27	9.14
Mar. 2	7.91	May 1	7.70	Aug. 28	9.04	Dec. 30	8.10
3	7.98	28	8.50	Sept. 29	8.83		

588 (*911, p. 52; 941, p. 36). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	7.44	Apr. 23	8.07	July 18	8.96	Oct. 31	8.82
Feb. 2	7.63	May 1	8.18	29	8.93	Nov. 27	8.83
Mar. 2	7.75	28	8.60	Aug. 28	8.30	Dec. 30	8.60
Apr. 3	7.80	July 1	8.91	Sept. 29	8.62		

592 (*911, p. 52; 941, p. 37). E. M. Claridge. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 15.95; May 25, 13.73; Oct. 23, 17.14.593 (*911, p. 53; 941, p. 37). E. M. Claridge. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 17.88; May 25, 15.55; Oct. 22, 18.76.

594 (#911, p. 53; 941, p. 37). E. M. Claridge. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 14, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 10.74; May 25, 10.45; Oct. 23, 11.40.

597 (#911, p. 53; 941, p. 37). C. M. Pursley. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	11.45	Apr. 16	9.51	May 28	10.28	Sept. 28	14.01
Feb. 2	11.35	27	9.67	July 1	19.50	Oct. 28	13.25
Mar. 2	11.39	May 1	9.63	29	19.63	Nov. 27	12.60
23	10.84	14	9.73	Aug. 28	16.10	Dec. 28	12.16
Apr. 3	9.33	25	9.47				

598 (#911, p. 53; 941, p. 37). Union Canal Co. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 13.88; May 25, 12.09; Oct. 23, 14.72.

603 (#911, p. 53; 941, p. 37). L. A. Nelson. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 32.07; May 25, 30.28; Oct. 23, 31.73.

606 (#911, p. 54; 941, p. 37). Pedro Solas. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 5.40; May 25, 4.15; Oct. 23, 8.22.

609 (#911, p. 54; #941, p. 37). Mrs. Annie Collins. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 17, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 22.56; May 25, 20.35; Oct. 22, 22.31.

610 (#911, p. 54; 941, p. 38). Bert Hatch. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 17, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 49.28; May 25, 47.97; Oct. 22, 47.42.

612 (#911, p. 55; 941, p. 38). Montezuma Canal Co. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 7 S., R. 26 E. No measurements made in 1942.

613 (#911, p. 55; 941, p. 38). Montezuma Canal Co. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 59.86; May 26, 58.11; Oct. 22, 57.52.

614 (#911, p. 55; #941, p. 38). Mrs. Bertha Gietz. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 62.30; May 25, 60.52; Oct. 22, 59.46.

615 (#911, p. 55; #941, p. 38). Mrs. Bertha Gietz. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 61.83; May 25, 59.56; Oct. 22, 58.25.

616 (#911, p. 55; #941, p. 38). Kimball and Greenhalgh. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	46.16	Apr. 16	44.21	May 25	42.30	Sept. 28	41.35
Feb. 2	45.04	27	43.89	July 1	41.31	Oct. 28	41.42
Mar. 2	46.70	May 1	43.13	29	40.98	Nov. 27	41.75
23	47.07	14	42.64	Aug. 28	40.95	Dec. 28	42.22
Apr. 3	44.58						

618 (#941, p. 38). Willard Welker. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 21, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 31.27; May 25, 29.94; Oct. 23, 30.93.

619 (#911, p. 56; #941, p. 38). Willard Welker. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 21, T. 7 S., R. 26 E. Measurements discontinued after January 1942; casing sealed. Water level, in feet below measuring point, 1942: Jan. 6, 39.90.

621 (#941, p. 39). Lee Johns. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 22, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 31.39; May 25, 28.17; Oct. 23, 31.40.

623 (#911, p. 56; 941, p. 39). Lee Johns. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 22, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 24.34; May 25, 21.17; Oct. 23, 25.17.

a Two nearby irrigation wells pumping.

625 (*911, p. 56; 941, p. 39). Willard Welker. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 31.04; May 25, 24.63; Oct. 23, 28.80.

627 (*911, p. 56; 941, p. 39). Mrs. Nannie Wilson. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 24, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 21.39; May 25, 20.25.

628 (*911, p. 56; *941, p. 39). Kempton and Larson. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 24, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 19.14; May 25, 16.84; Oct. 23, 20.18.

630 (*911, p. 57; 941, p. 39). E. L. Claridge. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	15.79	May 1	13.00	July 29	19.40	Oct. 31	17.19
Feb. 2	16.50	28	14.05	Aug. 28	19.07	Nov. 27	17.26
Mar. 2	15.98	July 1	19.74	Sept. 29	17.72	Dec. 30	17.35
Apr. 3	14.42						

639 (*911, p. 57; 941, p. 39). Amos Cook. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 30.69; May 25, 30.86; Oct. 23, 28.67; Nov. 16, a/26.45.

661 (*911, p. 57; *941, p. 39). Louis Michelena. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 1, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 32.69; May 25, 32.98; Oct. 23, 32.91.

662 (*911, p. 57; 941, p. 40). Mrs. Jose Somora (published in Water-Supply Papers 911 and 941 as owned by L. Michelena). NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	16.65		b16.93	June 8	17.59	Sept. 28	17.68
Feb. 2	16.67	Apr. 3	16.75	July 1	17.98	Oct. 28	17.99
6	16.70	May 1	16.77	29	18.25	Nov. 27	17.66
Mar. 3	16.84	28	17.34	Aug. 28	18.05	Dec. 28	17.41

664 (*911, p. 58; 941, p. 40). San Jose Canal Co. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1942

Jan. 3	16.43	May 1	15.97	July 29	20.93	Oct. 31	18.19
Feb. 2	16.50	28	16.91	Aug. 28	18.38	Nov. 27	17.83
Mar. 2	16.80	July 1	17.43	Sept. 29	18.06	Dec. 30	17.70
Apr. 3	16.16						

667 (*941, p. 40). Jose B. Garcia. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 17.71; May 25, 17.70; Oct. 22, 19.03.

669 (*911, p. 58; *941, p. 40). S. Molino. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 12.41; May 25, 12.35; Oct. 22, 12.38.

674 (*911, p. 58; 941, p. 40). Louis Michelena. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 6, 16.70; May 25, 10.98; Oct. 23, 14.59.

675 (*941, p. 40). Louis Michelena. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 6, 9.08; May 25, 4.45; Oct. 25, 5.99.

676 (*911, p. 58; 941, p. 41). Louis Michelena. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 6, 13.16; May 25, 12.37; Oct. 23, c/19.77.

683 (*911, p. 59; 941, p. 41). Tom Gardner. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 22.67; May 25, 23.11; Oct. 23, 24.40.

a Irrigation water nearby.

b Lowest water level in period between tape measurements.

c Windmill pumping slowly.

685 (#911, p. 59; 941, p. 41). Brijido Carrasco. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 11, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 27.31; May 25, 26.45; Oct. 22, 27.32.

689 (#911, p. 59; 941, p. 41). San Jose Canal Co. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 48.40; May 25, 39.56; Oct. 23, 44.19.

696 (#911, p. 59; 941, p. 41). Louis Carrasco. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 15.85; May 25, 14.10; Oct. 23, 17.52.

699-A. E. M. Claridge. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E. About 300 feet south of Gila River and 10 feet west of roads leading from Solomonsville River crossing. Used driven observation well with sand point, diameter 1 inch, depth 9 feet. Measuring point, top of pipe, level with land surface and 2,955.92 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 23	4.48	July 29	6.70	Sept. 29	7.07	Nov. 27	6.80
July 17	6.42	Aug. 28	6.62	Oct. 31	7.72	Dec. 30	6.88
18	6.27						

700 (#911, p. 60; 941, p. 41). Graham County. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E. Measurements discontinued after May 1942. For later measurements made in this area, see well 700-A.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 3	6.44	Mar. 2	6.57	Apr. 23	3.44
Feb. 2	6.17	Apr. 3	5.11	May 1	4.47

700A. Graham County. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E. About 1,280 feet south of Gila River, on east side of Solomonsville River road leading from crossing. Used driven observation well with sand point, diameter 1 inch, depth 9 feet. Measuring point, top of pipe, level with land surface and 2,956.72 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 18	5.67	Aug. 28	6.50	Oct. 31	7.24	Dec. 30	7.08
29	6.62	Sept. 29	7.21	Nov. 27	6.82		

701 (#911, p. 60; 941, p. 42). Graham County. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	6.33	May 1	4.06	July 29	7.49	Oct. 31	7.80
Feb. 2	5.91	28	5.15	Aug. 28	7.64	Nov. 27	7.60
Mar. 2	6.37	July 1	6.82	Sept. 29	7.95	Dec. 30	7.64
Apr. 24	3.42						

702 (#911, p. 61; 941, p. 42). William Waldrom. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	12.83	July 1	15.42	Sept. 29	14.59	Nov. 27	13.67
May 1	9.79	29	15.43	Oct. 31	14.17	Dec. 30	13.66
28	10.50	Aug. 27	15.12				

703 (#911, p. 61; 941, p. 42). William Waldrom. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 12.09; May 25, 10.32; Oct. 22, 13.70.

705 (#911, p. 61; 941, p. 42). J. M. Hatfield. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 21.42; May 25, 19.77; Oct. 22, 19.52.

708 (*911, p. 61; *941, p. 42). Pete Bertaldo. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 20, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 40.26; May 25, 37.12; Oct. 23, 38.78.

709 (*911, p. 61; *941, p. 42). E. E. Taylor. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 17.04; May 26, 15.93; Oct. 22, 16.31.

758 (*911, p. 61; *941, p. 42). Mrs. E. Harris. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 8 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 19.51; May 25, 18.85; Oct. 23, 19.97.

766 (*911, p. 62; *941, p. 42). Cluff and Montierth. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 8 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 6, 49.30; May 25, 52.28; Oct. 23, 49.56.

791 (*911, p. 62; *941, p. 43). Howard Olsen. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 8 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 30.74; May 26, 34.43.

792 (*911, p. 62; *941, p. 43). Howard Olsen. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 8 S., R. 27 E. Water levels, in feet below measuring point, 1942: Jan. 5, 32.16; May 26, 33.13.

793 (*911, p. 62; *941, p. 43). Howard Olsen. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, T. 8 S., R. 26 E. Water levels, in feet below measuring point, 1942: Jan. 5, 47.74; May 26, 48.20.

GREENLEE COUNTY (DUNCAN VALLEY)

By H. M. Babcock and R. L. Cushman

Duncan Valley is the western part of the area commonly known as the Duncan-Virden Valley, which lies along the upper Gila River, in Greenlee County, Ariz., and Hidalgo County, N. Mex. A detailed investigation of the ground-water resources of the Duncan-Virden Valley was conducted during the period October 1, 1939, to May 31, 1941, by the Geological Survey, United States Department of the Interior, in cooperation with the United States Engineer Office, War Department, and a preliminary report on it was released by the Geological Survey. The work included the periodic measurement of water levels in observation wells, which was continued for the remainder of the year 1941 and all through 1942. In 1942, 33 wells were under observation.

During 1942 the water levels in most of the observation wells, 25 of which are in Greenlee County, Ariz., were measured twice, and the amount of water pumped was computed. In all, 68 water-level measurements were made, 52 of which were made in wells in Greenlee County. About 1,600 acre-feet of water was pumped from wells in the entire area.

Graphs showing the fluctuations of water level in several of the observation wells, the monthly precipitation at Duncan, Ariz., and the monthly pumpage for irrigation are given in figure 3. Because only infrequent measurements of water level were made in 1942, the fluctuations in that year are represented by dashed lines.

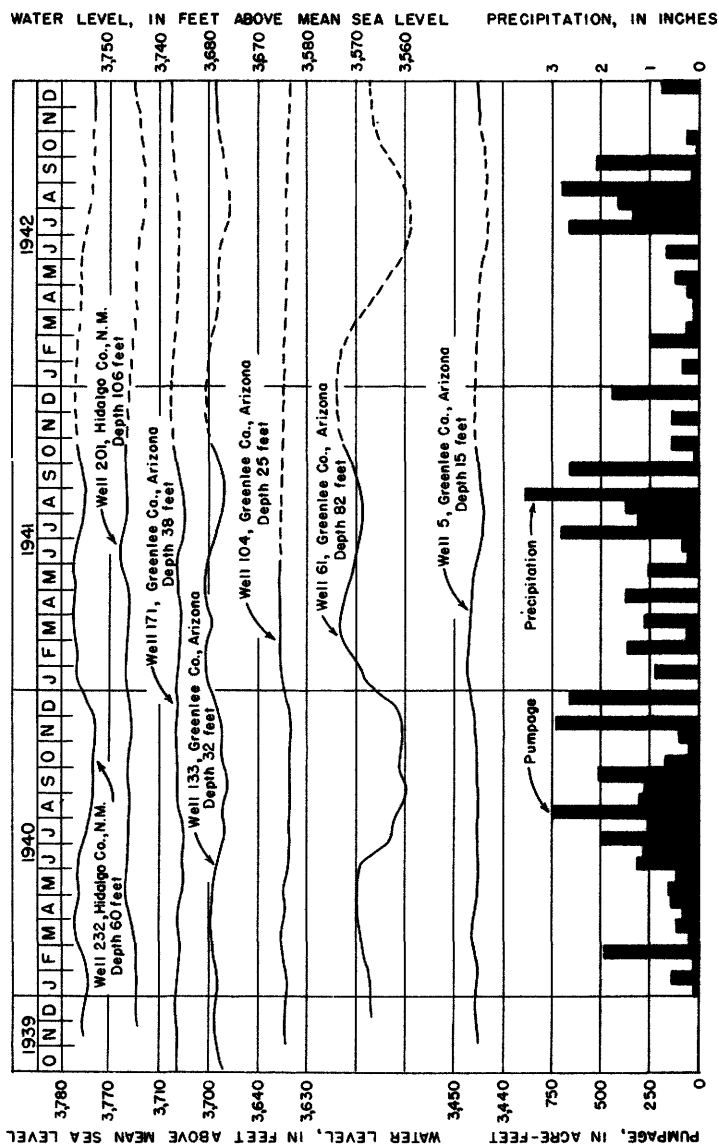


Figure 3.--Graphs showing fluctuations of water level in observation wells in Duncan-Virden Valley, Greenlee County, Ariz., and Hidalgo County, N. Mex.

In Water-Supply Paper 911, which includes the records for 1940 of wells in this area, the heading of the table on page 63 is in error. The correct heading of this table is as follows: Water pumped from wells, in acre-feet, and average precipitation, in inches, in Duncan-Virden Valley, 1940.

Records of water level in wells in Virden Valley are given in the New Mexico section of this volume.

Water-level measurements

- 5 (*941, p. 45). Warner Foote. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 7, T. 6 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 8.21; Nov. 11, 8.42; Dec. 15, 8.17.
- 12 (*911, p. 65; 941, p. 45). Mr. Wilton. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 20, T. 6 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 22.21; Nov. 11, 24.10.
- 14 (*911, p. 65; *941, p. 45). Victor Rowden. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 6 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 32.63; Nov. 11, 35.08.
- 31 (*911, p. 65; 941, p. 45) J. C. Merritt. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 4, T. 7 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 26.78; Nov. 11, 28.53.
- 36 (*911, p. 66; 941, p. 45). M. M. Cosper. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 16, T. 7 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 11.80; Nov. 11, 14.63.
- 43 (*911, p. 66; 941, p. 45). Ernest Campbell. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 7 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 20.05; Nov. 11, 22.69.
- 49 (*911, p. 66; 941, p. 45). W. M. Zumwalt. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 7 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 35.74; Nov. 11, 47.44.
- 61 (*911, p. 66; 941, p. 46). M. W. McKelvey. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 8 S., R. 31 E. Water level, in feet below measuring point, 1942: Mar. 11, 28.62.
- 63 (*911, p. 67; 941, p. 46). M. W. McKelvey. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 8 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 40.90; Nov. 11, 47.65; Dec. 15, 47.09.
- 66 (*911, p. 67; 941, p. 46). Franklin Irrigation District well 4. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 11, T. 8 S., R. 31 E. No measurements made in 1942.
- 68 (*911, p. 67; 941, p. 46). Franklin Irrigation District test well 10. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 11, T. 8 S., R. 31 E. Water level, in feet below measuring point, 1942: Mar. 11, 12.02.
- 69 (*911, p. 67; 941, p. 46). Franklin Irrigation District well 3. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 8 S., R. 31 E. No measurements made in 1942.
- 72 (*911, p. 67; 941, p. 46). J. C. Campbell. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 8 S., R. 31 E. Water levels, in feet below measuring point, 1942: Mar. 11, 45.42; Nov. 10, 49.07.
- 84 (*941, p. 46). Lee Beavers. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 8 S., R. 32 E. No measurements made in 1942.
- 92 (*911, p. 68; 941, p. 46). Raymond Davis. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 17, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 11, 66.76; Nov. 10, 68.97.
- 96 (*911, p. 68; 941, p. 46). L. Deane. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 11, 27.77; Nov. 10, 29.10.
- 100 (*911, p. 68; 941, p. 46). W. M. Zumwalt. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 31.77; Nov. 10, 25.40; Dec. 16, 25.27.

104 (*911, p. 68; 941, p. 47). Bill Cosper. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 8 S., R. 32 E. Well filled in during 1941; later reopened and equipped with small pump and electric motor. Measuring point, bottom of 90° ell, 11.0 feet below land surface and 3,645.61 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 15, 12.12.

111 (*911, p. 68; 941, p. 47). Franklin Irrigation District well 8. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 28, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 10.02; Nov. 10, 10.72.

120 (*911, p. 69; 941, p. 47). D. E. Wilkins. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 13.05; Nov. 10, 11.91.

122 (*911, p. 69; 941, p. 47). Delbert Moyers. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 32, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 29.30; Nov. 10, 26.72.

125 (*911, p. 69; 941, p. 47). V. L. Crofts. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 21.21; Nov. 10, 22.06; Dec. 16, 20.15.

131 (*911, p. 69; 941, p. 47). Franklin Irrigation District well 2. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 8 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 11, 20.21; Nov. 10, 20.47.

133 (*911, p. 71; 941, p. 47). Floyd McDaniels. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 8 S., R. 32 E. Destroyed by flood in September; new well, 15 feet north of old well. Measuring point of new well is top of first joint in casing on west side, 2.7 feet above land surface and 3,689.61 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 10, 6.25; Nov. 10, 5/11.45; Dec. 16, 5/11.23.

136 (*911, p. 71; 941, p. 47). Franklin Irrigation District well 1. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 8 S., R. 32 E. No measurements made in 1942.

160 (*911, p. 71; 941, p. 47). Franklin Irrigation District well 7. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 9 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 9.45; Nov. 10, 9.87.

161 (*911, p. 71; 941, p. 48). Franklin Irrigation District well 6. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 9 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 8.61; Nov. 10, 9.00.

162 (*911, p. 72; 941, p. 48). Franklin Irrigation District well 5. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 9 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 17.88; Nov. 10, 18.30.

171 (*911, p. 72; 941, p. 48). John Chapman. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 9 S., R. 32 E. Water levels, in feet below measuring point, 1942: Mar. 10, 37.12; Nov. 10, 36.40.

MARICOPA COUNTY (QUEEN CREEK AREA)

By E. M. Cushing

The measuring of water levels in observation wells in the Queen Creek area, in Maricopa and Pinal Counties, begun as part of the general investigation of the ground-water resources in the State, was continued during 1942, as was also the collecting of data on the quantity of water pumped for irrigation from wells in this area and in several adjacent areas. In all, 166 individual measurements were made in 45 wells in the area during the year. In the part of the area that is in Maricopa County, 123 tape measurements were made in 34 wells, one of which is equipped with a continuous water-stage recorder.

a Measurement made in new well.

Measurements made of wells in the part of the Queen Creek area that is in Pinal County are given in this report under that county, but the fluctuations of water levels in wells in the entire area are discussed under Maricopa County, because the larger part of the area is in Maricopa County. Graphs showing the fluctuations in typical wells during the period of record are given in figure 4, as are also graphs showing the pumpage, by months, in the Queen Creek Irrigation District and the precipitation, by months, at Superior, Ariz. Most of the pumpage was from wells in Maricopa County. The following table gives the pumpage for irrigation in 1942, by months, in the Queen Creek Irrigation District and in several adjacent areas.

Pumpage from wells, in acre-feet, in the Queen Creek and adjacent areas, 1942

	Bulldog-Superstition area	Queen Creek Irrigation District	Roosevelt Water Conservation District	Chandler Heights Citrus District	Magma area
Jan.	100	300	2,200	49.6	4
Feb.	400	1,000	5,300	78.9	0
Mar.	300	2,800	7,300	239.8	1,486
Apr.	600	4,500	7,600	393.5	1,595
May	800	3,900	9,300	382.7	904
June	700	4,900	10,800	675.9	828
July	1,100	6,600	10,900	863.2	1,280
Aug.	1,100	6,000	10,800	650.3	1,141
Sept.	900	4,800	9,900	562.2	1,016
Oct.	800	2,000	8,800	491.0	414
Nov.	500	1,500	6,500	193.2	113
Dec.	200	1,200	5,700	78.5	658
Total	7,500	39,500	94,900	4,658.8	9,439

The water-level measurements in the outlying wells show a progressive decline in water levels, which indicates that water is still being withdrawn at a rate in excess of the rate of replenishment. The water-level measurements in the wells in the area of heavy pumping show a seasonal lowering of the water table as a result of this pumping. (See graph of well 261, fig. 4). When pumping stops, water levels in the heavily, pumped area rise as a result of recharge by underground percolation from outlying areas. Thus the yearly decline in the water table caused by the pumping is spread over the entire area. (See graph of well 41, fig. 4.)

Water levels in the relatively shallow wells in the valley of Queen Creek near the base of the Pinal Mountains began to decline in the early spring of 1942 and continued to decline throughout the year. (See graph of well 23, fig. 4.) This decline is due to the lack of surface flow in Queen Creek and the slow percolation of the ground water from the canyon into the area below.

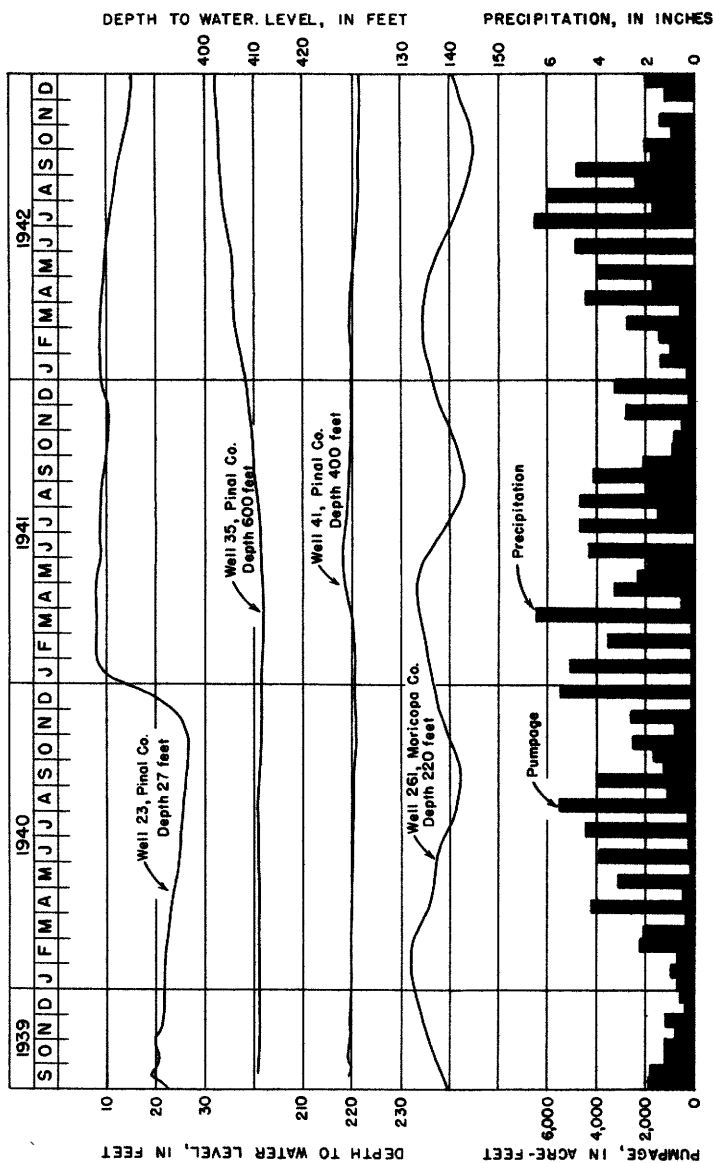


Figure 4.--Graphs showing fluctuations of water level in observation wells in the Queen Creek area, Maricopa and Pinal Counties, Ariz.

The water level in well 35 (see fig. 4), situated on the desert plain about half a mile from Queen Creek and a few miles downstream from the mouth of the canyon, continued to rise during the year. This rise is the continuation of the one which began in the spring of 1941 and is caused by the recharge resulting from the unusually wet winter of 1940-41. The delay in the manifestation of this recharge is attributed to the depth of the water table in this well.

Water-level measurements

1 (*941, p. 51). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 4, T. 1 N., R. 6 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 25	162.42	July 28	168.16	Dec. 16	172.77
June 3	166.05	Oct. 14	171.23		

3 (*911, p. 73; 941, p. 51). Elias Habeeb. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 1 N., R. 6 E. Measurements discontinued after Nov. 4, 1941.

6 (*911, p. 74; 941, p. 51). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 1 N., R. 6 E. Measurements discontinued after Apr. 24, 1941.

10 (*911, p. 74; 941, p. 51). Win Wylie. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 1 N., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 25, 184.64; June 3, 189.41; Oct. 14, 193.90; Dec. 14, 194.24.

18 (*911, p. 74; 941, p. 51). J. Assyd. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 1 N., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 25, 126.16; June 5, 130.63; Oct. 14, 135.36; Dec. 16, 134.87.

19 (*911, p. 74; 941, p. 51). E. D. Edwards. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 1 N., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 120.34; June 5, 124.86; Oct. 14, 129.89; Dec. 16, 128.31.

62 (*911, p. 74; 941, p. 51). Evans Blewett. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 1 N., R. 7 E. Measurements discontinued after Nov. 6, 1941.

68 (*911, p. 75; 941, p. 51). Mr. Schmitt. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 1 N., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 303.51; June 3, 303.57; Oct. 14, 303.85; Dec. 16, 303.99.

84 (*911, p. 75; 941, p. 51). W. A. Anderson. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 176.30; June 4, 176.50; Dec. 16, 176.75.

87 (*911, p. 75; 941, p. 52). Mrs. Gardner. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 116.46; June 5, 116.43; Oct. 14, 116.75; Dec. 16, 117.04.

89 (*911, p. 75; 941, p. 52). D. Cole. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 114.36; June 4, 114.63; Oct. 16, 115.32; Dec. 16, 115.40.

94 (*911, p. 75; 941, p. 52). "Old Clifford Place." NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 127.36; June 4, 127.63; Oct. 16, 128.05; Dec. 16, 128.09.

100 (*911, p. 76; 941, p. 52). A. W. Kelly. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 1 S., R. 7 E. Measurements discontinued after Dec. 23, 1941.

101 (*911, p. 76; 941, p. 52). Mr. Gardiner. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 26, 162.94; June 4, 163.22; Oct. 16, 163.66; Dec. 16, 163.70.

102 (*911, p. 76; 941, p. 52). Florence McEntire. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 1 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 116.83; June 4, 117.30; Oct. 16, 118.16; Dec. 16, 118.41.

- 125 (*911, p. 77; 941, p. 52). J. C. Jenkins. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 1 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 139.97; June 5, 146.46; Oct. 14, 148.98; Dec. 16, 145.66.
- 128 (*911, p. 77; 941, p. 52). Roosevelt Water Conservation District. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 1 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 110.02; Oct. 14, 115.90; Dec. 18, 113.70.
- 130 (*911, p. 77; 941, p. 52). C. F. Lockhart. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 1 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 89.75; June 5, 90.59; Oct. 14, 89.74; Dec. 17, 90.02.
- 136 (*911, p. 77; 941, p. 53). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 25, T. 1 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 95.03; June 5, 95.77; Oct. 14, 97.68; Dec. 17, 96.64.
- 151 (*911, p. 77; 941, p. 53). Roosevelt Water Conservation District. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 2 S., R. 5 E. Water levels, in feet below measuring point, 1942: Feb. 26, 52.20; June 5, 56.65; Oct. 16, 57.93.
- 155 (*911, p. 78; 941, p. 53). F. C. Harris. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 25, T. 2 S., R. 5 E. Water levels, in feet below measuring point, 1942: Feb. 26, 33.73; June 4, 34.82; Oct. 16, 30.81; Dec. 17, 32.36.
- 164 (*911, p. 78; 941, p. 53). Roosevelt Water Conservation District. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 5, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 75.59; June 5, 77.70; Oct. 14, 77.34; Dec. 17, 75.39.
- 170 (*911, p. 78; 941, p. 53). A. Sanford. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 91.05; June 5, 94.17; Oct. 14, a/99.14; Dec. 17, a/98.27.
- 177 (*911, p. 78; 941, p. 53). J. O. Power. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 112.71; Oct. 16, 119.19; Dec. 17, 118.70.
- 185 (*911, p. 78; 941, p. 53). J. S. Gephart. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 94.48; June 5, 96.87; Oct. 16, 101.80; Dec. 17, 100.65.
- 205 (*911, p. 79; 941, p. 53). A. J. Schlesinger. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 107.99; June 5, 118.75; Oct. 16, 123.55; Dec. 17, 117.17.
- 208 (*911, p. 79; 941, p. 53). H. O. Backer. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 20, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, a/91.00; June 4, a/83.79; Oct. 16, 81.12; Dec. 17, 79.53.
- 217 (*911, p. 79; 941, p. 54). Chandler Heights Citrus Irrigation District (published in Water-Supply Paper 941 erroneously as Chandler Heights Citrus Growers). SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 186.41; Oct. 16, 195.04.
- 218 (*911, p. 79; 941, p. 54). Clyde Fitzgerald. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 93.99; Oct. 16, 101.03; Dec. 17, 97.92.
- 221 (*911, p. 79; 941, p. 54). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1942: Feb. 26, 50.90; Oct. 16, 46.17; Dec. 17, 48.97.
- 252 (*911, p. 80; 941, p. 54). Jack Barnes. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 9, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 136.50; June 2, 141.72; Oct. 15, 147.53; Dec. 15, 143.12.
- 254 (*911, p. 80; 941, p. 54). W. J. Germann. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 26, 120.26; Dec. 17, 125.94.
- 260 (*911, p. 80; 941, p. 54). Lawrence Ellsworth. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 24, 137.49; June 5, 142.34; Oct. 15, 150.66; Dec. 16, 143.59.
- 261 (*911, p. 80; 941, p. 54). Higley Ward School. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 15, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 24, 134.86; June 2, 138.26; Oct. 17, 144.67; Dec. 17, 141.49.
- 266 (*941, p. 54). B. P. Hurt. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 24, 139.00; June 2, 143.49; Oct. 15, 146.67; Dec. 15, 144.56.

a Well 300 feet distant, pumping.

271 (*911, p. 80; 941, p. 54). Sossaman Bros. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 26, 130.99; June 5, 137.05; Dec. 16, 137.86.

273 (*911, p. 81; 941, p. 55). Leo Ellsworth. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Oct. 16, 143.16; Dec. 15, 137.89.

279 (*911, p. 81; 941, p. 55). Southern Pacific Railroad. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 2 S., R. 7 E. Water levels, in feet below measuring point, 1942: Feb. 25, 146.44; June 2, 148.99; Oct. 15, 151.40; Dec. 15, 151.21.

PIMA COUNTY

By H. R. McDonald and M. J. Scott

Measurements of water levels in observation wells in Pima County were continued in 1942 as part of the program covering the Santa Cruz Valley in Pima, Pinal, and Santa Cruz Counties, in which the United States Engineer Office cooperated until July 1. In all, 161 individual measurements were made during the year in 56 wells in Pima County.

Graphs showing the fluctuations of water level in five observation wells in Pima County and one in Santa Cruz County, over a period of more than 3 years, are given in figure 5. This figure shows also the combined pumpage from wells in both counties during 1941 and 1942 and precipitation during the period of the program at the University of Arizona station of the United States Weather Bureau at Tucson.

Precipitation during 1942 was several inches below normal, but during each of the two preceding years it was several inches above normal. Recharge to the ground water for the 3 years of the investigation can therefore be considered as at least normal.

The total pumpage from wells in the Santa Cruz Basin in Pima and Santa Cruz Counties in 1942 was about 100,000 acre-feet, which exceeded the pumpage in 1941 by approximately 20,000 acre-feet. The pumpage in parts of the area in each of these years probably exceeded somewhat the safe perennial yield, which has been estimated to be about 80,000 acre-feet for the two counties.

Water levels were measured monthly in Pima County in 5 wells and less frequently in 51 other wells.

Well 1337 is an unused well in an area of heavy pumping about 16 miles northwest of Tucson. The water level in this well rose slightly during the winter of 1942 but declined abruptly during the irrigation season. It

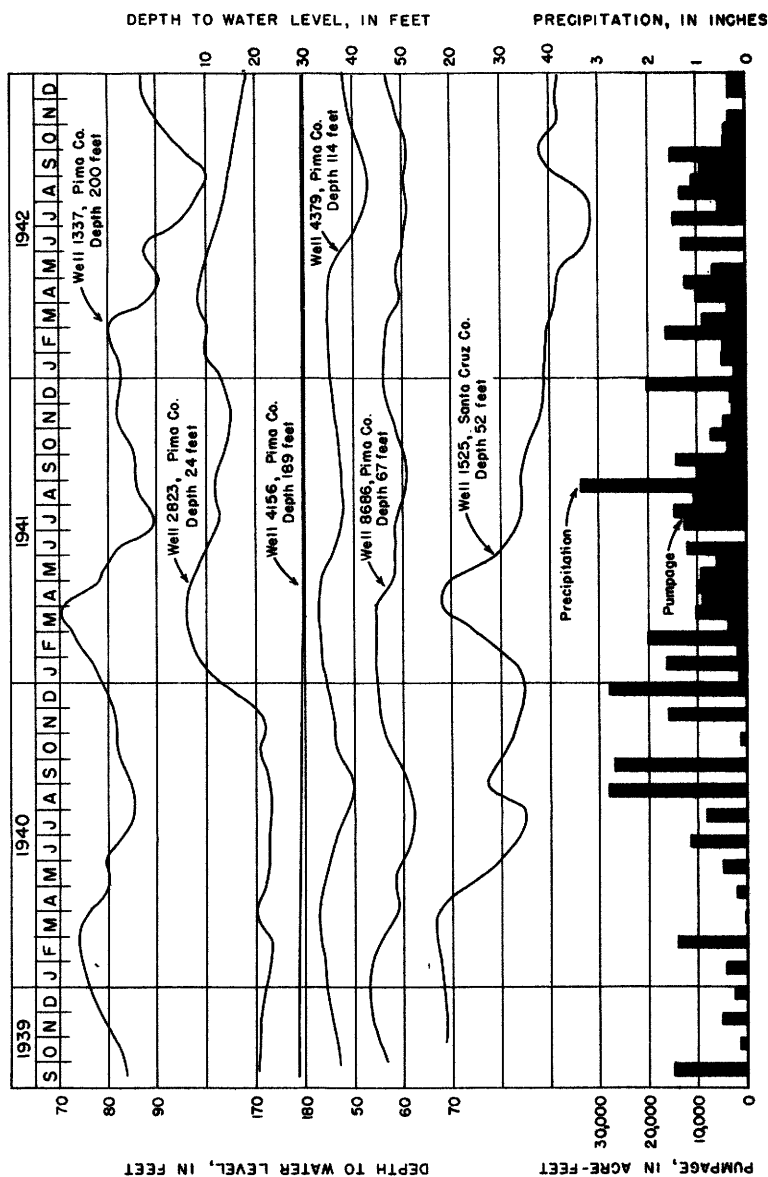


Figure 5.—Graphs showing fluctuations of water level in observation wells in the Santa Cruz Valley, Pima and Santa Cruz Counties, Ariz.

recovered quickly after pumping ceased, but at the end of the year it was more than 4 feet lower than at the beginning of the year and about $10\frac{1}{2}$ feet lower than in December 1939. The 3-year trend was downward, indicating that withdrawals exceed recharge.

Well 2823 is a shallow dug well situated 500 feet north of Rillito Creek in the area northeast of Tucson. It has not been used since measurements began in 1939. Because of the coarse material prevalent in the area and the proximity of the well to Rillito Creek, the effects of recharge and pumping in the vicinity are quickly registered in this well. During the winter months of 1942 floods in Rillito Creek raised the water level in the well, but in April pumping, coupled with the dry spring season, caused it to decline. The decline continued throughout the remainder of the year. However, the ground-water reservoir had been recharged to such an extent during the unusually wet winter of 1940-41 that the water level at the end of the year was about 2 feet higher than when measurements were begun in 1939.

Well 4156 is an unused, relatively deep well situated east of Tucson and isolated from heavy pumping. Since this well taps the deep ground-water horizons that are tapped also by some wells in Tucson, its mild fluctuations show the effects of long-time withdrawals and recharge in the area. Recharge occurring during the winter of 1940-41 caused a slight rise in the water level of this well beginning in September 1941 and lasting through March 1942. From March to the end of 1942 the water level declined slightly. During the 3-year period of measurement it declined almost 1 foot.

Well 4379 is a used irrigation well 4 miles south of Tucson, near the Santa Cruz River, in the vicinity of the wells that supply water to the city of Tucson. The water level in this well rose during the period January to April 1942, declined during the irrigation season, started to rise again in September, and was approximately 1 foot lower at the end than at the beginning of the year. During the 3-year period of observation, it declined about $3\frac{1}{2}$ feet.

Well 8686 is a domestic well in a heavily pumped area near Sahuarita, 18 miles south of Tucson. Its water level declined moderately during the irrigation season of 1942 and recovered at the close of the season, but it was 1 foot lower at the end of December than at the beginning of the year

and $3\frac{1}{2}$ feet lower than at the beginning of the period of observation 3 years before. The downward trend of the water level in the five wells here discussed and also in the 51 other observation wells in Pima County is typical of the lowering of the level of the water table in the larger part of the area.

Water-level measurements

454. Cortaro Farms. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 11, T. 11 S., R. 11 E. Beside galvanized iron storage tank, 75 feet west of frame house, 0.9 mile south of Pima-Pinal county line, and 5 miles northwest of Marana. Used drilled domestic well, diameter 10 inches. Equipped with cylinder pump and 5 horsepower gasoline engine. Measuring point, $\frac{3}{4}$ -inch hole, south side of pump base, 2.3 feet above land surface.

Water level, in feet below measuring point, 1941-42

Date	Water level	Date	Water level	Date	Water level
July 7, 1941	153.99	Dec. 1, 1941	153.87	Aug. 24, 1942	154.83
Aug. 18	156.98	Mar. 5, 1942	154.58	Dec. 22	154.93
Oct. 2	153.80	July 28	154.70		

457, formerly 3 (*941, p. 57). T. J. Smith. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 22, T. 11 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 9, 141.92.

460, formerly 5 (*941, p. 57). W. E. Anway. NW $\frac{1}{4}$ sec. 27, T. 11 S., R. 10 E (erroneously reported in Water-Supply Paper 941 as SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27). Water level, in feet below measuring point, 1942: Dec. 9, 143.18.

461, formerly 8 (*941, p. 57). T. V. Valenzuela. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 11 S., R. 10 E. Measuring point, bottom of pump base, south side, 1.4 feet above land surface and 1,940.68 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 9, 159.98.

463, formerly 6 (*941, p. 57). Bud Parker. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 11 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 8, 167.10.

535, formerly 25 (*911, p. 85; 941, p. 58). Cortaro Farms. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 30, T. 11 S., R. 11 E. Water levels, in feet below measuring point, 1942: Mar. 5, 173.86; Aug. 24, 174.30; Dec. 22, 173.76.

1254, formerly 81 (*911, p. 85; *941, p. 58). Cortaro Farms. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 31, T. 12 S., R. 13 E. Water levels, in feet below measuring point, 1942: Aug. 24, 96.22; Dec. 22, 93.67.

1337, formerly 96 (*911, p. 85; 941, p. 58). Cortaro Farms. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 16, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 5	80.53	June 1	87.53	Aug. 24	100.48	Nov. 30	87.79
27	88.08	30	94.98	Sept. 28	95.40	Dec. 22	87.11
Apr. 29	90.51	July 28	98.37	Oct. 30	90.56		

1355, formerly 97 (*911, p. 86; 941, p. 58). Cortaro Farms. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 21, T. 12 S., R. 12 E. Measurements discontinued after Nov. 13, 1941.

1356, formerly 98 (*911, p. 86; 941, p. 58). Cortaro Farms. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 12 S., R. 12 E. Measurements discontinued after Dec. 27, 1941.

1359, formerly 99 (*911, p. 86; 941, p. 58). Tucson Light & Power Co. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 26, T. 12 S., R. 12 E. Measurements discontinued after Dec. 26, 1941.

1367, formerly 101 (*911, p. 86; 941, p. 58). Arizona Building Co. (erroneously reported in Water-Supply Papers 911 and 941 as owned by Adams). NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 12 S., R. 12 E. Water levels, in feet below measuring point, 1942: Mar. 5, 118.60; Aug. 5, 128.50; Aug. 24, 129.74; Dec. 22, 125.39.

a Heavy pumping for irrigation in this vicinity.

1425, formerly 121 (*911, p. 86; 941, p. 58). Cortaro Farms. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 1, T. 12 S., R. 11 E. Water levels, in feet below measuring point, 1942: Mar. 5, 166.65; Dec. 22, 168.97.

1430, formerly 124 (*941, p. 58). J. E. Glover. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 12 S., R. 11 E. Measuring point, top of casing, west side, 1.1 feet above land surface and 2,014.13 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 9, 192.68.

1432, formerly 125 (*941, p. 59). P. Johansen. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 12 S., R. 11 E. Measuring point, bottom of pump base, north side, 1.1 feet above land surface and 2,062.32 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 7, 230.20.

1435, formerly 128 (*941, p. 59). S. B. Niles. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 12 S., R. 11 E. Measuring point, top of casing, north side, 1.7 feet above land surface and 2,188.27 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 7, 302.80.

1503, formerly 129-A (*941, p. 59). V. Valenzuela. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 12 S., R. 10 E. (erroneously reported in Water-Supply Paper 941 as NE $\frac{1}{4}$ sec. 8, T. 12 S., R. 10 E.). Measuring point, bottom of 2- by 12-inch timber, east side of pump, 0.5 foot above land surface and 1,964.30 feet above mean sea level. Water level, in feet below measuring point, 1942: Dec. 9, 161.78.

1506, formerly 130 (*941, p. 59). Harry Alexander. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 12 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 9, 195.89.

2650, formerly 131 (*911, p. 86; 941, p. 59). W. K. C. Nourse. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 2, T. 13 S., R. 12 E. Measurements discontinued after Dec. 27, 1941.

2652, formerly 133 (*911, p. 87; 941, p. 59). W. A. Hanson. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 13 S., R. 12 E. Measurements discontinued after Dec. 27, 1941.

2707, formerly 141 (*911, p. 87; 941, p. 59). Cortaro Farms. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 13 S., R. 13 E. Water level, in feet below measuring point, 1942: Mar. 5, 75.62. Measurements discontinued Apr. 29, 1942, as well as covered with 2 feet of earth.

2708, formerly 142 (*911, p. 87; 941, p. 59). Cortaro Farms. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 13 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 5, 30.60; Aug. 5, 33.56; Aug. 24, 34.02; Dec. 22, 34.11.

2710, formerly 132 (*911, p. 87; 941, p. 59). W. A. Knapp. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 13 S., R. 13 E. (erroneously reported in Water-Supply Papers 911 and 941 as SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 13 S., R. 12 E.). Measurements discontinued after Dec. 26, 1941.

2716, formerly 146 (*911, p. 87; *941, p. 60). Jaynes Station Irrigation District. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 13 S., R. 13 E. Measurements discontinued after Dec. 26, 1941.

2719, formerly 147 (*911, p. 87; 941, p. 60). Hans Benn. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 17, T. 13 S., R. 13 E. Measurements discontinued after Dec. 26, 1941.

2731, formerly 154 (*911, p. 88; 941, p. 60). Ralph Wetmore. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 13 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 5, 21.78; Aug. 26, 24.49; Dec. 22, 25.25.

2738, formerly 158 (*911, p. 88; 941, p. 60). Bruce Knapp. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 13 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 5, 31.72; Aug. 24, 31.98; Dec. 22, 32.64.

2805, formerly 185 (*911, p. 88; 941, p. 60). J. M. Guss. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 13 S., R. 14 E. Measurements discontinued after Dec. 26, 1941.

2808, formerly 187 (*911, p. 88; 941, p. 60). Courtright Stables. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 13 S., R. 14 E. Water levels, in feet below measuring point, 1942: Jan. 17, 5.90; Mar. 5, 5.85; Aug. 26, 12.64; Dec. 22, 13.11.

2811, formerly 190 (*911, p. 88; *941, p. 60). D. Hill. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 26, T. 13 S., R. 14 E. Measuring point, top of concrete curb, north side, 5.1 feet below land surface. Water level, in feet below measuring point, 1942: Jan. 17, 3.05. Measurements discontinued after Jan. 17, 1942.

2814, formerly 192 (*911, p. 88; 941, p. 60). Glenn Bingham. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 13 S., R. 14 E. Water level, in feet below measuring point, 1942: Jan. 17, 24.00. Measurements discontinued after Jan. 17, 1942.

2820, formerly 196 (*911, p. 89; 941, p. 60). Southern Arizona Polo Association. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 28, T. 13 S., R. 14 E. Water level, in feet below measuring point, 1942: Jan. 17, 8.91. Measurements discontinued after Jan. 17, 1942.

2821, formerly 197 (*911, p. 89; 941, p. 61). H. L. Kerr. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 28, T. 13 S., R. 14 E. Water level, in feet below measuring point, 1942: Jan. 17, 7.03. Measurements discontinued after Jan. 17, 1942.

2823, formerly 199 (*911, p. 89; 941, p. 61). Southern Arizona Polo Association. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 28, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 17	10.70	Apr. 29	9.30	July 29	13.80	Oct. 29	16.61
Mar. 5	10.24	June 1	11.05	Aug. 26	14.60	Nov. 27	17.56
27	8.13	30	12.40	Sept. 29	15.56	Dec. 22	18.40

2834, formerly 207 (*911, p. 89; 941, p. 61). F. W. Jordan. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 13 S., R. 14 E. Water level, in feet below measuring point, 1942: Jan. 17, 21.62. Measurements discontinued after Jan. 17, 1942.

2901, formerly 221 (*911, p. 89; 941, p. 61). W. G. Boyd. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 13 S., R. 15 E. Water level, in feet below measuring point, 1942: Jan. 17, 18.65. Measurements discontinued after Jan. 17, 1942.

2903, formerly 201 (*911, p. 89; *941, p. 61). E. L. Urquides. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 13 S., R. 15 E. Water levels, in feet below measuring point, 1942: Jan. 17, 9.46; Mar. 5, 8.95; Aug. 26, 11.14; Dec. 22, 12.76.

2909, formerly 222 (*911, p. 90; 941 p. 61). E. T. Wright. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 13 S., R. 15 E. Water level, in feet below measuring point, 1942: Jan. 17, 10.26. Measurements discontinued after Jan. 17, 1942.

2910, formerly 223 (*911, p. 90; 941, p. 61). V. C. Crouch. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 13 S., R. 15 E. Measuring point, top of concrete curb, west side, 1.4 feet above land surface. Water levels, in feet below measuring point, 1942: Jan. 17, 20.50; Mar. 5, 17.02; Aug. 26, 19.98; Dec. 22, 26.95.

4103, formerly 255 (*911, p. 90; *941, p. 61). J. S. Ayres (erroneously reported in Water-Supply Papers 911 and 941 as J. S. Sayres). NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 6, T. 14 S., R. 15 E. Water level, in feet below measuring point, 1942: Jan. 17, 7.25. Measurements discontinued after Jan. 17, 1942.

4153, formerly 253 (*911, p. 90; 941, p. 61). Emily Greenblatt. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 14 S., R. 15 E. Water levels, in feet below measuring point, 1942: Jan. 17, 56.29; Mar. 5, 55.55; Aug. 26, 56.15; Dec. 22, 57.06.

4156, formerly 256 (*911, p. 90; 941, p. 62). Charles Reynard. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 14 S., R. 15 E.

Water level, in feet below measuring point, 1942

Mar. 5	179.16	June 1	179.15	July 29	179.20	Oct. 29	179.41
27	179.08	24	179.25	Aug. 26	179.34	Nov. 27	179.37
Apr. 29	179.18	July 12	179.35	Sept. 29	179.37	Dec. 22	179.47

4375, formerly 294 (*911, p. 91; 941, p. 62). Hal Manning. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 34, T. 14 S., R. 13 E. Measuring point, bottom flange on west I-beam south side of pump, 1.1 feet below land surface. Water levels, in feet below measuring point, 1942: Mar. 24, 34.20; Dec. 23, 37.05.

4379, formerly 296 (*911, p. 91; 941, p. 62). Hal Manning. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 14 S., R. 13 E. Used dug and drilled irrigation well, diameter 150 to 16 inches, depth 114 feet, drilled to 114 feet in March 1942.

Water level, in feet below measuring point, 1942

Apr. 29	35.28	June 30	40.46	Oct. 29	39.91	Dec. 23	38.14
June 1	38.07	Sept. 29	41.00	Nov. 27	39.03		

4450, formerly 300 (*941, p. 62). Pima County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 14 S., R. 12 E. Water level, in feet below measuring point, 1942: Dec. 10, 94.90.

4452, formerly 301 (*941, p. 62). Pima County. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 17, T. 14 S., R. 12 E. Water level, in feet below measuring point, 1942: Dec. 10, 86.40.

4453, formerly 302 (*941, p. 62). Pima County. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 14 S., R. 12 E. Water level, in feet below measuring point, 1942: Dec. 10, 59.32.

4601, formerly 305 (*941, p. 63). J. Burrell. Sec. 10, T. 14 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 11, 19.96.

4602, formerly 306 (*941, p. 63). J. Burrell. Sec. 10, T. 14 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 11, 16.67.

4604, formerly 307 (*941, p. 63). Frank R. Rendon. SW $\frac{1}{4}$ sec. 24, T. 14 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 10, 307.55.

6404, formerly 308 (*941, p. 63). Everett Inscho. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 15 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 10, 146.49.

6405, formerly 309 (*941, p. 63). C. W. Van Camp. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 33, T. 15 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 10, 151.33.

6410, formerly 310 (*941, p. 63). C. W. Van Camp. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 15 S., R. 10 E. Water level, in feet below measuring point, 1942: Dec. 10, 215.23.

6575, formerly 311 (*911, p. 91; 941, p. 63). H. C. Barker. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T. 15 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 52.18; Aug. 24, 52.78; Dec. 23, 52.70.

6582, formerly 314 (*911, p. 91; 941, p. 64). San Xavier School. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 15 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 37.94; Aug. 24, 39.74; Dec. 23, 40.25.

6583, formerly 315 (*911, p. 92; 941, p. 64). Midvale Farms. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6590, formerly 319 (*911, p. 92; 941, p. 64). U. S. Indian Service, San Xavier Reservation. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 22, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6593, formerly 322 (*911, p. 92; 941, p. 64). U. S. Indian Service, San Xavier Reservation. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 15 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 28.50; Aug. 24, 30.74; Dec. 23, 30.17.

6601, formerly 327 (*911, p. 92; 941, p. 64). U. S. Indian Service, San Xavier Reservation. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6602, formerly 328 (*911, p. 92; 941, p. 64). U. S. Indian Service, San Xavier Reservation. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6603, formerly 329 (*911, p. 92; 941, p. 64). Papago Indian Tribe. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6604, formerly 330 (*911, p. 93; 941, p. 64). U. S. Indian Service, San Xavier Reservation. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 15 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

6612. City of Tucson. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 15 S., R. 13 E., 0.10 mile east of Santa Cruz River, 0.9 mile south of county road, 1.8 miles west of U. S. Highway 89, and 5.2 miles south of Tucson. Unused dug and drilled well, diameter 16 inches. Measuring point, top of concrete curb, west side, 1.0 foot above land surface.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 24	32.84	Aug. 24	32.85	Oct. 29	33.08	Dec. 23	32.87
29	32.70	Sept. 29	33.02	Nov. 27	32.96		

7152, formerly 363 (*911, p. 93; 941, p. 64). State of Arizona. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 16 S., R. 14 E. Water levels, in feet below measuring point, 1942: Mar. 6, 42.86; Aug. 25, 43.32; Dec. 23, 43.64.

7166, formerly 373 (*911, p. 93; 941, p. 65). Lane Farms. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 31, T. 16 S., R. 14 E.

7166. Lane Farms--Continued.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Mar. 6	51.15	June 1	54.94	Dec. 23	50.81
27	58.80	Aug. 25	58.13		

8578, formerly 393 (*911, p. 93; 941, p. 65). Lane Farms. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 17 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 61.30; Aug. 25, 64.23; Dec. 23, 63.77.

8587, formerly 395 (*911, p. 93; 941, p. 65). Lane Farms. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 25, T. 17 S., R. 13 E. Measurements discontinued after Dec. 29, 1941.

8676, formerly 411 (*911, p. 94; 941, p. 65). Lane Farms. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 17 S., R. 14 E. Water levels, in feet below measuring point, 1942: Mar. 6, 49.47; Apr. 29, 52.58. Measurements discontinued after Apr. 29, 1942.

8679, formerly 412 (*911, p. 94; 941, p. 65). Lane Farms. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 7, T. 17 S., R. 14 E. Measurements discontinued after Dec. 29, 1941.

8681, formerly 414 (*911, p. 94; 941, p. 65). H. B. Minelo. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 17 S., R. 14 E. Measurements discontinued after Dec. 29, 1941.

8686, formerly 415 (*911, p. 94; 941, p. 65). Arizona State Highway Department. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 17 S., R. 14 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	57.12	June 1	59.89	Aug. 25	60.22	Nov. 27	58.69
27	59.40	30	60.28	Sept. 29	61.10	Dec. 23	57.10
Apr. 29	58.80	July 29	60.70	Oct. 29	59.42		

8693, formerly 416 (*911, p. 94; 941, p. 65). Manuel Olivas. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 17 S., R. 14 E. Measurements discontinued after Dec. 29, 1941.

9230, formerly 444 (*911, p. 95; 941, p. 65). J. B. Bull. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T. 18 S., R. 13 E. Water levels, in feet below measuring point, 1942: Apr. 29, 49.22; Dec. 23, 48.55.

9238, formerly 451 (*911, p. 95; 941, p. 66). Owner's No. E 2. Intercontinental Ranch Co. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 18 S., R. 13 E. No measurements made in 1942.

10477, formerly 473 (*911, p. 95; 941, p. 66). Owner's No. W 1. Intercontinental Ranch Co. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 3, T. 19 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 52.85; Aug. 25, 54.38; Dec. 23, 52.10.

10479, formerly 474 (*911, p. 95; 941, p. 66). Hal Manning. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 9, T. 19 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

10480, formerly 475 (*911, p. 95; 941, p. 66). Hal Manning. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 19 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

10483, formerly 477 (*911, p. 96; 941, p. 66). Gustavo Amado. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 19 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, a/31.80; Aug. 25, 32.60; Dec. 23, a/33.13.

a Pumping.

PINAL COUNTY

By E. M. Cushing

Wells in Pinal County under observation in 1942 included 89 in the Santa Cruz and Gila River Basins, in which 306 measurements of water level were made, and 11 in the Queen Creek area, in which 43 measurements were made. This represents the addition of 38 wells, all in the Santa Cruz and Gila River Basins, to the number in the county under observation in the preceding year. The addition was made in order that the effects of pumping and recharge in the Santa Cruz River Basin might be measured not only in the Casa Grande-Eloy area but in all that part of the basin between the Pinal-Pima county line and the confluence of the Santa Cruz with the Gila River and in the Gila River Basin between the Ashurst-Hayden Dam and the confluence of the Santa Cruz and Gila Rivers. The United States Engineer Office cooperated until July 1 in the program covering the Santa Cruz River Basin.

The water-level fluctuations in the 11 wells in Pinal County that are in the Queen Creek area are discussed with those of other wells in that area under Maricopa County, as the larger part of the Queen Creek area is in Maricopa County. Graphs showing the fluctuations in 3 of these wells appear in figure 4, which is also included under Maricopa County.

The pumpage during 1942 from the ground-water reservoir in the Santa Cruz and Gila River Basins in Pinal County was about 500,000 acre feet, which includes pumpage from wells of the San Carlos Irrigation District and of the United States Indian Service, as obtained from their records.

Graphs showing the fluctuations of water level in typical wells in the Casa Grande-Eloy area of the Santa Cruz Basin during the period of the investigation are given in figure 6, as are also graphs showing the pumpage, by months, from the ground-water reservoir and the precipitation, by months, at the Casa Grande Ruins National Monument.

Well 890, situated a few miles northwest of Casa Grande, is at the western edge of an area irrigated mainly by surface water and at the eastern edge of an area irrigated by pumped water. The water level in this well remained at about the same elevation during the first quarter of the year and then began to decline slightly as the result of pumping. About

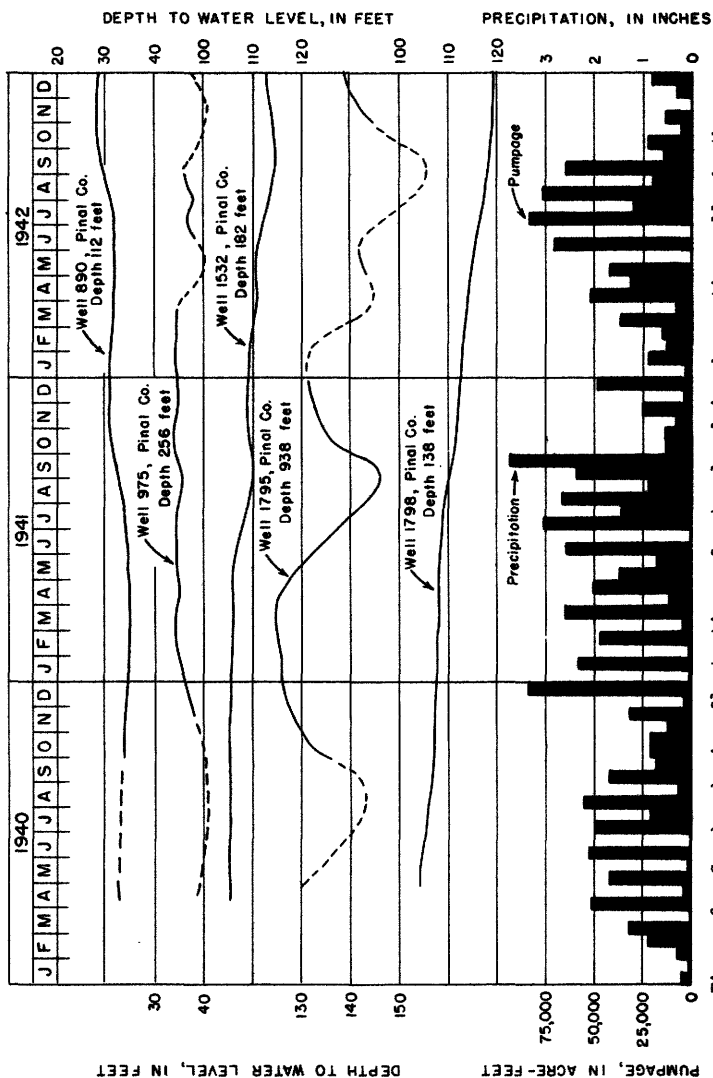


Figure 6.--Graphs showing fluctuations of water level in observation wells in the Casa Grande-Eloy area, Pinal County, Ariz.

June the recharge from irrigation and canal seepage overbalanced the effect of pumping, causing a rise in the water level that continued until irrigation ceased in November. After the irrigation season the water level showed little change, with just a slight decline at the end of the year.

Well 975, situated about 1 mile northeast of Casa Grande, was used again as an irrigation well during 1942. The graph of this well shows a decline of the water level in each of several months, caused by pumping of the well, and the consequent recovery of the water level after pumping ceased.

Well 1532, which is about 7 miles southwest of Casa Grande, is in an area of heavy pumping. Measurements of this well showed that pumping lowered the water table during 1942 and that the water table partially recovered at the end of the pumping season. As can be seen on the graph, the water level was about 4 feet lower at the end of 1942 than at the end of 1941.

Well 1795, which is in the center of the heavily pumped area south of Eloy, was more heavily pumped in 1942 than in 1941. The fluctuations of the water level in this well are similar for the 2 years, showing rapid decline during the pumping season and partial recovery at the end of the season, but the static water level was several feet lower at the end of 1942 than at the end of 1941.

Well 1798, about 6.5 miles southwest of Eloy, is near the western edge of the heavily pumped Eloy area. The graph of this well for 1942 shows a steady decline in the water level, which was a continuation of its constant decline since measurements began in April 1940, a definite indication that water is being withdrawn from the Eloy area at a rate in excess of the rate of replenishment.

Water-level measurements

1 (*911, p. 81; 941, p. 69). Mrs. T. Rose. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 1 N., R. 8 E. (erroneously reported in Water-Supply Papers 911 and 941 as SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 1 N., R. 8 E.). Water level, in feet below measuring point, 1942: Dec. 14, 271.70.

12 (*941, p. 69). Mr. Dobson. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 1 S., R. 8 E. Water levels, in feet below measuring point, 1942: Feb. 25, 259.94; June 3, 259.98; Oct. 13, 260.10; Dec. 14, 260.20.

22 (*911, p. 81; 941, p. 69). Hart Mullins. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 1 S., R. 10 E. Water levels, in feet below measuring point, 1942: Feb. 24, 9.14; June 3, 9.84; Oct. 13, 13.76; Dec. 14, 15.13.

23 (*911, p. 81; 941, p. 69). Hart Mullins. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 1 S., R. 10 E. Water levels, in feet below measuring point, 1942: Feb. 24, 8.96; June 3, 9.66; Oct. 13, 13.78; Dec. 14, 15.14.

24 (*911, p. 82; 941, p. 69). Jack Gray. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 1 S., R. 10 E. Water levels, in feet below measuring point, 1942: Feb. 24, 29.01; June 3, 30.90; Oct. 13, 35.46; Dec. 14, 37.10.

32 (*911, p. 82; 941, p. 69). L. C. Baldwin. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 1 S., R. 10 E. Water levels, in feet below measuring point, 1942: Feb. 24, 9.45; June 3, 12.28; Oct. 13, 17.14; Dec. 14, 19.10.

35 (*911, p. 82; 941, p. 70). E. M. Little. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 2 S., R. 10 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 24	406.43	July 28	403.41	Dec. 14	402.45
June 3	405.07	Oct. 13	402.90		

36 (*911, p. 82; 941, p. 70). L. C. Baldwin. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 1 S., R. 10 E. Water levels, in feet below measuring point, 1942: Feb. 24, 14.12; June 3, 20.15; Oct. 13, 25.43.

41 (*911, p. 82; 941, p. 70). W. A. Barkley. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 2 S., R. 8 E. Water levels, in feet below measuring point, 1942: Feb. 24, 219.69; June 3, 220.33; Oct. 15, 221.16; Dec. 15, 221.44.

71 (*911, p. 82; 941, p. 70). Magma Arizona Railroad. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 3 S., R. 8 E.

Water level, in feet below measuring point, 1942

Feb. 7	151.17	June 3	152.27	Dec. 15	153.39
24	151.15	Oct. 15	153.04		

93. Owner's No. 64. U. S. Indian Service. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 33, T. 3 S., R. 6 E., 100 feet southwest of State Highway 84, 0.5 mile south of Dock, and 16.2 miles northwest of Coolidge. Unused drilled irrigation well, diameter 20 inches, depth 210 feet. Measuring point, top of casing at seam, 1.8 feet above land surface. Water levels, in feet below measuring point, 1942: June 20, 54.20; Oct. 29, 52.96; Dec. 31, 52.34.

122. Owner's No. 52. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 25, T. 3 S., R. 4 E., 20 feet east of road, 7.7 miles southwest of State Highway 87, 3.3 miles northeast of Maricopa, and 25 miles northwest of Coolidge. Unused drilled irrigation well, diameter 20 inches. Measuring point, south side of top of casing, 0.9 foot above land surface. Water levels, in feet below measuring point, 1942: June 10, 29.29; Oct. 27, 28.80; Dec. 28, 28.51.

123. Owner's No. 61. U. S. Indian Service. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 36, T. 3 S., R. 4 E., 20 feet east of road, 6.4 miles southwest of State Highway 87, 9.7 miles northeast of Maricopa, and 24 miles northwest of Coolidge. Unused drilled irrigation well, diameter 20 inches, depth 160 feet. Measuring point, top of casing at seam at land surface. Water levels, in feet below measuring point, 1942: June 10, 25.06; Oct. 27, 24.46; Dec. 28, 24.05.

174. G. W. Yancey. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 4 S., R. 3 E., 300 feet north of Maricopa-Gila Bend Highway, and 2.8 miles northwest of Maricopa. Used dug stock well, diameter 45 inches, depth 27.5 feet. Measuring point, east side top of casing, 1.6 feet above land surface and 1,147.47 feet above mean sea level. Equipped with windmill. Water levels, in feet below measuring point, 1942: Mar. 13, 24.78; June 10, 25.34; Oct. 27, 26.17; Dec. 28, 25.92.

176. Mr. Sherman. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 4 S., R. 3 E., 200 feet north of road, 1 mile northeast of Casa Grande-Maricopa Highway, and 2 miles east of Maricopa. Unused drilled well, diameter 4 inches. Measuring point, north side top of casing 0.5 foot above land surface and 1,177.61 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 13, 40.99; June 10, 41.27; Oct. 27, 41.65; Dec. 28, 41.64.

249. Owner's No. 11-X. U. S. Indian Service. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 4 S., R. 6 E., 50 feet east of road, 1.1 miles southwest of State Highway 87, 1.7 miles south of Dock, and 15.7 miles northwest of Coolidge. Unused drilled irrigation well, diameter 18 inches. Measuring point, east side top of casing, 0.2 foot above land surface.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 20	35.64	Aug. 28	34.87	Oct. 29	34.19	Dec. 31	33.76
July 28	35.91	Sept. 28	34.45	Nov. 30	34.05		

257. Owner's No. 44. U. S. Indian Service. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 19, T. 4 S., R. 7 E., 10 feet north of Indian Service canal, 0.3 mile east of junction of State Highways 87 and 187, and 10.7 miles northwest of Coolidge. Unused drilled irrigation well, diameter 20 inches. Measuring point, top of casing at seam, 0.9 foot above land surface. Water levels, in feet below measuring point, 1942: June 19, 19.62; Oct. 29, 21.14; Dec. 31, 20.97.

258. Owner's No. 42. U. S. Indian Service. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 20, T. 4 S., R. 7 E., 20 feet east of trail, 1.6 miles east of State Highway 87, and 10 miles northwest of Coolidge. Used drilled well, diameter 20 inches. Measuring point, top of casing at seam, 0.8 foot above land surface. Equipped with rope and bucket.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 19	16.40	Aug. 28	17.60	Oct. 29	18.26	Dec. 31	18.29
July 28	17.17	Sept. 28	17.95	Nov. 30	18.39		

259. Owner's No. 43. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 30, T. 4 S., R. 7 E., 10 feet northeast of Indian Service canal, 0.2 mile northeast of State Highway 87, and 10 miles northwest of Coolidge. Unused drilled irrigation well, diameter 20 inches. Measuring point, top of casing at seam, 0.3 foot above land surface. Water levels, in feet below measuring point, 1942: June 19, 16.75; Oct. 29, 18.40; Dec. 31, 18.36.

278 (*941, p. 70). Arizona Ranches, Inc. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 4 S., R. 8 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 7	157.90	June 3	159.00	Dec. 15	160.08
24	157.87	Oct. 15	159.71		

299. E. C. High. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 32, T. 4 S., R. 9 E., 1.2 miles east of county road, 3.8 miles west of Florence, and 5.3 miles northeast of Coolidge. Used drilled irrigation well, diameter 20 inches, depth 100 feet. Measuring point, airline hole in pump base, 0.4 foot above land surface. Equipped with turbine pump and 50 horsepower electric motor. Water levels, in feet below measuring point, 1942: Feb. 26, 37.6; Oct. 29, 39.28; Dec. 31, 39.44.

324. Owner's No. 1. U. S. Indian Service. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 4 S., R. 10 E., 30 feet southeast of county road, 3 miles east of U. S. Highway 80, and 4 miles northeast of Florence. Unused drilled irrigation well, diameter 20 inches, depth 212 feet. Measuring point, east side of top of casing at land surface.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 19	84.02	Aug. 28	82.06	Oct. 29	80.70	Dec. 31	80.81
July 28	83.16	Sept. 28	80.95	Nov. 30	80.66		

327. Owner's No. 4. U. S. Indian Service. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 4 S., R. 10 E., 100 feet south of county road, 1.5 miles east of U. S. Highway 80, and 2 miles east of Florence. Unused drilled irrigation well, diameter 20 inches, depth 220 feet. Measuring point, west side of top of casing at land surface. Water levels, in feet below measuring point, 1942: June 19, 96.51; Oct. 29, 95.00; Dec. 31, 94.65.

341. Owner's No. 7. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 11 E., 30 feet southeast of county road, 6.3 miles east of U. S. Highway 80, and 8.3 miles northeast of Florence. Unused drilled irrigation well, diameter 20 inches, depth 162 feet. Measuring point, top of casing at seam, 0.8 foot above land surface.

341. U. S. Indian Service--Continued.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 19	21.44	Aug. 28	20.15	Oct. 29	18.75	Dec. 31	18.56
July 28	19.56	Sept. 28	20.28	Nov. 30	19.36		

437. Owner's No. 76. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 5 S., R. 9 E., 20 feet west of county road, 2.6 miles south of State Highway 287, and 4.7 miles east of Coolidge. Unused drilled irrigation well, diameter 16 inches, depth 616 feet. Measuring point, southeast side of top of casing, 1.5 feet above land surface. Water levels, in feet below measuring point, 1942: June 19, 117.41; Oct. 29, 117.90; Dec. 31, 116.19.

458. Owner's No. 16. U. S. Indian Service. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 14, T. 5 S., R. 8 E., 50 feet west of county road, 0.7 mile south of State Highway 287, and 2 miles northeast of Coolidge. Unused drilled irrigation well. Measuring point, top of 2- by 4-inch timber, east side, 0.9 foot above land surface. Water levels, in feet below measuring point, 1942: June 19, 71.43; Oct. 29, 68.76; Dec. 31, 68.20.

493. S. H. Wynn. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 5 S., R. 8 E., 0.1 mile east of county road, 1.9 miles west of State Highway 87, and 2.7 miles southwest of Coolidge. Used drilled irrigation well, diameter 20 inches. Measuring point, bottom of hole in east side of casing, 0.8 foot above land surface and 1,413.81 feet above mean sea level. Equipped with turbine pump and 100 horsepower electric motor. Water levels, in feet below measuring point, 1942: Mar. 6, 54.54; Oct. 29, 62.57; Dec. 31, 55.30.

503. L. D. Ulmer. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 1, T. 5 S., R. 8 E., 0.1 mile west of county road, 1.9 miles north of State Highway 287, and 4.3 miles northeast of Coolidge. Unused drilled irrigation well, diameter 20 inches. Measuring point, south side of top of casing, 0.5 foot below land surface. Water levels, in feet below measuring point, 1942: Feb. 25, 33.80; July 1, 35.26; Oct. 29, 35.76; Dec. 31, 35.90.

554. S. B. Rial. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 5 S., R. 7 E., 100 feet east of frame house, 0.5 mile north of county road, 0.9 mile south of State Highway 87, and 4.2 miles west of Coolidge. Unused drilled well, diameter 20 inches, depth 53 feet. Measuring point, top of cover, 0.8 foot above land surface. Water levels, in feet below measuring point, 1942: Feb. 25, 46.54; July 1, a/51.41; Oct. 29, b/; Dec. 31, 51.29.

616. H. D. Murphy. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 5 S., R. 4 E., 40 feet west of county road, 1.5 miles northeast of Casa Grande-Maricopa road, 6.0 miles southeast of Maricopa, and 14.8 miles northwest of Casa Grande. Used drilled well, diameter 20 inches, depth 75 feet. Measuring point, southeast side of top of casing at land surface and 1,228.87 feet above mean sea level. Equipped with windmill. Water levels, in feet below measuring point, 1942: Mar. 13, 71.50; June 10, 72.83; Oct. 27, 73.71; Dec. 28, 72.66.

618. J. R. Ross. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 5 S., R. 4 E., 150 feet east of county road, 5.5 miles north of State Highway 84, 7.2 miles southeast of Maricopa, and 14.8 miles northwest of Casa Grande. Unused drilled well, diameter 14 inches. Measuring point, northwest side of top of casing, 1.5 feet above land surface and 1,244.22 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 13, 82.55; June 11, 83.10; Oct. 27, 84.17; Dec. 28, 84.41.

653. Bernice White. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 5 S., R. 3 E., 50 feet west of trail, 75 feet north of Indian Reservation Line, 2.9 miles south of Maricopa, and 7 miles north of State Highway 84. Unused drilled well, diameter 16 inches. Measuring point, top of casing at seam, 2.2 feet above land surface and 1,201.31 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 13, 56.50; June 10, 56.95; Oct. 27, 57.54; Dec. 28, 57.66.

723. Mrs. Davis. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 6 S., R. 2 E., 30 feet behind old Orange Valley Service Station, 300 feet northwest of State Highway 84, 14 miles south of Maricopa, and 18.8 miles west of Casa Grande. Unused drilled well, diameter 6 inches. Measuring point, north side of top of casing, 0.9 foot above land surface and 1,536.14 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 18, 304.40; June 11, 272.47; Oct. 27, 241.98; Dec. 29, 238.87.

a Well 200 feet distant pumping.

b Dry, 53.1 feet below measuring point.

738. Owner's No. 2. A. A. Wallace. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 6 S., R. 3 E., 50 feet east of road, 2.6 miles north of State Highway 84, 9.7 miles south of Maricopa, and 16.6 miles west of Casa Grande. Used drilled irrigation well, diameter 20 inches, depth 400 feet. Measuring point, hole in south side of pump base at land surface and 1,291.99 feet above mean sea level. Equipped with turbine pump and 125 horsepower electric motor. Water levels, in feet below measuring point, 1942: Mar. 12, 123.08; Oct. 27, 134.67; Dec. 28, 130.99.

801 (*941, p. 70). Jake Stegmeier. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 6 S., R. 4 E. Measuring point, northeast side of top of concrete casing at land surface and 1,306.57 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 16, 78.32; June 12, 77.02; Oct. 28, 78.27; Dec. 29, 78.62.

818. Earl Lane. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 6 S., R. 4 E., 0.2 mile west of road, 0.5 mile south of State Highway 84, and 12.3 miles west of Casa Grande. Used drilled domestic well, diameter 6 inches. Measuring point, northeast side of top of casing, 0.8 foot above land surface and 1,311.78 feet above mean sea level. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point, 1942: Mar. 12, 107.42; June 11, 109.93; Oct. 27, 109.39; Dec. 29, 108.36.

885 (*941, p. 70). P. H. Ethington. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 9, T. 6 S., R. 5 E. Measuring point, north side of top of casing, 0.4 foot above land surface and 1,341.77 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 16, 56.04. Measurements discontinued after Mar. 16, 1942.

886 (*941, p. 71). Paul Knobloch. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 6 S., R. 5 E. Measuring point, north side top of casing at land surface and 1,332.79 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 13, 51.11. Measurements discontinued after Mar. 13, 1942.

887 (*941, p. 71). Paul Knobloch. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 6 S., R. 5 E. Measuring point, east side top of casing, 1.0 foot above land surface and 1,332.46 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 13, 44.19; June 12, 44.48; Oct. 27, 43.85; Dec. 28, 43.43.

890 (*941, p. 71). Mrs. Gus Kratzka. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 6 S., R. 5 E. Measuring point, top edge of north 6- by 6-inch timber, 0.8 foot above land surface and 1,349.72 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 13	31.03	May 29	31.41	July 29	30.44	Oct. 28	28.12
30	31.20	June 12	31.32	Aug. 27	29.53	Nov. 30	28.32
Apr. 29	31.36	30	31.19	Sept. 28	28.36	Dec. 28	28.57

893 (*941, p. 71). P. H. Ethington. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, T. 6 S., R. 5 E. Measuring point, south side top of casing, 0.8 foot above land surface and 1,347.00 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 16, 50.43; June 12, 49.28; Oct. 28, 46.42; Dec. 29, 47.36.

896 (*941, p. 71). P. H. Ethington. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 6 S., R. 5 E. Measuring point, north side bottom of pump base, 0.3 foot above land surface and 1,348.06 feet above mean sea level. Measurements discontinued Jan. 1, 1942.

901 (*941, p. 72). P. H. Ethington. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 22, T. 6 S., R. 5 E. Measuring point, south side bottom of pump base at land surface and 1,355.93 feet above mean sea level. Measurements discontinued Jan. 1, 1942.

905 (*941, p. 72). P. H. Ethington. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 6 S., R. 5 E. Measuring point, lower edge of discharge pipe, 2.0 feet above land surface and 1,367.63 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 16, 57.25. Measurements discontinued after Mar. 16, 1942.

906. Owner's No. 100. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 23, T. 6 S., R. 5 E., 30 feet west of county road, 0.7 mile north of State Highway 84, and 2.5 miles northwest of Casa Grande. Unused drilled irrigation well, diameter 20 inches, depth 174 feet. Measuring point, top of casing at seam, 0.7 foot above land surface. Water levels, in feet below measuring point, 1942: June 12, 33.78; Oct. 28, 28.82; Dec. 29, 30.20.

907 (#941, p. 72). Burris Brothers. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 6 S., R. 5 E. Measuring point, northwest side of top of casing at land surface and 1,374.56 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 16, 36.35; June 12, 39.46; Oct. 28, 30.66; Dec. 29, 33.50.

915 (#941, p. 72). U. S. Indian Service. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 36, T. 6 S., R. 5 E. Measurements discontinued after Mar. 21, 1941.

961 (#941, p. 72). Floyd Smith. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 6 S., R. 6 E. Measuring point, lower edge of discharge pipe, 1.6 feet above land surface and 1,390.63 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 9, 30.19; June 12, 31.06; Oct. 28, 30.90.

963 (#941, p. 73). J. J. Kirkland. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 6 E. Measuring point, southeast side of top of casing, 0.2 foot above land surface and 1,381.09 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 9, 21.45. Measurements discontinued after Mar. 9, 1942.

967 (#941, p. 73). E. E. Rosenberry. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 6 S., R. 6 E. Measuring point, north side top of 12-inch iron ring at land surface and 1,403.40 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 9, 32.82; June 12, 33.14; Oct. 28, 33.59.

968 (#941, p. 73). C. E. Sherrill. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 6 S., R. 6 E. Measuring point, top edge of west 8-by 8-inch timber, 0.67 foot above land surface and 1,421.21 feet above mean sea level. No measurements made in 1942.

970 (#941, p. 73). D. H. Prettyman. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 14, T. 6 S., R. 6 E. Measuring point, west side top of curb at land surface and 1,415.55 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 9, 34.30. Measurements discontinued after Mar. 9, 1942.

975 (#941, p. 73). Gilbert Brothers. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 17, T. 6 S., R. 6 E. Measuring point, top of east railroad rail, 0.2 foot above land surface and 1,396.71 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Mar. 9	33.90	June 30	36.07	Aug. 27	35.79
June 12	38.26	July 29	37.06	Dec. 30	36.16

977 (#941, p. 74). Mrs. Henry Botts. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 17, T. 6 S., R. 6 E. Measuring point, southwest corner of wood curb at land surface and 1,389.97 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 9, 28.14. Measurements discontinued after Mar. 9, 1942.

981 (#941, p. 74). Gilbert Brothers. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 6 S., R. 6 E. Measuring point, top edge of east 2- by 4-inch timber, 0.2 foot above land surface and 1,407.67 feet above mean sea level. No measurements made in 1942.

991 (#941, p. 74). Mrs. Emma Pennington. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 6 S., R. 6 E. Measuring point, west side top of 12-inch concrete casing, 2.4 feet above land surface and 1,440.72 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 9, 42.20; June 15, 44.44; Oct. 28, 41.87.

995 (#941, p. 74). U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 26, T. 6 S., R. 6 E. Measurements discontinued after July 21, 1941.

a Well 300 feet distant pumping.

1002. Owner's No. 103. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 6 S., R. 6 E., 50 feet northeast of county roads intersection, 0.8 mile southwest of State Highway 84, and 2.1 miles southeast of Casa Grande. Used drilled domestic well, diameter 20 inches, depth 154 feet. Measuring point, south of top of casing, 1 foot above land surface. Equipped with cylinder pump and small gasoline motor. Water levels, in feet below measuring point, 1942: June 12, 34.89; Oct. 28, 30.19; Dec. 29, 31.56.

1066 (*941, p. 74). Diwan Singh. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 22, T. 6 S., R. 7 E. (erroneously reported in Water-Supply Paper 941 as SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 22, T. 6 S., R. 7 E.). Measuring point, top of $\frac{3}{4}$ -inch hole in east side of pump base 0.6 foot above land surface and 1,446.69 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 9, 53.36; Oct. 28, 57.36.

1072. Owner's No. 85. U. S. Indian Service. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 6 S., R. 7 E., 50 feet west of Casa Grande canal, 150 feet west of county road, 1 mile south of Casa Grande-Coolidge Highway, and 8.8 miles east of Casa Grande. Unused drilled irrigation well, diameter 20 inches. Measuring point, east side of top of casing, 1.1 feet above land surface. Water levels, in feet below measuring point, 1942: June 15, 57.95; Oct. 28, 57.10.

1079. Owner's No. 84. U. S. Indian Service. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 6 S., R. 7 E., 20 feet north of Casa Grande canal, 50 feet west of county road, 1 mile south of Casa Grande-Coolidge Highway, and 9.8 miles east of Casa Grande. Unused drilled irrigation well, diameter 20 inches, depth 244 feet. Measuring point, south side of top of casing at land surface. Water levels, in feet below measuring point, 1942: June 15, 83.03; Oct. 28, 74.58.

1118 (*941, p. 75). Dick Shiflet. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 6 S., R. 8 E. (erroneously reported in Water-Supply Paper 941 as lot 9, NE $\frac{1}{4}$ sec. 4, T. 6 S., R. 8 E.). Measuring point, top of $\frac{3}{4}$ -inch hole in north side pump base, 2.1 feet above land surface and 1,431.59 feet above mean sea level. Water levels, in feet below measuring point, 1942: Oct. 29, 61.30; Dec. 31, 56.16.

1153. Owner's No. 82. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 6 S., R. 8 E., 20 feet north of Casa Grande canal, 0.1 mile east of county road, 1 mile south of Casa Grande-Coolidge Highway, and 11 miles east of Casa Grande. Unused drilled irrigation well, diameter 20 inches, depth 225 feet. Measuring point, south side of top of casing at land surface. Water levels, in feet below measuring point, 1942: June 15, 75.83; Oct. 28, 74.59.

1157. Owner's No. 78. U. S. Indian Service. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 6 S., R. 8 E., 100 feet west of west bank of Picacho Reservoir, 1.5 miles east of State Highway 87, and 8.2 miles south of Coolidge. Unused drilled irrigation well, diameter 20 inches, depth 290 feet. Measuring point, top of casing at seam, 2.2 feet above land surface. Water levels, in feet below measuring point, 1942: June 15, 25.83; Oct. 29, 27.69; Dec. 31, 30.01.

1162. Amos Hess Estate. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 6 S., R. 8 E., 100 feet northeast of Casa Grande canal, 300 feet east of State Highway 87, and 7.6 miles south of Coolidge. Unused drilled irrigation well, diameter 24 inches. Measuring point, east side of top of casing at land surface. Water levels, in feet below measuring point, 1942: Mar. 10, 56.31; June 15, 61.80; Oct. 29, 64.43; Dec. 31, 62.18.

1331. D. C. Roberts. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 7 S., R. 8 E., 50 feet north of road, 1 mile west of State Highway 87, and 3.1 miles northeast of Eloy. Used drilled irrigation well, diameter 20 inches, depth 310 feet. Measuring point, top of 1-inch hole (plug) in south side of pump, 0.7 foot above land surface and 1,540.52 feet above mean sea level. Equipped with turbine pump and 100 horsepower electric motor. Water levels, in feet below measuring point, 1942: Mar. 11, 93.65; June 29, 98.62; Oct. 29, 102.64; Dec. 31, 100.42.

1341. A. B. Houser. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 7 S., R. 8 E., 150 feet west of private road, 1.5 miles east of State Highway 87, and 3.6 miles east of Eloy. Used drilled irrigation well, diameter 20 inches. Measuring point, west side of top of base flange at bolt hole, 0.4 foot above land surface and 1,577.73 feet above mean sea level. Equipped with turbine pump and 140 horsepower Diesel motor. Water levels, in feet below measuring point, 1942: Mar. 11, 107.20; Oct. 29, 111.64.

1405. S. C. McFarland. $SE\frac{1}{4}SW\frac{1}{4}$ sec. 11, T. 7 S., R. 7 E., 30 feet north of county road, 4 miles south of Casa Grande-Coolidge Highway, 4.5 miles west of State Highway 87, and 5.3 miles northwest of Eloy. Used drilled irrigation well. Measuring point, top of 1-inch hole in northwest side of pump base, 0.2 foot above land surface and 1,498.39 feet above mean sea level. Equipped with turbine pump and 200 horsepower natural gas engine. Water levels, in feet below measuring point, 1942: Mar. 11, 86.13; Oct. 29, 90.93.

1413 (*941, p. 75). F. W. Shedd. $NE\frac{1}{4}SW\frac{1}{4}$ sec. 19, T. 7 S., R. 7 E. Measuring point, top of 3/4-inch hole in east side of pump base, 1.0 foot above land surface and 1,494.71 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 4, 72.29. Measurements discontinued after Mar. 4, 1942.

1414 (*941, p. 75). F. W. Shedd. $SW\frac{1}{4}SE\frac{1}{4}$ sec. 19, T. 7 S., R. 7 E. Measuring point, northeast side of top of casing at land surface and 1,516.79 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 4, 83.69; Oct. 30, 87.48; Dec. 30, 88.23.

1421 (*941, p. 75). F. W. Shedd. $SW\frac{1}{4}NW\frac{1}{4}$ sec. 27, T. 7 S., R. 7 E. Measuring point, top of 1-inch hole in east side of pump base, 0.2 foot above land surface and 1,467.60 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 4, 60.23; June 12, 60.73; Oct. 30, 60.61; Dec. 29, 60.06.

1422 (*941, p. 75). D. S. Cramer. $SE\frac{1}{4}SW\frac{1}{4}$ sec. 29, T. 7 S., R. 7 E. Measuring point, north side of top of casing at land surface and 1,513.44 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 4, 82.89; June 16, 84.61; Oct. 30, 85.84; Dec. 29, 86.14.

1476 (*941, p. 75). D. A. Trekel. $NE\frac{1}{4}SE\frac{1}{4}$ sec. 7, T. 7 S., R. 6 E. Measuring point, north side of top of wood curb, 2.9 feet above land surface and 1,423.58 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 41.33; June 11, 41.53; Oct. 28, 41.49; Dec. 29, 40.85.

1479 (*941, p. 76). Paul Brophy. $SW\frac{1}{4}SW\frac{1}{4}$ sec. 12, T. 7 S., R. 6 E. Measuring point, 1-inch hole in east side of pump base, 0.2 foot above land surface and 1,467.60 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 4, 60.23; June 12, 60.73; Oct. 30, 60.61; Dec. 29, 60.06.

1483 (*941, p. 76). N. H. Hanson. $SE\frac{1}{4}SE\frac{1}{4}$ sec. 17, T. 7 S., R. 6 E. Measuring point, south side top of casing, 1.5 feet above land surface and 1,441.16 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 12, 49.53. Measurements discontinued after Mar. 12, 1942.

1485 (*941, p. 76). F. W. Shedd. $SE\frac{1}{4}SE\frac{1}{4}$ sec. 27, T. 7 S., R. 6 E. Measuring point, south side top of casing, 0.4 foot below land surface and 1,480.38 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 59.65; June 12, 60.86; Oct. 28, 62.47; Dec. 29, 62.11.

1489. Albert Steinfield. $SE\frac{1}{4}NE\frac{1}{4}$ sec. 30, T. 7 S., R. 6 E., 150 feet west of county highway, 5.1 miles southwest of State Highway 84, 6.5 miles south of Casa Grande. Unused dug well, diameter 42 inches by 72 inches. Measuring point, top of east 12- by 12-inch timber, south side of pump base at land surface and 1,443.57 feet above mean sea level. Equipped with turbine pump. Water levels, in feet below measuring point, 1942: Mar. 12, 52.64; June 11, 52.92; Oct. 28, 53.54; Dec. 29, 53.63.

1532 (*941, p. 76). Phoenix Church of Brethren. $SE\frac{1}{4}NE\frac{1}{4}$ sec. 7, T. 7 S., R. 5 E. Measuring point, south side of top of casing, 2.0 feet below land surface and 1,366.06 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 13	110.33	May 29	111.08	July 29	113.69	Oct. 28	113.41
Mar. 30	111.09	June 11	111.92	Aug. 27	114.76	Nov. 30	113.00
Apr. 29	110.43	June 30	112.51	Sept. 28	114.32	Dec. 29	112.82

1533 (*941, p. 76). Southern Arizona Bank & Trust Co. $SW\frac{1}{4}NW\frac{1}{4}$ sec. 8, T. 7 S., R. 5 E. Measuring point, north side of top of casing at land surface and 1,371.94 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 13, 113.63. Measurements discontinued after Mar. 13, 1942.

1539. W. S. Stephenson Estate. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 7 S., R. 5 E., 150 feet north of Papago Indian Reservation Line, 2 miles west of county road, 6.7 miles southwest of Casa Grande. Unused drilled irrigation well, diameter 12 inches. Measuring point, top of casing at seam at land surface and 1,416.10 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 76.56; June 11, 85.92; Oct. 28, 79.21; Dec. 29, 79.09.

1540. L. R. Meyers. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 7 S., R. 5 E., at east end of old watering trough, 10 feet south of trail, 3 miles south of State Highway 84, and 4.1 miles southwest of Casa Grande. Unused drilled well, diameter 16 inches, depth 130 feet. Measuring point, top of casing at seam 1.0 foot above land surface and 1,388.13 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Mar. 20	89.34	June 11	89.47	Dec. 29	90.46
30	89.40	Oct. 28	90.09		

1583. State of Arizona. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 7 S., R. 4 E., 1.8 miles west of county road, 6.9 miles south of State Highway 84, and 11.0 miles southwest of Casa Grande. Used drilled irrigation well, diameter 24 inches, depth 918 feet. Measuring point, east side top of casing 1.1 feet above land surface and 1,372.56 feet above mean sea level. Equipped with turbine pump and Diesel motor. Water levels, in feet below measuring point, 1942: Mar. 13, 121.34; Oct. 27, 122.70; Dec. 29, 121.85.

1716 (#941, p. 77). Smith-Thornburg Co. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 8 S., R. 6 E. Measuring point, east side top of casing, 0.8 foot above land surface and 1,502.00 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 65.48; June 11, 66.29; Oct. 28, 67.17; Dec. 29, 67.34.

1725. State of Arizona. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 21, T. 8 S., R. 6 E., 0.6 mile southeast of Papago Indian Reservation fence corner, 8.3 miles southwest of State Highway 84, and 11.5 miles south of Casa Grande. Unused drilled well, diameter 12 inches. Measuring point, top of casing at seam at land surface and 1,503.74 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 68.22; June 11, 63.83; Oct. 28, 69.67; Dec. 29, 70.00.

1776 (#941, p. 77). S. C. Milligan. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 8 S., R. 7 E. Measuring point, plug in east side of pump, 1.0 foot above land surface and 1,544.77 feet above mean sea level. Water levels, in feet below measuring point, 1942: Oct. 30, 117.70; Dec. 30, 108.62.

1786 (#941, p. 77). Kenneth Hodgeman. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 15, T. 8 S., R. 7 E. Measuring point, top of 1-inch hole in east side of pump base, 0.5 foot above land surface and 1,565.21 feet above mean sea level. Water level, in feet below measuring point, 1942: Mar. 3, 115.51. Measurements discontinued after Mar. 3, 1942.

1787 (#941, p. 77). Sam Phillips. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 8 S., R. 7 E. Measuring point, top of 1-inch hole in north side of pump base, 2.0 feet above land surface and 1,569.41 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 3, 112.81; June 16, 127.60; Oct. 30, 126.20; Dec. 30, 120.34.

1791 (#941, p. 77). S. G. Wilson. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 22, T. 8 S., R. 7 E. Measuring point, top of 1-inch hole in west side of pump base, 1.1 feet above land surface and 1,574.88 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 3, 117.38; Oct. 30, 126.85; Dec. 30, 121.27.

1795 (#941, p. 78). Jack Pretzer, Jr. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 8 S., R. 7 E. Measuring point, top of 1-inch hole in east side of pump base, 0.4 foot above land surface and 1,615.21 feet above mean sea level.

Water level, in feet below measuring point, 1942

Apr. 29	143.22	Oct. 30	144.87	Dec. 30	139.10
May 29	141.87	Nov. 30	140.92		

a Well 175 feet distant pumping.

1798 (#941, p. 78). F. W. Shedd. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 33, T. 8 S., R. 7 E. Measuring point, north side of top of casing, 0.8 foot above land surface and 1,592.78 feet above mean sea level.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 3	113.41	July 29	117.26	Sept. 28	118.59	Nov. 30	119.18
June 16	116.15	Aug. 27	117.90	Oct. 30	119.03	Dec. 30	119.32

1855. D. A. Trekell. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 8 S., R. 8 E., 300 feet west of county road, 0.9 mile southwest of State Highway 84, and 1 mile south of Eloy. Used drilled irrigation well, diameter 20 inches, depth 450 feet. Measuring point, north side of bottom of base flange, 0.5 foot above land surface and 1,584.18 feet above mean sea level. Equipped with turbine pump and 125 horsepower electric motor.

Water level, in feet below measuring point, 1941-42

Date	Water level	Date	Water level	Date	Water level
Aug. 19, 1941	136.54	June 29, 1942	140.66	Dec. 30, 1942	137.55
Mar. 5, 1942	127.00	Oct. 30	141.45		

1880 (#941, p. 78). Arizona Farm Products Co. locally known as Jack Pretzer well 11. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 8 S., R. 8 E. Measuring point, north side of bottom of pump base flange, 0.3 foot above land surface and 1,628.71 feet above mean sea level. Water levels, in feet below measuring point, 1942: Sept. 28, 177.35; Dec. 30, 152.73.

1884 (#941, p. 78). Arizona Farm Products Co., locally known as Jack Pretzer well 6. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 8 S., R. 8 E. Measuring point, top of 1-inch hole in west side of pump base, 0.2 foot above land surface and 1,640.66 feet above mean sea level. Water levels, in feet below measuring point, 1942: Oct. 30, 155.49; Dec. 30, 151.36.

1886. Clark and Johnson. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 8 S., R. 8 E., across State Highway 84 from Montezuma Inn, 1.0 mile southeast of junction of State Highways 84 and 87, and 3.2 miles southeast of Eloy. Used drilled domestic irrigation well, diameter 14 inches, depth 375 feet. Measuring point, top of 3/4-inch hole in south side of pump, 0.3 foot below land surface and 1,609.36 feet above mean sea level. Equipped with turbine pump and Diesel motor. Water levels, in feet below measuring point, 1942: Mar. 10, 130.95; June 29, 154.96; Dec. 31, 136.87.

2097 (#941, p. 78). Arizona Farm Products Co., locally known as Jack Pretzer well 16. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 9 S., R. 8 E. Measuring point, top of 1-inch hole in west side of pump base, 1.6 feet above land surface and 1,661.43 feet above mean sea level. Measurements discontinued Jan. 1, 1942.

2104 (#941, p. 79). P. G. Wolfe. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 20, T. 9 S., R. 8 E. Water levels, in feet below measuring point, 1942: Oct. 30, 177.37; Dec. 30, 171.56.

2108. J. F. Nutt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 26, T. 9 S., R. 8 E., 100 feet north of county road, 5.6 miles southwest of State Highway 84, and 11 miles south-east of Eloy. Used drilled irrigation well, diameter 20 inches, depth 606 feet. Measuring point, top of 1 1/2-inch hole in west side of pump base, 0.2 foot above land surface. Equipped with turbine pump and 125 horsepower electric motor. Water levels, in feet below measuring point, 1942: Mar. 4, 153.07; Dec. 30, 155.68.

2173. Owner's No. 2. R. W. Dickey. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 9 S., R. 7 E., 200 feet northwest of intersection of county roads, 8.1 miles southwest of State Highway 84, and 8.8 miles southwest of Eloy. Used drilled irrigation well, diameter 20 inches. Measuring point, top of 1-inch hole in east side of pump base at land surface and 1,621.71 feet above mean sea level. Equipped with turbine pump and 300 horsepower Diesel engine. Water levels, in feet below measuring point, 1942: Mar. 3, 132.03; Dec. 30, 131.49.

2233. J. Sevak. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 9 S., R. 6 E., 200 feet west of road, 11.2 miles southwest of Eloy, and 18.1 miles south-southeast of Casa Grande. Used drilled irrigation well, diameter 10 inches, depth 382 feet. Measuring point, top of perforation in north side of casing, 0.3 foot below land surface and 1,578.74 feet above mean sea level. Equipped with turbine pump, and 50 horsepower Diesel motor.

2233. J. Sevak--Continued.

Water level, in feet below measuring point, 1941-42					
Date	Water level	Date	Water level	Date	Water level
Sept. 4, 1941	91.42	June 16, 1942	90.24	Dec. 30, 1942	89.05
Mar. 2, 1942	87.59	Oct. 30	90.19		

2236. B. F. Nelssen. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 9 S., R. 6 E., 30 feet east of old stone house, 3.5 miles east of Papago Indian Reservation Line, 11.8 miles southwest of Eloy, and 14.7 miles south of Casa Grande. Unused drilled well, diameter 4 inches. Measuring point, south side of top of casing 0.6 foot above land surface and 1,534.23 feet above mean sea level. Water levels, in feet below measuring point, 1942: Mar. 12, 86.19; June 11, 87.66; Oct. 28, 90.30; Dec. 29, 90.29.

2311 (*941, p. 79). J. C. Kinney. NW $\frac{1}{4}$ sec. 3, T. 10 S., R. 7 E. Measuring point, plug in west side of pump, 1.5 feet above land surface and 1,616.14 feet above mean sea level. Water levels, in feet below measuring point, 1942: Feb. 27, 98.57; June 16, 101.32; Oct. 30, 102.19; Dec. 30, 101.24.

2314 (*941, p. 79). Roland Curry. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 10 S., R. 7 E. Measuring point, top of $\frac{3}{4}$ -inch hole in east side of pump, 1.8 feet above land surface and 1,589.79 feet above mean sea level. Water levels, in feet below measuring point, 1942: Feb. 27, 94.70; June 16, 95.03; Oct. 30, 95.87; Dec. 30, 96.05.

2332 (*941, p. 79). J. C. Kinney. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 10 S., R. 8 E. Water levels, in feet below measuring point, 1942: Feb. 27, 149.60; June 16, 152.12; Oct. 30, 155.84; Dec. 30, 156.15.

2351. J. C. Kinney. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 10 S., R. 9 E., 50 feet east of corral, 200 feet southwest of ranch buildings, 5.0 miles southwest of State Highway 84, and 13.6 miles southeast of Eloy. Used drilled stock and domestic well. Measuring point, top of $\frac{3}{4}$ -inch hole (plug) in northeast side of pump, 1.1 feet above land surface. Equipped with cylinder pump and 3 horsepower electric motor. Water levels, in feet below measuring point: July 3, 1941, 140.27; Mar. 10, 1942, 143.98; June 29, 1942, 145.66; Dec. 30, 1942, 147.98.

2354 (*941, p. 79). H. H. Cake. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 10 S., R. 9 E. Water levels, in feet below measuring point, 1942: Mar. 5, 146.03; Dec. 21, 148.42.

2361 (*941, p. 80). King Brothers. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 22, T. 10 S., R. 9 E. Water levels, in feet below measuring point, 1942: Mar. 5, 138.7; Dec. 21, 141.81.

2363 (*941, p. 80). H. B. Aguirre. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 10 S., R. 9 E. Water levels, in feet below measuring point, 1942: Mar. 5, 134.87; Aug. 24, 135.76; Dec. 21, 137.14.

SANTA CRUZ COUNTY

By H. R. McDonald and M. J. Scott

The observation of selected wells in Santa Cruz County in 1942 formed part of the program covering the Santa Cruz Valley, the larger part of which lies in Pima and Pinal Counties. The United States Engineer Office cooperated in the program until July 1. During the year 53 measurements of water level were made in 10 wells in Santa Cruz County.

A graph showing fluctuations of water level in one well in Santa Cruz County is included in figure 5, which is made up of graphs of typical wells in the Santa Cruz River Basin in this county and in Pima County. The same figure shows also the combined pumpage in the two counties during

1941 and 1942 and the precipitation during the period of the program at the University of Arizona station of the United States Weather Bureau at Tucson.

The rainfall in Santa Cruz County during 1942 was below normal, but during the preceding year it was a little above normal. The ground-water recharge during 1942 should be considered as somewhat below normal.

The combined pumpage from wells in Pima and Santa Cruz Counties was 25 percent greater in 1942 than in 1941, being about 100,000 acre-feet in 1942 and 80,000 acre-feet in 1941. The pumpage in each of these years probably exceeded the safe perennial yield.

The greatest decline in water level in 1942 observed in the county was in well 1525. This well is located near the Santa Cruz River about 0.2 mile downstream from the infiltration gallery and pumping station that furnishes water to the city of Nogales. During 1942 the water level declined from January to June, began to rise in July as a result of recharge from the flood flow in the Santa Cruz River, and continued to rise during August and September. It dropped slightly in October, remaining approximately static thereafter to the end of the year. From the time of the first measurement, in November 1939, until December 30, 1942, the water level declined 23 feet. During these 3 years, the water levels in the other 10 observation wells in the county declined from 2 to 10 feet.

Water-level measurements

5, formerly 3 (*911, p. 96; 941, p. 81). R. W. Littlejohn. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 20 S., R. 12 E. Measuring point, top of wood curb, north side, 2.6 feet above land surface. Water levels, in feet below measuring point, 1942: Mar. 6, 63.30; Aug. 25, 63.82; Dec. 24, 63.73.

54, formerly 13 (*911, p. 96; 941, p. 81). Gene England. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 7, T. 20 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

57, formerly 12 (*911, p. 96; 941, p. 81). Albert Steinfeld. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 20 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

68, formerly 21 (*911, p. 97; 941, p. 81). Mr. Otero. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 19, T. 20 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

79, formerly 30 (*911, p. 97; 941, p. 81). Mrs. Schenkel. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 20 S., R. 13 E. Water levels, in feet below measuring point, 1942: Mar. 6, 28.35; Dec. 24, 28.99.

616, formerly 48 (*911, p. 97; 941, p. 81). Mrs. Mary Ellen Cotter. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 21 S., R. 13 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Mar. 6	27.64	June 1	28.85	July 29	29.91
Apr. 29	29.61	30	29.32	Dec. 24	28.99

624, formerly 53 (*911, p. 98; 941, p. 82). Mr. Favronio. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 21 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

900, formerly 81 (*911, p. 98; 941, p. 82). T. T. Pendleton. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 22 S., R. 13 E. Measurements discontinued after Nov. 25, 1941.

901, formerly 82 (*911, p. 98; 941, p. 82). T. T. Pendleton. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 22 S., R. 13 E. Measuring point, top of 3- by 12-inch timber near suction pipe under pitcher pump, 0.2 foot above land surface. Water levels, in feet below measuring point, 1942: Mar. 6, a; Aug. 25, a; Dec. 24, a.

908, formerly 91 (*911, p. 98; 941, p. 82). T. T. Pendleton. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	21.01	Apr. 29	20.54	July 29	23.54	Dec. 24	25.68
27	19.97	June 30	22.73	Aug. 25	23.52		

915, formerly 98 (*911, p. 99; 941, p. 82). T. T. Pendleton. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 22 S., R. 13 E. Measuring point, top of casing, south side, 0.25 foot above land surface. Water levels, in feet below measuring point, 1942: Mar. 6, 31.22; Aug. 25, 32.92; Oct. 6, 34.00; Dec. 24, 36.91.

917, formerly 99 (*911, p. 99; 941, p. 82). T. T. Pendleton. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 36, T. 22 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

1050, formerly 237 (*911, p. 103; 941, p. 85). Albert Gatlin. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 22 S., R. 15 E. Measurements discontinued after Dec. 31, 1941.

1051, formerly 236 (*911, p. 103; 941, p. 85). Caulishaw. San Jose de Sonoita Grant. Measurements discontinued after Dec. 31, 1941.

1053, formerly 235 (*911, p. 102; 941, p. 85). U. S. Civilian Conservation Corps Camp. San Jose de Sonoita Grant. Measurements discontinued after Dec. 31, 1941.

1055, formerly 234 (*911, p. 102; 941, p. 84). L. G. Zinsmeister. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 21, T. 22 S., R. 15 E. Measurements discontinued after Dec. 31, 1941.

1056, formerly 233 (*911, p. 102; 941, p. 84). L. G. Zinsmeister. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 22 S., R. 15 E. Measurements discontinued after Dec. 31, 1941.

1057, formerly 232 (*911, p. 102; 941, p. 84). Mr. Caulishaw. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 22 S., R. 15 E. Measurements discontinued after Dec. 31, 1941.

1504, formerly 125 (*911, p. 100; 941, p. 83). J. F. Dalton. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 23 S., R. 14 E. Measuring point, top of concrete curb, south side, 0.1 foot above land surface. Water level, in feet below measuring point, 1942: Dec. 24, 12.93.

1505, formerly 126 (*911, p. 100; 941, p. 83). Carl Peterson. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 23 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

1511, formerly 144 (*911, p. 101; 941, p. 83). George Griffith. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 26, T. 23 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

1513, formerly 132 (*911, p. 100; 941, p. 83). Dines Nelson. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 27, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	17.99	Apr. 29	17.62	June 30	19.20	Aug. 25	19.67
27	17.93	June 1	17.98	July 28	19.89	Dec. 24	18.96

1521, formerly 138 (*911, p. 100; 941, p. 83). Bill Chenoweth. NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 23 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

1525, formerly 142 (*911, p. 100; 941, p. 83). Camberos Brothers. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	40.02	June 1	46.94	Aug. 25	42.68	Nov. 27	41.36
27	41.05	30	48.73	Sept. 29	38.07	Dec. 24	41.90
Apr. 29	41.43	July 29	48.20	Oct. 29	41.91		

a Dry, 19 feet below measuring point.

1603, formerly 102 (*911, p. 99; 941, p. 82). T. T. Pendleton. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 12, T. 23 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

1604, formerly 103 (*911, p. 99; 941, p. 83). T. T. Pendleton. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 12, T. 23 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

1606, formerly 105 (*911, p. 99; 941, p. 83). Peter Malas. Formerly owned by Mrs. Ellen Underwood. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 23 S., R. 13 E. Measurements discontinued after Dec. 30, 1941.

1910, formerly 199 (*911, p. 101; 941, p. 84). Benito Morales. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 24 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

1912, formerly 202 (*911, p. 101; 941, p. 84). Simon Mastick. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 8, T. 24 S., R. 14 E.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 5	24.58	Apr. 29	26.12	June 30	26.92	Aug. 25	26.62
27	25.46	June 1	26.55	July 29	26.55	Dec. 24	28.72

1914, formerly 204 (*911, p. 102; 941, p. 84). P. C. Gallegos. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 24 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

1918, formerly 208 (*911, p. 102; 941, p. 84). O. D. Bartlett. SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 9, T. 24 S., R. 14 E. Measurements discontinued after Dec. 30, 1941.

2004, formerly 174 (*911, p. 101; 941, p. 83). D. Peterson. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 24 S., R. 15 E. Measurements discontinued after Nov. 26, 1941.

2006, formerly 176 (*911, p. 101; 941, p. 84). Neilson Brown. SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 24 S., R. 15 E. Measurements discontinued after Nov. 26, 1941.

2007, formerly 177 (*911, p. 101; 941, p. 84). Neilson Brown. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 24 S., R. 15 E. Measurements discontinued after Nov. 26, 1941.

CALIFORNIA

INTRODUCTION

The following report shows the progress made in 1942 by the Geological Survey, United States Department of the Interior, in the measurement of water levels in California. Part of this work was done in connection with intensive investigations of the ground-water resources made in special areas by the Geological Survey in cooperation with other agencies. In the part of the report that deals with southern California in general, the wells are classified by river basins; in the other parts, they are classified by counties.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

Most observation wells in California for which records are given in this report are listed herein either by river basins or by counties, both of which are arranged alphabetically. Three of the wells among those classified by river basins, however, because of their importance as key wells, are placed at the beginning of the list, even though this interferes with the alphabetical arrangement of the basins. Within each river basin or county, the wells are listed numerically, with the exception of one of the key wells, which is listed by name. Complete descriptions are given for only newly added wells. The numbers in parentheses immediately following a well number indicate the water-supply papers in which earlier records of that well are given and the pages on which they appear. An asterisk indicates that a description of the well is given in that paper. The water level in each of the wells listed under a river basin is expressed in feet below a fixed measuring point; the water level in each well listed under a county is expressed in feet below land-surface datum, which is a precise plane of reference that coincides with the average level of the land surface at the well. In the descriptive text, if any, preceding the water levels given for each well listed under a county, the position of that reference plane is defined with reference to the current measuring point at the well and to the datum plane for water levels published in earlier reports. For convenience, the name of the ground-water area is added after the county name if appropriate.

RIVER BASINS IN SOUTHERN CALIFORNIA

By F. C. Ebert

The Federal Geological Survey continued during 1942 its program of measuring the depth to water level in selected wells in southern California. In addition, systematic measurements were made by other agencies in several areas in this general region. The Division of Water Resources of the Department of Public Works, State of California, continued the assembling of records of wells in the south coastal basins collected by various agencies but did not, as in previous years, publish a report embodying these records.

CLIMATOLOGIC DATA

The following general summary of climatologic data for the calendar year 1942 is taken from a report ^{1/} of the Weather Bureau:

"The annual precipitation for 1942 approximated the 46-year average. It was well above normal in the central and northern coastal basins and the Sacramento drainage basin, approximated the normal in the San Joaquin drainage basin, and was deficient elsewhere, especially in southern California where some stations had less than half of their usual annual amount. Monthly State averages exceeded the normal only in April, May, August and November. In southern California all months had subnormal precipitation except April and August. Local floods occurred in the south-eastern desert regions following heavy rains on August 9, with property loss heavy in the Death Valley area. The number of thunderstorms was smaller than usual. Damage by grass, brush, and forest fires was subnormal.

"The total annual snowfall was only 79 percent of the 46-year average. April, May, and June were the only months with excesses. The total snowfall for the 1941-42 season, however, exceeded the normal, except in southern California, and water for irrigation was ample. The snow cover at the end of the year was only 34 percent of the normal. The ground was then generally bare below the 4,000-foot level in northern California, below the 5,000-foot level in the middle Sierra Nevada, and below the 6,000-foot level in the southern Sierra Nevada and mountains of southern California."

FLUCTUATIONS OF WATER LEVEL

San Gabriel River Basin

A continuous water-stage recorder was in operation all year on well 42a ^{2/} at Baldwin Park, in the upper San Gabriel Valley. The water level in this well declined from a mean daily altitude of 312.82 feet, the highest of the year, reached on January 1, to a low mean daily altitude of 295.16 feet, reached on December 30. On December 31, 1942, the mean daily altitude of the water level was 295.17 feet--17.65 feet below the high stage of the year and 17.70 feet below the stage of December 31, 1941.

^{1/} U. S. Department of Commerce, Weather Bureau, Climatological Data, vol. 46, No. 13, 1942.

^{2/} Ebert, F. C., Am. Geophys. Union Trans. 1936, p. 372.

Santa Ana River Basin

San Bernardino area

The water level in the Williams well stood at 13.42 feet below the reference point on January 3. It rose to 11.16 feet by February 7, declined to 13.25 feet by March 14, and then rose to 10.94 feet, the high point of the year, which it reached on May 2. From this date on the decline was continuous until the low stage of the year, 24.92 feet, was reached on November 21.

The water level in the Redlands well, U. S. 101, declined from 42.97 feet below the reference point, at which stage it stood on January 3, 1942, to a stage of 43.48 feet, which it reached on January 1, 1943.

Measurements of water level made during 1942 in 10 wells, distributed over the valley, indicate a mean decline of 1.7 feet from November 1941 to November 1942. The range of change varied from a rise of 3.95 feet, in well 94, near the north rim of the valley, to a decline of 9.87 feet, in well 117, west of Redlands.

San Jacinto Valley

The water level in well 72c rose from 72.52 feet below the reference point, its stage on November 7, 1941, to 71.64 feet, its stage on November 3, 1942.

Measurements of water level made during 1942 in 10 wells, distributed over the valley, indicate a mean decline of 4.2 feet. The range of change varied from a rise of 3.54 feet to a decline of 15.39 feet.

Tia Juana River Basin

The water levels in all 5 observation wells in this basin declined during the year. The net decline from November 1941 to November 1942 ranged from 1.85 feet, in well 0120, to 0.77 foot, in well 0140b, and averaged 1.24 feet in the 5 wells.

Otay River Basin

The water levels in both wells declined during the year. The net decline from November 1941 to November 1942 averaged 1.68 feet.

Sweetwater River Basin

In well 018c, which is 21 feet deep, the water level in November 1941 was 12.70 feet below the measuring point; that is, there was 8.3 feet of water in the well. In November 1942 this well was dry.

San Diego River Basin

In this basin water levels declined from October 1941 to November 1942. In well L28 in El Monte Park the decline was 9.54 feet. In 6 wells above San Vicente Creek the net average decline was 2.43 feet, in 8 wells below San Vicente Creek it was 1.89 feet, and in 6 wells in Mission Valley it was 1.38 feet.

San Dieguito River Basin

The water levels in 4 observation wells in San Pasqual Valley showed a net average decline of 2.04 feet from November 1941 to November 1942, the decline in the individual wells ranging from 1.38 feet, in well H34b, to 2.41 feet, in well G17a.

San Luis Rey River Basin

In the Bonsall Basin 8 wells showed a net average decline of 0.56 foot from December 1941 to December 1942, and 8 wells in the Mission Basin showed a net average decline of 6.46 feet. The declines in the individual wells ranged from 14.16 feet, in well F32, to 2.97 feet, in well F30. Two wells in this area had incomplete records.

Mojave River Basin

Observations of water levels in the Mojave River Basin were continued in 80 wells, most of which were measured in both the spring and fall of 1942. The annual discharge of the Mojave River during this year was less than normal, and at no time was there continuous flow from the Forks to Barstow.

Water levels in wells in the area near the Forks declined on an average of 0.6 foot, whereas in wells near the river channel in the stretch from Hesperia Crossing to Victorville they showed an average drop of 2.6 feet. The greatest decline registered in this area was 5.2 feet, in well U13, which is located on the east bank of the river at Hesperia Crossing. The water levels in wells on the mesa east of the river showed declines averaging about 1.5 feet.

Wells in the valley between Victorville and Hodge showed very little change in water level from the previous year: the average net change was a decline of 0.2 foot. Downstream from Hodge, between the river and the Barstow-Mojave highway, there was an average drop in the water table of 2.3 feet. The decline was greatest in well 56A, which is near the river channel, and became less toward the above-mentioned highway about in

proportion to the distance of each well from the river. In wells in the area north of the highway no definite trend in water level during the year was noted.

Water levels in the Lenwood-Barstow area did not change noticeably. Wells in the area between Barstow and Daggett showed a general decline in water level. The decline amounted to 1.7 feet in Barstow and increased toward Daggett, where, in well L1, the decline was 6 feet. The water level in this well is following the same pattern it followed during the year 1938-39.

Water levels in the sub-basin between Daggett and the Kouns-Newberry sand dune belt declined generally, the declines averaging 3.1 feet. The wells that were measured east of the sand-dune belt in the Newberry-Troy Lake area showed no definite trend in water level during the year.

Antelope Valley

Observations of water level in 1942 in this valley were made before and after the irrigation season. They indicated a continued downward trend in the levels. Declines varied in amount throughout the valley, being greatest in areas of most intensive pumping. The stages in December 1942 ranged from 1 to 8 feet lower than in December 1941 and averaged about 4 feet lower.

WATER-LEVEL MEASUREMENTS

Measurements were discontinued in 1941 in wells H1a and H1b in San Dieguito River Basin and L10, L83, and M40 in Mojave River Basin. These five wells have been omitted, therefore, from the list that follows. The first three wells in the list are key wells.

San Gabriel River Basin

42a (*817, pp. 9-11; 840, pp. 28-29; 845, pp. 17-18; 886, pp. 23-24; 911, p. 119; 941, pp. 90-91). Key well. At Baldwin Park.

Water level, in feet above mean sea level, 1942

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	312.82	312.19	311.81	311.33	311.10	309.44
2	312.73	312.18	311.92	311.32	311.07	309.38
3	312.72	312.15	311.91	311.31	311.07	309.31
4	312.66	312.14	311.79	311.22	311.07	309.22
5	312.64	312.13	311.82	311.25	311.00	309.18
6	312.61	312.13	311.86	311.27	310.95	309.12
7	312.59	312.13	311.72	311.22	310.94	309.06
8	312.59	312.13	311.73	311.21	310.93	309.01
9	312.53	312.12	311.75	311.20	310.87	308.92
10	312.52	312.08	311.76	311.24	310.85	308.80
11	312.52	312.07	311.77	311.17	310.81	308.75
12	312.49	312.10	311.74	311.18	310.74	308.64
13	312.46	312.12	311.72	311.14	310.67	308.50
14	312.42	312.02	311.79	311.16	310.59	308.38
15	312.42	312.04	311.68	311.15	310.62	308.28
16	312.40	312.00	311.63	311.10	310.58	308.19

42a. Key well--Continued.

Water level, in feet above mean sea level, 1942						
Day	Jan.	Feb.	Mar.	Apr.	May	June
17	312.37	311.97	311.63	311.07	310.49	308.08
18	312.35	311.95	311.73	311.10	310.34	308.04
19	312.33	311.92	311.68	311.15	310.32	307.94
20	312.33	311.96	311.59	311.12	310.29	307.85
21	312.33	312.02	311.59	311.09	310.19	307.79
22	312.25	311.92	311.61	311.12	310.10	307.72
23	312.25	311.91	311.62	311.08	310.01	307.64
24	312.25	312.00	311.61	311.04	309.95	307.54
25	312.26	311.92	311.52	311.06	309.94	307.44
26	312.28	311.93	311.48	311.07	309.85	307.35
27	312.26	311.96	311.50	311.09	309.74	307.13
28	312.26	311.83	311.49	311.11	309.66	307.05
29	312.21	.....	311.44	311.06	309.61	307.02
30	312.19	.....	311.35	311.08	309.53	306.91
31	312.19	.....	311.36	.....	309.43	.....

Water level, in feet above mean sea level, 1942						
Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	306.79	303.68	300.90	298.87	297.00	296.04
2	306.72	303.63	300.87	298.80	296.94	296.01
3	306.64	303.54	300.82	298.73	296.92	295.95
4	306.56	303.44	300.71	298.70	296.89	295.90
5	306.49	303.29	300.67	298.65	296.86	295.86
6	306.40	303.17	300.63	298.58	296.81	295.80
7	306.31	303.08	300.60	298.48	296.79	295.78
8	306.15	302.99	300.53	298.39	296.79	295.75
9	306.05	302.84	300.44	298.34	296.79	295.72
10	305.88	302.73	300.39	298.26	296.71	295.68
11	305.81	302.67	300.30	298.21	296.61	295.65
12	305.76	302.62	300.26	298.17	296.62	295.62
13	305.68	302.55	300.22	298.08	296.61	295.65
14	305.53	302.45	300.17	298.04	296.58	295.56
15	305.41	302.33	300.08	298.00	296.55	295.54
16	305.31	302.25	300.00	297.92	296.49	295.53
17	305.21	302.17	299.96	297.80	296.45	295.50
18	305.07	302.08	299.86	297.74	296.42	295.42
19	304.97	301.98	299.76	297.65	296.38	295.37
20	304.91	301.88	299.75	297.55	296.31	295.36
21	304.79	301.82	299.71	297.42	296.31	295.32
22	304.67	301.73	299.65	297.35	296.33	295.29
23	304.57	301.63	299.57	297.28	296.32	295.25
24	304.46	301.57	299.47	297.18	296.28	295.25
25	304.36	301.49	299.40	297.11	296.23	295.25
26	304.20	301.36	299.32	297.08	296.20	295.17
27	304.09	301.28	299.25	297.06	296.18	295.16
28	303.99	301.22	299.16	297.06	296.15	295.19
29	303.94	301.12	299.06	296.98	296.12	295.19
30	303.84	301.05	298.95	296.95	296.11	295.16
31	303.77	301.04	.....	296.96	.....	295.17

Santa Ana River Basin

San Bernardino area

Williams well (#817, pp. 12-16; 840, p. 30; 845, pp. 18-19; 886, p. 24; 911, pp. 119-120; 941, pp. 91-92). Key well. Record furnished by Gage Canal Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	13.42	Jan. 31	11.25	Feb. 28	12.75	Mar. 28	13.08
10	12.75	Feb. 7	11.16	Mar. 7	13.00	Apr. 4	12.42
17	12.33	14	11.75	14	13.25	11	13.16
24	11.85	21	12.42	21	13.25	18	11.84

Williams well--Continued.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 25	11.16	June 27	16.67	Aug. 29	21.84	Oct. 31	24.67
May 2	10.84	July 4	17.45	Sept. 5	22.33	Nov. 7	24.75
9	11.50	11	17.98	12	22.83	14	24.83
16	12.00	18	18.58	19	23.16	21	24.92
23	12.92	25	19.16	26	23.50	28	24.92
30	13.86	Aug. 1	19.75	Oct. 3	23.75	Dec. 5	24.92
June 6	14.75	8	20.16	10	24.00	12	24.92
13	15.42	15	20.83	17	24.25	19	24.83
20	15.92	22	21.33	24	24.50	26	24.75

San Jacinto Valley

72c (*817, p. 12; 840, p. 30; 845, p. 18; 886, p. 24; 911, p. 120; 941, p. 92). Key well. At Perris, Riverside County. Water levels, in feet below measuring point, 1942: Feb. 18, 72.11; May 19, 72.15; Aug. 26, 73.49; Nov. 3, 71.64.

Mojave River Basin

U1 (*886, p. 30; 911, p. 125; 941, p. 96). Mr. Olive. SE. corner NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 3 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 6, 68.34; Nov. 21, 75.10.

U4 (*886, p. 30; 911, p. 125; 941, p. 96). Near center of SE $\frac{1}{4}$ sec. 12, T. 3 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 6, 7.26; Nov. 21, ground moist at 25.

U6 (*886, p. 30; 911, p. 125; 941, p. 96). Mike Spranger. Near center of east line of SW $\frac{1}{4}$ sec. 6, T. 3 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 2.27; Nov. 20, dry at about 23.

U9 (*886, p. 30; 911, p. 126; 941, p. 96). A. W. Cole. Near NE. corner of SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 30, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 29.02; Nov. 21, 40.09.

U13 (*886, p. 31; 911, p. 126; 941, p. 96). Arrowhead Reservoir & Power Co. Near west line of SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 17.39; Nov. 19, 31.88.

U14 (*886, p. 31; 911, p. 126; 941, p. 96). O.A. Minister. Near SW. corner of sec. 20, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 20.80; Nov. 19, 30.40.

U15 (*886, p. 32; 911, p. 126; 941, p. 96). J.M. Allison. Near center of south line of NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 20, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 26.34; Nov. 19, 32.32.

U16 (*886, p. 32; 911, p. 126; 941, p. 96). N.F. Marsh. Near center of south line of NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 4 N., R. 3 W. No measurements made in 1942.

U17 (*886, p. 32; 911, p. 126; 941, p. 96). W.O. Wade. SW. corner of NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 250.68; Nov. 19, 251.81.

U18a (*886, p. 33; 911, p. 126; 941, p. 96). W.E. Tussing. NE. corner of SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 10, T. 4 N., R. 3 W. Measurements discontinued.

U19 (*886, p. 33; 911, p. 126; 941, p. 96). E.D.S. Pope. Near SW. corner of NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 199.29; Nov. 19, 200.19.

U21 (*886, p. 33; 911, p. 126; 941, p. 96). A.B. Sheridan. SW. corner of sec. 5, T. 4 N., R. 2 W. No measurements made in 1942.

U23 (*886, p. 33; 911, p. 126; 941, p. 96). G.W. McIister. Near center of south line of NE $\frac{1}{4}$ sec. 19, T. 4 N., R. 3 W. Water level, in feet below measuring point, 1942: Nov. 19, 32.80.

U26 (*886, p. 34; 911, p. 126; 941, p. 96). Arrowhead Reservoir & Power Co. Near NW. corner of SW $\frac{1}{4}$ sec. 17, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 18.73; Nov. 19, 20.93.

U28 (*886, p. 34; 911, p. 126; 941, p. 96). C.O. Evans. Near SE. corner of SW $\frac{1}{4}$ sec. 18, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 23.61; Nov. 20, 26.12.

U31 (*886, p. 34; 911, p. 126; 941, p. 96). Center of east line of SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 165.89; Nov. 20, 166.75.

U43 (*886, p. 35; 911, p. 126; 941, p. 96). A. W. Phillips. Near NE. corner NW $\frac{1}{4}$ sec. 6, T. 4 N., R. 3 W. Measuring point, beginning Nov. 20, 1942, top of casing, 1.0 foot above land surface and 2,572.52 feet above sea level. Water levels, in feet below measuring point, 1942: May 7, 54.68; Nov. 20, 54.85.

U44 (*886, p. 35; 911, p. 126; 941, p. 96). A.J. Lintner. Near NE. corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 6, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 7, 53.09; Nov. 20, 53.96.

U55 (*886, p. 35; 911, p. 126; 941, p. 96). F.A. Fletcher. Near center of west line of SE $\frac{1}{4}$ sec. 9, T. 5 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 89.95; Nov. 19, 90.02.

U57 (*886, p. 35; 911, p. 126; 941, p. 96). J.D. Humiston. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 5 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 6, 104.58; Nov. 19, 105.16.

U59 (*886, p. 36; 911, p. 126; 941, p. 96). Lee Saul. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 11, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 6, 57.14; Nov. 19, 57.17.

U59a (*886, p. 36; 911, p. 126; 941, p. 96). Lee Saul. SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 11, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 6, 45.20; Nov. 19, 46.04.

U61 (*886, p. 36; 911, p. 126; 941, p. 96). SW $\frac{1}{4}$ sec. 10, T. 5 N., R. 4 W., in Victorville. Water levels, in feet below measuring point, 1942: May 7, 45.71; Nov. 19, 46.19.

U68 (*886, p. 36; 911, p. 126; 941, p. 97). A. Sorenson. On Verde Ranch, near NW. corner of NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 5 N., R. 4 W. No measurements made in 1942.

U72 (*886, p. 36; 911, p. 127; 941, p. 97). On Verde Ranch, near SW. corner of sec. 36, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 3.67; Nov. 20, 4.24.

M3 (*886, p. 37; 911, p. 127; 941, p. 97). John Bennetts. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 6 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 20.45; Nov. 27, 21.19.

M7 (*886, p. 37; 911, p. 127; 941, p. 97). NE. corner of NW $\frac{1}{4}$ sec. 30, T. 7 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 57.25; Nov. 27, 57.52.

M15 (*886, p. 37; 911, p. 127; 941, p. 97). SE. corner of sec. 31, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 14.63; Nov. 27, 15.52.

M19 (*886, p. 37; 911, p. 127; 941, p. 97). F.H. Merrell. Near center of west line of NW $\frac{1}{4}$ sec. 31, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 44.15; Nov. 27, 45.11.

M22 (*886, p. 37; 911, p. 127; 941, p. 97). Mr. Lord. Near center of south line of SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 20, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 2.85; Nov. 27, 5.13.

M26 (*886, p. 38; 911, p. 127; 941, p. 97). Near SW. corner of SE $\frac{1}{4}$ sec. 2, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1942: May 7, 24.11; Nov. 27, 26.41.

M30 (*886, p. 38; 911, p. 127; 941, p. 97). Holcomb Bros. SW. corner SE $\frac{1}{4}$ sec. 12, T. 8 N., R. 4 W. No measurements made in 1942.

M38 (*886, p. 38; 911, p. 127; 941, p. 97). Everett Swing. SE. corner of NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 8 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 7, 13.18; Nov. 27, 15.46.

M41a (*886, p. 38; 911, p. 127; 941, p. 97). Nellie Storey. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 34, T. 9 N., R. 3 W. Water level, in feet below measuring point, 1942: May 7, 125.56.

M43 (*886, p. 39; 911, p. 127; 941, p. 97). Mr. Shobel. Near NE. corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 9 N., R. 2 W. Water levels, in feet below measuring point, 1942: May 7, 65.27; Nov. 27, 65.23.

M51 (*886, p. 39; 911, p. 127; 941, p. 97). J. Slagill. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 8.00; Nov. 27, dry at 16.2.

M52 (*886, p. 39; 911, p. 127; 941, p. 97). SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 90.76; Nov. 27, 90.82.

M52b (*886, p. 39; 911, p. 127; 941, p. 97). Near center of north line of NW $\frac{1}{4}$ sec. 32, T. 10 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 57.64; Nov. 27, 57.68.

M53 (*886, p. 39; 911, p. 127; 941, p. 97). NE. corner sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 74.85; Nov. 27, 76.22.

M56 (*886, p. 40; 911, p. 127; 941, p. 97). Mr. Osborn. SE. corner sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 12.87; Nov. 27, 14.60.

M56a (*886, p. 40; 911, p. 127; 941, p. 97). Mr. Bullock. SW. corner of NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 14, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 13.77; Nov. 27, 17.07.

M64 (*886, p. 40; 911, p. 127; 941, p. 97). NE. corner SE $\frac{1}{4}$ sec. 28, T. 11 N., R. 3 W. No measurements made during 1942.

M66 (*886, p. 41; 911, p. 128; 941, p. 97). Near center of south line of SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 11 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 31.70; Nov. 27, 31.87.

M71 (*886, p. 41; 911, p. 128; 941, p. 97). A.H. Harris. Near SW. corner sec. 23, T. 10 N., R. 3 W. Water levels, in feet below measuring point, 1942: May 8, 33.35; Nov. 27, 36.84.

M74 (*886, p. 41; 911, p. 128; 941, p. 97). J.D. Rich. SE. corner of sec. 30, T. 10 N., R. 2 W. Water levels, in feet below measuring point, 1942: May 8, 21.35; Nov. 27, 21.94.

M75 (*886, p. 41; 911, p. 128; 941, p. 97). Mr. Loftus. NE. corner of SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 19, T. 10 N., R. 2 W. Water levels, in feet below measuring point, 1942: May 8, 66.80; Nov. 27, 66.83.

M82 (*886, p. 41; 911, p. 128; 941, p. 97). Water company. In Barstow, near center of west line of NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 6, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 7, 5.97; Nov. 26, 7.70.

M84 (*886, p. 42; 911, p. 128; 941, p. 98). Mr. Nelson. SE. corner of NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, T. 10 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 7, 46.99; Nov. 26, 48.79.

M88 (*886, p. 42; 911, p. 128; 941, p. 98). Mr. Sandoz. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 10 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 7, 26.28; Nov. 26, 27.62.

M91 (*886, p. 42; 911, p. 128; 941, p. 98). R. Harlan. NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 7, 7.65; Nov. 21, 10.14.

M92 (*886, p. 42; 911, p. 128; 941, p. 98). Mr. Gibbs. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 7, 3.35; Nov. 26, 4.23.

M97 (*886, p. 43; 911, p. 128; 941, p. 98). Greystone Auto Camp. NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 15, 52.25; Nov. 26, 53.51.

M100 (*886, p. 43; 911, p. 128; 941, p. 98). F. Ryerse. NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1942: May 15, 10.82; Nov. 25, 13.18.

L1 (*886, p. 47; 911, p. 128; 941, p. 98). B.A. Funk. SW. corner of NW $\frac{1}{4}$ sec. 18, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1942: May 15, 16.19; Nov. 25, 19.27.

L8 (*886, p. 47; 911, p. 128; 941, p. 98). Center of west line of NW $\frac{1}{4}$ sec. 24, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1942: May 14, 66.43; Nov. 25, 68.88.

L10a (*886, p. 48; 911, p. 128; 941, p. 98). E.D. Barry. Near NW. corner of SW $\frac{1}{4}$ sec. 20, T. 9 N., R. 2 E. No measurements made during 1942.

L19 (*886, p. 48; 911, p. 128; 941, p. 98). Mr. Clinkenbeard. NW. corner of NW $\frac{1}{4}$ sec. 34, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 5.18; Nov. 25, 30.56.

L21 (*886, p. 43; 911, p. 128; 941, p. 98). Lyle Graham. NW. corner of NE $\frac{1}{4}$ sec. 4, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 3.18; Nov. 24, 4.71.

L22 (*886, p. 43; 911, p. 128; 941, p. 98). Lyle Graham. NW. corner of NE $\frac{1}{4}$ sec. 4, T. 8 N., R. 3 E., in pump house near ranch house. No measurements made in 1942.

L23 (*886, p. 43; 911, p. 128; 941, p. 98). C.W. Beaverstock. SW. corner NW $\frac{1}{4}$ sec. 3, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 5.60; Nov. 24, 7.54.

L24 (*886, p. 44; 911, p. 128; 941, p. 98). SE. corner NW $\frac{1}{4}$ sec. 3, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 24.82; Nov. 24, 24.24.

L28 (*886, p. 44; 911, p. 129; 941, p. 98). C.E. Burckhardt. Near SW. corner of SW $\frac{1}{4}$ sec. 7, T. 8 N., R. 4 E. Water levels, in feet below measuring point, 1942: May 13, 38.51; Nov. 24, 38.74.

L31 (*886, p. 44; 911, p. 128; 941, p. 98). A.M. Monroe. Near NW. corner of SE $\frac{1}{4}$ sec. 31, T. 9 N., R. 4 E. Water levels, in feet below measuring point, 1942: May 13, 16.00; Nov. 24, 16.46.

L32 (*886, p. 44; 911, p. 128; 941, p. 98). Near SW. corner of SW $\frac{1}{4}$ sec. 4, T. 8 N., R. 4 E. Water level, in feet below measuring point, 1942: May 13, ground moist at 7.0.

L37 (*886, p. 44; 911, p. 128; 941, p. 98). Mojave Camp service station. Near center SW $\frac{1}{4}$ sec. 12, T. 8 N., R. 4 E. Water levels, in feet below measuring point, 1942: May 13, 33.10; Nov. 24, 33.58.

L42 (*886, p. 45; 911, p. 128; 941, p. 98). G. Lingensfelder. Near center of SW $\frac{1}{4}$ sec. 15, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1942: May 14, 66.80; Nov. 25, b/dry.

L43 (*886, p. 45; 911, p. 128; 941, p. 98). Near SW. corner of NW $\frac{1}{4}$ sec. 13, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1942: May 14, 62.16; Nov. 25, 64.79.

L43a (*886, p. 45; 911, p. 128; 941, p. 98). Near SW. corner of NW $\frac{1}{4}$ sec. 13, T. 9 N., R. 1 E., about 300 feet south of well 43. Water levels, in feet below measuring point, 1942: May 14, 62.61; Nov. 25, 65.32.

L47 (*886, p. 45; 911, p. 128; 941, p. 98). Near NW. corner of NW $\frac{1}{4}$ sec. 12, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1942: May 14, 41.12; Nov. 26, 43.21.

L49 (*886, p. 45; 911, p. 128; 941, p. 98). Yermo Mutual Water Co. SE. corner of SW $\frac{1}{4}$ sec. 32, T. 10 N., R. 2 E. Water levels, in feet below measuring point, 1942: May 14, 25.50; Nov. 26, 28.48.

a Pumping; no measurement.

b Casing partly filled with drifting sand since measurement of May 14, 1942.

L50 (*886, p. 46; 911, p. 129; 941, p. 99). Near NW. corner NW $\frac{1}{4}$ sec. 4, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1942: May 14, 18.10; Nov. 26, 19.27.

L51 (*886, p. 46; 911, p. 129; 941, p. 99). Bruce McCormick. Near center of NE $\frac{1}{4}$ sec. 3, T. 9 N., R. 2 E., near Corral. Water levels, in feet below measuring point, 1942: May 14, 13.02; Nov. 26, 18.26.

L51a (*886, p. 46; 911, p. 129; 941, p. 99). Bruce McCormick. Near center of NE $\frac{1}{4}$ sec. 3, T. 9 N., R. 2 E., at east end of ranch house. Water levels, in feet below measuring point, 1942: May 14, 16.94; Nov. 26, 21.51.

L54 (*886, p. 46; 911, p. 129; 941, p. 99). Near center SW $\frac{1}{4}$ sec. 34, T. 10 N., R. 2 E. Water levels, in feet below measuring point, 1942: May 14, 57.62; Nov. 26, 58.11.

L63 (*886, p. 47; 911, p. 129; 941, p. 99). Near center of sec. 18, T. 9 N., R. 2 E. Water level, in feet below measuring point, 1942: May 14, 53.05.

L64 (*886, p. 47; 911, p. 129; 941, p. 99). Annie Escholtz. Near center of SE $\frac{1}{4}$ sec. 8, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1942: May 14, a/38.68; Nov. 25, b/.

L67 (*886, p. 49; 911, p. 129; 941, p. 99). Hunter. Near SW. corner of SW $\frac{1}{4}$ sec. 12, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1942: May 14, 4.11; Nov. 25, 4.52.

L68 (*886, p. 49; 911, p. 129; 941, p. 99). Scobel & Haimut. Near SW. corner of SW $\frac{1}{4}$ sec. 14, T. 9 N., R. 2 E., north of ranch house. Water levels, in feet below measuring point, 1942: May 14, 23.41; Nov. 25, 23.82.

L68a (*886, p. 49; 911, p. 129; 941, p. 99). Scobel & Haimut. Near SW. corner of SW $\frac{1}{4}$ sec. 14, T. 9 N., R. 2 E., about 200 feet northeast of well L68. Water levels, in feet below measuring point, 1942: May 14, 20.14; Nov. 25, 18.00.

L68c (*886, p. 50; 911, p. 129; 941, p. 99). Scobel & Haimut. Near SW. corner of SW $\frac{1}{4}$ sec. 14, T. 9 N., R. 2 E., southeast of well L68. Water levels, in feet below measuring point, 1942: May 14, 18.22; Nov. 25, 18.29.

L76 (*886, p. 50; 911, p. 129; 941, p. 99). Mr. Bozarth. Near center of west line of NW $\frac{1}{4}$ sec. 10, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 34.16; Nov. 25, 34.29.

L77 (*886, p. 50; 911, p. 130; 941, p. 99). NW. corner of sec. 3, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 42.52; Nov. 25, 42.66.

L78 (*886, p. 50; 911, p. 130; 941, p. 99). Mr. Henderson. South of center of NW $\frac{1}{4}$ sec. 34, T. 10 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 8.05; Nov. 25, 8.79.

L93 (*886, p. 51; 911, p. 130; 941, p. 99). E. Nichols. SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 12, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1942: May 13, 26.60; Nov. 25, 26.09.

L97 (*886, p. 51; 911, p. 130; 941, p. 99). G.F. Getty. Near NE. corner of sec. 21, T. 10 N., R. 3 E. No measurements made in 1942.

Otay River Basin

O39a (*845, p. 23; 886, p. 25; 911, p. 121; 941, p. 92). N. Bard. At NW. corner of Sixth and Main Streets, in Otay.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	30.80	May 11	30.92	Nov. 11	32.36
Mar. 20	30.08	Aug. 14	31.49		

O89a (*845, p. 23; 886, p. 25; 911, p. 121; 941, p. 92). G. W. St. Clair. NW $\frac{1}{4}$ sec. 22, T. 18 S., R. 2 W., at Otay.

a Pump operating in well.

b Pumping; no measurement.

089a. G. W. St. Clair--Continued.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	22.59	May 11	22.77	Nov. 11	25.72
Mar. 20	21.08	Aug. 14	24.84		

San Diego River Basin

L28 (*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92). San Diego County. At El Monte Park.

Water level, in feet below measuring point, 1942					
Jan. 21	14.97	May 14	16.30	Sept. 8	23.22
Apr. 22	14.62	July 8	18.20	Nov. 9	23.90

L29 (*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92). Pratt test well, on north bank of river about 0.3 mil east of El Monte pumping plant.

Water level, in feet below measuring point, 1942					
Jan. 21	7.44	May 14	7.57	Sept. 8	9.82
Mar. 4	7.46	July 8	8.40	Nov. 9	10.21

L30 (*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92). Irrigation District well 6, 0.2 mile north of El Monte pumping plant.

Water level, in feet below measuring point, 1942					
Jan. 21	3.99	May 14	4.19	Sept. 8	6.77
Mar. 4	4.02	July 8	5.61	Nov. 9	7.46

L31 (*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 93). On Truttman Ranch, about 0.5 mile northwest of El Monte pumping plant.

Water level, in feet below measuring point, 1942					
Jan. 21	3.95	May 14	4.30	Sept. 8	6.05
Mar. 4	3.98	July 8	5.10	Nov. 9	6.54

L32 (*845, p. 27; 886, p. 25; 911, p. 121; 941, p. 93). On Dr. Irey Ranch, on north bank of San Diego River, east of Lakeside.

Water level, in feet below measuring point, 1942					
Jan. 21	8.82	May 14	9.02	Sept. 8	10.72
Mar. 4	8.79	July 8	9.82	Nov. 9	10.99

L33 (*845, p. 27; 886, p. 25; 911, p. 121; 941, p. 93). In county yard, NW $\frac{1}{4}$ sec. 17, T. 15 S., R. 1 E., east of Lakeside.

Water level, in feet below measuring point, 1942					
Jan. 21	7.65	May 14	7.97	Sept. 8	9.90
Mar. 4	7.62	July 8	8.93	Nov. 9	10.07

L5a (*845, p. 28; 886, p. 25; 911, p. 122; 941, p. 93). J. F. Rickerts. SE $\frac{1}{4}$ sec. 7, T. 15 S., R. 1 E., El Cajon land grant, at Lakeside.

Water level, in feet below measuring point, 1942					
Jan. 21	10.60	May 14	11.00	Sept. 8	12.60
Mar. 4	10.54	July 8	11.94	Nov. 9	12.90

L35 (*845, p. 32; 886, p. 26; 911, p. 122; 941, p. 35). Mr. Langdon, near Benedict Avenue, Lakeside.

Water level, in feet below measuring point, 1942					
Jan. 21	7.40	May 14	6.95	Sept. 8	10.03
Mar. 4	7.36	July 8	8.60	Nov. 9	11.31

L37 (*845, pp. 32-33; 886, p. 26; 911, p. 122; 941, p. 93). Mr. Levi. SE $\frac{1}{4}$ sec. 13, T. 15 S., R. 1 W., Lakeside.

Water level, in feet below measuring point, 1942					
Jan. 21	(a)	May 14	9.31	Sept. 8	12.70
Mar. 4	9.13	July 8	11.08	Nov. 9	13.14

L39 (*845, p. 33; 886, p. 26; 911, p. 122; 941, p. 93). Mr. Burch. NE $\frac{1}{4}$ sec. 24, T. 15 S., R. 1 W., Riverview.

a Obstruction in well.

L39. Mr. Burch--Continued.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	7.95	May 14	8.23	Sept. 8	10.22
Mar. 4	7.93	July 8	9.05	Nov. 9	10.71

L2 (*845, p. 33; 886, p. 26; 911, p. 122; 941, p. 93). Riverview well 2, at Riverview.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	2.50	May 14	3.10	Sept. 8	5.55
Mar. 4	2.34	July 8	4.49	Nov. 9	5.16

L44a (*845, p. 34; 886, p. 26; 911, p. 122; 941, p. 93). Riverview well 3, north of main river channel, at Riverview.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	4.07	May 14	4.31	Sept. 8	5.96
Mar. 4	4.05	July 8	5.09	Nov. 9	6.33

L83c (*845, p. 35; 886, p. 26; 911, p. 122; 941, p. 93). Riverview well 1, NE $\frac{1}{4}$ sec. 23, T. 15 S., R. 1 W., at Riverview.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	0.79	May 14	0.79	Sept. 8	2.11
Mar. 4	.54	July 8	1.28	Nov. 9	2.48

L46 (*845, p. 36; 886, p. 26; 911, p. 122; 941, p. 93). On County Farm, NW $\frac{1}{4}$ sec. 27, T. 15 S., R. 1 W., at Santee.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	6.37	May 14	6.65	Sept. 8	8.54
Mar. 3	6.25	July 8	7.61	Nov. 9	8.94

L85 (*845, p. 36; 886, p. 26; 911, p. 122; 941, p. 93). Dr. Good (formerly owned by William Thum). On El Cajon land grant, at Santee.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	9.17	May 15	10.01	Sept. 8	13.05
Mar. 3	8.96	July 8	11.14	Nov. 9	12.56

K51a (*845, p. 37; 886, p. 26; 911, p. 122; 941, p. 93). Mr. Jaussaud. 0.25 mile east of Old Mission San Diego, near Grantville.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 9	13.92	May 15	120.40	Sept. 11	17.84
Mar. 3	120.89	July 6	16.38	Nov. 12	17.53

K51b (*845, p. 38; 886, p. 26; 911, p. 122; 941, p. 93). Mr. Jaussaud. 0.25 mile east of Old Mission San Diego, near Grantville.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 9	12.56	May 15	118.60	Sept. 11	16.51
Mar. 3	119.08	July 6	15.09	Nov. 12	16.25

K60 (*845, p. 38; 886, p. 26; 911, p. 123; 941, p. 93). Mr. Bridges. On Pueblo lot 1110, 0.3 mile west of city pumping plant, on south side of Mission Valley.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 9	2.50	May 15	3.21	Sept. 11	3.93
Mar. 3	2.61	July 6	3.77	Nov. 12	3.52

K62 (*845, p. 39; 886, p. 27; 911, p. 123; 941, p. 93). Mr. S. H. McIntosh (formerly owned by T. J. Goset). On Pueblo lot 1106, near Murray Canyon road in Mission Valley.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 9	9.55	May 15	10.27	Sept. 11	11.44
Mar. 3	9.64	July 6	10.70	Nov. 12	12.08

K63 (*845, p. 39; 886, p. 27; 911, p. 123; 941, p. 93). Mr. Confar. On Pueblo lot 1119, on south side of Mission Valley.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 9	9.86	May 15	11.97	Sept. 11	14.16
Mar. 3	11.22	July 6	13.80	Nov. 12	14.39

a Pump operating in well.

b Pump operating in nearby well.

K33a (*845, p. 40; 886, p. 27; 911, p. 123; 941, p. 93). Mr. Chapman.
On Pueblo lands of San Diego, Old Town.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 9	4.97	May 15	5.47	Sept. 11	6.34
Mar. 3	4.97	July 6	5.80	Nov. 12	6.48

San Dieguito River Basin

G17a (*840, p. 38; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93).
On Pratt Ranch, NE $\frac{1}{4}$ sec. 31, T. 12 S., R. 1 W., at San Pasqual.

Water level, in feet below measuring point, 1942

Jan. 19	0.21	June 9	1.82	Nov. 25	3.24
Apr. 1	.61	Sept. 18	3.50		

G17b (*817, pp. 38-39; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93).
On Pratt Ranch, NE $\frac{1}{4}$ sec. 31, T. 12 S., R. 1 W., at San Pasqual.

Water level, in feet below measuring point, 1942

Jan. 19	4.41	June 9	5.79	Nov. 25	7.37
Apr. 1	4.76	Sept. 18	7.61		

H31b (*840, p. 39; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93).
On Ward Estate, SW $\frac{1}{4}$ sec. 33, T. 12 S., R. 1 W., at San Pasqual.

Water level, in feet below measuring point, 1942

Jan. 19	8.76	June 9	9.25	Nov. 25	10.29
Apr. 1	8.73	Sept. 18	9.68		

H34b (*840, p. 42; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93).
On Feet Ranch, NW $\frac{1}{4}$ sec. 35, T. 12 S., R. 1 W., at San Pasqual.

Water level, in feet below measuring point, 1942

Jan. 19	4.50	June 9	4.55	Nov. 25	5.79
Apr. 1	4.52	Sept. 18	4.97		

San Luis Rey River Basin

C9a (*840, p. 36; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 94).
On San Luis Rey Ranch.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	11.27	Apr. 15	11.31	July 13	12.72	Oct. 19	11.76
Feb. 16	11.39	May 18	11.79	Aug. 24	12.21	Nov. 16	11.52
Mar. 18	11.19	June 15	12.08	Sept. 14	12.08	Dec. 14	11.78

C9b (*840, p. 36; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 94).
On San Luis Rey Ranch, NE $\frac{1}{4}$ sec. 1, T. 10 S., R. 3 W., at San Luis Rey.

Water level, in feet below measuring point, 1942

Jan. 12	8.68	Apr. 15	8.77	July 13	9.03	Oct. 19	9.03
Feb. 16	8.84	May 18	8.92	Aug. 24	9.05	Nov. 16	9.02
Mar. 18	8.64	June 15	8.97	Sept. 14	9.08	Dec. 14	9.02

C9c (*840, p. 36; 845, p. 43; 886, p. 28; 911, p. 124; 941, p. 94).
On San Luis Rey Ranch, NE $\frac{1}{4}$ sec. 1, T. 10 S., R. 3 W., at San Luis Rey.

Water level, in feet below measuring point, 1942

Jan. 12	5.69	Apr. 15	5.80	July 13	6.09	Oct. 19	6.04
Feb. 16	5.83	May 18	5.96	Aug. 24	6.10	Nov. 16	5.99
Mar. 18	5.62	June 15	5.99	Sept. 14	6.09	Dec. 14	5.99

a Pump operating in well.

C8 (*886, p. 28; 911, p. 124; 941, p. 94). Fallbrook Public Utility District observation well. On San Luis Rey Ranch.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	8.84	Apr. 15	9.13	July 13	9.78	Oct. 19	9.67
Feb. 16	9.15	May 18	9.44	Aug. 24	9.85	Nov. 16	9.55
Mar. 18	8.82	June 15	9.62	Sept. 14	9.81	Dec. 14	9.47

C3a (*840, p. 35; 845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94). On Gird Ranch, NW $\frac{1}{4}$ sec. 15, T. 10 S., R. 3 W., at San Luis Rey.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	7.63	Apr. 15	7.88	July 13	9.11	Oct. 19	10.31
Feb. 16	8.14	May 18	8.58	Aug. 24	9.85	Nov. 16	9.16
Mar. 18	7.48	June 15	8.80	Sept. 14	10.10	Dec. 14	8.65

C5 (*845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94). Hart Inc. 2 miles east of Bonsall.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	5.94	Apr. 15	6.00	July 13	6.68	Oct. 19	7.80
Feb. 16	5.98	May 18	6.12	Aug. 24	7.65	Nov. 16	6.20
Mar. 18	5.97	June 15	6.15	Sept. 14	8.23	Dec. 14	6.57

C7b (*840, p. 35; 845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94). Bonsall School well. SW $\frac{1}{4}$ sec. 20, T. 10 S., R. 3 W., at Bonsall.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	9.22	Apr. 15	9.25	July 13	10.23	Oct. 19	10.92
Feb. 16	9.32	May 18	9.62	Aug. 24	10.69	Nov. 16	11.41
Mar. 18	8.85	June 15	9.89	Sept. 14	11.28	Dec. 14	10.35

C4 (*886, p. 28; 911, p. 124; 941, p. 94). Fallbrook Public Utility District observation well. On property of San Diego County Water Co.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	12.56	Apr. 15	12.66	July 13	13.41	Oct. 19	13.93
Feb. 16	12.61	May 18	13.01	Aug. 24	13.75	Nov. 16	13.55
Mar. 18	12.82	June 15	13.22	Sept. 14	13.84	Dec. 14	13.18

F37 (*911, p. 125; 941, p. 95). City of Oceanside observation well. On Williams Ranch, SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 11 S., R. 4 W. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	7.87	Apr. 13	7.98	July 20	11.88	Oct. 19	14.42
Feb. 16	8.25	May 18	8.29	Aug. 25	11.64	Nov. 16	13.81
Mar. 16	7.70	June 15	10.33	Sept. 14	12.38	Dec. 14	14.03

F36 (*886, p. 28; 911, p. 124; 941, p. 94). City of Oceanside observation well. On Stokes property, on north bank of San Luis Rey River, east of San Luis Rey. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	9.12	Apr. 13	9.28	July 20	10.96	Oct. 19	13.70
Feb. 16	9.32	May 18	9.62	Aug. 25	12.47	Nov. 16	14.15
Mar. 16	9.19	June 15	10.03	Sept. 14	13.00	Dec. 14	14.45

F22 (*845, p. 43; 886, p. 28; 911, p. 124; 941, p. 95). Santa Fe well. In pump house on right bank of San Luis Rey River, 0.1 mile west of Ashley School. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	10.26	Apr. 13	10.38	July 20	(a)	Oct. 19	12.84
Feb. 16	10.48	May 18	(a)	Aug. 25	(a)	Nov. 16	13.00
Mar. 16	10.20	June 15	(a)	Sept. 14	13.34	Dec. 14	(a)

F30 (*886, p. 29; 911, p. 124; 941, p. 95). Carlsbad Mutual Water Co. Observation well, near north abutment of county-road bridge at San Luis Rey. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

a Pump operating in well.

F30. Carlsbad Mutual Water Co.--Continued.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	7.85	Apr. 13	7.97	July 20	9.19	Oct. 19	10.77
Feb. 16	8.07	May 18	8.35	Aug. 25	10.03	Nov. 16	10.78
Mar. 16	7.52	June 15	8.71	Sept. 14	10.43	Dec. 14	11.04

F17 (#840, pp. 32-33; 845, p. 43; 886, p. 29; 911, p. 125; 941, p. 95). Old San Luis Rey store. SW $\frac{1}{4}$ sec. 8, T. 11 S., R. 4 W., in San Luis Rey. Measurements have been referred to measuring point used prior to Dec. 30, 1929, by adding 3.1 feet. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	9.70	Apr. 13	9.70	July 20	10.22	Oct. 19	10.54
Feb. 16	9.80	May 18	10.07	Aug. 24	10.70	Nov. 16	(a)
Mar. 16	9.74	June 15	10.18	Sept. 14	11.04		

F32 (#886, p. 29; 911, p. 125; 941, p. 95). Carlsbad Mutual Water Co. Observation well, 0.25 mile east of pumping plant. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	10.60	Apr. 13	8.55	July 21	22.62	Oct. 19	18.31
Feb. 16	10.49	May 18	16.40	Aug. 24	20.00	Nov. 16	15.80
Mar. 16	11.90	June 15	24.45	Sept. 14	20.09	Dec. 14	23.15

F13b (#886, p. 29; 911, p. 125; 941, p. 95). City of Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	7.93	Apr. 13	7.56	July 21	14.82	Oct. 19	14.10
Feb. 16	8.60	May 18	12.25	Aug. 24	13.60	Nov. 16	12.80
Mar. 16	8.47	June 15	14.00	Sept. 14	14.97	Dec. 14	16.38

F13c (#886, p. 29; 911, p. 125; 941, p. 95). City of Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	7.04	Apr. 13	7.91	July 21	11.84	Oct. 19	12.89
Feb. 16	7.57	May 18	9.00	Aug. 24	12.97	Nov. 16	12.68
Mar. 16	7.59	June 15	10.40	Sept. 14	13.68	Dec. 14	13.08

F13d (#886, p. 29; 911, p. 125; 941, p. 95). City of Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	8.37	Apr. 13	8.42	July 21	12.50	Oct. 19	12.88
Feb. 16	9.03	May 18	10.61	Aug. 25	13.52	Nov. 16	12.60
Mar. 16	8.53	June 15	12.15	Sept. 14	13.15	Dec. 14	13.93

F13e (#886, p. 29; 911, p. 125; 941, p. 95). City of Oceanside, 0.1 mile northwest of old brick pumping plant. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	6.05	Apr. 13	6.16	July 21	9.66	Oct. 19	10.10
Feb. 16	6.63	May 18	7.85	Aug. 24	9.90	Nov. 16	9.76
Mar. 16	6.11	June 15	9.11	Sept. 14	10.37	Dec. 14	10.85

Sweetwater River Basin

O18c (#845, p. 25; 886, p. 25; 911, p. 121; 941, p. 92). L. C. Kincaid. On La Nacion land grant, at Sunnyside.

Water level, in feet below measuring point, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	11.27	May 11	11.97	Nov. 11	(c)
Mar. 20	11.07	Aug. 14	15.70		

a Well filled in.

b Pump operating in nearby well.

c Well dry.

Tia Juana River Basin

0188b (*845, p. 20; 886, p. 24; 911, p. 120; 941, p. 92). On Owens Ranch, SW $\frac{1}{4}$ sec. 34, T. 18 S., R. 2 W.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	9.53	May 11	10.15	Nov. 11	11.67
Mar. 20	9.29	Aug. 14	12.37		

0120 (*845, p. 20; 886, p. 24; 911, p. 120; 941, p. 92). On Hewitt Bros. Hog Ranch, SW $\frac{1}{4}$ sec. 33, T. 18 S., R. 2 W.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	8.96	May 11	10.02	Nov. 11	11.76
Mar. 20	9.08	Aug. 14	12.17		

0125 (*845, p. 21; 886, p. 25; 911, p. 120; 941, p. 92). On Evans Ranch, SE $\frac{1}{4}$ sec. 34, T. 18 S., R. 2 W., near San Ysidro.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	8.81	May 11	9.53	Nov. 11	11.25
Mar. 20	8.73	Aug. 14	11.62		

0130b (*845, p. 21; 886, p. 25; 911, p. 120; 941, p. 92). At Nestor Bridge, NE $\frac{1}{4}$ sec. 4, T. 19 S., R. 2 W.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	9.51	May 11	10.10	Nov. 11	10.48
Mar. 20	9.10	Aug. 14	12.12		

0140b (*845, p. 22; 886, p. 25; 911, p. 120; 941, p. 92). Mrs. A. W. Jackson. Near center of sec. 1, T. 19 S., R. 2 W., at San Ysidro.

Water level, in feet below measuring point, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 23	7.04	May 11	7.43	Nov. 11	7.54
Mar. 20	6.80	Aug. 14	7.95		

a Pump operating in nearby well.

LOS ANGELES AND ORANGE COUNTIES (LONG BEACH-SANTA ANA AREA)

By J. F. Poland and A. A. Garrett

PROGRAM OF WORK

Since 1940 the Geological Survey, United States Department of the Interior, in cooperation with the Orange County Flood Control District, the Orange County Water District, the Los Angeles County Flood Control District, and the Board of Water Commissioners of the city of Long Beach, has been engaged in an intensive investigation of the ground-water bodies that underlie most of the coastal plain in Los Angeles and Orange Counties. The investigation is concerned especially with the contamination of the ground-water bodies by salt water along the coast and the watertightness of the Newport-Inglewood structural zone.

Before the intensive cooperative investigation was begun, measurements had been made in the Long Beach-Santa Ana area, for periods varying in length, chiefly by the San Gabriel Valley Protective Association, the Orange County Flood Control District, the Los Angeles County Flood Control District, the Los Angeles Department of Water and Power, the city of Long Beach, and other local agencies and by R. A. Shafer, acting for the Bixby-Bryant interests. A more nearly complete list of the agencies and the periods of their activity, or, if still continuing, the beginning dates of those periods, have been published in an earlier report. ^{3/} The measurements were made at monthly or more frequent intervals in about 680 wells, of which about 220 were in the coastal zone of the area. The limits of the Long Beach-Santa Ana area and of the coastal zone as covered in this report are shown in figure 7.

During the year work was completed on an index to factual data on some 4,000 water wells in the area. ^{4/} The index is made up of three lists of the wells, arranged according to different numbering systems. The three numbering systems are explained, and cross references serve to identify each

^{3/} Meinzer, O. E., Wenzel, L. K., and others, Water levels and artesian pressure in observation wells in the United States in 1941, Part 6, Southwestern States and Territory of Hawaii: U. S. Geol. Survey Water-Supply Paper 941, p. 101, 1943.

^{4/} Piper, A. M., Poland, J. F., and others, Index to factual data from water wells on a part of the coastal plain in Los Angeles and Orange Counties, Calif.: U. S. Geol. Survey processed report, 298 pp., June 1942.

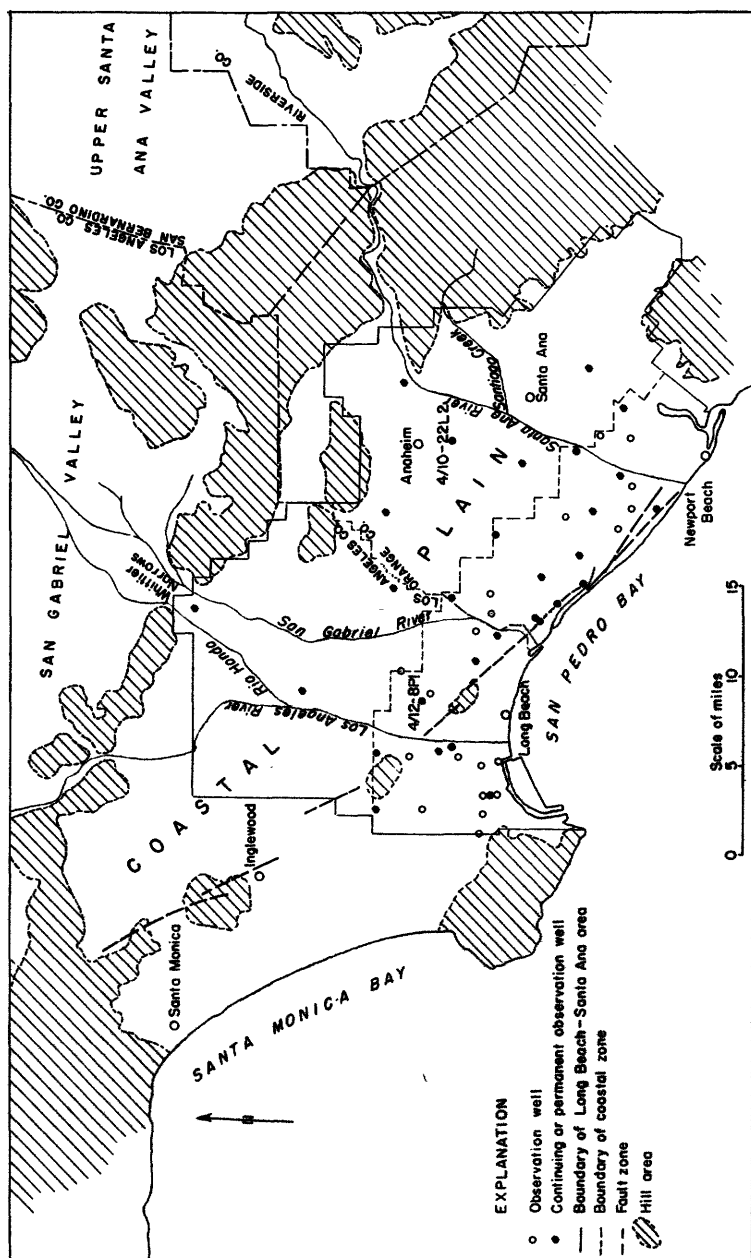


Figure 7.--Sketch map of the coastal plain in Los Angeles and Orange Counties, Calif., showing the location of selected observation wells in the Long Beach-Santa Ana area.

well with the same well in the other lists. The wells are classified according to the nature of the data available. The index, which was prepared in cooperation with the Orange County Flood Control District, Orange County Water District, Los Angeles County Flood Control District, and Board of Water Commissioners of the city of Long Beach, was released in June 1942 to the Washington office and certain field offices of the Federal Geological Survey and to the cooperating agencies.

SCOPE OF RECORDS

Late in 1940 and early in 1941 the Geological Survey began quarterly measurements of water level in 134 water wells in the coastal zone to supplement the water-level data available from other agencies. These wells were selected primarily to obtain records in areas not intensively covered by other agencies, to afford the closest feasible determination of head in the several water-bearing zones along and near the Newport-Inglewood structural zone. They include closely spaced wells of different depths paired to indicate the differential head between the several zones. So far as possible wells for which depths and perforated intervals were known were selected.

In addition, water levels have been measured periodically in 62 shallow observation wells constructed by the Geological Survey on low lands in and near five gaps through the coastal hills and mesas of the Newport-Inglewood zone. In the several gaps are deposits of Recent age, which, in two of the gaps, attain a maximum thickness of about 150 feet. The shallow wells were constructed to afford observation points on certain bodies of shallow ground water that occur in the upper 20 to 50 feet of these Recent deposits. The following table lists the 62 wells.

Shallow observation wells constructed by the Geological Survey in the coastal zone of the Long Beach-Santa Ana area

<u>Alamitos gap</u>	5/11-28J2	4/13-11D2
5/12-1D1	33A1	11F1
2A1	33G1	11K5
2H3	33L1	11L3
2K1	33M1	11P1
2P4	33N1	14F3
10H1	<u>Dominiguez gap</u>	14K6
10H2	4/13-2K1	14P1
10K1	10F1	23P2
10P1	10R1	23P2
11D1	11B1	26L1
<u>Bolsa gap</u>	11B2	26P6
5/11-26N2	11B3	<u>Huntington Beach mesa</u>
27B2	11C1	5/11-35D2

Shallow observation wells constructed by the Geological Survey in the coastal zone of the Long Beach-Santa Ana area--Continued

<u>Santa Ana gap</u>	6/10-1902	5/11-1802
6/10-6P2	19P2	18P2
7L4	19L1	18P3
7P1	6/11-13G4	18P4
18C5	13W3	18P5
18P2	<u>Sunset gap</u>	18P6
18L1	5/11-701	19D2
18P2	18B1	5/12-24H1
19C1	18G1	

On other observation wells that were paired to indicate the differential head across the Newport-Inglewood structural zone, water-level recorders have been installed and operated by the Geological Survey. Along the coast between Seal Beach and Huntington Beach three pairs of deep observation wells were constructed on the coastal side of the above-mentioned structural zone as part of the cooperative program--wells 5/12-13D1 and 13D2, near Seal Beach; wells 5/11-18N1 and 18P1, in Sunset gap; and wells 5/11-29E1 and 29E2, on Bolsa Chica mesa. On these wells, also, water-level recorders have been operated.

Water-level recorders have been operated by the Geological Survey on a total of 26 wells for periods ranging from a month to more than 2 years. The following table lists these wells by number and gives for each its depth, the position of the water-yielding zone it taps, and the period during which continuous records of water level were made. In some wells the water level was measured weekly for several months after the recorders were removed.

Wells in the coastal zone of the Long Beach-Santa Ana area on which water-level recorders have been maintained by the Geological Survey

Well	Depth	a/ Water-yielding zone (feet below land surface)	b/ Period of operation
4/13-2J4	178.4	.....	July 25, 1942-
14L1	114.3	86-114	Dec. 15, 1942-
23W2	115.2	77-118	Apr. 29, 1941-
31L1	629.8 (910)	274-438	Oct. 30, 1942-Dec. 14, 1942
		530-908	*
33D1	888.2	669-800	Sept. 10, 1941-Jan. 5, 1942
5/11-18N1	250-250.0 (380)	172-212	Aug. 23, 1941-June 15, 1942
		221-251	
18P1	125.0 (240)	110-148	Aug. 22, 1941-June 15, 1942
20L2	157.5	.....	Jan. 23, 1942-July 27, 1942
29C4	157.0	.....	Dec. 23, 1942-Aug. 14, 1942
29E1	220.0 (410)	158-212	Aug. 23, 1941-June 15, 1942
29E2	120.0 (131)	85-129	Aug. 23, 1941-June 15, 1942

a Measured by the Geological Survey. For wells 4/13-31L1, 5/12-2B1, and 5/12-18P3, figures in parentheses indicate reported depths; for the paired permanent observation wells 5/11-18N1 and 18P1, 5/11-29E1 and 29E2, and 5/12-13D1 and 13D2 figures in parentheses indicate depth to which well was drilled before backfilling and setting casing.

b If no terminal date is indicated, water-level recorder operated beyond Dec. 31, 1942.

Wells in the coastal zone of the Long Beach-Santa Ana area on which water-level recorders have been maintained by the Geological Survey--Cont.

Well	Depth	Water-yielding zone (feet below land surface)	Period of operation
5/12-2B1	255.2 (547)	480-541	June 18, 1942-Dec. 14, 1942
10A1	300.4	c124-143	Sept. 15, 1941-Dec. 19, 1941
			Aug. 15, 1942-
11H1	296.0	.....	July 2, 1942-
11L1	810.0	320-358	June 16, 1942-
12P3	362.6 (500)	348-360	June 16, 1942-
13D1	210.0 (381)	183-258	Feb. 20, 1942-
13D2	140.0 (160)	125-158	Feb. 18, 1942-
6/10-6P1	150.5	.....	Nov. 29, 1940-
6P2	24.7	11-25	Apr. 4, 1941-July 11, 1942
6/11-1Q1	380.0	.....	Nov. 30, 1940-Aug. 11, 1941
2G2	123.9	78-126	Nov. 28, 1940-Feb. 25, 1941
2G3	258.5	100-118	Feb. 25, 1941-Aug. 22, 1941
13G4	12.7	6-7	June 23, 1941-Feb. 18, 1942
13M1	364.1	Probably below 300 feet	Apr. 4, 1941-Sept. 9, 1941
13M3	13.7	6-12	Apr. 4, 1941-Feb. 18, 1942

In all, during the period extending from late 1940 through 1942, the Geological Survey has measured the depth to water quarterly in 196 wells--134 water wells and 62 shallow observation wells--and has operated water-level recorders on 23 others. More than 2,920 individual measurements of depth to water have been made.

All periodic measurements of depth to water made by the Geological Survey in the Long Beach-Santa Ana area during the period 1940-42 are included in this report. Records not included are those for a considerable number of wells for which less than three measurements have been obtained and certain series of measurements made in some wells within very short periods for the purpose of special study. Records that fall in these two classes are not considered as representative of periodic measurements. For wells on which recorders have been operated by the Geological Survey, depth to water is given at 5-day intervals for the periods of recorder operation. These depths have been taken from the recorder charts.

The 6 wells constructed for the Geological Survey on the coastal side of the Newport-Inglewood structural zone and 28 others, which, by reason of their location and depth, may be regarded as representative, have been selected to show the typical fluctuations of water level in the Long Beach-Santa Ana area. The 6 wells constructed for the Geological Survey have been measured by the Geological Survey. For wells 4/13-31L1, 5/12-2B1, and 5/12-12P3, figures in parentheses indicate reported depths; for the paired permanent observation wells 5/11-18N1 and 18P1, 5/11-29E1 and 29E2, and 5/12-13D1 and 13D2 figures in parentheses indicate depth to which well was drilled before backfilling and setting casing.

b If no terminal date is indicated, water-level recorder operated beyond Dec. 31, 1942.

c Available records disagree concerning position of water-yielding zone.

designated "permanent" observation wells in this report; the 28 others, for most of which there are available periodic records of water levels spanning more than 10 years, have been designated "continuing" observation wells. It is planned to continue the records for both permanent and continuing observation wells in succeeding annual water-level reports. Of these 34 wells, 6 have been measured by the Geological Survey only, 9 by the Geological Survey and other agencies, and 19 by other agencies only.

For 12 of the continuing observation wells, records have been published previously; ^{5/} for the 16 others the available records are included among those on pages 89-175. Most of these records span a 10- to 12-year period, and measurements are available for most of the wells included at about weekly intervals.

GROUND-WATER WITHDRAWALS AND WATER-LEVEL FLUCTUATIONS

Development of ground-water supplies in the Long Beach-Santa Ana area commenced about 1860. In 1904, W. C. Mendenhall estimated the withdrawal of ground water within this area to be about 150,000 acre-feet. ^{6/} During the three decades following the canvass by Mendenhall, many irrigation wells of large diameter were constructed and, with the development and widespread use of deep-well turbine pumps, the withdrawal of ground water increased more than twofold. By the early 1930's, the annual consumption of ground water had reached about 330,000 acre-feet, and since then, except in 1936 when there was an increased draft to compensate for low seasonal precipitation, it has remained nearly constant.

Initially there were flowing wells over about 290 square miles, or 37 percent, of the coastal plain. By 1904, the area of flowing wells had decreased to an estimated 190 square miles, and by 1928, as a result of the increased draft, nearly all wells on the coastal plain had ceased to flow. Continued heavy draft of ground water, together with subnormal rainfall in 6 of the 8 years following 1928, resulted in 1936 in the lowest water level on record. (See hydrograph for well 4/10-2212 in fig. 8.) During the autumn low-water period of 1936, water levels in wells were below sea level over about 320 square miles, or 40 percent, of the coastal plain. In 4 of

^{5/} Meinzer, O. E., Wenzel, L. K., and others, op. cit., pp. 100-135.
^{6/} Mendenhall, W. C., Development of underground waters in the eastern coastal-plain region of southern California: U.S. Geol. Survey Water-Supply Paper 137, 140 pp., 1905; Development of underground waters in the central coastal-plain region of southern California: U.S. Geol. Survey Water-Supply Paper 138, 162 pp., 1905.

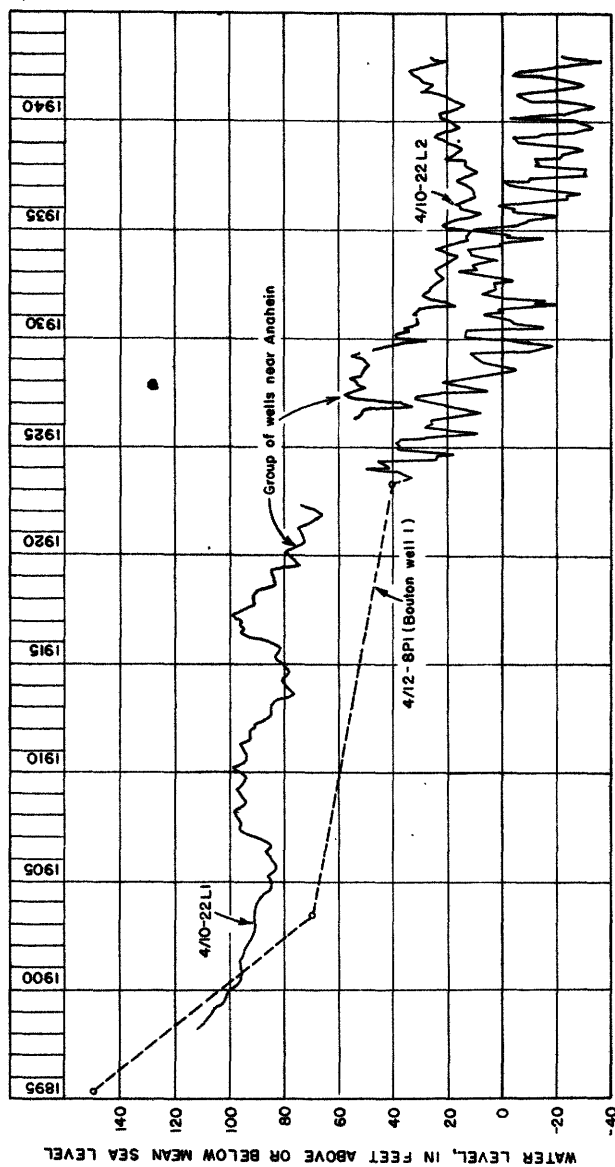


Figure 8.--Graphs showing fluctuations of water level in typical wells in the Long Beach-Santa Ana area, Los Angeles and Orange Counties, Calif. (Partly after F. C. Ebert, in Am. Geophys. Union Trans. for 1936, pt. 2, p. 376.)

the 6 years following 1936, rainfall was above normal and water levels rose considerably, so that during the period 1940-41 flow by artesian pressure was rejuvenated in an area of about 16 square miles lying immediately northeast of the Newport-Inglewood structural zone and extending from Long Beach to Huntington Beach. During the early part of 1942, this area of flowing wells diminished slightly.

The hydrograph for well 4/12-8P1 (see fig. 8) illustrates conditions in an area a few miles northeast of Long Beach. Here withdrawals for municipal and other uses have been maintained at a sufficiently high rate since 1936 to depress water levels, contrary to the general trend, which is toward recovery.

Summary of water-level fluctuations

The following table summarizes the observed range of water levels in a group of 54 selected wells, composed of the 6 permanent and 28 continuing observation wells and 20 additional wells selected to give most effective geographic distribution in the most critical portions of the coastal zone. (For the location of these wells, see fig. 7.) All except two of the wells are believed to tap confined water bodies; the exceptions are well 2/12-13A1, near Whittier Narrows, and well 4/9-7B1, near the mouth of Santa Ana River Canyon, which are water-table wells. Among the wells in this table are 39 whose water-level records extend continuously from 1933 or earlier years to the end of 1942; for 27 of these the lowest measured water level occurred in the period 1934-36, and for 10 the highest measured water level occurred in 1941 or 1942.

The data in the table have been compiled from measurements made by the following agencies and persons: Geological Survey, California Division of Water Resources, Los Angeles County Flood Control District, Los Angeles Department of Water and Power, Orange County Flood Control District, San Gabriel Valley Protective Association, city of Long Beach, city of Newport Beach, city of Pasadena, The Irvine Co., Montana Land Co., Ross A. Shafer for the Bixby-Bryant interests, W. W. Hoy, and J. B. Lippincott.

Summary of water-level fluctuations in 54 selected observation wells of the Long Beach-Santa Ana area, Calif., with reference to sea level (W, weekly; M, monthly; Q, quarterly; S, semiannually; A, annually; R, recorder. Last symbol of entry indicates present frequency or character of measurements)

Well	Period of record	Frequency of measurements	Lowest observed static water level		Highest observed static water level		Level at end of October 1942 (feet)
			Feet	Date	Feet	Date	
2/12-13A1	1928-	M-W,R	+129.36	Oct. 19, 1934	+163.49	Aug. 4, 1941	+157.12
3/11-36Q2	1930-	R	+52	Sept. 15, 1937	+40.46	Feb. 19, 1931	+20.59
3/12-8L3	1930-	R	+48.75	Aug. 19, 1936	+77.87	Mar. 23, 1930	+65.00
3/13-35B2	1930-	M,Q	+20.17	Oct. 3, 1934	+41.02	Feb. 11, 1931	+33.77
4/9-7B1	1928-	M,W	+8.21	Oct. 28, 1936	+103.32	May 14, 1941	+39.77
4/10-22I2	1928-	A-M	+8.3	Dec. 3, 1936	+55.8	Apr. 11, 1928	a+23.77
4/11-5D1	1930-	M	-9.91	Aug. 22, 1938	+41.29	Mar. 17, 1933	a+12.9
4/11-19K1	1903, 1929-	M,R	-6.00	Sept. 23, 1936	+28.5	Aug. 20, 1903	+8.07
4/12-4J3	1937-	M	+17.9	July 2, 1942	+52.4	Apr. 21, 1941	.....
4/12-8F1	1903, 1923-	M,R	-36.72	Oct. 12, 1942	+68.5	July 30, 1903	-35.12
4/12-17G3	1933-	M	-22.10	Oct. 28, 1942	+30.60	Apr. 21, 1935	-22.10
4/12-25M1	1937-	M	-6.4	Sept. 1, 1938	b+15.5	May 1941	a+7.2
4/12-27K2	1923-24, 1931-	M	-4.01	Sept. 1, 1939	+42.4	Jan. 1942	a+6.11
4/13-2F1	1923, 1930-	M,R	-.3	Oct. 28, 1930	+23.1	Feb. 2, 1924	a+13.11
4/13-8L1	1931-	S-M,Q	-13.2	Nov. 2, 1936	+7.53	Mar. 29, 1923	+13.11
4/13-14L1	1930-	M,R	-11.48	Nov. 2, 1937		May 1, 1941	+25.13
4/13-23G2	1932-	R,W,R	-53.2	Sept. 8, 1930	+7.93	Apr. 5, 1941	a+2.48
4/13-23M2	1931-38 1941-	M	-8.52	Aug. 30, 1940	-28.43	Feb. 6, 1939	-40.7
4/13-27K1	1923, 1930-	R	-11.66	Nov. 3, 1932	+2.77	May 5, 1941	b-1.90
4/13-28N1	1928-	Q,M	-22.66	Sept. 24, 1934	+7.00	Mar. 21, 1923	.....
4/13-29M1	1928-	M	-22.66	Sept. 4, 1935	-13.26	Dec. 10, 1928	-17.47
4/13-30D1	1930-	M	-28.8	Mar. 18, 1935	-15.6	Feb. 11, 1930	-17.15
4/13-30D1	1930-	M,Q	-33.41	Aug. 30, 1935	-20.56	July 17, 1942	-21.34
4/13-33D1	1931-	M-R,Q	-37.70	Oct. 5, 1941	-26.05	Feb. 16, 1939	-34.54
4/13-33E6	1927-	Q-M,Q	-36.42	Apr. 4, 1933	-18.47	Feb. 16, 1939	-22.67
4/13-35M1	1923, 1929-	S-M	-9.9	Oct. 11, 1929	+2.24	Feb. 6, 1939	-7.17
5/10-9D1	1922, 1924-	A-M	+1.78	Sept. 4, 1936	+56.8	June 13, 1922	a+19.23

a Interpolated.

b Top of casing, well flowing intermittently, true static level unknown.

Summary of water-level fluctuations in 54 selected observation wells of the Long Beach-Santa Ana area, Calif., with reference to sea level

(W, weekly; M, monthly; Q, quarterly; S, semiannually; A, annually; R, recorder. Last symbol of entry indicates present frequency or character of measurements.)--Continued

Well	Period of record	Frequency of measurements	Lowest observed static water level		Highest observed static water level		Level at end of October 1942 (feet)
			Feet	Date	Feet	Date	
5/10-28E1	1935-	M	-7.8	July 22, 1936	+20.6	Jan. 13, 1942	.....
5/10-34E1	1935-	M	+2.7	August 1936	+19.55	Jan. 13, 1942	+13.56
5/11-2E1	1929-	M	-10.30	July 21, 1936	+25.67	May 19, 1930	.....
5/11-6A1	1928-	M,W	-9.89	Nov. 9, 1936	+23.9	Apr. 9, 1929	+6.83
5/11-6D2	1903, 1922-	A-M,W	-3.46	Oct. 1, 1936	+35.4	June 22, 1922	+4.44
5/11-16D2	1929-	R	b-9.75	Oct. 10, 1936	b+17.32	Feb. 6, 1930	c+1.19
5/11-18N1	1941-	R	b-.90	Nov. 19, 1941	b+3.11	Dec. 18, 1941	.....
5/11-18P1	1941-	R	b+1.94	May 31, 1942	b+6.19	Dec. 18, 1941	.....
5/11-23A2	1941-	Q	+4.85	Mar. 20, 1942	+16.24	Jan. 14, 1942	+9.13
5/11-25P1	1930-	M	-2.93	July 24, 1936	+14.10	Feb. 25, 1932	c+9.2
5/11-28A1	1930-	M	-12.67	Oct. 7, 1936	+21.29	Feb. 6, 1942	d+7.54
5/11-29C4	1941-	Q,R	+1.97	Aug. 14, 1942	b+9.86	Feb. 2, 1942	.....
5/11-29E1	1941-	R	b.00	May 30, 1942	b+3.43	Dec. 18, 1941	.....
5/11-29E2	1941-	R	b.56	May 19, 1942	b+2.60	Dec. 19, 1941	.....
5/12-2B1	1929-	M-R,W	-1.65	Sept. 5, 1936	+13.84	Dec. 11, 1929	b+6.10
5/12-12P1	1930-	W	-7.30	Oct. 3, 1936	+9.71	Mar. 13, 1933	+3.14
5/12-13D1	1942-	R	b+.33	Apr. 29, 1942	+1.86	Dec. 7, 1942	b+1.62
5/12-13D2	1942-	R	c+.82	Sept. 21, 1942	c+1.14	May 2, 1942	c+1.95
6/10-1E1	1930-	M,W	-23.31	July 24, 1936	+19.63	Jan. 17, 1942	+7.12
6/10-1L2	1904, 1921-	Q,M	+13.75	June 20, 1928	b+40.05	May 19, 1904	+21.67
6/10-3Q2	1940-	Q	+3.83	Mar. 17, 1942	+18.14	Jan. 12, 1942	+7.09
6/10-5C1	1931-	M,W	-7.7	Aug. 8, 1936	+15.04	Jan. 17, 1942	+9.08
6/10-7B1	1927-	M,W	-16.4	Sept. 2, 1936	b+11.2	1927-1930	+2.21
6/11-1Q1	1932-	M-R,W	-8.4	Apr. 4, 1935	b+8.61	Mar. 1, 1932	+2.89
6/11-2G1	1940-	W	+1.17	Dec. 9, 1940	+7.64	Feb. 23, 1942	c+4.88
6/11-13G2	1930-	R	-9.36	Apr. 10, 1931	c+4.50	Apr. 21, 1941	c+.57
I-9F1	1932-	M,W	-13.13	Apr. 27, 1936	+25.94	Jan. 28, 1942	c+11.1

a Interpolated.

b Top of casing, well flowing intermittently, true static level unknown.

c From recorder charts.

d Reported average for month.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

The wells whose water levels in 1942 are given in the following tables are listed by numbers assigned to them by the Federal Geological Survey. The numbering system used by the Survey for wells in the Long Beach-Santa Ana area is the same as that used for wells in Santa Barbara County and is explained in the paper on that county. (See p.189). Most of the observation wells in the Long Beach-Santa Ana area are described for the first time in this report.

In accordance with the uniform system of reference recently adopted by the Geological Survey for records published in the annual water-level reports, water levels in each well are expressed as depth to water in feet below a land-surface datum, which for each well is a plane of precise reference that approximates the level of the land surface as of 1942. For many wells in this area the position of the land surface is not stable; however, if the land-surface datum is established by reference to the position of the measuring point and, where possible, is also connected with a suitable reference bench mark, the record can be continued from year to year in terms of a precise level that is independent of change in either the measuring point or the actual land surface.

In previous reports on the Long Beach-Santa Ana area, measured depths of wells have been expressed in feet below top of casing or other measuring point, but in the present report they are expressed in feet with reference to the land-surface datum. This is done for the sake of conformity, as both depths to water and depths of perforated intervals are expressed in feet below land surface.

For an adequate analysis of hydrologic conditions in the critical area proximate to the Newport-Inglewood structural zone, it was necessary to know the altitudes of measuring points at observation wells established or constructed by the Geological Survey. Because this structural zone is known to be seismically active, it was suspected that altitudes determined in the early 1930's might not be dependable, owing to earth movements during or subsequent to the Long Beach earthquake of 1933. Accordingly, a trial third-order level line was run in Santa Ana gap and on Huntington Beach mesa late in 1941, and it was found that differential earth movement of the order

of a foot had occurred in part of that area since 1932. Subsequently, altitudes of measuring points for all observation wells within at least a mile of the Newport-Inglewood structural zone were tied to a common level net.

To accomplish this tie, about 80 miles of third-order levels were run from and through previously established bench marks to the 68 observation wells constructed by the Geological Survey in the coastal zone. By means of a first-order level net developed by the city of Long Beach in 1941 it was possible to anchor this third-order level net to bench mark "tidal 8", which is on the first-order net, in Los Angeles Outer Harbor, and from current work by the United States Coast and Geodetic Survey it was known that bench mark "tidal 8" had remained stable with respect to mean sea level. Also, it was found that recent earth movement had been negligible at three previously established bench marks--one in the Dominguez gap and two in the Santa Ana gap. The third-order levels run by the Geological Survey were adjusted accordingly, to establish a local so-called "sea-level datum of 1941." Subsequently, by running about 70 additional miles of levels with transit and stadia or with alidade and level rod, the altitudes of outlying wells were adjusted to this local datum. Altogether, the altitudes of about 170 of the 223 observation wells constructed or established by the Geological Survey in the coastal zone, and also of certain of the previously established observation wells of other agencies have been adjusted to the sea-level datum of 1941.

For those wells not tied to the level net adjusted to the datum of 1941, altitudes determined by other agencies, if available, have been given, and the responsible agency has been cited. For the few remaining wells not tied to any level net, altitude of land-surface has been interpolated to the nearest foot from topographic maps of the Geological Survey.

Los Angeles County

2/12-13A1 (*941, p. 105). Lycan Bros. Geological Survey continuing observation well. About 1 mile east of Montebello. Measuring point, top of casing, 1.90 feet above land-surface datum which is 181 feet above mean sea level (interpolated from topographic map). Records furnished by San Gabriel Valley Protective Association.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	18.14	Apr. 8	18.06	July 8	18.98	Oct. 7	23.58
14	18.12	15	17.94	15	19.27	14	23.52
21	18.09	22	17.83	22	19.56	21	23.68
28	18.03	29	17.73	29	19.95	28	23.88
Feb. 4	18.00	May 6	17.72	Aug. 5	20.34	Nov. 4	23.93
11	18.02	13	17.74	12	20.79	11	23.90
18	18.04	20	17.90	19	21.17	18	23.84
25	17.98	27	18.01	26	21.58	25	23.75
Mar. 4	17.98	June 3	18.13	Sept. 2	21.86	Dec. 2	23.64
11	17.95	10	18.30	9	22.29	9	23.58
18	17.88	17	18.48	16	22.55	16	23.53
25	17.94	24	18.58	23	22.87	23	23.45
Apr. 1	18.05	July 1	18.74	30	23.16	30	23.26

3/12-8L3 (*941, p. 107). Los Angeles County Farm. Geological Survey continuing observation well. About 2 miles southwest of Downey. Measuring point, top of recorder platform at hole, 5.0 feet below land-surface datum which is 92 feet above mean sea level (interpolated from topographic map). Records furnished by San Gabriel Valley Protective Association.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	17.07	Apr. 13	17.24	July 6	29.95	Oct. 5	28.12
12	17.10	20	17.20	13	30.51	12	26.93
19	17.49	27	17.55	20	30.31	19	26.90
26	16.78	May 4	19.97	27	31.10	26	27.00
Feb. 2	17.20	11	21.44	Aug. 3	31.35	Nov. 2	24.28
9	18.18	18	25.04	10	31.54	9	23.78
16	18.67	25	25.43	17	30.06	16	24.40
23	18.76	June 1	26.50	24	30.02	23	23.91
Mar. 2	17.38	8	26.16	31	30.22	30	23.57
9	18.44	15	26.54	Sept. 7	29.62	Dec. 7	23.82
16	16.79	22	27.20	14	29.98	14	23.51
23	17.70	29	29.64	21	28.75	21	23.19
30	19.75			28	28.20	28	21.65
Apr. 6	19.26						

3/13-32C1. John Larronde. California Division of Water Resources serial No. B-112e and location No. 833D; Los Angeles Department of Water and Power No. 7-A-49. About 1.5 miles southeast of Gardena, 1,050 feet north of Victoria Street, and 700 feet west of Avalon Boulevard, about 250 feet west of red house, under windmill tower, in 2- by 3-foot red box. Drilled domestic well, diameter 8 inches, reported depth 275 feet. Measuring point, top west side of casing flush with concrete foundation, 0.20 foot above land-surface datum and 34.95 feet above sea-level datum of 1941. Additional measurements made monthly 1930-41 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 1, 1941	43.81	Nov. 7, 1941	46.26	Mar. 25, 1942	44.28
Aug. 12	47.85	Jan. 9, 1942	44.98	Oct. 30	46.79

a Highest level for the day.

3/13-32F2. John Larronde. Geological Survey continuing observation well. California Division of Water Resources serial No. B-112a and location No. 833A; Los Angeles Department of Water and Power No. 7-A-48. About 1.5 miles southeast of Gardena, 450 feet north of Victoria Street, 24 feet west of west lane of Avalon Boulevard, 5 feet east of fence in west bank of highway cut, and 30 feet south of concrete pump foundation. Unused drilled well, diameter 12 inches, depth 543.0 feet. Measurements made monthly 1930-41 by Los Angeles Department of Water and Power and quarterly since 1941 by Geological Survey. Measuring point, top of 3/4-inch coupling atop 2-inch pipe welded into casing cover, 0.81 foot above top of casing, 0.50 foot below land-surface datum and 47.85 feet above sea-level datum of 1941. Records furnished by Los Angeles Department of Water and Power except as indicated. All water levels are below sea level.

Water level, in feet below land-surface datum, 1930, 1932-42

Date	Water level	Date	Water level	Date	Water level
Oct. 23, 1930	72.70	Nov. 5, 1934	75.85	Mar. 23, 1938	68.60
Apr. 8, 1932	70.10	Dec. 10	72.30	Apr. 29	72.00
June 18	74.50	Jan. 10, 1935	70.90	June 9	74.15
July 16	75.80	Feb. 5	70.50	July 28	78.10
Aug. 5	76.05	7	70.50	Nov. 17	74.65
Sept. 8	75.75	Mar. 4	71.05	Jan. 10, 1939	73.70
Oct. 6	74.75	Apr. 8	70.60	Feb. 2	69.50
Nov. 15	73.40	May 7	71.90	Mar. 7	69.95
Dec. 29	71.05	June 11	75.45	Apr. 4	70.10
Jan. 8, 1933	70.70	July 23	80.00	May 15	73.30
Feb. 8	69.60	Sept. 4	79.95	June 14	76.10
Apr. 4	69.90	Nov. 1	78.90	July 20	77.55
May 8	71.50	Dec. 18	73.10	Aug. 24	78.50
June 13	72.05	Feb. 3, 1936	71.95	Oct. 11	75.42
July 12	74.35	Mar. 31	71.50	Dec. 15	74.45
20	74.90	May 25	74.85	Jan. 23, 1940	70.60
Aug. 3	76.00	June 17	76.00	Feb. 15	70.68
Sept. 15	75.50	July 31	78.50	Mar. 12	70.71
Oct. 2	74.65	Aug. 31	79.10	Apr. 12	71.40
Nov. 9	73.90	Oct. 13	78.15	June 26	77.10
Dec. 5	73.60	Nov. 18	75.00	Oct. 9	79.20
Jan. 4, 1934	70.50	Jan. 5, 1937	72.30	Jan. 29, 1941	a70.76
Feb. 8	69.90	Feb. 10	69.65	Apr. 23	70.25
Mar. 5	69.25	Mar. 18	69.75	May 1	a71.03
Apr. 9	72.00	Apr. 19	71.65	Aug. 12	a77.33
May 1	73.80	May 18	73.70	Oct. 21	78.56
June 7	76.60	June 18	76.20	Nov. 7	a75.43
July 12	78.10	July 20	79.70	Jan. 9, 1942	a72.82
Aug. 8	80.30	Aug. 20	79.30	Mar. 25	a72.88
Sept. 17	80.50	Oct. 14	78.90	July 17	a78.28
Oct. 3	80.70	Dec. 7	74.10	Oct. 30	a78.30

3/13-35B2. H. Y. Sasaki. Geological Survey continuing observation well. California Division of Water Resources serial No. B-122L and location No. 892D; Los Angeles Department of Water and Power No. 7-B-42. About 1.5 miles south of Compton, 180 feet south of Artesia Street, and 350 feet west of Delta Avenue, lone casing in field. Unused drilled well, diameter 12 inches (7-inch inside casing), depth 174.0 feet. Measurements made monthly 1930-41 by Los Angeles Department of Water and Power and quarterly since 1941 by Geological Survey. Measuring point, top west side of casing at chisel cuts, 1.42 feet above top of concrete ring between 7-inch and 12-inch casings, 2.00 feet above land-surface datum and 57.27 feet above sea-level datum of 1941. Records furnished by Los Angeles Department of Water and Power except as indicated.

Water level, in feet below land-surface datum, 1930-42

Oct. 16, 1930	22.80	Aug. 7, 1931	24.85	July 6, 1932	24.90
Dec. 3	18.30	Sept. 4	25.00	Aug. 5	24.90
Feb. 11, 1931	14.25	Dec. 4	20.70	Sept. 12	24.80
Mar. 4	15.10	Jan. 11, 1932	17.75	Oct. 6	24.00
Apr. 3	18.35	Feb. 5	16.80	Nov. 15	23.40
May 5	18.35	Mar. 2	15.45	Dec. 15	21.55
June 3	20.55	Apr. 7	17.25	Jan. 12, 1933	21.25
July 7	22.35	June 8	21.75	Feb. 15	18.45

a Measured by Geological Survey.

3/13-35B2. H. Y. Sasaki--Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Mar. 8, 1933	19.90	May 7, 1935	20.00	Feb. 7, 1939	19.65
21	17.90	June 6	a25.50	Mar. 8	19.15
Apr. 4	21.70	July 17	29.00	Apr. 11	19.73
May 7	22.10	Nov. 1	26.40	May 17	22.95
June 7	22.55	June 18, 1936	28.75	June 16	b27.25
July 12	25.00	Oct. 9	31.65	Oct. 17	a26.75
Aug. 3	26.10	Nov. 18	29.25	Dec. 20	22.28
Sept. 8	28.50	Jan. 5, 1937	27.10	Jan. 26, 1940	20.30
Oct. 2	27.00	Feb. 10	22.30	Feb. 16	19.50
Nov. 9	25.25	Apr. 20	21.20	Mar. 8	19.15
Dec. 5	24.20	May 18	23.60	Apr. 16	a19.65
June 7, 1934	25.90	June 16	28.15	Jan. 26, 1941	c19.71
July 13	28.55	Aug. 20	28.00	May 1	c15.83
Aug. 6	31.10	Oct. 15	28.05	2	16.10
Sept. 6	31.15	Mar. 22, 1938	21.00	Nov. 6	c16.14
Oct. 3	35.10	Apr. 27	21.20	Mar. 24, 1942	c14.93
Nov. 5	24.85	July 27	26.20	July 16	c23.10
Dec. 10	23.00	Nov. 17	23.80	Oct. 29	c21.50
Mar. 12, 1935	21.70	Jan. 3, 1939	20.60		

3/13-35C2. Carson Estate Co. About 1.5 miles south of Compton, 1,200 feet south of Artesia Street, 500 feet east of Alameda Street, and 320 feet southwest of well 35C1, which is in frame pump house 10 feet south of concrete standpipe, lone casing in field. Unused drilled well, diameter 8 inches, depth 595.9 feet. Measuring point, top southwest side of casing, at chisel cuts, 1.10 feet above land-surface datum and 54.75 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

May 2, 1941	17.12	Jan. 8, 1942	17.05	July 16, 1942	d23.20
Aug. 12	22.11	Mar. 24	16.34	Oct. 29	23.23
Nov. 6	19.19				

4/11-5D1. V. Capovilla. Geological Survey continuing observation well. California Division of Water Resources serial No. C-897k and location No. 1034E. About 3.5 miles south of Norwalk, 300 feet south of Orangethorpe Avenue, and 350 feet east of Beck Street. Drilled domestic well, diameter 10 inches, reported depth 270 feet. Water level measured monthly since 1930 by Orange County Flood Control District. Measuring point, top of $\frac{1}{4}$ -inch board 0.04 foot above top of concrete base, which is 0.50 foot above land-surface datum and 45.2 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1930-42

May 10, 1930	24.24	June 16, 1932	9.54	Aug. 21, 1934	36.69
Dec. 8	19.16	July 12	24.08	Jan. 3, 1935	11.70
Dec. 20	20.78	Aug. 5	27.28	Mar. 15	14.86
Jan. 13, 1931	17.14	Sept. 8	25.71	Apr. 26	19.26
Feb. 3	21.00	Oct. 24	16.76	June 27	31.40
18	22.44	Nov. 14	17.29	Aug. 22	36.43
Mar. 5	20.30	Dec. 22	11.03	Oct. 15	27.06
Apr. 27	41.40	Jan. 27, 1933	6.59	Mar. 24, 1936	9.70
May 6	32.93	Feb. 27	7.20	Apr. 17	25.97
June 2	28.09	Mar. 17	3.41	May 15	29.53
July 1	e57.16	Apr. 20	19.63	June 16	37.39
Oct. 6	30.72	July 17	29.82	July 20	41.56
Nov. 3	e49.14	Aug. 29	29.78	Aug. 26	29.22
Dec. 2	33.89	Oct. 27	22.32	Oct. 5	38.42
Jan. 11, 1932	14.09	Dec. 26	13.77	Nov. 3	36.84
Feb. 19	17.16	May 17, 1934	31.53	Dec. 4	37.23
Mar. 1	26.42	July 12	36.44	Feb. 16, 1937	17.71

a Pumping; windmill on well.

b Well 100 feet north pumping.

c Measured by Geological Survey.

d Well 320 feet northeast pumping.

e Below sea level.

4/11-5D1. V. Capovilla--Continued.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Apr. 14, 1937	29.54	Apr. 3, 1939	10.09	Apr. 17, 1941	3.70
May 27	32.81	May 12	26.01	May 13	7.80
June 25	a49.26	June 12	a48.67	June 3	13.25
July 27	a52.57	July 13	41.09	July 7	22.47
Aug. 23	a48.82	Aug. 17	a45.86	Aug. 5	34.97
Sept. 20	a49.62	Sept. 19, 1939	a51.36	Sept. 8	25.91
Oct. 19	a47.89	Oct. 24	22.80	Oct. 6	26.45
Nov. 19	27.61	Dec. 7	19.06	Nov. 10	15.61
Dec. 21	26.99	Jan. 2, 1940	15.48	Dec. 8	12.03
Jan. 20, 1938	18.06	Feb. 6	10.51	Jan. 8, 1942	6.25
Feb. 25	20.76	Mar. 12	9.96	Feb. 5	7.20
Mar. 29	18.60	Apr. 1	10.54	Mar. 9	8.25
Apr. 25	20.10	May 6	17.44	Apr. 6	9.11
May 24	22.89	June 3	30.87	May 15	14.00
July 19	a48.82	July 8	37.46	June 15	28.37
Aug. 22	a54.61	Aug. 12	42.62	July 14	35.45
Sept. 30	33.16	Sept. 17	35.49	Aug. 18	39.23
Oct. 27	31.18	Oct. 10	30.65	Sept. 21	29.82
Nov. 25	27.23	Nov. 14	22.61	Oct. 19	40.26
Dec. 16	18.73	Jan. 7, 1941	15.61	Nov. 17	18.56
Jan. 24, 1939	12.84	Feb. 13	10.62	Dec. 21	26.21
Mar. 3	23.59	Mar. 7	8.57		

4/12-4J2. Montana Land Co. well 14. California Division of Water Resources, serial No. C-907d and location No. 964A. About 2 miles south of Bellflower, 2,900 feet south of South Street, 200 feet west of Clark Avenue, and 550 feet south of well 4J3. Unused drilled well, diameter 14 inches, reported depth 1,061 feet, measured depth 258.0 feet. Casing perforated from 925 to 939 and from 990 to 1,029 feet below land surface. Measuring point, top of cast-iron flange at land-surface datum, which is 51 feet above mean sea level (interpolated from topographic map). Water level affected by intermittent pumping of irrigation well 4/12-4J3. Additional measurements made about monthly 1928-30 by San Gabriel Valley Protective Association and Pasadena Water Department and semiannually since 1941 by Los Angeles Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Apr. 21, 1941	(b)	Jan. 7, 1942	(b)	July 2, 1942	35.22
Aug. 15	22.22	Mar. 24	(b)	15	c47.74

4/12-4J3. Montana Land Co. well 86. About 2 miles south of Bellflower, 2,350 feet south of South Street, 330 feet west of Clark Avenue, and 8 feet north of standpipe under turbine pump in concrete foundation block. Drilled irrigation well, diameter 14 inches, reported depth 354 feet. Casing perforated from 313 to 343 feet below land surface. Measuring point, bottom edge of horizontal 1-inch nipple in north side of pump base, 0.55 foot above concrete pump foundation and 1.40 feet above land-surface datum which is 51 feet above mean sea level (interpolated from topographic map). To adjust tape reading for horizontal correction, subtract 0.30 foot. Additional measurements made about monthly since 1937 by Montana Land Co.

Water level, in feet below land-surface datum, 1941-42

Apr. 21, 1941	(d)	Jan. 7, 1942	(d)	July 15, 1942	(e)
Aug. 15	20.45	Mar. 24	(d)	23	(e)
Nov. 6	3.74	July 2	33.11		

a Below sea level.

b Flowing.

c Well 4/12-4J3 pumping.

d Flowing.

e Pumping.

4/12-8N1 (138, p. 74, well 936). Montana Land Co. California Division of Water Resources serial No. C-926e and location No. 936C; Bouton well 2. About 2 miles north of Signal Hill, 500 feet north of Carson Street, and 45 feet west of center line of Union Pacific Railroad, open casing in concrete foundation block. Unused drilled well, diameter 12 inches, depth 732.0 feet. Casing perforated from 702 to 740 feet below land surface. Measuring point, top of concrete foundation, 1.00 foot above land-surface datum which is 70 feet above mean sea level (interpolated from topographic map). Water level probably affected by intermittent pumping of well 4/12-8L1, about 1,000 feet northeast. Additional measurements made about biweekly 1930-37 by Los Angeles County Flood Control District. All water levels since 1941 are below sea level.

Water level, in feet below land-surface datum, 1903, 1941-42

Date	Water level	Date	Water level	Date	Water level
July 30, 1903	(a)	Aug. 16, 1941	96.76	Jan. 7, 1942	80.76
May 2, 1941	74.70	Nov. 10	91.11	July 15	92.02

4/12-8P1 (138, p. 74, well 934; *941, p. 110). Montana Land Co. Geological Survey continuing observation well. About 2 miles north of Signal Hill and 300 feet northeast of well 8N1. Measuring point, top of recorder platform, 0.42 foot above top of casing, and top of concrete, 0.50 foot above land-surface datum and 68.90 feet above mean sea level (altitude by city of Long Beach). Records furnished by city of Long Beach. All water levels are below sea level.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	81.12	Apr. 6	75.35	July 6	89.42	Oct. 5	105.27
12	79.71	13	74.27	13	91.35	12	105.12
19	78.84	20	73.46	20	92.84	19	104.35
26	78.11	27	73.45	27	94.43	26	103.52
Feb. 2	76.90	May 4	74.53	Aug. 3	95.54	Nov. 2	100.70
9	76.35	11	76.48	.10	97.93	9	98.45
16	76.11	18	78.39	17	101.59	16	100.62
23	71.73	25	80.92	24	103.25	23	97.08
Mar. 2	71.23	June 1	82.82	31	104.47	30	98.06
9	74.24	8	85.55	Sept. 7	104.50	Dec. 7	95.22
16	74.32	15	86.48	14	105.02	14	98.03
23	72.56	22	87.34	21	105.36	21	94.29
30	74.28	29	88.49	28	105.47	28	92.19

4/12-16J1. Montana Land Co. well 90. About 2 miles northeast of Signal Hill, 750 feet south of Conant Street, and 80 feet west of Clark Avenue, in sheet-metal shelter, under turbine pump. Drilled irrigation well, diameter 14 inches, reported depth 275 feet. Measuring point, lower edge of hole in north side of pump base, 1.30 feet above land-surface datum which is 34 feet above mean sea level (interpolated from topographic map). To adjust tape reading for horizontal correction, subtract 0.10 foot. Additional measurements made about monthly 1939-41 by Montana Land Co.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Apr. 18, 1941	24.66	Jan. 7, 1942	27.93	July 15, 1942	b54.58
Aug. 16	b45.51	Mar. 21	29.57	Oct. 27	b50.17
Nov. 6	b39.55				

4/12-17G3. Montana Land Co. well 66. About 1.5 miles north of Signal Hill, 0.38 mile south of Carson Street, 0.37 mile east of Union Pacific Railroad, and 280 feet south of private road, lone casing in field. Unused drilled well, diameter 12 inches, depth 88.8 feet. Measuring point, top of wooden plug at 2-inch hole, 1.10 feet above top south side of casing, and 2.20 feet above land-surface datum which is 56 feet above mean sea level (interpolated from topographic map). Additional measurements made about monthly since 1933 by Montana Land Co.

a Flowing.

b Below sea level.

4/12-17G3. Montana Land Co.--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Apr. 25, 1941	48.90	Jan. 10, 1942	a57.46	July 15, 1942	a69.40
Aug. 16	a69.87	Mar. 21	51.83	Oct. 28	a78.10
Nov. 10	a65.57				

4/12-24M1. City of Long Beach. California Division of Water Resources serial No. C-940a and location No. 1008C. About 1.5 mile west of Los Alamitos, 1,200 feet west of San Gabriel River, 250 feet south of Spring Street, 1,175 feet east of Studebaker Road, 3 feet south of sheet-metal pump house, and 20 feet west of tank tower. Drilled irrigation well, diameter 4 inches, reported depth 318 feet. Casing perforated from 300 to 318 feet below land surface. Measuring point, inner rim on under side of 4-inch pipe tee atop casing, 0.30 foot above land-surface datum which is 22 feet above mean sea level (interpolated from topographic map). Additional measurements made monthly in 1929 by San Gabriel Valley Protective Association and irregularly 1930-33 by Pasadena Water Department. Water levels, in feet below land-surface datum, 1942: Jan. 7, 1.37; Mar. 21, 4.57; July 15, 11.80; Oct. 28, 13.87.

4/12-25M1. Bryant Ranch. California Division of Water Resources serial No. C-914q and location No. 500E. About 2 miles southwest of Los Alamitos, 2,650 feet west of San Gabriel River, 1 mile south of Spring Street, 2,700 feet east of Palo Verde Avenue, 60 feet south of Stearns Street, extended, and 15 feet east of brick reservoir, in frame pump house. Drilled irrigation well, diameter 16 inches, reported depth 575 feet. Casing perforated at several intervals between 192 and 575 feet below land surface. Measuring point, bottom edge of 1½-inch hole in north side of pump head (remove pipe to measure), 0.5 foot above land-surface datum which is 15 feet above mean sea level (interpolated from topographic map). Additional measurements made biweekly since 1937 by R. A. Shafer for Bixby-Bryant interests.

Water level, in feet below land-surface datum, 1941-42

Apr. 14, 1941	0.86	Nov. 6, 1941	3.45	Mar. 21, 1942	3.14
Aug. 16	7.55	Jan. 7, 1942	(b)		

4/12-27K2. Bryant Ranch. Geological Survey continuing observation well. California Division of Water Resources serial No. C-914a and location No. 470; J. B. Lippincott's No. 470-A; owner's No. 8. About 2 miles east of Signal Hill, 1.02 miles south of Spring Street, 360 feet east of Bellflower Boulevard, and 20 feet south of Stearns Street extended, in frame pump house painted red. Unused drilled well, diameter 12 inches, reported depth 835 feet. Casing perforated from 500 to 570, 695 to 735, and 745 to 815 feet below land surface. Reportedly flowed 5,000,000 gallons a day upon completion in 1915. Water level probably depressed currently by heavy withdrawals from public-supply wells to west. Water-level measurements as follows: (1) Monthly 1923-24 by J.B.Lippincott; (2) irregularly 1931-33, also by J.B.Lippincott; (3) water-level recorder operated since Oct. 5, 1933, by R. A. Shafer for Bixby-Bryant interests. Measuring point, top south side of flange atop casing, 0.90 foot above land-surface datum and 18.27 feet above mean sea level (altitude by R. A. Shafer)

Water level, in feet, with reference to land-surface datum, 1923-24, 1931-42

Sept. 7, 1923	c+11.5	Dec. 23, 1931	-7.30	Feb. 1, 1934	-5.04
Oct. 10	c+13.5	Jan. 4, 1932	-6.10	15	-4.98
Nov. 2	c+14.5	Feb. 24	-3.60	Mar. 2	-4.08
20	c+17.0	Nov. 7	-14.5	16	-4.41
Jan. 9, 1924	c+19.0	Oct. 5, 1933	-13.1	Apr. 1	-6.84
Feb. 2	c+25.0	Nov. 2	-11.5	16	-8.31
27	cd+4.0	17	-11.6	May 1	-9.73
Mar. 28	c+17.5	Dec. 2	-10.29	16	-12.35
Aug. 27	cd+4.0	16	-10.30	June 1	-15.39
Sept. 25	c+11.0	Jan. 4, 1934	-7.06	16	-13.70
Nov. 16, 1931	-11.0	15	-6.15	July 1	-14.34

a Below sea level.

b Flowing.

c Approximate only; measuring point assumed to have been 3 feet above land-surface datum; water level calculated to nearest 0.5 foot.

d Well probably flowing for irrigation at time measurement was made.

4/12-27K2. Bryant Ranch--Continued.

Water level, in feet, with reference to land-surface datum,
1925-24, 1931-42

Date	Water level	Date	Water level	Date	Water level
July 16, 1934	-13.1	Mar. 3, 1937	-9.50	Oct. 3, 1939	a-17.80
Aug. 1	-13.39	17	-8.81	18	-15.46
16	-14.85	Apr. 3	-8.04	3	-14.06
Sept. 1	-15.76	20	-7.29	17	-12.04
17	-15.5	May 4	-8.02	Dec. 4	-10.87
Oct. 1	-15.08	15	-8.25	16	-9.72
19	-15.57	June 2	-10.13	Jan. 4, 1940	-7.77
Nov. 1	-13.29	17	-10.46	17	-6.74
21	-11.17	July 3	-13.13	Feb. 5	-5.53
Dec. 3	-10.56	17	-14.89	16	-5.00
19	-9.43	Aug. 2	-16.16	Mar. 5	-4.70
Jan. 2, 1935	-8.32	18	a-18.28	18	-5.70
18	-6.25	Sept. 2	a-17.46	Apr. 4	-5.16
Feb. 16	-4.82	17	a-17.89	17	-4.90
Mar. 1	-5.35	Oct. 4	-17.29	May 3	-4.84
20	-3.64	11	-16.85	18	-7.11
Apr. 1	-3.23	Nov. 4	-15.70	June 5	-9.88
16	-2.92	17	-15.57	17	-11.04
May 3	-3.31	Dec. 6	-14.83	July 1	-14.71
17	-4.17	16	-14.33	17	-15.99
June 2	-5.27	Jan. 3, 1938	-11.84	Aug. 2	a-20.11
17	-7.15	17	-12.91	16	a-20.15
July 1	-9.41	Feb. 4	-11.22	Sept. 3	a-20.62
16	-10.81	18	-9.48	16	a-20.85
Aug. 3	-13.90	Mar. 1	-8.93	Oct. 3	a-20.44
17	-14.89	19	-8.46	16	a-18.37
Sept. 3	-14.79	Apr. 2	-8.05	Nov. 1	-16.28
16	-14.39	18	-9.33	18	-14.24
Oct. 5	-13.58	May 3	-8.77	Dec. 4	-12.17
17	-12.92	19	-8.41	20	-11.60
Nov. 4	-13.18	June 2	-10.11	Jan. 3, 1941	-9.87
12	-12.27	17	-10.75	17	-9.25
Dec. 19	-10.01	July 1	-13.02	Feb. 4	-8.19
Jan. 3, 1936	-9.17	15	-13.65	18	-7.36
17	-8.78	Aug. 3	-16.70	Mar. 3	-6.55
Feb. 3	-9.43	16	a-18.13	18	-5.69
17	-8.56	Sept. 1	a-17.94	Apr. 5	-4.77
Mar. 12	-8.63	16	a-18.21	15	-4.15
17	-7.80	Oct. 5	a-17.85	May 6	-2.82
Apr. 4	-8.85	17	-16.68	16	-2.57
17	-9.82	Nov. 2	-14.68	June 4	-3.89
May 2	-10.78	18	-13.63	20	-4.91
16	-12.47	Dec. 1	-12.79	July 8	-5.65
June 1	-14.95	17	-10.93	17	-7.63
18	-17.12	Jan. 3, 1939	-8.23	Aug. 5	-10.30
19	-17.13	16	-7.63	18	-11.24
July 3	a-19.76	Feb. 4	-6.13	Sept. 5	-13.31
17	a-20.27	17	-5.53	18	-12.61
Aug. 3	a-20.43	Mar. 4, 1939	-5.30	Oct. 3	-12.94
18	a-20.36	17	-4.71	17	-11.73
Sept. 3	a-21.10	Apr. 3	-4.10	Nov. 3	-7.80
17	a-20.53	17	-4.19	18	-5.87
Oct. 3	a-20.58	May 3	-5.54	Dec. 5	-5.05
19	a-19.88	18	-6.78	16	-3.47
Nov. 4	a-18.79	June 2	-11.01	Jan. 2, 1942	-1.46
17	a-18.17	15	-13.14	16	-.89
Dec. 1	a-18.02	30	-16.86	Feb. 3	-.64
18	-15.25	July 18	a-18.14	16	-1.79
Jan. 9, 1937	-12.87	Aug. 4	a-20.07	Mar. 4	-2.05
18	-12.20	17	a-20.74	19	-3.54
Feb. 1	-11.28	Sept. 1	a-21.38	Apr. 4	-6.33
19	-10.12	18	a-21.30	17	-5.35

a Below sea level.

4/12-27K2. Bryant Ranch--Continued.

Water level, in feet, with reference to land-surface datum,
1923-24, 1931-42

Date	Water level	Date	Water level	Date	Water level
May 4, 1942	-3.63	Aug. 1, 1942	-14.91	Oct. 15, 1942	-13.11
19	-2.69	24	-16.09	Nov. 2	-11.01
June 1	-5.98	Sept. 3	-14.95	20	-8.93
22	-6.73	17	-15.08	Dec. 4	-7.47
July 3	-8.87	Oct. 5	-13.97	17	-6.86
15	-11.39				

4/12-30B1. Richfield Oil Co.'s "Hass Lease" well. About 0.5 mile northwest of Signal Hill, 53 feet south of Willow Street, and 560 feet east of Orange Avenue, under pipe tripod in oil field. Drilled industrial well, diameter 12 inches, reported depth 254 feet; casing perforated from 138 to 148 and 160 to 168 feet below land surface. Measuring point, lower lip of 2-inch elbow atop 2-inch pipe welded into cover plate, 0.58 foot above cover plate, 1.20 feet above land-surface datum and 131.0 feet above sea-level datum of 1941. Water levels, in feet below land-surface datum, 1942: Mar. 18, 111.40; Mar. 24, 111.38; July 18, 110.85; Oct. 31, 110.40.

4/12-33A1. Bixby Land Co. About 2 miles southeast of Signal Hill, 1,150 feet south and 2,550 feet east of intersection of U. S. Highway 101 and Lakewood Boulevard, 95 feet west of Clark Avenue, and 70 feet south of southwesternmost eucalyptus tree of clump. Drilled domestic well, diameter 4 inches, depth 209.7 feet. Measuring point, top of casing, 0.20 foot above land-surface datum and 23.4 feet above sea-level datum of 1941. Well partially filled with rubbish late in 1942.

Water level, in feet below land-surface datum, 1941-42

Apr. 14, 1941	11.97	Nov. 6, 1941	19.30	Mar. 21, 1942	16.54
Aug. 16	16.34	Jan. 7, 1942	19.60	July 15	14.96

4/13-2A1. Dominguez Estate Co. About 2.5 miles south of Compton, and 0.35 mile west of Los Angeles River, 4,100 feet north of Del Amo Street, and 3,150 feet east of Alameda Boulevard, in sheet-metal pump house in field. Drilled irrigation well, diameter 12 inches, reported depth 160 feet. Measuring point, lower inside edge of 2-inch hole on west side of pump base casting, 0.5 foot above concrete floor of pump house, 1.00 foot above land-surface datum and 45.80 feet above sea-level datum of 1941. Reference bench mark, on top of 8-inch discharge pipe at south base of concrete standpipe; chiseled cross, 0.65 foot above measuring point.

Water level, in feet below land-surface datum, 1941-42

Feb. 26, 1941	15.58	Nov. 6, 1941	14.61	Mar. 24, 1942	14.01
May 3	13.54	Jan. 8, 1942	14.47	July 16	19.70
Aug. 12	b20.55				

4/13-2J3. Del Amo Estate Co. About 3 miles south of Compton, 0.2 miles west of Los Angeles River, 2,550 feet north and 4,300 feet east from the intersection of Alameda and Del Amo Streets, about 15 feet southeast of power-line pole, in frame pump house in field, 60 feet north of well 4/13-2J4. Drilled irrigation well, diameter 14 inches, reported depth 168 feet. Measuring point, bottom of notch in north side of casing, 0.30 foot below top of casing, 0.70 foot above land-surface datum and 44.34 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

May 3, 1941	14.63	Nov. 6, 1941	16.78	Mar. 24, 1942	15.24
Aug. 12	a25.88	Jan. 8, 1942	13.72	July 16	20.91

a Pumping.

b Well 1,500 feet south pumping.

4/13-2J4. Del Amo Estate Co. About 3 miles south of Compton, 0.2 mile west of Los Angeles River, 60 feet south of well 2J3, open casing in field. Unused irrigation well, diameter 14 inches, depth 178.4 feet. Measuring point, top west side of casing, at north side of notch, at chisel cuts, 0.50 foot above land-surface datum and 45.67 feet above sea-level datum of 1941. Water-level recorder installed July 25, 1942, by Geological Survey. Water level affected by intermittent pumping of well 2J3 July to September 1942.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 17, 1941	17.32	Aug. 25, 1942	b19.45	Oct. 31, 1942	c17.97
May 3	13.47	31	b19.30	Nov. 5	c17.75
Aug. 12	a18.58	Sept. 5	b19.73	10	c17.51
Nov. 6	15.45	10	b19.40	15	c17.43
Jan. 8, 1942	15.94	15	b19.12	20	c17.22
Mar. 24	13.69	20	b19.23	25	c17.29
July 16	19.42	25	b19.00	30	c17.28
24	a19.42	30	b18.90	Dec. 5	c17.14
25	b18.31	Oct. 5	c18.76	10	c17.00
31	b18.77	10	c18.57	15	c17.21
Aug. 5	b19.04	15	c18.26	20	c16.89
10	b19.17	20	c18.18	25	c16.46
15	b19.88	25	c18.51	31	c16.32
20	b19.77				

4/13-2K1. Constructed by Geological Survey on property of Del Amo Estate Co. Near Long Beach, 0.25 mile west of Los Angeles River, 2,640 feet north of Del Amo Street, 1,700 feet east of Pacific Electric Railway (Long Beach line), 340 feet west of irrigation well 4/13-2J3, 30 feet west of lane, and 20 feet north of power-line pole 394475E. Bored water-table well, diameter 1½ inches, depth 24.5 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 44.82 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	20.28	Dec. 23, 1941	18.99	July 29, 1942	20.14
Nov. 17	19.30	Jan. 22, 1942	18.88	Nov. 6	21.12
Dec. 6	19.23	Mar. 28	18.38	Dec. 22	20.88

4/13-2P1. Del Amo Estate Co., H. R. Wilson, lessee. California Division of Water Resources serial Nos. B-118c and B-123d, and location Nos. 875D and 885B; Los Angeles Department of Water and Power No. 7-D-50. Near Long Beach, 0.6 mile west of Los Angeles River, 380 feet north of Del Amo Street, 1,760 feet east of Alameda Street, 90 feet northeast of ranch house, and 18 feet north of well 2P2, in frame pump house. Drilled irrigation well, diameter 12 inches, reported depth 118 feet. Casing perforated from 90 to 117 feet below land surface. Measuring point, top east side of coupling atop 2-inch measuring pipe set in concrete, 1 foot west of casing, 0.44 foot above concrete floor of pump house which is at land-surface datum, and 39.55 feet above sea-level datum of 1941. Reference bench mark, at well 4/13-2P3, 200 feet north and 450 feet west of well 2P1, on south corner of concrete foundation; chiseled cross, 40.18 feet above sea-level datum of 1941. Additional measurements made in 1923 and monthly 1930-41 by Los Angeles Department of Water and Power, also since 1938 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Jan. 17, 1941	25.14	Nov. 7, 1941	d25.00	July 16, 1942	27.67
May 2	21.78	Jan. 8, 1942	22.80	Oct. 29	26.00
Aug. 12	27.20	Mar. 24	22.40		

- a Well 2J3 pumping.
- b High level for the day.
- c At noon.
- d Well 30 feet south pumping.

4/13-6K1. M. B. Beauley. California Division of Water Resources serial No. B-108b and location No. 814; Los Angeles Department of Water and Power No. 7-A-51. About 2 miles south of Gardena, 375 feet south of intersection of Figueroa and Main Streets, 173 feet west of Main Street, and 12 feet east of wood-stave tank on tower. Domestic well, diameter 4 inches, reported depth 82 feet. Measuring point, top north side of casing, at chisel cuts, 0.19 foot above top of concrete block around casing, 100 foot above land-surface datum and 23.45 feet above sea-level datum of 1941. Reference bench mark, 0.30 mile south of well 6K1, 20 feet east of center line of Main Street, and 0.30 mile north of West-East Road; top of tablet set in concrete in 6-inch pipe, with cover marked "COUNTY SURVEY MONUMENT", 0.8 foot below surface, 20.35 feet above sea-level datum of 1941. Additional measurements made intermittently 1931-32 and in 1935 by Los Angeles Department of Water and Power and semiannually since 1933 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 30, 1941	22.00	Nov. 7, 1941	22.30	July 17, 1942	a24.54
May 1	15.33	Jan. 9, 1942	a22.82	Oct. 30	a25.70
Aug. 12	20.35	Mar. 25	a23.42		

4/13-7E1. Frank S. Austin. California Division of Water Resources serial No. B-108 and location No. 805. About 3 miles south of Gardena, 150 feet north of West-East Road, 700 feet west of Vermont Avenue, 45 feet northeast of dwelling, and 10 feet west of green tank and tower, in shed. Unused drilled well, diameter 7 inches, depth 99.9 feet. Measuring point, top west side of casing, 1.00 foot above land-surface datum and 36.13 feet above mean sea level (altitude by Los Angeles County Flood Control District). All water levels are below sea level. Additional measurements made semiannually since 1941 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Jan. 30, 1941	50.91	Nov. 10, 1941	51.51	July 17, 1942	50.62
May 1	49.51	Jan. 9, 1942	49.65	Oct. 30	51.22
Aug. 12	51.25	Mar. 25	49.32		

4/13-8L1. Joseph Loria. California Division of Water Resources serial No. B-114 and location No. 836. About 3.5 miles south of Gardena, 1,900 feet north of Carson Street, 1,200 feet west of Avalon Street, and 125 feet east of Grace Street, 25 feet southwest of stucco dwelling, in front yard, under windmill. Unused bored well, diameter 36 inches, depth 32.2 feet. Measuring point, top of 1-inch board over well, 0.08 foot above top of south side of casing, 0.50 foot above land-surface datum and 18.03 feet above sea-level datum of 1941. Additional measurements made irregularly 1931-36, monthly in 1937, and semiannually since 1937 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Jan. 27, 1941	a18.75	Nov. 7, 1941	a19.92	July 17, 1942	a23.39
May 1	10.00	Jan. 8, 1942	a21.19	Oct. 30	a24.63
Aug. 12	16.68	Mar. 24	a22.13		

4/13-10F1. Constructed by Geological Survey on property of Dominguez Estate Co. Near Long Beach 1.5 miles west of Los Angeles River. 1,330 feet east of Wilmington Avenue, 26 feet south of Dominguez Street, and 1.5 feet west of power-line pole 400620E. Bored water-table well, diameter 1½ inches, depth 17.6 feet. Measuring point, top north side of casing, 0.75 foot above land-surface datum and 28.65 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	9.36	Jan. 22, 1942	10.42	July 29, 1942	12.21
Nov. 17	10.21	Mar. 28	9.26	Nov. 6	14.05
Dec. 6	10.50	Apr. 16	10.39	Dec. 22	14.27
25	10.38	21	10.38		

a Below sea level.

4/13-10R1. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 1.5 miles west of Los Angeles River, 1,130 feet north of Carson Street, 165 feet east of Alameda Street, 18 feet north of Madison Street, and 5 feet east of east curb of alley. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 20.5 feet. Measuring point, top north side of casing, at land-surface datum and 29.13 feet above sea-level datum of 1941. Reference bench mark, 3.04 feet south of well 10R1, on concrete curb; chiseled square, 0.04 foot below measuring point.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 10, 1941	16.62	Dec. 23, 1941	16.94	Apr. 16, 1942	15.17
Nov. 17	16.88	Jan. 22, 1942	16.64	July 29	17.43
Dec. 6	17.11	Mar. 28	15.42	Nov. 6	18.8

4/13-11B1. Constructed by Geological Survey on property of Del Amo Estate Co. Near Long Beach, 0.5 mile west of Los Angeles River, 56 feet south of Del Amo Street, 150 feet west of Compton Creek, 50 feet west of Pacific Electric Railway (Long Beach line), and 1 foot west of fence along railroad right-of-way. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 27.9 feet. Measuring point, top north side of casing, 1.40 feet above land-surface datum and 39.14 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	21.89	Jan. 22, 1942	18.61	July 29, 1942	19.53
Nov. 17	18.51	Mar. 28	16.24	Sept. 30	19.84
Dec. 6	18.48	July 1	18.58	Nov. 6	19.38
Dec. 23	18.51	24	19.72	Dec. 22	18.87

4/13-11B2. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 0.5 mile west of Los Angeles River, 23 feet south of Del Amo Street, 2,600 feet east of Alameda Street, and 600 feet west of well 11B1. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 26.0 feet. Measuring point, top north side of casing, 1.70 feet above land-surface datum and 38.29 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1942

July 1	22.87	July 29	24.18	Nov. 6	23.43
24	23.81	Sept. 30	24.75	Dec. 22	23.08

4/13-11B3. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 0.5 mile west of Los Angeles River, 29 feet south of Del Amo Street, 148 feet west of west track of Pacific Electric Railway (Long Beach line), and 100 feet west of well 11B2. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 26.7 feet. Measuring point, top north side of casing, 2.60 feet above land-surface datum and 40.47 feet above sea-level datum of 1941. Water levels, in feet below land-surface datum, 1942: Aug. 20, 24.26; Sept. 30, 22.78; Nov. 6, 21.95; Dec. 22, 21.51.

4/13-11C1. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 0.5 mile west of Los Angeles River, 23 feet south of Del Amo Street, 1,150 feet west of Pacific Electric Railway (Long Beach line), and 400 feet west of well 11B3. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 30.4 feet. Measuring point, top north side of casing, 0.50 foot above land-surface datum and 38.21 feet above sea-level datum of 1941. Reference bench mark, 650 feet north and 550 feet west of well 11C1, on top of concrete foundation at well 2P3, at south corner; chiseled cross, 40.18 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1942

July 1	25.28	July 29	26.51	Nov. 6	25.91
24	26.10	Sept. 30	27.13	Dec. 22	25.59

4/13-11D2. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 1 mile west of Los Angeles River, 25 feet south of Del Amo Street, and 180 feet east of Alameda Street. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 28.6 feet. Measuring point, top north side of casing, 2.50 feet above land-surface datum and 36.32 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	26.00	Jan. 22, 1942	22.55	Sept. 30, 1942	26.00
Nov. 17	24.05	Mar. 28	22.05	Nov. 6	25.62
Dec. 6	23.16	July 29	24.89	Dec. 22	25.18
23	22.38				

4/13-11F1. Constructed by Geological Survey on property of Dominguez Estate Co. Near Long Beach, 0.5 mile west of Los Angeles River, 1,200 feet north of Dominguez Street, 1,280 feet west of Pacific Electric Railway (Long Beach line), and 100 feet east of Santa Fe Avenue extended, at east side of line of trees. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 30.8 feet. Measuring point, top east side of casing, 1.00 foot above land-surface datum and 35.06 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 10, 1941	25.37	Dec. 23, 1941	22.67	July 29, 1942	23.84
Nov. 17	23.25	Jan. 22, 1942	22.47	Dec. 22	23.86
Dec. 6	23.08	Mar. 28	22.14		

4/13-11K5. Constructed by Geological Survey on property of Carson Estate Co. Near Long Beach, 0.1 mile west of Los Angeles River, 225 feet south of Dominguez Street, 61 feet west of Pacific Electric Railway (Long Beach line), and 7 feet southwest of railroad telegraph pole. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 20.9 feet. Measuring point, top north side of casing, 2.40 feet above land-surface datum and 38.17 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	16.46	Jan. 22, 1942	15.07	Nov. 6, 1942	16.79
Dec. 6	15.16	Mar. 28	14.78	Dec. 22	16.50
Dec. 23	14.94	July 29	16.84		

4/13-11L3. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 0.6 mile west of Los Angeles River, 23 feet south of Tyler Street, 12 feet west of Santa Fe Avenue, at southwest corner of street intersection, 1 foot west of curb. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 30.5 feet. Measuring point, top north side of casing, at land-surface datum and 33.47 feet above sea-level datum of 1941. Reference bench mark, 1.5 feet east of well 11L3, in curb; nail set in lead, 0.02 foot above measuring point.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	25.55	Jan. 22, 1942	22.25	Nov. 6, 1942	24.73
Nov. 17	24.90	Mar. 28	21.61	Dec. 22	24.38
Dec. 23	22.56	July 29	23.92		

4/13-11P1. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach 1.2 miles north of Los Angeles River, 132 feet north of Adams Street, 15 feet west of Santa Fe Avenue, 3 feet west of curb, and 2 feet northwest of vertical 2-inch pipe and valve. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 23.3 feet. Measuring point, top north side of casing, at land-surface datum and 30.34 feet above sea-level datum of 1941. Reference bench mark, 2.3 feet east of well 11P1, on concrete curb; chiseled square, 0.02 foot below measuring point.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	19.89	Jan. 22, 1942	20.05	July 29, 1942	20.23
Nov. 17	20.14	Mar. 28	19.98	Nov. 6	20.46
Dec. 23	20.04				

4/13-13N1. P. Valenzuela. California Division of Water Resources serial No. C-905 and location No. 897A; J. P. Lippincott's No. 897-A. In Long Beach, about 1.2 miles north of Willow Street, 0.15 mile east of Los Angeles River, 700 feet south of 225d Street, 200 feet east of Golden Avenue, 65 feet north of large frame house, and 35 feet southeast of southeast concrete derrick foundation, inside frame building. Unused drilled well, diameter 4 inches, depth 205.0 feet. Measuring point, top of casing, 1.00 foot above land-surface datum which is 58 feet above mean sea level (interpolated from topographic map). Reference bench mark, top southeast corner of concrete derrick foundation, 35 feet northwest of well 13N1, 3.94 feet above measuring point. Additional measurements made irregularly 1923-28 by California Division of Water Rights and irregularly 1928-32 by San Gabriel Valley Protective Association and Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Feb. 3, 1941	49.39	Aug. 14, 1941	55.57	Oct. 31, 1942	57.33
May 9	51.85	July 18, 1942	56.15		

4/13-14F3. Constructed by Geological Survey on property of Los Angeles County. Near Long Beach, 0.6 mile west of Los Angeles River, 1,000 feet north of 223d Street, 41 feet east of Santa Fe Avenue, 0.5 foot south of south end of retaining wall of highway underpass, and 1 foot east of sidewalk. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 22.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 24.54 feet above sea-level datum of 1941. Reference bench mark, 0.9 foot northwest of well, on corner of concrete curb; chiseled square, 0.85 foot below measuring point.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 10, 1941	18.99	Jan. 22, 1942	17.99	July 29, 1942	17.74
Nov. 17	18.69	Mar. 28	17.55	Nov. 6	18.58
Dec. 23	18.25				

4/13-14K5. Southern California Edison Co., Ltd. Los Angeles Department of Water and Power No. 7-D-27. Near Long Beach, about 1.4 miles north of Willow Street, 0.2 mile west of Los Angeles River, 225 feet north of 223d Street, and 475 feet east of Delta Avenue, lone casing in field. Unused drilled well, diameter 6 inches, depth 49.2 feet. Measuring point, top south side of coupling screwed to casing, at chisel cuts, 1.00 foot above land-surface datum and 31.10 feet above sea-level datum of 1941. Additional measurements made monthly from 1930-33 by Los Angeles Department of Water and Power.

Water level, in feet below land-surface datum, 1941-42

Jan. 14, 1941	24.98	Aug. 13, 1941	26.09	Mar. 24, 1942	22.82
May 2	21.12	Nov. 7	24.56	July 16	24.58
9	21.57	Jan. 8, 1942	23.15	Oct. 30	25.63

4/13-14K6. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, about 1.3 miles north of Willow Street, 0.4 mile east of Santa Fe Avenue, 20 feet south of 223d Street, 450 feet west of Los Angeles River, and 1 foot south of telephone pole. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 20.3 feet. Measuring point, top north side of casing, at land-surface datum and 28.86 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	15.29	Jan. 22, 1942	15.53	July 29, 1942	15.92
Nov. 17	15.45	Mar. 28	15.28	Nov. 6	16.49
Dec. 23	15.58				

4/13-14L1. Southern California Edison Co., Ltd. Geological Survey continuing observation well. California Division of Water Resources serial No. B-124k and location No. 887F; Los Angeles Department of Water and Power No. 7-D-25. In Long Beach, 0.4 mile west of Los Angeles River, 60 feet south of 223d Street, 800 feet east of Santa Fe Avenue, and 36 feet east of Caspian Avenue; lone casing in field. Unused drilled well, diameter 10 inches, depth 114.3 feet. Casing perforated from 90 to 116 feet below land surface. Water-level measurements as follows: (1) Monthly 1930-41 by Los Angeles Department of Water and Power; (2) monthly 1933-42 by both Los Angeles County Flood Control District and Long Beach Water Department working separately; (3) water-level recorder installed Dec. 14, 1942, by Geological Survey. Measuring point, top west side of casing, at chisel marks, 0.70 foot above land-surface datum and 29.25 feet above sea-level datum of 1941. Records furnished by Los Angeles Department of Water and Power through 1938 and by city of Long Beach since 1938 except as indicated. Water levels are below sea level unless otherwise noted.

Water level, in feet below land-surface datum, 1930-42

Feb. 4, 1930	30.03	Aug. 7, 1931	39.93	Sept. 12, 1932	36.63
Mar. 17	29.23	Sept. 4	39.83	Oct. 6	36.03
Aug. 5	39.13	Oct. 5	39.03	Nov. 15	35.23
Sept. 8	40.03	Nov. 4	38.63	Jan. 12, 1933	34.03
Oct. 7	39.78	Dec. 4	36.33	Feb. 15	32.08
Feb. 11, 1931	32.88	Jan. 11, 1932	32.73	Mar. 8	33.58
Mar. 4	34.93	Feb. 5	31.63	15	30.98
Apr. 3	37.23	Mar. 2	30.63	21	30.68
May 5	34.97	May 9	34.38	Apr. 4	29.73
June 3	36.23	June 8	35.34	May 8	30.98
July 7	38.13	Aug. 5	37.48	June 7	30.58

5/13-14L1. Southern California Edison Co., Ltd.--Continued.

Water-level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
July 12, 1933	32.73	Nov. 18, 1936	31.33	July 12, 1940	28.84
Aug. 3	33.33	Jan. 5, 1937	28.83	Aug. 13	29.10
Sept. 8	35.83	Feb. 11	a27.48	Sept. 13	29.79
Oct. 2	34.93	Mar. 18	a26.33	Oct. 14	28.99
Nov. 9	33.08	Apr. 19	a27.45	Nov. 15	a28.18
Dec. 5	33.23	May 18	a28.03	Dec. 27	a24.87
Jan. 4, 1934	30.23	June 17	a28.13	Feb. 18, 1941	a23.22
Feb. 8	29.33	July 20	30.33	Mar. 10	a21.72
Mar. 5	a28.38	Aug. 20	30.33	Apr. 5	a20.62
Apr. 9	31.23	Oct. 14	30.48	Apr. 28	a21.30
May 1	30.48	Dec. 7	a28.38	May 13	ab22.21
June 7	31.23	Mar. 23, 1938	a24.53	May 17	a22.60
July 13	33.58	Apr. 27	a24.58	June 7	a24.44
Aug. 6	34.38	June 8	a27.53	July 15	a25.97
Sept. 6	35.83	July 27	28.58	Aug. 8	a27.69
Oct. 3	34.88	Nov. 22	a26.28	Sept. 6	a27.66
Nov. 5	32.63	Jan. 13, 1939	a23.93	Sept. 27	a27.10
Dec. 10	30.43	Feb. 6	a23.46	Nov. 6	a24.51
Jan. 10, 1935	a28.33	Mar. 7	a24.14	Dec. 16	a22.93
Feb. 7	a28.53	Apr. 8	a24.41	Jan. 23, 1942	a22.96
Mar. 4	a28.48	May 9	a26.91	Feb. 11	a24.36
Apr. 10	a27.78	June 9	a28.21	Mar. 20	a22.41
May 7	30.23	July 8	a27.47	Apr. 8	a22.36
June 10	30.88	Aug. 18	29.00	May 15	a22.74
July 22	33.73	Sept. 16	32.77	June 12	a24.76
Sept. 5	35.63	Oct. 7	a28.18	July 17	a24.74
Nov. 1	33.93	Nov. 18	a27.21	Aug. 5	a24.82
Dec. 18	32.43	Dec. 9	a26.84	Sept. 16	a27.59
Feb. 3, 1936	31.78	12	a25.89	Oct. 7	a25.64
Mar. 30	29.73	Jan. 9, 1940	a25.07	Nov. 18	a25.16
May 21	31.68	Feb. 6	a24.07	Dec. 10	a24.32
June 24	31.88	Mar. 8	a24.46	14	ab24.49
July 30	32.93	Apr. 19	a24.64	21	ab24.12
Aug. 31	32.83	May 17	a26.97	28	ab23.70
Oct. 13	33.33	June 24	a27.30		

4/13-14P1. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 0.5 mile west of Los Angeles River, 130 feet north of Wardlow Road, 49 feet east of Santa Fe Avenue, and 18 feet north of driveway. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 29.5 feet. Measuring point, top north side of casing, at land-surface datum and 26.27 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	24.39	Jan. 22, 1942	22.28	July 29, 1942	23.76
Nov. 17	22.77	Mar. 28	21.81	Nov. 6	23.96
Dec. 23	22.10	Apr. 22	21.35		

4/13-14Q3. Bell Ranch. California Division of Water Resources serial No. B-125a and location No. 888. In Long Beach, about 1 mile north of Willow Street, 0.29 mile west of Los Angeles River, 104 feet north of Wardlow Road, 1,300 feet east of Santa Fe Avenue, and 76 feet west of Delta Avenue, in yard, 3 feet south of hedge. Unused well, diameter 4 inches, depth 54.3 feet. Measuring point, top west side of casing, at chisel cuts, 1.00 foot above land-surface datum and 27.14 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Jan. 13, 1941	22.90	Aug. 13, 1941	24.55	Mar. 24, 1942	21.05
May 2	19.44	Nov. 6	22.78	July 16	22.95
9	19.67	Jan. 8, 1942	21.45	Oct. 30	20.37

a Above sea level.

b Measured by Geological Survey.

4/13-15E1. Cedric Seabranck. California Division of Water Resources serial Nos. B-119c and B-119d and location Nos. 867B and 867C. Los Angeles Department of Water and Power No. 7-D-33. J. B. Lippincott's No. 7-D-33. Near Long Beach, 1.86 miles west of Los Angeles River, 670 feet north of 223d Street, 950 feet east of Wilmington Avenue, 45 feet north of well 15E2, under turbine pump, and 15 feet northwest of elevated water tank, capped with wooden plug. Unused drilled well, diameter 16 inches, depth 117.5 feet. Measuring point, on northwest side of casing, in notch at chisel cuts, 0.10 foot below top, at land-surface datum and 20.50 feet above sea-level datum of 1941. Additional measurements made in 1923 and about monthly 1928-41 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 5, 1941	23.86	Nov. 7, 1941	26.73	July 17, 1942	a38.07
9	24.60	Jan. 8, 1942	26.45	Oct. 30	29.51
Aug. 13	29.05	Mar. 24	25.81		

4/13-16D1. Luigi Debernardi. Los Angeles Department of Water and Power No. 7-C-14. Near Long Beach, 2.85 miles west of Los Angeles River, 310 feet south of Carson Street, 75 feet west of Edgar Street, 50 feet northwest of frame dwelling, and 6 feet south of steel tank, under windmill. Drilled domestic well, diameter 8 inches, reported depth 80 feet. Measuring point, top west side of casing between 4- by 4-inch pipe clamps, at land-surface datum and 15.49 feet above sea-level datum of 1941. Additional measurements made yearly in 1930 and 1931 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

May 3, 1941	17.71	Jan. 9, 1942	21.96	July 17, 1942	23.04
Aug. 13	21.74	Mar. 24	21.05	Oct. 30	31.81
Nov. 7	21.43				

4/13-16H1. Cedric Seabranck. California Division of Water Resources serial No. B-119v and location No. 867D. Near Long Beach, 1.9 miles west of Los Angeles River, 225 feet north of 223d Street, 850 feet east of Wilmington Avenue, and 95 feet north of white frame dwelling facing 223d Street, amid small frame sheds, in chicken yard. Unused drilled well, diameter 4 inches, depth 147.3 feet. Measuring point, top east side of 10-inch terra cotta pipe, 1.70 feet above land-surface datum and 21.35 feet above sea-level datum of 1941. Additional measurements made irregularly from 1930 through 1933 by Pasadena Water Department. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Jan. 16, 1941	33.30	Nov. 7, 1941	32.81	July 17, 1942	b34.15
May 6	30.37	Jan. 8, 1942	31.42	Oct. 30	33.64
Aug. 13	34.33	Mar. 24	30.60		

4/13-19D1. C. F. Fiesel. California Division of Water Resources serial No. B-110a and location No. 818; Los Angeles Department of Water and Power No. 7-C-5; J. B. Lippincott's No. 818. Near Wilmington, about 0.35 mile north of Sepulveda Boulevard, 4.85 miles west of Los Angeles River, 1,500 feet south of Ocean Street, 300 feet east of Vermont Avenue, 115 feet east of ungraded lane, and 30 feet northeast of frame dwelling. Drilled domestic well, diameter 7 inches, reported depth 220 feet. Measuring point, top north side of casing next to iron strap, 1.00 foot above land-surface datum and 43.00 feet above sea-level datum of 1941. Additional measurements made about monthly since 1930 by Los Angeles Department of Water and Power and Los Angeles County Flood Control District. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Jan. 30, 1941	73.51	Nov. 10, 1941	67.29	July 17, 1942	68.63
May 5	65.63	Jan. 9, 1942	66.36	Oct. 30	80.00
Aug. 13	67.98	Mar. 25	64.94		

a Well 15E2 pumping.

b Well 15E2, 500 feet northeast, pumping.

4/13-22G1. Watson Estate Co. Los Angeles Department of Water and Power No. 7-D-17. Near Long Beach, 1.2 miles west of Los Angeles River, 2,500 feet north of Willow Street, 1,800 feet east of Alameda Street, 110 feet northeast of frame dwelling, and 10 feet northeast of wood-stave tank, under windmill. Drilled domestic well, diameter 4 inches, reported depth 50 feet. Measuring point, wooden pipe clamp 0.32 foot above top of casing and concrete foundation, 0.30 foot above land-surface datum and 28.40 feet above sea-level datum of 1941. Additional measurements made in 1930 and irregularly in 1931 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 16, 1941	30.61	Jan. 8, 1942	30.78	July 17, 1942	32.30
May 6	28.02	Mar. 24	30.22	Oct. 30	34.67
Aug. 13	a36.07				

4/13-23D2. Meecham Ranch. California Division of Water Resources serial No. B-125h and location No. 888G. Los Angeles Department of Water and Power No. 7-D-13. In Long Beach, about 0.75 mile north of Willow Street, and 0.8 mile west of Los Angeles River; 40 feet south of 32d Street extended, 1,400 feet west of Santa Fe Avenue, and 200 feet east of transmission line, lone casing 40 feet south of ungraded road and 45 feet north of lone tree. Unused drilled well, diameter 10 inches, depth 63.2 feet. Measuring point, south side of 1-inch nipple welded to casing cover, 0.50 foot above land-surface datum and 24.57 feet above sea-level datum of 1941. Reference bench mark, 12 feet east of well 23D2, in concrete foundation, on south side, about 0.5 foot east of 5/8-inch anchor bolt; chiseled square 0.96 foot below measuring point. Additional measurements made in 1923, 1930, and about monthly 1931-41 by Los Angeles Department of Water and Power and irregularly since 1935 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Jan. 13, 1941	23.01	Nov. 7, 1941	b25.00	Mar. 24, 1942	22.22
May 6	20.48	Jan. 8, 1942	22.48	Oct. 30	b24.26
Aug. 13	b26.76				

4/13-23E2. Mrs. Hill. In Long Beach, about 0.7 mile north of Willow Street, 0.77 mile west of Los Angeles River, 225 feet south of 32d Street extended, 1,300 feet west of Santa Fe Avenue, 20 feet west of Webster Avenue, 200 feet southeast of well 23D2, and 10 feet west of concrete standpipe, in field. Unused drilled well, diameter 10 inches, reported depth 160 feet. Measuring point, top east edge of pump column, at land-surface datum and 24.39 feet above sea-level datum of 1941; access is had through 2-foot length of horizontal 7-inch discharge pipe.

Water level, in feet below land-surface datum, 1941-42

May 6, 1941	20.71	Nov. 7, 1941	b25.1	Mar. 24, 1942	22.45
Aug. 13	b26.85	Jan. 8, 1942	24.02	Oct. 30	b26.96

4/13-23F2. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 0.5 mile west of Los Angeles River, 50 feet north of Spring Street, 49 feet east of Santa Fe Avenue, and 4 feet east of pole B3457Y. Bored water-table well, diameter 1 1/4 inches, depth 24.3 feet. Measuring point, top north side of casing, at land-surface datum and 22.54 feet above sea-level datum of 1941. Reference bench mark, 0.6 foot east of well, on concrete sidewalk; chiseled square, 0.02 foot above measuring point.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	17.19	Jan. 22, 1942	18.55	July 29, 1942	19.58
Nov. 17	18.11	Mar. 28	18.63	Nov. 6	20.64
Dec. 23	18.32				

a Pumping.

b Below sea level.

4/13-23G1. R. J. Whettnall. In Long Beach, about 0.75 mile north of Willow Street, 0.11 mile west of Los Angeles River, 190 feet east of Fashion Avenue, 85 feet south of 32d Street, 8 feet south of garage, and 8 feet east of fence. Unused drilled well, diameter 4 inches, depth 54.3 feet. Measuring point, top north side of casing at chisel cuts, 0.50 foot above land-surface datum and 24.45 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 13, 1941	20.12	Aug. 13, 1941	20.94	Jan. 8, 1942	19.20
May 1	17.72	Nov. 7	19.25	Mar. 24	all.21

4/13-23G2. (#941, p.115). City of Long Beach. Geological Survey continuing observation well. Measuring point, 3/4-inch hole in north side of pump base, 1.30 feet above land-surface datum and 25.80 feet above mean sea level (altitude by city of Long Beach). Reference bench mark, top north side of inner 4- by 4-foot concrete foundation, 0.10 foot below measuring point. Records furnished by city of Long Beach. All water levels are below sea level.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	59.7	Apr. 11	59.4	July 1	68.2	Sept. 30	61.5
17	59.9	18	58.3	11	71.3	Oct. 10	66.9
24	59.7	25	57.9	17	69.0	17	66.3
Feb. 7	59.9	May 1	59.2	25	69.9	24	67.8
14	61.4	9	61.0	Aug. 1	69.6	Nov. 2	65.2
21	61.1	16	62.9	8	70.9	7	65.2
28	58.0	23	65.8	15	70.7	14	65.7
Mar 7	62.7	June 1	67.0	22	69.9	21	64.4
14	58.7	6	67.9	Sept. 1	68.1	Dec. 1	65.4
21	57.9	13	68.0	12	67.7	12	64.8
31	63.7	21	67.5	19	66.5	19	65.1

4/13-23M2. Irwin Stewart. California Division of Water Resources serial No. B-126b and location No. 889A; Los Angeles Department of Water and Power No. 7-D-7. In Long Beach, about 0.3 mile north of Willow Street, and 0.68 mile west of Los Angeles River, 220 feet south of Columbia Street, and 890 feet west of Santa Fe Avenue, in frame pump house in field. Unused drilled well, diameter 14 inches, depth 115.2 feet. Casing perforated from 103 to 120 feet. Measuring point, top of casing, 0.50 foot above land-surface datum and 21.13 feet above sea-level datum of 1941. Water-level recorder installed Apr. 29, 1941, by Geological Survey. Additional measurements made monthly 1932-37 and into 1938 by city of Long Beach and yearly 1931-34 and in 1938 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42
(Chiefly noon levels from recorder charts)

Date	Water level	Date	Water level	Date	Water level
Jan. 13, 1941	b24.50	July 15, 1941	b21.62	Oct. 15, 1941	b23.43
Apr. 24	17.91	20	b22.11	20	b23.36
26	20.00	25	b21.81	25	b22.57
May 1	17.92	31	b22.15	31	b22.11
5	17.84	Aug. 5	b22.45	Nov. 5	b21.97
10	18.57	10	b22.92	10	b22.12
15	19.12	15	b23.37	15	b22.01
20	19.38	20	b23.51	20	b21.87
25	20.22	25	b23.55	25	b22.14
31	20.45	31	b23.61	30	b22.21
June 5	b20.78	Sept. 5	b23.75	Dec. 5	b21.89
10	b20.64	10	b23.95	10	b21.57
15	b20.65	15	b23.99	15	b21.26
20	20.63	20	b24.11	20	b21.17
25	b20.85	25	b23.74	25	b21.25
30	b21.09	30	b23.75	31	b21.10
July 5	b21.27	Oct. 5	b23.69	Jan. 5, 1942	b21.04
10	b21.33	10	b23.72	10	b21.02

a Reported that waste water is allowed to flow into well.

b Below sea level.

4/13-23M2. Irwin Stewart--Continued.

Water level, in feet below land-surface datum, 1941-42
(Chiefly noon levels from recorder charts)

Date	Water level	Date	Water level	Date	Water level
Jan. 15, 1942	a21.06	May 15, 1942	20.38	Sept. 10, 1942	a22.91
20	a21.15	20	20.51	15	a22.86
25	a21.23	25	20.46	20	a22.91
31	a21.16	31	a20.69	25	a23.02
Feb. 5	a21.30	June 5	a21.29	30	a22.79
10	a21.38	10	a21.72	Oct. 5	a22.81
15	a21.50	15	a21.89	10	a22.80
20	a21.48	20	a22.03	15	a22.50
25	a21.23	25	a21.89	20	a22.52
28	a21.02	30	a22.02	25	a22.69
Mar. 5	a20.82	July 5	a22.26	31	a22.53
10	a20.76	10	a22.24	Nov. 5	a22.28
15	20.56	15	a22.18	10	a22.14
20	20.38	20	a22.19	15	a22.13
25	20.34	25	a22.45	20	a22.15
31	20.39	31	a22.63	25	a22.05
Apr. 5	20.45	Aug. 5	a22.51	30	a21.95
10	20.24	10	a22.52	Dec. 5	a21.90
15	19.98	15	a22.63	10	a21.92
20	19.75	20	a22.63	15	a21.94
25	19.60	25	a23.00	20	a21.95
30	19.57	31	a23.06	25	a21.82
May 5	20.03	Sept. 5	a23.01	31	a21.60
10	20.39				

4/13-23P2. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 0.5 mile west of Los Angeles River, 49 feet north of Willow Street, and 49 feet west of Santa Fe Avenue. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 26.5 feet. Measuring point, top north side of casing, at land-surface datum and 20.03 feet above sea-level datum of 1941. Well destroyed in 1942. Water levels, in feet below land-surface datum: Sept. 10, 1941, a/21.95; Nov. 17, 1941, a/21.06; Dec. 23, 1941, a/20.74; Jan. 22, 1942, a/20.83; Mar. 28, 1942, 19.97.

4/13-26G1. Mr. Peterson. California Division of Water Resources serial No. B-126c and location No. 889C; J. B. Lippincott's No. 889-C. In Long Beach, about 650 feet south of Willow Street, and 0.5 mile west of Los Angeles River, 70 feet north of West 25th Street, and 165 feet east of Santa Fe Avenue, under windmill tower. Unused drilled well, diameter 7 inches, depth 84.1 feet. Measuring point, top west side of casing at chisel cuts, 0.50 foot above land-surface datum and 19.33 feet above sea-level datum of 1941. Additional measurements made irregularly 1929-34 by Los Angeles County Flood Control District, and irregularly 1930-33 by Pasadena Water Department.

Water level, in feet below land-surface datum, 1941-42

Jan. 13, 1941	a19.52	Nov. 7, 1941	a21.20	July 16, 1942	a20.86
May 6	16.55	Jan. 8, 1942	a20.48	Oct. 30	a21.07
Aug. 13	a21.77	Mar. 24	a19.53		

4/13-26L1. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 0.5 mile west of Los Angeles River, 80 feet south of Hill Street, 49 feet east of Santa Fe Avenue and 1 foot northwest of concrete box enclosing water-main valve. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 19.5 feet. Measuring point, top north side of casing, at land-surface datum and 14.67 feet above sea-level datum of 1941. Reference bench mark, 0.67 foot southeast of well, on concrete enclosure of water-main valve, at northwest corner of top surface, 0.13 foot above measuring point.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	13.77	Jan. 22, 1942	a14.85	July 29, 1942	a15.00
Nov. 17	13.45	Mar. 28	a14.74	Nov. 6	a15.28
Dec. 23	14.65				

a Below sea level.

4/13-26P2. Wilbert Coty. California Division of Water Resources serial No. B-136a and location No. 380; city of Long Beach No. B-9. In Long Beach, about 0.4 mile west of Los Angeles River, 95 feet north of State Street, 100 feet east of Canal Avenue, 20 feet north of house, and 10 feet east of fence. Unused well, diameter 2 inches, depth 85.7 feet. Measuring point, top southwest side of casing, 0.3 foot above land-surface datum and 10.64 feet above sea-level datum of 1941. Reference bench mark, at northwest corner of intersection of Santa Fe Avenue and State Street, atop curb; chiseled cross, 650 feet west of well 26P2 and 12.32 feet above sea-level datum of 1941. Additional measurements made monthly 1932-42 by city of Long Beach.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1941	a11.39	Nov. 10, 1941	a16.43	July 18, 1942	a14.92
May 7	9.46	Mar. 25, 1942	a13.61	Oct. 31	a14.40
Aug. 13	a16.47				

4/13-26P6. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 0.5 mile west of Los Angeles River, 160 feet north of State Street and 49 feet east of Santa Fe Avenue. Bored water-table well, diameter 1 1/4 inches, depth 18.4 feet. Measuring point, top north side of casing, at land-surface datum and 12.28 feet above sea-level datum of 1941. Reference bench mark, 150 feet south of well, at northwest corner of intersection of Santa Fe Avenue and State Street, on curb; chiseled cross, 12.32 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Sept. 10, 1941	13.27	Jan. 22, 1942	14.35	July 29, 1942	14.04
Nov. 17	14.01	Mar. 28	13.96	Nov. 6	14.34
Dec. 23	14.25				

4/13-27K1. Watson Estate Co. California Division of Water Resources serial No. B-135d and location No. 370; Los Angeles Department of Water and Power No. 3-B-4; city of Long Beach No. B-14. Near Long Beach, about 0.35 mile north of State Street and 1.1 miles west of Los Angeles River; 675 feet south of Hill Street and 260 feet west of transmission line, at post in field. Unused drilled well, diameter 12 inches, reported depth 493 feet. Casing perforated from 102 to 129 feet and 463 to 481 feet below land surface. Measuring point, top north side of casing, at land-surface datum and 10.85 feet above sea-level datum of 1941. Well filled with debris in summer of 1942. Additional measurements made irregularly 1923-32 by Los Angeles Department of Water and Power; about monthly 1932-41 and into 1942 by city of Long Beach; monthly beginning in 1941 by Los Angeles County Flood Control District. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Jan. 13, 1941	14.42	Aug. 13, 1941	17.35	Jan. 9, 1942	17.56
May 7	12.23	Nov. 10	18.16	Mar. 25	15.87

4/13-28N1. Wilmington Cemetery. California Division of Water Resources serial No. B-134k and location No. 340; Los Angeles Department of Water and Power No. 3-A-10. In Wilmington, 250 feet north of State Street, 2,500 feet east of Avalon Boulevard, 45 feet north of East O Street, 340 feet east of Eubank Avenue, 18 feet north of south fence of cemetery, 20 feet west of gate, and 5 feet east of water tank, under windmill. Drilled irrigation well, diameter 8 inches, reported depth 300 feet. Measuring point, top of 1/2-inch casing cover southeast of pipe, 0.20 foot above land-surface datum of 1941. Additional measurements made monthly 1928-41 by Los Angeles Department of Water and Power and monthly beginning in 1941 by Los Angeles County Flood Control District. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

May 7, 1941	59.87	Jan. 9, 1942	61.11	July 17, 1942	bc61.85
Aug. 13	b60.76	Mar. 25	60.87	Oct. 31	62.07
Nov. 10	60.95				

a Below sea level.

b Pumping.

c Well 28N2 pumping.

4/13-28N2. Wilmington Cemetery. California Division of Water Resources location No. 340A; Los Angeles Department of Water and Power No. 3-A-11. In Wilmington, 170 feet north of East O Street, 545 feet east of Eubank Avenue, and 300 feet northeast of well 28N1, under windmill. Drilled irrigation well, diameter 8 inches, reported depth 200 feet. Measuring point, bottom edge of 2-inch plank cover atop concrete curbing between two pipes, 2.00 feet above land-surface datum and 46.00 feet above sea-level datum of 1941. Additional measurements made in 1910 by owner, irregularly 1928-29 and monthly 1930-36 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 9, 1941	60.96	Nov. 10, 1941	60.46	July 17, 1942	ab61.54
May 7	59.33	Jan. 9, 1942	60.63	Oct. 31	61.53
Aug. 13	60.62	Mar. 25	60.47		

4/13-29M1. Robert Tracy. California Division of Water Resources serial No. B-134 and location No. 320; J. B. Lippincott's No. 320. In Wilmington, 1,350 feet north of State Street, 1,150 feet east of Wilmington Avenue, 185 feet south of Q Street, 105 feet west of Bayview Avenue, and 25 feet west of white house, in back yard, at north fence. Unused well, diameter 5 inches, depth 68.5 feet. Measuring point, top of 2-inch nipple welded to casing cover, 0.89 foot above land-surface datum and 39.14 feet above sea-level datum of 1941. Reference bench mark, about 0.25 mile south of well 29M1, at northwest corner of McDonald Avenue and U. S. Highway 101, 13.2 feet east of power-line pole 21158M, and 1 foot north of curb; chiseled square, 33.90 feet above sea-level datum of 1941. Additional measurements made about monthly 1930-42 by Los Angeles County Flood Control District. All water levels are below sea level. Water levels, in feet below land-surface datum: Jan. 9, 1941, 56.08; May 7, 1941, 55.56; July 17, 1942, 54.89; Oct. 31, 1942, 55.21.

4/13-29P1. Mrs. E. Schneider. Los Angeles Department of Water and Power No. 3-A-22. In Wilmington, 120 feet north of State Street, 80 feet west of Fries Avenue, and 5 feet east of green tank, north of frame dwelling. Unused drilled well, diameter 8 inches, depth 84.1 feet. Measuring point, top east side of casing, 0.30 foot above land-surface datum and 41.30 feet above sea-level datum of 1941. Additional measurements made irregularly by Los Angeles Department of Water and Power 1932-33. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 9, 1941	57.35	Nov. 10, 1941	56.77	July 17, 1942	57.16
May 7	56.75	Jan. 9, 1942	56.85	Oct. 31	57.56
Aug. 13	56.57	Mar. 25	56.68		

4/13-30D1. Poggie Ranch. California Division of Water Resources serial Nos. B-110d and B-133t and location Nos. 809 and 310B; Los Angeles Department of Water and Power No. 3-A-3. Near Wilmington, about 1,080 feet north of West Lomita Boulevard, 245 feet east of Vermont Avenue, 350 feet south of oil well "Poggie 5", 50 feet south of well 30D2, and 20 feet east of narrow paved road, at south end of green frame shed, in sheet-metal pump house. Drilled domestic and irrigation well, diameter 12 inches, reported depth 314 feet. Casing perforated at intervals from 232 to 297 feet. Measuring point, at southeast side of pump base, at bottom, on concrete foundation, 0.50 foot above land-surface datum and 45.44 feet above sea-level datum of 1941. To adjust tape reading for horizontal correction, subtract 0.28 foot. Reference bench mark, 21.5 feet north of well 30D1, in green frame shed, at southwest corner of concrete pier; chiseled square, 2.5 feet above concrete floor and 3.04 feet above measuring point. Additional measurements made about monthly 1930-41 by Los Angeles Department of Water and Power. Water levels, in feet below land-surface datum: Jan. 10, 1941, 69.20; May 6, 1941, 68.50; July 17, 1942, 65.50; Oct. 30, 1942, 66.28.

a Pumping.

b Well 28N1 pumping.

4/13-311L. Palos Verdes Estates. California Division of Water Resources serial No. B-133F and location No. 312; J. B. Lippincott's No. 312. Near Wilmington, 0.25 mile west of Figueroa Street, 200 feet north of Anaheim Street, and N.17°W. from well 5/13-6D1, south of Bixby Slough, in open field. Unused drilled well, diameter 24 inches, depth 629.8 feet. Casing perforated at intervals from 280 feet to bottom. Measuring point, top south side of casing at riveted seam, at land-surface datum and 26.3 feet above sea-level datum of 1941. Water-level recorder maintained on well Oct. 30 to Dec. 14, 1942 by Geological Survey. Additional measurements made irregularly 1929-34 and into 1935 by Los Angeles County Flood Control District. All water levels are below sea level.

Water level in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Oct. 22, 1942	46.69	Nov. 10, 1942	46.10	Nov. 30, 1942	44.59
30	46.53	15	46.06	Dec. 5	44.59
31	46.40	20	46.68	10	44.60
Nov. 5	46.20	25	44.44	14	44.31

4/13-32D1. Daniel Hanson. California Division of Water Resources serial No. B-134a and location No. 321. In Wilmington, 0.25 mile south of State Street, 250 feet north of West L Street, 160 feet west of McDonald Avenue, 66 feet west of dwelling, and 32 feet north of south fence, in back yard. Unused well, diameter 8 inches, depth 73.3 feet. Measuring point, top of 2-inch cast-iron coupling welded to casing cover-plate, 0.23 foot above top of casing, 0.40 foot above land-surface datum, and 38.8 feet above sea-level datum of 1941. Additional measurements made irregularly 1930-1938 by Los Angeles County Flood Control District. All water levels are below sea level.

Water level, in depth below land-surface datum, 1941-42

Jan. 9, 1941	52.55	Nov. 10, 1941	51.43	July 17, 1942	51.99
May 8	51.78	Jan. 9, 1942	51.64	Oct. 31	52.40
Aug. 13	51.30	Mar. 25	51.71		

4/13-33D1. California Division of Water Resources serial No. B-134g and location No. 341D. City of Los Angeles, Wilmington plant well 14. Geological Survey continuing observation well. In Wilmington, about half a mile north of Anaheim Street, 375 feet north of East L Street and 125 feet west of Hyatt Avenue, 4 feet west of steel tower. Unused drilled public-supply well, diameter 20 inches, depth 888.2 feet. Casing perforated from 720 to 800 feet below land surface. Water level measured monthly 1931-41 by Los Angeles Department of Water and Power. Water-level recorder maintained on well from Sept. 10, 1941, to Jan. 5, 1942, by Geological Survey. Measuring point, top of casing, 0.20 foot above land-surface datum and 32.90 feet above sea-level datum of 1941. Water level in this well is affected by withdrawals from industrial wells 27M1, M3, and M4 located about 1.5 miles northeast. Records through 1940 and for April 1941 furnished by Los Angeles Department of Water and Power; those for 1941-42 furnished by Geological Survey except as indicated. All water levels are below sea level.

Water level, in feet below land-surface datum, 1931-42

Dec. 4, 1931	66.30	Sept. 7, 1934	(b)	Nov. 27, 1936	66.50
Jan. 11, 1932	63.10	June 5, 1935	(b)	Dec. 29	63.20
23	64.00	July 22	(b)	Jan. 26, 1937	62.45
Feb. 5	64.95	Sept. 5	(b)	Feb. 25	61.15
Mar. 2	a63.60	Oct. 17	(b)	Mar. 29	61.35
Apr. 7	a67.70	Nov. 25	65.50	Apr. 29	63.35
May 9	a69.15	Dec. 17	65.65	May 27	64.80
June 18	a71.45	Jan. 28, 1936	65.95	June 28	66.05
July 6	a72.05	Feb. 28	61.50	July 29	68.60
Aug. 5	a72.55	Mar. 26	62.55	Aug. 30	68.10
Sept. 8	a71.30	Apr. 29	64.95	Sept. 24	67.55
Oct. 14	a69.00	May 28	67.45	Dec. 1	62.40
Nov. 15, 1933	(b)	June 26	68.50	Jan. 13, 1938	60.35
Dec. 8	(b)	July 27	69.90	Feb. 24	58.90
Feb. 8, 1934	65.45	Aug. 27	69.65	Mar. 23	59.60
July 13	(b)	Sept. 28	68.50	Apr. 22	62.15
Aug. 7	(b)	Oct. 27	66.35	May 25	62.00

a Nearby wells pumping.

b Pumping.

4/13-33D1. City of Los Angeles--Continued.

Water level, in feet below land-surface datum, 1931-42

Date	Water level	Date	Water level	Date	Water level
June 24, 1938	63.80	Feb. 13, 1940	60.13	Oct. 25, 1941	66.74
July 22	65.20	Mar. 12	61.48	31	65.46
Aug. 24	65.59	Apr. 11	61.04	Nov. 5	64.97
Sept. 27	66.35	June 26	68.05	10	65.35
Oct. 20	64.72	Oct. 9	67.95	20	65.43
Nov. 22	69.10	Jan. 9, 1941	61.83	25	65.62
Dec. 22	60.35	Apr. 21	60.92	30	65.40
Jan. 16, 1939	59.20	May 8	62.51	Dec. 5	65.69
Feb. 16	58.75	Aug. 13	67.62	10	65.64
Mar. 28	58.90	Sept. 10	69.57	15	64.28
May 1	61.90	15	68.63	20	63.60
June 1	66.00	20	69.49	25	63.72
July 1	67.72	25	69.28	31	63.45
Aug. 1	68.75	30	70.03	Jan. 5, 1942	63.45
Sept. 1	69.45	Oct. 5	70.40	9	63.67
Oct. 3	65.40	10	69.87	Mar. 25	61.71
Nov. 1	65.72	15	69.21	July 18	68.37
Dec. 8	65.55	20	69.53	Oct. 31	67.24
Jan. 12, 1940	62.00	22	68.37		

4/13-33E1. City of Los Angeles, Wilmington plant well 2. California Division of Water Resources serial No. B-134d and location No. 341A. In Wilmington, 1,050 feet north of Anaheim Street, 20 feet north of Opp Street, 25 feet east of Santa Fe Railway, and 5 feet south of concrete tower. Unused drilled public-supply well, diameter 12 inches, reported depth 856 feet. Measuring point, top of 3/4-inch hole in cover plate, 0.02 foot above top of casing, 0.69 foot above top inside southwest corner of concrete foundation which is at land-surface datum, and 26.00 feet above sea-level datum of 1941. Wells at this plant not used since 1935. Additional measurements made about monthly 1928-40 and in 1941 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Jan. 9, 1941	45.52	Dec. 22, 1941	47.75	Mar. 24, 1942	45.58
May 8	44.26	29	47.67	July 18	48.79
Dec. 15	48.12	Jan. 9, 1942	47.63	Oct. 31	48.40

4/13-33E6. City of Los Angeles, Wilmington plant well 10. In Wilmington, about 1,250 feet north of Anaheim Street, 50 feet south of Grant Street, 60 feet east of McFarland Avenue, 400 feet northeast of well 33E1, and 3 feet south of concrete tower. Unused drilled public-supply well, diameter 12 inches, reported depth 563 feet. Casing perforated at intervals between 155 and 561 feet below land surface. Measuring point, top east side of casing, between 8- by 8-inch pipe clamps, 1.00 foot above land-surface datum and 26.80 feet above sea-level datum of 1941. Additional measurements made about monthly 1927-41 by Los Angeles Department of Water and Power. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Jan. 9, 1941	46.00	Dec. 15, 1941	48.65	Mar. 25, 1942	46.13
May 8	44.79	22	48.13	July 17	45.2.16
Aug. 13	48.42	29	48.09	Oct. 31	48.47
Nov. 10	48.25	Jan. 9, 1942	48.12		

4/13-33E7. City of Los Angeles, Wilmington plant well 9. In Wilmington, about 1,300 feet north of Anaheim Street, 50 feet south of Grant Street extended, 285 feet east of McFarland Avenue, 575 feet northeast of well 33E1, and 3 feet south of concrete tower in field. Unused drilled public-supply well, diameter 12 inches, reported depth 577 feet, measured depth 127.9 feet. Casing perforated at intervals between 129 and 570 feet. Measuring point, top of 1-inch coupling welded in top of casing cap, 0.06 foot above top of casing, at land-surface datum and 25.55 feet above sea-level datum of 1941. The fact that the water level in this well has fluctuated only slightly since 1936 and that at present it is 10 feet higher than the water level in well 33E6 suggest that perforations may be plugged. Additional measurements made about monthly 1927-40 and in 1941 by Los Angeles Department of Water and Power. All water levels are below sea level.

a Measured by Los Angeles Department of Water and Power.

b Measurement probably inaccurate.

4/13-33E7. City of Los Angeles--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Jan. 10, 1941	35.74	Dec. 22, 1941	37.46	Mar. 25, 1942	37.76
May 8	34.64	Dec. 29	34.51	July 17	37.77
Dec. 15	37.46	Jan. 9, 1942	37.62	Oct. 31	38.32

4/13-35M1. City of Long Beach Gas Department. California Division of Water Resources serial No. B-136d and location No. 381A; Los Angeles Department of Water and Power No. 3-B-20. In Long Beach, about 0.8 mile west of Los Angeles River, 750 feet south of Anaheim Street, 1,350 feet west of Santa Fe Avenue, and 70 feet south of well 35M2, in yard 42 feet west of concrete warehouse, under manhole cover. Unused drilled well, diameter 10 inches, reported depth 137 feet. Measuring point, top north edge of manhole ring support, 0.17 foot below land-surface datum and 7.00 feet above sea-level datum of 1941. Reference bench mark, 11 feet north of well, on south corner of concrete foundation block; chiseled square, 0.15 foot above measuring point. Additional measurements made irregularly in 1923, 1929-1931, and in 1934 by Los Angeles Department of Water and Power; irregularly since 1929 by Los Angeles County Flood Control District, and monthly since 1932 by Long Beach Water Department. All water levels are below sea level except as noted.

Water level, in feet below land-surface datum, 1941-42

Jan. 8, 1941	26.85	Nov. 10, 1941	519.72	July 18, 1942	16.21
May 8	7.55	Jan. 9, 1942	18.74	Oct. 31	14.34
Aug. 14	19.53	Mar. 25	14.59		

5/12-2A1. Constructed by Geological Survey on property of Bryant Ranch. About 2 miles north of Seal Beach, 1,325 feet south of East Seventh Street, 15 feet east of San Gabriel River, and 80 feet west of transmission tower 142. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 20.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 12.29 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	7.30	Jan. 21, 1942	6.53	July 27, 1942	8.23
Nov. 15	7.24	Mar. 27	6.38	Nov. 6	8.61
Dec. 23	6.79				

5/12-2B1. Bryant Ranch. Geological Survey continuing observation well. California Division of Water Resources serial No. C-910f and C-913r, location Nos. 492B and 492D; J. B. Lippincott's No. 502A. About 2 miles north of Seal Beach, 640 feet west of San Gabriel River, 450 feet south of East Seventh Street, 10 feet west of ungraded lane, in field. Drilled unused well, diameter 10 inches, reported depth 547 feet, measured depth 255.2 feet. Casing perforated from 460 to 507 feet below land surface. Water-level measurements as follows: (1) About monthly 1929-31 and into 1932 by San Gabriel Valley Protective Association; (2) irregularly 1931-33 by J. B. Lippincott; (3) in March 1933 by Orange County Flood Control District; (4) biweekly since 1933 by R. A. Shafer for Bixby-Bryant interests; (5) water-level recorder maintained on well June 18 to Dec. 14, 1942, by Geological Survey. Measuring point, top east side of flanged casing, 1.00 foot above land-surface datum and 10.85 feet above sea-level datum of 1941. Records for September 1929 to August 1933 furnished by San Gabriel Valley Protective Association except as indicated; those for September 1933 to June 18, 1942, furnished by R. A. Shafer except as indicated; those for period since June 18, 1942 furnished by Geological Survey.

a Above sea level.

b Well 35M2 pumping.

5/12-2B1. Bryant Ranch--Continued.

Water level, in feet, with reference to land-surface datum, 1929-42

Date	Water level	Date	Water level	Date	Water level
Sept. 3, 1929	a+0.32	Oct. 1, 1934	-8.0	Apr. 20, 1937	-1.4
21	+1.36	19	-8.0	May 4	-1.6
25	+1.51	Nov. 1	-6.6	15	-1.9
Oct. 2	+1.36	21	-4.5	June 2	-3.2
10	+1.70	Dec. 3	-3.8	17	-3.4
18	(b)	19	-3.0	July 3	-4.9
Nov. 13	(b)	Jan. 2, 1935	-2.3	17	-6.4
Dec. 11	+3.99	18	-1.0	Aug. 2	-8.0
Feb. 21, 1930	(b)	Feb. 4	-1.5	18	-9.3
Mar. 12	(b)	15	-0.0	Sept. 2	-9.1
May 28	(b)	Mar. 1	-1.5	17	-9.3
Aug. 16	+1.87	20	+1.0	Oct. 3	-8.5
29	+1.07	Apr. 1	+1.2	18	-8.0
Sept. 17	-0.07	20	(b)	Nov. 4	-8.1
Oct. 7	-0.03	May 3	(b)	17	-8.0
Nov. 12	+0.83	17	+0.9	Dec. 6	-7.1
Dec. 10	+2.36	June 3	+0.2	16	-6.9
24	(b)	17	-2.2	Jan. 3, 1938	-4.9
Apr. 1, 1931	+1.42	July 1	-2.9	17	-4.7
22	-1.63	16	-3.7	Feb. 4	-4.0
May 8	+0.20	Aug. 3	-5.7	18	-3.2
15	+0.84	17	-6.5	Mar. 1	-2.6
23	+1.00	Sept. 3	-7.1	Apr. 2	-1.0
29	cd+1.5	16	-6.6	18	-1.5
June 6	cd+1.5	Oct. 5	-6.4	May 3	-1.4
12	+0.93	17	-6.2	19	-0.9
July 24	-2.3	Nov. 4	-6.2	June 3	-2.9
Sept. 4	-4.4	18	-5.7	17	-3.1
Nov. 6	-3.5	Dec. 20	-4.3	July 1	-4.7
Dec. 24	+0.4	Jan. 3, 1936	-3.1	15	-6.2
Jan. 2, 1932	cd+1.1	17	-2.8	Aug. 3	-7.6
4	cd+1.07	Feb. 3	-3.6	16	-5.7
Feb. 24	cd+1.07	17	-2.8	Sept. 1	-8.7
Mar. 8, 1933	bef+1.65	Mar. 2	-2.8	16	-8.9
9	bef+1.70	17	-2.6	Oct. 3	-9.1
13	bef+3.80	Apr. 4	-3.0	17	-8.0
15	bef+3.65	17	-3.4	Nov. 2	-6.7
Sept. 26	-6.3	May 2	-4.3	18	-6.1
Nov. 1	-5.3	16	-5.2	Dec. 1	-5.2
16	-5.0	June 1	-6.9	17	-3.9
Dec. 2	-4.2	18	-8.5	Jan. 3, 1939	-2.4
16	-4.2	July 3	g-9.9	16	-1.7
Jan. 4, 1934	-1.24	17	g-9.9	Feb. 17	-0.2
15	-0.71	Aug. 3	g-10.8	Mar. 4	+0.3
Feb. 1	+1.16	18	g-11.0	17	+0.5
15	+0.58	Sept. 5	g-11.4	Apr. 3	+0.7
Mar. 2	+0.65	13	g-11.2	17	+0.2
Apr. 1	+0.46	Oct. 3	g-11.1	May 3	+0.1
16	0.59	19	g-10.9	18	-1.3
May 1	-2.23	Nov. 4	g-10.5	June 2	-4.1
16	-3.13	17	-9.6	15	-5.2
June 1	-4.71	Dec. 1	-9.6	July 1	-7.7
16	-7.29	19	-7.9	18	-8.0
July 2	-6.23	Jan. 9, 1937	-6.1	Aug. 4	-9.7
16	-6.53	16	-5.5	17	g-10.1
Aug. 1	-6.6	Feb. 1	-5.0	Sept. 1	g-10.7
16	-6.5	17	-3.8	18	g-10.7
Sept. 1	-7.7	Mar. 3	-3.3	Oct. 3	-8.9
17	-8.3	17	-2.8	18	-7.1
	-8.1	Apr. 3	-2.3	Nov. 3	-5.7

a Well 35 feet west pumping.

b Flowing.

c Flowing during measurement.

d Measured by J. B. Lippincott.

e Static level.

f Measured by Orange Flood Control District.

g Below sea level.

5/12-2B1. Bryant Ranch--Continued.

Water level, in feet, with reference to land-surface datum, 1929-42

Date	Water level	Date	Water level	Date	Water level
Nov. 17, 1939	-4.8	Apr. 15, 1941	(b)	July 15	c-1.24
Dec. 4	-4.2	May 6	(b)	15	-1.10
16	-3.6	16	(b)	20	-4.01
Jan. 9, 1940	-2.2	June 4	(b)	25	-4.70
17	-1.3	20	(b)	31	-4.86
Feb. 5	-.3	July 3	(b)	Aug. 5	-4.44
16	-1.1	17	-.6	10	-4.93
Mar. 5	+2	Aug. 5	-2.5	15	-5.02
18	-1.1	18	-3.2	20	-5.57
Apr. 4	+1	Sept. 5	-4.6	25	-3.95
17	+3	18	-3.1	31	c-4.15
May 3	+4	Oct. 3	-4.4	Sept. 5	-5.66
18	-1.3	17	-3.8	10	-5.44
June 5	-2.9	Nov. 3	-1.3	15	-5.40
17	-4.5	18	+2	20	-5.70
July 1	-6.3	Dec. 5	+1.8	25	-5.48
17	-7.1	16	(b)	30	-5.27
Aug. 2	-9.7	Jan. 2, 1942	(b)	Oct. 5	-5.41
16	a-10.0	16	(b)	10	-5.24
Sept. 3	a-10.4	Feb. 3	(b)	15	-4.84
16	a-10.7	16	(b)	20	-4.69
Oct. 3	a-10.2	Mar. 4	(b)	25	-4.48
16	-9.3	19	+2	31	-3.75
Nov. 1	-8.1	Apr. 4	.0	Nov. 5	-3.20
18	-6.5	17	(b)	10	-2.94
Dec. 4	-5.1	May 4	(b)	15	c-2.55
20	-4.5	17	+8	23	c-2.00
Jan. 3, 1941	-3.3	June 1	.0	25	-1.86
17	-2.7	18	c-.14	30	-1.61
Feb. 4	-1.8	20	-.20	Dec. 5	-1.39
18	-1.1	25	-.27	10	-1.23
Mar. 18	+5	30	-.88	15	c-.95
Apr. 5	(b)	July 5	c-1.50	28	c-.44

5/12-2B2. Bryant Ranch well 12. California Division of Water Resources serial No. C-913q and location No. 492C. About 2 miles north of Seal Beach, 450 feet south of East Seventh Street, 675 feet west of San Gabriel River, 45 feet west of ungraded lane, and 35 feet west of well 2B1. Unused drilled well, diameter 7 inches, reported depth 483 feet, measured depth 436.3. Casing perforated between 257 and 273 feet and for 8 feet between 472 and 483 feet below land surface. Measuring point, top of flanged casing, at land-surface datum and 9.45 feet above sea-level datum of 1941. Additional measurements made irregularly 1933-34 and into 1935 by Orange County Flood Control District and biweekly 1937-39 and into 1940, by R. A. Shafer for Bixby-Bryant interests.

Water level, in feet below land-surface datum, 1941-42

Apr. 10, 1941	(d,e)	Jan. 7, 1942	(d)	July 15, 1942	2.42
Nov. 6	f.46	Mar. 21	1.25	Oct. 27	3.85

5/12-2B3. Bryant Ranch. About 2.5 miles north of Seal Beach, 1,600 feet west of San Gabriel River, and 42 feet south of East Seventh Street. Unused well, diameter 4 inches, depth 103.0 feet. Measuring point, top north side of coupling on top of casing, at chisel cuts, 3.00 feet above land-surface datum and 11.85 feet above sea-level datum of 1941. Casing cut off and plugged late in 1942, now in drainage channel.

Water level, in feet, with reference to land-surface datum, 1941-42

May 2, 1941	+2.96	Jan. 7, 1942	(g)	July 15, 1942	-1.7
Nov. 6	+1.17	Mar. 21	+1.02	Oct. 26	-3.22

a Below sea level.

b Flowing.

c Tape measurement by Geological Survey.

d Flowing.

e Well 2B1, 30 feet east, flowing.

f Well 1, 700 feet west pumping.

g Flowing.

5/12-2C4. Fred H. Bixby Co. About 2 miles north of Seal Beach, 0.45 mile west of San Gabriel River, 1,500 feet south of East Seventh Street, 20 feet south of frame dwelling, 15 feet east of T-lane south, and 10 feet north of water tank and tower, in pump house. Drilled domestic and irrigation well, reported depth 130 feet. Casing perforated at intervals from 22 to 100 feet. Measuring point, top rim of 2-inch slanted access pipe into east side of casing, 0.06 foot above top of concrete foundation, 1.50 feet above land-surface datum and 13.80 feet above sea-level datum of 1941. Water levels, in feet below land-surface datum: Nov. 6, 1941, a/7.96; Jan. 7, 1942, 6.19; Mar. 21, 1942, 6.15; Oct. 27, 1942, b/.

5/12-2H2. Bryant Ranch. California Division of Water Resources serial No. C-911f and location No. 503C; J. B. Lippincott's No. 503C. About 2 miles north of Seal Beach, 0.48 mile south of East Seventh Street, 125 feet west of San Gabriel River, 100 feet south of ungraded lane, lone casing in field. Unused well, diameter 4 inches, depth 40.0 feet. Measuring point, top of casing, 0.5 foot above $\frac{3}{4}$ -inch hole in casing plug, 2.80 feet above land-surface datum and 8.31 feet above sea-level datum of 1941. Additional measurements made in 1926 and 1928 by California Division of Water Resources, about weekly since 1930 by Orange County Flood Control District, and irregularly 1929-36 and into 1937 by Los Angeles County Flood Control District.

Water level, in feet above (+) or below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Apr. 10, 1941	+0.92	Jan. 7, 1942	+1.10	July 15, 1942	-0.13
Nov. 6	-2.88	Mar. 21	+89	Oct. 27	-4.70

5/12-2H3. Constructed by Geological Survey on property of Bryant Ranch. About 2 miles north of Seal Beach, 2,400 feet south of East Seventh Street, 100 feet west of San Gabriel River, at fence line. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.8 feet. Measuring point, top north side of casing, 1.50 feet above land-surface datum and 8.47 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	5.84	Jan. 21, 1942	4.17	July 27, 1942	c7.20
Nov. 15	5.85	Mar. 27	4.79	Nov. 6	c8.51
Dec. 23	5.14				

5/12-2K1. Constructed by Geological Survey on property of Bryant Ranch. About 1.5 miles north of Seal Beach, 0.6 mile south of East Seventh Street, and 1,500 feet from San Gabriel River along south side of ungraded road, at fence. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 17.5 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 5.34 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	3.88	Jan. 21, 1942	0.33	July 27, 1942	2.12
Nov. 15	2.33	Mar. 27	1.35	Nov. 6	4.05
Dec. 23	.71				

5/12-2P4. Constructed by Geological Survey on property of Fred H. Bixby Co. About 1.5 miles north of Seal Beach, 0.4 mile west of San Gabriel River, 400 feet south of east-west drainage canal, 350 feet north of windmill over 2311 2P2, and 2 feet west of fence along west side of ungraded lane. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.9 feet. Measuring point, top north side of casing, 1.50 feet above land-surface datum and 5.74 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	c5.93	Jan. 21, 1942	4.12	July 27, 1942	c6.00
Nov. 15	c5.15	Mar. 27	3.99	Nov. 6	c6.74
Dec. 23	c4.87				

a Well 950 feet north pumping.

b Pumping.

c Below sea level.

5/12-10A1. Standard Oil Co. California Division of Water Resources serial No. C-913g and location No. 484. About 1 mile north of Seal Beach, 560 feet northwest of The Toledo, 400 feet southwest of U.S. Highway 101, lone casing in field. Unused drilled well, diameter 16 inches, depth 296.6 feet. Casing perforated from 130 to 143 feet below land surface. Measuring point, top north surface of casing flange, 4.00 feet above land-surface datum and 9.04 feet above sea-level datum of 1941. Water-level recorder maintained on well since Aug. 15, 1942, by Geological Survey. Records after Nov. 5 not shown because measurements indicate false level. Water levels are below sea level unless otherwise indicated.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 15	5.94	Sept. 15	5.12	Oct. 5	5.98	Oct. 25	5.65
20	5.64	20	5.73	10	5.99	31	5.84
Sept. 5	5.04	25	5.92	15	5.92	Nov. 5	6.30
10	5.14	30	6.01	20	5.83		

5/12-10H1. Constructed by Geological Survey on property of city of Long Beach. About 1 mile northwest of Seal Beach, 90 feet northeast of Pacific Electric Railway, 25 feet northwest of The Toledo, 3 feet northwest of power-line pole 264400E, and 1.5 feet east of fence corner. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.5 feet. Measuring point, top north side of casing, at land-surface datum and 5.81 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	4.11	Jan. 21, 1942	2.85	July 27, 1942	4.17
Nov. 15	4.02	Mar. 27	3.01	Nov. 6	4.94
Dec. 23	3.38				

5/12-10H2. Constructed by Geological Survey on property of W. F. McGrath. About 1 mile northwest of Seal Beach, 770 feet southwest of U.S. Highway 101, 30 feet northwest of The Toledo, 382 feet northeast of northeast corner of fence around marine stadium, and 3.5 feet northwest of power-line pole 264392E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 17.3 feet. Measuring point, top of casing, 1.00 foot above land-surface datum and 7.42 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	5.07	Jan. 21, 1942	3.40	July 27, 1942	5.00
Nov. 15	4.85	Mar. 27	2.01	Nov. 6	5.62
Dec. 23	4.02				

5/12-10K1. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 244 feet southwest of East Second Street, 126 feet east of former channel of San Gabriel River, and 20 feet north of unused street, marked by post. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 15.3 feet. Measuring point, top north side of casing, at land-surface datum and 6.74 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	5.13	Jan. 21, 1942	5.22	July 27, 1942	5.89
Nov. 15	5.60	Mar. 27	6.41	Nov. 6	6.36
Dec. 23	5.16				

5/12-10P1. Constructed by Geological Survey on property of city of Long Beach. In Long Beach, 350 feet southwest of shore of Alamitos Bay, 35 feet northeast of East Ocean Avenue, 82 feet southeast of 65th Place, 15 feet northeast of alley, and 1.5 feet north of pole 6525, midway between sidewalk and curb. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 9.3 feet. Measuring point, top north side of casing, at land-surface datum and 4.67 feet above sea-level datum of 1941. Reference bench mark, 1 foot southwest of well, on curb; chiseled square, 0.03 foot above measuring point.

Water level, in feet below sea-level datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	3.41	Jan. 21, 1942	3.58	July 27, 1942	3.40
Nov. 15	3.42	Mar. 27	3.80	Nov. 6	3.12
Dec. 23	3.31				

a At sea level.

5/12-11D1. Constructed by Geological Survey on property of Fred H. Bixby Co. About 1 mile north of Seal Beach, 800 feet northeast of U. S. Highway 101, 1,000 feet east of junction of oil-company road with highway, at toe of roadway fill. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 13.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 3.69 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	a3.97	Jan. 21, 1942	0.67	July 27, 1942	2.36
Nov. 15	1.18	Mar. 27	.74	Nov. 6	1.76
Dec. 23	.54				

5/12-11H1. Bryant Ranch. California Division of Water Resources serial Nos. C-910q and C-910n, location Nos. 504 and 494A; Los Angeles County Flood Control District and J. B. Lippincott's No. 504. About 1 mile north of Seal Beach, 0.14 mile southeast of San Gabriel River, 0.50 mile northeast of bridge on U. S. Highway 101 over San Gabriel River, about 50 feet northwest of county line, and 300 feet east of pumped well 11G1, which is in pump house. Unused drilled well, diameter 8 inches, depth 296.0 feet. Measuring point, top of collar about top of casing, south side, 0.50 foot above land-surface datum and 6.88 feet above sea-level datum of 1941. Water-level recorder installed July 2, 1942, by Geological Survey. Reference bench mark, at Associated Oil well "Bryant 21," 135 feet west of well 11H1, on outside corner of iron plate atop northeast concrete derrick foundation; chiseled square, 4.12 feet above measuring point. Additional measurements made about monthly since 1950 by Orange County Flood Control District, and irregularly 1929-34 and into 1955 and monthly since 1955 by Los Angeles County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

(Chiefly high level for the day, from recorder charts)

Apr. 8, 1941	2.42	Aug. 10, 1942	c6.52	Oct. 25, 1942	a6.76
Aug. 14	a8.03	15	ac6.91	31	a6.71
Oct. 24	ab10.86	20	a8.78	Nov. 5	6.17
Nov. 12	a7.32	25	a6.69	9	d6.09
Jan. 8, 1942	3.09	31	a7.44	16	d5.64
15	3.26	Sept. 5	a7.48	20	(e)
Mar. 20	2.91	10	a7.19	25	4.97
July 2	a4.17	15	a7.19	30	5.00
5	4.01	20	a7.59	Dec. 5	4.44
10	4.12	25	a7.24	10	4.18
15	c4.79	30	a7.65	15	4.11
20	5.11	Oct. 5	a7.67	20	3.90
25	5.69	10	a7.29	25	3.31
31	c6.14	15	a6.92	31	3.08
Aug. 5	c6.37	20	a6.92		

Orange County

3/11-36Q2 (#941, p. 117). M. Del Giorgio. Geological Survey continuing observation well. About 1 mile southeast of Buena Park. Measuring point, top of casing, at land-surface datum and 91.58 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	55.07	Mar. 11	55.94	May 13	54.60	July 15	73.94
14	54.50	18	54.49	20	59.95	22	75.18
21	54.10	25	53.97	27	66.68	29	73.77
28	53.65	Apr. 1	55.99	June 3	67.79	Aug. 5	74.54
Feb. 4	53.48	8	57.19	10	67.58	12	73.29
11	53.70	15	54.59	17	66.75	19	73.40
18	54.70	22	52.98	24	67.40	26	73.84
25	53.68	29	52.45	July 1	69.89	Sept. 2	74.82
Mar. 4	53.47	May 6	53.12	8	70.12	10	73.93

a Below sea level.

b Well 11G1 pumping.

c Well 11G1 pumping previous day.

d Tape measurement.

e Recorder not operating.

3/11-36Q2. M. Del Giorgio--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 16	72.67	Oct. 15	69.40	Nov. 12	65.37	Dec. 9	63.26
23	72.06	21	71.22	18	64.00	16	64.72
30	71.42	28	70.99	25	64.65	23	64.39
Oct. 7	71.64	Nov. 4	65.69	Dec. 2	63.70	30	59.77

4/9-7B1 (*941, p. 120). Dowling and Prentice. Geological Survey continuing observation well. About 3 miles east of Anaheim. Measuring point, top edge of center hole in cover insert welded on casing, 0.1 foot below top of casing and 0.9 foot above land-surface datum which is 214 feet above mean sea level (interpolated from topographic map). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942

Jan. 7	157.95	Apr. 15	161.09	July 22	180.72	Oct. 15	167.67
14	156.59	22	159.82	29	184.54	21	168.17
21	156.12	29	152.30	Aug. 5	184.40	28	174.23
28	154.86	May 6	152.27	12	160.92	Nov. 4	168.98
Feb. 4	152.56	13	153.26	19	161.37	12	168.74
11	151.11	20	154.31	26	173.03	18	168.53
18	152.55	27	156.69	Sept. 2	176.72	25	168.24
25	150.81	June 3	158.81	10	192.00	Dec. 2	168.24
Mar. 4	150.82	10	166.69	16	165.61	9	168.38
11	150.99	17	161.20	23	166.17	16	168.57
18	152.88	24	164.44	30	166.68	23	170.67
25	158.80	July 1	165.19	Oct. 7	167.21	30	168.45
Apr. 1	163.28						

4/10-2212, formerly 41b (*840, p.28; 886, p.24; *941, p.123). Halderman and Callens. Geological Survey continuing observation well. About 2 miles south of Anaheim. Measuring point, hole in east side of pump base, 0.1 foot above land-surface datum and 136.09 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by San Gabriel Valley Protective Association and Orange County Flood Control District as indicated.

Water level, in feet below land-surface datum, 1942

Jan. 2	a104.52	Apr. 10	b103.54	July 9	a101.47	Oct. 13	b111.77
19	b103.57	16	a102.59	9	b109.07	22	(c)
Feb. 13	a102.76	May 7	a101.58	30	a110.89	Nov. 12	a112.60
16	b103.45	11	b102.28	Aug. 10	bcl27.60	13	b110.59
Mar. 5	a103.17	28	(c)	Sept. 8	bcl31.67	Dec. 3	a110.13
16	b103.72	June 5	b106.92	10	a116.71	15	b110.35
26	a103.48	18	(c)	Oct. 1	a116.98	24	a109.22

4/11-19J1. Roy Visbeck. California Division of Water Resources serial No. C-909r and location No. 1038D. About 0.5 mile north of Los Alamitos, 70 feet south of Spring Street, and 100 feet west of Bloomfield Avenue, in west end of shed, under derrick. Drilled domestic and stock well, diameter 12 inches, depth 532.8 feet; casing perforated from 518 to 532 and 548 to 556 feet below land surface. Measuring point, top west side of casing, 1.20 feet above land-surface datum which is 26 feet above mean sea level (interpolated from topographic map). Additional measurements made about quarterly December 1932 to November 1935 by Orange County Flood Control District, and about monthly December 1935 to November 1938 by Montana Land Co.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 16, 1941	2.77	Nov. 12, 1941	d10.35	Jan. 20, 1942	10.22
Aug. 14	27.39	Jan. 15, 1942	d9.53	July 10	(d)

4/11-19K1 (138, p. 83; well 1183; *941, p. 123). Los Alamitos Sugar Co. Geological Survey continuing observation well. About half a mile north of Los Alamitos. Measuring point, top of recorder platform, 0.22 foot above top of casing, at land-surface datum and 28.72 feet above mean sea level (altitude by city of Long Beach). Records furnished by city of Long Beach.

a Measured by San Gabriel Valley Protective Association. c Pumping.

b Measured by Orange County Flood Control District. d Pumping.

4/11-19K1. Los Alamitos Sugar Co.--Continued.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	4.14	Apr. 13	7.94	July 13	22.65	Oct. 12	20.56
12	3.74	20	6.71	20	23.39	19	21.26
19	3.38	27	5.54	27	21.39	26	20.43
26	3.18	May 4	5.06	Aug. 3	24.67	Nov. 2	16.62
Feb. 2	3.10	11	5.72	10	25.03	9	14.94
9	3.21	18	9.85	17	26.52	16	13.53
16	3.67	25	12.52	24	27.32	23	12.19
23	4.17	June 1	15.41	31	27.11	30	11.36
Mar. 2	3.80	8	17.31	Sept. 7	23.15	Dec. 7	10.88
9	5.47	15	16.02	14	21.65	14	10.68
16	6.66	22	18.94	21	20.58	21	10.37
23	7.23	29	18.21	28	22.65	28	9.52
30	8.48	July 6	17.84	Oct. 5	22.81	31	as.94
Apr. 6	8.75						

4/11-30K2. Bryant Ranch. California Division of Water Resources serial No. C-911p and location No. 520B. About half a mile south of Los Alamitos, 915 feet south of Bryant Avenue, and 300 feet east of Los Alamitos Boulevard, lone casing in field. Unused well, diameter 2 inches, depth 275.3 feet. Measuring point, top south side of casing at notch, 0.7 foot above land-surface datum and 19.91 feet above mean sea level (altitude by R. A. Shafer). Additional measurements made about monthly since 1933 by Orange County Flood Control District and biweekly 1933-38 by R. A. Shafer for Bixby-Bryant interests.

Water level, in feet below land-surface datum, 1941-42			
Date	Water level	Date	Water level
May 15, 1941	1.37	Nov. 12, 1941	6.35
Aug. 14	12.58	Jan. 15, 1942	2.45
15	13.03	Mar. 20	5.62
		July 10, 1942	11.20
		Oct. 30	12.13

5/10-9D1 (#941, p. 126). Julio Martinez. Geological Survey continuing observation well. About 1 mile south of Garden Grove. Measuring point, base of hole in north side of pump at air pipe, 0.05 foot above concrete base, 0.30 foot above top of casing, 0.80 foot above land-surface datum and 75.5 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942			
Date	Water level	Date	Water level
Jan. 19	48.55	May 11	58.35
Feb. 16	51.32	June 5	(b)
Mar. 16	56.78	July 9	62.06
Apr. 10	57.28	Aug. 10	63.06
		Sept. 8	65.98
		Oct. 13	57.80
		Nov. 13	53.65
		Dec. 15	54.97

5/10-19A1. Fred Wright. About 5 miles southwest of Santa Ana, 540 feet south of Smeltzer Avenue, 30 feet west of Wright Street, open casing projecting from concrete block in yard, 12 feet east of domestic well 19A2. Unused well, diameter 4 inches, depth 63.3 feet. Measuring point, top east side of casing at chisel cuts, 0.40 foot above concrete block and 0.70 foot above land-surface datum, which is 41 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42			
Date	Water level	Date	Water level
May 21, 1941	23.54	Jan. 13, 1942	19.25
Aug. 14	36.12	20	31.61
Nov. 8	23.77	July 7, 1942	633.11
		Oct. 28	27.51

a Measured by Geological Survey.

b Pumping.

c Well 19A2 pumping.

5/10-21F2. J. W. Martin. California Division of Water Resources serial No. C-1203a and location No. 14477. About 4 miles southwest of Santa Ana, 310 feet north of Heil Avenue, 90 feet west of Newhope Road and 4 feet west of tank, in frame pump house. Drilled domestic and irrigation well, diameter 10 inches, reported depth 128 feet. Measuring point, bottom west edge of pump base, 0.60 foot above land-surface datum which is 51 feet above mean sea level (interpolated from topographic map). To adjust tape reading for horizontal correction subtract 0.20 foot.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Aug. 14, 1941	ab70.7	Mar. 19, 1942	39.09	July 23, 1942	(a)
Jan. 13, 1942	27.02	July 7	(a)		

5/10-28B1. John Sturtevant. California Division of Water Resources serial No. C-1202h and location No. 14478B. Geological Survey continuing observation well. About 3.5 miles southwest of Santa Ana, 1,200 feet east of Newhope Road, 40 feet south of Wintersburg Avenue, and 4 feet south of concrete standpipe, lone casing in field. Unused drilled well, diameter 10 inches, depth 122.0 feet. Water level measured about monthly since 1935 by Orange County Flood Control District and quarterly since 1941 by Geological Survey. Measuring point, top south side of casing at chisel cuts, 0.50 foot below top of concrete base and 0.10 foot below land-surface datum which is 45 feet above mean sea level (interpolated from topographic map). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1935-42

Date	Water level	Date	Water level	Date	Water level
Mar. 25, 1935	27.49	Sept. 22, 1938	39.98	Feb. 18, 1941	30.12
Mar. 30, 1936	41.63	Oct. 17	38.07	Mar. 21	26.84
Apr. 24	40.90	Nov. 21	35.44	Apr. 25	25.87
May 20	43.45	Dec. 8	34.77	May 15	26.65
June 22	b46.90	Jan. 17, 1939	29.14	May 23	c28.3
July 22	b52.87	Mar. 6	28.65	June 12	33.62
Sept. 2	b49.12	24	31.04	July 10	36.58
Oct. 9	42.80	Apr. 27	32.70	Aug. 14	c40.50
Nov. 17	40.52	May 25	40.82	22	39.30
Feb. 3, 1937	34.54	June 29	44.40	Sept. 16	39.15
Apr. 13	30.52	Aug. 2	b47.57	Nov. 8	c28.25
May 18	36.29	Oct. 26	34.02	13	28.10
June 11	39.56	Nov. 30	34.85	Dec. 15	26.39
July 20	ba71.17	Dec. 21	34.24	Jan. 12, 1942	25.41
Aug. 13	ba74.34	Jan. 25, 1940	29.70	13	c24.30
Sept. 13	ba74.92	Feb. 29	32.00	Feb. 9	26.37
Oct. 11	39.69	Mar. 27	38.29	Mar. 13	37.50
Nov. 9	37.42	Apr. 25	31.94	19	c33.55
Dec. 13	35.53	May 23	37.24	Apr. 13	29.58
Jan. 14	34.09	June 13	42.13	June 8	36.28
Feb. 8	33.65	July 18	b47.56	July 7	bc50.7
Mar. 24	30.33	Aug. 19	44.64	13	37.81
Apr. 11	30.39	Sept. 20	43.34	Aug. 11	40.40
May 10	29.49	Oct. 21	40.23	Sept. 3	41.19
June 9	38.32	Jan. 6, 1941	31.57	Oct. 2	40.65
July 11, 1938	ba68.72				

5/10-28D1. J. Inako, lessee. About 4 miles southwest of Santa Ana, 275 feet south of Wintersburg Avenue, 500 feet east of Verano Street, lone casing, in concrete block in field. Unused drilled well, diameter 7 inches, depth 210.0 feet. Measuring point, top east side of casing at chisel cuts, 0.2 foot above land-surface datum which is 38 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

May 26, 1941	4.14	Nov. 8, 1941	14.35	Mar. 19, 1942	17.37
Aug. 14	14.86	Jan. 13, 1942	14.93		

a Pumping.

b Below sea level.

c Measured by Geological Survey.

5/10-30B3. J. Ishii. About 6 miles southwest of Santa Ana, 780 feet south of Wintersburg Avenue, 375 feet east of Bushard Street, 4 feet south of concrete standpipe, lone casing in field. Unused drilled well, diameter 7 inches, depth 282.3 feet. Measuring point, top south side of casing at chisel cuts, 0.70 foot above land-surface datum which is 31 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 28, 1941	16.31	Jan. 14, 1942	12.20	July 6, 1942	22.93
Aug. 14	27.78	Mar. 19	25.74	Oct. 29	19.08
Nov. 8	16.25				

5/10-31A1. H. C. Gordon, lessee. California Division of Water Resources serial No. C-1256k and location No. 13240. About 4 miles northeast of Huntington Beach, 650 feet south of Talbert Avenue and 100 feet west of Wright Street, 8 feet northeast of well 31A10 and 5 feet east of tank atop shed. Unused well, diameter 2 inches, depth 70.0 feet. Measuring point, top north side of flange atop casing, 0.50 foot above land-surface datum which is 25 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
June 2, 1941	12.13	Jan. 13, 1942	7.51	July 6, 1942	15.74
Aug. 15	17.55	Mar. 18	ab31.33	Oct. 28	14.08
Nov. 7	11.05				

5/10-32P1. Robert Gisler. California Division of Water Resources serial No. C-1258m and location No. 13250D. About 4 miles northeast of Huntington Beach, 1,160 feet north of Garfield Avenue, 1,980 feet east of Wright Street, lone casing inside red tile, in field. Unused drilled well, diameter 10 inches, depth 128.0 feet. Measuring point, top west side of casing, at chisel cuts, 0.20 foot below land-surface datum which is 20 feet above mean sea level (interpolated from topographic map). Water levels, in feet below land-surface datum: June 2, 1941, 10.24; July 6, 1942, 14.87; Oct. 22, 1942, 11.66.

5/10-33A1. Antonio Bushard. About 4 miles southwest of Santa Ana, 100 feet south of Talbert Avenue, 100 feet west of Harbor Boulevard, 5 feet south of water tank and tower, in sheet-metal pump house. Drilled irrigation well, diameter 10 (?) inches. Measuring point, rectangular hole in top of pump base at south side of pump column, 0.10 foot above concrete foundation and 1.50 feet above land-surface datum which is 36 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Nov. 13, 1941	20.08	Mar. 18, 1942	30.13	Oct. 28, 1942	23.50
Jan. 13, 1942	16.16	July 23	28.97		

5/10-33H1. Antonio Bushard. California Division of Water Resources serial No. C-1252 and location No. 13270. About 4 miles southwest of Santa Ana, 50 feet north of Huntzinger Avenue, 500 feet west of Harbor Boulevard, in pump house in field. Drilled irrigation well, diameter 10 inches, depth 258.6 feet. Current measuring point, outside thread of discharge pipe, on north side of pump house, 0.3 foot above concrete floor, 1.40 feet above land-surface datum which is 32 feet above mean sea level (interpolated from topographic map). To adjust tape reading for horizontal correction, subtract 0.50 foot. Additional measurements made irregularly 1930-37 and into 1938 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
June 4, 1941	15.98	Jan. 13, 1942	13.73	July 6, 1942	19.70
Aug. 14	21.40	Mar. 18	26.77	Oct. 28	18.25
Nov. 6	16.92				

5/10-34H1. City of Newport Beach well 10. California Division of Water Resources serial No. C-1252d and location No. 13280A. About 5 miles southwest of Santa Ana, 415 feet north of Huntzinger Avenue, and 150 feet east of Harbor Boulevard, lone casing in field. Unused drilled well, diameter 18 inches, depth 411.0 feet. Casing perforated from 336 to 342 and 350 to 372 feet below land surface. Measuring point, on west side of casing, at chisel marks in cut-out, 0.30 foot below top of casing, 1.00 foot above land-surface datum which is 33 feet above mean sea level (interpolated from topographic map). Additional measurements since 1935 made by city of Newport Beach.

a Below sea level.

b Nearby well pumping.

5/10-34E1. City of Newport Beach--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
June 4, 1941	18.53	Jan. 13, 1942	13.45	July 6, 1942	21.86
Aug. 14	22.90	Mar. 18	26.32	Oct. 28	19.44
Nov. 6	17.49				

5/11-2E1. Western Trust and Savings Bank. Geological Survey continuing observation well. California Division of Water Resources serial Nos. C-987n and C-987h, location Nos. 593B and 593A. About 1 mile north of Westminster, 0.25 mile south of Garden Grove Boulevard, 1,300 feet north of Trask Street and 960 feet east of Golden West Avenue, under turbine pump at east end of fence, in field. Drilled irrigation well, diameter 12 inches, reported depth 517 feet. Water level measured in 1929 by San Gabriel Valley Protective Association and monthly since 1930 by Orange County Flood Control District. Measuring point, bottom edge of cut-out, 0.27 foot below top southwest side of casing, 0.10 foot above land-surface datum and 48.08 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District except as indicated.

Water level, in feet below land-surface datum, 1929-42

June 8, 1929	a30.97	Dec. 22, 1933	36.09	Jan. 13, 1939	32.38
May 19, 1930	22.31	Mar. 9, 1934	36.59	Feb. 7	30.56
June 20	31.36	May 31	47.52	Mar. 7	31.83
July 9	35.40	31	bc52.79	June 14	47.92
Sept. 2	43.17	July 26	b52.70	July 7	b49.69
Oct. 6	38.36	Aug. 24	b51.12	Aug. 7	b52.77
Nov. 3	36.19	Dec. 28	34.22	Sept. 12	b50.19
Dec. 22	29.33	Mar. 19, 1935	31.20	Oct. 9	41.58
Jan. 7, 1931	26.38	May 6	32.44	Nov. 9	39.42
Feb. 3	24.38	July 11	47.64	Dec. 4	39.74
17	24.47	Aug. 26	b51.51	Jan. 12, 1940	33.33
25	28.63	Oct. 31	47.33	Feb. 9	32.74
Mar. 4	29.77	Mar. 25, 1936	40.38	Mar. 14	37.26
27	38.83	Apr. 21	42.13	Apr. 8	34.13
Apr. 3	43.08	May 18	46.03	May 9	36.98
May 15	33.03	June 17	b52.79	June 6, 1940	45.73
June 1	35.71	July 21	b58.28	July 1	b51.68
July 6	43.65	Aug. 28	b54.30	Aug. 5	b54.15
Aug. 10	b49.00	Oct. 6	b51.48	Sept. 19	(c)
Sept. 11	46.49	Nov. 10	47.48	Oct. 14	b49.20
Oct. 3	41.36	Dec. 8	46.67	Dec. 19	36.66
Nov. 4	41.18	Feb. 3, 1937	38.92	Jan. 27, 1941	33.29
Dec. 7	32.73	Mar. 30	35.03	Feb. 25	31.47
Jan. 12, 1932	26.67	Apr. 14	34.85	Mar. 18	29.63
Feb. 20	23.98	May 24	40.57	May 12	27.05
Mar. 1	24.74	July 16	b50.55	June 10	33.44
Apr. 13	33.68	Sept. 9	b50.54	July 11	39.77
May 13	36.70	Oct. 7	b50.41	Aug. 14	43.20
June 23	42.74	Nov. 8	46.46	Sept. 15	(c)
July 14	43.09	Dec. 9	44.97	Oct. 10	40.92
Aug. 8	42.19	Jan. 11, 1938	39.00	Nov. 14	30.75
Sept. 13	43.51	Feb. 25	39.03	Dec. 4	29.65
Oct. 25	38.98	Mar. 22	34.61	Jan. 6, 1942	26.80
Nov. 18	38.55	Apr. 8	35.26	Feb. 9	26.04
Dec. 23	31.22	May 9	35.96	Mar. 12	31.87
Feb. 2, 1933	27.94	June 6	(c)	June 4	36.97
Mar. 14	27.50	July 8	45.74	July 17	(c)
15	28.52	Aug. 5	(c)	Aug. 17	42.23
July 14	47.92	Sept. 19	b48.97	Sept. 11	(c)
Aug. 7	47.40	Oct. 11	45.60	Oct. 6	(c)
Sept. 7	47.90	Nov. 18	(c)	Nov. 9	33.38
Oct. 24	43.87	Dec. 6	41.37	Dec. 8	(c)

a Measured by San Gabriel Valley Protective Association.

b Below sea level.

c Pumping.

5/11-6A1. I. W. Hellman Ranch. California Division of Water Resources serial No. C-912d and location No. 542. About 4 miles northeast of Seal Beach, 3,600 feet east of Los Alamitos Boulevard extending north, 30 feet south of Garden Grove Boulevard, 25 feet west of drainage ditch, and 20 feet northeast of tank and tower, in frame shed. Drilled irrigation and domestic well, diameter 12 and 10 inches, reported depth 1,030 feet. Casing perforated at intervals from 818 to 975 feet below land surface. Measuring point, top of 1-inch hole in northeast side of pump base, 0.50 foot below land-surface datum, and 15.71 feet above mean sea level (altitude by Ross A. Shafer). Additional measurements made about monthly 1928-30 and into 1931 by San Gabriel Valley Protective Association, about monthly since 1931 by Orange County Flood Control District, and biweekly 1933-37 and since 1939 by R. A. Shafer for Bixby-Bryant interests.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Aug. 15, 1941	ab72.5	Jan. 15, 1942	(c)	July 23, 1942	(a)
Nov. 12	4.13	July 10	(a)	Oct. 30	9.38

5/11-6D2 (138,p.85, well 1246). I. W. Hellman Ranch. California Division of Water Resources serial No. C-911 and location No. 522B. About 2.5 miles northeast of Seal Beach, 1,300 feet east of Los Alamitos Boulevard, 300 feet south of Garden Grove Boulevard, 55 feet southeast of windmill, and 6 feet north of door at west end of barn. Unused well, diameter 2 inches, depth 105.8 feet. Casing perforated from 185 to 195 feet below land surface. Measuring point, top north side of 2-inch casing, at land-surface datum and 12.47 feet above sea-level datum of 1941. Additional measurements made as follows: (1) Irregularly 1922-27 and into 1928 by California Division of Water Resources; (2) monthly since 1928 by San Gabriel Valley Protective Association; (3) monthly since 1930 by Orange County Flood Control District; (4) weekly to monthly 1931-36 by Los Angeles County Flood Control District; and (5) biweekly since 1934 by R. A. Shafer for the Bixby-Bryant interests.

Water level, in feet, with reference to land-surface datum, 1903, 1941-42

Aug. 25, 1903	de+14.3	Nov. 12, 1941	-4.07	July 10, 1942	-6.03
Mar. 20, 1941	-1.79	Jan. 15, 1942	-.12	Oct. 30	-8.03
Aug. 14	-7.25	Mar. 20	-3.22		

5/11-7G1. Constructed by Geological Survey on property of I. W. Hellman Ranch. About 2 miles northeast of Seal Beach, 2,600 feet south and 2,600 feet east from intersection of Los Alamitos Boulevard and Westminster Avenue, 40 feet north of power-line pole 356199E, and 1.5 feet east of fence. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 21.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 8.01 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	7.82	Dec. 24, 1941	6.14	Mar. 27, 1942	6.25
Nov. 17	6.98	Jan. 21, 1942	5.78	Nov. 6	8.31

5/11-8D1. I. W. Hellman Ranch. California Division of Water Resources serial No. C-912f and location No. 544B. About 2.5 miles northeast of Seal Beach, 25 feet south of Westminster Avenue, 35 feet east of Hellman Avenue, 5 feet east of driveway, under fence. Unused well, diameter 2 inches, depth 104.3 feet. Casing perforated from 110 to 118 feet below land surface. Measuring point, lower inside edge of side outlet of 2-inch tee atop casing, 1.20 feet above land-surface datum which is 13 feet above mean sea level (interpolated from topographic map). Additional measurements made irregularly 1922-27 and 1928 by California Division of Water Resources, about monthly 1928-32 by San Gabriel Valley Protective Association, and about monthly since 1933 by Orange County Flood Control District. Water levels, in feet below land-surface datum: Mar. 20, 1941, 4.38; July 10, 1942 5.79; Oct. 30, 1942, 7.78.

a Pumping.

b Below sea level.

c Flowing, estimated 50 gallons a minute.

d Flowing.

e Height of static level.

5/11-11Q2. Westminster Memorial Cemetery. California Division of Water Resources serial No. C-989c and location No. 14405c. About 1 mile south of Westminster, 1,100 feet north of Bolsa Avenue, 1,350 feet west of Huntington Beach Boulevard, and 25 feet west of T-lane north from Bolsa Avenue, in sheet-metal pump house. Drilled irrigation well, diameter 16 inches, reported depth 165 feet. Casing perforated from 97 to 135 feet below land surface. Measuring point, 1-inch hole in northwest side of pump base, 0.1 foot above top of casing, 1.00 foot above land-surface datum, and 39.3 feet above sea-level datum of 1941. Additional measurements made irregularly 1929-31 by San Gabriel Valley Protective Association.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 25, 1941	18.6	Jan. 13, 1942	15.58	July 7, 1942	31.41
Aug. 12	30.46	Mar. 19	36.11	Oct. 29	23.19
Nov. 10	20.07				

5/11-13A1. Sterling Price. California Division of Water Resources serial No. C-989L and location No. 14425B. About 2 miles southeast of Westminster, 115 feet south of Bolsa Avenue, 225 feet west of Cannery Street, 6 feet west of tree, and 3 feet north of fenced enclosure. Unused well, diameter 7 inches, depth 138.0 feet. Casing perforated from about 115 to 150 feet below land surface. Measuring point, top south side of casing at seam, 0.30 foot above land-surface datum and 43.5 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Mar. 24, 1941	25.0	Nov. 13, 1941	24.58	July 7, 1942	33.61
May 15	23.52	Jan. 13, 1942	20.54	Oct. 29	28.31
Aug. 12	37.57	Mar. 19	30.88		

5/11-13A3. Sterling Price. California Division of Water Resources serial No. C-989b and location No. 14425A. About 2 miles southeast of Westminster, 1,200 feet south of Bolsa Avenue, and 370 feet west of Cannery Street, in field. Drilled well, diameter 10 inches, depth 136.4 feet. Measuring point, top south side of casing, 1.10 feet above land-surface datum and 43.0 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Mar. 24, 1941	22.2	Nov. 13, 1941	22.49	July 7, 1942	31.27
May 15	21.23	Jan. 13, 1942	18.48	Oct. 29	26.19
Aug. 12	34.62	Mar. 19	29.81		

5/11-13M2. L. L. Gallup. About 1.5 miles south of Westminster, 30 feet south of Sugar Avenue, 900 feet east of Huntington Beach Boulevard, and 80 feet west of Van Buren Street, lone casing in field. Unused well, diameter 5 inches, depth 77.4 feet. Measuring point, top east side of casing at chisel cuts, 0.60 foot above land-surface datum and 31.8 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Mar. 25, 1941	13.04	Nov. 10, 1941	14.72	July 7, 1942	22.26
May 15	12.82	Jan. 14, 1942	10.42	Oct. 29	18.02
Aug. 12	23.36	Mar. 19	23.72		

5/11-14B2. Mrs. M. R. King. About 1.25 miles south of Westminster, 1,050 feet south of Bolsa Avenue, and 1,700 feet west of Huntington Beach Boulevard, lone casing in field. Unused drilled well, diameter 10 inches, reported depth 548 feet. Casing perforated at intervals from 92 to 548 feet below land surface. Measuring point, top north side of casing at chisel cuts, 0.60 foot above land-surface datum and 32.1 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

May 23, 1941	14.50	Jan. 13, 1942	15.21	July 7, 1942	15.73
Aug. 12	16.04	Mar. 19	15.06	Oct. 29	17.82
Nov. 10	17.18				

5/11-14J1. Don McMillan. California Division of Water Resources serial No. C-993c and location No. 14406A. About 1.5 miles south of Westminster, 350 feet west of Huntington Beach Boulevard, 35 feet south of Sugar Avenue and 3 feet east of concrete standpipe, in field. Drilled irrigation well, diameter 12 inches, depth 125.3 feet. Measuring point, top southwest side of casing, at notch, at land-surface datum and 23.2 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 24, 1941	5.39	Nov. 10, 1941	7.07	July 7, 1942	15.03
May 15	5.27	Jan. 14, 1942	2.76	Oct. 29	10.38
Aug. 12	15.76				

5/11-16D1. Anaheim Sugar Co. California Division of Water Resources serial No. C-991d and location No. 565. About 4 miles east of Seal Beach, 1,100 feet east of Bolsa Chica Avenue, 50 feet south of Bolsa Avenue, and 65 feet west of house, in field. Unused drilled well, diameter 10 inches, depth 393.3 feet. Measuring point, top east side of casing at chisel cuts, 1.00 foot above land-surface datum which is 16 feet above mean sea level (interpolated from topographic map). Additional measurements made monthly in 1929 and 1930 by San Gabriel Valley Protective Association, monthly 1932-36 and weekly since 1937 by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1941-42

Mar. 7, 1941	-4.20	Nov. 8, 1941	-5.43	July 10, 1942	-4.63
May 15	+4.47	Jan. 15, 1942	+5.58	Oct. 30	-9.86
Aug. 8	-6.98	Mar. 20	-7.43		

5/11-16D2 (*941, p. 127). Anaheim Sugar Co. Geological Survey continuing observation well. About 4 miles east of Seal Beach. Measuring point, top of wooden platform, 1.54 feet above top of casing, 2.30 feet above land-surface datum, and 18.24 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	2.58	Apr. 8	7.80	July 8	10.45	Oct. 7	13.58
14	2.28	15	5.60	15	11.95	15	13.61
21	2.20	22	4.07	22	11.14	21	14.81
28	1.95	29	3.42	29	13.49	28	12.57
Feb. 4	2.12	May 6	3.70	Aug. 5	14.50	Nov. 4	10.64
11	3.52	13	3.89	12	14.24	12	10.43
18	5.80	20	5.11	19	14.83	18	10.61
25	6.72	27	7.09	26	14.63	25	7.85
Mar. 4	9.00	June 3	8.90	Sept. 2	17.01	Dec. 2	8.38
12	11.59	10	9.00	10	17.25	9	7.68
18	10.35	17	10.48	16	17.64	16	7.52
25	10.75	24	8.45	23	17.34	23	6.48
Apr. 1	10.20	July 1	9.22	30	14.49	30	5.59

5/11-17A1. Blue Wing Shooting Club. California Division of Water Resources serial Nos. C-991t and C-991b and location Nos. 555A and 555. About 3.5 miles east of Seal Beach, 110 feet south of Bolsa Avenue and 570 feet west of Bolsa Chica Avenue, in field. Unused drilled well, diameter 12 inches, depth 689.0 feet. Measuring point, top of 3-inch coupling in plate bolted over casing, 0.58 foot above top of casing, 0.50 foot above land-surface datum, which is 15 feet above mean sea level (interpolated from topographic map). Additional measurements made irregularly 1928-31 by San Gabriel Valley Protective Association and about monthly 1930-34 and into 1935 by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 15, 1941	b+1.9	Nov. 8, 1941	-3.35	Jan. 15, 1942	cd+10
Aug. 8	(c)	13	-2.41	Oct. 30	-9.03
12	-3.56				

a Below sea level.

b Flowing about 5 gallons a minute during measurement.

c Flowing.

d Static level reported.

5/11-17J1. Westminster Gun Club. California Division of Water Resources serial No. C-9911 and location No. 556B. About 3.5 miles east of Seal Beach, 2,800 feet south of Bolsa Avenue and 650 feet west of Bolsa Chica Avenue, in frame pump house. Drilled well, used for filling duck ponds, diameter and depth unknown. Measuring point, top of 3/4-inch pipe, 3.00 feet above land-surface datum which is 12 feet above mean sea level (interpolated from topographic map). Water level, in feet, with reference to land-surface datum, 1941-42; May 16, 1941, ab+5.0; Aug. 9, 1941, c/; Jan. 15, 1942, ab+8.2; July 10, 1942, a/.

5/11-17P2. Laurence Lerno. About 3.5 miles east of Seal Beach, 375 feet north of Smeltzer Avenue, and 2,800 feet west of Bolsa Chica Avenue, lone casing in field. Unused well, diameter 4 inches, depth 177.1 feet. Measuring point, top of 2-inch inner casing, 0.90 foot above land-surface datum and 9.65 feet above sea level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
May 16, 1941	ab+1.84	Jan. 15, 1942	ab+2.95	July 8, 1942	2.84
Aug. 13	5.81	Mar. 20	3.41	Oct. 30	4.64
Nov. 12	1.90				

5/11-18B1. Constructed by Geological Survey on property of State of California. About 2 miles east of Seal Beach, 1.35 miles east of Westminster Avenue, 30 feet south of Bolsa Avenue, 18 feet east of T-lane south, and 1.5 feet northeast of corner fence post. Bored water-table well, diameter 1 1/4 inches, depth 23.3 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and 7.31 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 9, 1941	5.40	Dec. 29, 1941	2.38	July 28, 1942	4.27
Nov. 15	3.69	Jan. 21, 1942	2.01	Sept. 30	5.65
Dec. 24	2.51	Mar. 28	2.75	Nov. 6	4.88

5/11-18G1. Constructed by Geological Survey on property of I. W. Hellman Ranch. About 2 miles east of Seal Beach, 1,360 feet south and 1.35 miles east of intersection of Westminster and Bolsa Avenues, 12 feet east of T-lane south and 1.5 feet west of fence along lane. Bored water-table well, diameter 1 1/4 inches, depth 20.3 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and 4.29 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Sept. 9, 1941	-2.43	Dec. 29, 1941	+0.13	July 28, 1942	-1.26
Nov. 15	-1.24	Jan. 21, 1942	+0.67	Sept. 30	-2.72
Dec. 24	-.02	Mar. 28	-.31	Nov. 6	-1.80

5/11-18G2. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 2,380 feet south and 1.35 miles east from intersection of Westminster and Bolsa Avenue, 1,020 feet south of well 11G1, 10 feet east of T-lane south, and 1.5 feet west of fence along lane. Bored water-table well, diameter 1 1/4 inches, depth 20.3 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and 5.10 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Sept. 8, 1941	-2.44	Dec. 29, 1941	+0.88	July 28, 1942	-1.24
Nov. 15	-.36	Jan. 21, 1942	+1.06	Sept. 30	-2.44
Dec. 24	+0.65	Mar. 27	-.24	Nov. 6	-1.64

5/11-18N1. Geological Survey permanent observation well, on property of Alamitos Land Co. About 2 miles southeast of Seal Beach, 5,350 feet south of Bolsa Avenue, 9,700 feet west of Bolsa Chica Avenue, about 700 feet southwest of Hog Island, and 168 feet southwest of well 18P1. Well drilled July 1941 to 380 feet, cased to 250 feet. Welded hard red steel casing, diameter 6 inches to 70 feet, 4 inches from 70 to 250 feet; perforated from 179 to 209 and from 229 to 249 feet. Shallow water shut off by cementing at 155 feet. Companion to well 18P1, which taps shallow water. Measuring point, top east side of casing at chisel cuts, 2.20 feet above land-surface datum and 7.05 feet above sea-level datum of 1941. Water-level recorder maintained on well Aug. 23, 1941, to June 15, 1942, by Geological Survey. Water level fluctuates with tide; greatest daily range about 3.8 feet.

a Flowing.

b Height of static level.

c Pumping about 900 gallons a minute.

5/11-18N1. Geological Survey--Continued.

Highest daily water level, in feet below land-surface datum, 1941-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Aug. 25, 1941	3.65	Dec. 5, 1941	2.82	Mar. 15, 1942	2.77
31	(a)	10	3.17	20	3.37
Sept. 5	3.15	15	2.37	25	3.81
10	3.70	20	2.00	31	3.39
15	3.58	25	3.58	Apr. 5	3.23
20	2.97	31	2.38	10	3.47
25	3.20	Jan. 5, 1942	3.00	15	2.81
30	3.29	10	3.65	20	3.15
Oct. 5	3.08	15	1.90	25	3.60
10	3.67	20	3.26	30	2.51
15	3.65	25	3.60	May 5	2.87
20	2.38	31	2.77	10	3.32
25	3.01	Feb. 5	3.60	15	3.12
31	3.47	10	2.96	20	6.67
Nov. 5	3.02	15	2.27	25	3.47
10	3.59	20	3.75	31	2.20
15	3.00	25	3.58	June 5	3.77
20	2.05	28	3.10	10	2.83
25	3.85	Mar. 5	3.55	14	2.67
30	2.82	10	3.65		

5/11-18P1. Geological Survey permanent observation well, on property of Alamitos Land Co. About 2 miles southeast of Seal Beach, 5,200 feet south of Bolsa Avenue, and 9,500 feet west of Bolsa Chica Avenue. Well drilled July 1941 to 240 feet, cased to 125 feet. Welded hard red steel casing, diameter 6 inches, perforated from 109 to 124 feet. Deeper water shut off by cement plug reaching from 135 to 150 feet below land surface. Companion to well 18N1. Measuring point, top east side of casing at chisel cuts, 1.50 feet above land-surface datum and 6.50 feet above sea-level datum of 1941. Reference bench mark, southeast corner concrete well curb; chiseled square, 1.52 feet below measuring point and 4.78 feet above sea-level datum of 1941. Water-level recorder maintained on well Aug. 22, 1941, to June 15, 1942, by Geological Survey. Water level fluctuates with tide; greatest daily range about 3.9 feet.

Highest daily water level, in feet, with reference to
land-surface datum, 1941-42
(From recorder charts)

Sept. 1, 1941	+0.40	Dec. 10, 1941	-0.01	Mar. 15, 1942	+0.19
5	+36	15	+81	20	(a)
10	-38	20	+1.19	25	-.91
15	-.29	25	-.46	31	-.50
20	+34	31	+79	Apr. 5	-.09
25	-.01	Jan. 5, 1942	+15	10	-.59
30	-.02	10	-.56	15	+0.04
Oct. 5	+24	15	+1.24	20	-.30
10	-.41	20	-.14	25	-.70
15	-.36	25	-.49	30	+32
20	+91	31	+36	May 5	+0.04
25	+26	Feb. 5	-.68	10	-.45
31	-.21	10	+10	15	-.16
Nov. 5	+24	15	+81	20	-.84
10	-.38	20	-.74	25	-.60
15	+24	25	-.56	31	+72
20	+19	28	-.07	June 5	-.98
25	-.67	Mar. 5	-.79	10	+06
30	+39	10	-.68	15	-.21
Dec. 5	+43				

a Recorder not operating.

5/11-18P2. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 1 mile south and 1.12 miles east from intersection of Westminster and Bolsa Avenues, 600 feet southwest of Hog Island, and 42 feet south of permanent observation well 18P1. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 16.1 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and 5.91 feet above sea-level datum of 1941. Reference bench mark, 7 feet northwest of well, on southwest corner of concrete foundation block; chiseled square, 0.91 foot below measuring point and 5.00 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 8, 1941	1.99	Jan. 21, 1942	2.12	Sept. 30, 1942	2.18
Nov. 14	2.28	Mar. 27	2.64	Oct. 2	2.29
Dec. 24	2.01	July 28	2.23	Nov. 6	2.24
29	1.72				

5/11-18P3. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 0.9 mile south and 1.23 miles east from intersection of Westminster and Bolsa Avenues, 680 feet northeast of permanent observation well 18P1, 400 feet southeast of Hog Island, 17 feet southeast of lane. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 23.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 5.25 feet above sea-level datum of 1941.

Water level, in feet with reference to land-surface datum, 1941-42

Sept. 8, 1941	-3.35	Jan. 21, 1942	+0.01	Sept. 30, 1942	-2.12
Nov. 15	-1.05	Mar. 27	-1.41	Oct. 2	-2.15
Dec. 24	-.31	July 28	-2.15	Nov. 6	-1.49
29	-.02				

5/11-18P4. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 0.85 mile south and 1.31 miles east from intersection of Westminster and Bolsa Avenues, 600 feet northeast of well 18P3, at east toe of fill of lane. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 8.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 5.79 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	1.02	Jan. 21, 1942	1.12	July 28, 1942	0.82
Nov. 15	1.19	Mar. 27	3.51	Sept. 30	1.43
Dec. 24	1.08	Apr. 16	1.08	Oct. 2	1.83
29	.69	17	1.36	Nov. 6	.99

5/11-18P5. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 0.95 mile south and 1.2 miles east from intersection of Westminster and Bolsa Avenues, 350 feet southeast of Hog Island and 168 feet S. 53° W. of well 18P3, 10 feet southeast of lane. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 15.3 feet. Water-yielding zone from 13 to 15 feet below land surface. Measuring point, top north side of casing, 3.00 feet above land-surface datum and 7.04 feet above sea-level datum of 1941. Water levels, in feet below land-surface datum, 1942: July 28, 2.95; Sept. 30, 1.04; Oct. 2, 2.01; Nov. 6, 2.44.

5/11-18P6. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles east of Seal Beach, 0.96 mile south and 1.18 miles east from intersection of Westminster and Bolsa Avenues, 424 feet N. $52\frac{1}{2}^{\circ}$ E. of well 18P2 and 10 feet southeast of lane. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 17.0 feet. Measuring point, top north side of casing, 1.40 feet above land-surface datum and 4.90 feet above sea-level datum of 1941. Water levels, in feet below land-surface datum, 1942: July 28, 1.37; Sept. 30, 2.42; Oct. 2, 2.41; Nov. 6, 1.85.

5/11-19D2. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles southeast of Seal Beach, 1.2 miles south of Bolsa Avenue, 1,600 feet northeast of U. S. Highway 101, and 1,200 feet southwest of well 18P1, in tidal marsh, marked by post south of casing. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 19.4 feet. Measuring point, top north side of casing, 1.90 feet above land-surface datum and 4.43 feet above sea-level datum of 1941.

5/11-19D2. Constructed by Geological Survey--Continued.

Water level, in feet below land-surface datum, 1941-42					
Date	Water level	Date	Water level	Date	Water level
Sept. 11, 1941	6.75	Jan. 21, 1942	1.15	July 28, 1942	1.06
Nov. 15	.80	Mar. 27	1.57	Nov. 6	1.12
Dec. 24	1.00				

5/11-20C1. Mr. Wilson. California Division of Water Resources serial No. C-1002d, location No. 557E. About 3.5 miles southeast of Seal Beach, 2,700 feet west of Bolsa Chica Avenue, 170 feet south of Smeltzer Avenue, 20 feet northwest of frame shed, and 30 feet west of drainage ditch, in field. Unused drilled well, diameter 10 inches, depth 540.3 feet. Measuring point, top north side of 12-inch concrete pipe enclosing casing, at chisel cuts, 0.20 foot above land-surface datum and 9.50 feet above sea-level datum of 1941. Additional measurements made in 1933 and weekly since 1934 by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1941-42					
Mar. 14, 1941	a+0.21	Nov. 12, 1941	-1.94	July 8, 1942	-1.45
May 16	(a)	Jan. 15, 1942	+0.07	Oct. 30	-5.66
Aug. 9	-5.21	Mar. 20	-3.09		

5/11-20E1. Lomita Land & Water Co. About 3 miles southeast of Seal Beach, 2,450 feet south of Smeltzer Avenue extended, 4,250 feet west of Bolsa Chica Avenue, 300 feet west of lane, and 6 feet east of concrete foundation, in field. Unused well, diameter 4 inches, depth 170.4 feet. Measuring point, top of pipe clamp at northwest side of casing, 0.90 foot above land-surface datum and 6.55 feet above sea-level datum of 1941. Access to well is had by removing plug in 2-inch pipe cemented inside 4-inch casing.

Water level, in feet, with reference to land-surface datum, 1941-42					
Mar. 17, 1941	(b)	Nov. 17, 1941	+0.78	Mar. 20, 1942	-0.67
May 17	(b)	Jan. 9, 1942	(b)	July 8	+1.12
Aug. 8	-2.49	23	+4.79	Oct. 29	-2.67

5/11-20H2. Joseph Brazil. California Division of Water Resources serial No. C-991p and location No. 557B. About 4 miles southeast of Seal Beach, 270 feet north of Heil Avenue, 300 feet west of Bolsa Chica Avenue, 400 feet northeast of house, in frame pump house in field. Drilled domestic well, diameter 12 inches, depth 226.7 feet, casing reported perforated from 560 to 585 feet below land surface. Measuring point, top south side of casing at chisel cuts, 1.50 feet above land-surface datum and 13.55 feet above sea-level datum of 1941. Additional measurements made irregularly 1929-30 and into 1931 by San Gabriel Valley Protective Association.

Water level, in feet below land-surface datum, 1941-42					
Mar. 11, 1941	c4.0	Nov. 8, 1941	d6.70	July 8, 1942	6.42
May 16	2.04	Jan. 15, 1942	1.67	Oct. 30	9.04
Aug. 8	d8.95	Mar. 20	8.52		

5/11-20L2. Lomita Land & Water Co. About 3.5 miles southeast of Seal Beach, 3,100 feet south of Smeltzer Avenue, 3,800 feet west of Bolsa Chica Avenue, 80 feet west of ungraded lane, in field. Unused well, diameter 4 inches, depth 157.5 feet. Measuring point, top north side of 6-inch standpipe over casing, 9.00 feet above land-surface datum and 17.85 feet above sea-level datum of 1941. Water-level recorder maintained on well Jan. 25 to July 27, 1942, by Geological Survey.

Highest daily water level, in feet, with reference to land-surface datum, 1942

(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	+1.55	Feb. 15	+1.25	Mar. 2	e-1.98	Mar. 25	-3.91
31	+1.68	20	-1.90	10	(f)	31	-3.65
Feb. 5	+1.57	25	-1.86	17	e-3.81	Apr. 5	-2.73
10	+1.88	28	-1.46	20	-3.98	13	e-1.18

a Flowing during measurement.

b Flowing.

c Pumping.

d Pump shut off prior to measurement.

e Tape measurement.

f Recorder not operating.

5/11-20L2. Lomita Land & Water Co.--Continued.

Highest daily water level, in feet, with reference to
land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 15	-0.69	May 15	+0.44	June 15	-2.38	July 15	-3.82
20	+0.04	20	+0.06	20	-2.75	20	-4.14
25	+0.45	25	-0.86	25	-2.04	25	-4.28
30	+0.59	31	-1.41	29	a-2.27	27	-4.58
May 5	+0.70	June 5	-2.55	July 6	a-3.02	Aug. 3	a-5.46
10	+0.54	10	-2.58	13	a-3.59	10	a-6.10

5/11-21H2. Lloyd Edwards. California Division of Water Resources serial No. C-992g and location No. 577B. About 5 miles north of Huntington Beach, 1,000 feet north of Heil Avenue, and 650 feet west of Springdale Avenue, 300 feet west of barn, at concrete pump foundation in field. Unused well, diameter 4 inches, reported depth 525 feet. Measuring point, top north side of gate valve, 1.00 foot above land-surface datum and 15.1 feet about sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 6, 1941	-1.71	Nov. 7, 1941	-2.48	July 8, 1942	(d)
May 16	bcd+2.5	Jan. 15, 1942	cd+5.48	Oct. 29	-8.62
Aug. 8	-1.63	Mar. 20	-2.62		

5/11-21M3. George J. McDonald. About 4 miles east of Seal Beach, 700 feet south of Heil Avenue, 75 feet east of Bolsa Chica Avenue, 75 feet south of stucco house, in frame pump house. Drilled well, diameter 8 inches, depth 225.7 feet. Casing perforated from 203 to 213 feet and 225 to 228 feet below land surface. Measuring point, top west side of casing, beneath pump, 1.3 feet above land-surface datum and 18.05 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 11, 1941	9.15	Nov. 8, 1941	11.80	July 8, 1942	11.35
May 17	8.02	Jan. 15, 1942	7.21	Oct. 30	13.27
Aug. 8	13.62	Mar. 20	13.04		

5/11-21P4. William A. Schonle. About 4.5 miles northwest of Huntington Beach, 225 feet north of Wintersburg Avenue, 400 feet west of Graham Street, and 10 feet northeast of frame building. Drilled domestic and irrigation well, diameter 10 inches, reported depth 102 feet. Casing perforated from 50 to 53 feet and 70 to 73 feet below land surface. Measuring point, top west side of casing at seam, 1.00 foot above land-surface datum and 3.25 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 14, 1941	(d)	Nov. 7, 1941	(de)	July 8, 1942	(d)
May 16	(d)	Jan. 15, 1942	(d)	Oct. 29	+3.38
Aug. 8	+0.80				

5/11-21R1. E. Kettler. About 4.5 miles north of Huntington Beach, 1,100 feet north of Wintersburg Avenue, and 55 feet west of Springdale Avenue, lone casing in field. Drilled irrigation well, diameter 8 inches, depth 100.0 feet. Casing reported perforated from 60 to 100 feet below land surface. Measuring point, top of casing, 0.50 foot above land-surface datum and 8.8 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Mar. 6, 1941	0.31	Nov. 13, 1941	1.18	July 8, 1942	2.64
May 16	(d)	Jan. 15, 1942	(d)	Oct. 29	3.52
Aug. 8	4.09	Mar. 20	7.82		

a Tape measurement.

b Measurement approximate.

c Height of static level.

d Flowing.

e Estimated flow 1 gallon a minute.

5/11-22L3. George B. Crane. About 1.5 miles west of Wintersburg, 2,250 feet north of Wintersburg Avenue, 150 feet west of Edwards Street, 85 feet southeast of well 22L4, and 15 feet southwest of frame shed. Drilled irrigation well, diameter 12 inches, reported depth 112 feet. Measuring point, top west side of casing, at land-surface datum and 13.6 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42					
Date	Water level	Date	Water level	Date	Water level
Mar. 3, 1941	4.50	Nov. 7, 1941	5.49	July 8, 1942	a7.52
May 16	3.06	Jan. 15, 1942	2.23	Oct. 29	7.66
Aug. 8	9.02	Mar. 20	(a)		

5/11-22N2. George B. Crane. California Division of Water Resources serial No. C-996g and location No. 578D. About 2 miles west of Wintersburg, 1,080 feet north of Wintersburg Avenue, 450 feet east of Springdale Avenue, open casing in field. Drilled irrigation well, diameter 8 inches, depth 76.0 feet. Measuring point, top east side of casing at seam, at land-surface datum and 9.6 feet above sea-level datum of 1941. Measurements discontinued in 1942, after pump was installed on well. Additional measurements made irregularly in 1931 by Orange County Flood Control District. Water levels, in feet below land-surface datum, 1941: Mar. 5, 1.53; May 16, 0.70; Nov. 13, 2.39.

5/11-23A2. Boulevard Gardens Water Co. About 1 mile north of Wintersburg, 1,200 feet south of Smeltzer Avenue, 450 feet west of Huntington Beach Boulevard, 85 feet north of Holt Street, 20 feet south of public-supply well 23A1, and 1 foot south of pump house painted white. Unused drilled well, diameter 7 inches, depth 219.7 feet. Measuring point, top east side of casing, at land-surface datum and 25.4 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Apr. 2, 1941	11.75	Nov. 10, 1941	12.85	July 7, 1942	17.29
May 15	10.27	Jan. 14, 1942	9.16	Oct. 29	16.27
Aug. 13	b19.20	Mar. 20	20.55		

5/11-23B1. Charles Cook. About 1 mile north of Wintersburg, 200 feet south of Smeltzer Avenue, 1,340 feet west of Huntington Beach Boulevard, in unpainted frame pump house in field. Drilled irrigation well, diameter 10 inches. Measuring point, lower lip of discharge pipe on pump, 0.40 foot above land-surface datum, and 25.9 feet above sea-level datum of 1941. To adjust tape reading for horizontal correction, subtract 0.4 foot.

Water level, in feet below land-surface datum, 1941-42					
Mar. 25, 1941	9.87	Nov. 10, 1941	9.51	July 7, 1942	10.68
May 15	6.16	Jan. 14, 1942	4.39	Oct. 29	13.55
Aug. 13	13.09	Mar. 19	(a)		

5/11-24A1 (137, p. 98, Santa Ana quadrangle well 196). Anaheim Sugar Co. California Division of Water Resources serial No. C-993g and location No. 14427. About 1 mile northeast of Wintersburg, 130 feet south of Smeltzer Avenue, 780 feet west of Cannery Street, in field, 10 feet south of 16-inch irrigation hydrant protruding 2 feet above land surface. Unused drilled well, diameter 7 inches, depth 26.0 feet. Measuring point, top west side of casing at chisel cuts, 1.50 feet above land-surface datum and 34.9 feet above sea-level datum of 1941. Well casing broken off at land surface early in 1942; measurements discontinued. Additional measurements made irregularly in 1931 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1904, 1941-42					
Mar. 8, 1904	(c)	Aug. 13, 1941	(d)	Jan. 13, 1942	12.77
Feb. 27, 1941	15.79	Nov. 8	17.66	Mar. 20	24.36
May 15	14.43				

5/11-24A3. Anaheim Sugar Co. About 1 mile northeast of Wintersburg, 50 feet south of Smeltzer Avenue and 410 feet west of Cannery Avenue, lone casing in field. Unused drilled well, diameter 10 inches, depth 500.1 feet. Measuring point, top south side of casing at chisel cuts, 0.90 foot above land-surface datum and 36.2 feet above sea-level datum of 1941.

a Pumping.

b Well 23A1, 20 feet north, shut down prior to measurement.

c Flowing.

d Dry.

5/11-24A3. Anaheim Sugar Co.--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 27, 1941	21.60	Nov. 8, 1941	19.26	July 7, 1942	23.54
May 15	16.05	Jan. 13, 1942	14.74	Oct. 28	23.14
Aug. 13	26.01	Mar. 20	24.87		

5/11-25A1. J. Ishii. California Division of Water Resources serial No. C-999m and location No. 14428A. About 1 mile east of Wintersburg, 600 feet south of Wintersburg Avenue, 600 feet west of Cannery Avenue, in small pump house in field. Drilled irrigation well, diameter 10 inches. Measuring point, top west side of casing, 0.50 foot above land-surface datum which is 27 feet above mean sea level (interpolated from topographic map). Additional measurements made irregularly in 1931 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 25, 1941	15.00	Nov. 8, 1941	12.36	July 6, 1942	12.94
May 19	7.60	Jan. 14, 1942	7.02	Oct. 29	15.92
Aug. 13	16.26	Mar. 19	19.15		

5/11-25M1. Cameron Tract Community Well. California Division of Water Resources serial No. C-999h and location No. 14419B. About half a mile south of Wintersburg, 225 feet south of Slater Avenue, 250 feet east of Huntington Beach Boulevard, and 20 feet west of Cameron Street. Unused well, diameter 4 inches, depth 379.2 feet. Measuring point, top of flanged casing, 0.80 foot above land-surface datum and 26.43 feet above mean sea level (altitude by California Division of Water Resources). Additional measurements made irregularly in 1931 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 19, 1941	14.1	Nov. 7, 1941	11.26	July 7, 1942	12.13
May 19	6.67	Jan. 14, 1942	5.95	Oct. 29	14.65
Aug. 9	14.95	Mar. 19	18.85		

5/11-25N1. Huntington Beach Land Co. About 1 mile south of Wintersburg, 275 feet north of Talbert Avenue and 225 feet west of Huntington Beach Boulevard, in cemetery, 10 feet south of water-tank tower. Unused drilled well, diameter 7 inches, depth 123.4 feet. Measuring point, top south side of casing, 0.80 foot above land-surface datum which is 43 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 19, 1941	41.08	Nov. 1, 1941	39.52	July 7, 1942	41.55
May 19	37.39	Jan. 14, 1942	36.72	Oct. 29	41.21
Aug. 9	42.68	Mar. 19	43.88		

5/11-25F1. E. J. Lecrivain. Geological Survey continuing observation well. California Division of Water Resources serial No. C-999f and location No. 14419A. About 3.5 miles north of Huntington Beach, 215 feet north of Talbert Boulevard, and 330 feet west of Newland Street, at north end of cylindrical steel tank. Drilled domestic well, diameter 12 inches, reported depth 150 feet. Water level measured about monthly since 1930 by Orange County Flood Control District. Measuring point, northeast side of pump base, 0.26 foot above concrete block, 1.10 feet above land-surface datum and 49.1 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Aug. 5, 1930	39.25	Aug. 12, 1931	45.00	Nov. 25, 1932	38.46
Sept. 6	40.16	Sept. 15	41.68	Dec. 20	36.47
Oct. 4	38.13	Oct. 9	40.51	Feb. 28, 1933	35.99
Nov. 6	37.22	Nov. 4	39.55	Mar. 13	36.33
23	34.57	Dec. 22	36.24	16	37.74
26	35.76	Jan. 13, 1932	35.17	Apr. 17	42.85
Feb. 19, 1931	35.96	Feb. 25	33.90	July 10	41.56
Mar. 20	44.90	Apr. 1	35.92	Sept. 1	42.25
Apr. 7	45.75	18	37.48	Jan. 23, 1934	37.17
May 18	37.81	July 19	40.99	June 14	44.58
June 3	37.80	Aug. 19	40.15	Sept. 25	45.50
July 7	40.32	Oct. 26	38.88	Jan. 22, 1935	38.15

a Below sea level.

5/11-25F1. E. J. Lecrivain--Continued.

Water level, in feet below land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
July 22, 1935	44.09	June 9, 1938	b42.03	Sept. 20, 1940	47.65
Aug. 29	45.40	July 11	42.92	Oct. 21	45.63
Nov. 18	42.23	Aug. 8	44.97	Jan. 6, 1941	40.55
Mar. 30, 1936	47.98	Sept. 22	44.69	Feb. 18	38.91
Apr. 24	44.92	Oct. 17	43.16	Mar. 21	36.57
May 20	45.62	Nov. 21	b42.56	Apr. 25	38.09
June 22	a48.10	Dec. 8	41.43	June 12	37.67
July 24	a50.93	Jan. 17, 1939	b39.68	July 10	40.07
Sept. 2	ab51.43	Mar. 6	36.66	Aug. 22	42.14
Oct. 7	ab50.50	24	40.35	Sept. 16	42.99
Nov. 17	46.64	Apr. 27	38.86	Oct. 9	40.60
Feb. 3, 1937	42.82	May 25	42.53	Nov. 13	36.92
Apr. 13	39.43	June 29	44.70	Dec. 15	35.38
May 18	41.13	Aug. 2	46.93	Jan. 12, 1942	34.09
June 11	c42.63	Sept. 18	46.88	Feb. 9	34.84
July 20	c46.00	Oct. 26	41.76	Mar. 13	44.40
Aug. 13	47.00	Nov. 30	41.47	Apr. 13	38.80
Sept. 13	46.87	Dec. 21	41.24	May 12	37.08
Oct. 11	45.10	Jan. 25, 1940	39.38	June 8	41.67
Nov. 9	44.44	Feb. 29	41.30	July 13	41.65
Dec. 13	40.96	Mar. 27	46.04	Aug. 11	41.81
Jan. 14, 1938	41.79	Apr. 25	41.94	Sept. 3	(b)
Feb. 8	42.76	May 23	43.10	Oct. 2	40.54
Mar. 24	39.24	June 13	44.69	Nov. 10	38.20
Apr. 11	39.09	July 18	47.50	Dec. 10	37.50
May 10	b39.67	Aug. 19	ab49.28		

5/11-26N2. Constructed by Geological Survey on property of Orange County. About 3 miles north of Huntington Beach, 760 feet north of Talbert Avenue, 21 feet east of Golden West Avenue, and 1.2 feet west of power-line pole 135660E. Bored water-table well, diameter 1½ inches, depth 13.3 feet. Measuring point, top north side of casing, 2.20 feet above land-surface datum and 6.21 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42					
Sept. 11, 1941	-1.96	Jan. 21, 1942	+1.12	Mar. 27, 1942	-1.62
Nov. 14	-.05	Feb. 9	+0.76	Nov. 6	-.50
Dec. 23	+0.46				

5/11-27A2. Charles Cook. California Division of Water Resources serial No. C-996b and location No. 598A. About half a mile west of Wintersburg, 120 feet south of Wintersburg Avenue, 100 feet west of Golden West Avenue, 50 feet south of house, in small concrete block. Drilled domestic well, diameter 7 inches, reported depth 120 feet. Measuring point, top south side of casing at chisel cuts, 0.90 foot above land-surface datum and 13.31 feet above sea-level datum of 1941. Reference bench mark, at northeast corner of intersection of Golden West and Wintersburg Avenues, in top of highway post; U. S. Geol. Survey copper nail and washer, 15.05 feet above sea-level datum of 1941. Measurements discontinued early in 1942, when pump was installed on well. Additional measurements made about monthly 1928-31 and into 1932 by San Gabriel Valley Protective Association.

Water level, in feet below land-surface datum, 1941-42					
Mar. 6, 1941	3.45	Aug. 8, 1941	(b)	Jan. 14, 1942	1.71
May 19	2.36	Nov. 7	4.52		

5/11-27B2. Constructed by Geological Survey on property of Orange County. About 4 miles north of Huntington Beach, 0.5 mile west of Golden West Avenue, 26 feet south of Wintersburg Avenue, 15 feet east of Edwards Street, and 1.2 feet southeast of pole C2731(1). Bored water-table well, diameter 1½ inches, depth 23.5 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 6.18 feet above sea-level datum of 1941.

a Below sea level.

b Pumping.

c Shut down in order to measure.

5/11-27B2. Constructed by Geological Survey--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 11, 1941	a8.09	Jan. 20, 1942	3.74	July 9, 1942	4.37
Nov. 14	4.45	Mar. 27	4.32	Nov. 6	a7.66
Dec. 24	3.81				

5/11-27D1. Mrs. Goldie Cleaver. About 1.5 miles west of Wintersburg, 25 feet south of Wintersburg Avenue, and 350 feet east of Springdale Avenue, lone casing with gate valve, in field. Domestic and irrigation well, diameter 4 inches, reported depth 490 feet. Measuring point, for water levels below top of casing, top north side of gate valve, 1.50 feet above land-surface datum and 8.66 feet above sea-level datum of 1941; for water levels above top of casing, center line of outside faucet at south side of dwelling 180 feet east of well, and 9.54 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

Mar. 5, 1941	+3.9	Nov. 7, 1941	+3.1	July 8, 1942	(b)
May 16	+8.4	Jan. 15, 1942	+13.1	Oct. 29	-5.56
Aug. 8	+3.4	Mar. 20	+1.8		

5/11-27L1. Joseph Callens. California Division of Water Resources serial Nos. C-995x and C-995e, and location Nos. 589B and 589C. About 1.5 miles southwest of Wintersburg, 420 feet south of Slater Avenue, and 1,000 feet west of Edwards Street, under pump in field. Drilled irrigation well, diameter 10 inches, reported depth 500 feet. Measuring point, for water levels greater than 2½ feet above land-surface datum, top of 1-inch valve in discharge line of centrifugal pump; top of valve, when in vertical position, is 3.2 feet above flange atop casing, 4.1 feet above land-surface datum, and 7.2 feet above sea-level datum of 1941. Additional measurements made irregularly 1930-32 and into 1933 by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1941-42

Mar. 3, 1941	+4.3	Nov. 7, 1941	(d)	July 8, 1942	(b)
May 17	+7.1	Jan. 14, 1942	+13.6	Oct. 29	(d)
Aug. 8	+6.6	Mar. 20	(d)		

5/11-27P1. Charles Swarner. About 1.5 miles southwest of Wintersburg, 2,130 feet south of Slater Avenue and 150 feet west of Edwards Street, lone casing in field. Unused drilled well, diameter 12 inches. Measuring point, top southeast side of casing, 0.40 foot above land-surface datum which is 2 feet above mean sea level (interpolated from topographic map). Measurements discontinued in 1942. Water levels, in feet below land-surface datum: Mar. 3, 1941, 0.82; May 17, 1941, 0.32; Aug. 8, 1941, 1.58; July 8, 1942, 1.61.

5/11-28A1. A. Ruoff. Geological Survey continuing observation well. California Division of Water Resources serial No. C-995n and location No. 578A. About 4 miles northwest of Huntington Beach, 240 feet south of Wintersburg Avenue, and 200 feet west of Springdale Avenue, in frame pump house 30 feet southwest of shed. Drilled irrigation well, diameter 10 inches, reported depth 453 feet. Water level measured monthly since 1930 by Orange County Flood Control District. Measuring point, hole 3/8 of an inch in diameter in outlet plug, 0.67 foot above top of casing, 1.08 feet above land-surface datum, 0.33 foot above top southwest corner of concrete pump foundation, and 8.21 feet above sea-level datum of 1941. Records furnished by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1930-42

May 17, 1930	+8.3	Oct. 3, 1930	-2.15	Dec. 22, 1930	-3.52
June 20	+7.8	Nov. 3	-1.58	Jan. 5, 1931	-.98
July 9	+7.8	7	-1.28	26	+6.43
Sept. 3	-2.55	26	-4.01	Feb. 19	fa-19.65

a Below sea level.

b Flowing.

c Measurement approximate.

d Below measuring point; casing not open.

e Height of static level.

f Pumping.

5/11-28A1. A. Ruoff--Continued.

Water level, in feet, with reference to land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
Mar. 14, 1931	-1.99	Apr. 22, 1936	-1.63	Sept. 18, 1939	b-7.59
20	(a)	May 20	-2.42	Oct. 26	b-10.19
21	+1.71	June 22	-3.98	Nov. 30	-3.57
Apr. 4	+1.30	July 22	-7.13	Dec. 21	-1.10
28	+1.79	Sept. 1	b-9.77	Jan. 25, 1940	(a)
May 15	+3.00	Oct. 7	b-19.80	Feb. 29	+3.33
June 3	+3.30	Nov. 10	b-18.29	Mar. 27	(c)
July 7	+1.00	13	-12.40	Apr. 25	+2.98
Aug. 12	b-11.10	Feb. 3, 1937	-4.43	May 23	+3.04
Sept. 12	b-12.08	Apr. 12	(a)	June 13	+2.22
Oct. 9	b-13.27	May 18	(a)	July 18	-2.97
Nov. 6	b-12.41	June 17	(a)	Aug. 19	-6.35
Dec. 15	-2.56	July 19	-2.78	Sept. 20	b-17.22
Jan. 13, 1932	+4.62	Aug. 12	-3.15	Oct. 21, 1940	b-14.29
Feb. 24	+8.40	Sept. 14	-6.88	Jan. 6, 1941	+3.58
Apr. 18	+5.97	Oct. 11	b-12.22	Feb. 18	+3.68
May 17	+6.05	Nov. 9	b-16.56	Mar. 21	(a)
July 21	+5.10	Dec. 13	b-9.30	Apr. 18	+10.48
Sept. 15	+7.73	Jan. 14, 1938	-2.73	May 15	(a)
Oct. 25	b-8.71	Feb. 8	-5.78	June 12	(a)
Nov. 25	-4.78	Mar. 24	(a)	July 10	+12.51
Dec. 20	+9.93	Apr. 11	(a)	Aug. 8	(a)
Feb. 3, 1933	+8.19	May 2	+4.20	Sept. 16	-2.10
Mar. 14	(a)	10	+4.33	Oct. 9	+0.08
Apr. 15	(a)	31	+4.95	Nov. 13	+5.58
July 10	(a)	July 11	+2.72	Dec. 15	+7.18
Aug. 2	+2.45	Aug. 8	+2.32	Jan. 12, 1942	(a)
Sept. 1	-2.48	Sept. 22	b-13.38	Feb. 6	+14.16
Nov. 7	-4.72	Oct. 17	b-13.95	Mar. 13	(c)
Jan. 23, 1934	+6.06	Nov. 21	-4.67	Apr. 13	(a)
June 14	-0.86	Dec. 8	(c)	May 8	+11.56
Sept. 25	-6.95	Jan. 17, 1939	+5.04	June 11	(a)
Jan. 22, 1935	+5.07	Mar. 6	+8.26	July 10	(a)
Mar. 22	+6.55	9	+9.13	Aug. 11	(a)
May 6	+9.88	24	+7.09	Sept. 1	-2.86
July 19	(a)	May 29	+7.31	Oct. 2	-4.75
Aug. 29	-2.00	June 29	-.62	Nov. 10	(a)
Nov. 14	b-12.87	Aug. 2	-1.39	Dec. 10	(a)
Mar. 30, 1936	-4.89				

5/11-28H2. Callens Brothers. California Division of Water Resources serial No. C-995p and location No. 579B. About 2 miles west of Wintersburg, 600 feet north of Slater Avenue and 40 feet west of Springdale Avenue, in field, 8-inch gate valve atop casing. Drilled irrigation well, diameter 14 inches, reported depth 354 feet. Casing perforated from 70 to 82 feet and 306 to 354 feet below land surface. Measuring point for water levels higher than 0.2 foot above land surface, top west side of casing at chisel cuts, 0.20 foot above land-surface datum and 5.27 feet above sea-level datum of 1941. Well flowing on Mar. 14, May 17, and Aug. 8, 1941, and Jan. 15 and July 8, 1942; not flowing on Nov. 7, 1941, and Oct. 29, 1942; pumping on Mar. 19, 1942. Static level about 15 feet above land surface on Jan. 15, 1942. Additional measurements made irregularly 1931-34 and into 1935 by Orange County Flood Control District.

5/11-28H4. Constructed by Orange County. About 4 miles north of Huntington Beach and 1 mile west of Golden West Avenue, 15 feet north of Slater Avenue, 33 feet west of Springdale Street, and 1.5 feet west of power-line pole 115540E. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 10.7 feet. Measuring point, top north side of casing, 1.50 feet above land-surface datum and 6.30 feet above sea-level datum of 1941.

- a Flowing.
- b Below sea level.
- c Pumping.

5/11-28H4. Constructed by Orange County--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 11, 1941	a6.85	Jan. 20, 1942	a5.73	July 9, 1942	a4.86
Nov. 14	a8.11	Mar. 27	3.82	Nov. 6	a8.15
Dec. 24	a6.13				

5/11-28J2. Constructed by Geological Survey on property of Orange County. About 3.5 miles northwest of Huntington Beach and 1.25 miles west of Golden West Avenue; 1,275 feet south of Slater Avenue, 18 feet west of lane that is 0.25 mile west of Springdale Avenue extended, 4 feet east of fence line, and 2.5 feet west of power-line pole. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 14.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 3.78 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	a5.69	Jan. 20, 1942	1.79	July 9, 1942	a5.27
Nov. 14	2.45	Mar. 27	a2.88	Nov. 6	a3.77
Dec. 24	1.81				

5/11-29C4. Sunset Land & Water Co. Geological Survey continuing observation well. About 1 mile southeast of Sunset Beach, 750 feet north and 2,750 feet east from intersection of U. S. Highway 101 and Los Patos Avenue, 25 feet west of T-lane north, 6 feet north of well 29C3, open casing enclosed in 2- by 3-foot covered box. Unused drilled well, diameter 10 inches (7-inch inside casing), depth 157.0 feet. Measuring point, top west side of 10-inch casing at 4 chisel cuts, 2.70 feet above land-surface datum and 10.60 feet above sea-level datum of 1941. Water-level recorder on well maintained Dec. 23, 1941, to Aug. 14, 1942, by Geological Survey. Reference bench mark, about 750 feet south of well along north side of Los Patos Avenue, in northeast angle of T-lane north, on top of concrete curb, about 5 feet east of culvert; chiseled circle, 10.52 feet above sea-level datum of 1941.

Water level at noon, in feet, with reference to land-surface datum, 1941-42
(From recorder charts)

Mar. 17, 1941	b-0.01	Feb. 27, 1942	-0.69	May 25, 1942	-0.27
May 17	b+.72	Mar. 5	-1.97	31	-.85
Aug. 8	b-4.85	10	-2.87	June 5	-1.85
Nov. 7	b-4.65	15	-3.57	10	-1.93
Dec. 22	b+.33	20	-3.33	15	-1.83
25	+.54	25	-3.32	20	-2.27
29	+.82	31	-3.02	25	-1.52
Jan. 6, 1942	+1.26	Apr. 5	-2.33	30	-1.76
10	+1.38	10	-1.22	July 5	-2.10
15	+1.43	15	-.31	11	b-2.71
20	+1.63	20	+.27	13	b-2.90
25	+1.72	25	+.73	20	b-3.31
31	+1.85	30	+.84	25	b-3.51
Feb. 5	+1.90	May 5	+1.03	27	b-3.98
10	+1.20	10	+.95	Aug. 3	b-4.48
15	+.60	15	+.81	10	b-5.06
20	-.15	20	+.38	14	-5.89
25	-.37				

a Below sea level.

b Tape measurement.

5/11-29E1. Geological Survey permanent observation well, on property of Bolsa Land Co. About 1 mile southeast of Sunset Beach, 2,000 feet east and 58.5 feet south from intersection of U. S. Highway 101 and Los Patos Avenue, and 50 feet west of well 29E2, in pasture. Well drilled July 1941 to 410 feet, cased to 220 feet. Welded hard red steel casing, diameter 6 inches to 60 feet, 4 inches to 220 feet, perforated from 169 to 219 feet. Shallow water shut off by cementing at 133 feet. Companion to well 29E2, which taps shallow water. Measuring point, top north side of casing at chisel cuts, 1.50 feet above land-surface datum and 9.06 feet above sea-level datum of 1941. Reference bench mark, top northeast corner of concrete well curb; chiseled square, 1.38 feet below measuring point and 7.68 feet above sea-level datum of 1941. Water-level recorder maintained on well Aug. 23, 1941, to June 15, 1942, by Geological Survey. Water level fluctuates with tide; greatest daily range about 3.0 feet.

Highest daily water level, in feet below land-surface datum, 1941-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Aug. 25, 1941	5.51	Dec. 5, 1941	4.95	Mar. 10, 1942	5.78
31	(a)	10	5.18	15	5.10
Sept. 5	5.10	15	4.68	20	5.55
10	5.46	20	5.81	25	5.96
15	5.45	25	5.64	31	5.67
20	5.03	31	4.67	Apr. 5	5.35
25	5.15	Jan. 5, 1942	5.17	10	5.75
30	5.24	10	5.71	15	5.28
Oct. 5	5.05	15	4.33	20	5.45
10	5.45	20	5.35	25	5.85
15	5.48	25	5.68	30	5.03
20	4.48	31	5.05	May 5	5.24
25	(a)	Feb. 5	5.74	10	5.67
31	5.43	10	5.23	15	5.51
Nov. 5	5.07	15	4.65	20	5.93
10	5.44	20	5.81	25	5.77
15	5.13	25	5.71	31	4.69
20	4.34	28	5.34	June 5	6.05
25	5.74	Mar. 5	5.71	10	5.27
30	5.00				

5/11-29E2. Geological Survey permanent observation well, on property of Bolsa Land Co. About 1 mile southeast of Sunset Beach, 2,050 feet east and 58.5 feet south from intersection of U. S. Highway 101 and Los Patos Avenue. Well drilled July 1941 to 131 feet, cased to 120 feet. Welded hard red steel casing, diameter 6 inches; perforated from 100 to 120 feet. Companion to well 29E1. Measuring point, top north side of casing, 1.50 feet above land-surface datum and 8.07 feet above sea-level datum of 1941. Reference bench mark, top northeast corner of concrete well curb, chiseled square, 1.15 feet below measuring point and 6.92 feet above sea-level datum of 1941. Water-level recorder maintained on well Aug. 23, 1941, to June 15, 1942. Water level fluctuates with tide; greatest daily range about 1.5 feet.

Highest daily water level, in feet below land-surface datum, 1941-42
(From recorder charts)

Aug. 25, 1941	4.75	Nov. 10, 1941	4.75	Jan. 25, 1942	5.02
31	4.75	15	4.65	31	4.66
Sept. 5	4.61	20	4.35	Feb. 5	5.02
10	4.80	25	4.98	10	4.75
15	4.84	30	4.58	15	4.32
20	4.55	Dec. 5	4.51	20	5.09
25	4.68	10	4.61	25	5.05
30	4.72	15	4.36	28	4.82
Oct. 5	4.54	20	4.06	Mar. 5	5.17
10	4.73	25	4.94	10	5.18
15	4.82	31	4.29	15	4.64
20	4.16	Jan. 5, 1942	4.64	20	4.98
25	4.42	10	5.06	25	5.24
31	4.84	16	4.07	31	5.12
Nov. 5	4.61	20	4.73	Apr. 5	4.89

a Recorder not operating.

5/11-29B2. Geological Survey--Continued.

Highest daily water level, in feet below land-surface datum, 1941-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Apr. 10, 1942	5.12	May 5, 1942	4.72	May 31, 1942	4.46
15	4.80	10	5.10	June 5	5.29
20	4.92	15	5.02	10	4.85
25	5.12	20	5.28	15	4.77
30	4.67	25	5.20		

5/11-33A1. Constructed by Geological Survey on property of Bolsa Land Co. About 3.5 miles northwest of Huntington Beach, 2,880 feet south of Slater Avenue and 1,000 feet west of Springdale Avenue extended, 60 feet east of bank of north-south drainage channel. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.3 feet. Measuring point, top north side of casing, 3.00 feet above land-surface datum and 4.14 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	2.89	Jan. 20, 1942	2.09	July 9, 1942	3.44
Nov. 14	1.74	Mar. 27	1.73	Nov. 6	2.88
Dec. 24	1.42				

5/11-33G1. Constructed by Geological Survey on property of Bolsa Land Co. About 3 miles northwest of Huntington Beach, 1.4 miles south of Slater Avenue and 0.8 mile northeast of U. S. Highway 101. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.1 feet. Measuring point, top north side of casing, 3.00 feet above land-surface datum and 4.94 feet above sea-level datum of 1941. Casing removed in 1942.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	1.02	Dec. 24, 1941	1.37	Mar. 27, 1942	a2.48
Nov. 14	1.38	Jan. 20, 1942	1.68	July 9	a5.46

5/11-33L1. Constructed by Geological Survey on property of Bolsa Land Co. About 3 miles northwest of Huntington Beach and 2,400 feet N. 51° E. from well 33N1, in tidal marsh. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 10.9 feet. Measuring point, top north side of casing, 3.00 feet above land-surface datum and 4.17 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	3.75	Jan. 20, 1942	1.82	July 9, 1942	3.50
Nov. 14	2.18	Mar. 27	1.95	Nov. 6	2.02
Dec. 24	1.48				

5/11-33M1. Constructed by Geological Survey on property of Bolsa Land Co. About 3 miles northwest of Huntington Beach, 1,200 feet northeast of U. S. Highway 101, and 1,100 feet N. 51° E. from well 33N1, in tidal marsh. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.6 feet. Measuring point, top north side of casing, 2.5 feet above land-surface datum and 3.55 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	4.75	Jan. 20, 1942	1.38	July 9, 1942	4.44
Nov. 14	2.15	Mar. 27	1.48	Nov. 6	3.00
Dec. 24	1.13				

5/11-33N1. Constructed by Geological Survey on property of Bolsa Land Co. About 3 miles northwest of Huntington Beach, 1.97 miles southeast from intersection of U. S. Highway 101 and Los Patos Avenue and 100 feet northeast of highway, at foot of sand dune. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.3 feet. Measuring point, top north side of casing, 2.50 feet above land-surface datum and 5.87 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	2.89	Jan. 20, 1942	2.11	July 9, 1942	a3.40
Nov. 14	2.70	Mar. 27	2.91	Nov. 6	3.01
Dec. 24	2.22				

a Below sea level.

5/11-34G2. Pacific American Oil Co. About 2 miles north of Huntington Beach, 280 feet north of Ellis Avenue, 530 feet east of Edwards Street, 120 feet west of sheet-metal boiler house, and 35 feet north of private surfaced road, in 3- by 3-foot concrete block. Unused drilled well, diameter 10 inches, depth 118.0 feet. Measuring point, top west side of casing, 0.04 foot below top of concrete block, 0.40 foot above land-surface datum, and 61.85 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 28, 1941	59.0	Nov. 7, 1941	57.32	July 8, 1942	56.57
May 19	56.73	Jan. 14, 1942	56.18	Oct. 29	57.50
Aug. 9	56.47	Mar. 20	56.11		

5/11-34H1. California Division of Water Resources serial No. C-997f and location No. 13190B. About 2 miles north of Huntington Beach, 1,180 feet north of Ellis Avenue, 800 feet west of Golden West Avenue, 130 feet south of unimproved road, on small knoll south of eucalyptus trees. Unused well, diameter 6 inches, depth 72.0 feet. Measuring point, top north side of casing, 0.20 foot above land-surface datum and 43.89 feet above sea-level datum of 1941. Additional measurements made about monthly 1931-35 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 27, 1941	40.63	Nov. 7, 1941	39.47	July 8, 1942	39.23
May 19	38.46	Jan. 14, 1942	37.94	Oct. 29	40.16
Aug. 9	39.42	Mar. 20	39.73		

5/11-34H2. R. W. Brown. About 2 miles north of Huntington Beach, 350 feet north of Ellis Avenue, 600 feet west of Golden West Avenue, 20 feet west of dwelling, and 6 feet east of tank and tower, in concrete block. Unused drilled well, diameter 7 inches, depth 73.3 feet. Measuring point, top south side of casing at west side of pump column, 0.26 foot above concrete foundation, 0.70 foot above land-surface datum and 64.55 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 28, 1941	a70.9	Nov. 7, 1941	59.30	July 8, 1942	58.99
May 19	a68.86	Jan. 14, 1942	58.17	Oct. 29	60.07
Aug. 9	58.94	Mar. 20	58.64		

5/11-35A4. Mrs. Bonnie M. Sage. About 2.5 miles north of Huntington Beach, 700 feet south of Talbert Avenue and 550 feet west of Huntington Beach Boulevard, lone casing in depression. Unused well, diameter 5 inches, depth 499.4 feet. Measuring point, top south side of casing, 1.80 feet above land-surface datum which is 54 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 10, 1941	45.7	Jan. 14, 1942	35.21	July 7, 1942	37.76
Sept. 22	47.28	Mar. 19	44.82	Oct. 29	47.63
Nov. 8	42.94				

5/11-35C2. Baldwin & McIntosh. California Division of Water Resources serial No. C-997a and location No. 13190. About 2.5 miles north of Huntington Beach, 830 feet south of Talbert Avenue, 1,500 feet east of Golden West Avenue, 750 feet west of Gothard Street, in concrete block under windmill. Stock well, depth 103.8 feet. Measuring point, top south side of casing at bent-over portion, 0.20 foot below top of concrete block, 1.00 foot above land-surface datum which is 30 feet above mean sea level (interpolated from topographic map). Additional measurements made about monthly 1930-33 and into 1934 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Feb. 19, 1941	23.7	Nov. 7, 1941	(b)	July 8, 1942	28.21
May 19	(b)	Mar. 20, 1942	42.91	Oct. 29	31.12

a Below sea level.
b Pumping.

5/11-35D2. Constructed by Geological Survey on property of Orange County. About 3 miles north of Huntington Beach, 30 feet south of Talbert Avenue, 550 feet east of Golden West Avenue, and 1 foot south of power-line pole 178118E, on hillside. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 19.5 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 21.50 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 11, 1941	16.77	Jan. 21, 1942	14.42	Mar. 27, 1942	16.77
Nov. 14	15.73	Feb. 9	14.25	Nov. 6	16.49
Dec. 23	14.94				

5/11-35L1. Frank Dispalatro. About 2 miles north of Huntington Beach, 150 feet south of Ellis Avenue, 1,500 feet east of Golden West Avenue, 80 feet south of dwelling, under windmill, 5 feet north of galvanized-iron tank on tower. Drilled irrigation well, diameter 16 inches, reported depth 350 feet. Measuring point, top of 2-inch plank, 0.17 foot above top east side of casing, 1.50 feet above land-surface datum and 53.42 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Feb. 19, 1941	50.00	Jan. 14, 1942	45.07	July 8, 1942	46.55
May 19	45.49	Mar. 19	45.19	Oct. 29	48.21
Nov. 7	46.60				

5/12-1D1. Constructed by Geological Survey on property of I. W. Hellman Ranch. About 2 miles north of Seal Beach, 0.22 mile east of San Gabriel River, 42 feet south of Garden Grove Boulevard, 1 foot south of highway fence, and 1 foot east of fence line along east side of radio-transmitter station property. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 18.8 feet. Measuring point, top north side of casing, 1.5 feet above land-surface datum and 10.98 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 8, 1941	6.26	Jan. 21, 1942	6.81	July 27, 1942	7.85
Nov. 15	7.43	Mar. 27	7.45	Nov. 6	9.22
Dec. 23	7.02				

5/12-11L1. City of Los Angeles, Department of Water and Power well 2. California Division of Water Resources serial No. C-913L and location No. 494. About 1 mile north of Seal Beach, 350 feet northeast of U. S. Highway 101, and 500 feet southeast of the San Gabriel River highway bridge, on right-of-way of Los Angeles Department of Water and Power. Unused drilled well, diameter 10 inches, reported depth 810 feet. Casing perforated from 320 to 358 feet below land surface. Measuring point, lower edge of cut-out, 0.14 foot below top north side of casing, 1.00 foot above land-surface datum and 8.26 feet above sea-level datum of 1941. Water-level recorder installed June 16, 1942, by Geological Survey. Reference bench mark, at San Gabriel River highway bridge, at south end of east parapet wall, in top of concrete sidewalk; Los Angeles County Flood Control District tablet, 15.84 feet above sea-level datum of 1941. All water levels are below sea level.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 16	15.86	Aug. 5	15.89	Sept. 25	16.25	Nov. 16	16.31
20	15.83	10	16.06	30	16.37	20	16.15
25	15.72	15	16.06	Oct. 5	16.32	25	16.20
30	15.77	20	16.07	10	16.36	30	16.32
July 5	15.90	25	15.95	15	16.25	Dec. 5	16.24
10	15.84	31	16.18	20	16.23	10	16.35
15	15.75	Sept. 5	16.18	25	16.30	15	16.31
20	16.11	10	16.10	31	(a)	20	16.30
25	15.85	15	16.11	Nov. 2	16.12	25	15.83
31	16.00	20	16.22	10	(a)	31	16.32

a Recorder not operating.

b Tape measurement.

5/12-12P1. I. W. Hellman Ranch. Geological Survey continuing observation well. California Division of Water Resources serial No. C-910j and location No. 515A. About 1 mile east of Seal Beach, 1,750 feet east and 350 feet north from intersection of Bolsa and Westminster Avenues, in unpainted frame pump house, 20 feet west of driveway. Drilled irrigation well, diameter 12 inches, depth 185.3 feet. Water level measured about weekly 1930-42 by Orange County Flood Control District, also irregularly since September 1941 by Geological Survey. Measuring point, top edge of upper of two 3/4-inch holes in west side of casing, 0.20 foot above land-surface datum and 16.17 feet above sea-level datum of 1941. Records furnished by Orange County Flood Control District, except as indicated.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Nov. 8, 1930	13.32	Jan. 6, 1934	10.34	Feb. 2, 1935	9.60
26	12.43	13	9.89	9	9.48
Dec. 22	10.73	20	9.65	16	9.31
Jan. 9, 1931	8.90	27	9.46	23	9.19
26	7.50	Feb. 3	9.24	Mar. 9	8.92
Feb. 17	7.01	10	9.34	16	8.70
Mar. 2	ab20.29	17	9.59	23	8.68
13	8.50	26	9.87	30	8.62
21	8.77	Mar. 3	9.90	Apr. 6	8.54
Apr. 3	10.03	10	10.56	13	(a)
May 15	ab21.24	17	ab20.41	19	8.51
June 2	9.94	24	11.49	20	8.42
July 7	ab21.64	31	11.21	27	8.66
Aug. 11	ab17.51	Apr. 7	11.39	May 4	8.69
Sept. 11	b16.55	14	11.64	11	8.85
Oct. 5	ab24.00	21	11.82	18	8.98
Nov. 5	ab24.29	28	12.06	25	9.36
Dec. 10	11.65	May 5	12.76	June 1	9.63
Jan. 12, 1932	8.34	12	13.00	8	10.05
Feb. 20	6.91	19	13.47	15	(a)
Mar. 21	ab18.19	26	14.07	22	11.18
Apr. 15	a13.96	June 2	(a)	29	(a)
May 14	8.92	9	b21.40	July 6	12.18
Aug. 12	12.22	16	14.54	13	(a)
Sept. 13	13.79	23	14.30	20	(a)
Nov. 19	14.55	30	(a)	27	13.51
Dec. 23	11.28	July 7	14.62	Aug. 3	13.91
Feb. 2, 1933	8.97	14	14.73	10	14.17
Mar. 9	8.90	21	15.04	17	(a)
12	6.52	25	(a)	24	14.78
Mar. 13	6.26	28	15.24	27	14.80
16	6.65	Aug. 4	(a)	31	14.92
27	10.32	11	(a)	Sept. 7	(a)
July 18	13.05	18	b16.01	14	14.70
20	ab18.48	25	b16.50	21	14.90
22	13.28	Sept. 1	b16.45	28	15.54
29	13.33	8	(a)	Oct. 5	(a)
Aug. 12	13.79	15	b16.82	19	(a)
19	13.94	22	b16.90	26	(a)
26	13.86	29	b17.76	Nov. 2	b16.80
Sept. 2	14.47	Oct. 6	(a)	5	b16.59
9	14.91	13	(a)	9	b16.48
16	15.49	20	b17.36	16	(a)
23	b16.04	27	b16.31	23	b16.52
30	b16.17	Nov. 3	15.44	30	14.65
Oct. 14	b16.20	10	14.74	Dec. 7	14.51
21	b16.14	17	14.04	14	13.54
28	b16.24	24	12.94	21	(a)
Nov. 4	ab22.98	Dec. 1	12.86	28	12.32
10	b22.66	15	12.09	Jan. 11	11.88
18	b22.58	21	11.81	18	12.33
Dec. 9	13.52	29	11.27	25	12.40
16	12.55	Jan. 12, 1935	10.48	Feb. 1	13.06
23	11.96	19	9.98	8	12.94
30	11.20	26	9.98	21	12.76

a Pumping.

b Below sea level.

5/12-12P1. I. W. Hellman Ranch--Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Feb. 29, 1936	13.01	Apr. 24, 1937	10.55	July 23, 1938	14.49
Mar. 7	12.98	May 1	10.49	30	b16.06
14	13.33	8	10.87	Aug. 6	ab18.59
21	13.50	15	11.04	13	ab20.68
27	13.67	22	12.42	20	ab20.24
Apr. 4	13.45	29	12.10	27	ab18.13
11	13.39	June 5	11.92	Sept. 3	ab27.22
18	13.12	12	a15.69	10	b17.34
22	13.02	19	11.34	16	ab19.54
May 2	12.78	26	12.69	24	ab30.63
9	13.25	July 3	ab22.82	Oct. 1	ab23.96
16	13.68	10	13.76	8	ab20.84
19	ab19.23	17	14.33	15	ab20.44
23	ab22.44	24	14.73	22	ab23.44
29	ab20.02	31	b16.01	29	ab24.70
June 6	14.90	Aug. 7	b18.12	Nov. 5	ab21.04
13	15.22	14	b18.49	12	ab20.24
19	b16.08	21	b18.54	19	b16.68
27	b16.07	28	b16.92	26	ab21.71
July 3	ab24.53	Sept. 4	ab22.76	Dec. 3	ab17.07
11	b16.97	11	ab23.61	10	15.02
18	b17.56	18	ab24.34	17	13.76
22	ab25.16	25	b18.12	24	14.04
Aug. 1	b17.90	Oct. 2	b17.24	31	13.52
8	b18.06	9	b16.88	Jan. 7, 1939	11.42
15	b18.86	16	ab25.52	14	11.97
22	b17.93	23	ab25.47	28	10.36
29	ab24.94	30	b18.21	Feb. 4	9.84
Sept. 1	ab25.67	Nov. 6	ab24.98	11	13.54
5	ab25.36	13	ab25.79	24	ab17.74
12	ab21.54	20	ab24.35	Mar. 4	8.94
19	b18.83	27	b17.45	11	10.48
26	ab25.77	Dec. 4	b16.57	18	9.17
Oct. 3	b23.27	11	b17.99	25	10.44
6	ab25.43	18	14.81	Apr. 1	ab16.86
10	ab25.57	24	14.31	8	9.94
17	b19.94	31	ab18.71	15	9.10
24	b19.47	Jan. 8, 1938	13.51	22	9.21
31	ab20.61	15	13.26	29	9.42
Nov. 7	b18.84	22	13.84	May 6	10.98
10	ab23.36	29	a15.79	13	10.00
14	ab24.94	Feb. 5	14.80	20	a14.24
21	ab24.93	11	13.54	27	11.98
28	ab22.46	19	14.81	June 3	12.03
Dec. 5	ab18.04	26	13.52	10	13.21
12	ab23.89	Mar. 12	11.94	17	13.61
17	ab17.56	19	11.14	24	13.99
19	b16.37	26	11.60	July 1	14.42
26	15.57	Apr. 2	10.30	8	ab21.13
Jan. 2, 1937	b18.64	9	10.87	15	15.27
11	14.13	16	10.64	22	15.44
16	13.93	23	12.02	29	15.79
23	13.72	30	10.52	Aug. 5	15.45
29	13.50	May 7	10.79	12	15.93
Feb. 13	12.41	14	12.91	19	15.74
20	11.78	21	11.83	26	b16.21
27	11.48	28	11.49	Sept. 2	b16.77
Mar. 6	11.38	June 4	11.71	8	b18.49
13	11.05	11	12.54	16	b20.44
20	11.33	18	12.58	23	b19.20
27	10.67	25	14.74	30	b18.16
Apr. 3	10.62	July 1	ab23.46	Oct. 7	b17.72
10	10.44	9	13.58	14	ab23.54
17	10.38	16	15.82	21	b16.84

a Pumping.

b Below sea level.

5/12-12Pl. I. W. Hellman Ranch--Continued.

Water level, in feet below land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
Oct. 28, 1939	a16.84	Oct. 26, 1940	a18.38	Nov. 13, 1941	c10.34
Nov. 4	15.34	Nov. 2	a19.86	15	10.12
10	abl7.21	9	a17.78	22	10.27
18	14.77	16	a16.83	29	10.11
25	14.30	23	a16.23	Dec. 6	abl6.34
Dec. 2	14.43	30	15.30	13	8.67
9	14.32	Dec. 7	15.28	20	8.10
16	14.13	14	13.79	27	8.73
23	15.37	21	b14.64	Jan. 3, 1942	7.49
30	12.74	28	12.11	10	7.64
Jan. 6, 1940	12.17	Jan. 4, 1941	12.00	17	7.00
13	10.91	11	11.93	24	6.84
20	11.39	18	b12.69	31	6.96
27	11.18	25	10.71	Feb. 7	7.10
Feb. 3	12.59	Feb. 1	11.08	14	abl7.12
10	10.78	8	10.25	21	8.05
17	10.94	15	10.81	28	8.88
24	10.18	Mar. 8	9.54	Mar. 7	8.67
Mar. 1	10.25	22	8.90	14	9.21
9	10.58	29	8.42	21	9.89
16	b14.73	Apr. 5	7.99	28	9.77
23	11.46	12	7.74	Apr. 11	9.42
30	10.41	19	8.23	25	7.72
Apr. 6	11.29	26	b12.11	25	c7.71
13	11.45	May 3	b15.41	May 2	7.88
20	11.17	10	8.03	16	7.54
27	10.66	17	8.22	29	8.45
May 4	10.39	24	8.48	June 27	10.08
11	b15.72	June 7	8.79	July 10	c10.33
18	11.61	14	9.04	11	10.82
June 1	13.04	21	9.53	25	11.90
8	abl9.14	28	9.26	Aug. 8	12.67
15	13.21	July 12	9.66	22	13.49
22	abl9.61	19	10.78	Sept. 5	14.80
29	14.46	26	abl8.90	9	c15.27
July 6	14.97	Aug. 2	11.38	11	c15.28
13	15.36	16	12.41	11	abc24.45
20	15.84	23	12.99	19	15.70
27	a18.71	30	14.23	Oct. 3	14.31
Aug. 3	a16.86	Sept. 6	14.66	10	14.15
10	a17.69	13	15.10	24	14.00
17	a18.06	17	c15.35	30	c13.02
24	ab22.70	18	abc25.10	31	12.83
31	ab20.61	20	14.59	Nov. 7	12.69
Sept. 7	a18.60	27	abl8.82	14	12.25
14	a19.60	Oct. 4	14.14	21	11.53
21	a19.10	11	ab22.13	28	11.78
28	a20.00	18	abl6.59	Dec. 5	10.95
Oct. 4	a20.42	25	12.44	12	10.62
11	ab29.33	Nov. 1	11.41	19	9.97
19	a19.36	8	abl7.30		

a Below sea level.

b Pumping.

c Measured by Geological Survey.

5/12-12P3. City of Seal Beach well 2. California Division of Water Resources serial No. C-1002f and location No. 515D. About 1 mile north-east of Seal Beach, 670 feet north and 1,500 feet east from intersection of Bolsa and Westminster Avenues, 30 feet east of well 12P4, which is in sheet-metal pump house. Unused drilled well, formerly public supply, diameter 16 inches, depth 362.6 feet. Casing perforated from 348 to 362 feet below land surface. Measuring point, top north side of casing, at west edge of 2-inch cut-out, 0.02 foot above concrete foundation, 1.00 foot above land-surface datum and 20.09 feet above sea-level datum of 1941. Water-level recorder installed June 16, 1942, by Geological Survey. Water level affected by pumping of wells 12P4 and 12P6.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 17	a15.88	Aug. 1	17.40	Sept. 25	c22.73	Nov. 15	18.17
June 13	a13.85	10	18.40	30	c22.00	20	17.27
20	b14.04	17	a19.82	Oct. 5	c21.50	25	16.41
25	13.67	20	c19.61	10	c21.51	30	16.53
30	13.70	25	c19.87	15	c21.47	Dec. 5	15.77
July 5	13.96	31	c20.68	20	c21.25	10	15.25
10	14.10	Sept. 5	c21.24	25	c20.79	15	14.86
15	15.55	10	c22.37	31	c19.60	20	14.50
20	15.83	15	c23.25	Nov. 5	18.82	25	13.90
27	a16.92	21	c23.51	10	18.86	31	13.49
31	17.63						

5/12-13D1. Geological Survey permanent observation well on property of I. W. Hellman Ranch. California Division of Water Resources serial No. C-10021 and location No. 505A. In Seal Beach, 55 feet south and 110 feet east from intersection of Bolsa and Westminster Avenues and 50 feet west of well 13D2, in cultivated field. Well drilled December 1941 to 381 feet, cased to 210 feet. Welded hard red steel casing, diameter 6 inches to 60 feet, 4 inches to 210 feet, perforated from 190 to 210 feet. Shallow water shut off by cementing at 155 feet. Companion to well 13D2, which taps shallow water. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 25.55 feet above sea-level datum of 1941. Reference bench mark, top northwest corner of concrete well curb; chiseled square, 0.55 foot below measuring point and 25.00 feet above sea-level datum of 1941. Water-level recorder installed Feb. 20, 1942. Water level fluctuates with tide; greatest daily range about 0.34 foot.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 20	23.61	May 10	23.92	July 31	23.13	Oct. 20	22.91
25	23.50	15	23.81	Aug. 5	23.12	25	22.85
28	23.49	20	23.83	10	23.03	31	22.93
Mar. 5	23.54	25	23.76	15	23.09	Nov. 5	22.89
10	23.51	31	23.52	20	23.02	10	22.73
15	22.96	June 5	23.67	25	22.92	15	22.86
20	23.02	10	23.48	31	23.04	20	(e)
25	23.07	15	23.40	Sept. 5	23.04	25	22.83
31	23.09	20	23.44	10	23.01	30	22.85
Apr. 5	22.85	25	23.24	15	23.02	Dec. 5	22.71
10	22.69	30	23.18	20	22.97	10	22.75
15	22.35	July 5	23.31	25	22.94	15	22.91
20	22.08	10	23.14	30	22.95	20	22.80
25	23.02	15	23.11	Oct. 5	22.93	25	22.78
30	d23.99	20	23.21	10	22.89	31	22.92
May 5	23.92	25	23.00	15	22.87		

a Tape measurement.

b Well 12P4 pumping.

c Below sea level.

d Water level depressed and adjusted balance obtained by pumping out brackish water above salt-water column.

e Recorder not operating.

5/12-13D2. Geological Survey permanent observation well on property of I. W. Hellman Ranch. California Division of Water Resources serial No. C-1102j and location No. 505B. In Seal Beach, 55 feet south and 160 feet east from intersection of Bolsa and Westminster Avenues, in cultivated field. Well drilled December 1941 to 160 feet, cased to 140 feet. Welded hard red steel casing, diameter 6 inches to 60 feet, 4 inches to 140 feet; perforated from 130 to 140 feet. Companion to well 13D1. Measuring point, top north side of casing at chisel cuts, 1.00 foot above land-surface datum and 26.58 feet above sea-level datum of 1941. Reference bench mark, top northeast corner of concrete well curb; copper nail and washer, 0.75 foot below measuring point and 25.83 feet above sea-level datum of 1941. Water-level recorder installed Feb. 18, 1942. Water level fluctuates with tide; greatest daily range about 0.21 foot.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 20	24.53	May 10	24.57	July 31	24.58	Oct. 20	24.62
25	24.53	15	24.58	Aug. 5	24.60	25	24.56
28	24.52	20	24.63	10	24.55	31	24.63
Mar. 5	24.61	25	24.64	15	24.60	Nov. 5	24.62
10	24.61	31	24.54	20	24.58	10	24.52
16	24.59	June 5	24.67	25	24.52	15	24.61
19	24.56	10	24.58	31	24.62	20	24.61
25	24.59	15	24.54	Sept. 5	24.64	25	24.59
31	24.62	20	24.53	10	24.60	30	24.61
Apr. 5	24.59	25	24.50	15	24.64	Dec. 5	24.52
10	24.62	30	24.46	20	24.64	7	24.51
15	24.54	July 5	24.57	25	24.62	14	a24.69
20	24.51	10	24.50	30	24.61	20	24.57
25	24.48	15	24.49	Oct. 5	24.62	25	24.57
30	24.44	20	24.60	10	24.61	31	(b)
May 5	24.47	25	24.52	15	24.60		

5/12-24H1. Constructed by Geological Survey on property of Alamitos Land Co. About 2 miles southeast of Seal Beach, 300 feet north of elevated wood-stave tank at Sunset Beach, 63 feet northeast of U. S. Highway 101, and 4 feet east of fence. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 14.8 feet. Measuring point, top north side of casing, 2.50 feet above land-surface datum and 12.61 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 9, 1941	7.74	Dec. 29, 1941	7.58	July 28, 1942	8.08
Nov. 15	7.77	Jan. 21, 1942	7.27	Nov. 6	8.25
Dec. 24	7.39	Mar. 27	7.10		

6/10-1E1. Frank Ey. Geological Survey continuing observation well. California Division of Water Resources serial No. C-1241 and location No. 13311A. About 3.5 miles northeast of Costa Mesa, 210 feet south and 1,300 feet west from intersection of Paularino Avenue and Newport Boulevard, 450 feet east of drainage ditch, and 15 feet west of barn. Drilled irrigation well, reported depth 300 feet. Water level measured monthly September 1930-35 and weekly since 1936 by Orange County Flood Control District. Measuring point, hole in northeast side of pump base, 0.80 foot above land-surface datum and 34.97 feet above mean sea level (altitude by Orange County Flood Control District). To adjust tape reading for horizontal correction, subtract 0.17 foot. Companion to well 11E2, which is about 900 feet south and which taps the shallow Pleistocene water-bearing members. Records furnished by Orange County Flood Control District.

a Tape measurement.

b Recorder not operating.

6/10-181. Frank Ey-Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Sept. 27, 1930	25.09	June 24, 1936	a48.38	July 31, 1937	a49.45
Oct. 9	24.76	27	a50.49	Aug. 7	a45.70
Nov. 19	19.83	July 3	(b)	14	a42.57
Dec. 30	16.23	11	a50.02	17	a41.47
Jan. 22, 1931	16.38	18	a53.38	21	a39.88
Feb. 24	22.95	24	a57.48	28	a38.41
Mar. 18	a35.17	Aug. 1	a53.30	Sept. 14	a36.20
Apr. 20	a46.01	8	a50.14	18	a36.27
May 26	26.15	15	(b)	25	a36.05
June 6	24.56	22	a45.56	Oct. 2	a35.67
July 13	ab47.17	29	a46.59	9	a34.99
Aug. 18	a36.06	Sept. 4	a45.66	16	a35.11
Sept. 16	31.03	5	a45.33	18	a34.81
Oct. 9	31.22	12	a44.06	23	a34.19
Nov. 17	a36.10	19	a42.85	30	a34.31
Jan. 25, 1932	19.17	26	a41.40	Nov. 6	33.80
Feb. 26	15.22	Oct. 3	a41.67	13	32.69
Mar. 29	22.01	10	a42.39	18	33.15
Apr. 25	26.74	17	a42.39	20	32.88
May 23	(b)	20	a41.65	27	32.27
June 25	a34.39	24	a41.31	Dec. 4	a34.41
July 21	(b)	31	a41.39	11	33.07
Aug. 2	a34.27	Nov. 7	a40.38	14	31.86
22	30.56	12	a40.08	18	31.01
Oct. 27	27.91	14	a40.43	24	29.89
Nov. 28	24.81	21	a41.20	31	28.79
Dec. 9	24.29	28	a41.30	Jan. 8, 1938	27.90
10	23.86	Dec. 5	a40.51	15	27.18
15	22.28	12	a38.37	17	27.44
16	22.06	19	a36.95	22	26.71
27	21.08	26	a35.25	29	26.57
Feb. 6, 1933	15.29	Jan. 2, 1937	33.48	Feb. 5	32.23
Mar. 7	24.90	11	32.23	11	a36.00
12	19.33	16	31.53	15	a36.14
15	20.70	23	30.16	19	a37.88
Apr. 20	a37.23	29	30.38	24	a37.19
May 25	28.22	Feb. 5	32.60	26	a38.58
July 7	28.75	13	29.41	Mar. 12	31.78
31	a40.25	20	27.98	19	31.97
Sept. 5	31.80	27	27.13	25	31.55
Nov. 9	29.41	Mar. 6	26.43	26	31.24
Jan. 9, 1934	21.28	13	25.71	Apr. 2	32.32
June 21	a36.88	20	25.17	9	32.42
Aug. 1	(b)	27	24.67	14	30.71
Sept. 4	a38.65	Apr. 3	24.16	16	30.63
Jan. 29, 1935	21.25	10	23.93	23	28.94
May 9	21.87	13	23.87	30	26.09
July 30	a45.22	17	23.98	May 7	24.12
Aug. 30	a40.27	24	25.83	12	23.89
Nov. 25	32.58	May 1	26.85	14	23.86
Mar. 28, 1936	a46.63	8	27.23	21	23.09
Apr. 1	a46.37	15	27.03	28	23.09
4	a47.25	20	27.68	June 4	25.73
11	a47.03	22	28.04	9	26.21
18	a48.55	29	28.89	11	26.46
28	a44.19	June 5	29.30	18	27.08
May 2	a41.97	12	30.41	25	c32.02
9	(b)	19	32.16	July 1	32.86
16	a39.56	24	33.43	9	a34.49
22	(b)	26	a35.33	12	(b)
23	a40.04	July 3	a40.29	16	a41.03
29	a37.54	10	a42.85	23	a41.83
June 6	(b)	17	a44.27	30	a41.14
13	a41.35	22	a44.72	Aug. 6	a45.22
20	a47.18	24	a45.87	9	a45.93

a Below sea level.

b Pumping.

c Pumping 4 days prior to measurement.

6/10-181. Frank Ey--Continued.

Water level, in feet below land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
Aug. 13, 1938	a44.87	Oct. 28, 1939	30.29	Dec. 28, 1940	26.89
20	a40.85	Nov. 4	30.51	Jan. 4, 1941	25.60
27	a38.07	10	29.37	11	25.29
Sept. 3	a37.02	18	29.88	15	25.33
10	a36.99	25	29.94	18	25.22
16	a36.71	Dec. 2	29.75	25	24.15
24	a35.77	9	29.40	Feb. 1	24.65
Oct. 1	a35.64	16	29.93	8	26.40
8	a35.33	23	28.65	15	27.85
15	a34.55	30	25.00	Mar. 5	21.93
22	33.47	Jan. 13, 1940	25.21	8	21.49
29	32.71	20	25.01	22	19.87
Nov. 5	32.55	27	22.73	29	19.31
12	32.11	Feb. 3	24.27	Apr. 5	18.69
19	30.53	10	23.67	12	17.77
26	30.06	17	23.57	19	16.49
Dec. 3	29.75	24	25.23	26	17.13
10	29.08	Mar. 1	29.28	May 3	16.78
17	27.93	9	31.87	10	17.23
22	26.11	16	a34.68	17	18.13
24	25.92	23	a36.79	24	18.58
31	24.75	29	a37.40	June 7	19.08
Jan. 7, 1939	23.76	30	a37.61	14	19.98
14	22.93	Apr. 6	33.66	21	20.32
21	22.21	13	28.88	28	21.65
28	21.58	20	27.13	July 12	27.85
Feb. 4	20.61	27	26.60	19	a35.25
11	20.22	May 4	25.90	26	a37.37
24	19.95	11	25.77	Aug. 2	a36.23
27	20.57	18	26.66	8	a36.04
Mar. 4	24.16	23	27.63	16	a34.32
11	28.75	June 1	30.85	23	30.88
18	31.96	8	30.77	30	29.00
25	a34.55	15	30.01	Sept. 6	28.25
Apr. 1	a34.25	22	30.48	13	27.71
8	34.03	26	30.48	20	27.56
22	28.95	29	32.99	27	27.14
29	28.67	July 6	a37.47	Oct. 4	26.53
May 6	28.28	13	a43.79	11	26.49
13	28.53	20	(b)	18	26.16
20	27.13	24	a48.11	25	24.38
27	29.05	27	a49.13	Nov. 1	22.66
June 3	29.53	Aug. 3	(b)	8	21.58
10	31.93	10	a43.95	15	20.39
17	34.01	17	a44.29	22	19.48
24	a36.85	24	(b)	29	19.43
July 1	a39.37	29	a45.97	Dec. 6	18.76
8	a40.01	31	a42.67	13	17.94
15	a42.30	Sept. 7	a40.87	20	17.36
22	a44.37	14	(b)	27	16.21
29	a47.39	21	a39.53	Jan. 3, 1942	15.77
Aug. 5	a44.63	28	(b)	10	14.89
12	a41.73	Oct. 4	(b)	17	14.54
19	a39.84	11	a36.94	24	15.95
26	a37.57	19	a35.88	31	18.38
Sept. 2	a37.48	26	a35.12	Feb. 7	23.90
8	a36.60	Nov. 2	33.78	14	28.20
16	a36.48	9	33.41	21	31.33
21	a37.49	16	32.36	28	32.48
23	a37.14	23	30.48	Mar. 7	32.27
30	a34.36	30	29.48	14	32.65
Oct. 7	32.58	Dec. 7	29.00	21	31.21
14	32.03	14	28.43	28	31.86
21	31.08	21	27.63	Apr. 11	28.95

a Below sea level.

b Pumping.

6/10-1L1. Frank Ey--Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Apr. 25, 1942	25.05	Aug. 8, 1942	25.78	Oct. 31, 1942	27.05
May 2	23.75	20	31.25	Nov. 7	26.32
16	23.33	22	31.73	14	26.06
19	23.25	Sept. 5	28.93	19	25.71
29	24.4	19	29.88	21	25.38
June 13	24.6	25	29.29	28	24.93
16	24.44	Oct. 3	30.03	Dec. 5	24.54
27	26.41	10	29.60	12	24.16
July 11	(a)	22	27.90	19	24.35
25	237.63	24	28.03	21	24.94

6/10-1L2 (137, p. 137, Santa Ana quadrangle well 1356); 1921-26, U. S. Geol. Survey well 9. I. A. W. Henry. Geological Survey continuing observation well. California Division of Water Resources serial No. C-1243 and location No. 13322; Orange County Flood Control District No. 13312A. About 3.5 miles northeast of Costa Mesa, 265 feet south of Baker Street, 145 feet northwest of Newport Boulevard, and 150 feet southwest of well 1L1. Unused drilled well, diameter 2½ inches, depth 142.6 feet. Water-level measurements as follows: (1) In 1904, irregularly 1921-26 and quarterly since 1940 by Geological Survey; (2) about monthly 1926-40 and into 1941 by W. W. Hoy; and (3) monthly since 1930 by Orange County Flood Control District. Measuring point, top north side of casing, 0.4 foot above land-surface datum and 40.05 feet above mean sea level (altitude by W. W. Hoy).

Water level, in feet below land-surface datum, 1904, 1921-42

May 19, 1904	(c)	Oct. 17, 1927	16.10	Feb. 24, 1931	17.45
19, 1921	7.8	Nov. 10	14.75	Mar. 18	18.75
June 8	4.8	Dec. 13	13.70	Apr. 20	21.76
July 21	12.5	Jan. 19, 1928	13.50	May 26	19.20
Sept. 28	7.2	Feb.	12.2	June 6	18.86
Mar. 18, 1922	1.12	Mar.	17.00	July 13	20.20
May 31	1.43	Apr.	18.80	Aug. 18	20.76
Aug. 8	4.15	May	22.80	Sept. 16	20.70
Nov. 23	2.06	June 20	25.90	Oct. 9	20.48
Feb. 28, 1923	0.0	July 7	23.1	Nov. 17	19.95
June 7	6.04	Aug. 9	17.0	Jan. 25, 1932	12.96
Aug. 17	12.10	Sept. 14	16.73	Feb. 26	17.19
Nov. 28	4.21	24	17.50	Mar. 29	17.59
Aug. 26, 1924	10.43	Oct. 15	16.68	Apr. 25	18.64
Dec. 4	7.89	Nov. 19	16.31	May 23	18.44
Feb. 10, 1925	7.48	Aug. 23, 1929	19.27	June 25	19.54
Aug. 27	19.60	Sept. 7	19.30	July 21	20.18
Oct. 31	15.16	Nov. 15	18.30	Aug. 22	20.20
May 21, 1926	15.25	Dec. 20	18.08	Sept. 20	20.09
June 3	15.28	Jan. 8, 1930	17.77	Oct. 27	20.10
July 2	15.65	18	16.18	Nov. 28	19.97
Aug. 5	16.30	Feb. 17	15.93	Dec. 27	19.12
Sept. 2	16.85	Mar. 17	17.26	Feb. 6, 1933	17.68
Oct. 4	17.55	Apr. 4	17.55	Mar. 7	18.43
Nov. 13	15.43	22	18.15	Apr. 20	21.00
Dec. 9	15.10	May 12	16.32	May 25	19.87
29	15.10	May 31	17.02	July 7	20.32
Jan. 4, 1927	14.10	June 25	18.25	31	21.74
Mar. 1	12.45	July 21	19.73	Sept. 8	21.27
Apr. 1	12.23	Sept. 3	19.00	Nov. 9	20.90
May 3	12.50	Oct. 25	18.15	Jan. 9, 1934	19.42
June 10	12.00	Nov. 21	17.85	June 21	21.54
July 9	13.60	Dec. 11	17.63	Sept. 4	22.44
Aug. 5	14.20	Jan. 2, 1931	17.55	Jan. 29, 1935	19.38
Sept. 5	16.15	22	17.68	May 9	19.34

a Obstruction in well.

b Below sea level.

c Flowing.

d Pumping.

e Pump operating in well 1L1, 150 feet northeast.

6/10-1L2. I. A. W. Henry--Continued.

Water level, in feet below land-surface datum, 1904, 1921-42

Date	Water level	Date	Water level	Date	Water level
July 30, 1935	22.22	July 12, 1938	a17.81	Jan. 15, 1941	19.75
Aug. 30	22.60	Aug. 9	19.48	Mar. 5	15.26
Nov. 25	22.20	Sept. 23	20.15	May 8	14.35
Apr. 1, 1936	20.42	Oct. 21	20.38	May 9	b14.37
28	24.60	Nov. 25	20.52	June 19	15.12
May 22	21.71	Dec. 22	19.24	July 21	15.62
June 24	23.36	Jan. 27, 1939	18.10	Aug. 14	b16.04
July 24	a23.91	Feb. 27	17.54	28	16.21
Sept. 4	24.51	Mar. 31	18.22	Oct. 24	17.02
Oct. 20	24.65	May 8	18.50	Nov. 6	b16.80
Nov. 12	24.93	June 22	19.10	28	16.90
Feb. 5, 1937	20.89	July 21	18.95	Dec. 23	17.05
Apr. 13	17.53	Aug. 24	20.04	Jan. 9, 1942	17.02
May 20	18.03	Sept. 21	20.53	Feb. 17	17.10
June 24	18.84	Oct. 23	19.98	Mar. 17	17.20
July 22	20.42	Dec. 1	20.08	17	b17.21
Aug. 17	20.40	26	20.12	Apr. 17	17.40
Sept. 14	20.06	Jan. 23, 1940	19.81	May 19	17.34
Oct. 18	20.24	Feb. 29	19.20	June 16	17.46
Nov. 18	20.25	Mar. 29	20.20	July 3	b17.23
Dec. 14	20.21	Apr. 22	19.30	16	17.59
Jan. 17, 1938	20.27	May 23	19.55	Aug. 20	17.60
Feb. 15	19.17	June 26	19.84	Sept. 25	17.81
24	19.25	July 24	20.72	Oct. 22	17.94
Mar. 25	16.86	Aug. 29	21.05	27	b17.98
Apr. 14	17.18	Oct. 1	21.05	Nov. 19	18.28
May 12	17.34	Dec. 11	b20.33	Dec. 21	18.11
June 9	a17.50	12	20.22		

6/10-2B2. J. W. Schiffer. About 3.5 miles northeast of Costa Mesa, 900 feet north of Paularino Avenue and 165 feet west of Bear Street; 15 feet south of elevated metal tank and 12 feet east of well 2B1. Unused drilled well, diameter 8 inches, depth 33.2 feet. Measuring point, top south side of casing, at chisel cut, 0.10 foot above land-surface datum which is 34 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42

Dec. 14, 1940	14.58	Nov. 6, 1941	11.54	July 3, 1942	c10.85
May 9, 1941	6.54	Jan. 12, 1942	11.36	Oct. 27	12.48
Aug. 14	9.56	Mar. 17	9.58		

6/10-2G5. Mrs. Medlock. About 3 miles northeast of Costa Mesa, 50 feet north of Paularino Avenue and 175 feet west of Bear Street, in field. Unused well, diameter 4 inches, depth 157.4 feet. Measuring point, top south side of casing, 0.6 foot below land-surface datum which is 36 feet above mean sea level (interpolated from topographic map). Well destroyed in 1942.

Water level, in feet below land-surface datum, 1940-42

Dec. 13, 1940	17.71	Aug. 14, 1941	13.05	Jan. 12, 1942	14.46
May 9, 1941	10.23	Nov. 6	14.62		

6/10-2H1. Nate Hughes. California Division of Water Resources serial No. C-1240 and location No. 13311. About 3 miles northeast of Costa Mesa, 100 feet north of Paularino Avenue and 950 feet east of Bear Street, 6 feet north of water tank. Drilled domestic and irrigation well, diameter 12 inches, reported depth 200 feet. Measuring point, east side of casing under pump at south edge of bent-down rim of casing, 0.10 foot above land-surface datum and 35.3 feet above mean sea level (altitude by Orange County Flood Control District. Additional measurements made about monthly 1930-35 by Orange County Flood Control District).

a Pump operating in well 1L1, 150 feet northeast.

b Measured by Geological Survey.

c Well 2B1 pumping.

6/10-2H1. Nate Hughes--Continued.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Dec. 13, 1940	15.59	Nov. 6, 1941	13.55	July 3, 1942	14.00
May 9, 1941	(a)	Jan. 12, 1942	12.73	Oct. 27	14.70
Aug. 14	13.81	Mar. 17	14.19		

6/10-3E1. Mary E. Peroni. About 3 miles north of Costa Mesa and 150 feet north of Baker Street extended, 250 feet west of Banana Street, beneath windmill, 80 feet west of house. Domestic well, diameter 7 inches, depth 186 feet. Measuring point, top of east bolt of 2- by 6-inch pipe clamp, 0.27 foot above top of casing and concrete block at land surface datum which is 42 feet above mean sea level (interpolated from topographic map).

Water level, depth below land-surface datum, 1940-42

Dec. 17, 1940	37.98	Jan. 12, 1942	32.51	July 3, 1942	34.32
May 9, 1941	b35.12	Mar. 17	37.29	Oct. 27	34.38
Nov. 6	33.96				

6/10-3E2. Mary E. Peroni. About 3 miles north of Costa Mesa, 400 feet east of Harbor Boulevard, 150 feet north of Baker Street, 400 feet west of Banana Street, and 170 feet west of well 3E1, which is under windmill. Unused well, diameter 7 inches, depth 118.4 feet. Measuring point, top east side of casing, 1.50 feet above land-surface datum which is 42 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42

Dec. 17, 1940	37.36	Nov. 6, 1941	33.06	July 3, 1942	34.34
May 9, 1941	31.95	Jan. 12, 1942	30.97	Oct. 27	33.63
Aug. 14	34.75	Mar. 17	37.48		

6/10-3E3. Charles Borchard. About 3 miles north of Costa Mesa, 1,150 feet north of Fairview Road, 250 feet east of Harbor Boulevard, lone casing in field. Unused well, diameter 3 inches, depth 140.5 feet. Measuring point, top edge of $\frac{1}{2}$ -inch hole in topmost reducer, 2.50 feet above land-surface datum which is 40 feet above mean sea level (interpolated from topographic map); to measure, remove $\frac{1}{2}$ -inch plug.

Water level, in feet below land-surface datum, 1941-42

May 9, 1941	25.52	Jan. 12, 1942	22.57	July 3, 1942	22.19
Aug. 14	31.62	Mar. 17	36.81	Oct. 27	28.05
Nov. 6	26.35				

6/10-3N1. F. Clark. California Division of Water Resources serial No. C-1248c and location No. 13282D. About 2.5 miles north of Costa Mesa, 0.30 mile south of Baker Street, and 700 feet east of Harbor Boulevard, in square concrete pit. Unused drilled well, diameter 16 inches, depth 158.0 feet. Measuring point, top west side of casing, 4.79 feet below top of pit and 3.50 feet below land-surface datum which is 55 feet above mean sea level (interpolated from topographic map). Additional measurements made in 1933 and 1934 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1940-42

Dec. 18, 1940	50.51	Nov. 6, 1941	15.19	July 3, 1942	28.83
May 9, 1941	12.87	Jan. 12, 1942	15.38	Oct. 27	29.27
Aug. 14	14.56				

6/10-3Q2. About 2.5 miles north of Costa Mesa, 0.48 mile south of Baker Street and 0.45 mile east of Harbor Boulevard, about 5 feet east of concrete standpipe, in field. Unused well, diameter 10 inches, depth 582.1 feet. Measuring point, east side of concrete shell around casing, 0.61 foot above top of casing, and 0.25 foot below land-surface datum which is 57 feet above mean sea level (interpolated from topographic map).

a Pumping.

b Pumping slowly.

6/10-3Q2--Continued.

Water level, in feet below land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 18, 1940	51.09	Nov. 6, 1941	44.90	Mar. 17, 1942	53.42
May 9, 1941	40.66	10	44.46	July 3	51.28
Aug. 14	ab59.80	Jan. 12, 1942	39.11	Oct. 27	50.16

6/10-5B1. Robert Gisler. California Division of Water Resources serial No. C-1258q and location No. 13251. About 4 miles northeast of Garfield Avenue extended, and 525 feet east of Ward Street, lone casing in field. Unused drilled well, diameter 10 inches, depth 73.7 feet. Casing perforated from 85 to 95 feet below land surface. Measuring point, top west side of casing, at riveted seam, 1.30 feet above land-surface datum which is 20 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 19, 1940	13.74	Nov. 7, 1941	9.81	July 6, 1942	9.68
May 9, 1941	6.62	Jan. 13, 1942	8.04	Oct. 28	11.76
Aug. 13	9.14	Mar. 18	9.19		

6/10-5C1 (*941, p. 130). Robert Gisler. Geological Survey continuing observation well. About 3 miles northeast of Huntington Beach. Measuring point, top of base plate on southeast side of well, 0.08 foot above casing, 1.00 foot above land-surface datum and 20.22 feet above mean sea level (altitude by Orange County Flood Control District). In Water-Supply Paper 941, water-level measurements after Dec. 21, 1932, were incorrectly referred to top of casing instead of top of base plate; thus the published figures for 1933-41, in feet with reference to sea level, are 0.08 foot too low. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 3	4.62	Mar. 14	(c)	June 27	(c)
10	4.42	21	(c)	July 11	(c)
17	4.18	28	(c)	25	15.55
24	4.18	Apr. 11	14.16	Aug. 8	15.80
31	4.32	25	(c)	22	(c)
Feb. 7	4.72	May 2	(c)	Sept. 5	14.35
14	6.78	16	(c)	19	(c)
21	7.42	29	(c)	Oct. 3	12.00
28	(c)	June 14	(c)	10	11.68
Mar. 7	17.00				
				Oct. 24	11.08
				31	10.14
				Nov. 7	9.37
				14	9.05
				21	8.70
				28	8.57
				Dec. 5	8.41
				12	8.34
				19	8.30

6/10-6A1. H. J. Lamb. California Division of Water Resources serial No. C-1258c and location No. 13241C. About 3.5 miles northeast of Huntington Beach, 500 feet south of Garfield Avenue, and 70 feet west of Wright Street, in field. Drilled irrigation well, diameter 8 inches, depth 139.0 feet. Measuring point, top of $\frac{1}{2}$ - to $\frac{3}{8}$ -inch reducer in 6-inch elbow, 0.90 foot above flange of reducer on casing, 1.00 foot above land-surface datum which is 15 feet above mean sea level (interpolated from topographic map). Well covered in 1942; measurements discontinued.

Water level, in feet below land-surface datum, 1941-42					
Date	Water level	Date	Water level	Date	Water level
May 9, 1941	1.59	Nov. 7, 1941	4.75	Mar. 18, 1942	ab6.85
Aug. 13	13.20	Jan. 13, 1942	.01		

a Below sea level.

b Well 3Q1, 75 feet north, pumping.

c Pumping.

6/10-6B1. H. J. Lamb. About 3 miles northeast of Huntington Beach, 340 feet south of Garfield Avenue, and 590 feet east of Bushard Street, in pump house. Drilled irrigation well, diameter 10 inches, depth 139.7 feet. Measuring point, top northeast side of casing, at chisel cuts, 0.40 foot above land-surface datum and 15.61 feet above sea-level datum of 1941. Reference bench mark, about 700 feet northwest of well 6B1, at southwest corner of intersection of Bushard Street and Garfield Avenue, in top of concrete post; U. S. Geol. Survey standard tablet stamped "TT No. 11 Y 1932," 16.72 feet above sea-level datum of 1941.

Water level, depth below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Dec. 19, 1940	9.94	Nov. 7, 1941	5.74	July 6, 1942	(c)
May 10, 1941	2.85	Jan. 13, 1942	2.08	Oct. 23	12.42
Aug. 13	13.44	Mar. 19	abl7.82	Oct. 28	7.88

6/10-6D1. Walter Lamb. California Division of Water Resources serial No. C-1257b and location No. 13231A. About 2.5 miles northeast of Huntington Beach, 700 feet south of Garfield Avenue, and 360 feet east of Cannery Avenue, in field. Unused well, diameter 5 inches, depth 128.0 feet. Measuring point, top north side of inner casing, 1.00 foot above land-surface datum and 11.57 feet above mean sea level (altitude by Orange County Flood Control District).

Water level, in feet, with reference to land-surface datum, 1940-42

Dec. 20, 1940	-6.22	Nov. 7, 1941	-2.05	July 6, 1942	-5.94
May 10, 1941	+6.5	Jan. 13, 1942	de+1.31	Oct. 28	-4.05
Aug. 13	-8.77	Mar. 18	bf-14.07		

6/10-6H1. E. A. Lamb. California Division of Water Resources serial No. C-1258a and location No. 13241A. About 3 miles northeast of Huntington Beach, 2,460 feet south of Garfield Avenue, and 200 feet west of Wright Street. Drilled irrigation well, diameter 8 inches, depth 100.0 feet. Measuring point, top of nipple, 0.05 foot above 3/4-inch valve, 1.90 feet above flange on casing, 2.70 feet above land-surface datum which is 11 feet above mean sea level (interpolated from topographic map).

Water level, in feet, with reference to land-surface datum, 1941-42

May 10, 1941	-0.45	Jan. 13, 1942	+0.21	July 6, 1942	-9.21
Aug. 13	-bl2.23	Mar. 18	-abl4.11	Oct. 28	-5.55
Nov. 7	3.94				

6/10-6N1. H. J. Lamb. About 2.5 miles northeast of Huntington Beach, 880 feet north of Adams Avenue, and 480 feet east of Cannery Avenue, in frame pump house in field. Drilled irrigation well, diameter 7 inches, reported depth 150 feet. Measuring point, top south side of casing, at concrete floor, 0.50 foot above land-surface datum and 9.90 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1941-42

May 13, 1941	-0.60	Jan. 13, 1942	+0.18	July 6, 1942	-7.22
Aug. 13	-bcl4.41	Mar. 18	-bl9.04	Oct. 28	-4.88
Nov. 7	3.13				

6/10-6P1. H. J. Lamb. California Division of Water Resources serial No. C-1257a and location No. 13232. About 2.5 miles northeast of Huntington Beach and 1.1 miles west of Santa Ana River, 1,020 feet north of Adams Avenue, and 830 feet west of Bushard Street, in field. Casing is flush with ground, but 18-inch concrete tile around well extends height to about 4 feet. Unused drilled well, diameter 10 inches, depth 146.7 feet. Measuring point, top northeast side of concrete tile, 3.80 feet above land-surface datum and 13.40 feet above sea-level datum of 1941. Reference bench mark, at southeast corner of intersection of Bushard Street and Adams Avenue, 1,300 feet southeast of well 6P1, at top of 6- by 6-inch highway right-of-way post; U. S. Geol. Survey, copper nail and washer 12.40 feet above sea-level datum of 1941. Water-level recorder installed Nov. 29, 1940 by Geological Survey.

- a Well nearby pumping.
- b Below sea level.
- c Pumping.
- d Flowing
- e Height of static level.
- f Well nearby pumping.

6/10-6Pl. H. J. Lamb--Continued.

Highest daily water level, in feet, with reference to
land-surface datum, 1940-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Nov. 30, 1940	7.67	Aug. 10, 1941	8.67	Apr. 20, 1942	4.97
Dec. 5	7.66	15	c10.27	25	3.57
10	(a)	20	9.60	30	2.85
15	6.33	25	7.85	May 5	4.28
20	6.55	31	8.40	10	3.70
25	5.60	Sept. 5	8.78	15	4.14
31	5.34	10	8.54	20	5.28
Jan. 5, 1941	5.00	15	7.84	25	4.72
10	4.93	20	7.20	31	5.85
15	4.86	25	7.48	June 5	5.94
20	4.62	30	7.45	10	6.60
25	4.80	Oct. 5	6.79	15	5.65
31	5.12	10	6.51	20	(a)
Feb. 5	4.93	15	6.18	25	6.38
10	4.23	20	5.47	30	6.96
15	4.17	25	4.05	July 5	6.55
20	3.45	31	3.03	10	8.74
25	2.85	Nov. 5	3.05	15	8.63
28	2.76	10	2.65	20	8.62
Mar. 5	2.20	15	2.25	25	c9.95
10	1.75	20	2.00	31	c10.07
15	1.52	25	2.30	Aug. 5	c9.62
20	1.24	30	2.09	10	9.27
25	(a)	Dec. 5	1.93	15	c9.75
31	1.13	10	1.12	20	c9.73
Apr. 5	.87	15	.73	25	9.25
10	.74	20	.50	31	8.47
15	.50	25	.28	Sept. 5	9.40
20	.42	31	(b)	10	8.23
25	.53	Jan. 5, 1942	(b)	15	7.92
30	.19	10	(b)	20	7.39
May 5	(b)	15	(b)	25	7.05
10	.16	20	(b)	30	6.85
15	.47	25	(b)	Oct. 5	6.31
20	.53	31	.13	10	6.02
25	1.25	Feb. 5	.03	15	5.40
31	2.52	10	.60	20	5.40
June 5	3.02	15	1.90	25	5.73
10	3.18	20	(a)	31	4.55
15	3.83	25	7.29	Nov. 5	4.00
20	4.30	28	9.13	9	3.30
25	5.22	Mar. 5	(a)	15	(a)
30	5.24	10	c16.66	20	3.49
July 5	5.79	15	c11.73	25	3.48
10	7.43	20	c17.33	30	3.12
15	7.87	25	c15.70	Dec. 5	3.37
20	8.40	31	c15.60	10	2.92
25	8.93	Apr. 5	c13.33	15	3.00
31	c9.66	10	c12.75	20	2.76
Aug. 5	9.13	15	7.18	25	2.65

6/10-6P2. Constructed by Geological Survey on property of H. J. Lamb. About 2.5 miles northeast of Huntington Beach, 1,030 feet north of Adams Avenue, 830 feet west of Bushard Street, and 7 feet north of well 6Pl, in field. Bored water-table well, diameter 8 inches, depth 24.7 feet. Casing perforated from 11 to 25 feet below land surface. Measuring point, top east side of casing at high point, 1.00 foot above land-surface datum and 10.84 feet above sea-level datum of 1941. Water-level recorder maintained on well Apr. 4, 1941, to July 11, 1942, by Geological Survey. All water levels through Mar. 10, 1942, are below sea level.

- a Recorder not operating.
b Above land-surface datum.
c Below sea level.

6/10-6P2--Continued.

Water level, at noon, in feet below land-surface datum, 1941-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Apr. 5, 1941	12.80	Oct. 20, 1941	11.35	May 5, 1942	6.99
10	12.60	25	11.25	10	6.97
15	12.39	31	11.17	15	6.96
20	12.33	Nov. 5	11.07	20	6.95
25	12.20	10	10.95	25	6.97
30	12.15	15	10.96	31	6.97
May 5	12.07	20	10.97	June 5	6.98
10	11.97	25	10.92	10	7.00
15	11.87	30	10.89	15	7.02
20	11.79	Dec. 5	10.77	20	7.05
25	11.78	10	10.66	25	7.11
31	11.63	15	10.67	30	7.14
June 5	11.58	20	10.63	July 5	7.17
10	11.55	25	10.57	10	7.19
15	11.50	31	10.48	13	b6.84
20	11.40	Jan. 5, 1942	10.49	20	b6.93
25	11.41	10	10.44	27	b6.88
30	11.39	15	10.40	Aug. 3	b7.07
July 5	11.39	20	10.33	10	b7.17
10	(a)	25	10.28	17	b7.12
15	11.43	31	10.19	24	b7.27
20	11.45	Feb. 5	10.17	31	b7.34
25	11.49	10	10.10	Sept. 14	b7.49
31	11.51	15	10.10	21	b7.54
Aug. 5	11.56	20	10.12	28	b7.60
10	11.59	25	10.17	Oct. 5	b7.67
15	11.67	28	10.20	12	b7.69
20	11.69	Mar. 5	10.34	19	b7.75
25	11.72	10	9.89	26	b7.83
31	11.71	16	b6.17	Nov. 2	b7.83
Sept. 5	11.64	20	6.15	9	b7.88
10	11.61	25	6.45	16	b7.92
15	11.58	31	6.78	23	b7.95
20	11.55	Apr. 5	6.97	30	b7.95
25	11.50	10	7.09	Dec. 7	b8.00
30	11.53	15	7.09	14	b7.99
Oct. 5	11.45	20	7.06	21	b8.02
10	11.44	25	7.06	28	b8.07
15	11.40	30	7.01		

6/10-7B1. Anaheim Sugar Co. California Division of Water Resources serial No. C-1262j and location No. 13242C; J. B. Lippincott's No. 234. About 3 miles northeast of Huntington Beach, 270 feet south of Adams Avenue, 1,200 feet west of Wright Street, and 60 feet east of well 7B2. Drilled irrigation well, diameter 12 inches, depth 114.9 feet. Measuring point, top east side of casing, 0.39 foot above arrow chiseled in 1-inch ring clamp, 0.60 foot above land-surface datum and 11.15 feet above sea-level datum of 1941. Additional measurements made monthly 1927-31, part of 1932, 1939-40, and into 1941 by J. B. Lippincott; monthly 1931-33 and weekly since 1934 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1940-42

Dec. 3, 1940	d11.30	Nov. 6, 1941	8.19	July 3, 1942	d15.22
May 10, 1941	6.31	Jan. 12, 1942	5.39	Oct. 27	d10.62
Aug. 13	d16.84	Mar. 17	de27.14		

a Recorder not operating.

b Tape measurement.

c Field irrigated for several days previously.

d Below sea level.

e Pumping.

6/10-7C1. George Bushard. California Division of Water Resources serial No. C-1260L and location No. 13232C; J. B. Lippincott's No. 227. About 2.5 miles northeast of Huntington Beach, 100 feet south of Adams Avenue, and 450 feet west of Bushard Street, in frame pump house 4 feet south of concrete standpipe, in field. Unused drilled well, diameter 10 inches, depth 134.0 feet. Measuring point, top west side of collar at chisel cuts, 0.27 foot above top of casing, 1.50 feet above land-surface datum, and 9.54 feet above sea-level datum of 1941. Additional measurements made irregularly in 1927 and 1928 by J. B. Lippincott.

Water level, in feet, with reference to land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 20, 1940	-5.98	Nov. 6, 1941	-2.58	July 6, 1942	-7.44
May 10, 1941	+2.22	Jan. 13, 1942	+1.02	Oct. 28	-4.11
Aug. 13	a-11.70	Mar. 18	ab-18.56		

6/10-7L1. R. L. Farnsworth. California Division of Water Resources serial No. C-1262b and location No. 13233; J. B. Lippincott's No. 245. About 2.5 miles east of Huntington Beach, 1,800 feet north of Atlanta Avenue, and 300 feet west of Bushard Street, in field under windmill. Drilled domestic well, diameter 6 inches, depth 81.4 feet. Measuring point, top east side of casing at chisel cuts, 0.50 foot above land-surface datum and 8.44 feet above sea-level datum of 1941. Reference bench mark, at well 6/10-7K5, 700 feet north and 400 feet east of well 7L1, on southwest corner of concrete foundation; chiseled square, 9.98 feet above sea-level datum of 1941. All water levels are below sea level. Additional measurements made about monthly 1930-35 by Orange County Flood Control District and monthly 1937-40 and into 1941 by J. B. Lippincott. Water levels, in feet below land-surface datum: Dec. 3, 1940, 20.53; Aug. 13, 1941, 13.87; July 3, 1942, c/22.09; Nov. 6, 1942, 8.05.

6/10-7L4. Constructed by Geological Survey on property of Orange County. About 2.5 miles east of Huntington Beach, 2,480 feet north of Atlanta Avenue, 20 feet west of Bushard Street, and 2 feet north of power-line pole 426972E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 18.4 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 9.38 feet above sea-level datum of 1941. Reference bench mark, at well 6/10-7K5, 110 feet north and 80 feet east of well 7L4, on southwest corner of concrete foundation; chiseled square, 9.98 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Sept. 11, 1941	6.83	Jan. 20, 1942	7.06	July 28, 1942	6.71
Nov. 13	7.36	Mar. 27	5.59	Nov. 6	7.62
Dec. 23	7.54	Apr. 16	5.39		

6/10-7P1. Constructed by Geological Survey on property of Orange County. About 2.5 miles east of Huntington Beach, 1,320 feet north of Atlanta Avenue, 20 feet west of Bushard Street, and 1 foot west of power-line pole 97887E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 17.3 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 9.13 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Sept. 11, 1941	7.08	Jan. 20, 1942	7.97	July 28, 1942	7.63
Nov. 13	8.00	Mar. 27	7.51	Nov. 6	a8.28
Dec. 23	a8.23				

6/10-8A1. About 2.5 miles northwest of Costa Mesa, 0.5 mile east of Santa Ana River, 385 feet south of Adams Avenue, at foot of mesa. Unused drilled well, diameter 12 inches, depth 108.5 feet. Measuring point, top east side of casing at chisel cuts, flush with concrete floor, at land-surface datum which is 35 feet above mean sea level (interpolated from topographic map).

- a Below sea level.
- b Nearby well pumping.
- c Pumping.

6/10-8A1--Continued.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Dec. 18, 1940	13.73	Aug. 14, 1941	(a)	Oct. 27, 1942	12.04
May 12, 1941	8.28	July 3, 1942	16.18		

6/10-8B1. C. J. Segerstrom Sons. About 2.5 miles northwest of Costa Mesa, 0.14 mile east of Santa Ana River, 140 feet south of Adams Avenue, and 100 feet southwest of well 8B2, which is in sheet-metal pump house. Unused drilled well, diameter 12 inches, depth 222.5 feet. Casing perforated from 88 to 100 and 115 to 130 feet below land surface. Measuring point, top northeast side of casing at seam, 0.02 foot above concrete block, at land-surface datum which is 13 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42

Dec. 18, 1940	13.66	Sept. 22, 1941	613.27	Mar. 17, 1942	616.21
May 12, 1941	6.11	Nov. 6	9.47	July 3	619.62
Aug. 14	615.54	Jan. 12, 1942	5.89	Oct. 27	12.69

6/10-10D5. The Irvine Co. About 2 miles north of Costa Mesa, 1,580 feet south of Adams Avenue, 150 feet east of Harbor Boulevard, and 50 feet east of east wall of abandoned concrete reservoir, under derrick. Unused drilled well, diameter 12 inches, reported depth 844 feet. Casing perforated from 725 to 770 feet below land surface. Measuring point, horizontal cut above 5/8-inch hole in northeast side of casing, and 0.43 foot below top, 0.30 foot above land-surface datum which is 66 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42

Dec. 18, 1940	60.75	Nov. 10, 1941	54.71	July 3, 1942	59.27
May 9, 1941	51.74	Jan. 12, 1942	50.12	Oct. 27	58.56
Aug. 14	65.44	Mar. 17	61.73		

6/10-18B4. E. Gisler. J. B. Lippincott's No. 201-A. About 2.5 miles east of Huntington Beach, 115 feet south of Atlanta Avenue, and 160 feet east of Bushard Street, under windmill. Domestic well, diameter 4 inches, depth 89.0 feet. Measuring point, top of 2- by 4-inch wooden pipe clamp at three chisel cuts, 0.15 foot above top of casing, 0.50 foot above land-surface datum, and 7.60 feet above sea-level datum of 1941. Reference bench mark, 10 feet west of well, in concrete floor of frame shed under water tank; chiseled square, 0.32 foot above measuring point. Water level affected by pumping of irrigation well 18B3 and of public-supply wells 18C1 and C2. Additional measurements made monthly 1930-31 and 1940-41 by J. B. Lippincott. All water levels are below sea level.

Water level, in feet below land-surface datum, 1940-42

Dec. 5, 1940	15.83	Nov. 13, 1941	9.97	July 3, 1942	(c)
May 13, 1941	9.86	Jan. 12, 1942	10.85	23	16.19
Aug. 13	18.78	Mar. 17	19.01	Oct. 27	12.24

6/10-18C5. Constructed by Geological Survey on property of Orange County. About 2.5 miles east of Huntington Beach, 18 feet south of Atlanta Avenue, 20 feet west of Bushard Street, and 1.5 feet west of power-line pole 34422E. Bored water-table well, diameter $1\frac{1}{2}$ inches, depth 16.2 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and originally 9.76 feet above sea-level datum of 1941. Reference bench mark, at well 6/10-18C1, 160 feet south and 190 feet west of well 18C5, top east end of upper concrete step of pump house; copper nail with washer, 10.00 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 11, 1941	7.07	Jan. 20, 1942	67.77	July 28, 1942	7.43
Nov. 13	68.11	Mar. 27	5.64	Nov. 6	69.17
Dec. 23	67.77	Apr. 22	5.63		

a Obstruction in well.

b Below sea level.

c Pumping.

6/10-18F2. Constructed by Geological Survey on property of Orange County. About 2.5 miles east of Huntington Beach, 1,510 feet south of Atlanta Avenue, 20 feet west of Bushard Street, and 1 foot north of power-line pole 426965E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 17.2 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 8.47 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Sept. 9, 1941	7.26	Jan. 20, 1942	a7.94	July 28, 1942	a7.56
Nov. 13	a8.14	Mar. 27	4.71	Nov. 6	a9.20
Dec. 23	a8.08				

6/10-18J4. Fairview Farms Water Co. California Division of Water Resources serial No. C-1270b and location No. 13245J. About 3 miles east of Huntington Beach, 0.2 mile west of Santa Ana River, 550 feet west of Wright Street, 80 feet south of Hamilton Street, and 35 feet south of pumping plant, in yard. Unused drilled well, diameter 10 inches, depth 255.7 feet. Measuring point, top west side of $1\frac{1}{2}$ -inch pipe in plug, 0.33 foot above top of casing, 0.20 foot above land-surface datum and 7.20 feet above sea-level datum of 1941. Additional measurements made 1922-28 by California Division of Water Resources, monthly 1930-31 by Orange County Flood Control District, and monthly 1927-29 by J. B. Lippincott.

Water level, in feet below land-surface datum, 1940-42

Dec. 20, 1940	6.93	Nov. 13, 1941	a7.17	July 3, 1942	ab22.54
Aug. 14, 1941	al7.37	Mar. 17, 1942	al2.71	Oct. 27	al6.83

6/10-18L1. Constructed by Geological Survey on property of Orange County. About 2.5 miles east of Huntington Beach, 10 feet south of Hamilton Street, 13 feet west of Bushard Street, and 1.5 feet south of power-line pole 97903E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 14.2 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 8.19 feet above sea-level datum of 1941. Reference bench mark, at abandoned well 18K1, 250 feet south and 100 feet east of well 18L1, at top east side of concrete collar; copper nail and washer 0.3 foot south of chiseled cross, 7.85 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Sept. 9, 1941	a7.49	Jan. 20, 1942	a7.57	July 28, 1942	a7.90
Nov. 13	a7.81	Mar. 27	5.05	Nov. 6	a9.52
Dec. 23	a7.65	Apr. 22	5.18		

6/10-18P2. Constructed by Geological Survey on property of Orange County. About 2.5 miles southeast of Huntington Beach, 4,080 feet south of Atlanta Avenue, 20 feet west of Bushard Street, and 1.5 feet south of power-line pole 477206E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 13.6 feet. Measuring point, top north side of casing, 0.5 foot above land-surface datum and 6.38 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

Sept. 9, 1941	10.99	Jan. 20, 1942	6.98	July 28, 1942	7.32
Nov. 13	7.24	Mar. 27	6.05	Nov. 6	7.83
Dec. 23	7.22				

6/10-19B1. Peter Karales. About 3 miles east of Huntington Beach, 1,350 feet west of Santa Ana River, 2,900 feet south of Hamilton Street, 1,100 feet east of Bushard Street, 500 feet southeast of barn, and 350 feet south of T-lane east, under turbine pump in field. Unused drilled well, diameter 8 inches, depth 135.0 feet. Measuring point, top south side of casing, between timbers supporting pump, at land-surface datum and 5.14 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1940-42

Dec. 28, 1940	2.46	Aug. 13, 1941	a6.82	Oct. 27, 1942	a7.39
May 13, 1941	1.91	July 3, 1942	ac7.70		

a Below sea level.

b Nearby wells pumping.

c Well 19B3 pumping.

6/10-1983. Peter Karales. Orange County Flood Control District No. 13235P; J. B. Lippincott's No. 251. About 2.5 miles southeast of Huntington Beach, 0.53 mile south of Hamilton Street, and 33 feet east of Bushard Street, under belt-driven turbine pump. Drilled irrigation well, diameter 12 inches, depth 100.7 feet. Casing perforated from 85 to 120 feet below land surface. Measuring point, northwest edge of rectangular hole cut in segment of channel iron atop casing, 0.04 foot above top of casing, 0.20 foot above land-surface datum and 5.38 feet above sea-level datum of 1941. Additional measurements made monthly 1939-40 and into 1941 by J. B. Lippincott.

Water level, in feet below land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 26, 1940	4.26	Nov. 13, 1941	3.71	July 3, 1942	(b)
May 13, 1941	2.18	Jan. 12, 1942	2.44	23	a8.00
Aug. 13	a7.80	Mar. 17	a6.96	Oct. 27	a5.37
19	a7.82				

6/10-1961. Constructed by Geological Survey on property of Orange County. About 2.5 miles southeast of Huntington Beach, 1.01 miles south of Atlanta Avenue, 20 feet west of Bushard Street, and 1.5 feet south of power-line pole 491992E. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 14.2 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 6.98 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42					
Sept. 9, 1941	7.92	Jan. 20, 1942	7.21	July 28, 1942	8.78
Nov. 13	8.11	Mar. 27	7.99	Nov. 6	9.09 -
Dec. 23	7.35				

6/10-1962. Constructed by Geological Survey on property of Orange County. About 2.5 miles southeast of Huntington Beach, 1.5 miles south of Atlanta Avenue, 33 feet west of Bushard Street, and 2 feet south of pole 327WU. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 13.0 feet. Measuring point, top north side of casing, 1.00 foot above land-surface datum and 5.77 feet above sea-level datum of 1941. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42					
Aug. 19, 1941	8.67	Dec. 23, 1941	6.46	July 28, 1942	7.74
Sept. 9	9.20	Jan. 20, 1942	6.51	Nov. 6	9.22
Nov. 14	7.27	Mar. 27	6.84		

6/10-1962. Constructed by Geological Survey on property of Orange County. About 2.5 miles southeast of Huntington Beach, 650 feet north of U. S. Highway 101, 30 feet west of Bushard Street, and 2 feet west of pole 320WU. (U2). Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 8.0 feet. Measuring point, top north side of casing, 1.25 feet above land-surface datum and 4.38 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Aug. 18, 1941	2.69	Dec. 23, 1941	1.48	July 28, 1942	1.98
Sept. 9	a3.19	Jan. 20, 1942	2.39	Nov. 6	2.99
Nov. 13	2.40	Mar. 27	a4.86		

6/10-1961. Constructed by Geological Survey on property of Orange County. About 2.5 miles southeast of Huntington Beach, 88 feet north of U. S. Highway 101, 25 feet west of Bushard Street, and 2 feet west of pole 317WU. Bored water-table well, diameter $1\frac{1}{4}$ inches, depth 11.2 feet. Measuring point, top north side of casing, 2.00 feet above land-surface datum and 8.90 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Sept. 9, 1941	5.19	Jan. 20, 1942	4.72	July 28, 1942	5.34
Nov. 13	5.34	Mar. 27	5.64	Nov. 6	5.65
Dec. 23	4.57				

a Below sea level.

b Pumping.

6/11-1Q1. Mrs. W. T. Newland. California Division of Water Resources serial No. C-1260m and location No. 13222C; J. B. Lippincott's No. 240. About 1.5 miles northeast of Huntington Beach, 150 feet north of Adams Avenue, 0.47 mile west of Cannery Street, 90 feet east of drainage ditch. Unused drilled well, diameter 16 inches, depth 380.0 feet. Measuring point, top of 6- by 6-inch pipe clamp at U. S. Geol. Survey washer, 0.48 foot above top of casing, 1.50 feet above land-surface datum, and 10.11 feet above sea-level datum of 1941. Water-level recorder maintained on well Nov. 30, 1940, to Aug. 11, 1941, by Geological Survey. Additional measurements made monthly 1932-33 and weekly since 1934 by Orange County Flood Control District, also monthly 1939-40 and into 1941 by J. B. Lippincott.

Water level, in feet below land-surface datum, 1940-42
(From recorder charts, except as indicated)

Date	Water level	Date	Water level	Date	Water level
Nov. 29, 1940	ab9.21	June 30, 1941	3.31	Mar. 30, 1942	bc21.97
Jan. 5, 1941	6.85	July 5	3.84	May 4	a3.99
10	6.60	10	4.33	11	a3.66
15	6.41	15	5.04	18	a2.86
20	6.20	20	5.66	25	a4.48
25	6.06	25	6.83	June 1	a4.60
30	6.03	31	6.93	8	a4.54
Feb. 5	5.88	Aug. 5	6.70	15	a6.65
10	5.62	10	6.69	22	a6.83
15	5.40	11	a.75	29	a5.21
20	5.03	18	a7.71	July 6	a5.80
25	4.63	Sept. 8	a8.21	13	a6.58
28	4.54	15	a8.13	20	a8.28
Mar. 5	4.14	29	a7.25	27	a7.9
10	3.89	Oct. 6	a7.66	Aug. 3	a8.16
15	3.55	13	a6.98	10	a7.48
20	3.32	20	a6.55	17	a7.88
25	3.16	28	a5.50	24	ab8.77
31	2.89	Nov. 3	a4.81	31	ab8.98
Apr. 5	2.71	10	a4.35	Sept. 14	a7.93
10	2.49	17	a3.83	21	a7.70
15	2.26	24	a3.54	28	a7.56
20	2.04	Dec. 8	a2.94	Oct. 5	a8.16
25	1.91	15	a2.43	12	a6.79
30	1.65	22	a1.98	19	a6.31
May 5	1.48	Jan. 5, 1942	a1.15	26	a6.27
10	1.35	12	a.91	Nov. 2	a5.49
15	1.29	19	a.64	9	a5.10
20	1.21	26	a.42	16	a4.76
25	1.25	Feb. 2	a.33	23	a4.48
31	1.60	9	a.31	30	a4.08
June 5	1.76	16	a1.81	Dec. 7	a4.02
15	2.30	23	a3.12	14	a3.80
20	2.47	Mar. 2	a6.27	21	a3.57
25	3.00	23	bc25.82	28	a3.19

6/11-2A3. L. J. Stearns. About 2 miles north of Huntington Beach, 750 feet south of Garfield Avenue, and 150 feet west of Huntington Beach Boulevard, in frame pump house, 5 feet east of square metal tank atop shed. Domestic well, reported depth 103 feet. Measuring point, top north side of casing, flush with top of concrete block, 0.40 foot above land-surface datum and 59.38 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42					
Jan. 3, 1941	56.94	Nov. 7, 1941	52.82	July 7, 1942	53.7
May 14	51.21	Jan. 14, 1942	51.28	Oct. 29	54.36
Aug. 13	53.19	Mar. 19	52.55		

a Tape measurement.

b Below sea level.

c Pumping.

d Pump shut off prior to measurement.

e Measurement approximate.

6/11-2G1. Southern California Water Co. California Division of Water Resources serial No. C-997h and location No. 13201C. About 2 miles north of Huntington Beach, 57 feet south of Clay Street, 210 feet west of Huntington Avenue, 54 feet north of well 2G2, in center of concrete foundation. Unused drilled well, formerly public-service, diameter 12 inches, depth 251.8 feet. Casing perforated from 80 to 118 feet below land surface. Measuring point, top west edge of casing at chisel cuts, at land-surface datum and 60.31 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Dec. 9, 1940	59.14	July 7, 1941	53.17	Mar. 30, 1942	53.75
26	58.82	14	53.22	May 4	54.49
30	58.81	21	53.58	11	54.44
Jan. 3, 1941	58.77	28	53.74	18	54.35
4	58.77	Aug. 4	53.98	25	54.26
6	58.69	11	54.02	June 1	54.20
11	58.49	18	54.16	8	54.17
15	58.39	Sept. 4	54.47	15	54.21
20	58.28	8	54.55	22	54.29
21	58.30	15	54.67	29	54.33
24	58.16	22	54.66	July 6	54.43
25	58.22	29	54.87	13	54.50
27	58.14	30	54.88	20	54.68
28	58.09	Oct. 6	54.83	27	54.66
29	58.04	13	55.03	Aug. 3	54.73
Feb. 3	57.91	20	55.08	10	54.85
10	57.67	28	55.05	17	54.94
17	57.00	Nov. 3	54.96	24	55.06
24	57.28	10	54.85	31	55.16
Mar. 3	57.02	17	54.78	Sept. 14	55.34
17	56.42	24	54.59	21	55.41
24	56.13	Dec. 1	54.66	28	55.42
31	55.79	8	54.36	Oct. 5	55.5
Apr. 7	55.50	15	54.20	12	55.49
14	55.22	22	54.08	19	55.47
21	54.92	29	53.94	26	55.47
28	54.68	Jan. 5, 1942	53.81	Nov. 2	55.40
May 5	54.42	12	53.66	9	55.31
12	54.20	26	54.25	16	55.22
19	53.98	Feb. 2	53.06	23	55.12
26	53.79	9	52.88	30	55.01
June 2	53.60	16	52.76	Dec. 7	54.93
9	53.43	23	52.67	14	54.84
16	53.48	Mar. 2	52.75	21	54.77
23	53.36	15	53.20	28	54.63
30	53.38	23	53.44		

6/11-2G2. Southern California Water Co. California Division of Water Resources serial No. C-997j and location No. 13201B. About 2 miles north of Huntington Beach, 111 feet south of Clay Street, and 225 feet west of Huntington Avenue, in center of concrete foundation. Unused drilled well, formerly public-service, diameter 12 inches, depth 123.3 feet. Gravel reported from 78 to 126 feet below land surface. Measuring point, top east side of casing at flat tip, 6.60 foot above land-surface datum and 61.17 feet above sea-level datum of 1941. Water-level recorder maintained on well Nov. 28, 1940, to Feb. 25, 1941, by Geological Survey.

Water level, in feet below land-surface datum, 1940-42

Dec. 5, 1940	a59.44	Jan. 15, 1941	a58.64	Feb. 24, 1941	57.56
10	a59.36	20	a58.53	Mar. 3	57.31
15	a59.27	25	a58.43	10	57.07
20	(b)	31	a58.27	17	56.73
25	a59.12	Feb. 5	a58.12	24	56.43
31	a59.00	10	a57.98	31	56.17
Jan. 5, 1941	a58.86	15	a57.88	Apr. 7	55.82
11	58.75	20	a57.73	14	55.45

a Noon reading from recorder charts.

b Recorder not operating.

6/11-262. Southern California Water Co.--Continued.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Apr. 21, 1941	55.22	Nov. 3, 1941	55.25	June 22, 1942	54.56
28	54.97	10	55.14	29	54.67
May 5	54.72	17	55.06	July 6	54.71
12	54.52	24	54.89	13	54.79
19	54.28	Dec. 1	54.75	20	54.88
26	54.09	8	54.64	27	54.94
June 2	53.91	15	54.52	Aug. 3	55.04
9	53.81	22	54.39	10	55.14
16	53.70	29	54.25	17	55.22
23	53.64	Jan. 5, 1942	54.11	24	55.36
July 7	53.70	12	53.89	31	55.46
14	53.75	26	53.56	Sept. 14	55.64
21	53.86	Feb. 2	53.37	21	55.71
28	54.01	9	53.18	28	55.78
Aug. 4	54.13	16	53.07	Oct. 5	55.81
11	54.28	23	52.97	12	55.81
18	54.43	Mar. 2	53.03	19	55.78
Sept. 4	54.34	15	53.46	26	55.77
8	54.82	23	53.71	Nov. 2	55.71
15	54.94	30	53.01	9	55.63
22	55.05	May 4	54.79	16	55.53
29	55.14	11	54.72	23	55.44
30	55.15	18	54.65	30	55.32
Oct. 6	55.25	25	54.56	Dec. 7	55.26
13	55.38	June 1	54.49	14	55.17
20	55.37	8	54.47	21	55.07
28	55.30	15	54.50	28	54.96

6/11-263. Southern California Water Co. California Division of Water Resources serial No. C-9971 and 13201A. About 2 miles north of Huntington Beach, 63 feet south of Clay Street, 57 feet west of Huntington Avenue, and 153 feet east of well 261. Unused drilled well, formerly public-service, diameter 12 inches, depth 258.5 feet. Casing perforated from 100 to 118 feet below land surface. Measuring point, raised point on top southeast side of casing, 0.20 foot above land-surface datum and 59.22 feet above sea-level datum of 1941. Reference bench mark, southeast corner of concrete foundation; U. S. Geol. Survey copper nail and washer, 59.75 feet above sea-level datum of 1941. Water-level recorder maintained on well Feb. 25 to Aug. 22, 1941, by Geological Survey.

Water level, in feet below land-surface datum, 1940-42

Dec. 9, 1940	a59.56	Feb. 28, 1941	c55.95	June 10, 1941	c52.31
26	58.02	Mar. 5	c55.78	15	c52.29
30	57.93	10	c55.47	20	c52.24
Jan. 3, 1941	b57.88	15	c55.31	25	c52.27
4	57.97	20	c55.04	30	c52.29
6	57.79	25	c54.81	July 5	c52.31
11	57.55	31	c54.52	10	c52.38
15	57.45	Apr. 5	c54.21	15	c52.46
20	57.32	10	c54.11	20	c52.61
21	57.35	15	c53.86	25	c52.71
24	57.12	20	c53.64	31	c52.95
25	57.11	25	c53.43	Aug. 5	c53.05
27	57.02	30	c53.29	10	c53.16
28	57.02	May 5	c53.06	15	c53.29
29	56.96	10	c52.95	20	c53.41
Feb. 3	56.80	15	c52.78	22	53.46
10	56.69	20	d54.12	Sept. 4	54.65
17	56.31	25	c52.56	8	54.03
24	56.04	31	c52.40	15	54.17
25	c56.03	June 5	c52.35	22	54.46

a Below sea level.

b Measurement may be inaccurate.

c From recorder charts.

d Well 264, 200 feet south, pumping.

6/11-203. Southern California Water Co.--Continued.

Water level, in feet below land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Sept. 29, 1941	54.51	Feb. 16, 1942	51.75	Aug. 10, 1942	55.31
30	54.41	23	51.88	17	55.24
Oct. 6	54.36	Mar. 2	52.33	24	55.29
13	54.52	15	53.79	31	55.55
20	54.56	23	54.89	Sept. 14	55.39
28	54.30	30	54.88	21	56.07
Nov. 3	54.02	May 4	54.03	28	56.04
10	53.97	11	53.87	Oct. 5	56.10
17	53.83	18	53.83	12	55.86
24	53.62	25	53.69	19	55.66
Dec. 1	53.77	June 1	53.70	26	55.67
8	53.35	8	53.87	Nov. 2	55.53
15	53.25	15	54.95	9	55.32
22	53.02	22	54.80	16	55.05
29	52.85	29	54.05	23	54.87
Jan. 5, 1942	52.58	July 6	54.4	30	54.74
12	52.40	13	54.43	Dec. 7	54.67
26	52.03	20	54.72	14	54.56
Feb. 2	51.85	27	54.80	21	54.43
9	51.77	Aug. 3	55.05	28	53.77

6/11-2H2. Miss Mary Williams. About 2 miles north of Huntington Beach, 120 feet south of William Street, 175 feet west of Hampshire Avenue, 30 feet northwest of dwelling, in concrete block. Unused drilled well, diameter 9 inches, depth 108.6 feet. Measuring point, top south side of casing at chisel cuts, 0.90 foot above land-surface datum and 58.51 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Jan. 2, 1941	55.77	Nov. 7, 1941	52.28	July 7, 1942	52.16
May 14	50.63	Mar. 19, 1942	51.52	Oct. 29	52.92
Aug. 13	51.95				

6/11-11J1. Mrs. David Stewart. California Division of Water Resources serial No. C-1261f and location No. 13213. In Huntington Beach, 270 feet south of Indianapolis Street and 50 feet west of Hampshire Avenue. Unused well, depth 88.0 feet. Measuring point, top of 1-inch board over casing, 0.40 foot below land surface datum. Well destroyed in 1942. Water levels, in feet below land-surface datum: May 14, 1941, a/0.8; Nov. 6, 1941, 0.95; Jan. 13, 1942, 0.81; Mar. 18, 1942, 0.71.

6/11-11Q1. Superior Oil Co. California Division of Water Resources serial No. C-1261s and location No. 13204B. About half a mile east of Huntington Beach, 160 feet north of Atlanta Avenue and 210 feet east of Huntington Avenue, in southwest corner of fenced lot, east of bank. Unused drilled well, diameter 12 inches, depth 323.3 feet. Measuring point, top west side of casing, 0.70 foot above land-surface datum and 18.35 feet above sea-level datum of 1941.

Water level, in feet below land-surface datum, 1941-42

Jan. 6, 1941	15.31	Nov. 6, 1941	15.12	July 6, 1942	16.12
May 14	14.78	Jan. 12, 1942	14.83	Oct. 27	15.75
Aug. 13	15.90	Mar. 18	16.15		

6/11-12A1. Mrs. W. T. Newland. About 2 miles northeast of Huntington Beach, 200 feet south of Adams Avenue, 90 feet west of Cannery Avenue, 10 feet north of wood-stave tank, in pump house. Drilled irrigation well, diameter 10 inches, depth 154.0 feet. Measuring point, top south side of casing, 1.00 foot above land-surface datum and 9.13 feet above sea-level datum of 1941. Reference bench mark, southeast corner of concrete foundation; chiseled square, 9.34 feet above sea-level datum of 1941.

a Measurement approximate.

6/11-12A1. Mrs. W. T. Newland--Continued.

Water level, in feet, with reference to land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 31, 1940	-4.87	Nov. 7, 1941	-2.58	July 6, 1942	-6.35
May 13, 1941	-.22	Jan. 13, 1942	+53	Oct. 28	-4.01
Aug. 13	a-10.18	Mar. 18	(b)		

6/11-12C1. Mr. Thompson. California Division of Water Resources serial No. C-1260j and location No. 13223E. About 1.5 miles northeast of Huntington Beach, 950 feet south of Adams Avenue, 2,550 feet east of Hampshire Avenue, 50 feet west of drainage ditch, in pump house in field. Drilled irrigation well, diameter 10 inches, reported depth 167 feet. Measuring point, bottom edge of metal strap supporting oil line, south side of pump, 0.80 foot above land-surface datum and 8.76 feet above sea-level datum of 1941.

Water level, in feet, with reference to land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 31, 1940	-4.07	Nov. 6, 1941	-2.49	July 6, 1942	-6.90
May 14, 1941	-.10	Jan. 13, 1942	+22	Oct. 28	-4.19
Aug. 13	a10.80	Mar. 18	(b)		

6/11-12E1. F. E. Farnsworth. California Division of Water Resources serial No. C-1259 and location No. 13213C. About 1 mile northeast of Huntington Beach, 410 feet north of Indianapolis Street, and 140 feet east of Hampshire Avenue, 100 feet southeast of dwelling and 1 foot west of tower painted red. Drilled domestic well, diameter 8 inches, depth 94.7 feet. Measuring point, top northwest corner of 2- by 6-inch plank over well, at land-surface datum and 28.1 feet above sea-level datum of 1941. Additional measurements made about yearly 1922-28 by California Division of Water Resources and in 1930 by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 31, 1940	25.73	Nov. 6, 1941	b25.92	July 6, 1942	25.87
May 14, 1941	24.09	Jan. 13, 1942	24.45	Oct. 28	25.64
Aug. 13	26.09	Mar. 18	27.13		

6/11-12J2. Mrs. W. T. Newland. J. B. Lippincott's No. 210-a. About 1.5 miles east of Huntington Beach, 250 feet south of Indianapolis Street, 1,280 feet west of Cannery Avenue, and 300 feet east of well 12J1, in field. Unused drilled well, diameter 8 inches, depth 82.2 feet. Measuring point, top east side of casing at chisel cuts, 1.00 foot above land-surface datum and 6.70 feet above sea-level datum of 1941. Additional measurements made monthly 1937-40 and into 1941 by J. B. Lippincott.

Water level, in feet below land-surface datum, 1940-42					
Date	Water level	Date	Water level	Date	Water level
Dec. 31, 1940	4.41	Nov. 6, 1941	2.68	July 6, 1942	a7.26
May 14	.86	Jan. 13, 1942	.13	Oct. 27	4.27
Aug. 14	a9.57	Mar. 19	ac18.51		

6/11-13C2. I. Oka. California Division of Water Resources serial No. C-1261a and location No. 13214A; J. B. Lippincott's No. 1261-A. About 1 mile east of Huntington Beach, 250 feet south of Atlanta Avenue, and 1,080 feet west of Newland Avenue, in pump house. Drilled irrigation well, diameter 16 inches, depth 229.8 feet. Measuring point, notched top west side of casing, at land-surface datum and 4.80 feet above sea-level datum of 1941. Additional measurements made monthly 1930-33 by Orange County Flood Control District; in 1939 and monthly in 1940 and into 1941 by J. B. Lippincott.

Water level, in feet below land-surface datum, 1940-42 -					
Date	Water level	Date	Water level	Date	Water level
Dec. 26, 1940	2.88	Nov. 6, 1941	2.06	July 6, 1942	3.59
May 14, 1941	1.00	Jan. 12, 1942	1.33	Oct. 27	3.06
Aug. 14	ab26.67	Mar. 17	a5.91		

a Below sea level.

b Pumping.

c Well near by pumping.

6/11-13F2. California Division of Water Resources serial No. C-1263d and location No. 13224F; J. B. Lippincott's No. 204. About 1.5 miles east of Huntington Beach, 2,100 feet south of Atlanta Avenue, 190 feet west of Newland Avenue, and 150 feet south of drainage ditch, lone casing in field. Unused drilled well, diameter 7 inches, depth 110.6 feet. Measuring point, top north side of outer casing, 1.50 feet above land-surface datum and 4.06 feet above sea-level datum of 1941. Additional measurements made irregularly in 1932 and 1933, about monthly 1939-40 and into 1941, by Orange County Flood Control District, and about monthly 1939-40 and into 1941 by J. B. Lippincott. Water-level recorder maintained on well Dec. 1931 to Feb. 1932 by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1940-42

Date	Water level	Date	Water level	Date	Water level
Dec. 26, 1940	-1.39	Jan. 12, 1942	+0.60	July 6, 1942	-a3.44
Aug. 14, 1941	a4.17	Mar. 17	-a6.77	Oct. 27	-2.47
Nov. 6	-.74				

6/11-13F3. About 1.5 miles east of Huntington Beach, 0.27 mile south of Atlanta Avenue, 400 feet west of Newland Avenue, 350 feet north of drainage ditch, lone casing in field. Abandoned drilled oil well, diameter 16 inches, depth 142.5 feet. Measuring point, top of 1-inch nipple welded to casing cover plate, 2.00 feet above land-surface datum which is 4 feet above mean sea level (interpolated from topographic map).

Water level, in feet below land-surface datum, 1940-42

Dec. 26, 1940	3.39	Nov. 6, 1941	1.48	July 6, 1942	a4.22
May 14, 1941	.59	Mar. 17, 1942	a8.05	Oct. 27	3.22
Aug. 14	a7.28				

6/11-13G1. Surf Land & Water Co. California Division of Water Resources serial Nos. C-1263b and C-1263c, location Nos. 13224B and 13224D. About 1.5 miles east of Huntington Beach, 1,500 feet south of Atlanta Avenue, 1,150 feet east of Newland Avenue, and 710 feet east of well 13G2. Drilled irrigation well, diameter 12 inches, depth 169.8 feet. Measuring point, top of 1-inch pipe, 0.80 foot above land-surface datum and 4.32 feet above sea-level datum of 1941. Additional measurements made in 1930 and monthly 1931 through February 1933 by County Flood Control District.

Water level, in feet below land-surface datum, 1940-42

Dec. 26, 1940	a3.76	Nov. 6, 1941	1.83	July 6, 1942	a4.78
May 14, 1941	1.04	Jan. 12, 1942	.43	Oct. 27	a3.68
Aug. 14	(b)	Mar. 17	a8.98		

6/11-13G2. Surf Land & Water Co. Geological Survey continuing observation well. California Division of Water Resources serial No. C-1263a and location No. 13224A. About 1.5 miles east of Huntington Beach, 0.29 mile south of Atlanta Avenue, and 0.11 mile east of Newlands Avenue. Unused drilled well, diameter 12 inches, reported depth 154 feet. Water-level recorder maintained on well since 1930 by Orange County Flood Control District. Measuring point, top edge of hole in recorder floor, 2.68 feet above top of casing, 3.50 feet above land-surface datum and 6.35 feet above sea level datum of 1941. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1930-42

May 26, 1930	1.08	Aug. 8, 1930	a8.41	Oct. 24, 1930	a3.16
June 2	a2.91	12	a6.3	31	a4.08
9	a3.88	15	a7.05	Nov. 7	2.40
16	a5.20	22	a6.23	14	1.74
23	a5.43	29	a9.31	21	1.47
30	a5.13	Sept. 5	a7.45	28	.58
July 7	a4.19	12	a7.70	Dec. 5	.69
8	a5.61	19	a8.26	12	.39
15	a7.33	26	a5.25	19	.59
18	a8.59	Oct. 3	a6.51	23	.40
25	a7.19	10	a6.42	26	c .27
Aug. 1	a8.55	17	a6.19	Jan. 2, 1931	c .08

a Below sea level.

b Pumping.

c Above land-surface datum.

6/11-13G2. Surf Land & Water Co.--Continued.

Water level, in feet below land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1931	0.50	Dec. 3, 1931	1.10	Jan. 21, 1933	0.54
9	a.43	10	.59	25	a1.05
16	a.50	17	.46	Feb. 1	a.28
23	a.45	24	.22	8	a.78
30	.25	31	.39	15	a.79
Feb. 7	a.46	Jan. 7, 1932	1.20	21	1.20
13	.07	14	.22	28	1.51
17	2.13	21	.56	Mar. 7	1.85
20	1.99	21	a.47	14	.53
27	b4.60	28	.49	21	2.78
Mar. 2	b4.21	Feb. 4	a.09	28	b5.65
6	b7.86	11	a.25	Apr. 4	b5.12
13	b8.62	18	.06	11	b4.89
20	b10.79	25	a.52	18	b3.90
27	b10.91	Mar. 3	a.37	25	2.63
Apr. 3	b11.51	10	a.12	May 2	1.50
10	b12.21	17	a.80	9	1.96
17	b10.47	24	1.88	16	c3.18
23	b9.19	31	2.67	23	1.99
30	b5.96	Apr. 7	b3.51	31	b3.31
May 7	b3.83	14	b3.26	June 7	2.04
9	b3.53	21	2.30	14	b3.99
16	b4.06	28	2.23	21	b2.92
23	b5.48	May 5	1.53	28	b4.97
26	b3.89	12	2.76	July 5	b4.58
28	b3.92	19	b2.86	12	b4.13
June 4	b3.50	26	b4.96	19	b4.32
11	b5.63	June 1	b4.10	26	b3.94
18	b6.07	8	b5.86	Aug. 2	b5.09
25	b6.84	15	b5.99	9	b3.87
July 2	b7.49	22	b7.60	16	b4.10
9	b7.50	29	b6.00	23	b6.11
16	b7.81	July 6	b6.43	30	b6.05
23	b7.77	13	b6.44	Sept. 6	b7.02
30	b7.79	20	b5.66	13	b4.33
Aug. 6	b8.03	27	b5.73	20	b3.69
13	b7.17	Aug. 3	b6.89	27	b4.44
20	b6.91	10	b6.82	Oct. 4	b3.04
27	b7.45	17	b5.99	11	b3.12
Sept. 3	b6.02	24	b5.48	18	2.41
10	b6.16	31	b5.88	25	b3.34
17	b5.13	Sept. 7	b5.55	Nov. 1	2.17
24	b4.99	14	b4.94	8	b3.08
Oct. 1	b4.28	21	b4.50	15	b3.95
8	b3.79	28	b5.25	22	b2.88
9	b4.1	Oct. 5	b3.68	29	1.28
13	b4.6	13	2.04	Dec. 6	1.09
14	b3.7	20	1.90	14	1.86
15	b3.55	27	b3.93	20	.18
22	b3.88	Nov. 3	2.66	27	.00
26	b3.8	10	2.70	Jan. 3, 1934	.22
29	b3.77	17	2.44	10	a .42
31	b3.5	23	b3.47	17	.60
Nov. 5	b3.99	30	1.47	24	a .48
9	2.8	Dec. 7	2.31	31	1.35
12	b3.82	14	.18	Feb. 7	.47
16	2.4	21	.30	14	2.03
17	2.7	28	a.05	21	bd5.34
19	1.52	Jan. 4, 1933	.06	28	b4.68
23	.9	11	.40	Mar. 7	b5.96
26	1.51	13	a.41	14	b7.94

a Above land-surface datum.

b Below sea level.

c Well 500 feet east pumping.

d Several wells in vicinity pumping.

6/11-1362. Surf Land & Water Co.--Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
Mar. 21, 1934	a8.03	May 28, 1935	1.99	Aug. 20, 1936	a10.00
28	a7.42	June 5	2.19	27	a9.30
Apr. 4	a6.01	12	2.77	Sept. 3	a10.19
11	a7.41	19	a4.54	10	a9.73
18	a5.83	26	a5.28	17	a8.01
25	a4.84	July 3	a4.46	24	a7.02
May 2	a5.25	10	a6.01	Oct. 1	a6.36
9	a6.70	17	a6.46	8	a5.31
16	a6.01	24	a6.18	15	a5.45
24	a7.36	31	a6.12	22	a5.04
29	a6.75	Aug. 7	a8.22	29	a4.70
June 5	a5.99	14	a6.40	Nov. 5	a4.34
12	a4.34	21	a7.76	12	a5.09
19	a6.29	28	a5.38	19	a5.31
26	a6.02	Sept. 4	a7.28	25	a5.26
July 3	a8.46	11	a7.36	Dec. 2	a4.25
10	a6.27	18	a6.35	9	a5.11
17	a7.63	25	a5.20	16	2.65
24	a7.24	Oct. 2	a4.21	23	2.31
31	a8.95	9	a3.57	30	2.09
Aug. 7	a8.89	16	a4.70	Jan. 7, 1937	1.94
14	a8.46	23	a3.32	14	1.42
22	a6.80	30	a4.22	21	1.73
29	a8.90	Nov. 6	a2.95	28	1.73
Sept. 5	a7.82	14	a3.53	Feb. 4	1.61
12	a7.18	20	2.77	11	1.17
19	a7.86	27	2.04	18	.15
26	a6.15	Dec. 4	2.33	25	.62
Oct. 3	a6.19	11	a2.93	Mar. 4	.55
10	a6.12	18	.90	11	.15
17	a4.14	26	.60	18	.59
24	2.17	Jan. 2, 1936	.75	25	be .23
31	2.06	9	.37	Apr. 1	.20
Nov. 7	1.59	16	2.21	8	.21
14	1.94	23	2.10	15	.66
21	1.05	30	a5.80	22	2.29
28	.80	Feb. 6	a3.52	29	1.09
Dec. 5	.52	13	a3.04	May 6	1.70
12	.58	20	1.98	12	2.42
19	.67	27	a3.29	19	2.61
26	.02	Mar. 5	a5.26	26	2.24
Jan. 2, 1935	b.01	12	a4.82	June 2	a3.62
9	b.11	19	a8.02	9	a3.32
16	b.17	26	a9.36	16	a3.72
23	b.04	Apr. 2	a9.09	23	a4.49
30	b.09	9	a7.41	30	a4.91
Feb. 2	b.29	16	a4.91	July 7	a4.92
11	b.97	23	a3.80	14	a6.78
13	b.87	30	a3.58	21	a5.35
20	.14	May 7	a4.27	28	a7.49
27	b.05	14	a6.53	Aug. 4	a5.64
Mar. 6	b.17	21	a6.95	11	a5.66
13	b.02	28	a6.62	18	a6.55
20	b.05	June 4	a6.29	25	a6.12
27	b.53	11	a7.16	Sept. 1	a5.73
Apr. 3	b.06	18	a7.02	8	a5.96
10	b.41	25	a6.86	15	a6.41
17	b.54	July 2	a8.03	22	a4.95
24	b.39	9	a10.09	29	a4.87
May 1	.17	16	a11.51	Oct. 6	a4.51
8	.47	23	a10.96	13	a4.03
15	.73	30	a11.39	20	a3.77
22	1.29	Aug. 12	a9.38	27	a4.28

a Below sea level.

b Above land surface datum.

c Water flowing into casing.

6/11-13G2. Surf Land & Water Co.--Continued.

Water level, in feet below land-surface datum, 1930-42					
Date	Water level	Date	Water level	Date	Water level
Nov. 3, 1937	a3.58	Jan. 4, 1939	.16	Mar. 13, 1940	a5.93
10	a3.35	11	.09	20	a8.36
17	a3.28	18	b.01	27	a8.72
24	2.65	25	b.53	Apr. 3	a6.27
Dec. 1	2.14	Feb. 1	b.51	10	a5.79
8	2.79	8	b.62	17	a4.69
15	1.57	15	b.13	24	a3.46
22	1.36	22	b.51	May 1	2.32
29	1.14	Mar. 1	b.30	8	2.22
Jan. 5, 1938	.70	8	b.16	15	2.82
12	1.98	15	1.59	22	a3.61
19	1.61	22	2.22	29	a5.30
26	2.42	29	2.29	June 5	a4.88
Feb. 2	a3.02	Apr. 5	1.54	12	a5.45
12	1.65	12	1.91	19	a5.28
16	1.74	19	1.50	26	a5.89
23	2.10	26	2.28	July 3	a5.57
Mar. 11	2.02	May 3	2.41	10	a6.97
16	.67	10	a3.70	17	a7.23
24	.24	17	a3.77	24	a7.32
30	.18	24	a4.23	31	a7.07
Apr. 6	.55	31	a4.62	Aug. 7	a8.55
13	.86	June 7	a4.52	14	a7.63
20	1.15	14	a5.01	21	a8.18
27	.94	21	a6.36	28	a7.41
May 4	.07	28	a6.20	Sept. 4	a6.92
11	.67	July 5	a5.70	11	a7.08
18	.84	12	a8.02	18	a6.68
25	.96	19	a7.36	25	a6.34
June 1	1.92	26	a6.82	Oct. 2	a5.85
8	2.50	Aug. 2	a6.67	9	a4.82
15	2.76	9	a8.21	15	a4.76
22	a3.37	16	a8.01	22	a4.53
29	a3.47	23	a6.82	31	a3.23
July 6	a3.82	30	a8.36	Nov. 6	a2.87
11	a4.07	Sept. 6	a6.49	13	a2.95
13	a3.94	13	a6.12	20	a3.73
20	a5.23	20	a7.62	27	a3.27
27	a5.54	27	a5.14	Dec. 4	a3.49
Aug. 3	a5.58	Oct. 4	a2.93	11	2.49
10	a6.06	11	2.72	18	a3.13
17	a6.20	18	2.60	26	2.50
24	a5.97	25	2.34	Jan. 2, 1941	2.45
31	a6.97	Nov. 1	2.55	8	2.73
Sept. 7	a5.50	8	2.55	15	2.71
14	a5.45	15	1.77	22	2.68
21	a4.76	22	2.03	29	a3.98
28	a4.86	29	2.15	Feb. 5	a3.93
Oct. 5	a5.47	Dec. 6	1.90	11	1.80
10	a5.50	13	2.12	19	.65
13	a5.47	20	2.82	25	b.40
19	a4.44	27	2.09	Apr. 17	b1.46
26	a4.57	Jan. 3, 1940	1.15	24	b1.30
Nov. 2	a2.96	10	.39	May 8	b.95
9	a3.09	17	.62	14	b.30
16	a2.97	24	1.33	21	.42
23	a4.33	31	1.76	28	2.12
30	a4.38	Feb. 7	.60	June 4	2.01
Dec. 7	a5.12	14	1.06	11	2.05
14	a3.02	21	1.10	18	2.48
21	.85	28	1.96	27	a4.01
28	.43	Mar. 6	a4.61	July 2	a3.99

a Below sea level.

b Above land-surface datum.

c Well 500 feet east pumping.

6/11-1302. Surf Land & Water Co.--Continued.

Water level, in feet below land-surface datum, 1930-42

Date	Water level	Date	Water level	Date	Water level
July 9, 1941	a5.74	Jan. 7, 1942	b0.85	July 8, 1942	a5.49
16	a6.24	14	b.40	15	a5.52
23	a6.70	21	b.47	22	a6.20
30	a5.79	28	.48	29	a5.97
Aug. 6	a5.54	Feb. 4	.61	Aug. 5	a6.43
13	a5.52	11	2.85	12	a6.28
20	a5.99	18	a4.52	19	a6.33
27	a6.05	25	a5.24	26	a5.86
Sept. 3	a5.73	Mar. 4	a6.75	Sept. 2	a6.31
10	a5.58	11	a8.67	10	a5.39
17	a5.01	18	a7.61	16	a5.31
24	a4.32	25	a6.60	23	a4.56
Oct. 1	a4.60	Apr. 1	a7.99	30	a4.23
8	a3.90	8	a6.10	Oct. 7	a3.46
15	a4.38	15	a4.44	15	a3.14
22	2.82	22	2.18	21	a3.17
29	1.56	29	1.05	28	2.70
Nov. 5	1.36	May 6	2.38	Nov. 4	1.74
12	.71	13	2.64	12	2.11
19	.38	20	a3.38	18	2.14
26	1.14	27	a3.59	25	2.10
Dec. 3	.75	June 3	a4.25	Dec. 2	2.13
10	.19	10	a4.32	9	1.62
17	.10	17	a4.69	16	1.53
24	b.40	24	a3.98	23	1.12
31	b.68	July 1	a5.31	30	.98

6/11-1304. Constructed by Geological Survey on property of Surf Land & Water Co. About 1.5 miles east of Huntington Beach, 0.29 mile south of Atlanta Avenue, 0.1 mile east of Newland Street, and 10 feet east of well 6/11-1302, in field. Bored water-table well, diameter 8 inches, depth 12.7 feet; casing perforated from 6 to 13 feet below land surface. Measuring point, top north side of casing, 0.80 foot above land-surface datum and 3.72 feet above sea-level datum of 1941. Water-level recorder maintained on well June 23, 1941 to February 18, 1942 by Geological Survey. All water levels are below sea level.

Water level, in feet below land-surface datum, 1941-42

(Noon readings, from recorder charts, except as indicated)

June 23, 1941	c3.23	Oct. 20, 1941	4.77	Feb. 15, 1942	3.74
25	3.27	25	4.77	20	c3.78
30	3.40	31	4.76	23	c3.82
July 5	3.50	Nov. 5	4.76	Mar. 16	c3.61
10	3.60	10	4.76	23	c3.87
15	3.70	15	4.78	30	c4.00
20	3.79	20	4.77	Apr. 20	c4.20
25	3.84	25	4.68	May 4	c4.39
31	3.92	30	4.66	11	c4.53
Aug. 5	3.96	Dec. 5	4.65	18	c4.69
10	4.05	10	3.28	25	c5.03
15	4.13	15	3.74	June 1	c5.36
20	4.21	20	3.76	8	c4.66
25	4.23	25	3.77	15	c5.89
31	4.26	31	3.53	22	c6.02
Sept. 5	4.30	Jan. 5, 1942	3.47	29	c6.36
8	c4.32	10	3.48	July 6	c6.54
15	4.39	15	3.50	13	c6.77
20	4.43	20	3.53	20	c7.02
25	4.50	25	3.57	27	c7.2
30	4.55	31	3.61	Aug. 10	c7.49
Oct. 5	4.60	Feb. 5	3.66	17	c7.67
10	4.67	10	3.69	31	c8.03
15	4.73				

a Below sea level.

b Above land-surface datum.

c Tape measurement.

6/11-13M1. Mills Land & Water Co. California Division of Water Resources serial No. C-1275 and location No. 13215B; J. B. Lippincott's No. 223. About 1 mile southeast of Huntington Beach, 80 feet north of U. S. Highway 101, 80 feet east of Huntington Beach Boulevard, and 20 feet south of tank and white tower. Drilled domestic well, diameter 7 inches, depth 363.1 feet. Water-level recorder maintained on well Apr. 4, 1941, to Sept. 9, 1941, by Geological Survey. Measuring point, 2- by 4-inch board over north side of well at notch, 3.49 feet above top of casing, 4.49 feet above land-surface datum and 10.57 feet above sea-level datum of 1941. Additional measurements made about monthly June 1927 to December 1929 and into 1930 by J. B. Lippincott.

Highes Water level, in feet below land-surface datum, 1941-42
(Noon readings, from recorder charts, except as indicated)

Date	Water level	Date	Water level	Date	Water level
Apr. 5, 1941	2.73	Aug. 10, 1941	5.03	Mar. 2, 1942	b4.65
10	3.28	15	5.22	15	b5.28
15	2.31	20	4.76	23	b5.49
20	2.62	25	4.90	30	b5.91
25	2.70	31	5.00	Apr. 20	b4.47
30	2.76	Sept. 5	4.87	27	b4.48
May 5	2.73	15	b3.63	May 4	b3.99
10	2.27	22	b4.90	11	b4.20
15	2.57	Oct. 6	b4.79	18	b4.51
20	2.92	13	b4.83	25	b4.82
25	2.77	20	b4.84	June 1	b4.59
31	3.51	28	b4.11	8	b4.78
June 5	3.37	Nov. 3	b3.48	15	b4.65
10	3.15	10	b3.47	22	b4.42
15	3.65	17	b4.40	29	b4.65
20	3.47	24	b3.57	July 6	b4.91
25	3.55	Dec. 8	b3.46	13	bc4.96
30	3.97	15	b3.89	20	b4.90
July 5	3.87	22	(c)	27	b5.06
10	4.17	Jan. 5, 1942	b2.84	Aug. 3	b4.85
15	4.85	12	b3.71	10	b5.30
20	5.17	19	b2.88	17	b4.85
25	5.31	Feb. 2	b3.33	24	b5.30
31	4.81	16	b3.42	31	b4.93
Aug. 5	a4.69	23	b4.85		

6/11-13M3. Constructed by Geological Survey on property of Mills Land & Water Co. About 1 mile southeast of Huntington Beach, 90 feet north and 75 feet east from intersection of U. S. Highway 101 and Hampshire Avenue, 35 feet north and 15 feet west from well 13M1, and 6 feet west of garage. Bored water-table well, diameter 8 inches, depth 13.7 feet, casing perforated from 7.7 to 13.7 feet below land surface. Measuring point, top of casing at chisel cuts, 1.25 feet above land-surface datum and 8.04 feet above sea-level datum of 1941. Reference bench mark, 5 feet south and 6 feet east from well, in concrete foundation of water-tank tower support; U. S. Geol. Survey nail and washer, 7.44 feet above sea-level datum of 1941. Water-level recorder maintained on well April 4, 1941, to Feb. 18, 1942.

Water level, at noon, in feet below land-surface datum, 1941-42
(Highest daily level, from recorder charts, except as indicated)

Apr. 5, 1941	3.45	May 31, 1941	4.61	July 25, 1941	6.31
10	3.50	June 5	4.94	31	6.34
15	3.47	10	5.49	Aug. 5	6.22
20	3.75	15	6.05	10	6.28
25	3.72	20	6.41	15	6.51
30	3.74	25	6.27	20	6.44
May 5	3.86	30	6.41	25	6.28
10	3.76	July 5	6.39	31	6.39
15	3.85	10	5.82	Sept. 5	6.23
20	4.25	15	6.39	10	6.04
25	4.33	20	6.41	15	6.19

a Estimated.

b Tape measurement.

c Pumping.

6/11-13M3---Continued.

Water level, in feet below land-surface datum, 1941-42
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level
Sept. 20, 1941	6.18	Dec. 25, 1941	6.15	May 4, 1942	a5.70
25	6.23	31	6.00	11	a6.19
30	6.36	Jan. 5, 1942	6.16	18	a6.34
Oct. 5	6.35	10	6.15	25	a6.50
10	6.44	15	5.83	June 1	a6.06
15	6.54	20	6.01	8	a6.47
20	5.98	25	6.14	15	a6.37
25	5.05	31	6.21	22	a6.51
31	6.27	Feb. 5	6.17	29	a6.16
Nov. 5	6.34	10	6.20	July 6	a6.61
10	6.28	15	6.09	13	a6.57
15	6.35	20	a6.31	20	a6.72
20	6.16	23	a6.35	27	a6.43
25	6.31	Mar. 2	a6.38	Aug. 3	a6.55
30	6.44	16	a5.96	10	a6.43
Dec. 5	6.04	23	a6.11	17	a6.48
10	6.07	30	a6.09	24	a6.34
15	6.08	Apr. 20	a5.83	31	a6.49
20	5.94	27	a6.09		

I-9F1 (#941, p. 133). 7/ The Irvine Co. Geological Survey continuing observation well. About 3 miles south of Santa Ana. Measuring point, bottom of pump base at hole in base ring, 0.15 foot above top of casing, 0.55 foot above land-surface datum and 51.55 feet above mean sea level (altitude by Orange County Flood Control District). Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	26.67	Apr. 8	bcl55.96	July 8	bcl66.33	Oct. 7	bcl64.75
14	25.91	15	bcl56.10	15	49.91	15	bcl64.72
21	25.09	22	42.05	22	bcl59.15	21	bcl67.51
28	25.06	29	bcl49.70	29	bcl66.62	28	bcl63.73
Feb. 4	25.43	May 6	37.66	Aug. 5	50.88	Nov. 4	39.37
11	27.22	13	33.94	12	44.62	12	38.38
18	29.63	20	32.67	18	43.22	18	bcl59.28
25	29.77	27	35.35	26	42.61	25	38.99
May 4	31.47	June 3	36.87	Sept. 2	41.63	Dec. 2	bcl66.38
11	36.28	10	36.83	10	41.38	9	37.16
18	39.34	17	39.35	16	41.65	16	38.01
25	bcl70.90	24	36.50	23	41.77	23	37.12
Apr. 1	bcl72.54	July 1	37.73	30	42.64	30	35.70

a Tape measurement.

b Pumping.

c Below sea level.

7/ The initial letter in the number of this well indicates the Irvine tract, which is the easternmost part of the Long Beach-Santa Ana area. The remainder of the number is in conformity with the system used by the Geological Survey in numbering its other wells in this area.

SAN JOAQUIN COUNTY (MOKELUMNE AREA)

By J. W. Robinson

PROGRAM OF WORK

During 1942 the East Bay Municipal Utility District continued its program of measuring the water level in observation wells in the Mokelumne area, which is in the central part of the so-called Great Valley. Many of the wells have been measured by other agencies also. Of these observation wells, 24 were selected in 1935 by the Federal Geological Survey as typical, and their records were used as the basis of an approximate index to changes in ground-water storage in the area. In 1942 the water level in each of the 24 wells was measured monthly, and, all together, 274 measurements were made. No water-level recorders or float gages were operated.

The first of the following tables correlates the average yearly fluctuations in water level since 1933 in the 24 selected wells with the yearly fluctuations in rainfall. Excessive rainfall and rising water levels began in 1940 and continued to the end of 1942.

The second table shows the water-level changes in 1942 by periods of increasing and diminishing withdrawal for irrigation.

Average fluctuations of water level in 24 observation wells and fluctuations of rainfall in the Mokelumne area, 1934-42

Year	Water level		Rainfall <u>a/</u>	
	Yearly rise (+) or decline (-) (feet)	Accumulated rise (+) or decline (-) (feet)	Yearly excess (+) or deficiency (-) (inches)	Accumulated excess (+) or deficiency (-) (inches)
1934	-0.72	-0.72	-12.78	-12.78
1935	+0.07	-.65	-3.20	-15.98
1936	+1.53	+.88	+11.86	-4.12
1937	+1.17	+2.05	+5.11	+.99
1938	+1.24	+3.29	+14.31	+15.30
1939	-3.58	-.29	-12.70	+2.60
1940	+1.31	+1.02	+15.18	+17.78
1941	+1.34	+2.36	+5.68	+23.46
1942	+.72	+3.09	+8.52	+31.98

a Average of rainfall at Electra, West Point, and Twin Lakes. Average yearly rainfall, 1906-40, at the three stations was 37.98 inches.

Seasonal changes in water level, in feet, in 24 observation wells in the Mokelumne area, 1942

Period	Greatest rise	Greatest recession	Average water-level change
Jan. 1 to May 31 (increasing withdrawal for irrigation)	+7.45	-3.00	+2.02
June 1 to Dec. 31 (diminishing withdrawal)	+3.4	-6.26	-1.30
The year	+3.18	-.39	+7.2

The preceding tables indicate that replenishment in 1942 was greatest during the first half of the year, as in 1940 and 1941. During 1942, rainfall was especially heavy during April and May, ordinarily a period of increasing withdrawal for irrigation. From July through October rainfall was deficient, and the average water level declined rapidly from its mid-year peak. At the end of December, however, notwithstanding this decline, the water levels in the 24 wells averaged 0.72 foot higher than at the end of 1941.

WELL-NUMBERING SYSTEM

The numbers assigned to the observation wells of the Mokelumne area indicate their location according to a projection of the rectangular system of public-land surveys.^{1/} In the number 3717A1, for example, the first digit indicates the township (T.3N.), the second digit indicates the range (R. 7 E.), the next two digits indicate the section (sec. 17), and the letter indicates the 40-acre subdivision of the section. Within each 40-acre tract the wells are numbered serially as indicated by the final digit or digits of the number. Thus, well 3717A1 is in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 17, T. 3 N., R. 7 E., and was the first well in that tract to be listed.

WATER-LEVEL MEASUREMENTS

For an explanation of the plan followed in listing the well records for California, see page 27.

363L3 (*840, p. 45; 845, p. 44; 886, p. 53; 911, p. 132; 941, p. 137). F. B. Mills. Land-surface datum is 41.24 feet above sea-level datum of earlier reports and 2.10 feet above measuring point.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 5	14.78	Apr. 3	13.25	Sept. 1	15.72
Mar. 2	13.06	May 1	13.35	Oct. 5	14.19

3617A1 (*840, p. 45; 845, p. 44; 886, p. 53; 911, p. 132; 941, p. 137). Otto Helmie. Land-surface datum is 24.29 feet above sea-level datum of earlier reports and 0.20 foot below measuring point (2).

^{1/} Piper, A. M., Gale, H. S., Thomas, H. E., and Robinson, T. W., Geology and ground-water hydrology of the Mokelumne area, Calif. U. S. Geol. Survey Water-Supply Paper 780, pp. 122-123, pl. 1, 1939.

3617A1. Otto Helmie--Continued.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	11.74	Apr. 3	7.10	July 1	11.34	Oct. 6	14.89
Feb. 2	10.01	May 1	7.01	Aug. 4	11.32	Nov. 3	13.33
Mar. 2	7.60	June 1	8.10	Sept. 1	14.47	Dec. 2	12.66

3636R2 (*619, p. 311; *777, p. 28; *817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138). Leland W. Bunch. Land-surface datum is 37.97 feet above sea-level datum of earlier reports and 7.60 feet above measuring point (3).

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	16.33	Apr. 3	12.78	Sept. 1	17.09	Nov. 3	16.90
Feb. 2	12.40	June 1	13.54	Oct. 8	16.03	Dec. 2	16.12
Mar. 2	12.62	Aug. 4	17.29				

373B1 (*777, p. 28; *817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138). Jacob Knoll. Land-surface datum is 80.45 feet above sea-level datum of earlier reports and 1.40 feet below measuring point.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	34.41	Apr. 3	32.94	July 1	28.04	Oct. 7	33.11
Feb. 2	33.35	May 1	29.69	Aug. 4	30.76	Nov. 3	33.48
Mar. 2	32.26	June 1	26.96	Sept. 1	31.74	Dec. 2	33.70

376J8 (*777, p. 28; *817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138). R. E. and Ruth F. Coker. Land-surface datum is 53.35 feet above sea-level datum of earlier reports and 0.40 foot below measuring point.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	20.77	Apr. 3	20.59	July 1	18.58	Oct. 8	20.40
Feb. 2	20.16	May 1	19.60	Aug. 4	19.18	Nov. 3	20.17
Mar. 2	19.82	June 1	19.00	Sept. 1	20.03	Dec. 2	19.97

377J1 (*777, p. 29; *817, p. 19; 840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; *941, p. 138). J. and Rachel Goetken. Land-surface datum is 52.63 feet above sea-level datum of earlier reports and 0.10 foot below measuring point (4).

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	25.50	Apr. 3	27.15	July 1	27.26	Oct. 8	26.65
Feb. 2	24.79	May 1	27.68	Aug. 4	27.49	Nov. 3	26.27
Mar. 2	24.87	June 1	25.93	Sept. 1	27.44	Dec. 2	25.73

3710K3 (*777, p. 29; *817, p. 19; 840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138). Edward Preszler. Land-surface datum is 72.59 feet above sea-level datum of earlier reports and 1.20 feet below measuring point.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	37.04	Apr. 3	47.00	July 1	40.06	Oct. 8	38.22
Feb. 2	36.60	May 1	45.32	Aug. 4	40.94	Nov. 3	37.29
Mar. 2	40.55	June 1	39.08	Sept. 1	40.28	Dec. 2	36.66

3710K4 (*777, p. 29; *817, p. 19; *840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138). Edward Preszler. Land-surface datum is 72.37 feet above sea-level datum of earlier reports and 0.87 foot below measuring point (2).

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	36.55	May 1	42.94	Sept. 1	39.86	Nov. 3	36.90
Feb. 2	36.19	July 1	39.81	Oct. 8	37.71	Dec. 2	36.13
Mar. 2	40.37	Aug. 4	40.66				

3715P2 (*777, p. 29; *817, p. 19; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138). Eugene R. Hieb. Land-surface datum is 66.84 feet above sea-level datum used in earlier reports and 3.50 feet below measuring point.

a Pump operating in adjacent well.

3715P2. Eugene R. Hieb--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	37.42	Apr. 3	36.79	July 1	39.65	Oct. 8	39.47
Feb. 2	36.99	May 1	37.24	Aug. 4	41.03	Nov. 3	38.43
Mar. 2	36.75	June 1	37.32	Sept. 1	40.89	Dec. 2	37.50

3719A2 (*777, p. 30; *817, p. 19; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138). C. M. Ferdun. Land-surface datum is 48.52 feet above sea-level datum of earlier reports and 0.50 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	25.75	Apr. 3	25.05	July 1	27.61	Oct. 8	27.88
Feb. 2	25.50	May 1	25.04	Aug. 4	28.77	Nov. 3	27.13
Mar. 2	24.81	June 1	26.64	Sept. 1	28.72	Dec. 2	26.53

3727F3 (*777, p. 30; *817, p. 20; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 139). John F. Heitzmann. Land-surface datum is 59.42 feet above sea-level datum of earlier reports and 1.70 feet below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	33.74	Apr. 3	32.03	July 1	35.06	Oct. 8	35.51
Feb. 2	33.20	May 1	31.82	Aug. 4	34.06	Nov. 3	34.57
Mar. 2	32.72	June 1	31.51	Sept. 1	36.12	Dec. 2	33.96

3730E2 (*619, p. 322; *777, p. 30; *817, p. 20; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 139). W. L. Flanigan. Land-surface datum is level with concrete floor of pump house, 41.86 feet above sea-level datum of earlier reports, and 8.86 feet above measuring point (3). Beginning August 4, 1942, measuring point (4), top of casing, 0.62 foot below land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	19.89	May 1	16.18	Aug. 4	27.04	Nov. 3	22.82
Apr. 3	15.84	June 1	16.95	Oct. 1	26.37		

4612R1 (*619, p. 337; *777, p. 31; *817, p. 20; 840, p. 47; 845, p. 46; 886, p. 54; 911, p. 134; 941, p. 139). G. A. Jahant. Land-surface datum is 57.34 feet above sea-level datum of earlier reports and 0.91 foot below measuring point (3), which is top south side of pit curb.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	30.04	Apr. 3	25.88	July 1	29.06	Oct. 8	30.65
Feb. 2	27.96	May 1	25.52	Aug. 4	31.48	Nov. 3	29.74
Mar. 2	27.06	June 1	25.25	Sept. 1	31.57	Dec. 2	28.79

4634R1 (619, p. 344; *777, p. 31; *817, p. 20; *840, p. 47; 845, p. 46; 886, p. 55; 911, p. 134; *941, p. 139). E. M. Smith. Land-surface datum is 43.28 feet above sea-level datum of earlier reports and 0.90 foot below measuring point (4).

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	15.35	Apr. 3	14.27	July 1	12.93	Oct. 5	13.60
13	15.57	May 1	14.86	Aug. 4	13.64	Nov. 3	12.86
Feb. 2	15.79	June 1	12.92	Sept. 1	13.84	Dec. 2	11.99
Mar. 2	14.85						

4636A1 (*619, p. 345; *777, p. 31; *817, p. 20; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139). D. D. Smith and S. H. and I. Zimmerman. Land-surface datum is 49.90 feet above sea-level datum of earlier reports and level with top of casing. Beginning Nov. 3, 1942, measuring point (2), top of casing (lowered), 0.16 foot below land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	19.21	May 1	19.42	Aug. 4	24.57	Nov. 3	17.50
Feb. 2	17.84	June 1	22.21	Sept. 1	18.98	Nov. 3	17.49
Mar. 2	17.29	July 1	20.65	Oct. 8	18.02	Dec. 2	18.51
Apr. 3	18.19						

a Intermittent creek flowing nearby.

b Pump operating in adjacent well.

4715C3 (*777, p. 32; *817, p. 21; 840, p. 49; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139). Robert L. Carter. Land-surface datum is 92.05 feet above sea-level datum of earlier reports and 1.00 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	48.15	Apr. 3	46.39	July 1	47.82	Oct. 6	49.42
Feb. 2	47.42	May 1	46.19	Aug. 4	49.40	Nov. 3	48.89
Mar. 2	47.03	June 1	46.04	Sept. 1	49.66	Dec. 2	47.86

4718N3 (*777, p. 32; *817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139). Martha Eddlemon. Land-surface datum is 59.04 feet above sea-level datum of earlier reports and 0.80 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	30.98	Apr. 3	28.69	July 1	33.72	Oct. 8	32.90
Feb. 2	30.27	May 1	28.29	Aug. 4	35.84	Nov. 3	31.85
Mar. 2	29.50	June 1	27.92	Sept. 1	34.54	Dec. 2	31.00

4722Q4 (*777, p. 32; *817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139). Adolphus Eddlemon. Land-surface datum is 83.61 feet above sea-level datum of earlier reports and 0.80 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	38.40	Apr. 3	37.02	July 1	37.72	Oct. 6	39.56
Feb. 2	38.93	May 1	36.85	Aug. 4	39.18	Nov. 3	38.98
Mar. 2	37.50	June 1	36.70	Sept. 1	39.48	Dec. 2	38.47

4722Q5 (*777, p. 32; *817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139). Adolphus Eddlemon. Land-surface datum is 83.85 feet above sea-level datum of earlier reports and 0.20 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	38.51	Apr. 3	37.88	July 1	49.02	Oct. 6	41.03
Feb. 2	37.77	May 1	37.37	Aug. 4	44.10	Nov. 3	39.35
Mar. 2	37.65	June 1	37.62	Sept. 1	41.75	Dec. 2	38.71

4727P1 (*777, p. 33; *817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 140). Frank H. and Leonard W. Buck. Land-surface datum is 81.20 feet above sea-level datum of earlier reports and 0.90 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	31.88	Apr. 3	29.94	July 1	27.60	Oct. 6	32.54
Feb. 2	29.73	May 1	28.92	Aug. 4	30.60	Nov. 3	32.48
Mar. 2	28.91	June 1	26.85	Sept. 1	32.09	Dec. 2	32.49

4730J2 (*777, p. 33; *817, p. 22; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 140). Clara A. Barton. Measuring point (2) beginning June 13, 1941, wooden pit cover 3/4-inch hole, 0.30 foot above land-surface datum, which is 58.27 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	30.14	May 1	27.07	Aug. 6	30.12	Nov. 3	27.56
Feb. 2	27.00	June 1	28.12	Sept. 1	28.98	Dec. 2	26.90
Apr. 3	26.34	July 1	29.34	Oct. 8	28.04		

4731J3 (*777, p. 33; *817, p. 22; *840, p. 49; *845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140). Charles H. Woest. Land-surface datum is 57.78 feet above sea-level datum of earlier reports and 0.40 foot above measuring point (7).

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	22.24	Apr. 3	21.75	July 1	21.09	Oct. 8	21.59
Feb. 2	18.02	May 1	20.36	Aug. 4	21.54	Nov. 3	21.56
Mar. 2	20.44	June 1	18.75	Sept. 1	22.54	Dec. 2	22.16

a Water leaking into well.

4731N5 (*777, p. 33; *817, p. 22; 840, p. 49; 845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140). Jacob Goshring. Land-surface datum is 44.12 feet above sea-level datum of earlier reports and 2.90 feet below measuring point.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	8.00	Apr. 3	6.72	July 1	4.59	Oct. 8	6.40
Feb. 2	a3.08	May 1	4.62	Aug. 4	5.62	Nov. 3	6.30
Mar. 2	6.75	June 1	1.79	Sept. 1	6.28	Dec. 2	7.81

4734G1 (*777, p. 34; 817, p. 22; 840, p. 49; 845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140). John J. Schmiedt. Land-surface datum is 57.50 feet above sea-level datum of earlier reports and 0.70 foot below measuring point.

Water level, in feet below land-surface datum, 1942

Jan. 9	5.76	Apr. 3	6.27	July 1	4.72	Oct. 7	7.30
Feb. 2	a1.11	May 1	3.89	Aug. 4	6.94	Nov. 3	7.93
Mar. 2	4.70	June 1	a1.69	Sept. 1	b7.62	Dec. 2	8.00

a Adjacent land flooded.

b Adjacent land being irrigated.

SANTA BARBARA COUNTY

By G. A. La Rocque, Jr., G. F. Worts, Jr., and J. E. Upson

PROGRAM OF WORK

The inventory of the ground-water resources of Santa Barbara County, which began in January 1941, was continued in 1942 by the Geological Survey, United States Department of the Interior, in cooperation with the county. In connection with this inventory, periodic measurements of water level were made during the year in 195 wells, located in six ground-water areas. Measurements were discontinued in 15 wells and begun in 48 additional wells, and water-level recorders or "high-low" float gages were maintained on 21 wells. The measurements were made for the Geological Survey by G. A. La Rocque, Jr., J. E. Upson, G. F. Worts, Jr., L. Porter, Jr., and W. T. Jamison. In four of the areas measurements were made also by five local agencies, as follows: In the Santa Maria Valley, by the Santa Maria Valley Water Conservation District, the city of Santa Maria, and the San Joaquin Power Division of the Pacific Gas & Electric Co; in the Middle and Lower Santa Ynez Valleys, by the city of Santa Barbara; and in the Carpinteria Basin, by the Carpinteria County Water District. These local agencies have made their measurements available to the Geological Survey. The following table indicates the scope of the well-measurement program:

Progress of well-measurement program in Santa Barbara County in 1942

Ground-water area	Observation wells	Water-level measurements made by --		Wells equipped at times with --	
		Geological Survey	Local agencies	Water-level recorders	High-low float gages
South-coastal lowland:					
Carpinteria Basin	32	394	184	1	0
Goleta Basin	38	569	0	2	1
Santa Ynez River Basin:					
Middle Santa Ynez Valley	34	408	29	2	0
Lower Santa Ynez Valley	50	1,232	148	4	5
Santa Maria Valley	31	553	138	3	3
Cuyama Valley	10	119	0	0	0
Total (6 areas)	195	3,275	499	12	9

SUMMARY OF HYDROLOGIC FEATURES

As it has progressed, the ground-water inventory has shown that the four principal lowland areas include seven distinct ground-water areas. In order from south to north these are Carpinteria Basin, Goleta Basin, Middle Santa Ynez Valley, Lower Santa Ynez Valley, San Antonio Valley, Santa Maria Valley, and Cuyama Valley. (See figs. 9 to 15). In general, the ground-water bodies of these several areas are derived largely from seepage of streams but partly, also, from water from outlying water-bearing materials, which they receive by underground percolation.

In the Carpinteria and Goleta Basins of the south-coastal lowland, the ground-water bodies receive their supply in part by the seepage of water from the small streams that head in the Santa Ynez Range, in part, evidently by percolation from saturated bodies of unconsolidated and partly consolidated deposits adjacent to the basins, and probably, in smaller part, by the infiltration of rain. These basins are so narrow and their storm runoff is so flashy that most of each year's rainfall passes swiftly to the sea.

The basin of the Santa Ynez River comprises two ground-water areas, namely, Middle Santa Ynez Valley and Lower Santa Ynez Valley, separated by the Santa Rita Hills and the Santa Rita Valley, which lie north of the river and parallel to it.

The Middle Santa Ynez Valley includes a narrow alluvial tongue, extending along the river, and a broad terraced upland, extending east of Alamo Pintado Creek beyond Santa Ynez and Los Olivos. The alluvial tongue is replenished chiefly by seepage from the river. The terraced upland about Santa Ynez is underlain by a thick body of semiconsolidated alluvium, which has become an extensive ground-water reservoir. This reservoir receives its supply in large part by the infiltration of rain but probably in part, also, by the seepage of water from intermittent streams that head in the San Rafael Mountains, to the northeast. It is separated from the Santa Ynez River by a barrier of impermeable rock and therefore receives no water from it. Instead, it discharges into the river through perennial spring-fed streams.

The Lower Santa Ynez Valley includes the Lompoc Plain and adjacent hilly and terraced areas. In this valley the principal water-bearing zones

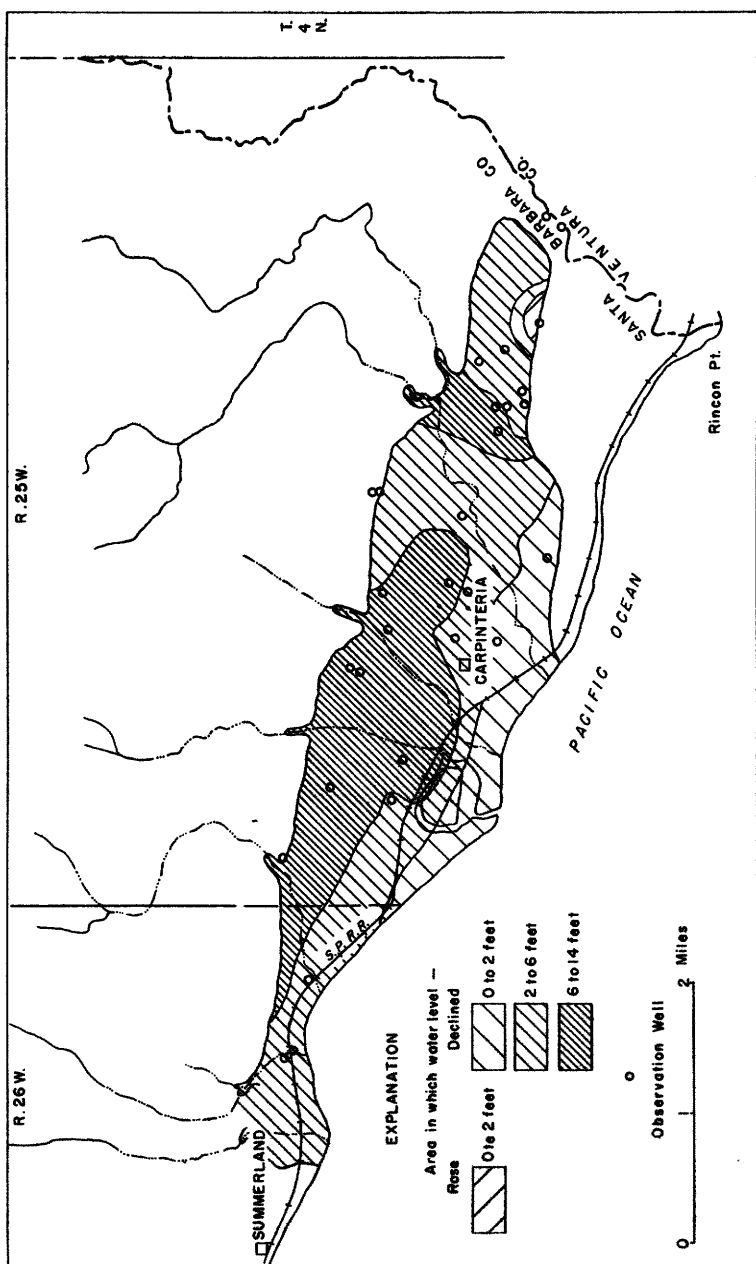


Figure 9.--Map of the Carpinteria Basin plain, Calif., showing net change of ground-water level during the period December 1941 to December 1942.

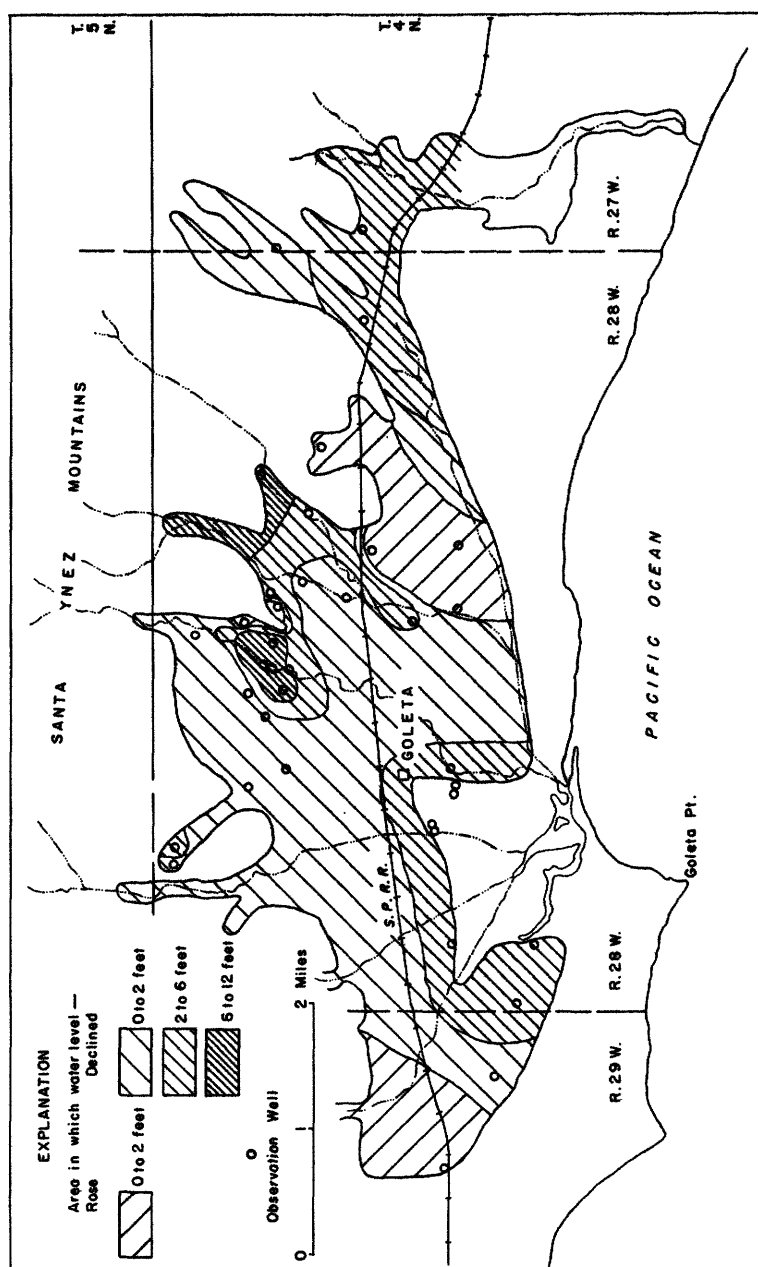


Figure 10.--Map of the Goleta Basin plain, Calif., showing net change of ground-water level during the period December 1941 to December 1942.

underlie the Lompoc Plain and the corresponding terraces along the river upstream. These zones are replenished largely from the Santa Ynez River and from tributary streams that enter the plain from the south, but some replenishment probably takes place by underground percolation from unconsolidated and semiconsolidated deposits that underlie the terraced and hilly terrain to the northeast.

Similarly, in the Santa Maria Valley replenishment of the ground-water bodies, for the greater part, takes place by the seepage of water from the Santa Maria River, which is formed by the confluence of the Cuyama and Sisquoc Rivers. Some replenishment, however, apparently takes place by the lateral percolation of ground water from the extensive hilly and upland area south and southeast of Santa Maria. Much of this water is derived initially from rain, which becomes ground water by infiltration.

In the Cuyama Valley the chief sources of replenishment are the Cuyama River and the smaller streams that enter the valley from the south.

In Santa Barbara County most of the rain falls in winter and spring, and little or none in summer and fall. During the year ending September 30, 1942, the rainfall was about average, but substantially less than during the year ending September 30, 1941. This is brought out by the first of the two following tables, which gives the rainfall, by months, during each of those years at the Weather Bureau stations at Santa Maria and Santa Barbara, whose climatologic records are among the longest for stations in Santa Barbara County. The second table gives the rainfall, by months, during the 13-month period December 1941 to December 1942, at 12 supplemental stations, which are maintained by the Federal Geological Survey. The rain gages at these supplemental stations are read at intervals ranging from 15 to 30 days, some of this work being done by local observers. Though the rainfall indicated at a station for any particular month may be somewhat too large or too small, depending on the dates on which the gage was read, the quantities shown are generally in relative agreement with the rainfall measured at the Weather Bureau stations at Santa Maria and Santa Barbara.

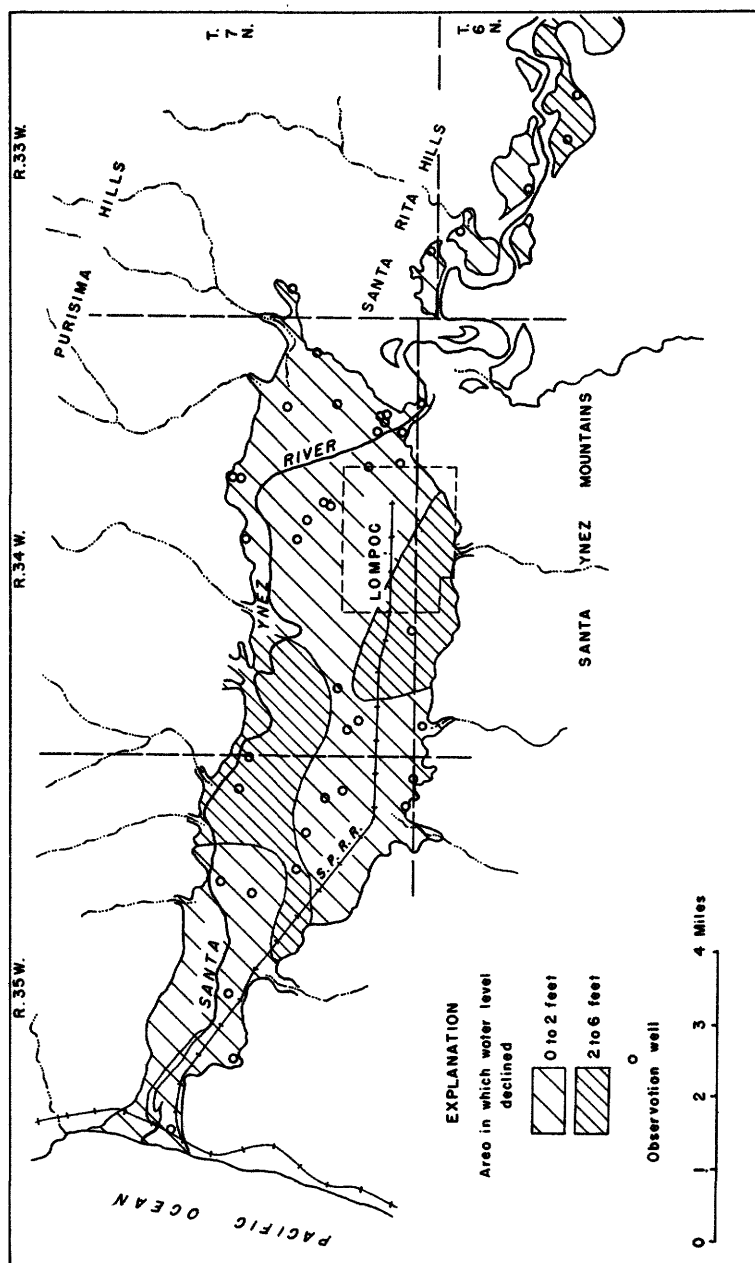


Figure 11.--Map of the lowland plains in the Lower Santa Ynez Valley, Calif., showing net change of groundwater level during the period December 1941 to December 1942.

Average monthly and yearly rainfall, in inches, at Santa Maria and Santa Barbara, Calif., 1885-1942, and monthly and yearly rainfall, 1940-41 and 1941-42

Month	Santa Maria			Santa Barbara		
	Average	1940-41	1941-42	Average	1940-41	1941-42
October	0.75	0.73	1.04	0.85	0.75	0.89
November	1.12	.12	.32	1.38	.43	.44
December	2.59	5.25	7.50	3.21	8.92	5.00
January	3.13	5.04	1.78	4.12	9.68	.80
February	2.69	6.83	1.30	3.81	8.21	.75
March	2.54	8.72	2.04	3.26	11.71	1.76
April	.98	3.86	2.82	1.10	5.50	3.19
May	.41	.07	.11	.45	.01	T
June	.08	Tr.	0	.08	Tr.	0
July	.01	.09	0	.02	.03	0
August	.03	.03	.02	.04	.01	T
September	.25	.01	.02	.43	0	.03
The year	14.38	30.75	16.95	18.75	45.25	12.86

Approximate monthly rainfall, in inches, at 12 stations in Santa Barbara County, Calif., 1941-42

Station	1941	1942					
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
Santa Ynez Peak	4.25	9.18	2.14	2.95	6.33	0.12	0
Bluff Camp; Big Pine Mt. a/	3.98	7.48	2.75	1.64	6.35	0	0
Little Pine Mt., Camuesa Pk. b/	3.80	6.05	2.80	1.33	7.50	0	0
La Zaca Creek-San Antonio Creek divide	6.25	3.18	1.09	2.10	3.48	.14	.06
Harris gaging station	8.95	1.31	.92	1.35	3.17	.13	0
La Zaca Creek-Foxen Creek divide	6.09	3.56	1.09	2.70	3.80	.25	.04
Marre Ranch	2.68	4.25	.92	2.41	1.70	1.64	0
Salsipuedes Creek-Jalama Creek divide	2.93	2.82	1.99	3.81	4.53	.18	.10
Salsipuedes Creek gaging station	10.02	.93	1.01	2.68	2.70	.05	0
Lisque Creek-Alamo Pintado Creek divide	3.20	5.32	.95	2.23	2.53	1.78	0
San Antonio Creek-Santa Maria River divide	6.26	2.08	.74	1.71	3.23	.26	.36
Average	5.31	4.19	1.49	2.27	4.12	.41	.05

a Originally at Bluff Camp; moved to Big Pine Mountain in December 1942.

b Originally at Little Pine Mountain; moved to Camuesa Peak in December 1942.

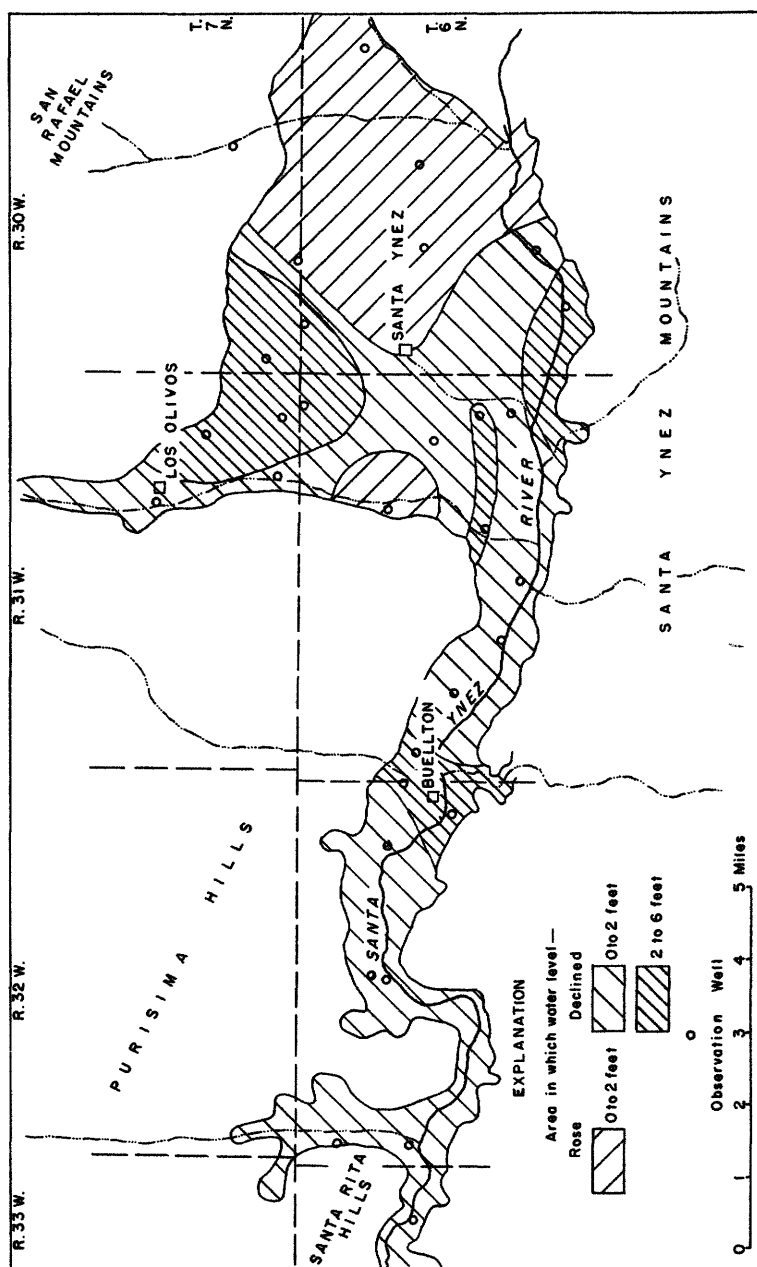


Figure 12.--Map of the lowland plains in the Middle Santa Ynez Valley, Calif., showing net change of groundwater level during the period December 1941 to December 1942.

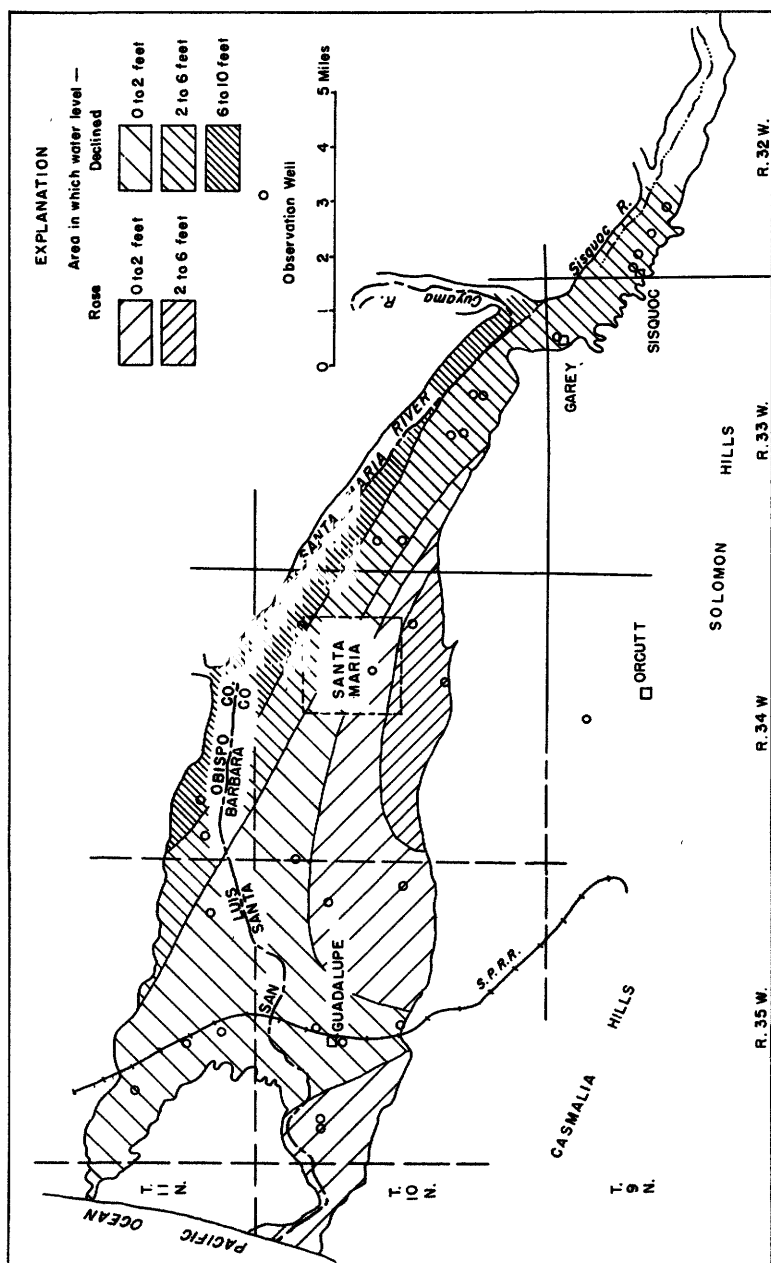


Figure 15.--Map of the lowland plain in the Santa Maria Valley, Calif., showing net change of ground-water level during the period December 1941 to December 1942.

Approximate monthly rainfall, in inches, at 12 stations
in Santa Barbara County, Calif., 1941-42--Continued

Station	1942					
	July	Aug.	Sept.	Oct.	Nov.	Dec.
Santa Ynez Peak	0	0	0	0	2.74	2.36
Bluff Camp; Big Pine Mt. ^a	0	0	0	0	0	2.37
Little Pine Mt.; Camuesa Pk. ^b	0	0	0	0	0	1.84
Santa Cruz gaging station	0	0	0	.96	.39	1.75
La Zaca Creek-San Antonio Creek divide	.02	T	.01	.81	.67	1.71
Harris gaging station	0	0	0	.80	.24	3.12
La Zaca Creek-Foxen Creek divide	.01	.01	.02	0	.79	2.45
Marre Ranch	T	0	0	0	.79	2.69
Salsipuedes Creek-Jalama Creek divide	.06	.03	.09	1.00	0	2.99
Salsipuedes Creek gaging station	0	0	0	.94	.73	1.79
Lisique Creek-Alamo Pintado Creek divide	0	0	0	0	1.53	2.35
San Antonio Creek Santa Maria River divide	.02	.11	.03	.77	1.09	2.57
Average	.01	.01	.01	.44	.75	2.33

During the spring of 1942 the water level in most wells rose to high stages concurrently with the cessation of pumping for irrigation and with relatively high rainfall in April. Late in the year, because of the deficiency of autumn rainfall, the flow of streams was small, and local withdrawals of ground water for irrigation continued into December. The net result from January to December was a general decline from the high water levels of December 1941, which had followed the heavy rainfall of that year. Hydrographs for eight typical wells are given in figure 15. . They show water levels with reference to land-surface datum but not to sea-level datum. However, in all but two of the wells water levels remained appreciably above sea level in the years shown. The position of sea level is therefore marked only on the graphs for the two wells in which water levels fell below sea level. These are wells 4/28/17H11 and 4/25/27Q2. .

Figures 9 to 15 show in some detail the net changes of ground-water level, during the 13-month period December 1941 to December 1942, in the several ground-water areas of the county.

^a Originally at Bluff Camp; moved to Big Pine Mountain in December 1942.

^b Originally at Little Pine Mountain; moved to Camuesa Peak in December 1942.

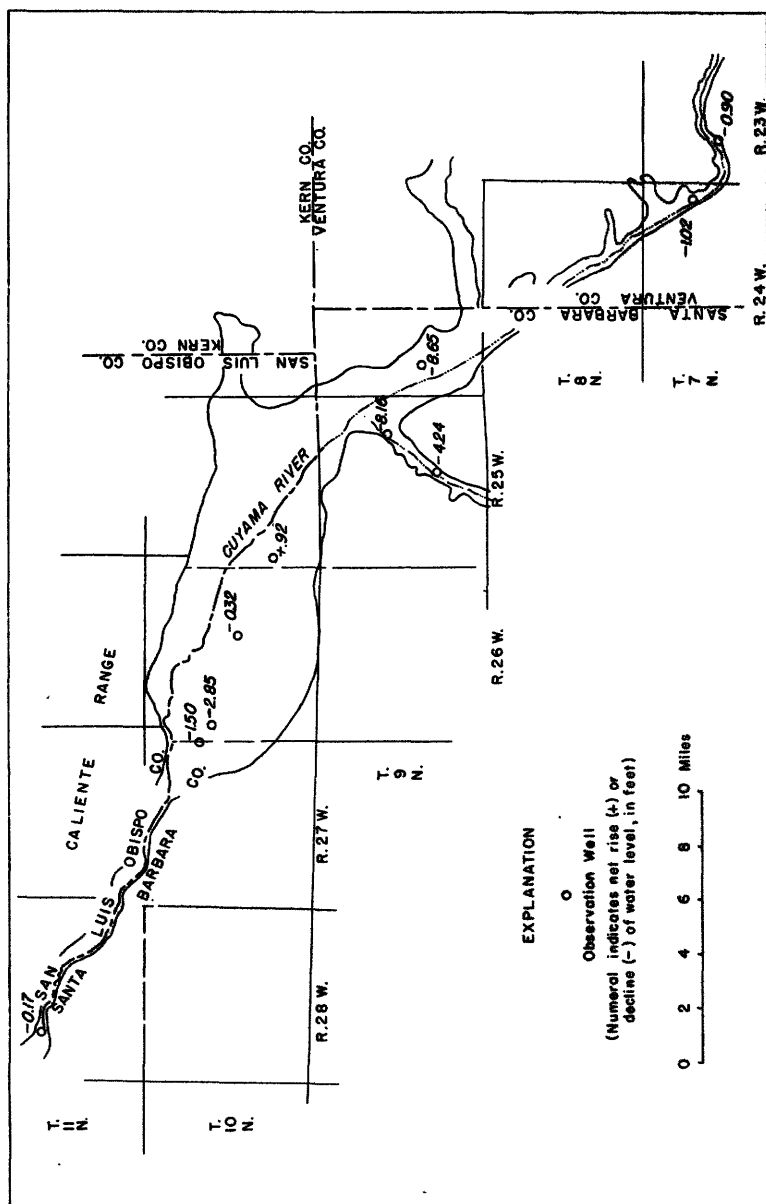


Figure 14.--Map of the Cuyama Valley plain, Calif., showing net change of ground-water level during the period December 1941 to December 1942.

Nearly everywhere in the Carpinteria and Goleta Basins there was a net decline of water level during the year. (See figs. 9 and 10.) This decline was greatest in the areas of largest withdrawal. In those areas the decline in places exceeded 10 feet and was the greatest in the county. In two small areas in the Goleta Basin and in one small area in the Carpinteria Basin, however, there was a slight net rise in water level. These areas of net rise suggest delayed replenishment from outlying ground-water bodies following the very heavy rainfall in the winter of 1940-41.

In the Lower Santa Ynez Valley (see fig. 11) the water level declined everywhere, and the decline was greatest in the areas of heaviest pumping. The water level declined in most of the Middle Santa Ynez Valley, also (see fig. 12), and here too, the decline was greatest in the areas of largest withdrawal. It was least along the river, where to some degree the ground-water levels respond to fluctuations in river stage. In areas of little pumping and in areas of lagging replenishment from outlying ground-water bodies the water level rose.

In the Santa Maria Valley (see fig. 13) the net decline in water level was greatest on the northern edge of the valley, along the Santa Maria River. In the southern part of the valley the water level rose, owing in part to comparatively small withdrawals and in part, possibly, to replenishment by continued underground percolation from deposits that crop out in the hills to the south. Water thus percolating is derived primarily from rain, which becomes ground water by infiltration.

For the Cuyama Valley the net change (see fig. 14) is shown only at individual wells. At all but one of the wells, the net change was a decline, and this decline was greatest near the upper end of the main valley.

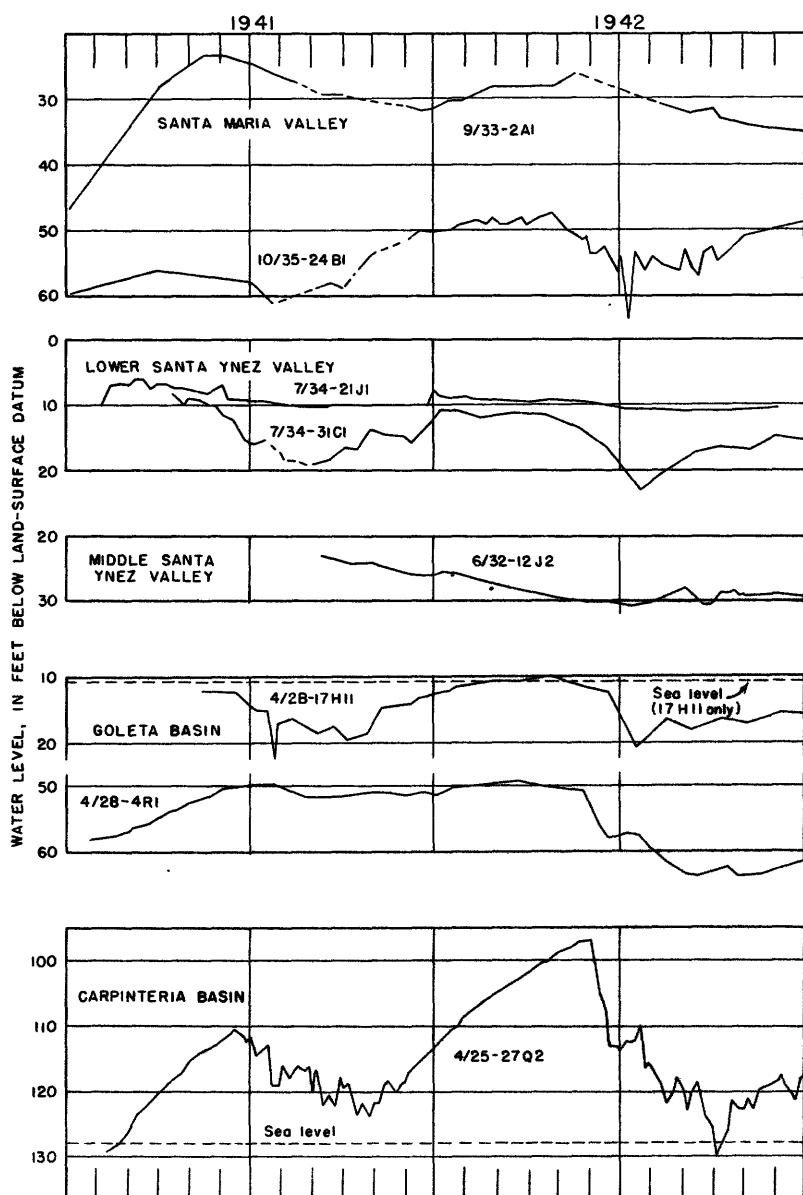


Figure 15.--Graphs showing fluctuations of water level in eight typical wells in Santa Barbara County, Calif., 1941-42.

WELL-NUMBERING SYSTEM

The numbers assigned by the Federal Geological Survey to its observation wells in Santa Barbara County show the location of the wells according to the rectangular system for subdivision of public land. For example, in the number 4/25-19F4, the part that precedes the hyphen indicates the township and range (T. 4 N., R. 25 W.). The one or two digits following the hyphen indicate the section (sec. 19), and the letter indicates the 40-acre subdivision of the section as shown in the accompanying diagram. Within

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

each 40-acre tract the wells are numbered serially, as indicated by the final digit of the number. Thus, well 19F4 is the fourth well to be listed in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19. As virtually all of Santa Barbara County is in the northwest quadrant of the San Bernardino meridian and base line, the foregoing symbol for township and range can be used throughout the county. Some parts of the county have never been public land; for these the rectangular system of land subdivision has been extrapolated.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

For an explanation of the plan followed in listing the well records for California, see page 60. For Santa Barbara County, the records of only those wells in which more than four measurements have been made are included in this report. Descriptions are given of all wells listed, including those described in Water-Supply Paper 941.

Carpinteria Basin

4/25-19F4. M. F. Lewis. Quinton, Code, and Hill - Leeds and Barnard No. 287. About 1.9 miles northwest of Carpinteria. 0.24 mile west of Gravens Lane, 200 feet north of State Highway 150, 50 feet north of oak tree. Measuring point, top of bearing collar on pump shaft, 1.20 feet above land-surface datum and about 107 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	83.24	Apr. 23	80.30	July 9	86.14	Oct. 8	96.25
22	82.84	May 21	80.30	16	86.97	Nov. 5	97.50
Feb. 19	81.73	June 6	80.97	Aug. 13	90.51	Dec. 4	96.52
Mar. 19	80.72	18	82.48	Sept. 10	94.05	31	96.27

4/25-19J5. Lyman and Young. Quinton, Code, and Hill - Leeds and Barnard No. 229-Fl37. About 1.3 miles northwest of Carpinteria, 0.3 mile west of Santa Monica Road, about 0.15 mile south of State Highway 150, beneath wooden tripod. Measuring point, lower edge of hand hole in west side of pump base casing, 0.50 foot above land-surface datum and about 56 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	45.01	Mar. 19	40.09	June 6	a49.52	Nov. 5	61.63
22	43.77	Apr. 2	39.90	Aug. 13	b59.14	Dec. 4	ac77.02
Feb. 15	41.50	23	39.41	Sept. 10	a60.51	31	57.92
Mar. 5	40.88	May 21	39.85	Oct. 8	ac82.52		

4/25-20K1. C. B. Franklin. Quinton, Code, and Hill - Leeds and Barnard No. 206. About 0.8 mile nearly north of Carpinteria, 0.3 mile west of Linden Avenue, 115 feet north and 45 feet east of right-angle turn in State Highway 150, and 15 feet east of galvanized-steel motor house. South of two irrigation wells. Measuring point, bottom northwest side of pump base, 1.02 feet above land-surface datum (includes constant of 0.62 foot to offset inclination of tape), 0.35 foot above concrete foundation, and about 44.62 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	28.24	Mar. 19	24.18	May 21	24.97	Aug. 13	ac135.72
22	27.69	Apr. 2	24.81	June 6	cl11.17	Sept. 10	ac116.40
Feb. 5	25.85	16	23.20	18	a56.60	Nov. 5	43.97
19	24.61	23	22.70	July 16	b42.79	Dec. 31	a40.19
Mar. 5	24.70	30	22.19				

4/25-20Q2. J. B. Romero. About 0.7 mile nearly north of Carpinteria, 0.3 mile west of Linden Avenue, 250 feet south of right-angle turn in State Highway 150, 30 feet south of irrigation well 4/25-20Q1. Measuring points, July 10, 1941, to July 30, 1942, top of steel cover through hole, 0.30 foot above land-surface datum and about 41 feet above sea-level datum of 1929; after Aug. 13, 1942, top south side of 4- by 6-inch wood pump support, 0.50 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.80	Apr. 16	19.88	July 16	a51.81	Oct. 8	a44.97
22	23.52	23	19.43	23	36.11	Nov. 5	41.42
Feb. 5	22.48	30	19.34	30	a39.17	12	39.59
19	21.77	May 21	20.83	Aug. 13	a43.15	Dec. 3	a38.17
Mar. 5	21.38	June 6	28.31	20	40.62	17	38.25
19	20.61	18	234.06	Sept. 10	a41.75	31	a55.44
Apr. 2	20.84	July 9	a37.76	24	a46.92		

4/25-21N2 (*941, p. 162). E. S. Pillsbury. Quinton, Code, and Hill - Leeds and Barnard No. 242. About 0.7 mile northeast of Carpinteria, 80 feet north of State Highway 150, 0.3 mile east of Linden Avenue, 75 feet east of property line and cypress hedge, in frame pump house beneath tower. Measuring point, top south side of pump base, 0.10 foot above land-surface datum and about 51 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	34.74	Mar. 19	30.52	May 21	30.13	Nov. 5	52.67
22	32.99	Apr. 2	31.87	July 9	63.62	Dec. 4	48.95
Feb. 19	30.92	23	28.61	Aug. 13	67.66	31	42.77
Mar. 5	30.41						

4/25-21R1. B. Moore. About 1.3 miles northwest of Carpinteria, 0.20 mile north of State Highway 150, 15 feet west of property-line road. Measuring point, top east side of 12-inch casing, 1.00 foot above land-surface datum and about 128 feet above sea-level datum of 1929.

- a Pump operating in adjacent well.
- b Pump recently operated.
- c Pump operating.

4/25-21R1. B. Moore--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	76.64	Apr. 23	72.64	July 30	72.08	Nov. 5	77.39
22	75.93	May 21	70.23	Aug. 13	73.21	12	77.41
Feb. 19	74.68	June 6	69.69	20	73.64	Dec. 4	77.10
Mar. 5	73.90	18	70.35	27	73.96	17	77.10
19	73.08	July 9	71.52	Sept. 10	74.94	31	77.28
Apr. 3	72.50	16	71.91	Oct. 8	75.83		

4/25-21R2. B. Moore. About 1.3 miles northwest of Carpinteria, 100 feet north of well 4/25-21R1. Measuring point, top south side of 12-inch casing, at edge of notch, level with land-surface datum and about 128 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	76.30	Apr. 23	72.27	July 30	72.91	Nov. 5	78.46
22	75.98	May 21	71.29	Aug. 13	73.61	12	78.73
Feb. 19	74.98	June 6	70.89	20	74.00	Dec. 4	79.14
Mar. 5	74.40	18	71.28	27	74.41	17	79.38
19	73.65	July 9	72.10	Sept. 10	75.40	31	79.62
Apr. 3	73.01	16	72.32	Oct. 8	76.96		

4/25-22R1 (*941, p. 162). A. H. Young. Quinton, Code, and Hill - Leeds and Barnard No. 226. About 2.2 miles east-northeast of Carpinteria, 0.5 mile north along Carpinteria Creek from State Highway 150, 110 feet east of creek and 25 feet south of private lane, at edge of lemon grove, in galvanized pump house. Measuring point, lower face of 3/8-inch steel pump support at discharge pipe, 1.10 feet above land-surface datum, 1.0 foot above concrete foundation, and about 212 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	13.96	Apr. 2	14.84	July 9	20.62	Oct. 8	30.88
22	13.93	23	14.29	Aug. 13	26.08	Nov. 5	31.47
Feb. 19	14.40	May 21	a101.70	20	26.70	Dec. 3	31.49
Mar. 5	14.57	June 6	18.76	27	b27.25	31	59.10
19	14.21						

4/25-27J1 (*941, p. 163). About 2.1 miles nearly east of Carpinteria, 0.4 mile east of Carpinteria Creek, 60 feet south of State Highway 150, 15 feet east of property-line road, beneath south side of wooden loading dock. Measuring point, top west side of 10-inch casing, 0.20 foot above land-surface datum, 0.8 foot below concrete curb, and about 142 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	125.97	Apr. 16	c109.55	July 9	118.67	Nov. 5	131.37
22	c120.87	May 4	c106.95	16	119.12	12	130.09
29	c95.39	21	c105.33	Aug. 13	125.22	Dec. 3	130.09
Mar. 3	c112.82	June 6	109.38	Sept. 10	126.92	17	130.01
5	115.46	18	114.97	Oct. 8	130.20	31	129.35
19	116.14						

4/25-27P3. C. B. Franklin. Quinton, Code, and Hill - Leeds and Barnard No. 210. About 1.7 miles nearly east of Carpinteria, 0.45 mile south of State Highway 150, 300 feet west of property line, 150 feet east of irrigation well 4/25-27P2, in lemon grove. Measuring point, top south-west side of 12-inch casing, at stud bolt, 0.70 foot above land-surface datum and about 130 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	107.74	Apr. 2	98.41	July 9	112.06	Nov. 5	a120.50
22	106.25	16	97.71	16	111.37	12	a118.18
Feb. 5	104.49	23	96.59	Aug. 13	d117.32	Dec. 3	113.80
19	102.85	May 21	94.70	Sept. 10	d121.73	17	d116.85
Mar. 5	101.23	June 6	d101.62	Oct. 8	d121.75	31	d116.47
19	99.80	18	d111.53				

a Pump operating.

b Pump recently operated.

c Surface water diverted to well for several days prior to measurements.

d Pump operating in adjacent well.

4/25-27Q1. F. G. McCloskey. About 1.8 miles nearly east of Carpinteria, 0.27 mile south of State Highway 150, 30 feet east of property-line road, 8 feet south of unpainted frame shed. Measuring point, bottom of pump base, on west side, 1.40 feet above land-surface datum and about 136 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	115.10	Mar. 5	107.34	Apr. 23	102.43	Aug. 13	107.12
22	113.47	12	106.53	May 7	101.37	Nov. 5	a111.20
Feb. 5	110.67	19	106.00	21	100.32	17	a121.74
12	106.53	25	105.49	June 6	102.66	Dec. 31	119.90
26	107.90	Apr. 2	104.39	July 16	113.18		

4/25-27Q2. A. F. Heimlich. About 1.8 miles nearly east of Carpinteria, 0.34 mile south of State Highway 150, 70 feet south of T-lane east, and 140 feet east of property-line road, at east base of lemon tree. Measuring point, top of base panel of instrument shelter at 1-inch bored hole, 0.75 foot above land-surface datum, 0.13 foot above top of casing, and about 128 feet above sea-level datum of 1929.

Water level, at noon, in feet below land-surface datum, 1942
(From recorder charts)

Jan. 5	112.13	Apr. 5	101.10	July 5	112.52	Oct. 10	b128.13
10	111.38	10	100.46	10	112.20	15	b126.13
15	110.66	15	100.20	15	b111.60	20	b121.28
20	110.19	20	99.66	20	b110.02	25	b122.83
25	109.35	25	99.34	25	b116.58	31	b122.66
31	108.44	30	98.88	31	b115.64	Nov. 5	b121.06
Feb. 5	107.74	May 5	98.37	Aug. 10	b118.00	10	b122.94
10	106.99	10	98.00	15	b121.69	15	119.65
15	106.37	15	97.56	20	b119.93	20	119.27
20	105.69	20	97.19	25	b117.65	25	119.11
25	105.00	25	97.83	31	b119.99	30	118.33
28	104.74	31	96.98	Sept. 5	b123.09	Dec. 5	117.19
Mar. 5	104.29	June 5	99.19	10	b120.09	10	b119.17
10	103.68	10	b105.32	15	b118.54	15	b120.09
15	103.10	15	b107.14	20	b122.98	20	b121.50
20	102.84	20	b112.99	25	b124.35	25	b118.20
25	102.39	25	b113.05	30	b125.79	31	117.71
31	101.69	30	b113.64	Oct. 5	b129.84		

4/25-27Q3. S. E. Kramer. About 1.9 miles east-southeast of Carpinteria, 0.5 mile south of State Highway 150, 50 feet west of property-line road, at south edge of lemon grove, beneath delapidated windmill tower. Measuring point, top west side of 12-inch casing, at notch. 0.50 foot above land-surface datum and about 138 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 8	117.46	Apr. 2	107.92	July 9	116.25	Nov. 5	124.52
22	114.79	23	105.98	16	115.03	Dec. 4	123.20
Feb. 19	112.16	May 21	103.66	Aug. 13	138.83	17	a140.39
Mar. 5	110.82	June 6	103.94	Sept. 10	128.14	31	124.63
19	109.21	18	a125.78	Oct. 8	130.84		

4/25-27Q5. S. E. Kramer. Quinton, Code, and Hill - Leeds and Barnard No. 267. About 0.15 mile west of observation well 4/25-27Q3, on hillside, at south edge of lemon grove. Measuring point, bottom of pump base, on north side, 1.30 feet above land-surface datum and about 179 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 22	145.90	Mar. 19	141.57	May 21	d155.19
Feb. 19	143.56	Apr. 23	138.82		

a Pump operating in adjacent well.

b Depressed by draft from adjacent wells; highest level of day.

c Below sea-level datum of 1929.

d Pump recently operated.

4/25-27R2. W. H. Yule. About 2.2 miles nearly east of Carpinteria, 0.14 mile south of State Highway 150, 25 feet east of property-line road, in frame pump house painted green. Measuring point, top of pump base, on west side, 0.30 foot above land-surface datum, 0.1 foot above concrete floor, and about 132 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	116.43	Apr. 2	108.75	June 18	111.95	Sept. 10	120.06
22	115.01	23	107.14	July 9	112.63	Nov. 5	122.92
Feb. 19	112.24	May 21	105.79	16	112.24	Dec. 3	119.51
Mar. 5	111.47	June 6	105.47	Aug. 13	123.35	31	120.93
19	109.82						

4/25-28F1. P. Hanson. About 0.6 mile nearly east of Carpinteria, 0.45 mile northwest of U. S. Highway 101, and 180 feet west of Casitas Pass Road, in corrugated-steel pump house. Measuring point, bottom of plate clamping air and oil lines to pump base, level with steel plate welded to I-beam pump support, 0.30 foot above land-surface datum and about 59 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	34.62	Mar. 19	28.43	June 6	28.24	Nov. 5	45.59
22	33.40	Apr. 23	25.62	18	45.75	Dec. 3	41.70
Feb. 19	30.47	May 21	25.78	Oct. 8	51.86	31	49.37
Mar. 5	29.42						

4/25-28J1. W. C. and C. A. Catlin. Quinton, Code, and Hill - Leeds and Bernard No. 264. About 1.0 mile east of Carpinteria, 0.42 mile south of State Highway 150, 320 feet east of property-line road, at south edge of lemon grove, in corrugated-steel pump house. Measuring point, top of lug over hole in pump base for air line. 1.00 foot above land-surface datum, 0.46 foot above concrete foundation, and about 90 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	67.10	Apr. 16	58.35	July 9	b76.77	Sept. 10	a109.57
22	65.61	23	57.68	16	b84.95	Oct. 8	a108.23
Feb. 5	64.18	30	57.47	30	a98.58	Nov. 5	77.41
19	62.80	May 21	a57.37	Aug. 13	a109.36	Dec. 3	73.39
Mar. 5	61.50	June 6	a86.63	20	82.69	17	73.13
19	60.22	18	74.85	27	102.71	31	71.75
Apr. 3	59.42						

4/25-28M1 (*941, p. 163). Mrs. A. Baylor. About 0.4 mile east of Carpinteria, 0.33 mile northeast of State Highway 150, 200 feet northwest of Casitas Pass Road, 8 feet south and 10 feet east of northeast corner of dwelling, in frame pump house. Measuring point, top of 2-inch casing, 0.52 foot above land-surface datum and concrete foundation of pump house, and about 58 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	31.55	Apr. 23	22.89	July 16	c52.51	Oct. 8	49.29
22	30.42	May 21	23.16	30	44.47	Nov. 5	42.75
Feb. 19	27.44	June 6	25.78	Aug. 13	c56.91	Dec. 3	39.06
Mar. 5	26.29	18	c44.30	20	c52.98	17	39.14
19	25.23	July 9	c51.55	Sept. 10	d59.77	31	36.29
Apr. 2	25.40						

4/25-29A1. M. Young. Quinton, Code, and Hill - Leeds and Bernard No. 230. About 0.6 mile north-northeast of Carpinteria, 460 feet south of State Highway 150, 320 feet east of Linden Avenue, 100 feet east of well 4/25-29A3, in frame pump house. Measuring point, lower south edge of pump base, through notch in casing, 0.85 foot above land-surface datum (includes constant of 0.65 to offset inclination of tape) and about 34.65 feet above sea-level datum of 1929.

- a Pump operating.
- b Pump recently operated.
- c Pump operated in adjacent well.
- d Below sea-level datum of 1929.

4/25-29A1. M. Young--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	14.95	Mar. 5	10.95	Apr. 23	9.36	July 16	32.66
22	13.11	19	10.88	May 21	11.38	Dec. 31	24.02
Feb. 19	11.37	Apr. 2	all.93				

4/25-29A3. M. Young. About 0.6 mile north-northeast of Carpinteria. 100 feet west of irrigation well 4/25-29A1. Measuring point, top south side of 12-inch casing at seam, 0.60 foot above land-surface datum, and 0.30 foot above concrete foundation, and about 33 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 8	12.66	Apr. 23	7.12	July 16	31.89	Sept. 24	cd55.36
Feb. 5	9.87	30	6.60	23	d35.16	Oct. 8	cd49.71
19	9.15	May 21	8.45	30	cd58.89	Nov. 5	cd47.52
Mar. 5	8.61	June 6	16.99	Aug. 13	cd66.97	12	28.42
19	8.39	18	cd58.12	20	d39.54	Dec. 3	cd42.21
Apr. 2	b8.76	July 9	29.93	Sept. 10	31.58	31	22.63
16	8.13						

4/25-29D1. H. Sturmer. Quinton, Code, and Hill - Leeds and Barnard No. 232. About 0.8 mile northwest of Carpinteria, 0.15 mile north of U. S. Highway 101, 125 feet west of Santa Monica Road, in rear of dwelling. Measuring point, top south side of 12-inch casing, 0.40 foot above land-surface datum and about 17 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 8	6.15	Mar. 19	2.08	June 18	12.43	Oct. 8	d35.55
22	4.83	Apr. 2	3.35	July 9	d23.00	Nov. 5	d24.84
Feb. 5	4.03	23	1.48	16	d20.44	Dec. 3	20.42
19	3.48	May 21	5.23	Aug. 13	d27.22	31	20.05
Mar. 5	4.40	June 6	8.70	Sept. 10	d27.10		

4/25-29H1. C. R. Sawyer. About 0.2 mile nearly east of Carpinteria, 0.15 mile northeast of U. S. Highway 101, 0.12 mile east of Linden Avenue, 120 feet north of alley, in corrugated-steel pump house. Measuring point, bottom of pump base, on south side, at groove in concrete foundation, 0.73 foot above land-surface datum (includes constant of 0.33 foot to offset inclination of tape) and about 34.33 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 8	8.08	Apr. 2	5.82	July 16	27.48	Nov. 12	20.57
22	7.45	23	4.63	Aug. 23	ad45.66	Dec. 3	16.91
Feb. 19	6.45	May 21	4.67	Sept. 10	d34.84	17	16.71
Mar. 5	6.09	June 6	5.93	Nov. 5	22.39	31	13.30
26	5.68	18	18.67				

4/25-29R1. Carpinteria Union High School. In eastern Carpinteria, 250 feet south of U. S. Highway 101, 5 feet west of storeroom. Measuring points: Aug. 28, 1941, to Sept. 10, 1942, top northwest side of pump base, through 1-1/8-inch hole, 1.20 feet above land-surface datum and about 33 feet above sea-level datum of 1929; after Oct. 8, 1942, top west side of 10-inch casing, 0.99 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 8	13.96	Apr. 2	9.70	July 9	e24.36	Oct. 8	d36.23
22	12.48	23	8.67	16	22.35	Nov. 5	26.32
Feb. 19	11.55	May 21	9.25	Aug. 13	d37.76	Dec. 4	20.92
Mar. 5	10.75	June 6	11.24	Sept. 10	24.46	31	16.17
19	10.56	18	30.47				

a Pump recently operated.

b Pump recently operated in adjacent well.

c Pump operating in adjacent well.

d Below sea-level datum of 1929.

e Pump operating.

4/25-30B1. A. Fogliadini. About 1.1 miles west-northwest of Carpinteria, 0.3 mile west of Santa Monica Road, 0.12 mile north of U. S. Highway 101, 75 feet west of T-lane north, in rear of dwelling. Drilled well within dug well 4/25-30B3. Measuring point, common for wells 4/25-30B1 and 30B3, top of concrete cover, 0.30 foot above land-surface datum and about 14 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	3.35	Apr. 23	1.34	Aug. 13	11.24	Nov. 5	8.73
22	3.60	May 21	2.62	Sept. 10	10.08	Dec. 4	5.94
Feb. 19	3.20	June 18	5.20	Oct. 8	9.45	31	9.00
Mar. 19	1.86	July 9	6.47				

4/25-30B3. A. Fogliadini. About 1.1 miles west-northwest of Carpinteria, dug well surrounding drilled well 4/25-30B1. Measuring point, common for wells 4/25-30B1 and 30B3, top of concrete cover, 0.30 foot above land-surface datum and about 14 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	3.33	Apr. 23	1.36	Aug. 13	11.27	Nov. 5	8.76
22	3.54	May 21	2.58	Sept. 10	10.09	Dec. 4	5.93
Feb. 19	3.19	June 18	5.18	Oct. 8	9.47	31	9.02
Mar. 19	1.92	July 16	6.40				

4/25-33C1. B. F. Franklin. About 1.0 mile southeast of Carpinteria, 0.45 mile east of Carpinteria Creek, 50 feet south of U. S. Highway 101, in open field, south of two oak trees. Measuring point, top north side of 12-inch casing, level with land-surface datum and about 70 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.47	Apr. 2	24.64	July 9	25.08	Nov. 5	25.35
22	24.38	23	24.66	16	25.16	12	25.46
Feb. 19	24.51	May 21	24.90	Aug. 13	24.90	Dec. 4	25.75
Mar. 5	24.52	June 6	24.88	Sept. 10	25.03	31	25.85
19	24.54	18	24.96				

4/25-35A1. E. S. Atkinson. Quinton, Code, and Hill - Leeds and Barnard No. 217. About 3.2 miles nearly east of Carpinteria, south of Y-intersection of State Highway 150 and Rincon Road, 75 feet north of Rincon Creek, beneath large oak tree west of Rincon Road. Measuring points: Aug. 28, 1941, to Feb. 19, 1942, top of pump base, on northeast side, 0.30 foot above land-surface datum and about 155 feet above sea-level datum of 1929; after Mar. 5, 1942, bottom of pump base on east side, through slot in casing, 0.30 foot above land-surface datum. Measurements discontinued after Aug. 13.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	18.83	Mar. 5	19.28	Apr. 23	18.77	July 16	21.95
22	18.79	19	18.70	May 21	19.10	Aug. 13	36.23
Feb. 19	18.95	Apr. 5	19.02	July 9	25.85		

4/25-35B1. R. Nichols. About 3.1 miles east-southeast of Carpinteria, 0.14 mile southwest of irrigation and observation well 4/25-35A1, 15 feet west of Rincon Creek, in corrugated-steel pump house. Measuring point, top north side of 12-inch casing, level with land-surface datum and about 139 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	40.37	May 7	25.88	Sept. 10	71.05	Dec. 4	61.10
22	31.46	June 18	27.46	Oct. 8	65.74	31	66.57
Mar. 26	26.03	July 16	66.30	Nov. 5	66.94		

a Pump recently operated.

b Pump operating in adjacent well.

4/25-35D1. W. B. Knowlton. Quinton, Code, and Hill - Leeds and Barnard No. 283. About 2.5 miles nearly east of Carpinteria, 0.5 mile north of old U. S. Highway 101, about 0.5 mile northwest of Rincon Creek, 350 feet west of bend in State Highway 150, on hillside in frame pump house painted green. Measuring point, lower west edge of pump base, through hole in concrete foundation, 1.30 feet above land-surface datum and about 146 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	140.21	Mar. 19	134.68	June 18	134.77	Nov. 5	141.32
22	139.19	Apr. 2	133.86	Sept. 10	137.10	Dec. 4	138.10
Feb. 19	136.71	23	131.95	Oct. 8	141.22	31	137.52
Mar. 5	136.20						

4/26-23H1. A. P. Kramer. About 3.0 miles west-northwest of Carpinteria, 90 feet south of Southern Pacific Railroad, 230 feet east of Garapato Creek, in frame pump house. Measuring point, top west side of 8-inch casing, 0.50 foot above land-surface datum and about 38 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	31.73	Apr. 23	31.88	Aug. 13	35.60	Nov. 5	338.56
22	31.47	May 21	32.25	Sept. 10	(b)	Dec. 4	35.85
Feb. 19	31.20	June 18	32.92	Oct. 8	36.52	31	35.98
Mar. 19	31.53	July 16	34.46				

4/26-23H4. E. Busby. About 3.0 miles west-northwest of Carpinteria, 65 feet north of U. S. Highway 101, 30 feet west of Garapato Creek, in frame pump house painted green. Measuring point, top of pump base through 1½-inch hole, 0.70 foot above land-surface datum and about 41 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	29.02	Apr. 23	28.95	Aug. 13	32.50	Nov. 5	333.75
22	28.84	May 21	29.55	Sept. 10	33.08	Dec. 4	33.30
Feb. 19	28.23	June 18	30.04	Oct. 8	33.50	31	33.52
Mar. 19	28.58	July 16	31.24				

4/26-24F2. A. F. Thurmond. Quinton, Code, and Hill - Leeds and Barnard No. 127. About 2.5 miles west-northwest of Carpinteria, 165 feet north of U. S. Highway 101, and 250 feet west of Arroyo Padaro Creek. Measuring point, top of 12-inch casing, 0.50 foot above land-surface datum and about 12 feet above sea-level datum of 1929. Measurements discontinued after July 16.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.62	Feb. 19	2.18	Mar. 19	2.13	June 6	3.27
22	2.58	Mar. 5	2.55	Apr. 23	2.20	July 16	216.77

a Pump recently operated.

b Pump operating.

c Pump operating in adjacent well.

d Below sea-level datum of 1929.

Goleta Basin

4/27-6N1. J. McCaughy. About 4.4 miles east-northeast of Goleta, 0.2 mile east of Cienigita Road, 450 feet south of State Highway 150, and 10 feet east of motor shed. Measuring point, on bottom of pump base on south edge, at groove for air line, 0.50 foot above land-surface datum and about 232 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	84.75	Mar. 23	84.10	June 19	84.58	Dec. 4	85.98
17	84.65	Apr. 24	83.92	Aug. 14	85.19	30	85.94
Feb. 23	84.51	May 22	83.76	Nov. 6	86.00		

4/27-713. Nora J. Spear. About 4.4 miles nearly east of Goleta, 580 feet north of Hollister Avenue, 550 feet west of La Cumbre Road, at north end of unpainted frame pump house. Measuring point, on bottom of pump base, at south edge, 1.20 feet above land-surface datum and about 191 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	49.95	Apr. 24	44.89	Aug. 14	55.75	Nov. 6	54.84
17	49.39	May 22	47.36	Sept. 11	57.63	Dec. 4	53.46
Feb. 23	48.63	June 19	53.73	Oct. 9	56.11	30	51.72
Mar. 23	46.10	July 17	55.99				

4/28-2P2. A. L. Pennell. About 2.6 miles east-northeast of Goleta, 0.3 mile east of Tuckers Grove, 400 feet north of Cathedral Oaks Road, 100 feet east of property line, at east side of unpainted wooden motor shed. Measuring point, top of 5/8-inch bolt projecting from 10- by 10-inch wooden pump support over 4- by 4-foot dug well, 0.40 foot above land-surface datum and about 195 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	21.58	Apr. 24	18.96	Aug. 14	25.94	Nov. 6	32.48
17	20.87	May 22	19.56	Sept. 11	28.11	Dec. 4	33.92
Feb. 23	19.63	June 19	21.79	Oct. 9	30.34	30	34.17
Mar. 23	19.92	July 17	23.84				

4/28-3E2. Peter Cavalletto. About 2.1 miles northeast of Goleta, 20 feet north of Patterson Avenue, 25 feet west of San Jose Creek. Measuring point, top west side of pump base through 3/4-inch hole, 0.40 foot above land-surface datum and about 138 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	10.42	Apr. 24	10.16	Aug. 14	b14.92	Nov. 6	b15.31
16	10.31	May 22	12.25	Sept. 11	b12.49	Dec. 4	11.50
Feb. 23	10.29	June 19	a47.12	Oct. 9	a34.90	30	11.29
Mar. 23	10.13	July 17	23.17				

4/28-3M2. L. W. Fowler. About 1.8 miles northeast of Goleta, 125 feet north of Cathedral Oaks Road, 80 feet east of Patterson Avenue, 10 feet south of unimproved road. Measuring point, top northwest side of 16-inch casing, level with land-surface datum and about 125 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	95.20	Apr. 24	89.93	Aug. 14	b104.29	Nov. 6	b103.42
16	94.05	May 22	b91.62	Sept. 11	b104.16	Dec. 4	97.20
Feb. 23	93.07	June 19	b102.24	Oct. 9	b103.86	30	95.73
Mar. 23	89.97	July 17	b104.62				

4/28-3P. Lynn Sexton. Quinton, Code, and Hill - Leeds and Barnard No. 119. About 1.7 miles northeast of Goleta. 0.2 mile south of Cathedral Oaks Road, 210 yards east of Patterson Avenue, 5 feet east of corrugated-steel motor shed. Measuring point, top north side of 10-inch casing, 0.60 foot below land-surface datum and about 158 feet above sea-level datum of 1929.

a Pump operating.

b Pump operating in adjacent well.

4/28-3P1. Lynn Sexton--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	133.77	Apr. 24	131.05	Aug. 14	132.22	Nov. 6	133.92
16	133.44	May 22	130.34	Sept. 11	132.57	Dec. 4	133.71
Feb. 22	132.57	June 19	130.82	Oct. 9	133.36	30	133.48
Mar. 23	131.64	July 17	131.36				

4/28-3P2. G. L. Bean. About 1.9 miles northeast of Goleta, 0.22 mile east of Patterson Avenue, 60 feet south of Cathedral Oaks Road, 200 feet west of Maria Ygnacia Creek, in corrugated-steel pump house. Measuring point, top of 6- by 6-inch wooden pump support, 1.20 feet above land-surface datum and about 130 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	54.69	Apr. 24	a73.74	July 17	a84.09	Oct. 9	56.98
16	54.12	May 22	51.26	Aug. 14	a83.14	Nov. 6	57.49
Feb. 23	52.17	June 19	53.36	Sept. 11	56.21	Dec. 30	57.94
Mar. 23	51.79						

4/28-4K4. R. S. Rowe. About 1.5 miles north-northeast of Goleta, 1.0 mile north of Southern Pacific Railroad, 320 yards east of private extension of Depot Road, 90 feet south of property line. Measuring point, top north side of 12-inch casing, 1.30 feet above land-surface datum and about 91 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	17.07	Apr. 24	15.42	Aug. 14	17.78	Nov. 6	19.67
16	16.71	May 22	17.99	Sept. 11	18.08	Dec. 4	18.81
Feb. 23	16.48	June 19	16.88	Oct. 9	18.85	30	18.28
Mar. 23	15.92	July 17	18.47				

4/28-4P1. J. Reeber. Quinton, Code, and Hill - Leeds and Barnard No. 174. About 1.2 miles north-northeast of Goleta, 0.8 mile north of Southern Pacific Railroad, 25 feet west of private extension of Depot Road, 50 feet north of property line, in frame pump house painted blue. Measuring point, top of 12-inch I-beam, 1.00 foot above land-surface datum and about 95 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	82.10	Apr. 24	78.15	July 17	80.04	Nov. 6	84.40
16	81.50	May 22	78.12	Aug. 14	82.15	Dec. 4	83.79
Feb. 23	79.99	June 19	79.93	Sept. 11	84.43	30	82.91
Mar. 23	79.03	July 2	82.17	Oct. 9	87.74		

4/28-4Q2. R. S. Rowe. About 1.25 miles nearly northeast of Goleta, 0.7 mile north of Southern Pacific Railroad, 320 yards east of private extension of Depot Road, 50 feet northeast of irrigation well 4/28-4Q1. Measuring point, top south side of 12-inch casing, level with land-surface datum and about 89 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	65.81	Apr. 24	66.81	Aug. 14	75.36	Nov. 6	74.55
16	65.44	May 22	63.15	Sept. 11	b96.07	Dec. 4	73.55
Feb. 23	64.13	June 19	b84.04	Oct. 9	76.16	30	b96.43
Mar. 23	62.98	July 17	b93.88				

4/28-4R1 (#941, pp. 164-165). L. M. Cavaletto. About 1.5 miles north-east of Goleta, 0.7 mile north of Southern Pacific Railroad, 250 yards west of Patterson Avenue, 45 feet south of property-line road, at northeast base of lemon tree in second row south of road. About 350 yards nearly east of irrigation wells 4/28-4R3 and 4R4. Measuring points: Jan. 28 to July 18, 1941, top of base panel of instrument shelter, 1.00 foot above land-surface datum and about 98 feet above sea-level datum of 1929; after July 18, 1941, top northwest side of 16-inch casing, 0.78 foot above land-surface datum.

a Pump operating.

b Pump operating in adjacent well.

4/28-4R1. L. M. Cavaletto--Continued.

Water level, in feet below land-surface datum, 1942
(Undated entries are highest and lowest levels
between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	51.31		57.33		57.38		62.55
16	50.09		58.01		57.43		63.66
Feb. 23	49.50	June 19	58.01	July 20	57.42	Sept. 2	63.08
Mar. 23	49.00		57.95		57.42		63.08
Apr. 24	48.73		57.96		58.54		64.11
May 22	50.80	22	57.96	27	58.54	8	64.11
25	50.93		57.68		58.54		64.11
	50.76		57.96		59.78		64.64
June 1	53.22	29	57.68	Aug. 3	59.78	16	64.18
	53.16		57.31		60.57		63.51
	54.05	July 6	57.69		60.52	23	63.52
3	54.05		57.32	10	60.52	30	63.31
	54.00		57.24		61.65	Oct. 14	62.57
	55.45	13	57.37	14	61.65	21	62.77
8	55.44		57.36		61.65	28	63.68
	55.44		57.34		63.18	Nov. 18	63.57
	57.35	17	57.38	26	62.97	Dec. 30	61.62
15	57.33						

4/28-4R2 (*941, p. 165). G. M. Gallagher. About 1.5 miles nearly northeast of Goleta, 450 feet north-northeast of irrigation wells 4/28-4R3 and 4R4, 100 feet east of San Jose Creek, 75 feet southeast of large eucalyptus tree. Measuring point, top northwest side of 12-inch casing, level with land-surface datum and about 103 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 3	36.17	Apr. 24	35.03	Aug. 14	56.37	Nov. 6	57.00
16	36.02	May 22	46.19	Sept. 12	58.82	Dec. 4	59.10
Feb. 23	36.19	June 19	52.64	Oct. 9	56.25	30	54.87
Mar. 23	35.30	July 17	50.30				

4/28-4R3 (*941, pp. 165-166). L. M. Cavaletto and G. M. Gallagher. Quinton, Code, and Hill - Leeds and Barnard No. 115. About 1.5 miles nearly northeast of Goleta, 450 feet south-southwest of observation well 4/28-4R2 and 15 feet north of irrigation well 4/28-4R4. Discontinued as irrigation well in March 1942. Measuring points: Apr. 10, 1941, to Mar. 23, 1942, lower west edge of pump base, 0.30 foot below land-surface datum and about 96 feet above sea-level datum of 1929; after Apr. 24, 1942, top of wooden cover, 0.14 foot below land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 3	82.47	Apr. 24	79.46	June 19	74.81	Oct. 9	c82.40
16	80.47	May 1	67.69	July 17	71.25	Nov. 6	75.82
Feb. 14	76.51	22	66.12	Aug. 14	c83.15	Dec. 4	76.03
23	75.59	June 3	85.12	Sept. 11	c80.56	30	73.28
Mar. 23	71.94						

4/28-5C1. Mario Mostachetti. About 1.9 miles nearly north-northwest of Goleta, 0.9 mile north of Stow Canyon Road, 0.5 mile west of Fairview Road, 30 feet south of earth reservoir, 15 feet southwest of road leading to farm. Measuring point, top west side of wooden motor support, 2.00 feet above land-surface datum and about 164 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 3	3.10	May 22	d13.66	Aug. 14	7.07	Nov. 6	8.89
16	3.25	June 19	3.67	Sept. 11	7.50	Dec. 5	9.16
Feb. 23	3.20	July 17	6.08	Oct. 9	8.34	30	9.24
Apr. 24	d9.24						

a "High-low" gage installed.

b Gage removed.

c Pump operating in adjacent well. d Pump operating.

4/28-5D1. Mario Mostachetti. About 2 miles north-northwest of Goleta. 200 feet south of road leading to farm, 220 yards nearly west of well 4/28-5C1, beneath corrugated-steel lean-to. Measuring point, top north side of 8-inch casing, 2.50 feet above land-surface datum and about 215 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	a38.96	Apr. 24	a25.83	Aug. 14	26.00	Nov. 6	25.04
16	a38.00	May 22	a30.10	Sept. 11	26.07	Dec. 5	a32.83
Feb. 23	24.70	June 19	24.06	Oct. 9	95.39	30	24.95
Mar. 23	23.44	July 17	24.90				

4/28-5J1. Harry Sexton. About 1.2 miles north of Goleta, 0.4 mile north of Stow Canyon Road, 325 feet east of Fairview Road, 10 feet north of property-line road, 10 feet east of well 4/28-5J2. Measuring point, top southwest corner of 6- by 6-foot concrete well curb, 1.00 foot above land-surface datum and about 97 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	11.52	Mar. 23	11.35	July 17	15.30	Nov. 6	14.67
16	11.47	Apr. 24	11.38	Aug. 14	14.28	Dec. 5	13.82
Feb. 23	11.38	May 22	11.70	Oct. 9	15.26	30	13.63

4/28-5J2. Harry Sexton. Quinton, Code, and Hill - Leeds and Barnard No. 50. About 1.2 miles north of Goleta, 10 feet west of well 4/28-5J1, beneath small pump shelter. Measuring point, lower edge of pump base, 1.10 feet above land-surface datum and about 95 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	9.68	Apr. 24	9.46	Aug. 14	12.47	Nov. 6	13.10
16	9.37	May 22	9.80	Sept. 11	a36.56	Dec. 5	11.96
Feb. 23	9.55	June 19	a33.23	Oct. 9	13.36	30	11.80
Mar. 23	9.52	July 17	13.49				

4/28-5R5. F. J. Ewing. About 1 mile nearly north of Goleta, 450 feet north of Stow Canyon Road, 300 yards east of Fairview Road, 25 feet north of irrigation well 4/28-5R4, at south side of road leading to farm. Measuring point, top south side of 6-inch casing, level with land-surface datum and about 61 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	47.10	Apr. 24	43.46	Aug. 14	b52.32	Nov. 6	47.13
16	46.66	May 22	42.85	Sept. 11	46.03	Dec. 5	46.34
Feb. 23	45.98	July 17	44.39	Oct. 9	b52.88	30	46.94
Mar. 23	44.66						

4/28-9A3 (*941, pp. 166-167). L. M. Cavaletto. About 1.3 miles nearly northeast of Goleta, 250 feet northeast of irrigation well 4/28-9A2, 60 feet north and 10 feet east of northeast corner of dwelling. Measuring points: Apr. 9, to July 19, 1941, top east side of 12-inch casing, 1.50 feet above land-surface datum and about 89 feet above sea-level datum of 1929; after July 19, 1941, top of base panel of instrument shelter, 1.71 feet above land-surface datum.

Water level at noon, in feet below land-surface datum, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	43.55	Feb. 25	43.21	Apr. 15	42.01	June 5	a44.50
10	43.13	28	43.11	20	41.17	10	a44.47
15	42.83	Mar. 5	43.65	25	41.87	15	a45.41
20	43.39	10	43.26	30	42.63	20	a45.80
25	42.76	15	42.69	May 5	40.95	25	a47.85
31	43.19	20	42.31	10	41.22	30	a47.89
Feb. 5	42.45	25	42.58	15	42.51	July 5	a45.59
10	43.10	31	43.62	20	42.86	10	a45.58
15	42.75	Apr. 5	44.30	25	41.19	15	a45.37
20	43.15	10	42.87	31	a44.22	20	a45.50

a Pump operating.

b Pump operating in adjacent well.

c Depressed by draft from adjacent well; highest level of day.

4/28-9A3. L. M. Cavaletto--Continued.

Water level at noon, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 25	a46.37	Sept. 5	a50.03	Oct. 15	a48.80	Nov. 25	48.02
31	a46.43	10	a50.30	20	a49.39	30	47.70
Aug. 5	a47.54	15	a48.66	25	a48.62	Dec. 5	47.92
10	a47.07	20	a48.36	31	a49.29	10	46.90
15	a47.78	25	a48.89	Nov. 4	48.40	15	47.30
20	a48.82	30	a48.49	11	a49.60	20	46.87
26	a50.26	Oct. 5	a48.26	15	48.66	25	46.13
31	a48.50	10	a49.27	20	48.23	31	46.37

4/28-10A1. C. C. Lee. About 2.2 miles nearly east-northeast of Goleta, 0.4 mile north of Southern Pacific Railroad, 400 feet southwest of Turnpike Road, 100 feet southeast of Loma Abaja Creek, at east side of wooden shed painted green. Measuring point, top north side of 8-inch casing, 1.00 foot above land-surface datum and about 132 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	98.95	Apr. 24	96.14	Aug. 14	98.14	Nov. 6	100.32
16	98.39	May 22	b96.02	Sept. 11	99.77	Dec. 4	100.44
Feb. 23	96.57	June 19	b96.68	Oct. 9	100.03	30	101.13
Mar. 23	96.38	July 17	b97.69				

4/28-10F1. John S. Edwards. Quinton, Code, and Hill - Leeds and Barnard No. 127. About 1.5 miles nearly east-northeast of Goleta, 200 yards north of Southern Pacific Railroad, 0.20 mile east of Patterson Avenue, 200 feet southeast of private bridge over Maria Ygnacia Creek, at west edge of lemon grove, in corrugated-steel pump house. Measuring point, top southeast side of pump base, through hole for air line, 0.70 foot above land-surface datum and about 78 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 3	60.99	Apr. 24	c65.53	Aug. 14	64.81	Nov. 6	63.61
16	60.26	May 22	56.52	Sept. 12	63.66	Dec. 4	62.10
Feb. 23	58.97	July 17	60.65	Oct. 9	64.09	30	61.82
Mar. 23	c65.55						

4/28-10K2. Norman Troup. About 1.8 miles nearly east-northeast of Goleta, 400 feet south of Southern Pacific Railroad, 200 yards west of San Marcos Pass Road, between orange and walnut groves. Measuring point, top west side of pump base through hole, 2.50 feet above land-surface datum and about 85 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 3	86.50	Apr. 24	82.90	Aug. 14	94.93	Nov. 6	89.20
16	86.10	May 22	83.07	Sept. 11	95.03	Dec. 4	87.74
Feb. 23	84.70	June 19	86.83	Oct. 9	89.54	30	87.19
Mar. 23	85.43	July 17	c136.48				

4/28-10N6. Dr. E. O. Campbell. About 1.3 miles east of Goleta, 225 feet north of U. S. Highway 101, 300 feet west of Maria Ygnacia Creek, 100 feet north of dwelling, at east side of garage. Measuring point, top east side of brick curb, level with land-surface datum and about 61 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 3	20.49	Apr. 24	21.09	Aug. 14	21.61	Nov. 6	22.14
16	20.52	May 22	21.25	Sept. 11	21.88	Dec. 4	22.32
Feb. 23	20.85	June 19	21.28	Oct. 9	22.02	30	22.49
Mar. 23	21.01	July 17	21.39				

a Depressed by draft from adjacent well; highest level of day.

b Pump operating in adjacent well.

c Pump operating.

4/28-11F1. J. Scavarda. About 2.7 miles nearly east-northeast of Goleta, 0.3 mile north of Southern Pacific Railroad, 0.3 mile east of Turnpike Road, 500 feet north-northeast of dwelling, at west edge of walnut grove, 10 feet north of unpainted wooden shed. Measuring point, top northwest side of pump base, through hole, 1.30 feet above land-surface datum and about 144 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	117.50	Apr. 24	115.61	Aug. 14	116.65	Nov. 6	115.26
17	117.27	May 22	115.39	Sept. 11	117.70	Dec. 4	117.30
Feb. 23	116.54	June 19	115.62	Oct. 9	117.45	30	117.36
Mar. 23	116.07	July 17	116.84				

4/28-12L4 (#941, p. 167). L. More. About 3.6 miles nearly east of Goleta, 155 feet north and 520 feet east of underpass of U. S. Highway 101 beneath Southern Pacific Railroad, 100 feet south of irrigation well 12L5. Measuring point, top east side of 12-inch casing, level with concrete floor and land-surface datum and about 141 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	35.84	Apr. 24	34.17	Aug. 14	62.06	Nov. 6	59.30
17	35.34	May 22	37.01	Sept. 11	66.85	Dec. 4	48.08
Feb. 23	34.74	June 19	36.62	Oct. 9	64.85	30	44.00
Mar. 23	35.06	July 17	57.89				

4/28-15E1. A. J. Holloway. Quinton, Code, and Hill - Leeds and Barnard No. 43A. About 1.4 miles nearly east-southeast of Goleta, 0.35 mile south of U. S. Highway 101, 400 feet east of Maria Ygnacia Creek, 40 feet south of property line, at west edge of walnut grove. Measuring point, top south side of 12-inch casing, 1.00 foot above land-surface datum and about 37 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	41.87	Apr. 24	37.58	Aug. 14	46.27	Nov. 6	44.71
16	41.25	May 22	37.22	Sept. 12	45.39	Dec. 4	42.99
Feb. 23	39.67	June 19	41.08	Oct. 9	46.45	30	42.69
Mar. 23	38.69	July 17	48.52				

4/28-15G2. J. J. Wheeler. About 1.9 miles nearly east-southeast of Goleta, 0.3 mile south of U. S. Highway 101, 175 feet west of T-lane south, at south side of property-line road, 15 feet north of frame motor house painted white. Measuring point, lower north edge of pump base, at groove for air line, 0.40 foot above land-surface datum and about 44 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	51.88	Apr. 24	47.62	Aug. 14	56.74	Nov. 6	54.29
16	51.37	May 22	47.77	Sept. 11	54.95	Dec. 4	53.25
Feb. 23	49.82	June 19	50.88	Oct. 9	58.84	30	52.75
Mar. 23	48.51	July 17	59.39				

4/28-17C1. Navy Department and Marine Corps Air Station. Formerly owned by A. F. Snow. About 0.4 mile nearly west-southwest of Goleta, 300 feet south of U. S. Highway 101, and 150 feet east of San Pedro Creek, in frame pump house between garage and tank house. Well abandoned and filled during August 1942. Measuring point, top northeast corner of 1-inch coping of well curb, 1.20 feet above land-surface datum and about 18 feet above sea-level datum of 1929. Measurements discontinued after Aug. 14.

a Pump operating.

b Pump operating in adjacent well.

4/28-17C1. Navy Department and Marine Corps Air Station--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	3.04	Mar. 23	a4.87	May 22	b7.62	July 17	8.24
17	3.40	Apr. 24	2.89	June 19	5.91	Aug. 14	a10.37
Feb. 23	4.63						

4/28-17C2. Navy Department and Marine Corps Air Station. Formerly owned by Mr. Romo. About 0.33 mile nearly west-southwest of Goleta, 300 feet south of U. S. Highway 101, and 450 feet east of San Pedro Creek, at west side of wooden shed in rear of dwelling. Well abandoned and filled during August 1942. Measuring point, top south side of 8-inch casing, 1.50 feet above land-surface datum and about 16 feet above sea-level datum of 1929. Measurements discontinued after Aug. 14.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	5.91	Mar. 23	4.30	May 22	3.78	July 17	4.78
17	5.52	Apr. 24	2.91	June 19	5.23	Aug. 14	5.03
Feb. 23	4.74						

4/28-17G1 (#941, p. 167). Navy Department and Marine Corps Air Station. Formerly owned by Santa Barbara Packing Co. About 0.4 mile south of Goleta, 0.4 mile south of U. S. Highway 101, and 250 feet west of Fairview Road, in frame pump house painted white. Measuring point, lower north edge of pump base, 1.80 feet above land-surface datum and about 16 feet above sea-level datum of 1929. Well abandoned and filled during October 1942. Measurements discontinued after Oct. 9.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	10.77	Mar. 23	a14.98	June 19	10.43	Sept. 11	15.51
16	10.30	Apr. 24	a11.65	July 17	a19.53	Oct. 9	15.02
Feb. 23	9.07	May 22	8.46	Aug. 14	a18.92		

4/28-17H3 (#941, pp. 167-168). J. J. Mathews (published erroneously in Water-Supply Paper 941 as J. T. Mathews). About 0.5 mile nearly south of Goleta, 50 feet north of Mathews Avenue, 250 feet east of Fairview Road, 50 feet south of dwelling. Measuring point, top west side of 12-inch casing, at slot in galvanized-steel cover, 0.80 foot above land-surface datum and about 12 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	2.75	Apr. 24	2.12	Aug. 14	4.94	Nov. 6	6.24
16	2.77	May 22	2.92	Sept. 11	5.46	Dec. 4	6.40
Feb. 23	2.90	June 19	3.91	Oct. 9	5.89	30	6.37
Mar. 23	2.61	July 17	4.35				

4/28-17H11 (#941, p. 168). Mrs. Leslie Oakley and Mrs. Mary Bonetti. About 0.4 mile south-southeast of Goleta, 480 feet west along power line from Nectarine Avenue, 150 feet southeast of San Jose Creek, 15 feet northwest of large tank tower. Measuring point, top east side of 6-inch casing, 0.50 foot above land-surface datum and about 11 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	12.31	Apr. 24	9.97	Aug. 14	16.38	Nov. 6	17.06
16	11.89	May 22	11.31	Sept. 11	18.00	Dec. 4	15.32
Feb. 23	11.51	June 19	12.20	Oct. 9	16.35	30	15.48
Mar. 23	10.56	July 17	20.80				

4/28-18G2. T. B. Bishop Co. About 1.25 miles west-southwest of Goleta, 50 feet north of U. S. Highway 101, and 100 feet west of property line, in corrugated-steel pump house. Measuring point, top southeast side of pump base, through hole, 3.00 feet above land-surface datum and about 10 feet above sea-level datum of 1929.

a Pump operating.

b Pump recently operated.

4/28-18G2. T. B. Bishop Co.--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	24.06	Apr. 24	21.02	Aug. 14	all 4.8	Nov. 6	26.94
17	23.48	May 22	22.00	Sept. 11	30.21	Dec. 5	31.46
Feb. 23	22.02	June 19	all 17.3	Oct. 9	36.32	30	26.50
Mar. 23	21.40	July 17	all 10.2				

4/28-18N3. C. A. Storke. About 1.8 miles west-southwest of Goleta, 0.45 mile south of U. S. Highway 101, 0.6 mile east of Isla Vista Road, 30 feet south of property line, and 50 feet southwest of unpainted wooden shed. Measuring point, top west side of 16-inch casing, level with 10-inch I-beam and land-surface datum and about 7 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	12.29	Apr. 24	11.44	Aug. 14	20.03	Nov. 6	19.51
17	12.48	May 22	16.67	Sept. 11	19.48	Dec. 5	17.49
Feb. 23	10.85	June 19	15.82	Oct. 9	b21.73	30	16.08
Mar. 23	11.88	July 17	17.81				

4/28-18Q1. Navy Department and Marine Corps Air Station. About 1.5 miles nearly southwest of Goleta, 0.65 mile south of U. S. Highway 101, and 1.0 mile east of Isla Vista Road. Measuring point, top of 2-inch plank cover over dug well, level with land-surface datum and about 4.0 feet above sea-level datum of 1929. Well abandoned and filled during June 1942. Measurements discontinued after May 22.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 5	3.44	Feb. 23	4.18	Apr. 24	4.14
17	4.21	Mar. 23	4.19	May 22	4.12

4/28-18Q2. Navy Department and Marine Corps Air Station. About 1.5 miles nearly southwest of Goleta, 100 feet nearly east of well 4/28-18Q1, beneath steel windmill tower. Measuring point, top west side of plank cover over dug well, 1.20 feet above land-surface datum and about 4.0 feet above sea-level datum of 1929. Well abandoned and filled during December 1942. Measurements discontinued after Dec. 30.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 19	2.53	Aug. 14	4.77	Oct. 9	3.44	Dec. 5	0.78
July 17	2.63	Sept. 11	4.85	Nov. 6	1.06	30	.00

4/29-13K2. T. B. Bishop Co. Quinton, Code, and Hill - Leeds and Barnard No. 76. About 2.3 miles nearly west-southwest of Goleta, 0.28 mile south of U. S. Highway 101, and 90 feet west of farm leading to farm road. Measuring point, top south side of 12-inch casing, 1.00 foot above land-surface datum and concrete floor and about 25 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

(Beginning Sept. 28, records at noon from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	44.34	Aug. 14	44.65	Oct. 25	45.50	Nov. 30	44.96
17	44.04	Sept. 11	44.97	28	45.13	Dec. 5	45.13
Feb. 23	43.37	28	c45.05	Nov. 2	44.84	10	45.12
Mar. 23	42.98	30	45.08	6	44.26	15	45.10
Apr. 24	42.53	Oct. 5	45.24	11	44.54	20	45.21
May 22	41.46	10	45.26	15	44.84	25	44.91
June 19	43.81	15	45.19	20	44.96	30	44.64
July 17	43.60	20	45.25	25	44.94		

a Pump operating.

b Pump operating in adjacent well.

c Recorder installed.

4/29-14A3. Frank Baker. About 3 miles nearly west of Goleta, 0.6 mile west of Glen Annie Road, 80 feet north of Southern Pacific Railroad. Measuring point, top south side of 12-inch casing, level with land-surface datum and about 51 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	74.24	Apr. 24	73.06	Aug. 14	73.84	Nov. 6	73.79
17	74.04	May 22	72.85	Sept. 11	a74.53	Dec. 5	73.49
Feb. 23	73.75	June 19	a76.44	Oct. 9	74.15	30	73.21
Mar. 23	73.38	July 17	a74.35				

Santa Ynez Valley

6/20-2Pl. L. B. and K. W. Manning. About 4 miles nearly east of Santa Ynez, 0.4 mile east of Santa Agueda Creek, 90 feet north of Happy Canyon Road, 6 feet west of wood tank painted green, beneath windmill tower. Measuring point, top south side of 6-inch casing, 1.60 feet above land-surface datum and about 689 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 27	36.78	July 10	36.27	Oct. 6	b45.31	Dec. 2	b40.63
May 29	36.31	Aug. 7	36.26	Nov. 12	36.22	31	36.32
June 12	36.32	Sept. 1	b36.18				

6/30-6A1. S. Torrance. About 1.5 miles nearly north of Santa Ynez, 0.32 mile east of Telephone Road, 125 feet south of Baseline Avenue, in field. Measuring point, top west side of 16-inch casing, 0.70 foot above land-surface datum and about 670 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 22	42.36	July 10	50.03	Oct. 6	51.66	Dec. 2	47.91
May 28	47.67	Aug. 7	50.80	Nov. 12	50.80	31	46.88
June 12	48.78	Sept. 1	52.93				

6/30-7K1. Mrs. Anderson. In Santa Ynez, about 350 feet south of State Highway 150, 75 feet west of Faraday Street, and 20 feet north of wooden tank and tower painted green. Measuring point, top of metal cover, at hole, 0.50 foot above land-surface datum and about 615 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Dec. 19, 1941	b39.69	May 1, 1942	b39.99	Sept. 1, 1942	b40.03
Jan. 15, 1942	39.79	26	b40.02	Oct. 6	39.88
29	39.77	June 12	b40.18	Nov. 12	39.96
Mar. 9	b39.99	July 10	b40.25	Dec. 2	b39.92
Apr. 6	b39.97	Aug. 7	b40.19	31	39.76

6/30-9N1. San Lucas Ranch. About 1.5 miles nearly east of Santa Ynez, 475 feet east and 0.2 mile south from Y-junction of State Highway 150 and road to Los Olivos, beneath windmill tower. Measuring point, top north side of casing collar, 1.10 feet above land-surface datum and about 654 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Dec. 26, 1941	31.97	May 1, 1942	31.68	Sept. 1, 1942	31.67
Jan. 15, 1942	b32.08	26	31.64	Oct. 6	31.73
29	31.87	June 12	31.65	Nov. 12	31.80
Mar. 9	31.84	July 10	31.67	Dec. 2	31.71
Apr. 6	31.72	Aug. 7	b32.29	31	31.70

a Pump operating in adjacent well.

b Pump operating.

6/30-10R1. L. B. and K. W. Manning. About 3.2 miles east of Santa Ynez, 50 feet south and 110 feet east from junction of Santa Agueda Creek Road and ranch road, 12 feet northwest of frame dwelling, beneath steel windmill tower. Measuring point, top east side of 1- by 12-inch wood collar, at copper nail and washer, level with top of concrete foundation, 0.50 foot above land-surface datum and about 644 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 13	27.24	July 10	24.04	Oct. 6	24.43	Dec. 2	24.58
May 29	24.59	Aug. 7	24.09	Nov. 12	23.95	31	24.21
June 12	24.09	Sept. 1	24.14				

6/30-20H2. Rancho Juan y Lolita. About 2.2 miles southeast of Santa Ynez, 1.6 miles west of San Lucas Bridge over Santa Ynez River, on north bank of river, east of two irrigation wells, in unpainted pump house. Measuring point, top south side of pump base, 0.30 foot above land-surface datum and about 469 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Dec. 19, 1941	9.18	May 1, 1942	9.01	Oct. 6, 1942	11.44
Jan. 15, 1942	9.15	26	9.55	Nov. 12	11.39
29	9.03	Aug. 7	10.47	Dec. 2	10.48
Mar. 9	9.36	Sept. 1	10.47	31	9.98
Apr. 6	9.23				

6/30-29E1. Rancho Juan y Lolita. City of Santa Barbara No. 609. About 2.8 miles nearly south of Santa Ynez, 1.6 miles east of Refugio Pass Road, 200 yards south of Santa Ynez River, 200 feet northeast of abandoned dwelling, north of tank and tower painted white, and beneath metal windmill tower. Measuring points: City of Santa Barbara, top of 10-inch casing, 0.42 foot above land-surface datum and about 462 feet above sea-level datum of 1929; Geological Survey, top of 1- by 6-inch wood clamp, on north side of pump column, 0.50 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	a13.4	Feb. 6	a13.9	May 26	14.00	Oct. 6	18.54
14	a13.6	Mar. 4	a14.0	June 12	14.36	Nov. 12	19.10
21	a13.7	9	13.94	July 10	14.91	Dec. 2	19.21
29	13.71	Apr. 6	13.82	Aug. 7	16.58	31	18.52
Feb. 2	a13.8	May 21	13.44	Sept. 1	17.49		

6/31-1B2. Imbach. About 1.5 miles north-northwest of Santa Ynez, 500 feet south of Baseline Avenue, and 950 feet east of Grand Avenue, 200 feet west of frame dwelling painted white. Measuring point, top east side of 8-inch casing, at base of notch, 0.60 foot above land-surface datum and about 676 feet above sea-level datum of 1929.

Water level, in feet below land-surfaces datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 3	26.61	July 10	b109.70	Oct. 5	32.51	Dec. 2	38.97
May 28	40.15	Aug. 7	39.15	Nov. 12	c85.30	30	30.60
June 12	37.24	Sept. 1	49.90				

6/31-7P1. H. Anderson. City of Santa Barbara No. 554. About 0.4 miles east-southeast of Buellton, 120 feet south of State Highway 150, at north-east corner of barn, beneath windmill tower. Measuring point, top northeast side of wooden cover, at copper nail and washer, 0.80 foot above land-surface datum and about 364 feet above sea-level datum of 1929.

a Measured by city of Santa Barbara.

b Pump stopped but had been operating several days prior to measurement.

c Pump recently operated.

6/31-7P1. H. Anderson--Continued.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Nov. 4, 1941	30.80	May 1, 1942	31.57	Sept. 1, 1942	a34.34
Jan. 12, 1942	a33.11	26	32.82	Oct. 6	33.31
29	31.02	June 11	35.77	Nov. 12	32.95
Mar. 9	a38.76	July 9	36.46	Dec. 2	33.22
Apr. 6	31.52	Aug. 6	32.29	31	32.78

6/31-11E1. T. Petersen. About 1.3 miles nearly south of Ballard, 175 feet west of county road between Solvang and Ballard, on east bank of earth reservoir, beneath frame derrick. Measuring point, top south side of pump base, through hole, 1.40 feet above land-surface datum and about 560 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Dec. 9, 1941	39.79	May 1, 1942	33.87	Sept. 1, 1942	42.47
Jan. 15, 1942	37.34	26	b37.98	Oct. 6	a38.07
29	36.63	June 12	a91.35	Nov. 11	40.13
Mar. 9	35.27	July 10	a91.92	Dec. 2	38.47
Apr. 6	34.44	Aug. 6	a99.92	30	36.99

6/31-13D1. Mrs. Parker. About 1.4 miles nearly west-southwest of Santa Ynez, 0.3 mile west of Refugio Pass Road, 150 feet south of State Highway 150, 85 feet west of dwelling painted white, beneath windmill tower. Measuring point, top north side of 2- by 6-inch wooden clamp, 1.50 feet above land-surface datum and about 610 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Dec. 19, 1941	102.91	May 1, 1942	102.74	Sept. 1, 1942	107.11
Jan. 15, 1942	102.71	26	102.93	Oct. 5	103.70
29	102.77	June 12	103.07	Nov. 12	103.65
Mar. 9	102.58	July 10	103.25	Dec. 2	103.57
Apr. 6	a106.84	Aug. 6	103.42	31	103.51

6/31-13L1. A. Hunt. About 1.5 miles southwest of Santa Ynez, 0.7 mile south of State Highway 150, 25 feet west of Refugio Pass Road, in galvanized-steel pump house. Measuring point, top northeast side of 7-inch casing, level with concrete pump foundation, 1.20 feet above land-surface datum and about 534 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Dec. 18, 1941	55.13	May 1, 1942	55.68	Sept. 1, 1942	55.86
Jan. 15, 1942	55.00	26	55.78	Oct. 6	55.89
29	55.08	June 12	55.93	Nov. 12	a57.62
Mar. 9	55.57	July 10	56.02	Dec. 2	a56.48
Apr. 6	55.60	Aug. 7	a57.34	31	a57.53

6/31-15K1. Rasmussen Bros. About 0.5 mile west of Solvang, 0.2 mile south of State Highway 150, 10 feet east of Alamo Pintado Creek, beneath steel windmill tower. Measuring point, top north side of 10-inch casing, 0.30 foot above land-surface datum and about 440 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Dec. 5, 1941	3.24	May 1, 1942	4.01	Sept. 1, 1942	4.21
Jan. 15, 1942	4.69	26	4.09	Oct. 6	3.74
29	3.77	June 12	4.12	Nov. 12	3.78
Mar. 9	4.64	July 9	a4.56	Dec. 2	3.70
Apr. 6	4.09	Aug. 6	a4.89	31	5.63

a Pump operating.

b Pump recently operated.

6/31-16N2. H. G. Petersen. About 0.9 mile nearly west of Solvang, 0.3 mile south of State Highway 150, 25 feet west of private land, in frame pump house painted white. Measuring point, top south side of pump base, through hole, 1.8 feet above concrete floor, 4.70 feet above land-surface datum and about 373 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Nov. 18, 1941	6.60	May 1, 1942	a5.93	Oct. 6, 1942	7.97
Jan. 15, 1942	a5.95	26	6.89	Nov. 12	7.78
29	a6.16	July 9	a8.26	Dec. 2	7.72
Mar. 9	6.64	Sept. 1	8.26	31	7.61
Apr. 6	6.43				

6/31-17F1. John R. Orton. City of Santa Barbara No. 560. About 1.5 miles east-southeast of Buellton, 500 feet south of State Highway 150, 60 feet west of property line, 100 feet north of irrigation well 6/31-17F2 beneath windmill tower. Measuring point, top southeast side of 12-inch casing, 0.90 foot above land-surface datum and about 358 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	b16.4	Feb. 2	b16.7	May 1	16.79	Sept. 1	c18.05
14	b16.7	6	b16.8	26	c17.30	Oct. 6	17.57
15	16.74	Mar. 4	b16.8	June 11	17.34	Nov. 12	17.35
21	b16.7	9	16.79	July 9	c21.20	Dec. 2	17.27
29	16.71	Apr. 6	16.64	Aug. 6	c18.62	31	16.16

6/31-21H1. Alisal Corporation. About 0.6 mile nearly southwest of Solvang, 800 feet north of Santa Ynez River, 300 feet east of Alisal Road, beneath steel windmill tower. Measuring point, top north side of wooden clamp, 1.70 feet above land-surface datum and about 407 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
Dec. 5, 1941	6.71	May 1, 1942	6.59	Sept. 1, 1942	7.06
Jan. 15, 1942	6.28	26	c6.83	Oct. 6	6.83
29	6.44	June 11	6.76	Nov. 12	6.98
Mar. 9	6.40	July 10	6.80	Dec. 2	6.85
Apr. 6	6.28	Aug. 6	7.47	31	6.75

6/31-24F1. Rancho Juan y Lolita. City of Santa Barbara No. 606. About 2.1 miles southwest of Santa Ynez, 125 feet east of Refugio Pass Road, 600 feet north of Santa Ynez River, beneath wooden windmill tower. Measuring point, top east side of 12-inch casing, 0.60 foot above land-surface datum and about 430 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	b7.7	Feb. 2	8.0	May 1	8.07	Sept. 1	9.25
14	b8.2	6	8.1	26	8.59	Oct. 6	9.91
15	8.08	Mar. 4	8.4	June 12	8.82	Nov. 12	10.15
21	bc8.5	9	8.49	July 10	8.72	Dec. 2	10.08
29	7.83	Apr. 6	8.68	Aug. 7	9.08	31	9.83

a Pump operating in adjacent well.

b Measured by city of Santa Barbara.

c Pump operating.

6/32-6K1. M. Barker. City of Santa Barbara No. 731. About 5.5 miles west-northwest of Buellton, about 50 feet south and 200 feet west from junction of State Highway 150 and county road south, beneath windmill tower. Measuring point, July 9, 1934, to Apr. 11, 1934, top of wooden curb, 1.00 foot above land-surface datum and about 391 feet above sea-level datum of 1929; after Aug. 5, 1941, top east side of 6- by 6-inch wooden clamp, 0.40 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	17.44	May 28	17.24	Aug. 6	a22.34	Nov. 18	a20.26
Feb. 23	a20.40	June 11	a35.73	Sept. 3	a29.49	Dec. 2	17.73
Mar. 23	16.98	July 9	a20.66	Oct. 5	19.28	29	17.69

6/32-7Q1. A. Silva. About 5.4 miles nearly west of Buellton, 1.3 miles south of State Highway 150, 150 feet west of county road south from abandoned Santa Rosa School, 225 feet south of dwelling, beneath windmill tower. Measuring point, top south side of 8-inch casing, through bored hole in wooden clamp, 1.20 feet above land-surface datum and about 299 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	43.41	May 28	a45.62	Aug. 6	46.16	Dec. 2	44.70
Feb. 23	43.83	June 11	45.14	Oct. 5	45.77	29	44.43
Mar. 23	44.19	July 9	a48.05				

6/32-9A1. O. Hollister. City of Santa Barbara No. 514. About 3.3 miles west of Buellton, at south side of State Highway 150, beneath windmill tower. Measuring points: July 15, 1932, to Dec. 30, 1941, top north-east side of 8-inch casing, level with land-surface datum and about 310 feet above sea-level datum of 1929; after Jan. 12, 1942, top south side of pump base, through hole, 0.67 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	ab30.7	Feb. 6	b29.6	June 11	c36.78	Oct. 5	31.86
12	30.02	23	30.14	July 9	33.05	Nov. 18	35.38
21	b16.2	Mar. 4	b30.1	Aug. 6	37.69	Dec. 2	31.43
26	29.85	23	30.11	Sept. 3	a36.47	29	31.03
Feb. 2	b29.8	28	31.16				

6/32-9G1. G. D. Owen. City of Santa Barbara No. 510. About 3.2 miles nearly west of Buellton, 0.35 mile south of State Highway 150, 0.2 mile east of ranch road, and 20 feet south of fence. Measuring points: July 12, 1932, to Apr. 11, 1934, top of casing, 1.50 feet above land-surface datum and about 303 feet above sea-level datum of 1929; after June 19, 1941, top east side of metal cover plate through threaded hole, 1.65 feet above land-surface datum, 0.15 foot above concrete foundation.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	28.46	May 28	a43.55	Aug. 6	31.26	Nov. 18	30.00
Feb. 23	28.58	June 11	c30.43	Sept. 3	30.63	Dec. 2	29.96
Mar. 23	28.53	July 9	a43.90	Oct. 5	30.41	29	29.75

6/32-11H1. W. M. Hunt. City of Santa Barbara No. 524A. About 1.1 miles nearly west of Buellton, 0.32 mile south of State Highway 150, 650 feet west of property line, in high-water channel of Santa Ynez River. Measuring point, top of 1½-inch threaded nipple, 0.80 foot above land-surface datum and about 300 feet above sea-level datum of 1929.

Water level, in feet, with reference to land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	+0.12	Mar. 23	+0.20	Aug. 6	a-12.39	Dec. 2	-0.48
26	+0.28	May 28	a-5.11	Sept. 3	a-11.77	29	-0.34
Feb. 23	+0.12	June 11	a-6.85	Nov. 18	-0.51		

a Pump operating.

b Measured by city of Santa Barbara.

c Pump operating in adjacent well.

6/32-12J2 (*941, pp. 153-154). A. Bodine. City of Santa Barbara No. 540. In Buelliton, about 50 feet south of State Highway 150 and 200 feet west of U. S. Highway 101, in rear of residence and store. Measuring point, top of 6-inch casing, level with land-surface datum and about 361 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942
(From recorder charts beginning May 28)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	25.59	Aug. 6	29.90	Oct. 21	28.43	Nov. 25	28.70
26	25.85	Sept. 3	27.88	25	c29.15	30	28.76
Feb. 23	26.96	25	30.13	31	c29.00	Dec. 5	28.84
Mar. 23	28.19	30	29.86	Nov. 5	c29.16	10	28.91
May 28	a30.03	Oct. 7	bc30.75	10	c28.98	15	c29.50
June 11	29.88	9	28.77	15	c28.80	20	29.10
July 9	30.76	14	28.68	20	28.70	31	29.13

6/32-13C1. Murdo Campbell. City of Santa Barbara No. 576A. About 0.9 mile southwest of Buelliton, 0.5 mile west of U. S. Highway 101, 800 feet northeast of Santa Rosa Road, on south bank of Santa Ynez River. Measuring point, top south side of 18-inch casing, level with concrete pump foundation, 1.50 feet above land-surface datum and about 351 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 12	34.11	Mar. 23	33.91	May 28	d35.72	Oct. 5	e52.28
26	33.60	Apr. 20	33.70	Sept. 3	e53.39	Dec. 30	35.05
Feb. 23	33.97						

6/32-16P3. Lind Ranch. On south bank of Santa Ynez River, about 3.7 miles southwest of Buelliton, 400 feet north of Santa Rosa Road, and 25 feet east of property line. Measuring point, top northwest side of 16-inch casing, 1.20 feet above land-surface datum and about 294 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 12	43.30	Apr. 20	43.40	July 9	44.42	Oct. 5	44.85
26	43.21	May 28	44.29	Aug. 6	45.51	Dec. 1	44.12
Feb. 23	43.50	June 11	44.27	Sept. 3	45.43	30	44.00
Mar. 23	43.59						

6/33-5E1. J. Guerra. City of Santa Barbara No. 249. About 4.5 miles east of Lompoc, near mouth of Santa Rita Creek, at ranch headquarters, about 25 feet south and 100 feet west from point of angle in road, beneath wooden windmill tower painted white. Measuring points: City of Santa Barbara, top of pump base, 1.60 feet above land-surface datum and about 193 feet above sea-level datum of 1929; Geological Survey, top northeast side of 8-inch casing, 1.06 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 7	df35.4	Jan. 26	28.16	May 28	30.35	Sept. 3	d40.57
12	28.20	28	f34.6	June 11	d31.79	Oct. 5	30.87
13	f27.7	Feb. 23	29.71	July 9	30.50	Nov. 11	d37.69
20	f27.8	Apr. 20	29.15	Aug. 6	30.69	Dec. 30	d43.96

6/33-8G1. S. H. Pettit. City of Santa Barbara No. 254. About 5.1 miles east-southeast of Lompoc, 150 feet north of Santa Ynez River, 350 feet west of private road to ford, 75 feet west of southernmost of several farm buildings, 15 feet west of motor shed. Measuring points: City of Santa Barbara, top of square hole in southwest side of 12-inch casing, 0.22 foot below land-surface datum and about 198 feet above sea-level datum of 1929; Geological Survey, lower southeast edge of pump base, 0.10 foot above land-surface datum.

- a Pump operating in adjacent well.
- b Water-level recorder installed.
- c Depressed by draft from adjacent wells; highest level of day.
- d Pump recently operated.
- e Pump operating.
- f Measured by city of Santa Barbara.

6/33-8G1. S. N. Pettit--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	a46.7	Jan. 26	46.28	May 28	b65.32	Oct. 5	47.41
12	46.28	Feb. 23	46.45	July 9	47.62	Nov. 11	47.13
13	a46.9	Mar. 23	46.30	Aug. 6	47.36	Dec. 30	46.98
20	a47.0	Apr. 20	46.19	Sept. 3	47.40		

6/33-9P1 (*941, p. 154). Hollister Estate. City of Santa Barbara No. 267. About 5.9 miles east-southeast of Lompoc, 35 feet north of Santa Rosa Road, 0.3 mile west of property line, in corrugated-steel pump house. Measuring points: Mar. 9, 1932, to Dec. 29, 1941, top west side of 16-inch casing, 0.50 foot below top of concrete foundation and land-surface datum, and about 200 feet above sea-level datum of 1929; after Jan. 8, 1942, top of 2- by 2-inch wooden sill of instrument shelter, 0.27-foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

(From float gage; undated entries are highest and lowest levels between dates of observation by Geological Survey)

Jan. 8	c32.17		32.47	Apr. 20	32.92		36.80
8	a32.2	Feb. 6	a32.4		32.92	Sept. 3	35.40
	32.16	23	32.32		33.59		35.32
	32.24		32.23	May 28	33.53		36.06
Jan. 12	32.19		32.57		33.49	Oct. 5	35.52
14	a32.3	Mar. 4	a32.5		33.78		35.52
	32.18	9	32.51	June 11	33.78		35.73
	32.45		32.41		33.76	Nov. 11	35.73
Jan. 21	a32.3		32.57		34.34		35.73
26	32.32	23	32.52	July 9	34.34		35.82
	32.32		32.36		34.28	Dec. 1	35.78
	32.43		32.83		35.14		35.78
Feb. 2	32.38	Apr. 6	32.81	Aug. 6	34.92		35.96
2	a32.4		32.36		34.39	30	36.11
	32.32		33.01				

6/33-12L1. J. Corbillini. City of Santa Barbara No. 284B. About 6.6 miles nearly west of Buellton, 0.3 mile north and 0.2 mile west from intersection of Santa Rosa Road and exit road from Santa Rosa County Park, in corrugated-steel pump house. Measuring point, bottom of pump base, on east side, at chiseled arrow, 1.00 foot above land-surface datum and about 228 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 8	a15.6	Feb. 6	a16.2	Apr. 20	15.99	Aug. 6	18.08
12	15.91	24	16.30	May 28	b24.32	Oct. 5	17.92
14	a16.0	Mar. 4	a16.5	June 11	b25.06	Dec. 1	17.62
21	a16.1	23	16.14	July 9	b26.36	30	b25.44
Feb. 2	a15.6						

6/33-16A1. W. H. Cooper. About 6.4 miles east-southeast of Lompoc, 500 feet south of Santa Rosa Road, 50 feet east of T-road north, in frame pump house. Measuring point, top of 16-inch casing at base of square notch, 0.50 foot above land-surface datum and about 206 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 12	29.22	Mar. 23	30.08	June 11	31.06	Sept. 3	d33.42
26	29.25	Apr. 20	30.30	July 9	32.07	Oct. 5	33.72
Feb. 23	29.84	May 28	30.67	Aug. 6	d36.70	Dec. 30	b40.41

a Measured by city of Santa Barbara.

b Pump operating.

c Float gage installed.

d Pump recently operated.

6/34-241 (*941, p. 154). C. Madsen. City of Santa Barbara No. 1A. About 2 miles east of Lompoc, on southwest side of walnut orchard, 150 feet northeast of Santa Ynez River, 0.5 mile southeast of Robinson Bridge, in corrugated steel pump house. Measuring points: City of Santa Barbara, top of 12-inch casing, 1.40 feet above land-surface datum and 131.36 feet above sea-level datum of 1929; Geological Survey, top south side of pump base at hole for air line, 1.50 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	36.79	Jan. 26	a37.0	Apr. 13	36.97	Oct. 7	b43.32
5	a36.8	Feb. 4	a37.2	May 18	37.02	Nov. 3	37.38
9	a37.1	16	37.15	June 15	37.32	Dec. 1	37.29
19	a37.2	Mar. 2	a37.3	Aug. 10	37.57	29	37.18
19	37.20	Apr. 2	a37.1	Sept. 8	37.52		

6/34-4D1. P. Tognatti. City of Santa Barbara No. 53. In southwestern Lompoc, about 50 feet south of State Highway 150 (Ocean Avenue), 24 feet east of Thirteenth Road, beneath wooden windmill tower. Measuring points: Apr. 18, 1930, to June 16, 1933, top of 3- by 6-inch wooden clamp on section of steel water tank, 2.70 feet above land-surface datum and 86.74 feet above sea-level datum of 1929; after Apr. 20, 1941, top of wooden well cover, at hole south of discharge pipe, 2.20 feet above land-surface datum Apr. 21, 1941, to Aug. 10, 1942, and 2.25 feet above land-surface datum after Oct. 14, 1942.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	18.31	Apr. 13	20.83	July 13	b22.68	Dec. 1	21.87
19	18.29	May 18	22.00	Aug. 10	b22.60	29	23.15
Feb. 16	18.28	June 15	b24.17	Oct. 14	24.58		

6/34-6C1. A. R. Leege. City of Santa Barbara No. 100. About 2.5 miles west of Lompoc, about 0.34 mile south of State Highway 150 (Ocean Avenue), and 20 feet east of Legge Avenue, beneath windmill tower. Measuring points: City of Santa Barbara, top of pump base, 1.18 feet above land-surface datum and 104.20 feet above sea-level datum of 1929; Geological Survey, top south side of 6-inch casing, 1.00 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	49.18	Jan. 19	48.40	Mar. 17	48.05	Sept. 8	52.34
6	a49.1	26	a48.2	Apr. 13	48.03	Oct. 7	52.26
12	a48.7	Feb. 4	a47.7	27	a47.7	Dec. 1	51.34
19	a48.7	Mar. 3	a47.8	July 13	52.35		

7/29-28D1. H. P. Golfelt. About 8.6 miles nearly east-northeast of Santa Ynez, 3.8 miles north-northeast of wooden bridge over Happy Canyon Creek, 125 feet west of road, 50 feet east of creek. Measuring point, top north side of 12-inch casing, 1.40 feet above land-surface datum and about 1,123 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 29	37.29	Aug. 7	53.53	Oct. 6	57.10	Dec. 2	57.28
June 11	39.35	Sept. 1	55.74	Nov. 12	57.40	29	47.42
July 10	46.98						

7/30-27Q1. Margaret Hourihan. About 5 miles east-southeast of Los Olivos, 1.8 miles east of Brinkerhof Road, 500 feet north of Roblar Avenue extended, 10 feet east of wooden tank painted red. Measuring point, top west side of 12-inch casing, 1.00 foot above land-surface datum and 790 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 29	18.76	Aug. 7	23.57	Oct. 6	29.32	Dec. 2	31.88
June 12	19.81	Sept. 1	25.53	Nov. 12	31.13	31	31.46
July 10	21.97						

a Measured by city of Santa Barbara.

b Pump operating.

7/30-31L2. H. B. Sanderson. About 2.1 miles nearly north of Santa Ynez, 0.5 mile north of Baseline Avenue, 0.2 mile west of Telephone Road, 20 feet south of property line, in peach orchard. Measuring point, top of 1-inch pipe, on west side of well, 0.30 foot above land-surface datum and about 723 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	75.14	June 12	92.43	Oct. 6	95.30	Dec. 2	93.95
May 26	a91.53	Sept. 1	96.75	Nov. 12	94.64	31	93.49

7/30-32R1. R. McGee. About 2 miles nearly northeast of Santa Ynez, 0.32 mile west of Moro Avenue, 225 feet north of Baseline Avenue, 10 feet north of frame tank house. Measuring point, top south side of 10-inch casing, 0.50 foot above land-surface datum and about 704 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 27	86.07	July 10	89.03	Oct. 6	86.10	Dec. 2	85.64
May 28	85.56	Aug. 7	b88.80	Nov. 12	85.89	31	85.52
June 12	87.58	Sept. 1	86.06				

7/31-23P1. F. L. Mattel. In Los Olivos, 0.16 mile west of Grand Avenue, 40 feet south of Railroad Avenue, 5 feet east of tank and tower painted white, in frame pump house. Measuring point, bottom of pump base, on north side, 0.60 foot above land-surface datum and about 827 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 16	8.50	July 10	b12.14	Oct. 6	8.79	Dec. 2	8.40
May 29	8.42	Aug. 7	8.09	Nov. 12	8.34	30	8.62
June 12	8.86	Sept. 1	8.28				

7/31-25L1. R. Smith. About 1.0 mile southeast of Los Olivos, 75 feet southwest of State Highway 80, 50 feet south of property line, 10 feet east of wood-stave tank, beneath steel windmill tower. Measuring point, top north side of 4- by 4-inch wood clamp, 0.60 foot above land-surface datum and about 807 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 22	57.70	July 10	60.89	Oct. 6	62.24	Dec. 2	62.94
May 26	b65.29	Aug. 7	b62.83	Nov. 12	62.91	30	b66.20
June 12	b62.11	Sept. 1	61.62				

7/31-35K1. B. H. and A. R. Hill. About 0.35 mile north of Ballard, 0.36 mile north of Baseline Avenue, 60 feet east of Alamo Pintado Creek, 50 feet south of property line. Measuring point, top of 1½-inch pipe projecting from northeast side of concrete pump foundation, 1.30 feet above land-surface datum and about 684 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 9	34.44	June 12	32.56	Oct. 6	36.56	Dec. 2	36.48
May 28	32.15	July 10	33.57	Nov. 11	37.22	30	36.05

7/31-36L2. Dr. W. B. Swackhamer. About 1.0 mile east-northeast of Ballard, 0.38 mile north of Baseline Avenue, 0.12 mile north of property line, and 50 feet west of Refugio Pass Road, in open field. Measuring point, top east side of 12-inch casing, between chiseled notches, 1.00 foot above land-surface datum and about 716 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Oct. 5	18.73	Oct. 21	18.70	Nov. 11	18.66	Dec. 2	18.60
7	18.66	28	18.40	18	18.57	30	18.54
14	18.75	Nov. 3	18.57	25	18.54		

a Pump recently operated.

b Pump operating.

7/33-30C1. J. Valla. About 4.1 miles east-northeast of Lompoc, 1.7 miles east of junction of Orcutt Road and State Highway 150; 85 feet south of highway, 200 feet west of well 7/33-30B1. Measuring point, top west side of 8-inch casing, 0.60 foot above land-surface datum and about 234 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1941-42

Date	Water level	Date	Water level	Date	Water level
July 17, 1941	153.06	May 18, 1942	152.63	Sept. 8, 1942	a152.23
Feb. 16, 1942	152.73	June 15	152.44	Oct. 7	a152.25
Mar. 17	152.81	July 13	152.41	Nov. 3	a152.19
Apr. 13	152.64	Aug. 10	a152.42	Dec. 29	a152.00

7/33-31R1. Lewis Bros. City of Santa Barbara No. 247A. About 4 miles nearly east of Lompoc, 500 feet south of Chalk Rock Cliffs Road, at south edge of field on terrace north of Santa Ynez River. Measuring point, top north side of 12-inch casing, 0.40 foot above land-surface datum and about 169 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	b42.0	Jan. 26	42.04	Apr. 20	42.28	Aug. 6	43.17
12	41.99	28	b42.1	May 28	42.52	Sept. 3	43.35
13	b42.0	Feb. 23	42.24	June 11	42.65	Oct. 5	43.45
20	b42.1	Mar. 23	42.22	July 9	42.97	Dec. 30	43.35

7/34-21J1 (*941, pp. 154-155). Camp Cooke Military Reservation of U.S. War Department. City of Santa Barbara No. 48. About 2.5 miles north of Lompoc, 0.22 mile north of Santa Ynez River, 50 feet south of terrace, about 250 feet west of road from Lompoc to Santa Maria (H Street extended). Measuring point, top of 12-inch casing at chalked arrow, 0.10 foot above land-surface datum and 78.59 feet above sea-level datum of 1929. Measurements discontinued after December 1.

Water level, in feet below land-surface datum, 1942
(From float gage; undated entries are highest and lowest levels between dates of observation by Geological Survey)

Jan.	5	8.08	Mar.	2	b9.1	May	18	9.55	July	27	10.76
		8.60		9	9.39			9.55			10.71
	5	b8.7			8.94			9.71			10.70
		8.59			9.40		25	9.62			10.77
		8.54		17	8.99			9.61		Aug. 3	10.74
		8.95			8.93			9.75			10.74
	9	b8.8			9.14		June 1	9.75			10.85
	12	8.85		23	9.14			9.75		10	10.85
		8.83			8.94			9.86			10.79
		9.01			9.49		8	9.83			10.88
Feb.	19	b9.2		30	9.32			9.82		26	10.85
	19	9.00		Apr. 2	b9.4			9.98			10.81
		c9.00			9.23		15	9.95			10.89
	26	b8.6			9.34			9.95		Sept. 2	10.81
	26	8.55		6	9.24			10.10			10.80
		8.55			9.19		22	10.10			10.85
		8.93			9.31			10.10		8	10.82
	2	8.79		13	9.29			10.34			10.73
	4	b8.9			9.06		29	10.30			10.85
		c8.95			9.29			10.30		16	10.77
	9	8.95		20	9.07			10.50			10.75
		8.93			8.65		July 6	10.50			10.83
		9.17			9.09			10.50		23	d10.75
	16	9.16		27	8.94			10.64		Oct. 7	10.87
		9.06			8.66		13	10.63		21	10.75
		9.22			9.24			10.63		Nov. 3	10.74
	23	9.11		May 5	9.13			10.71		11	10.67
		8.93			9.12		20	10.71		18	10.63
		9.40			9.60			10.68		Dec. 1	10.78

a Pump operating in adjacent well.
c "Low" of period.

b Measured by city of Santa Barbara.
d Float gage removed.

7/34-22H1. H. E. Harris. About 2.7 miles north-northeast of Lompoc, 0.2 mile west of T-road north at Rucker crossing of Santa Ynez River, about 350 feet south of terrace, 300 feet east of barn, beneath windmill tower. Measuring point, lower edge of square hole in north side of 11-inch casing, 1.80 feet above land-surface datum and about 99 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	21.24	Mar. 17	21.07	May 25	a24.08	July 27	21.37
12	21.14	23	21.05	June 1	a22.54	Aug. 3	21.40
19	21.12	30	21.04	8	a21.94	10	21.47
26	21.07	Apr. 6	20.98	22	a23.39	Sept. 8	21.60
Feb. 2	21.04	13	a23.89	29	21.54	Oct. 7	21.45
9	21.07	20	20.93	July 6	a22.54	Nov. 3	21.39
16	21.03	27	a22.42	13	a23.90	Dec. 1	b21.43
23	21.08	May 4	20.93	20	21.33	29	21.33
Mar. 9	21.09	18	a23.14				

7/34-22H2. H. E. Harris. City of Santa Barbara No. 32. About 2.7 miles north-northeast of Lompoc, 200 feet southwest of well 22H1, and 170 feet west of power line. Measuring points: May 27, 1930, to Apr. 18, 1934, top of wooden clamp, 0.70 foot above land-surface datum and 97.57 feet above sea-level datum of 1929; after Aug. 16, 1939, top west side of 6-inch casing, 0.33 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	21.66	Feb. 16	21.50	Apr. 27	21.47	July 13	21.86
5	c21.7	23	21.53	May 4	21.42	20	21.85
9	c21.7	Mar. 2	c20.8	18	21.50	27	21.81
12	21.61	9	21.53	25	d22.44	Aug. 3	21.83
19	21.57	17	21.51	June 1	d22.43	10	21.90
19	c22.6	23	21.50	8	22.28	Sept. 8	22.02
26	c21.6	30	21.51	15	d22.14	Oct. 7	21.94
26	21.55	Apr. 2	c21.6	22	22.08	Nov. 3	21.87
Feb. 2	21.51	6	21.48	29	21.95	Dec. 1	21.88
4	c21.6	13	21.51	July 6	21.86	29	21.80
9	21.53	20	21.46				

7/34-22J3. H. E. Harris. City of Santa Barbara No. 31G; owner's No. 2. About 2.5 miles north-northeast of Lompoc, about 700 feet south of farm road running north and west from Rucker crossing of Santa Ynez River and 15 feet east from end of power line. Measuring point, lowest point on edge of irregular chiseled hole in east side of 12-inch casing, 0.40 foot above land-surface datum, 0.50 foot below top of casing, and about 96 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	22.24	Mar. 17	22.04	May 25	d25.81	July 27	22.48
12	22.03	23	22.12	June 1	d24.80	Aug. 3	22.50
19	22.02	30	22.04	8	22.76	10	22.69
26	21.95	Apr. 6	22.02	15	d23.45	Sept. 8	22.63
Feb. 2	21.89	13	21.97	22	22.57	Oct. 7	22.54
9	21.99	20	21.80	29	22.52	Nov. 3	22.40
16	21.95	27	21.87	July 6	22.46	Dec. 1	22.33
23	22.06	May 4	21.86	13	22.57	29	22.27
Mar. 9	22.07	18	22.02	20	22.50		

7/34-25K1. W. Dutra. City of Santa Barbara No. 9A. About 2.9 miles northeast of Lompoc, near foot of Santa Rita Hills, about 0.4 mile south and 0.5 mile east from junction of State Highway 150 and Orcutt Road, 450 feet north of farmhouse, beneath windmill tower. Measuring points: Oct. 7, 1930, to Feb. 19, 1937, top of 8-inch casing, 1.25 feet above land-surface datum and 136.59 feet above sea-level datum of 1929; after Mar. 21, 1941, top northwest side of well cover, at hole, 1.40 feet above land-surface datum.

a Pump operating.

b Pump recently operated.

c Measured by city of Santa Barbara.

d Pump operating in adjacent well.

7/34-25K1. W. Dutra--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	55.56	Apr. 13	a55.53	Aug. 10	56.13	Nov. 3	55.99
19	55.49	May 18	a55.47	Sept. 8	56.17	Dec. 1	a55.77
Feb. 16	55.28	June 15	56.86	Oct. 7	56.05	29	a56.78
Mar. 17	a59.23	July 13	a59.70				

7/34-26A2 (#941, pp. 155-156). Mrs. K. McConnell. City of Santa Barbara No. 6B. About 2.5 miles northeast of Lompoc, about 40 feet north and 0.2 mile west from junction of State Highway 150 and Orcutt Road, at edge of field, in galvanized-steel pump house. Measuring point, top north side of 12-inch casing, level with land-surface datum and 113.32 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942
(Prior to May 4, records at noon from recorder charts)

Jan. 5	33.79	Mar. 20	33.93	June 8	34.21	Sept. 23	34.82
10	33.74	25	33.93	15	34.25	30	34.83
15	33.77	31	33.94	22	34.30	Oct. 7	34.91
20	33.71	Apr. 5	33.90	29	34.43	14	34.89
25	33.74	10	33.88	July 6	34.48	21	34.87
31	33.76	15	33.92	13	34.52	28	34.74
Feb. 5	33.78	20	33.92	20	34.59	Nov. 3	34.87
10	33.81	25	33.96	27	34.58	11	34.87
15	33.83	30	34.00	Aug. 3	34.59	18	34.86
20	33.80	May 4	b33.96	10	34.71	Dec. 1	34.84
25	33.85	5	33.96	26	34.74	9	34.90
28	33.90	18	34.03	Sept. 2	34.75	16	34.88
Mar. 5	33.88	25	34.09	8	34.79	23	34.87
10	33.82	June 1	34.17	16	34.85	29	34.82
15	33.94						

7/34-26R2. W. T. McHenry; W. Schuyler, lessee. City of Santa Barbara No. 3A. About 2.2 miles nearly northeast of Lompoc, about 1 mile north of Robinson Bridge over Santa Ynez River, 150 feet east of State Highway 150, 25 feet southeast of frame dwelling, beneath windmill tower. Measuring points: City of Santa Barbara, top of packing gland, 1.20 feet above land-surface datum and 115.11 feet above sea-level datum of 1929; Geological Survey, top southeast side of 10-inch concrete-tile well curb, 0.31 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	c32.1	Feb. 4	c32.2	Apr. 13	a37.02	Sept. 8	33.32
5	32.09	16	32.22	May 18	a34.42	Oct. 7	33.44
9	c32.0	Mar. 2	c32.2	June 15	a36.48	Nov. 3	33.35
19	c32.9	17	34.73	July 13	33.16	Dec. 1	33.42
19	32.08	Apr. 2	c32.3	Aug. 10	33.24	29	a33.58
26	c32.1						

7/34-27F1. M. G. and W. G. Moore. City of Santa Barbara No. 38. About 1.5 miles nearly north of Lompoc, 40 feet north of Central Avenue, 0.24 mile east of H Street, on east side of engine shelter. Measuring points: City of Santa Barbara, top of pump base, 0.07 foot above land-surface datum and 93.73 feet above sea-level datum of 1929; Geological Survey, lower face of pump base, at hole in concrete well curb, level with land-surface datum.

a Pump operating.

b Recorder removed.

c Measured by city of Santa Barbara.

7/34-27Fl. M. G. and W. G. Moore--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	a24.0	Mar. 17	24.14	Sept. 8	26.84	Nov. 3	25.79
5	24.11	Apr. 2	a24.0	16	26.63	11	25.68
9	a24.0	13	24.02	23	b37.08	18	25.76
19	a23.9	May 16	b36.49	30	26.55	Dec. 1	25.68
19	24.02	June 15	26.17	Oct. 7	26.66	9	26.03
26	a23.7	July 13	b37.93	14	25.94	16	26.37
Feb. 4	a23.6	Aug. 10	28.14	21	25.84	23	26.22
16	24.15	26	b37.65	28	26.05	29	25.53
Mar. 2	a23.2	Sept. 2	b37.47				

7/34-27Ll. Mrs. S. Van Clief; A. Schuyler, lessee. City of Santa Barbara No. 37 H. About 1.4 miles north-northeast of Lompoc, near ease edge of field, 0.3 mile north of North Avenue, and 30 feet west of A Street. Measuring points: City of Santa Barbara, bottom of pump base, 1.00 foot above land-surface datum and about 98 foot above sea-level datum of 1929; Geological Survey, top east side of 12-inch casing, 0.82 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	27.18	Feb. 16	27.08	Sept. 23	29.40	Nov. 11	28.53
5	a27.4	Mar. 2	a26.8	30	28.94	18	28.53
9	a27.3	Apr. 2	a26.9	Oct. 7	29.16	Dec. 1	28.45
19	a27.2	Aug. 26	29.72	14	28.75	9	28.64
19	27.03	Sept. 2	29.67	21	28.66	16	28.76
26	a27.2	8	29.13	28	28.75	23	28.75
Feb. 4	a26.8	16	30.21	Nov. 3	28.67	29	28.36

7/34-27Pl. Mrs. M. Skaarup; M. S. Wilson, lessee. City of Santa Barbara No. 49D. About 1.3 miles northeast of Lompoc, 1,400 feet north of North Avenue, 300 feet west of A Street, 75 feet west of dwelling, in pump house. Measuring point, top east side of 6-inch casing beneath steel well cover, 1.00 foot above land-surface datum and 96.00 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	a23.9	Jan. 26	a23.7	Mar. 17	24.23	June 15	26.48
5	23.88	Feb. 4	a23.7	Apr. 2	a24.6	July 13	26.58
9	a23.8	16	23.77	13	25.71	Aug. 10	27.97
19	a23.8	Mar. 2	a29.1	May 18	25.20	Sept. 8	26.90
19	23.73						

7/34-28Hl. T. M. Parks. City of Santa Barbara No. 49D. About 1.6 miles north of Lompoc, 0.13 mile north of Central Avenue, 40 feet west of road between Santa Maria and Lompoc (H Street extended), in corrugated-steel pump house. Measuring point, lower edge of hand hole on north side, through base of pump, 0.60 foot above land-surface datum and about 88 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	a21.0	Jan. 26	a22.2	Apr. 2	a22.9	Dec. 23	25.27
9	a22.3	Feb. 4	a22.2	July 6	27.98	30	24.02
19	a22.4						

7/34-28H2. T. M. Parks. City of Santa Barbara No. 49. About 1.6 miles north of Lompoc, 230 yards north of Central Avenue, 250 feet west of H Street, 100 feet north-northwest of dwelling, beneath pepper tree. Measuring points: May 15, 1930, to Dec. 9, 1942, top east side of 6-inch casing, level with concrete foundation, 0.50 foot above land-surface datum and 90.05 feet above sea-level datum of 1929; after Dec. 9, top base panel of instrument shelter, 0.99 foot above land-surface datum.

a Measured by city of Santa Barbara.

b Pump operating.

7/34-28H2. T. M. Parks--Continued.

Water level, in feet below land-surface datum, 1942
(From recorder charts beginning Dec. 9)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 29	23.68	Dec. 10	23.77	Dec. 20	24.01	Dec. 31	23.20
Dec. 9	24.14	15	23.93	25	23.39		

7/34-30R1. Mrs. E. Manfrina. City of Santa Barbara No. 96. About 2.3 miles west-northwest of Lompoc, 1.0 mile north of State Highway 150 (Ocean Avenue), 200 feet west of Floradale Avenue, 20 feet west of dwelling, beneath windmill tower. Measuring points: City of Santa Barbara, top of nut of union in pump column, 3.20 feet above land-surface datum and 70.01 feet above sea-level datum of 1929; Geological Survey, top of 10-inch inner wooden casing, 1.00 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	12.20	Feb. 4	b12.1	Apr. 27	b12.0	Sept. 8	c19.12
6	b12.2	16	11.80	May 18	12.31	Oct. 7	15.12
12	b12.0	Mar. 2	b11.9	June 15	15.90	Nov. 3	15.13
19	11.90	17	13.80	July 13	17.42	Dec. 1	14.85
19	b11.8	Apr. 13	12.01	Aug. 10	14.45	29	14.98
26	b11.8						

7/34-31B2. Mr. Tanoye. City of Santa Barbara No. 94. About 2.6 miles west-northwest of Lompoc, 0.25 mile north of Southern Pacific Railroad, 25 feet east of Legge Avenue, 20 feet southwest of irrigation well 7/34-31B1, beneath windmill tower. Measuring points: Apr. 22, 1930, to Apr. 24, 1934, top of 6-inch casing, about 8.6 feet below land-surface datum and 54.61 feet above sea-level datum of 1929; after May 7, 1941, top west side of 12-inch concrete casing, on inner edge at chalked arrow, 2.00 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 19	c11.19	Apr. 13	c11.15	July 13	d28.26	Nov. 3	c16.13
Feb. 16	c11.20	May 18	12.92	Aug. 10	(c)	Dec. 1	c14.88
Mar. 17	c10.30	June 15	c15.95	Oct. 7	c17.08	29	c14.52

7/34-31C1 (*941, p. 157). Union Sugar Co. City of Santa Barbara No. 103A; owner's No. L-16 Domestic. About 2.8 miles west-northwest of Lompoc, 0.4 mile north of Southern Pacific Railroad and 400 feet west of Legge Avenue, about 125 feet south of two-story frame dwelling painted yellow, 8 feet east of wooden tank, beneath windmill tower. Measuring points: May 19, 1930, to Apr. 30, 1935, top of 6-inch casing, 1.80 feet above land-surface datum and 61.53 feet above sea-level datum of 1929; after Apr. 16, 1941, top of 4- by 4-inch wooden clamp at 5/8-inch bored hole, 2.04 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	10.83	Apr. 13	11.33	Aug. 10	c20.75	Nov. 3	c16.92
19	c10.73	May 18	c13.23	Sept. 8	c17.59	Dec. 1	c14.73
Feb. 16	c11.81	June 15	c16.40	Oct. 7	c16.90	29	c15.18
Mar. 17	11.35	July 13	d22.98				

7/34-32R2 (*941, pp. 157-158). Lewis Bros. City of Santa Barbara No. 71A. About 1.3 miles west of Lompoc, 40 feet north of State Highway 150 (Ocean Avenue), 0.26 mile east of Bailey Avenue, in field. Measuring point, Dec. 19, 1930, to Dec. 9, 1942, top north side of 15-inch casing, 0.80 foot above land-surface datum and 80.50 feet above sea-level datum of 1929; after Dec. 23, 1942, top of 2-inch pipe, 3.76 feet above land-surface datum and 2.96 feet above top of 15-inch casing.

a Recorder installed.

b Measured by city of Santa Barbara.

c Pump operating in well.

d Pump operating in adjacent well.

7/34-32R2. Lewis Bros.--Continued.

Water level, in feet below land-surface datum, 1942
(From float gage; undated entries are highest and
lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
	15.90		16.44	June 22	17.83		18.92
Jan. 5	16.63	Mar. 30	16.45		17.83		19.28
	16.25		16.22		21.18	Sept. 23	18.94
	16.03		17.36	29	18.28		18.94
	16.26	Apr. 6	16.36		18.28		19.50
12	16.07		15.99		21.14	30	19.47
	15.91		18.57	July 6	19.17		19.30
	16.08	13	18.56		16.45		19.76
19	15.91		16.16		21.59	Oct. 7	19.30
	15.76		18.96	13	18.57		19.00
	16.46	20	16.19		18.57		19.43
26	15.86		16.10		20.51	14	19.13
	15.81		16.64	20	18.90		19.07
	15.89	27	16.64		18.70		20.68
Feb. 2	15.81		16.22		18.96	21	20.68
	15.79		18.13	27	18.70		19.34
	15.92	May 4	16.27		16.63		22.32
9	15.91		16.23		20.43	28	19.47
	15.91		20.87	Aug. 3	19.09		19.35
	16.04	18	20.86		18.74		19.70
16	16.01		17.16		20.66	Nov. 3	19.50
	15.93		20.88	10	18.74		19.44
	17.73	25	17.16		18.74		19.62
23	16.04		17.13		20.70	11	19.57
	15.74		18.64	26	19.01		19.52
	19.98	June 1	17.25		18.93		19.70
Mar. 9	16.80		17.25		19.53	18	19.59
	16.18		19.50	Sept. 2	19.53		a19.55
	16.80	8	19.97		19.53	Dec. 1	19.68
17	16.28		17.49		21.33		19.62
	16.14		19.97	8	21.06		19.78
	16.28	15	17.52		19.09	9	b19.62
23	16.18		17.49		21.49	23	19.50
	16.15		18.69	16	19.23	29	19.23

7/34-33A1. Mrs. S. E. C. Jordan. City of Santa Barbara No. 46A2. In northern Lompoc, 350 feet south of North Avenue, 450 feet west of H Street, 125 feet west of abandoned well 33A3, in swale at rear of dwelling. Measuring point, top west side of 8-inch casing, 2.00 feet above land-surface datum and about 70 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	c11.5	Jan. 26	c12.2	Apr. 2	c11.5	Aug. 10	13.05
5	11.48	Feb. 4	c12.4	13	11.40	Sept. 8	13.18
9	c11.7	16	12.51	May 18	11.82	Oct. 7	13.31
19	c12.1	Mar. 2	c12.6	June 15	12.49	Nov. 3	13.39
19	12.09	17	d3.99	July 13	12.85	Dec. 29	13.47

7/34-34A1. Mary Skaarup. City of Santa Barbara No. 25. In north-eastern Lompoc, 125 feet south of North Avenue, 0.34 mile east of North A Street, 75 feet east of barn, beneath windmill tower and 1,000-gallon elevated tank. Measuring points: Apr. 16, 1930, to Mar. 12, 1935, top of wooden pump support at bored hole, 2.60 feet above land-surface datum and 107.76 feet above sea-level datum of 1929; after Mar. 17, 1941, top south-west side of 6-inch casing at seam, 2.44 feet above land-surface datum.

a "High" level of period Nov. 18 to Dec. 1.

b Float gage removed.

c Measured by city of Santa Barbara.

d May be affected by surface inflow.

7/34-34A1. Mary Skaarup--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	28.01	Apr. 13	27.93	Aug. 10	32.38	Nov. 3	29.16
19	27.90	May 18	32.25	Sept. 8	29.85	Dec. 1	30.35
Feb. 16	28.59	June 15	32.41	Oct. 7	a35.59	29	30.09
Mar. 17	30.60	July 13	32.65				

7/34-34H1. Mrs. M. Balaam. City of Santa Barbara No. 23A. Near east boundary of Lompoc, 0.11 mile south of Pine Avenue, 25 feet west of First Street, near northeast corner of field, in unpainted frame pump house. Measuring point, lower south edge of pump base, beneath discharge pipe, 0.50 foot above land-surface datum and about 113 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	35.02	Apr. 13	34.76	Aug. 10	36.35	Nov. 3	35.90
19	35.18	May 18	35.01	Sept. 8	36.02	Dec. 1	35.78
Feb. 16	34.79	June 15	35.38	Oct. 7	36.09	29	35.70
Mar. 17	34.23	July 13	35.86				

7/34-35F1. A. Mattias. City of Santa Barbara No. 12H. About 1.5 miles east-northeast of Lompoc, 0.2 mile northwest of east end of Robinson Bridge, 0.2 mile west of State Highway 150, at southwest corner of property, 15 feet southwest of reservoir, in frame pump house. Measuring point, top west side of pump base, at hole for airline, 0.30 foot above land-surface datum and about 100 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	18.44	Apr. 6	18.48	July 6	19.22	Oct. 7	19.72
12	18.39	13	18.47	13	a55.24	14	19.55
19	18.36	20	18.24	20	a57.00	21	a53.11
26	18.30	27	18.43	27	19.37	28	19.46
Feb. 2	18.51	May 4	b18.60	Aug. 3	b19.42	Nov. 3	19.53
9	18.37	18	a55.62	10	19.48	11	19.65
16	18.40	25	a55.86	*26	b19.42	18	19.62
23	18.46	June 1	a55.42	Sept. 2	b19.41	Dec. 1	19.50
Mar. 9	18.52	8	18.92	8	19.45	9	19.52
17	18.50	15	19.11	16	19.46	16	19.54
23	18.48	22	a54.97	23	a55.57	23	19.67
30	18.56	29	19.12	30	a56.65	29	19.50

7/34-35K1. Mrs. M. McDonald. City of Santa Barbara No. 2D. About 1.7 miles east-northeast of Lompoc, 200 feet south of State Highway 150, 700 feet northeast of Robinson Bridge over Santa Ynez River, 75 feet west of dwelling, beneath windmill tower. Measuring point, top west side of wooden cover, through hole, 0.90 foot above land-surface datum and 124.32 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	35.39	Apr. 6	35.45	July 6	36.22	Oct. 7	b38.88
12	37.28	13	35.46	13	36.92	14	36.84
19	35.36	20	35.32	20	36.43	21	36.62
26	35.32	27	35.26	27	37.22	28	36.34
Feb. 2	35.33	May 4	b37.54	Aug. 3	36.63	Nov. 3	36.27
9	35.36	18	36.08	10	36.63	11	36.20
16	35.41	25	b35.86	26	36.76	18	36.14
23	35.44	June 1	b39.32	Sept. 2	36.97	Dec. 1	36.10
Mar. 9	35.49	8	40.38	8	36.61	9	36.10
17	35.40	15	b38.73	16	b39.34	16	36.11
23	35.33	22	b38.07	23	37.42	23	36.09
30	35.41	29	36.36	30	b38.63	29	36.04

a Pump operating.

b Pump operating in adjacent well.

7/34-35K2. Mrs. M. McDonald. City of Santa Barbara No. 2. About 1.7 miles east-northeast of Lompoc, 125 feet south of State Highway 150, 800 feet east of Robinson Bridge over Santa Ynez River, at northeast side of abandoned frame pump house. Measuring point, top of 10-inch casing at seam, 0.70 foot above land-surface datum and 96.67 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	a8.4	Mar. 9	8.41	June 15	b11.73	Sept. 30	b11.55
5	8.54	17	8.53	22	10.60	Oct. 7	b11.82
9	a8.3	23	8.27	29	9.30	14	9.61
12	8.29	30	8.32	July 6	9.56	21	9.55
19	a8.3	Apr. 2	a8.3	13	9.75	28	9.27
19	8.29	6	8.35	20	9.35	Nov. 3	9.19
26	a8.3	13	8.37	27	10.15	11	9.12
26	8.25	20	8.25	Aug. 3	9.55	18	9.08
Feb. 2	8.25	27	8.19	10	9.58	Dec. 1	9.03
4	a8.3	May 4	b10.51	26	9.71	9	9.04
9	8.28	18	8.99	Sept. 2	9.97	16	9.03
16	8.27	25	b10.79	8	9.53	23	9.02
23	8.36	June 1	b12.26	16	b12.25	29	8.98
Mar. 2	a8.4	8	9.64	23	9.91		

7/34-35K3. A. Dettamanti. City of Santa Barbara No. 2E. About 1.7 miles east-northeast of Lompoc, 100 feet south of Y-junction of highways, 500 feet east of Robinson Robinson Bridge over Santa Ynez River, in corrugated-steel pump house. Measuring points: May 26, 1930, to April 7, 1941, top of 12-inch casing, level with land-surface datum and 114.67 feet above sea-level datum of 1929; after October 10, 1941, lower east face of pump base, 0.39 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	27.21	Mar. 23	27.13	July 27	c29.04	Oct. 28	28.14
12	27.20	30	27.23	Aug. 3	28.44	Nov. 3	28.07
19	27.22	Apr. 6	27.28	10	28.47	11	27.95
26	27.17	13	27.24	26	28.59	18	27.93
Feb. 2	27.16	20	27.12	Sept. 2	28.81	Dec. 1	27.88
9	27.20	27	27.05	8	28.42	9	27.90
16	27.26	May 18	27.87	23	28.76	16	27.89
23	27.30	June 8	28.42	Oct. 14	28.65	23	27.86
Mar. 9	27.33	29	28.17	21	28.42	29	27.83
17	27.19	July 20	28.24				

7/34-35N1. E. Schuyler. City of Santa Barbara No. 11A2. About 1 mile east-northeast of Lompoc, 0.25 mile north of State Highway 150, 25 feet east of First Street, 300 feet south of dwelling. Measuring point, top southeast side of 6-inch casing, at seam, 2.30 feet above land-surface datum and about 118 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	35.09	Mar. 17	34.56	June 15	35.19	Oct. 7	35.84
19	35.04	Apr. 13	36.11	July 13	36.52	Nov. 3	36.10
Feb. 16	34.45	May 18	d38.10	Sept. 8	35.71	Dec. 29	35.97

7/34-35P1. W. P. and N. L. Robinson. City of Santa Barbara No. 10A. About 1.4 miles nearly east of Lompoc, 400 feet south of State Highway 150, 200 feet west of Robinson Bridge over Santa Ynez River, 75 feet east of private lane to dwelling. Measuring points: June 12, 1930, to Mar. 27, 1941: top of pump base, 1.10 feet above land-surface datum and 122.42 feet above sea-level datum of 1929; after Apr. 5, 1941, top of casing, 0.80 foot above land-surface datum.

a Measured by city of Santa Barbara.

b Pump operating in adjacent well.

c Pump recently operated.

d Pump operating.

7/34-35Pl. W. P. and M. L. Robinson--Continued.

Water level, in feet below land-surface datum, 1942
(From float gage; undated entries are highest and
lowest levels between dates of observation by
Geological Survey)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	35.60	Mar. 30	35.78	June 29	36.50	Sept. 30	36.67
5	a35.6		35.94		36.83		36.69
	35.85		36.04		37.71		36.60
	35.59		35.92		36.83	Oct. 7	36.66
9	a35.3	Apr. 2	a36.0	July 6	37.14		36.66
12	35.85	6	35.98		37.53		36.60
	36.00		35.98		37.01	14	36.62
	35.84		35.95	13	37.11		36.62
19	35.98	13	35.95		37.27		36.60
19	a36.0		35.95		36.76	21	36.60
	35.99		35.57	20	36.77		36.63
	35.81	20	35.67		37.71		36.52
26	35.82		35.71		36.76	28	36.53
26	a35.8		35.51	27	37.06		36.59
	35.90	27	35.61		37.59		36.44
	35.80		35.81		36.82	Nov. 3	36.49
Feb. 2	35.91		35.61	Aug. 3	36.83		36.50
4	a35.9	May 4	35.91		37.48		36.43
	36.02		36.05		36.78	11	36.47
	35.87		35.81	10	36.91		36.48
9	36.01	18	36.05		37.37		36.44
	36.05		36.14		36.73	18	36.44
	36.01		35.92	26	36.76		36.57
16	36.05	25	36.13		36.76		36.38
	36.08		36.24		36.69	Dec. 1	36.40
	36.01		36.13	Sept. 2	36.69		36.84
23	36.02	June 1	36.23		36.70		36.35
	36.12		36.29		36.60	9	36.40
	35.95		36.23	8	36.68		36.40
Mar. 2	a36.1	8	36.28		36.70		36.38
9	36.12		36.69		36.59	16	36.38
	36.12		36.28	16	36.67		36.83
	35.61	15	36.57		36.69		36.35
17	35.61		36.87		36.65	23	36.64
	35.79		36.46	23	36.67		36.90
	35.61	22	36.52		36.68		35.92
23	35.79		36.91		36.67	29	36.37
	35.94						

7/35-18J1 (*941, pp. 158-159). Camp Cooke Military Reservation of U. S. War Department. City of Santa Barbara No. 183. At Ocean Park, about 0.4 mile north of Surf, 0.25 mile south of Santa Inez River estuary, 400 feet east of Southern Pacific Railroad, and 20 feet north of county road to the park. Measuring points: Apr. 9, to May 12, 1930, top of casing, 6.20 feet above sea-level datum of 1929; after May 13, 1930, top east side of 10-inch casing (extended), 2.45 feet above land-surface datum and 7.65 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	1.36	Mar. 17	1.20	June 22	2.20	Sept. 30	1.19
6	a1.43	23	1.60	29	1.99	Oct. 7	1.43
12	a1.25	30	1.73	July 6	2.27	14	1.44
12	1.33	Apr. 6	1.62	13	2.23	21	1.56
19	1.04	13	1.58	20	2.56	28	1.19
20	a1.12	20	1.51	27	2.10	Nov. 3	1.59
26	1.11	27	1.53	Aug. 3	2.27	11	1.71
28	a1.05	May 4	1.76	10	2.29	18	1.08
Feb. 2	1.18	18	3.11	26	2.03	Dec. 1	1.66
5	a.84	25	2.19	Sept. 2	2.03	9	1.23
9	1.10	June 1	2.01	8	2.08	16	1.38
16	1.13	8	2.20	16	1.77	23	1.28
23	1.34	15	2.14	23	1.61	29	1.51
Mar. 9	1.64						

a Measured by city of Santa Barbara.

7/35-20J1. Camp Cooke Military Reservation of U. S. War Department. City of Santa Barbara No. 175A. About 1.3 miles east-southeast of Surf, in alcove of terrace front, 25 feet south of State Highway 150 (Ocean Avenue), beneath windmill tower. Measuring points: City of Santa Barbara May 12 to Sept. 29, 1930, and Geological Survey May 1, 1941, to Aug. 10, 1923, top north side of 4- by 4-inch wooden clamp at bored hole, 1.00 foot above land-surface datum and 20.07 feet above sea-level datum of 1929; city of Santa Barbara after Oct. 2, 1930, and Geological Survey after Sept. 8, 1942, top east side of 6-inch casing, 0.67 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	8.26	Feb. 5	a8.1	Apr. 27	a8.1	Sept. 8	8.77
6	a10.2	16	8.66	May 18	8.91	Oct. 7	8.55
12	a8.5	Mar. 3	abl2.3	June 15	9.55	Nov. 3	8.38
19	8.23	17	8.10	July 13	9.78	Dec. 1	8.30
20	a8.2	Apr. 13	8.51	Aug. 10	9.98	29	7.75
28	a9.1						

7/35-21G1. Camp Cooke Military Reservation of U. S. War Department. City of Santa Barbara No. 167. About 2.2 miles east-southeast of Surf, 0.17 mile north of Southern Pacific Railroad, 0.8 mile west of Renwick Avenue, in frame pump house. Measuring points: City of Santa Barbara, May 13, 1930, to June 9, 1931, top of horizontal flange of suction pipe, 7.70 feet below land-surface datum and 15.86 feet above sea-level datum of 1929; Geological Survey, lowest point on edge of irregular hole in south side of 12-inch casing, 0.40 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

June 15	9.54	Aug. 10	10.03	Oct. 7	10.28	Dec. 29	9.65
July 13	10.39	Sept. 8	10.15	Nov. 3	10.16		

7/35-21R1. Camp Cooke Military Reservation of U. S. War Department. City of Santa Barbara No. 163. About 2.4 mile southeast of Surf, 350 feet north of State Highway 150 (Ocean Avenue) and 250 feet south of Southern Pacific Railroad, 20 feet northwest of dwelling, beneath windmill tower. Measuring points: May 23, 1930, to Jan. 2, 1941, top of union in pump column, 3.70 feet above land-surface datum and 30.13 feet above sea-level datum of 1929; after Jan. 27, 1941, top east side of 6-inch casing, 3.20 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 5	5.28	Jan. 28	a5.9	Apr. 13	6.62	Sept. 8	10.03
6	a5.4	Feb. 5	a6.1	27	a6.4	Oct. 7	10.38
12	a5.6	16	6.33	May 18	7.06	Nov. 3	10.02
19	5.90	Mar. 3	a6.5	June 15	7.93	Dec. 1	8.89
20	a5.9	17	5.89	July 13	8.80	29	7.80

7/35-23E1. Union Sugar Co. Owner's No. L-3. About 5.5 miles west-northwest of Lompoc, 1.4 miles north of State Highway 150 (Ocean Avenue), 0.23 mile west of Union Sugar Avenue, 15 feet south of irrigation well 23E2. Measuring point, top east side of concrete foundation, at chiseled arrow, level with land-surface datum and about 37 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	4.94	Apr. 6	6.59	July 6	12.82	Oct. 7	c15.64
12	5.74	13	7.56	13	c13.17	14	15.74
19	7.01	20	8.13	20	13.50	21	c15.82
26	7.89	27	8.35	27	13.77	28	15.77
Feb. 2	8.78	May 5	9.14	Aug. 3	c14.01	Nov. 3	c15.81
9	9.59	18	c10.27	10	14.23	11	c15.91
16	c10.29	25	c10.80	26	14.75	18	c15.91
23	10.75	June 1	c11.31	Sept. 2	14.95	Dec. 1	15.87
Mar. 9	3.80	8	c11.26	8	15.10	9	c15.91
17	3.09	15	11.76	16	c15.24	16	c17.97
23	4.32	22	12.15	23	15.39	23	15.46
30	c5.63	29	12.49	30	c15.55	29	15.24

a Measured by city of Santa Barbara.

b Pump shut down prior to measurement.

c Pump operating in adjacent well.

7/35-23E2. Union Sugar Co. City of Santa Barbara No. 155; owner's No. L-3 Pumping Plant. About 5.5 miles west-northwest of Lompoc, 15 feet north of shallow observation well 23E1, in frame pump house painted red. Measuring points: May 19, 1930, to Apr. 30, 1935, base of cut-out in casing, 0.20 foot above land-surface datum and 36.79 feet above sea-level datum of 1929; after Apr. 10, 1941, lower east edge of pump base through cut-out, 0.70 foot above land-surface datum (add 0.12 foot to offset inclination of tape).

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	15.49	Apr. 6	15.47	July 6	16.53	Sept. 30	a66.78
12	15.87	13	15.27	13	a67.40	Oct. 7	a70.07
19	16.12	20	15.05	20	a69.01	14	18.67
26	15.55	27	14.93	27	16.62	21	a67.78
Feb. 2	15.52	May 5	15.25	Aug. 3	a69.36	28	19.28
9	16.38	18	a68.23	10	17.62	Nov. 3	a68.15
16	a65.59	25	a66.91	26	18.34	11	a70.47
23	15.29	June 1	a67.08	Sept. 2	17.80	18	a71.3
Mar. 9	18.54	8	a66.36	8	16.55	Dec. 1	18.04
17	15.13	15	16.75	16	a64.15	23	21.47
23	16.39	22	16.30	23	22.71	29	16.20
30	a62.15	29	16.32				

7/35-23N1. Union Sugar Co. City of Santa Barbara No. 154A; owner's No. L-8 Domestic. About 5.4 miles west-northwest of Lompoc, 0.85 mile north of State Highway 150 (Ocean Avenue), 0.4 mile west of Union Sugar Avenue, 50 feet south of dwelling, beneath windmill tower. Measuring point, top north side of 4- by 4-inch wooden clamp at hole, 1.00 foot above land-surface datum and 33.06 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	10.47	Aug. 10	18.67	Oct. 7	a20.32	Nov. 18	a16.14
19	a20.85	26	14.84	14	14.13	Dec. 1	14.91
Feb. 16	a16.83	31	14.61	21	a24.28	9	13.67
Mar. 17	a17.05	Sept. 2	18.21	28	12.18	16	13.44
Apr. 13	11.78	8	13.11	31	11.16	23	a17.28
May 18	b19.30	16	13.86	Nov. 3	14.43	29	a18.08
June 15	a19.55	23	14.99	11	14.22	30	11.85
July 13	21.71	30	14.34				

7/35-24J1 (*941, pp. 159-160). T. M. Parks. City of Santa Barbara No. 117B. About 3.9 miles northwest of Lompoc, 0.8 mile north of Central Avenue, 40 feet west of Douglass Avenue extended, east of overturned galvanized-steel pump house at edge of field. Measuring point, top of 12-inch casing at seam, level with concrete foundation, 1.40 feet above land-surface datum and 60.80 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

(Some entries are Geological Survey records at noon from recorder charts)

Jan. 5	20.69	Feb. 28	d20.94	May 10	d24.23	July 31	d25.75
7	c20.6	Mar. 3	c19.8	15	d22.07	Aug. 5	d28.10
10	20.57	5	d21.76	20	d24.30	10	d31.59
13	c20.5	10	d22.02	25	d23.62	15	d27.09
15	20.55	15	d21.24	31	d23.00	20	d26.25
20	20.52	20	20.88	June 5	d25.13	25	d29.51
20	c20.5	25	20.91	10	d24.35	31	d25.54
25	20.42	31	d23.30	15	d25.69	Sept. 5	d26.85
28	c20.4	Apr. 5	d23.30	20	d25.53	10	d25.37
31	20.35	10	21.32	25	d26.74	15	d25.16
Feb. 5	20.49	15	d21.92	30	d27.50	20	d25.49
5	c20.5	20	d23.05	July 5	d26.55	25	d25.40
10	20.89	25	21.25	10	d29.09	30	d24.95
15	20.95	27	c19.8	15	d32.35	Oct. 5	24.86
20	20.96	30	d22.70	20	d31.87	10	24.45
25	20.56	May 5	d22.10	25	d30.77	15	d26.04

a Pump operating.

b Pump operating in adjacent well.

c Measured by city of Santa Barbara.

d Depressed by draft from adjacent wells; highest level of day.

7/35-24J1. T. M. Parks--Continued.

Water level, in feet below land-surface datum, 1942
(Some entries are Geological Survey records at noon
from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 20	a24.67	Nov. 20	22.92	Dec. 5	a24.23	Dec. 20	23.20
25	a25.01	25	22.50	10	a23.14	25	22.64
30	a22.78	30	a22.78	15	a24.66	31	a25.17

7/35-24K1. A. B. Henning. City of Santa Barbara No. 118. About 4.3 miles northwest of Lompoc, 0.9 mile north of Central Avenue, 210 yards south of Santa Ynez River, 200 feet east of De Wolff Avenue, 20 feet north of dwelling, at laundry shed, about 65 feet east of irrigation well 7/35-24K2. Measuring point, top west side of 6-inch casing, 0.30 foot above land-surface datum and 51.73 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	17.03	Mar. 9	17.63	June 15	c26.75	Sept. 30	20.41
7	b17.0	17	17.47	22	23.18	Oct. 7	19.54
12	16.88	23	16.90	29	24.09	14	20.18
13	b16.9	30	17.67	July 6	22.17	21	(a)
19	16.87	Apr. 6	20.84	13	c27.57	28	19.34
20	b16.9	13	20.69	20	c28.27	Nov. 3	19.43
26	16.71	20	c24.35	27	24.05	11	18.89
28	b16.7	27	17.34	Aug. 3	c25.35	18	19.32
Feb. 2	16.68	27	b17.9	10	c26.07	Dec. 1	18.67
5	b16.9	May 5	18.95	26	25.57	9	18.99
9	16.86	18	21.73	Sept. 2	23.72	16	21.97
16	17.00	25	22.11	8	20.33	23	20.06
23	16.92	June 1	21.95	16	20.35	29	21.77
Mar. 2	b17.1	8	23.46	23	21.09		

7/35-24K2. A. B. Henning. City of Santa Barbara No. 118A. About 4.3 miles northwest of Lompoc, about 65 feet west of shallow observation well 24K1, in corrugated-steel pump house. Measuring point, top east side of pump base at hole for oil line, 1.20 feet above land-surface datum and about 51 feet above sea-level datum of 1929. (Land-surface datum is same for wells 7/35-24K1 and 24K2).

Water level, in feet below land-surface datum, 1942

Jan. 5	16.44	Mar. 23	16.32	June 22	f23.20	Oct. 14	19.78
12	16.34	30	17.10	29	24.14	28	18.78
19	16.28	Apr. 6	20.55	July 16	21.70	Nov. 3	19.10
26	16.15	13	20.38	27	25.81	11	18.34
Feb. 2	16.14	20	f35.90	Aug. 26	25.50	18	18.79
9	16.33	27	16.80	Sept. 2	23.66	Dec. 1	18.12
16	16.49	May 5	18.09	8	19.76	9	18.97
16	e29.60	18	21.60	16	19.86	16	22.58
23	16.35	25	21.92	23	20.68	23	20.26
Mar. 9	17.10	June 1	21.77	30	20.09	29	21.75
17	16.43	8	23.51	Oct. 7	19.00		

7/35-25P2. Sudden Estate. About 3.8 miles west-northwest of Lompoc, 0.29 mile south of Central Avenue, 280 feet west of De Wolff Avenue, south-west of dwelling, 150 feet nearly south of irrigation well 7/35-25P1, in corrugated-steel pump house. Measuring point, top of wood pump foundation 1.00 foot above land-surface datum and about 48 feet above sea-level datum of 1929.

- a Depressed by draft from adjacent wells; highest level of day.
- b Measured by city of Santa Barbara.
- c Pump operating in adjacent well.
- d Dry.
- e Pump operating for 2 minutes.
- f Pump operating.

7/35-25P2. Sudden Estate--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	a4.86	Apr. 13	4.98	Aug. 10	13.82	Nov. 3	8.62
19	4.36	May 18	b8.53	Sept. 8	b12.73	Dec. 1	7.23
Feb. 16	4.81	June 15	b10.87	Oct. 7	b11.44	29	7.52
Mar. 17	4.95	July 13	14.70				

7/35-26P2. Union Sugar Co. City of Santa Barbara No. 153; owner's No. L-5 Domestic. About 4.8 miles west-northwest of Lompoc, 450 feet north of Central Avenue, 25 feet west of Union Sugar Avenue, 100 feet east of irrigation well 7/35-26F1, beneath windmill tower. Measuring points: May 19, 1930, to Apr. 30, 1935, top of flange of suction pipe, level with land-surface datum and 37.58 feet above sea-level datum of 1929; after Apr. 8, 1941, top west side of 6-inch casing, 0.24 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	5.11	Apr. 13	5.91	Aug. 10	11.86	Nov. 3	8.22
19	5.26	May 18	7.42	Sept. 8	9.69	Dec. 1	7.66
Feb. 16	13.66	June 15	10.27	Oct. 7	12.74	29	7.44
Mar. 17	5.22	July 13	c20.74				

7/35-26J3. County of Santa Barbara, Artesia School District. City of Santa Barbara No. 145. About 4.3 miles west-northwest of Lompoc, 6 feet west of public-supply well 7/35-26J1. Measuring point, top east side of 6-inch casing, 1.00 foot above land-surface datum and 41.86 feet above sea-level datum of 1929. (Land-surface datum is same for wells 7/35/26J1 and 26J3.)

Water level, at noon, in feet below land-surface datum, 1942
(Records furnished by city of Santa Barbara from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	4.91	Apr. 5	6.53	July 5	13.85	Oct. 10	8.86
10	4.76	10	5.50	10	19.89	15	11.13
15	4.78	15	6.09	15	16.31	20	8.86
20	4.85	20	6.00	20	16.17	25	9.18
25	4.70	25	5.34	25	14.85	31	8.36
31	4.55	30	6.40	31	11.97	Nov. 5	8.35
Feb. 5	5.64	May 5	6.12	Aug. 5	13.35	10	7.89
10	5.62	10	7.50	10	12.10	15	8.04
15	5.57	15	6.82	15	11.60	20	7.33
19	5.17	20	7.84	Sept. 5	12.36	25	6.81
Mar. 5	6.34	25	8.35	10	11.40	30	7.38
10	6.05	June 11	12.61	16	10.82	Dec. 5	7.79
15	5.49	15	10.56	20	13.20	10	7.49
20	4.99	20	11.96	25	12.55	16	8.26
25	5.63	25	15.13	30	9.61	23	8.49
31	6.35	30	14.49	Oct. 5	10.01	31	8.14

7/35-27C2 (*941, p. 160). Southern Pacific Railroad. City of Santa Barbara No. 1610. About 5.9 miles west-northwest of Lompoc, 15 feet north of Southern Pacific Railroad, 150 feet west of Renwick Avenue, in west end of wooden tool shed painted yellow. Measuring point, top south side of 15-inch casing, level with concrete floor and land-surface datum, and 32.42 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

(Jan. 5 to May 4, records at noon from recorder charts; after May 18, records from float gages; undated entries are highest and lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	7.78	Jan. 31	8.38	Feb. 25	8.75	Mar. 20	8.44
10	7.99	Feb. 5	8.57	28	8.94	25	8.67
15	d8.36	10	8.72	Mar. 5	9.06	31	8.93
20	d8.66	15	8.92	10	9.04	Apr. 5	d8.69
25	8.52	20	8.87	15	8.59	10	8.62

a Pump recently operated.

c Pump operating in adjacent well.

b Pump operating.

d Depressed by draft from adjacent well; highest level of day.

7/35-27C2. Southern Pacific Railroad--Continued.

Water level, in feet below land-surface datum, 1932
(Jan. 5 to May 4, records at noon from recorder
charts; after May 18, records from float gages;
undated entries are highest and lowest levels
between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 15	8.71		10.40		10.95		10.68
20	8.64		13.02		11.62		10.93
25	8.18	July 6	10.87	Sept. 8	10.97	Nov. 3	10.93
30	8.52		10.87		10.89		10.83
May 4	a8.67		13.26		12.20		11.25
18	9.99	13	13.13	16	11.52	11	11.25
	9.99		11.43		11.41		11.02
	12.04		13.16		12.74		11.41
25	12.04	20	11.67	23	11.58	18	11.17
	11.90		10.87		11.23		10.56
	12.40		11.71		11.72		11.18
June 1	11.90	27	11.17	30	11.22	Dec. 1	10.66
	10.71		10.84		10.97		10.60
	11.90		11.21		11.28		11.09
8	10.71	Aug. 3	11.17	Oct. 7	11.28	9	10.99
	10.41		11.17		10.98		10.41
	10.89		12.34		11.37		10.99
15	10.41	10	11.87	14	11.27	16	10.93
	10.22		10.99		10.97		10.74
	10.48		12.22		11.82		11.14
22	10.22	26	11.56	21	11.78	23	10.84
	10.19		11.52		10.73		10.46
	10.54		11.72		12.49		11.12
29	10.40	Sept. 2	11.62	28	10.75	29	10.47

7/35-36B1 (*941, pp. 160-161). Union Sugar Co. City of Santa Barbara No. 112B; owner's No. L-17 Domestic. About 3.6 miles west-northwest of Lompoc, 0.46 mile north of Southern Pacific Railroad, 300 feet east of De Wolff Avenue, 50 feet northeast of dwelling, beneath windmill tower. Measuring point, top of 2- by 4-inch wooden clamp, 0.50 foot above concrete curb, 0.50 foot above land-surface datum and 53.61 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	6.77	Apr. 13	8.14	Aug. 10	9.73	Nov. 3	11.03
19	6.74	May 18	b9.30	Sept. 8	10.00	Dec. 1	12.68
Feb. 16	7.03	June 15	b13.93	Oct. 7	10.05	29	10.30
Mar. 17	7.85	July 13	8.35				

7/35-36P3 (*941, p. 161). Mrs. B. Carr. City of Santa Barbara No. 110B. About 3.7 miles west of Lompoc, about 335 feet south-southwest of observation well 36P1, 100 feet southwest of barn, beneath windmill tower. Measuring point, top of wooden cover at 3/4-inch bored hole, 0.3 foot above concrete curb, 1.00 foot above land-surface datum and 83.76 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 5	39.59	Mar. 17	38.46	May 18	38.28	July 13	b41.17
19	38.41	Apr. 13	37.76	June 15	40.06	Aug. 10	41.82
Feb. 16	38.54						

a Water-level recorder removed.

b Pump operating.

7/35-36Q2. Turri Bros. City of Santa Barbara No. 110. About 3.3 miles west of Lompoc, 0.34 mile south of State Highway 150 (Ocean Avenue), and 0.27 mile west of Douglass Avenue extended, 75 feet southeast of irrigation well 7/35-36Q1, beneath windmill tower. Measuring point, top north side of 6-inch casing, 1.30 feet above land-surface datum and 69.48 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	18.30	Feb. 16	17.76	June 15	b51.05	Aug. 10	b53.24
19	a17.87	Apr. 13	a23.66	July 13	b52.45		

Santa Maria Valley

9/32-7N1 (*941, p. 147). V. Tognazzini. J. B. Lippincott's No. 29-B; Santa Maria Valley Water Conservation District No. 6. About 0.28 mile nearly northeast of Sisquoc, 0.2 mile north of State Highway 140, 650 feet northeast of railroad warehouse, 100 feet north of property-line fence, in corrugated-steel pump house. Measuring point, top north side of pump base, through hole, 0.30 foot above concrete foundation, 2.30 feet above land-surface datum, and about 424 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	c50.67	Apr. 1	cd47.50	July 14	a64.78	Oct. 8	cd48.20
14	42.90	22	42.66	Aug. 11	65.23	Nov. 4	47.12
28	42.96	May 19	a61.56	Sept. 9	a66.08	30	47.91
Feb. 25	43.10	June 16	a63.32	Oct. 1	cd50.48	Dec. 28	48.40
Mar. 25	42.96	July 1	cd48.38				

9/32-7Q1. A. R. Carranza. About 0.5 mile nearly east of Sisquoc along State Highway 140, 400 feet north of highway, in frame pump house at north end of hedge. Measuring point, lower south edge of pump base, 0.30 foot above land-surface datum and about 421 feet above sea-level datum of 1929. Measurements discontinued after Aug. 11.

Water level, in feet below land-surface datum, 1942

Jan. 14	26.52	Mar. 25	26.33	May 19	25.49	July 14	27.22
28	26.46	Apr. 22	26.03	June 16	25.93	Aug. 11	a30.57
Feb. 5	26.45						

9/32-17G1. E. C. Lyman. About 1.6 miles nearly east-southeast of Sisquoc, 0.4 mile west of Tepusquet Creek Road, 270 yards north of State Highway 140, at north end of road leading to farm, 30 feet northwest of frame dwelling, beneath wooden windmill tower. Measuring point, top north side of 6-inch casing, 2.80 feet above land-surface datum and about 450 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 14	21.27	Mar. 25	19.57	June 2	a19.65	Aug. 4	a23.95
28	20.85	Apr. 1	19.52	9	a29.00	11	a24.59
Feb. 4	20.65	7	19.48	16	18.81	Sept. 1	a25.18
11	20.39	15	19.33	22	a20.21	9	a24.48
18	20.16	22	19.25	30	20.07	17	a25.03
25	20.03	29	18.96	July 6	a25.16	Oct. 8	24.63
Mar. 4	19.92	May 6	18.56	14	a21.69	Nov. 4	25.64
11	19.81	19	18.12	21	20.85	30	26.53
18	19.98	26	ab19.94	28	a24.70	Dec. 28	38.77

a Pump operating.

b Pump operating in adjacent well.

c Measured by Santa Maria Valley Water Conservation District.

d Pump recently operated.

9/32-18A1. Maria Dutra. About 1 mile nearly east-southeast of Sisquoc, 0.2 mile south and 50 feet west from right-angle bend in State Highway 140, 350 feet northeast of dwelling, in corrugated-steel pump house. Measuring point, top west side of pump base, through oil-line hole, 0.90 foot above land-surface datum and about 434 feet above sea-level datum of 1929. Measurements discontinued after Aug. 11.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	23.55	Mar. 25	22.76	May 19	21.74	July 14	a37.49
28	23.34	Apr. 22	22.45	June 16	a36.42	Aug. 11	a37.83
Feb. 25	22.95						

9/33-2A1 (*941, pp. 147-148). Santa Maria Realty Co. J. B. Lippincott's No. 62-H; Santa Maria Valley Water Conservation District No. 5. In Garey, 400 feet north of Wicks Avenue, 40 feet west of Andrews Avenue, in corrugated-steel pump house. Measuring point, top north side of pump base, through hole, 0.10 foot above concrete foundation, 0.60 foot above land-surface datum and about 381 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	b31.10	Apr. 1	b27.70	July 14	a31.12	Oct. 8	33.06
14	30.33	22	26.94	Aug. 11	30.82	Nov. 4	33.85
28	30.17	May 19	26.07	Sept. 9	32.08	30	34.58
Feb. 25	28.45	June 16	a36.34	Oct. 1	b32.42	Dec. 28	34.87
Mar. 25	27.98	July 1	b28.96				

9/34-3N3. City of Santa Maria. Owner's No. 3. About 5 miles nearly south of Santa Maria and 400 feet east of Lower Oroutt Road, 300 yards north of most southerly one of four wells in field, in corrugated-steel pump house. Measuring point, center of air gage, 0.80 foot above land-surface datum and about 280 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942
(Measured by city of Santa Barbara except as indicated)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	155.4	Mar. 31	155.6	July 31	155.2	Oct. 31	156.0
31	155.2	Apr. 30	155.2	Aug. 31	156.0	Nov. 30	153.8
Feb. 13	d154.39	May 31	155.0	Sept. 30	156.0	Dec. 31	153.8
28	155.2	June 30	155.2				

10/33-18G1. La Brea Securities Co. J. B. Lippincott's No. 134-Q2; Santa Maria Valley Water Conservation District No. 8; owner's No. 8. About 2.8 miles nearly east of Santa Maria, 1.2 miles east of road to Suey, 200 feet north of Santa Maria Valley Railroad, 350 feet west of irrigation well 10/33-18H1, in corrugated-steel pump house. Measuring point, top south side of pump base, through hole, 0.10 foot above concrete foundation, 0.60 foot above land-surface datum, and about 274 feet above sea-level datum of 1929. Measurements discontinued after Oct. 1.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	b79.33	Mar. 25	79.65	May 19	e79.89	July 14	a116.77
14	a116.54	Apr. 1	b79.50	June 16	e80.18	Aug. 11	a117.37
28	a80.30	22	78.67	July 1	b80.25	Oct. 1	b83.75
Feb. 25	80.24						

10/33-19B1 (*941, pp. 148-149). O. T. Rice. J. B. Lippincott's No. 134-G; Santa Maria Valley Water Conservation District No. 3; San Joaquin Power Division of Pacific Gas & Electric Co. No. 4. About 2.95 miles east-southeast of Santa Maria, 0.75 mile east of Battles Road, 40 feet south of East Stowell Road, 20 feet west of property-line fence, in corrugated-steel pump house. Measuring point, top west side of pump base, through hole, 0.30 foot above concrete foundation and land-surface datum and about 275 feet above sea-level datum of 1929.

a Pump operating.

b Measured by Santa Maria Valley Conservation District.

c Pump shut down prior to measurement.

d Measured by Geological Survey.

e Pump operating in adjacent well.

10/33-19B1. O. T. Rice--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a77.42	Mar. 25	77.79	Aug. 1	bc79.8	Nov. 4	77.87
14	78.60	Apr. 1	a77.75	Oct. 1	bc80.30	30	79.32
28	78.15	22	77.19	8	79.26	Dec. 28	79.72
Feb. 25	78.04	July 1	ab78.13				

10/33-27G1. W. C. Adam. J. B. Lippincott's No. 100-G; Santa Maria Valley Water Conservation District No. 7. About 6.2 miles east-southeast of Santa Maria, 0.5 mile north of State Highway 140, 200 yards northeast of railroad right-of-way, 150 feet east of wooden barn, in corrugated-steel pump house. Measuring point, top south side of pump base, through hole, 0.10 foot above concrete foundation, 0.40 foot above land-surface datum and about 338 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	a31.45	Apr. 1	a29.45	July 14	31.44	Oct. 8	d88.37
14	35.83	22	27.82	Aug. 11	d95.45	Nov. 4	40.77
28	33.55	May 19	27.37	Sept. 9	d86.56	30	42.26
Feb. 25	30.50	June 16	28.48	Oct. 1	a39.10	Dec. 28	43.50
Mar. 25	29.35	July 1	a28.70				

10/33-27K1 (#941, pp. 149-150). Newhall Land & Farming Co. J. B. Lippincott's No. 100-F. About 6.3 miles east-southeast of Santa Maria, 0.32 mile north of State Highway 140, 50 feet northeast of railroad right-of-way, 350 feet southwest of irrigation well 10/33-27K2. Measuring points: Oct. 22, 1941, to Sept. 24, 1942, top of base panel of instrument shelter, 0.43 foot above land-surface datum and about 345 feet above sea-level datum of 1929; after Sept. 24, 1942, top east side of 12-inch casing, 0.20 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

(Prior to Sept. 23, records at noon from recorder

charts; after Sept. 23, records from float gage;

undated entries are highest and lowest levels between

dates of observation)

Jan. 1	36.41	Mar. 31	27.54	June 25	29.08	Sept. 20	38.70
5	35.45	Apr. 5	27.53	30	29.37	23	a58.96
10	34.30	10	27.19	July 5	30.19	24	f39.01
15	33.89	15	26.95	10	30.86		39.01
20	32.62	20	26.64	13	31.14		39.99
25	31.96	25	26.45	21	31.87	Oct. 8	39.96
31	31.09	30	26.31	25	32.39		39.96
Feb. 5	30.53	May 5	26.41	31	33.20		41.44
10	30.00	10	26.48	Aug. 5	33.71	Nov. 7	41.43
15	29.58	15	26.68	10	34.34		41.43
20	29.22	20	26.45	15	35.13		42.59
25	28.90	25	26.75	20	35.70	30	42.59
28	28.63	31	27.12	25	36.14		42.59
Mar. 5	28.35	June 5	27.37	31	36.79		43.89
10	28.18	10	27.56	Sept. 5	37.19	Dec. 28	43.89
15	27.91	15	28.15	10	37.68		39.41
20	27.71	20	28.46	15	38.18		44.46
25	27.56						

10/33-28A1. J. Soares. J. B. Lippincott's No. 99-I; Santa Maria Valley Water Conservation District No. 4; San Joaquin Power Division of Pacific Gas & Electric Co. No. 1. About 5.4 miles nearly east-southeast of Santa Maria, 50 feet southwest of right-angle bend in State Highway 140, in corrugated-steel pump house. Measuring point, bottom east edge of pump base, level with concrete foundation, 0.20 foot above land-surface datum and about 325 feet above sea-level datum of 1929.

a Measured by Santa Maria Valley Water Conservation District.

b Pump shut down prior to measurement.

c Measured by San Joaquin Power Division of Pacific Gas & Electric Co.

d Pump operating.

e Water-level recorder removed.

f "High-low" gage installed.

10/33-28A1. J. Soares--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a42.55	Apr. 1	a36.22	July 14	b73.72	Oct. 8	b70.89
14	42.05	22	33.76	Aug. 1	cd41.0	Nov. 4	46.12
28	40.59	May 19	33.41	11	b72.57	30	46.20
Feb. 25	37.40	June 16	b77.01	Sept. 9	b72.20	Dec. 28	47.50
Mar. 25	35.15	July 1	ac36.18	Oct. 1	ac44.80		

10/33-28H1 (*941, p. 150). J. Soares. About 5.5 miles east-southeast of Santa Maria, 0.32 mile south of observation well 10/33-28A1, 50 feet west of State Highway 140, in galvanized-steel pump house. Measuring points: Feb. 11, to May 17, 1941, top of base panel of instrument shelter, 0.60 foot above concrete foundation, 1.20 feet above land-surface datum, and about 327 feet above sea-level datum of 1929; May 23 to June 29, 1941, top east side of 16-inch casing, 0.63 foot above land-surface datum; after July 10, 1941, bottom west edge of pump base, 0.66 foot above land-surface datum. Measurements discontinued after Aug. 11.

Water level, in feet below land-surface datum, 1942

Jan. 14	40.27	Feb. 25	36.91	May 19	32.98	July 14	35.50
28	39.37	Mar. 25	35.02	June 16	b59.87	Aug. 11	b42.92
Feb. 6	38.63	Apr. 22	33.82				

10/34-2R1. G. Apalatequi. J. B. Lippincott's No. 161-Q; Santa Maria Valley Water Conservation District No. 9. About 1.5 miles nearly northeast of Santa Maria, 1.0 mile east of U. S. Highway 101, 300 feet north of Donovan Road, on west bank of drainage canal, in frame pump house. Measuring point, top west side of pump base through hole, 0.20 foot above concrete foundation, 0.60 foot above land-surface datum and about 231 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	a84.60	Apr. 22	85.17	Aug. 11	88.58	Nov. 3	90.08
Feb. 25	84.68	May 19	84.38	Sept. 9	88.47	30	90.86
Mar. 25	85.02	June 16	85.38	Oct. 1	a88.72	Dec. 28	91.22
Apr. 1	a85.10	July 1	a86.27				

10/34-6N1. Grisingher & Signorelli. J. B. Lippincott's No. 156-K; Santa Maria Valley Water Conservation District No. 11. About 4.0 miles nearly west-northwest of Santa Maria, 1.1 miles north of State Highway 166, 0.5 mile east of Bonita Road, 200 feet southwest of dwelling, in corrugated-steel pump house. Measuring point, top east side of pump base through hole, 0.10 foot above concrete foundation, 0.80 foot above land-surface datum and about 153 feet above sea-level datum of 1929. Measurements by Geological Survey discontinued after Aug. 11.

Water level, in feet below land-surface datum, 1942

Jan. 1	a54.05	Mar. 25	b56.83	May 19	54.04	July 14	b60.55
14	53.57	Apr. 1	ac54.05	June 16	55.22	Aug. 11	b61.40
28	53.10	22	51.89	July 1	a57.12	Oct. 1	a56.93
Feb. 25	52.46						

10/34-14E3 (*941, p. 151). City of Santa Maria. San Joaquin Power Division of Pacific Gas & Electric Co. No. 20. About 0.4 mile nearly south of Santa Maria, 175 feet north of Santa Maria Valley Railroad, 275 feet east of U. S. Highway 101, and 50 feet west of municipal water-supply tank and tower, in southeast corner of garage. Measuring point, top north side of 2- by 2-inch hole in metal cover, level with land-surface datum and about 225 feet above sea-level datum of 1929.

a Measured by Santa Maria Valley Water Conservation District.

b Pump operating.

c Pump shut down prior to measurement.

d Measured by San Joaquin Power Division of Pacific Gas & Electric Co.

10/34-14E3. City of Santa Maria--Continued.

Water level, in feet below land-surface datum, 1942
(Measured by city of Santa Maria except as indicated)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	104.04	Apr. 5	102.17	July 12	102.98	Sept. 30	a104.67
7	a104.05	12	102.08	19	103.52	Oct. 4	104.83
11	103.87	19	101.92	26	103.73	11	104.46
18	103.67	26	101.75	Aug. 1	b104.0	18	104.75
25	103.50	May 3	101.67	2	103.83	31	a104.47
Feb. 1	103.25	10	101.62	9	103.92	Nov. 1	104.37
8	103.12	17	101.67	16	104.17	8	104.31
15	103.00	24	101.75	23	104.33	15	104.20
22	102.92	31	101.83	30	104.58	22	104.20
Mar. 1	102.67	June 7	101.96	31	a104.67	29	103.87
8	102.46	14	102.08	Sept. 6	104.62	Dec. 1	a103.86
15	102.42	22	102.25	13	104.67	20	103.16
22	102.33	28	102.58	20	104.71	30	103.45
29	102.25	July 5	102.83	27	104.79		

10/34-22R1. G. J. Wheat. J. B. Lippincott's No. 92-M; Santa Maria Valley Water Conservation District No. 1. About 1.9 miles nearly south of Santa Maria, 0.9 mile south of Stowell Road, 320 yards west of U. S. Highway 101, 200 feet northwest of shop, in corrugated-steel pump house. Measuring point, bottom west edge of pump base, level with concrete foundation, 0.50 foot above land-surface datum and about 218 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	c104.25	Apr. 1	c101.07	July 1	c102.53	Oct. 1	c102.00
14	103.80	22	100.80	14	102.29	Nov. 3	101.65
28	103.22	May 19	100.73	Aug. 11	102.79	30	101.12
Feb. 25	102.12	June 16	101.67	Sept. 9	102.51	Dec. 30	100.47
Mar. 25	101.36						

10/34-23H1. M. B. Rice. J. B. Lippincott's No. 131-D; Santa Maria Valley Water Conservation District No. 2. About 1.6 miles nearly southeast of Santa Maria, 0.3 mile south of Stowell Road, 40 feet west of South Nance Road, in frame pump house. Measuring point, top east side of pump base through hole, 0.20 foot above land-surface datum and about 242 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	c116.00	Mar. 11	112.90	Apr. 29	111.75	Sept. 9	114.15
14	115.20	18	112.67	May 6	111.58	16	113.99
28	114.56	25	112.54	June 1	112.11	24	113.87
Feb. 4	114.29	Apr. 1	c112.41	16	112.39	Oct. 1	c113.75
12	113.97	1	112.32	22	d112.80	8	113.62
18	113.80	8	112.22	July 1	c113.00	Nov. 3	113.20
25	113.34	15	112.01	Aug. 26	114.55	30	112.92
Mar. 4	113.14	22	111.86	Sept. 1	114.31	Dec. 30	112.30

10/35-7F1 (*941, p. 152). M. J. Ellis. Santa Maria Conservation District No. 18. About 1.9 miles nearly west of Guadalupe, 185 feet north of Guadalupe Road, 450 feet west of angle in road, 10 feet east of frame tank and tower, in corrugated-steel pump house. Measuring point, top east side of pump base through hole, 0.10 foot above concrete foundation, 1.80 feet above land-surface datum, and about 50 feet above sea-level datum of 1929.

a Measured by Geological Survey.

b Measured by San Joaquin Power Division of Pacific Gas & Electric Co.

c Measured by Santa Maria Valley Water Conservation District.

10/35-7F1. M. J. Ellis--Continued.

Water level, in feet, with reference to land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a (b)	Mar. 18	+1.05	June 8	-6.30	Aug. 26	-6.46
14	+1.05	Apr. 1	a-3.28	15	-4.96	Sept. 16	-5.24
28	+1.11	1	-3.03	29	-6.97	23	-5.18
Feb. 4	+1.19	8	-.76	July 1	ac-8.53	Oct. 1	a-4.45
11	+1.03	15	+1.13	6	-8.10	Nov. 3	-.14
18	+.73	22	+1.15	14	-7.37	Dec. 1	-1.38
25	+1.01	27	+.82	20	-9.46	29	+1.22
Mar. 11	-1.51	May 6	-3.07	Aug. 10	d-8.21		

10/35-7G3. J. Jenkins. About 1.6 miles nearly west of Guadalupe, 0.25 mile north of road to Guadalupe, 15 feet west of road leading to farm, 200 feet west of barn. Measuring point, top south side of 16-inch casing, 0.20 foot above land-surface datum and about 53 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Feb. 18	10.33	June 25	f15.07	Sept. 2	16.18	Oct. 7	13.77
May 6	ef9.55	30	f14.10	8	14.61		8.53
10	f9.69	July 5	14.40	16	13.60		14.52
15	f11.14	6	fg13.21	23	13.56	Nov. 3	8.54
20	f12.12	14	15.40	24	h16.11		7.44
25	f11.05	20	16.54		12.46		12.79
31	f11.97	27	19.21		16.75	Dec. 1	8.37
June 5	f12.29	Aug. 3	19.37	25	14.70		6.85
10	f12.40	10	17.36		10.82		12.20
15	f12.37	26	17.72		17.35	29	6.86
20	f13.85						

10/35-9F1 (#941, p. 131). Waller Franklin Seed Co. J. B. Lippincott's No. 119-H; Santa Maria Valley Water Conservation District No. 17. About 0.6 mile nearly northeast of Guadalupe, 0.5 mile north of State Highway 166, and 0.25 mile east of Southern Pacific Railroad, in frame pump house at east end of greenhouse. Measuring point, lower north edge of pump base, level with concrete foundation, 1.00 foot above land-surface datum and about 89 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	a15.42	Apr. 1	a21.55	June 8	143.97	Aug. 10	27.83
14	16.23	1	20.35	11	144.78	26	25.67
28	16.02	8	17.46	22	144.77	Sept. 2	24.17
Feb. 4	15.92	15	16.02	29	145.05	8	25.34
11	16.12	22	15.98	July 1	ad31.00	16	25.37
18	17.77	29	18.88	6	26.73	23	25.72
25	16.19	May 6	20.23	14	26.22	Oct. 1	a23.17
Mar. 4	18.58	19	13.61	20	145.99	Nov. 3	19.56
11	19.88	25	143.86	27	145.76	Dec. 1	18.60
18	16.57	June 1	145.45	Aug. 3	28.00	29	17.45
25	18.03						

a Measured by Santa Maria Valley Water Conservation District.

b Well flowing.

c Pump shut down prior to measurements.

d Pump recently operated.

e Recorder installed.

f Depressed by draft from adjacent wells; highest level of day.

g Recorder removed.

h "High-low" gage installed.

i Pump operating.

10/35-9N1. A. F. King. J. B. Lippincott's No. 119-J; Santa Maria Valley Water Conservation District No. 19. At Guadalupe, about 200 yards south of State Highway 166, and 40 feet west of State Highway 1, in frame pump house. Measuring point, bottom north edge of pump base, level with concrete foundation, 0.20 foot above land-surface datum and about 87 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a15.97	Apr. 1	ac27.05	July 1	ac35.22	Oct. 1	ac30.60
14	16.18	22	15.30	14	28.92	Nov. 3	b47.02
28	15.79	May 19	d24.52	Aug. 10	b53.60	Dec. 1	b46.05
Feb. 25	15.82	June 16	b52.66	Sept. 8	b52.10	19	16.63
Mar. 25	b45.61						

10/35-12M1. E. and G. Leroy. J. B. Lippincott's No. 124-F; Santa Maria Valley Water Conservation District No. 10. About 4.8 miles nearly west of Santa Maria, 0.2 mile north of State Highway 166, and 0.7 mile west of Bonita Road, in corrugated-steel pump house. Measuring point, top east side of pump base through hole, 0.30 foot above concrete foundation, 0.70 foot above land-surface datum, and about 139 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a43.05	Apr. 1	a45.10	July 1	ac54.60	Oct. 1	ac49.02
14	42.85	22	41.18	14	63.56	7	48.52
28	42.45	May 19	bc45.81	Aug. 11	49.80	Dec. 1	59.16
Feb. 25	41.81	June 16	46.33	Sept. 8	50.77	29	43.06
Mar. 25	b43.45						

10/35-21B1. C. P. Mathison. Santa Maria Valley Water Conservation District No. 20. About 1.4 miles nearly south-southeast of Guadalupe, 0.4 mile north of Corralillos Canyon Road, 0.25 mile east of Southern Pacific Railroad, 175 feet northeast of dwelling, in corrugated-steel pump house. Measuring point, top south side of pump base through hole, 0.15 foot above concrete foundation, 0.35 foot above land-surface datum, and about 94 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a11.55	Mar. 25	11.74	June 16	b54.65	Oct. 1	a17.90
14	11.55	Apr. 1	a16.63	July 1	ac39.43	Nov. 3	15.23
28	11.11	22	10.45	14	22.61	Dec. 1	13.30
Feb. 6	11.01	May 19	17.91	Aug. 10	22.48	29	11.73
25	10.89						

10/35-24B1 (*941, pp. 152-153). Union Sugar Co. Santa Maria Valley Water Conservation District No. 21; owner's No. N-6. About 4.6 miles nearly west-southwest of Santa Maria, 50 feet south of Corralillos Canyon Road and 50 feet west of Ray Road, in galvanized-steel pump house. Measuring point, top west side of pump base through hole, 0.15 foot above concrete foundation and land-surface datum, and about 144 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a49.95	Apr. 1	49.77	June 16	52.57	Aug. 26	d56.25
14	49.61	8	48.64	22	d54.80	Sept. 2	53.18
28	49.06	15	47.61	29	d56.29	8	d55.64
Feb. 11	48.79	22	47.35	July 1	a54.67	16	d56.76
18	49.05	27	48.05	6	b63.78	23	53.11
25	48.17	May 6	49.57	14	53.59	Oct. 1	a52.28
Mar. 4	49.15	19	51.31	20	55.09	7	c54.55
11	48.98	25	51.54	27	d56.12	Nov. 3	50.75
18	48.02	June 1	53.52	Aug. 3	53.71	Dec. 1	49.60
25	48.30	8	53.15	10	d55.15	29	48.71
Apr. 1	a49.10						

a Measured by Santa Maria Valley Water Conservation District.

b Pump operating.

c Pump recently operated.

d Pump operating in adjacent well.

11/34-29Pl. A. Guerra. About 4.1 miles nearly northwest of Santa Maria, 1.9 miles east of Bonita Road, and 0.6 mile south of paved road at base of terrace, 30 feet southeast of dwelling and 15 feet west of property-line fence. Measuring point Aug. 7 to Nov. 19, 1941, top north side of 18-inch casing, level with land-surface datum and about 159 feet above sea-level datum of 1929; Nov. 26, 1941, to May 5, 1942, top of 2- by 2-inch sill of instrument shelter, 0.25 foot above land-surface datum; May 5 to Sept. 25, 1942, top of base panel of instrument shelter, 0.35 foot above land-surface datum; after Sept. 25, 1942, top of wood cover, at center, 0.24 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942
(Prior to May 5, records from float gage; May 5 to Sept. 25 records at noon from recorder charts; undated entries are highest and lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	43.21		51.37		45.51	June 30	c47.37
	43.19	Feb. 25	44.65		45.65	July 5	47.45
	44.40		44.64	Apr. 15	45.62	10	c47.74
14	44.04		54.93		45.38	15	c47.85
	43.85	Mar. 4	44.88		46.30	20	c48.04
	44.53		44.86	29	45.39	25	c48.89
21	44.39		45.09		45.20	31	c49.10
	43.99	11	44.95		45.40	Aug. 5	c49.52
	44.63		44.85	May 5	a45.20	10	c49.38
28	44.05		45.70	5	b45.18	15	c49.56
	44.00	18	45.15	10	45.26	20	c49.73
	44.08		45.11	15	c45.68	25	c50.00
Feb. 4	44.08		45.25	20	45.92	31	c50.10
	44.07	25	45.22	25	45.88	Sept. 5	c50.85
	44.93		45.22	31	c46.08	10	c50.60
11	44.93		55.17	June 5	46.24	15	c50.66
	44.20	Apr. 1	45.53	10	46.35	20	c50.45
	54.99		45.49	15	46.49	25	cd50.70
18	51.37		46.22	20	46.82	Dec. 1	51.06
	44.48	8	45.57	25	c47.47	29	52.43

11/34-30Q1. Mary Bolton. J. B. Lippincott's No. 186-A; Santa Maria Valley Water Conservation District No. 12. About 4.6 miles nearly northwest of Santa Maria, 0.8 mile south of Guadalupe-Nipomo road, 1.05 miles east of Bonita Road, at southwest corner of property, in frame pump house. Measuring point, bottom south edge of pump base, level with concrete foundation, 0.50 foot above land-surface datum, and about 148 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	e47.00	Mar. 25	f63.76	July 1	e48.33	Oct. 7	51.27
14	46.85	Apr. 1	eg48.40	13	48.29	Nov. 3	51.14
28	46.72	22	46.47	Aug. 10	51.02	Dec. 1	51.36
Feb. 25	46.56	June 15	47.75	Oct. 1	ef52.50	29	50.94

11/35-20E1 (#941, p. 153). Union Sugar Co., Santa Maria Valley Water Conservation District No. 15; owner's No. F-3. About 4.3 miles north-northwest of Guadalupe, 0.7 mile west of Southern Pacific Railroad, 65 feet north of Oso Flaco Lake Road, in frame pump house painted red. Measuring points: May 16 to Nov. 19, 1941, bottom west edge of pump base, 0.50 foot above land-surface datum and about 49 feet above sea-level datum of 1929; after Dec. 17, 1941, top west side of 18-inch casing, level with land-surface datum.

- a "High-low" gage removed.
- b Recorder installed.
- c Depressed by draft from adjacent wells; highest level of day.
- d Recorder removed.
- e Measured by Santa Maria Valley Water Conservation District.
- f Pump operating.
- g Pump recently operated.

11/35-20E1. Union Sugar Co.--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a0.58	Apr. 1	ac27.00	July 13	9.63	Oct. 7	4.32
14	1.11	22	.05	Aug. 10	b96.83	Nov. 3	b96.16
28	.24	May 9	7.03	Sept. 8	b96.27	Dec. 1	5.24
Feb. 25	.78	June 16	5.58	Oct. 1	a8.25	29	1.38
Mar. 25	b95.37	July 1	a5.80				

11/35-28M1. Union Sugar Co. Santa Maria Valley Water Conservation District No. 16; owner's No. F-1-2. About 3.2 miles nearly north of Guadalupe, 0.7 mile south of Oso Placo Lake Road and 400 feet south of road leading to farm, 50 feet west of Southern Pacific Railroad, in corrugated-steel pump house. Measuring point, top west side of pump base, through hole, 0.10 foot above concrete foundation, level with land-surface datum and about 77 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 1	a12.75	Mar. 25	13.39	June 1	d26.72	Aug. 3	28.16
14	12.97	Apr. 1	a20.96	8	28.61	10	d31.66
28	12.58	1	d22.12	16	25.38	26	29.05
Feb. 4	12.20	8	13.79	22	28.19	Sept. 2	24.88
11	12.43	15	12.42	29	b57.38	8	d26.92
18	16.42	22	12.91	July 1	ac27.00	16	27.47
25	12.44	29	15.31	6	b54.76	23	24.83
Mar. 4	18.98	May 6	d19.68	13	27.44	Oct. 1	ac28.90
11	16.52	19	b50.53	20	28.85	Dec. 1	d17.94
18	12.67	25	d29.22	27	b49.60	29	13.93

11/35-33F1. Union Sugar Co. Owner's Morganti No. 1. About 2.4 miles nearly north of Guadalupe along State Highway 1, 50 feet west of highway in frame pump house painted red. Measuring point, bottom west edge of pump base, 0.20 foot above concrete foundation, level with land-surface datum and about 84 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Apr. 22	17.39	July 13	b36.82	Oct. 7	b35.02	Dec. 1	20.55
May 19	25.00	Aug. 10	b37.92	Nov. 3	20.33	29	18.87
June 16	24.73	Sept. 8	35.30				

11/35-33G1. H. E. Pezzoni. J. E. Lippincott's No. 180-B; Santa Maria Valley Water Conservation District No. 14. About 2.3 miles nearly north of Guadalupe, 50 feet south of Guadalupe-Nipomo road and 60 feet west of Southern Pacific Railroad, in unpainted frame pump house. Measuring point, top east side of pump base, through hole, 0.50 foot above land-surface datum and about 91 feet above sea-level datum of 1929. Measurements by Geological Survey discontinued after Jan. 28.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 1	a19.60	Jan. 28	19.01	July 1	a27.26
14	19.21	Apr. 1	a24.90	Oct. 1	a26.48

11/35-35A1. Bello Estate. Santa Maria Valley Water Conservation District No. 13. About 3.7 miles nearly northeast of Guadalupe, 0.5 mile south of Nipomo-Guadalupe road, and 0.6 mile west of Bonita Road, in corrugated-steel pump house. Measuring point, top south side of pump base, through hole, 0.30 foot above concrete foundation, 0.80 foot above land-surface datum and about 124 feet above sea-level datum of 1929. Measurements discontinued by Geological Survey after Aug. 10.

a Measured by Santa Maria Valley Water Conservation District.

b Pump operating.

c Pump recently operated.

d Pump operating in adjacent well.

11/35-35A1. Bello Estate--Continued.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a37.43	Mar. 25	b35.30	May 19	36.69	Aug. 10	b42.32
14	36.04	Apr. 1	a35.91	June 16	b33.15	Oct. 1	a41.25
Feb. 25	35.09	29	34.91	July 1	ac39.92		

Cuyama Valley

7/23-20C1. Owner unknown. About 13.8 miles nearly southeast of Cuyama ranger station, 1.0 mile east of U. S. Highway 399, 125 feet north of Lockwood Valley Road, in channel of Cuyama River. Measuring point, top south side of 16-inch casing, 7.00 feet above land-surface datum and about 3,602 feet above sea-level datum of 1929.

Water level, in feet, with reference to land-surface datum, 1942

Jan. 28	+2.78	May 20	+2.42	Aug. 12	+1.65	Nov. 6	+1.62
Mar. 24	+2.66	June 17	+2.06	Sept. 10	+1.60	30	+1.66
Apr. 28	+2.68	July 15	+1.77	Oct. 8	+1.49	Dec. 28	+1.99
May 7	+2.36						

7/24-13C1. Apache School District, Ventura County. About 12.0 miles nearly southeast of Cuyama ranger station, 300 feet west of U. S. Highway 399, 100 feet west of dwelling, 10 feet north of property line. Measuring point, top of wooden cover, 1.50 feet above land-surface datum and about 3,420 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 28	8.22	May 20	d8.23	Aug. 12	d11.48	Nov. 6	12.53
Mar. 23	8.34	June 17	d11.42	Sept. 10	d12.30	30	12.22
May 7	d10.05	July 15	d12.20	Oct. 8	12.80	Dec. 28	11.94

9/24-19Q1 (#941, p. 146, erroneously listed as No. 9/24-19P1). Forest Service, U. S. Dept. of Agriculture. About 0.5 mile southeast of Cuyama ranger station, 140 feet west of U. S. Highway 399, beneath wooden windmill tower. Measuring point, top west side of 5-5/8-inch casing, 1.30 feet above land-surface datum and about 2,784 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 28	24.92	May 20	27.65	Aug. 12	29.65	Nov. 6	31.78
Mar. 23	26.32	June 17	28.32	Sept. 10	30.33	30	32.35
Apr. 28	27.18	July 15	28.95	Oct. 8	31.06	Dec. 28	33.02
May 7	27.39						

9/25-14K1 (#941, p. 146). Snedden Land & Cattle Co. About 2.1 miles nearly west-northwest of Cuyama ranger station, in Santa Barbara Canyon, 1.8 miles southwest of U. S. Highway 399, 0.2 mile west of road, 15 feet north of galvanized-steel tank, beneath windmill tower. Measuring point, top southeast side of 5-5/8-inch casing, 0.20 foot above land-surface datum and about 2,646 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Jan. 28	55.70	May 20	53.72	Aug. 11	56.68	Nov. 6	60.53
Mar. 23	54.90	June 16	54.60	Sept. 9	57.96	30	61.50
May 7	53.88	July 14	55.55	Oct. 8	59.27	Dec. 28	62.63

a Measured by Santa Maria Valley Water Conservation District.

b Pump operating in adjacent well.

c Pump recently operated.

d Pump operating.

9/25-27C1 (*941, p. 146). Forest Service, U. S. Dept. of Agriculture. About 2.3 miles southwest of stock well 9/25-14K1, 150 feet east of road, 10 feet east of water tank, beneath windmill tower. Measuring point, top south side of 5-5/8-inch casing, 1.20 feet above land-surface datum and about 2,810 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	61.45	May 20	64.32	Aug. 11	66.65	Nov. 6	a70.95
Mar. 23	62.86	June 16	64.32	Sept. 9	68.01	30	71.77
May 7	63.08	July 14	65.55	Oct. 8	69.43	Dec. 28	72.83

10/25-30F1. H. S. Russell. About 0.9 mile south of Cuyama School and State Highway 166, 100 feet west of T-road south, in frame pump house. Measuring point, top southwest side of 16-inch casing, 0.30 foot above land-surface datum and about 2,311 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	52.20	May 7	51.71	Oct. 8	54.65	Nov. 30	52.15
Mar. 24	51.66	July 14	55.35	Nov. 4	52.54	Dec. 28	51.86
Apr. 28	51.71						

10/26-18F1 (*941, p. 146). E. S. Russell. About 2.9 miles along State Highway 166 from lane to Cuyama Ranch, 60 feet north of highway and 40 feet west of earth reservoir. Measuring point, lower edge of cut-out in casing below pump base, on southeast side, level with land-surface datum and about 2,081 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	52.65	Apr. 28	51.32	May 20	57.33	Dec. 28	54.90
Mar. 24	51.52	May 7	a91.42	Nov. 30	56.37		

10/26-22A1 (*941, p. 146), erroneously listed as No. 10/26-22C1). H. S. Russell. About 0.55 mile east along State Highway 166 from lane to Cuyama Ranch and 60 feet south of highway. Measuring point, low point on edge of cut-out in north side of 12-inch casing, 0.50 foot above land-surface datum and about 2,200 feet above sea-level datum of 1929.

Water level, in feet, with reference to land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	-0.65	May 20	b-5.05	Sept. 9	b17.87	Nov. 6	-4.39
Mar. 24	+2.25	June 16	b-17.47	Oct. 8	b13.20	30	-1.12
Apr. 28	-.33	July 14	b-17.03	Nov. 4	-5.31	Dec. 28	-.90
May 7	b-1.76	Aug. 12	b-18.02	5	-4.96		

10/27-12R1 (*941, p. 147). H. S. Russell; W. Kirachemann, lessee. At ranch headquarters, about 700 feet north of State Highway 166, 8 feet north of galvanized-steel tank house. Measuring point, lower southeast edge of cut-out in 12-inch casing, below pump base, level with land-surface datum and about 2,036 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	39.06	May 20	a48.05	Sept. 9	b43.87	Nov. 6	43.90
Mar. 24	38.94	June 16	43.60	Oct. 8	44.35	30	42.81
Apr. 28	38.58	July 14	41.36	Nov. 4	44.06	Dec. 28	41.73
May 7	38.59	Aug. 11	42.79				

11/28-17L1. Seers Ranch. About 0.4 mile south of State Highway 166, 0.15 mile west of bridge over Cuyama River below Cottonwood Creek, 50 feet northeast of road leading to farm. Measuring point, top southwest corner of 1-inch wooden curb of 4- by 4-foot dug well, 1.00 foot above land-surface datum and about 1,601 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	20.23	May 20	20.27	Aug. 11	20.52	Nov. 4	20.56
Apr. 28	20.19	June 16	20.17	Sept. 9	20.79	30	20.30
May 7	20.22	July 14	20.51	Oct. 8	20.72	Dec. 28	20.13

a Pump operating.

b Pump operating in adjacent well.

HAWAII

By H. T. Stearns

INTRODUCTION

The systematic investigation of the geology and ground-water resources of the Territory of Hawaii was continued in 1942 by the Geological Survey, United States Department of the Interior, in cooperation with the Division of Hydrography of the Territory. The results of the investigation on the island of Maui, covering a period of 10 years, were published in a bulletin of the Hawaii Division of Hydrography,^{1/} which includes a geologic map of Maui, on a scale of 1:62,500, showing all wells, tunnels, and test borings on that island. Further progress was made in the investigation on the island of Hawaii. In addition, numerous special investigations were made for the armed forces.

The total ground-water draft during 1942 for the Territory of Hawaii was 184,463 million gallons (about 565,750 acre-feet, or an average of 505 million gallons a day). This was 20,238 million gallons less than in 1941. Hawaii was the only one of the islands with an increase in pumpage during the year. More than half of the drop in the total pumpage is attributable to the decrease on Oahu, where heavy rains occurred.

Water levels in most wells in Oahu, Hawaii, Lanai, and leeward Maui showed a net rise in 1941; those in wells in Kauai, Molokai, and windward Maui showed a decline. Average rainfall for the Territory was 92.10 inches, which is 13.40 inches above the average for 1941 and 7.7 inches above normal. The drought that started in 1940 ended in 1942.

RECORDS OF ARTESIAN HEAD, WATER LEVEL, AND PUMPAGE

Most of the tables in this report set forth data on ground-water conditions in the Territory in 1942, such as artesian head, water level, and the chloride content of the waters. In the section on Oahu is a table listing, by name and number, the artesian areas on that island and giving the time of high and low artesian heads in each; in the records that follow, these areas are referred to by the numbers shown in this table. At the end of the report is a table showing, by pumping plants, the ground-water draft in the Territory.

^{1/} Stearns, H. T., and Macdonald, G. A., Geology and ground-water resources of the island of Maui, Hawaii: Hawaii Div. of Hydrography Bull. 7, 344 pp., 1942.

In the records of artesian head and water level, the numbers in parentheses immediately following the number or name of a recovery device--whether well, shaft, or test boring--or preceding a table indicate the water-supply papers in which earlier pertinent records are given and the pages on which they appear. An asterisk indicates that the paper so specified contains a description of the well, shaft, or test boring to which the table relates or that it contains more information than the papers not so specified.

The artesian head and water levels are expressed in feet with reference to mean sea level. In some wells, the artesian head, as given, is the measured water level in the well; in others, it is the height to which the water would rise in a casing or tube, as indicated by the shut-in pressure.

ISLAND OF OAHU

During 1942 the Geological Survey made 276 monthly measurements of artesian head and 371 chloride determinations on 175 wells on the island of Oahu. The Board of Water Supply, City and County of Honolulu, made 203 measurements of artesian head on 103 wells, 100 of which were measured more than once. The Geological Survey maintained two automatic water-stage recorders throughout the year, and the Board of Water Supply maintained nine.

During 1941, 309 measurements of artesian head were made on 40 wells, 292 chloride determinations were made on 59 wells, and two automatic water-stage recorders were maintained by the Geological Survey. The Honolulu Board of Water Supply made 415 water-level measurements on 106 artesian wells, of which 103 were measured more than once, and maintained 13 automatic recorders.

The termination of the drought brought relief to the underground storage from the heavy pumpage during 1941. Total pumpage for the island amounted to 121,111 million gallons, or 13,098 million gallons less than in 1941. Of the 12 artesian areas 5 showed gains in underground storage, but the artesian heads are not as high as they were during the period 1937-39 except in areas 8 and 9. The average rainfall on Oahu for the year amounted to 81.08 inches, 5.04 inches above normal and 35.78 inches above the average for 1941.

The development of ground water along the north shore of Pearl Harbor continued, but indications are that the peak has been passed.

The location of all wells is shown on the geologic map of Oahu in Hawaii Division of Hydrography Bulletin 2.

Time of high and low heads in artesian areas and net gain or loss in static head, in feet, as shown by typical wells in Oahu, 1942
(*777, p.47; 817, p.35; 840, p.58; 845, p.55; 886, p.81; 911, p.138; 941, p.170)

Area	Name	Well	High	Low	Net gain or loss
1	St. Louis Heights	2	December	February and September	+1.76
2	Makiki-Pacific Heights	83	March, April, and December	August and September	+ .34
3	Kapalama	132	December	August	+ .69
4	Moanalua	144	December	August and September	+ .42
5	Wilhelmina Rise	1A	December	May, June, and July	+ .54
6	Pearl Harbor	201	December	August and September	+2.22
		244	December	August	+3.52
		266	December	August	+4.41
7	Waialua	326	December	July	- .15
8	Kahuku	356	December	August	+1.28
		396	April and December	January	+1.42
9	Kahana	405	April and May	January	+ .91
10	Kaaawa	406	September	January	+1.10
11	Gilbert	a T5	December	June and July	+ .66
12	Mokuleia	286	December	May	+ .18
		308	December	August	+ .01

Schofield Barracks shaft 4 (*840, p. 59; *845, p. 56; 886, p. 82; 911, p. 138; 941, p. 171).

Water level, in feet, 1942
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	275.47	Apr. 4	274.61	July 4	(b)	Oct. 3	274.67
10	275.41	11	274.53	11	(b)	10	274.73
17	275.31	18	274.43	18	274.31	17	(b)
24	275.34	25	274.52	25	274.26	24	(b)
31	275.24	May 2	274.47	Aug. 1	(b)	31	(b)
Feb. 7	275.16	9	274.48	8	(b)	Nov. 7	274.88
14	275.08	16	274.45	15	274.28	14	274.83
21	274.93	23	274.39	22	(b)	21	274.85
28	274.89	30	274.35	29	274.43	28	274.90
Mar. 7	274.90	June 6	274.28	Sept. 5	274.49	Dec. 5	274.90
14	274.75	13	274.23	12	274.24	12	274.91
21	274.67	20	274.27	19	274.64	19	(b)
28	274.62	27	274.26	26	274.63	26	274.98

a Nonartesian, but indicative of adjacent artesian conditions.

b Pumping.

Artesian head, in feet, in 5 wells in the Honolulu district, 1942

(*817, p. 36; 840, p. 61; 845, p. 56; 886, p. 82; 911, p. 139; 941, p. 171).

(Mean daily measurements furnished by Board of Water Supply
City and County of Honolulu, from recorder charts)

Area	1	2	3	4	5
Well	2	83	132	144	1A
Jan. 7	26.43	28.86	27.81	.....	8.29
14	26.37	28.86	27.92	25.00	8.27
21	26.20	28.83	27.78	24.99	8.29
28	26.06	28.75	27.71	24.86	8.29
Feb. 4	25.79	28.63	27.65	.....	8.33
11	25.82	28.79	27.67	24.76	8.42
18	26.15	28.76	27.70	24.79	8.44
25	26.35	.....	27.72	24.35	8.46
Mar. 4	26.57	28.79	27.77	.....	8.42
11	26.86	28.86	27.82	24.90	8.45
18	26.95	29.02	27.88	.....	.....
25	26.91	29.14	.....	.....	8.47
Apr. 1	26.78	29.13	28.03	.....	8.46
8	26.99	29.11	.....	.....	8.45
15	27.25	29.04	28.09	25.12	8.45
22	27.43	28.96	28.04	25.05	8.36
29	27.42	28.78	27.93	24.96	.....
May 6	27.39	28.60	27.93	24.88	8.23
13	27.40	28.55	27.78	24.81	8.19
20	27.22	28.40	27.58	24.70	8.16
27	27.11	28.28	.....	24.64	8.12
June 3	26.97	28.13	27.40	24.57	8.14
10	26.83	28.02	27.32	.....	8.15
17	27.07	28.00	27.32	24.57	8.16
24	26.87	27.89	27.20	24.55	8.13
July 1	.....	27.83	.....	24.47	8.16
8	26.91	27.69	26.92	24.39	8.15
15	26.75	27.53	26.68	24.33	.....
22	26.51	27.33	26.58	24.28	.....
29	26.57	27.17	26.40	24.19	8.22
Aug. 5	26.62	27.09	26.34	24.20	8.31
12	26.42	.....	26.24	24.18	8.28
19	26.54	.....	26.34	24.09	8.29
26	26.17	27.03	26.41	24.09	8.33
Sept. 2	26.14	27.11	26.53	24.07	.....
9	.....	27.11	26.53	24.02	8.35
16	25.93	27.13	26.61	24.03	8.35
23	25.91	27.12	26.60	24.12	8.40
30	26.29	.....	26.61	24.19	8.46
Oct. 7	26.63	.....	26.65	24.18	.....
14	26.53	27.25	26.60	24.15	8.51
21	26.40	27.22	26.62	.....	.....
28	26.52	27.27	26.65	24.13	8.60
Nov. 4	27.08	.....	26.92	24.53	.....
11	27.44	27.55	27.09	24.75	.....
18	27.71	27.75	27.29	24.89	.....
25	27.86	27.85	27.42	24.86	.....
Dec. 2	28.13	28.03	27.56	24.82	.....
9	28.36	.....	27.73	25.03	.....
16	28.49	28.55	27.99	.....	.....
23	28.24	28.80	28.15	.....	8.87
30	28.25	29.05	28.43	25.59	8.87
31	28.26	29.10	28.45	25.59	8.86

Artesian head, in feet, and chloride, in parts per million, in typical wells in Oahu, 1942

Well 1B (area 5) (*777, p. 50; *817, p. 37; 840, p. 56-61; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172). Bishop Estate. On north side of Waiialae Golf Links, Kaimuki.

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Feb. 3	8.32	198	May 28	8.05	224	Oct. 24	8.66	186
27	8.39	164	July 16	8.16	228	Nov. 28	8.72	170
Mar. 24	8.43	170	Aug. 26	8.29	232	Dec. 30	8.87	163
Apr. 24	8.38	189	Sept. 26	8.43	200			

Well 9 (area 1) (*777, p. 49; 817, p. 37; 840, p. 56-62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172). J. J. Gouveia, Kapahulu Road, Honolulu.

Feb. 3	25.91	52	May 28	26.70	52	Oct. 22	26.32	54
27	26.13	49	July 14	26.40	53	Nov. 24	27.48	52
Mar. 24	26.52	53	Aug. 25	25.79	52	Dec. 28	27.15	50
Apr. 22	26.71	52	Sept. 24	25.59	50			

Well 81 (area 2) (*777, p. 49; 817, p. 37; 840, p. 56-62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172). A. Young. Young Street, Honolulu.

Feb. 3	28.49	36	May 28	28.05	39	Oct. 22	27.14	38
27	28.68	38	July 14	27.35	38	Nov. 24	27.63	37
Mar. 24	28.97	38	Aug. 25	26.94	38	Dec. 28	29.25	37
Apr. 22	28.85	38	Sept. 24	27.04	37			

Well 119 (area 3) (*777, p. 49; *817, p. 37; 840, p. 56-62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172). Honolulu Gas Co. in Honolulu.

Feb. 3	25.86	348	May 28	26.95	356	Oct. 22	.....	333
27	.....	353	July 23	25.47	356	Nov. 23	26.23	331
Mar. 26	26.94	361	Aug. 25	25.74	340	Dec. 28	26.75	324
Apr. 25	26.92	345	Oct. 1	25.35	330			

Well 153 (area 4) (*777, p. 50; 817, p. 37; 840, p. 56-62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173). S. Damon Estate. Moanalua Gardens, Honolulu.

Jan. 23	24.76	55	May 25	24.41	55	Oct. 22	23.88	57
Feb. 25	24.62	56	July 15	24.12	54	Nov. 24	24.77	55
Mar. 24	24.88	56	Aug. 25	23.88	55	Dec. 28	25.53	52
Apr. 22	24.89	55	Sept. 24	23.96	53			

Well 187B (area 6) (*817, p. 37; 840, p. 56-62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173). U. S. Navy. Near Aiea railroad station.

Jan. 3	20.14	...	Mar. 24	.....	101	Aug. 25	.....	111
14	20.06	...	Apr. 23	20.06	107	Sept. 23	18.96	103
23	19.56	93	May 26	19.46	101	Oct. 8	19.16	...
Feb. 7	19.46	...	July 8	19.36	...	22	.....	121
24	19.76	101	14	.....	113	Nov. 17	20.66	123
Mar. 12	20.06	...	Aug. 24	19.36	...	Dec. 28	.....	126
21	19.96	...						

Well 190 (area 6) (*777, p. 51; *817, p. 37; 840, p. 57-62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173). C. B. Cooper. Half a mile west of Aiea.

Jan. 23	19.76	51	May 25	19.76	51	Oct. 22	19.33	53
Feb. 25	20.04	50	July 14	19.49	56	Nov. 24	20.53	51
Mar. 24	20.51	51	Aug. 25	19.38	88	Dec. 28	21.89	53
Apr. 22	20.08	56	Sept. 24	19.17	56			

Artesian head, in feet, and chloride, in parts per million, in typical wells in Oahu, 1942

Well 193 (area 6) (*777, p. 51; 817, p. 38; 840, pp. 57-62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173). L. L. McCandless Estate. Waimalu Valley, 1 mile northwest of Aiea.

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 23	18.83	114	May 25	18.80	116	Oct. 22	18.35	133
Feb. 25	19.15	115	July 14	18.56	118	Nov. 24	19.99	136
Mar. 24	19.83	113	Aug. 25	18.37	128	Dec. 28	21.36	135
Apr. 22	19.58	109	Sept. 24	18.26	122			

Well 201 (area 6) (*777, p. 52; 817, p. 38; 840, pp. 57-62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173). Bishop Estate in Pearl City.

Jan. 23	17.46	536	May 25	17.37	483	Oct. 22	17.17	542
Feb. 25	17.71	537	July 14	17.07	496	Nov. 24	18.77	557
Mar. 24	17.99	569	Aug. 25	16.99	519	Dec. 28	20.59	620
Apr. 22	17.75	564	Sept. 24	16.99	468			

Well 244 (area 6) (*777, p. 52; 817, p. 38; 840, pp. 57-62; 845, p. 58; 886, p. 84; 911, p. 140; 941, p. 173). Bishop Estate, in Waipahu.

Jan. 23	18.37	127	May 25	18.39	127	Oct. 22	18.38	125
Feb. 25	18.42	125	July 14	17.99	137	Nov. 24	20.62	126
Mar. 24	19.41	130	Aug. 25	17.78	123	Dec. 28	22.99	122
Apr. 22	20.00	130	Sept. 24	17.87	122			

Well 266 (area 6) (*777, p. 52; 817, p. 38; 840, pp. 57-62; 845, p. 58; 886, p. 84; 911, p. 140; 941, p. 173). Honouliuli Ranch. One and three-quarters miles northeast of Ewa.

Jan. 27	16.45	200	May 25	17.26	200	Oct. 22	16.31	208
Feb. 25	16.67	189	July 14	15.77	200	Nov. 24	19.05	192
Mar. 24	17.56	205	Aug. 25	15.68	208	Dec. 28	22.91	184
Apr. 22	16.72	202	Sept. 24	15.71	205			

Well 276 (area 11) (*817, p. 38; 840, pp. 57-63; 845, p. 58; *886, p. 84; *911, p. 140; 941, p. 174). Ewa Plantation Co. $4\frac{1}{2}$ miles west of Ewa. Records furnished by owner; figures are monthly averages.

Jan.	12.95	608	May	(a)	618	Sept.	12.22	617
Feb.	12.86	608	June	(a)	620	Oct.	12.60	603
Mar.	12.53	615	July	(a)	622	Nov.	13.41	546
Apr.	12.34	614	Aug.	12.12	618	Dec.	14.13	462

Well 286 (area 12) (*777, p. 54; 817, p. 38; 840, pp. 57-63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174). Waialua Agricultural Co. in Mokuleia.

Jan. 22	17.87	112	May 27	16.36	117	Oct. 23	17.74	115
Feb. 26	17.94	114	July 15	17.16	111	Nov. 25	17.59	126
Mar. 25	18.00	121	Aug. 26	17.18	126	Dec. 29	18.14	114
Apr. 23	17.86	124	Sept. 25	17.34	116			

Well 308 (area 12) (*777, p. 54; 817, p. 38; 840, pp. 57-63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174). J. F. Mendonca. $1\frac{1}{2}$ miles west of Waialua Mill.

Jan. 22	19.36	100	May 27	18.53	102	Oct. 23	19.42	99
Feb. 26	18.71	96	July 15	18.53	99	Nov. 25	19.21	95
Mar. 25	19.00	101	Aug. 26	18.37	107	Dec. 29	19.58	94
Apr. 23	18.49	97	Sept. 25	18.68	98			

Well 326 (area 7) (*777, p. 52; 817, p. 39; 840, pp. 58-63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174). Waialua Agricultural Co. About $1\frac{1}{2}$ mile south of Waialua.

a Pumping.

Artesian head, in feet, and chloride, in parts per million, in typical wells in Oahu, 1942--Continued

Well 326. Waialua Agricultural Co.--Continued.

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 22	11.54	70	May 27	10.52	69	Oct. 23	11.35	69
Feb. 26	10.70	69	July 15	10.49	71	Nov. 25	11.05	69
Mar. 25	11.04	73	Aug. 26	10.64	70	Dec. 29	11.66	69
Apr. 23	10.97	69						

Well 337 (area 8) (*777, p. 53; 817, p. 39; 840, pp. 58-63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174). Waialae Training School for Boys.

Jan. 22	13.46	138	May 27	13.16	142	Oct. 23	14.20	141
Feb. 26	13.72	139	July 15	13.04	142	Nov. 25	13.67	130
Mar. 25	13.34	135	Aug. 26	13.18	131	Dec. 29	13.97	136
Apr. 23	13.34	144	Sept. 25	13.76	135			

Well 356 (area 8) (*777, p. 53; 817, p. 39; 840, pp. 58-63; 845, p. 59; 886, p. 85; 911, p. 141; 941, p. 174). Kahuku Plantation Co. At Sugar mill in Kahuku.

Jan. 21	11.99	135	May 27	12.11	144	Oct. 23	13.55	157
Feb. 26	12.21	126	July 15	11.54	153	Nov. 25	14.67	148
Mar. 25	13.77	145	Aug. 26	11.48	152	Dec. 29	15.19	105
Apr. 23	13.05	145	Sept. 25	11.55	158			

Well 396 (area 8) (*777, p. 53; *817, p. 39; 840, pp. 58-63; 845, p. 59; 886, p. 85; 911, p. 141; 941, p. 174). Kahuku Plantation Co. in Hauula.

Jan. 21	20.05	54	May 27	21.14	49	Oct. 23	20.50	52
Feb. 26	20.30	55	July 15	20.77	53	Nov. 25	21.08	50
Mar. 25	20.97	55	Aug. 26	20.69	54	Dec. 29	21.98	47
Apr. 23	21.47	54	Sept. 25	20.54	52			

Well 405 (area 9) (817, p. 39; 840, pp. 58-63; 845, p. 59; 886, p. 85; 911, p. 141; *941, p. 174). M. E. Foster Estate in Kahana.

Jan. 21	18.16	40	May 27	19.78	40	Oct. 23	19.47	40
Feb. 26	18.31	41	July 15	19.28	39	Dec. 3	19.39	39
Mar. 25	19.00	41	Aug. 26	19.27	42	29	19.58	40
Apr. 25	19.99	41	Sept. 25	19.27	40			

Well 406 (area 10) (*777, p. 53; 817, p. 39; 840, pp. 58-63; 845, p. 59; *886, p. 85; 911, p. 141; 941, p. 175). F. M. Swanzy, in Kaaawa Valley.

Jan. 21	15.73	194	May 27	16.78	200	Oct. 23	16.88	191
Feb. 26	15.94	198	July 15	16.82	196	Nov. 25	16.82	187
Mar. 25	16.17	207	Aug. 26	16.95	206	Dec. 29	16.89	187
Apr. 23	16.42	213	Sept. 25	17.07	198			

Test boring Oahu T1 (tributary to area 12) (*845, p. 60; 886, p. 85; 911, p. 141; 941, p. 175). Waialua Agricultural Co. In Kauhonahua Gulch 4 miles south of Waialua.

Water levels, in feet, and chloride, in parts per million, in test borings in Oahu, 1942

Dec. 31	19.02	52	May 1	18.83	42	Sept. 1	17.48	52
Jan. 31	19.04	31	June 1	18.58	31	Oct. 1	17.42	52
Mar. 2	19.00	42	July 1	17.58	52	31	17.08	36
31	19.00	52	Aug. 1	17.70	42	Dec. 2	16.83	42

Test boring Oahu T2 (tributary to area 7) (*845, p. 60; 886, p. 85; 911, p. 142; 941, p. 175). Waialua Agricultural Co. near Anahulu Canyon. 3½ miles east of Haleiwa.

Dec. 31	6.74	156	May 1	6.83	156	Sept. 1	6.71	177
Jan. 31	8.47	187	June 1	5.51	166	Oct. 1	6.11	187
Mar. 2	8.22	166	July 1	5.70	177	31	6.46	145
31	6.68	156	Aug. 1	6.24	187	Dec. 1	6.16	156

Test boring T5 (tributary to area 11) (*886, p. 84; 911, p. 142; 941, p. 175). Suburban Water Works, Honolulu. 5 miles west of Ewa on main highway.

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 27	4.54	502	May 26	4.11	468	Sept. 28	4.56	498
Feb. 24	4.43	484	June 19	4.04	522	Oct. 26	4.62	543
Mar. 26	4.20	489	July 16	4.02	507	Nov. 27	4.80	438
Apr. 27	4.18	495	Aug. 27	4.18	615	Dec. 30	5.26	246

Test boring Oahu T15 (*911, p. 142; 941, p. 175). Suburban Water Works, Honolulu. 1.8 miles above mouth of Nanakuli Gulch.

Feb. 24	1.92	93	July 16	1.75	95	Oct. 26	1.87	97
Mar. 26	1.85	96	Aug. 27	1.78	94	Nov. 27	1.90	93
Apr. 27	1.90	97	Sept. 28	1.83	94	Dec. 30	2.28	95
May 26	1.83	96						

Test boring Oahu T20 (tributary to area 6). U. S. Navy. 1 mile south-east of Puu Makakilo and 2 miles northwest of Ewa, on southeast side of main highway to Waianae, between pavement and fence, near east side of concrete bridge. Latitude 21°21'36", longitude 158°3'45". Drilled in September 1942 by Nat Whiton. Depth 137 feet; diameter 6 inches; cased with 9 feet of 6-inch casing. Boring penetrated alluvium to 89.5 feet and Koolau basalt from 89.5 to 137.0 feet. Aquifer, Koolau basalt. Water level when finished, 16.9 feet, chloride content 231 parts per million. Well is not artesian. Bench mark, top of casing, altitude 139.5 feet. Regular measurements were begun in October 1942.

Oct. 26	17.18	255	Nov. 27	18.10	251	Dec. 30	18.93	226
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ISLAND OF MAUI

The water levels in the wells owned by the Hawaiian Commercial & Sugar Co. and the Maui Agricultural Co., on the windward side of the island, showed a net decline during 1942 of 0.05 to 0.44 feet, except for those in pumps 3, 4, and 7 of the Maui Agricultural Co., which rose slightly. Of the 6 wells of the Pioneer Mill Co., on the leeward side of West Maui, the water level in three showed a net rise, in two a net decline, and in one no change. The United States Navy completed a new Maui-type well at the Puunene airport.

The East Maui Irrigation Co. ditch deliveries to the Isthmus amounted to 62,524.96 million gallons for the year, or 17,495 million gallons less than in 1941. All pumps of the Hawaiian Commercial & Sugar Co. except one were started in January and shut down in December. One was started in May and shut down in November. The Maui Agricultural Co.'s pumping season started in January, and by the end of February all but two pumps were running. These two were started in July. Two pumps were shut down in November and the others in December. The pumping season of the Pioneer Mill Co. began in January and closed in November and December.

The data in the following table were furnished by R. E. Hughes, of the Hawaiian Commercial & Sugar Co.; H. J. Eby, of the Maui Agricultural Co.; and C. K. Brown, of the Pioneer Mill Co.

Chloride, in parts per million, and water levels and net change in static level, in feet, in Maui, 1942
(911, p. 143; 941, p. 176)

Location	Geol. Survey No. <u>a</u>	Chloride	Water level	
			Dec. 31	Gain or loss
Hawaiian Commerical & Sugar Co.:				
1 (Kihei)	14	565	4.50	-0.15
2	25	482	5.35	-.08
3	22	362	4.25	-.11
4	24	432	2.89	-.17
5	19	465	4.35	-.44
6	18	349	5.16	-.26
7	16	276	5.50	-.08
8	17	453	5.08	-.10
3 (Kihei)	15	397	6.67	-.23
Maui Agricultural Co.:				
Lower Paia				
(pumps 1, 5, and 6)	30	406	4.25	-.05
Kahaka (pumps 3 and 4)	27	166	5.42	+.17
Paia School (pump 7)	28	187	4.14	+.04
Mill (pumps 8 and 13)	29	229	4.90	(b)
Kuau (pump 12)	31	208	4.23	-.12
Pioneer Mill Co.:				
Kaanapali	3	629	2.30	-.10
Kahoma	5	275	2.90	-.43
Lahaina	9	825	2.70	+.46
Mill	7	923	3.49	+.74
Olowalu	10	410	3.60	.00
Ukumehame	12	459	6.15	+.75

Water levels, in feet, and chloride, in parts per million, in test borings, in Maui, 1942

(Measurements furnished by Wailuku Sugar Co.)

Test boring Maui T102 (Iao Valley) (*911, p. 144; 941, p. 176). Geological Survey. In Iao Valley 1 mile west of Wailuku.

Date	Water level	Chloride	Date	Water level	Chloride	Date	Water level	Chloride
Feb. 26	33.54	17	July 21	32.68	18	Oct. 20	36.56	43
June 8	32.67	17	Aug. 25	35.60	18	Nov. 19	36.23	18
26	33.10	18	Sept. 22	35.01	21	Dec. 17	35.21	18

Test boring Maui T110 d (Puu Hele) (*911, p. 143; 941, p. 177). Wailuku Sugar Co. 2 miles north of Maalaea.

Feb. 26	27.60	202	July 21	7.99	181	Oct. 20	7.20	116
June 3	8.10	222	Aug. 25	7.59	145	Nov. 19	5.23	112
26	7.02	197	Sept. 22	5.31	126	Dec. 17	5.31	112

ISLAND OF MOLOKAI

The water level in test boring T1 was higher during the period June to December 1942 than at any time previously. This was partly due to a stretch of 0.67 foot in the cable used for measuring the well.

a These are the numbers of the wells as given in Bulletin 7 of the Hawaii Division of Hydrography and on the new geologic map of Maui.

b No previous record.

c Sampler stuck in hole during March, April, and May.

d Formerly T2.

e No measurements made in March, April, or May.

The water level in the Connant well was lower in 1942 than at any time since measurements were begun, in 1938, ranging from 0.75 foot to 1.67 feet. In the Kamalo well the water level showed a slight net decline from its stage in 1941, ranging from 1.67 to 2.00 feet. The Ualapue well showed little change from the preceding year except in April and October, the water level of 4.58 feet, reached in April, is the highest on record for this well, and that of 4.08 feet, in October, is the lowest.

Test boring Molokai T1 (#845, p. 62; 886, p. 87; 911, p. 144; 941, p. 177). Geological Survey, U. S. Dept. of Interior. Three quarters of a mile east of airport.

Water level, in feet, and chloride, in parts per million, 1942
(Measurements made by Mitchell Pauole and Solomon Hanakeawe, Hawaiian Homes Commission)

Date	Water level	Chloride	Date	Water level	Chloride	Date	Water level	Chloride
Jan. 15	5.4	561	May 19	5.4	534	Sept. 15	6.1	548
Feb. 19	5.4	556	June 15	6.0	553	Oct. 15	6.1	574
Mar. 19	5.3	542	July 15	6.2	539	Nov. 15	6.1	569
Apr. 15	5.3	548	Aug. 15	6.1	555	Dec. 15	6.0	532

Water levels, in feet, in observation wells in Molokai, 1942
(Measurements made by Herbert Wilson)

Connant well (#845, p. 63; 886, p. 87; 911, p. 144; 941, p. 177). Half a mile inland from Kaunakakai.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15	1.67	Apr. 15	1.50	July 15	1.00	Oct. 15	1.00
Feb. 15	1.50	May 15	1.50	Aug. 15	1.25	Nov. 15	.92
Mar. 15	1.58	June 15	.92	Sept. 15	1.17	Dec. 15	.75

Kamalo well (#845, p. 63; 886, p. 87; 941, p. 177). Half a mile north-east of Kamalo wharf.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15	2.00	Apr. 15	2.00	July 15	2.00	Oct. 15	1.67
Feb. 15	1.92	May 15	1.92	Aug. 15	2.00	Nov. 15	1.67
Mar. 15	2.00	June 15	2.00	Sept. 15	1.83	Dec. 15	1.67

Ualapue well (#845, p. 63; 886, p. 87; 941, p. 177). Two and three-quarters miles east of Kamalo well.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15	4.42	Apr. 15	4.58	July 15	4.25	Oct. 15	4.08
Feb. 15	4.33	May 15	4.50	Aug. 15	4.33	Nov. 15	4.26
Mar. 15	4.50	June 15	4.42	Sept. 15	4.25	Dec. 15	4.33

ISLAND OF LANAI

The water level in Maunalei shaft 1 showed more variation than usual during 1942. In June its stage was 2.39 feet, which is the lowest since 1937, whereas in November its stage was 2.75 feet, which lacks only 0.03 foot of equalling the high level of 1940. Datum is mean sea level.

On June 15 a check of the cable used for measuring this well showed a stretch of 0.67 foot since November 1939. Measurement of Aug. 15, 1939, should have been 4.94 feet instead of 3.94 feet.

Maunalei shaft 1 (*817, p. 41; 840, p. 65; 845, p. 63; 886, p. 87; 911, p. 144; 941, p. 178). 4 miles north-northeast of Lanai City.

Water level, in feet, 1942

(Records furnished by Hawaiian Pineapple Co.)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	2.62	Apr. 1	2.61	July 2	2.42	Oct. 1	2.55
Feb. 1	2.69	May 1	2.51	Aug. 2	2.45	Nov. 1	2.75
Mar. 1	2.69	June 1	2.39	Sept. 1	2.50	Dec. 1	2.72

ISLAND OF HAWAII

The water level in the Olaa shaft showed a slight net rise during 1942. It ranged from a high of 19.25 feet, on March 20, to a low of 13.79 feet, on December 31. The water level in the Kaiwiki shaft was higher during the last half of the year than at any time in 1941, ranging from 6.96 feet on June 1 to 5.92 feet on December 2. Owing to excavation work, no measurements were made during the first half of the year. The well is being enlarged to supply water for washing sugar cane. The salt content did not change during the year.

A Maui-type well is being excavated at Paauilo by the Hamakua Mill Co. to obtain water for washing mechanically harvested sugar cane.

Olaa shaft (*817, p. 42; 840, p. 66; 845, p. 64; 886, p. 88; 911, p. 145; 941, p. 178).

Water level, in feet, 1942

(Records furnished by George Duncan, Olaa Sugar Co., Ltd.)

Jan. 2	16.42	Apr. 3	18.75	July 3	15.78	Oct. 2	14.54
9	16.25	10	18.33	10	15.50	9	14.67
16	16.00	17	18.29	17	15.29	16	14.68
23	15.83	24	18.33	24	15.21	23	14.78
30	15.68	May 1	18.09	31	15.11	30	14.71
Feb. 6	15.42	8	18.03	Aug. 7	14.86	Nov. 6	14.67
13	15.17	15	17.96	14	14.81	13	14.50
20	14.92	22	17.67	21	14.67	20	14.57
27	14.83	29	17.46	28	14.69	27	14.34
Mar. 6	14.50	June 5	17.08	Sept. 4	14.65	Dec. 4	14.19
13	18.33	12	16.78	11	14.58	11	14.00
20	19.25	19	16.50	18	14.73	18	13.90
27	18.54	26	16.12	25	14.65	25	13.79

Kaiwika shaft (*840, p. 66; 845, p. 64; 886, p. 88; 911, p. 145; 941, p. 178).

Water level, in feet, 1942
(Records furnished by A. Walker, Kaiwika Sugar Co. Unless otherwise indicated, measurements were made while one pump was operating)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 1	6.96	Sept. 10	a6.58	Oct. 14	6.67	Nov. 18	6.17
10	a6.58	17	6.25	21	6.50	25	6.37
Sept. 2	6.42	24	6.58	28	b6.62	Dec. 2	5.92
3	a6.17	Oct. 1	6.37	Nov. 3	a6.00	9	6.33
4	6.42	7	a6.25	11	6.50	11	6.08

ISLAND OF KAUAI

The artesian head and the chloride content in Kauai wells in general showed a slight decline in 1942 except in well 14N, in which the head was higher throughout the year than in the preceding year, owing to the fact that the well was not pumped as continuously as during 1941.

Well 43 has been discontinued as an observation well because of a leaky casing.

Artesian head, in feet, and chloride, in parts per million, in typical wells in Kauai, 1942

Well 2F (*840, p. 67; 845, p. 65; 886, p. 88; 900, p. 146; 941, p. 179). In Kealia. (Records furnished by East Kauai Water Co.).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 21	10.20	44	May 19	9.47	41	Sept. 24	9.90	42
Feb. 23	10.01	43	June 20	9.66	40	Oct. 22	9.99	39
Mar. 23	9.99	43	July 22	9.98	41	Nov. 24	10.09	39
Apr. 18	9.47	42	Aug. 22	9.77	45	Dec. 19	9.96	39

Well 7 (*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179). In Wailua. (Records furnished by Lihue Plantation Co.).

Jan. 17	.....	127	May 15	.....	124	Sept. 15	.....	124
Feb. 17	.....	127	June 16	.....	132	Oct. 15	.....	129
Mar. 16	.....	132	July 14	.....	127	Nov. 17	.....	128
Apr. 16	.....	126	Aug. 17	.....	127	Dec. 15	.....	122

Well 8 (*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179). (Records furnished by Lihue Plantation Co.).

Jan. 17	12.70	100	May 15	12.26	100	Sept. 15	11.61	114
Feb. 17	12.53	95	June 16	12.15	104	Oct. 15	11.75	118
Mar. 16	12.37	103	July 14	11.60	99	Nov. 17	12.05	99
Apr. 16	12.39	99	Aug. 17	11.75	114	Dec. 15	11.95	97

Well 14N (*840, p. 68; 886, p. 89; 911, p. 146; 941, p. 179). In Koloa. (Records furnished by Koloa Sugar Co.).

Feb. 14	30.35	42	July 27	c16.69	42	Oct. 22	c13.52	43
Mar. 11	30.19	42	Aug. 25	c17.52	42	Nov. 26	30.35	40
Apr. 30	30.52	42	Sept. 26	c31.44	42	Dec. 29	31.10	40
June 25	c17.35	42						

a Two pumps operating.

b No pumps operating.

c Pumps operating.

Artesian head, in feet, and chloride, in parts per million, in typical wells in Kauai, 1942--Continued

The chloride content for well 14N in 1941 as published in Water-Supply Paper 941 is in error. The correct figures follow.

Date	Chloride	Date	Chloride	Date	Chloride	Date	Chloride
Jan. 30	44	Apr. 28	44	July 30	45	Oct. 30	44
Feb. 27	44	May 30	44	Aug. 29	44	Nov. 27	42
Mar. 28	44	June 26	44	Sept. 29	44	Dec.	..

Artesian head, in feet, and chloride, in parts per million, in Kekaha Sugar Co.'s wells, Kauai, 1942

Well 35 (*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179). Near Kekaha.

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan.	....	...	May 16	10.17	231	Sept.	....	...
Feb. 16	10.02	212	June 15	10.17	358	Oct.	....	...
Mar. 18	9.72	249	July 17	9.56	358	Nov.	....	...
Apr. 16	10.47	212	Aug. 15	9.57	352	Dec.	....	...

Well 37 (*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179). 4 miles northwest of Kekaha.

Jan.	10.28	152	May 16	9.82	170	Sept.	....	...
Feb. 16	10.28	103	June 15	9.98	182	Oct.	....	...
Mar. 18	10.13	109	July 17	9.39	182	Nov.	....	...
Apr. 16	9.93	212	Aug. 15	9.50	173	Dec.	....	...

Well 56 (*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 180). 7½ miles northwest of Kekaha.

Jan.	9.72	218	May 16	....	...	Sept.	....	...
Feb. 16	9.72	225	June 15	9.12	243	Oct.	....	...
Mar. 18	9.62	225	July 17	9.12	231	Nov.	....	...
Apr. 16	9.57	225	Aug. 15	9.07	231	Dec.	....	...

PUMPAGE

The following table gives the draft from all large ground-water pumping plants in the Territory of Hawaii. The draft from individual wells on Oahu, which is not included, is estimated to be about 25 million gallons a day. The total pumpage during 1942 was 184,462.67 million gallons. This was 20,238.21 million gallons less than in 1941.

The numbers in parentheses in the records for Maui and Oahu are those used by the Federal Geological Survey for the wells or other recovery devices.

Ground-water draft, in millions of gallons, in Territory of Hawaii, 1942
(Data furnished by owners)

Island of Hawaii			Island of Hawaii--Continued	
Kaiwika Sugar Co.		a75.50	Olaa Sugar Co.	1,318.18
Kohala Sugar Co.				191.00
Hoea pump	0.00		Total	1,584.68
Kohala pump	1,163.32			
Waikane pump	154.86	1,318.18		

Estimated.

Ground-water draft, in millions of gallons, in Territory of
Hawaii, 1942--Continued
(Data furnished by owners)

Island of Kauai a/		Island of Maui--Continued	
County of Kauai		Pioneer Mill Co.	
Waimae waterworks	137.87	Pump A (9),	2,181.84
Hanapepe waterworks	86.68	Lahaina	
	224.55	Pump B (8),	1,732.87
Kekaha Sugar Co.		Lahaina	
Wells 3-6, 12-14	(b)	Pump C (7),	369.37
16, and 19		Mill	
Well 9	630.00	Pump D (3),	1,260.33
Wells K-1 to K-5	627.00	Kaanapali	
Wells M-1 to	1,368.00	Pump E (9),	220.39
M-12		Lahaina	
Kekaha pump	730.00	Pump F (2),	810.04
Mana pump	118.00	Honokowai	
Waiawa pump	603.00	Pump G (4),	614.24
	4,076.00	Hahakea	
Koloa Sugar Co.	144.22	Pump H (3),	1,752.04
(3 pumps)		Kaanapali	
Lihue Plantation Co.		Pump L (6),	329.41
Shaft	c146.00	Wahikuli	
Kealia wells	c146.00	Pump M (5),	1,660.64
	562.00	Kahoma	
Total	5,006.77	Pump N (10),	660.39
		Olowalu	
Island of Lanai		Pump O (11),	121.89
Hawaiian Pineapple Co.		Olowalu	
Tunnels 1 and 2	130.33	Pump P (12),	448.70
Shaft 2	55.30	Ukumehame	13,162.15
	185.63	Total	56,573.83
Island of Maui		Island of Molokai	
Hawaiian Commercial & Sugar Co.		Estimate	1.00
Pump 1 (14), Kihei	528.34	Island of Oahu	
Pump 2 (25)	3,817.75	Ewa Plantation Co.	
Pump 3 (22)	2,809.50	Pump 1 (268)	1,754.00
Pump 4 (24)	2,402.75	Pump 2 (257)	1,049.00
Pump 5 (19)	1,651.83	Pump 3 (264)	3,623.00
Pump 6 (18)	4,493.54	Pump 4 (264)	3,317.00
Pump 7 (16)	4,530.52	Pump 5 (259)	2,522.00
Pump 8 (17)	3,778.67	Pump 6 (259)	2,999.00
Pump 3 (15),	4,897.55	Pump 7 (263)	1,639.00
Kihei		Pump 8 (270)	352.00
Central power	2,548.23	Pump 9A(273)	623.00
plant (20)	31,458.68	Pump 9B(273)	0.00
		Pump 9C(273)	872.00
Maui Agricultural Co.		Pump 9D(273)	0.00
Lower Paia (30),	2,298.00	Pump 9E(273)	443.00
pumps 1, 5, and		Pump 10(276)	2,694.00
6		Pump 11(276)	1,683.00
Kaheka (27),	2,349.00	Pump 12(276)	1,460.00
pumps 3 and 4		Pump 13(276)	2.00
Pump 7 (28)	2,003.00	Pump 15	3,583.00
Maliko (32),	945.00	(shaft 3)	
pumps 10 and		Pump 16 (dug	5,067.00
11		well 16)	
Pump 12 (31)	736.00		
Mill (29), pumps	3,622.00		
8 and 13	11,953.00		

a McBryde Sugar Co. not included. Three pumps in Hanapepe Valley and one pump at Lawai Valley pump ground and surface water. It is not possible to separate them.

b Pumping discontinued.

c Estimated.

Ground-water draft, in millions of gallons, in Territory of
Hawaii, 1942--Continued
(Data furnished by owners)

Island of Oahu--Continued		Island of Oahu--Continued	
Ewa Plantation Co.--Continued		Kahuku Plantation Co.--Continued	
Pump 20 (dug well 20)	854.00	Pump 17 (362)	104.07
Pump 21 (dug well 21)	569.00	Pump 20 (377)	500.13
Pump 22 (dug well 22)	445.00	Pump 23 (387)	60.08
Pump 23 (dug well 23)	3,236.00	Pump 25 (373)	64.96
Pump 24 (dug well 24)	863.00	Pump 26 (392)	123.76
Pump 25 (254)	386.00	Pump 27 (396)	.86
	40,035.00	Mill pump (355)	911.09
Hawaii Electric Co.			8,175.28
Wells & tunnel (199-1 and shaft 8)	4,127.00	Oahu Sugar Co.	
Kaluaoopu Spring	3,285.00	Pump 1 (247)	2,482.18
	7,412.00	Pump 2 (249)	2,597.51
Honolulu Board of Water Supply		Pump 3 (249)	1,619.42
Kalihi Station (shaft 6)	2,249.00	Pump 4 (248)	1,522.32
Waialea Station (shaft 7)	221.00	Pump 4B (tunnel)	0.00
Kaimuki Station (7)	2,021.00	Pumps 5 and 5B (274)	2,997.86
Beretania Station (88)	2,565.00	Pump 6 (239)	2,423.03
Kalihi Station (128)	1,475.00	Pump 6B (239)	0.00
	8,531.00	Pump 7 (246)	3,282.74
Honolulu Plantation Co.		Pumps 8 and 8A (Waialea Spring)	1,414.36
Pump 1 (185)	1,802.40	Pump 9 (Waialea Spring)	823.15
Pump 2 (196)	1,330.45		19,162.57
Pump 3 (186)	2,759.40	Private wells in Honolulu	d4,773.00
Pump 4 (197)	2,391.79	U. S. Army	
Pump 5 (189)	1,953.56	Schofield (shaft 4)	1,486.47
Pump 6 (Kalawao Spring)	582.66	Kahuku air base	c 10.04
Pump 16 (199-1)	a3,309.20		1,496.51
	14,129.46	U. S. Navy	
Honolulu Rural Water Works		Aiea (shaft 5)	3,055.89
Lualualei (shaft 2)b/	82.17	Aiea wells (187)	1,130.04
Kahuku Plantation Co.		Red Hill (shaft 11)	1,169.50
Pump 1 (353)	802.97		5,355.43
Pump 2 (341)	1,819.32	Waialea Training Schoolc/	39.42
Pump 3 (362)	1,456.12	Waialua Agricultural Co.	
Pump 5 (352)	1,440.32	Pump 1 (321)	1,046.79
Pump 6 (362-1)	274.67	Pump 2 (322)	3,360.54
Pump 7 (363)	139.23	Pump 3 (331)	2,600.81
Pump 8 (357)	266.16	Pump 4 (334)	645.26
Pump 12 (361)	113.31	Pump 5 (285)	810.29
Pump 14 (338)	c 40.60	Pump 6 (298, 299, 301 and 301)	310.15
Pump 15 (348)	57.63	Pump 7 (324)	339.85
		Pump 8 (329)	124.55
		Pump 9 (327)	15.34
		Pump 10 (323)	1,108.56
		Pump 11 (296)	128.37
		Pump 12 (332)	5.08
		Mill (319)	2,864.85
		Pump 13 (328)	7.31

a Includes an inseparable amount from Kaluaoopu Spring, obtained from Hawaiian Electric Co.

b This shaft was pumped by the Waianae Co. for irrigating sugar cane, under an agreement whereby the Rural Water Works receives water from the mountain tunnels in exchange.

c Estimated.

d Includes pumpage from wells belonging to military establishments in Honolulu.

e Not included in previous pumpage data.

Ground-water draft, in millions of gallons, in Territory of
Hawaii, 1942--Continued
(Data furnished by owners)

Island of Oahu--Continued		Island of Oahu--Continued	
Waialua Agricultural Co.--Continued		Waialua Agricultural Co.--Continued	
Pump 15 (317)	34.07	Keekee (dug well 6)	25.68
Pump 16 (316)	107.73	Pahoa (dug well 7)	104.38
	13,509.53	Kahoolanakio	
Waianae Co.		(dug well 10)	52.04
Puko (dug well 1)	102.49	Kamaila (277)	754.13
Makaha (dug well 1B)	57.39	Shaft 17 (shaft 1)	199.78
Makaha (dug well 2)	61.60	Makaha wells (a)	
Lehano (dug well 3)	78.00	(277-9)	
Kuaiwa (dug well 4)	28.17	Mill	222.59 1,718.59
Paheshee (dug well 5)	32.34	Total	b 121,110.76
		Grand total	184,462.67

a No record.

b The amount withdrawn by pump 16 of the Honolulu Plantation Co. is not included in the total pumpage in Oahu because it boosts water already listed under Hawaiian Electric Co. well.

NEW MEXICO

INTRODUCTION

By C. V. Theis

PROGRESS OF WORK

Work on the investigation of ground-water resources in New Mexico was continued in 1942 by the Geological Survey, United States Department of the Interior, in cooperation with the State engineer. The program of water-level measurements was carried on as in previous years except that, owing to the press of war work, the measurements were made at somewhat irregular intervals. In all, 2,148 measurements were made during the year.

FLUCTUATIONS IN WATER LEVEL

In the eastern part of the State the year 1942 was marked by a readjustment of water levels following the very heavy precipitation of 1941. In Portales Valley, Roosevelt County, and in the House area, Quay County, water levels declined somewhat in the areas in which they rose considerably the preceding year and rose somewhat in areas in which they rose but little in that year. In northern Lea County, where there are few pumps, rises in water level that began in 1941 continued in 1942. In the pumped areas the water levels declined. The shallow water table in the Roswell artesian basin declined in the heavily pumped areas but rose slightly in the margins of those areas. The artesian head of the water in the San Andres limestone in the Roswell artesian basin at the end of 1942 was at about the same level as at the end of the previous year. Water levels in the outcrop area of the San Andres rose during the year.

In most of the heavily pumped Deming area, in the southwestern part of the State, water levels declined during the year, indicating withdrawals of water in excess of recharge. This is not indicated, however, in a small part of this area, west of Deming, where wells had been deepened within the last 2 years, following the completion of a test well drilled by the State engineer. The test well showed the presence of additional aquifers, below

those commonly tapped, carrying water under greater head than the shallower aquifers. It seems clear that in this part of the Deming area there has been a readjustment of head tending to equalize it in the two sets of aquifers, for the water level in the deeper wells has declined, while that in the neighboring, shallower wells has risen.

WELL DESCRIPTIONS, RECORDS OF ARTESIAN HEAD, AND WATER-LEVEL MEASUREMENTS

Most observation wells in New Mexico are listed under the counties in which they are situated and numerically within each county. Artesian wells in the Roswell artesian basin and in the artesian-intake area of that basin, however, are listed by name under the heading "Chaves and Eddy Counties." Complete descriptions are given only for newly added wells. The numbers in parentheses immediately following a well number or name indicate the water-supply papers in which earlier records of that well are given and the pages on which they appear. The artesian head, in the six wells for which it is given, is expressed in feet above mean sea level. Nearly all water levels reported for New Mexico are expressed in feet and referred to land-surface datum. This datum corresponds to the actual land surface as closely as that surface can be determined and is referred to fixed points in the vicinity in order to fix its position definitely. The surface features of pumping and other wells in New Mexico are frequently changed, and it is impossible to maintain fixed and assumed points from which the water levels can be measured. It is therefore convenient to set an arbitrary datum independent of any one point, to which the level of the water of the well can be referred. The land-surface datum makes it possible to give directly the depth to water, which is one of the primary features of interest about a well.

WELL-NUMBERING SYSTEM

The system of numbering wells in New Mexico used in this report, except for Hidalgo and Sierra Counties, is based on the common land subdivisions and serves a dual purpose: it both designates the well and locates it to the nearest 10-acre tract. The number is divided into four segments by periods. The first segment denotes the township, south or north of the New Mexico base line; the second denotes the range east or

west of the New Mexico principal meridian; and the third is the number of the section. In general, the direction north or south of the base line or east or west of the meridian is not given, inasmuch as no confusion can arise for any one county with the exception of Roosevelt County. An N is added after the first number in this county if the township is north of the base line; if no letter is given the township is south of the base line. The fourth segment of the number gives the 10-acre tract in the section. The section is divided into four quarters numbered 1, 2, 3, and 4, for the northwest, northeast, southwest, and southeast quarters respectively, numbered thus in the normal reading order. The first digit of the last segment gives the quarter. Similarly the quarter is divided into four 40-acre tracts numbered in the same manner, and the second digit denotes the 40-acre tract. Finally, the 40-acre tract is divided into four 10-acre tracts in the same manner, and the third digit denotes the 10-acre tract. Thus, well 12.36.24.123 in Lea County is located in ~~SW 1/4 NE 1/4~~ sec. 24, T. 12 S., R. 36 E. If a well cannot be located accurately to a 10-acre tract, a zero is used as the third digit, and if it cannot be located within a definite 40-acre tract, zeros are used for both the second and third digits. If it cannot be located more closely than the section, the fourth segment is omitted. In Water-Supply Paper 911 and previous water-supply papers, the digits corresponding to unknown smaller tracts were simply omitted, but some confusion in cataloging arose from this practice. Wells with numbers in Water-Supply Paper 941 and this paper whose last segment ends in one or two zeros correspond to wells whose numbers in Water-Supply Paper 911 and earlier papers are the same except for the omission of the last one or two zeros. Letters a, b, c, are added to the last segment for the second, third, fourth and succeeding wells in the same 10-acre tract.

The following diagram shows the method of numbering the tracts within the section:

111	112	121	122	211	212	221	222
— (1) —	—	— (2) —	—	— (1) —	—	— (2) —	—
113	114	123	124	213	214	223	224
131	132	141	142	231	232	241	242
— (3) —	—	— (4) —	—	— (3) —	—	— (4) —	—
133	134	143	144	233	234	243	244
311	312	321	322	411	412	421	422
— (1) —	—	— (2) —	—	— (1) —	—	— (2) —	—
313	314	323	324	413	414	423	424
331	332	341	342	431	432	441	442
— (3) —	—	— (4) —	—	— (3) —	—	— (4) —	—
333	334	343	344	433	434	443	444

CHAVES AND EDDY COUNTIES (ROSWELL ARTESIAN BASIN)

By P. Donald Akin

The program of inventorying water levels and artesian head in the Roswell artesian basin was continued in 1942 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Most of the Roswell artesian basin lies in Chaves County, but a considerable part lies in northern Eddy County.

The first intensive investigation by the Federal Geological Survey of the artesian water resources of the Roswell artesian basin was begun by A. G. Fiedler and S. S. Nye in 1925, and an intensive investigation of the shallow ground-water resources of the basin was begun by A. M. Morgan in 1937. The findings of these investigations have been published in Geological Survey Water-Supply Paper 639 and in the 7th to 13th Biennial Reports of the State engineer of New Mexico. Data on artesian head have been published in Water-Supply Papers 777, 817, 840, 845, 886, 911, and 941. Data on shallow-water levels have been published in Water-Supply Papers 845, 886, 911, and 941.

The precipitation in 1942 at Roswell, as reported by the United States Weather Bureau, was 14.77 inches, which is nearly equal to the normal precipitation of 14.94 inches. The precipitation in May and June was more than 1 inch below normal for each month, and the precipitation in April, August, and December was more than 1 inch above normal for each month.

All the data necessary for a thorough-going estimate of the amount of ground water used in the Roswell artesian basin in 1942 are not yet

available. Preliminary data indicate that an additional 1,000 acres of land were brought under irrigation with shallow ground water in 1942. The acreage irrigated with artesian water in 1942 remained nearly the same as in previous years. The total area irrigated was about 105,500 acres, of which 57,100 acres was irrigated with artesian water, 32,300 acres with shallow ground water, and 16,100 with surface water. These figures include lands using water from two or more sources, the acreage of such lands being distributed proportionally among the several sources.

Although as the precipitation was about normal in 1942, the average depth of shallow ground water used was less than the 2.8 feet used in 1939 and 1940, or about 2.2 feet. The average use of flowing artesian water appears to have been about the same as the amount of shallow water used per acre, despite the fact that pressure was much higher. The Orchard Park and Artesia observation wells showed unusually large draw-downs during the summer. If it is tentatively assumed that 2.2 acre-feet of water per acre was used on lands irrigated with shallow water and the same amount used on lands irrigated with artesian water, about 71,000 acre-feet of shallow water and about 125,600 acre-feet of artesian water were used in the basin.

ARTESIAN WELLS

Six continuous water-stage recorders were operated in 1942 over artesian observation wells distributed throughout the basin. The records obtained from these wells were used to compute the mean monthly and mean yearly artesian heads, as has been done in previous years. The mean monthly heads are computed from the recorder records by the following procedure: The daily maximum and daily minimum heads are obtained from the recorder charts by inspection, missing days being interpolated. Mean monthly maximum and mean monthly minimum heads are then computed by averaging the daily maximum and daily minimum heads for the month. The mean monthly head is then considered to be the average of the mean monthly maximum and the mean monthly minimum heads. The mean annual head is the average mean monthly head for the year.

Records of artesian head

Berrendo well (*777, p.112; 817, p.196; 840, p.254; 845, p.281; 886, p.377; 911, p.153; 941, p.187). SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 9, T. 10 S., R. 24 E. Beginning of record: June 1926. Extremes: Highest mean annual water level, 3,571.8 feet (1942). Lowest mean annual water level, 3,563.0 feet (1940). Highest mean monthly water level, 3,574.8 feet (December 1926). Lowest mean monthly water level, 3,560.0 feet (August 1940).

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	25	3,573.7	June	30	3,570.2	Oct.	31	3,572.6
Feb.	28	3,573.8	July	31	3,568.9	Nov.	30	3,573.3
Mar.	31	3,572.9	Aug.	23	3,567.9	Dec.	31	3,573.6
Apr.	30	3,571.6	Sept.	30	3,571.3	Annual	351	3,571.8
May	31	3,571.7						

Berrendo-Smith well (*911, p.153; 941, p.187). NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 10 S., R. 24 E. Beginning of record: June 1940. Extremes: Highest mean annual water level, 3,571.0 feet (1942). Lowest mean annual water level, 3,566.2 feet (1941). Highest mean monthly water level, 3,573.9 feet (Jan. 1942). Lowest mean monthly water level, 3,577.9 feet (Aug. 1940).

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Jan.	31	3,573.9	June	30	3,568.0	Oct.	31	3,572.6
Feb.	28	3,573.7	July	31	3,567.2	Nov.	30	3,573.5
Mar.	31	3,572.4	Aug.	31	3,566.2	Dec.	31	3,573.9
Apr.	30	3,570.1	Sept.	30	3,570.7	Annual	365	3,571.0
May	31	3,570.2						

Mountain View well (*911, p.153; 941, p.187). NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 11 S., R. 24 E. Beginning of record: July 1940. Extremes: Highest mean annual water level, 3,569.6 feet (1942). Lowest mean annual water level, 3,564.2 feet (1941). Highest mean monthly water level, 3,573.6 feet (Jan. 1942). Lowest mean monthly water level, 3,553.4 feet (Aug. 1940).

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Jan.	31	3,573.6	June	30	3,566.4	Oct.	31	3,571.1
Feb.	28	3,573.3	July	19	3,564.7	Nov.	30	3,572.5
Mar.	31	3,571.5	Aug.	31	3,563.5	Dec.	31	3,573.1
Apr.	30	3,568.9	Sept.	30	3,568.3	Annual	353	3,569.6
May	31	3,568.9						

Orchard Park well (*777, p.112; *817, p.196; 840, p.254; 845, p.282; 886, p.378; 911, p.154; 941, p.188). Beginning of record: August 1925. Extremes: Highest mean annual water level, 3,528.1 feet (1942). Lowest mean annual water level, 3,516.1 feet (1940). Highest mean monthly water level, 3,544.0 feet (Jan. 1942). Lowest mean monthly water level, 3,501.7 feet (Aug. 1940).

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Jan.	22	3,544.0	June	30	3,514.8	Oct.	22	3,536.3
Feb.	28	3,540.8	July	31	3,513.5	Nov.	30	3,539.0
Mar.	31	3,531.6	Aug.	17	3,511.8	Dec.	25	3,539.3
Apr.	30	3,519.4	Sept.	30	3,526.3	Annual	327	3,528.1
May	31	3,520.2						

Greenfield well (*911, p.154; 931, p.188). NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 13 S., R. 25 E. New measuring point, top of casing, 3,537.68 feet above mean sea level and 13.92 feet above land-surface datum. Beginning of record: May 1940. Extremes: Highest mean annual water level, 3,517.5 feet (1941). Lowest mean annual water level, 3,516.4 feet (1942). Highest mean monthly water level, 3,535.4 feet (Jan. 1942). Lowest mean monthly water level, 3,485.0 feet (Aug. 1940).

NEW MEXICO, CHAVES AND EDDY COUNTIES, ARTESIAN WELLS

Greenfield well (*911,p.154; 941,p.188)--Continued.

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	24	3,535.4	June	30	3,500.0	Oct.	31	3,525.1
Feb.	28	3,531.6	July	24	3,498.2	Nov.	30	3,529.0
Mar.	23	3,519.3	Aug.	31	3,498.3	Dec.	31	3,529.9
Apr.	30	3,504.5	Sept.	30	3,515.6	Annual	343	3,516.4
May	31	3,509.6						

Artesia well (*777,p. 113; 817,p.196; 840,p.254; *845,p.282; 886,p.378; 911,p.154; 941,p.188). New measuring point, top of casing, 3,403.02 feet above mean sea level and 8.52 feet above land-surface datum. Beginning of record: April 1931. Extremes: Highest mean annual water level, 3,391.9 feet (1942). Lowest mean annual water level, 3,376.0 feet (1940). Highest mean monthly water level, 3,401.9 feet (Dec. 1942). Lowest mean monthly water level, 3,365.0 feet (Aug. 1940).

Mean monthly and mean annual artesian head, in feet
above sea level, 1942

Jan.	29	3,401.2	June	30	3,383.6	Oct.	29	3,397.6
Feb.	27	3,400.9	July	31	3,381.0	Nov.	30	3,400.6
Mar.	18	3,392.7	Aug.	21	3,378.3	Dec.	31	3,401.9
Apr.	28	3,386.1	Sept.	30	3,390.9	Annual	335	3,391.9
May	31	3,388.3						

Fluctuations in artesian head

The water-level fluctuations in the artesian recorder wells followed the same general pattern in 1942 as in the years prior to 1941. The water levels were high in January and February, before general irrigation began. As soon as irrigation began the water levels started to decline and they continued to decline generally until August. At the end of the heavy irrigation season in August, the water levels began to rise and rose more or less steadily throughout the remainder of the year.

In the Berrendo and Berrendo-Smith wells, at the north end of the irrigated area, the water levels recovered after the irrigation season to about the January stages, and in the Artesia well, the southernmost of these observation wells, the mean monthly water level was 0.7 foot higher in December than in the previous January. The seasonal draw-down of the water levels in the Berrendo and Berrendo-Smith wells during the summer was about the same as in previous years, but in the Artesia well it was much greater, probably indicating an abnormal summer draft for irrigation in that part of the area in 1942.

In the other wells the recovery of the water level was not complete. In the Mountain View well the mean monthly water level was about 0.5 foot lower in December than it was in the previous January. The seasonal draw-down in 1942 was about the same as in 1940. In the Orchard Park well the

mean monthly water level in December was 4.7 feet lower than in the previous January. The summer draw-down was somewhat greater in 1942 than it had been in previous years. In the Greenfield well the mean monthly water level in December was 5.5 feet lower than in the previous January.

WELLS IN THE ARTESIAN-INTAKE AREA

Monthly water-level measurements were begun in 1940 in six wells near the eastern edge of the principal intake area for the Roswell artesian basin and measurements were continued in these wells through 1941. In 1942, water levels were measured monthly in five of the wells. Measurements in the Fite community well were abandoned in 1942 and in its stead the McAuliffe well, in the same general area, was measured monthly from May to the end of the year.

The water levels in all the wells in which measurements were made continuously throughout 1942, except the J. Herbst well, were higher in December than in January. In the J. Herbst well, the water level seems to be affected to some extent by stream flow in the Hondo River, which is near the well, and in consequence was 0.96 foot lower in December than in January. The water levels in all the wells were 8 to 13 feet higher in December 1942 than in January 1941.

Water-level measurements

R. H. Rosenberg well (*941, p. 189). NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 30, T. 10 S., R. 23 E.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	239.70	Apr. 18	238.85	July 17	240.02	Oct. 9	240.07
Feb. 6	238.79	May 21	239.14	Aug. 14	240.64	Nov. 9	239.10
Mar. 9	238.70	June 22	239.67	Sept. 9	240.72	Dec. 10	238.72

J. Herbst well (*941, p. 189). NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 5, T. 12 S., R. 23 E.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	229.26	Apr. 18	226.85	July 17	227.96	Oct. 9	229.54
Feb. 16	229.40	May 21	225.76	Aug. 14	229.78	Nov. 9	229.58
Mar. 9	229.55	June 22	226.47	Sept. 9	229.54	Dec. 10	230.22

Diamond A Cattle Co. well (*941, p. 189). SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 14 S., R. 23 E.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	261.00	Apr. 18	259.75	July 17	259.96	Oct. 9	259.71
Feb. 16	260.05	May 21	259.83	Aug. 14	260.33	Nov. 9	258.99
Mar. 9	259.77	June 22	259.88	Sept. 9	260.17	Dec. 10	258.56

D. W. Runyan well (*941, p. 189). SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 16 S., R. 23 E.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	218.40	Apr. 18	217.12	July 17	216.27	Oct. 9	215.19
Feb. 16	217.09	May 21	216.55	Aug. 14	216.33	Nov. 9	214.41
Mar. 9	217.01	June 22	216.42	Sept. 9	215.86	Dec. 10	214.03

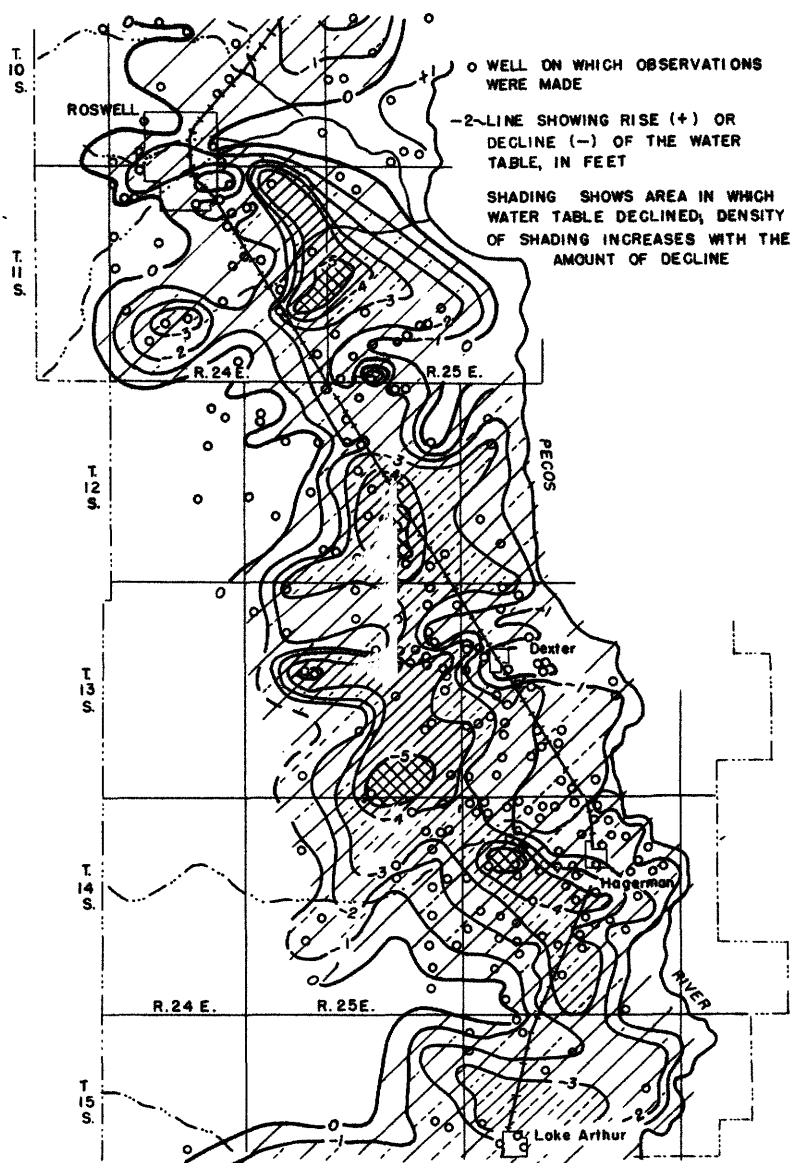


Figure 16.--Change in water level in northern part of Roswell Basin, Chaves County, N. Mex., from January 1942 to January 1943.

E. S. McAuliffe well. NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 18 S., R. 23 E. Abandoned oil test well. Diameter 12 $\frac{1}{2}$ for 400 feet, depth 1,079 feet. No equipment at well. Measuring point, top south edge of north 12- by 12-inch stringer over pit, level with land-surface datum.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 21	339.44	July 17	338.25	Sept. 9	345.26	Nov. 9	340.71
June 22	338.66	Aug. 14	338.06	Oct. 9	343.29	Dec. 10	339.44

Pite Community well (*941,p.189). NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 18 S., R. 23 E. Water levels, in feet below land-surface datum, 1942: Jan. 7, 395.41; Feb. 16, 394.49; Mar. 9, 396.60; Apr. 18, 398.52. Measurements discontinued.

C. R. Coffin well (*941,p.190). NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 27, T. 19 S., R. 23 E.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	370.94	Apr. 18	372.50	July 17	372.94	Oct. 9	370.68
Feb. 16	371.62	May 21	372.90	Aug. 14	371.37	Nov. 9	369.67
Mar. 9	372.17	June 22	373.07	Sept. 9	370.45	Dec. 10	370.90

SHALLOW WELLS

In order to observe the yearly water-level changes in the shallow wells in the Roswell artesian basin, 430 wells were measured in January and February of 1942. Of these, 6 were equipped with automatic water-stage recorders and 34 were measured at monthly or bimonthly intervals throughout the year in order to note the seasonal fluctuations in water level. Of the 430 wells measured, 303 are in Chaves County and 127 are in Eddy County. A total of 676 measurements was made during the year. Measurements were discontinued in 29 wells. Prior to September the measurements reported herein were made by Omar J. Loeltz, and the succeeding measurements were made by the writer.

Fluctuations in water level

The winter water-level measurements were used to draw maps showing the change in water level from January 1942 to January 1943. Figure 16 is a map showing the change in water level from January 1942 to January 1943 for the part of the Roswell artesian basin that is in Chaves County, and figure 17 is a similar map for the part of the basin that is in Eddy County. These maps show a general lowering of the water level during 1942 along the central part of the farming district from the vicinity of Roswell to about midway between Artesia and Dayton. The lowering ranged from a few hundredths of a foot to 7 feet, the larger declines being more or less localized in areas of heavy pumping near Roswell, in the vicinity of Orchard Park, west and northwest of Hagerman, south and west of Lake Arthur, and southwest of Artesia. Other declines occurred in smaller areas northeast

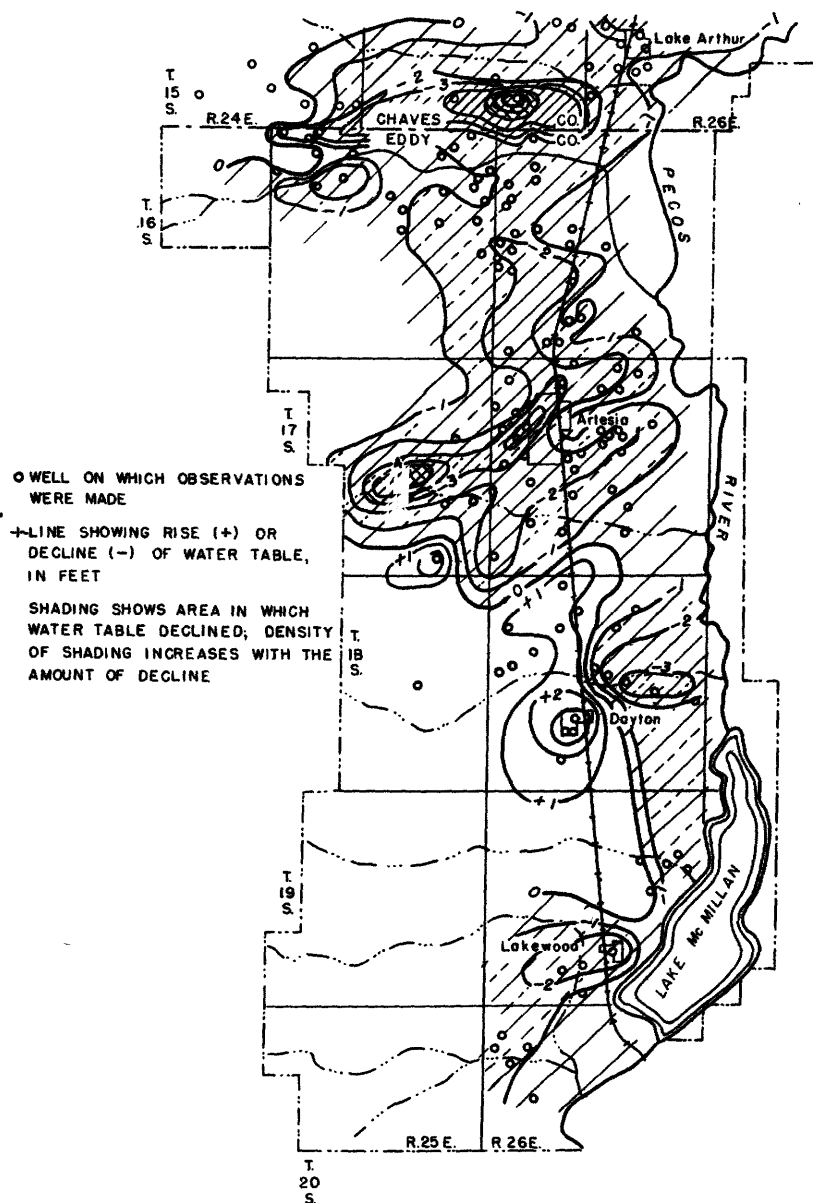


Figure 17.--Change in water level in southern part of Roswell Basin, Chaves and Eddy Counties, N. Mex., from January 1942 to January 1943.

of Roswell, south of Roswell, northeast of Dayton, and near Lakewood.

Rises of the water level occurred generally along the western edge of the farming areas from the north end of the ground-water irrigation district to the Chaves-Eddy county line, and in a large area around Dayton. A few more or less localized rises occurred along the eastern edge of the farming areas from the north end of the district to the latitude of Orchard Park and in a small area east of Dexter. The rises were generally less than 1 foot, although in a few of the wells they were as much as 3 to 4 feet.

The general decline of the water level may be attributed largely to the effects of pumping. Some of it, however, and possibly also the rises in some of the areas, may be the result of a gradual adjustment of the water table over the basin after the spectacular rise in 1941 which resulted from the unusually heavy rains in the basin.

Water-level measurements

Records of water levels in shallow wells in the Roswell artesian basin follow. For convenience, the wells are divided into two groups corresponding to the two counties in which they are situated.

Chaves County

10.24.8.111 (*886,p.385; 911,p.164; 941,p.202). No measurements made in 1942.

10.24.15.342 (*886,p.385; 911, p.164; 941,p.202). Tow. No measurements made in 1942.

10.24.16.133 (*886,p.385; 911,p.164; 941,p.202). George D. Ferrine. Water level, in feet below land-surface datum, 1942: Jan. 13, 23.03.

10.24.17.122 (*886,p.385; 911,p.159; 941,p.197). Howard.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 13	24.58	May 12	25.97	July 16	29.45
Mar. 14	24.65	June 24	28.97	Aug. 18	30.57
Apr. 15	27.74			Sept. 18	27.04
				Nov. 16	25.33

10.24.18.424 (*886,p.385; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 13, 34.32.

10.24.20.344 (*886,p.385; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 12, 36.54.

10.24.22.322 (*886,p.385; *911,p.164; 941,p.202). H. Crile. Designated in Water-Supply Paper 886 as 10.24.20.322. Water level, in feet below land-surface datum, 1942: Feb. 13, 11.19.

10.24.27.111 (*886,p.386; 911,p.164; 941,p.202). Hand pump removed. No equipment on well. Water level, in feet below land-surface datum, 1942: Feb. 13, 15.20.

10.24.28.122 (*941,p.197). Gale M. Nellis.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 13	22.80	June 24	20.78	Aug. 18	21.14
Mar. 14	22.80	July 16	20.86		

10.24.29.333 (*886,p.386; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 12, 34.88.

10.24.31.333 (*886,p.386; 911,p.164; 941,p.202). Mr. Williams. Water level, in feet below land-surface datum, 1942: Feb. 12, 28.34.

10.24.31.423 (*886,p.386; 911,p.164; 941,p.202). Windmill removed. No equipment at well. Well is located about 15 feet west of south projection of house and is covered with a piece of tin and some large stones. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 16.58.

10.24.31.444 (*886,p.285; 886,p.386; 911,p.159; 941,p.197). Star Tourist Camp.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 12	15.68	May 12	16.41	July 16	17.45	Sept. 18	18.73
Mar. 14	16.01	June 24	17.03	Aug. 18	18.51	Nov. 16	19.07
Apr. 15	16.43						

10.24.33.244. Bored well, 65 feet north of northernmost tree in front yard of a house and 2½ feet west of old fence line. Diameter 2 inches, depth 6 feet. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 5.65.

10.24.34.333. Bored well, located 3 feet east of first telephone pole north of terrace. Diameter 2 inches, depth 6 feet. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 2.67.

10.24.36.222. Bored well, in fence line on south side of east-west road and about 250 feet west of north-south road. Diameter 2 inches, depth 6 feet. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 3.30.

10.25.7.444. Bored well, in center of bare spot just north of section line and road, 1 mile east of section-corner marker and about 0.15 mile east of fence corner. Diameter 2 inches, depth 12 feet. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 3.28.

10.25.17.344. Bored well, in middle of draw, about 100 feet north of salt cedar growth and about 0.1 mile west of quarter-section marker. Diameter 2 inches, depth 10 feet. Measuring point, top of casing, 0.15 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 4.16.

10.25.19.331. Stock well, equipped with windmill. Measuring point, top of 4-inch casing, 0.82 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 30.76.

10.25.29.222. Bored well, in center of alkali spot about 300 feet east of road. Diameter 2 inches, depth 5 feet. Measuring point, top of casing, 0.10 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 12, 2.89.

10.25.32.431 (*886,p.386; 911,p.164; 941,p.202). Henry Russell Estate. Measurements discontinued.

10.25.32.444 (*886,p.387; 911,p.164; 941,p.202). Henry Russell Estate. No measurement made in 1942; well flowing.

11.23.12.221 (*886,p.387; 911,p.164; 941,p.202). No measurements made in 1942.

11.24.2.322 (*886,p.387; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 12, 4.21.

11.24.3.114 (*886,p.387; 911,p.164; 941,p.202). Measurements discontinued.

11.24.3.312 (*886,p.387; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 6, 5.24.

11.24.3.333 (*886,p.387; 911,p.164; 941,p.202). No measurements made in 1942.

11.24.6.224 (*886,p.387; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 6, 19.30.

11.24.6.311 (*886,p.387; 911,p.164; 941,p.202). Well equipped with pump jack. Water level, in feet below land-surface datum, 1942: Feb. 9, 40.92.

11.24.6.433 (*886,p.387; 911,p.164; 941,p.202). Old windmill tower over well. Well is equipped with automatic pressure pump. Measuring point, top of casing, 0.48 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 9, 28.98.

11.24.6.444 (*886,p.387; 911,p.164; 941,p.202). Morrie Huff. Water level, in feet below land-surface datum, 1942: Feb. 9, 31.46.

11.24.7.333 (*911,p.164; 941,p.202). Mrs. Pearl Baker. Water level, in feet below land-surface datum, 1942: Feb. 9, 60.22.

11.24.8.122 (*886,p.387; 911,p.164; 941,p.202). No measurements made in 1942.

11.24.9.211 (*886,p.387; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 12, 27.25.

11.24.10.114 (*911,p.164; 941,p.202). Claude Hobbs. Water level, in feet below land-surface datum, 1942: Feb. 6, 16.85.

11.24.10.224 (*845,p.286; 886,p.388; 911,p.159; 941,p.197). C. E. Smith.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 12	11.69	May 12	a18.06	July 16	22.02	Sept. 18	16.21
Mar. 14	13.11	June 24	a22.78	Aug. 18	23.21	Nov. 16	13.23

11.24.10.321 (*886,p.388; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 12, 21.13.

11.24.11.214 (*886,p.388; 911,p.164; 941,p.202). H. D. Jeffcoat. Measurements discontinued.

11.24.13.144 (*886,p.388; 911,p.164; 941,p.202). Frank Peters. Water level, in feet below land-surface datum, 1942: Feb. 6, 12.05.

11.24.14.313b(*845,p.287; 886,p.388; 911,p.160; 941,p.197). Fairbanks Filling Station.

Water level, in feet below land-surface datum, 1942

Feb. 6	28.17	May 12	34.80	July 16	42.76	Sept. 18	34.82
Mar. 14	30.90	June 24	42.03	Aug. 18	44.43	Nov. 16	28.88
Apr. 15	39.14						

11.24.15.421 (*886,p.388; 911,p.164; 941,p.202). Mrs. M. L. Barnett. Water level, in feet below land-surface datum, 1942: Feb. 6, 30.09.

11.24.15.431 (*886,p.388; 911,p.164; 941,p.202). M. L. and S. Barnett. Water level, in feet below land-surface datum, 1942: Feb. 9, 31.30.

11.24.17.121 (*886,p.388; 911,p.164; 941,p.202). D. H. Johnson. Measurements discontinued.

a Windmill pumping.

11.24.17.121a. D. H. Johnson. Abandoned well under barrel. Located about 25 feet southeast of a windmill well and 12 feet southeast of well 11.24.17.121. Measuring point, top of casing, 0.20 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 9, 49.15.

11.24.18.333 (*886,p.388; 911,p.164; 941,p.202). G. V. Coker. Water level, in feet below land-surface datum, 1942: Feb. 9, 79.51.

11.24.19.343 (*886,p.388; 911,p.164; 941,p.202). Water level, in feet below land-surface datum, 1942: Feb. 9, 83.58.

11.24.22.333 (*886,p.388; 911,p.164; 941,p.202). John Tweedy. Water level, in feet below land-surface datum, 1942: Feb. 6, 40.03.

11.24.23.411a (*886,p.389; 911,p.164; 941,p.202). Cornell University Ranch. Water level, in feet below land-surface datum, 1942: Feb. 6, 10.35.

11.24.23.433 (*886,p.389; 911,p.164; 941,p.203). Tweedy Gin. Water level, in feet below land-surface datum, 1942: Feb. 6, 7.60.

11.24.24.144 (*886,p.389; 911,p.164; 941,p.203). Water level, in feet below land-surface datum, 1942: Jan. 6, 5/5.03.

11.24.27.231 (*886,p.389; 911,p.164; 941,p.203). Mr. Copeland. Measurements discontinued.

11.24.28.113 (*886,p.389; 911,p.160; 941,p.198). Rocky Arroyo School House, State land.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	53.52	May 12	b57.96	July 18	b61.96	Sept. 18	62.70
Mar. 14	b55.05	June 24	b60.35	Aug. 18	63.74	Nov. 17	58.81
Apr. 14	56.55						

11.24.29.333. Domestic well, equipped with windmill. Measuring point, top of windmill pipe clamps, 0.30 foot above top of casing, 1.10 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 9, 78.91.

11.24.29.411 (*886,p.389; 911,p.164; 941,p.203). Mrs. J. S. Singleton. Water level, in feet below land-surface datum, 1942: Feb. 9, 69.82.

11.24.31.221 (*886,p.389; 911,p.164; 941,p.203). Measurements discontinued.

11.24.34.411b (*886,p.389; 911,p.164; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 42.36.

11.24.36.211 (*886,p.389; 911,p.164; 941,p.203). Russell Smith. Water level, in feet below land-surface datum, 1942: Feb. 6, 15.44.

11.24.36.133 (*886,p.389; 911,p.164; 941,p.203). Wiley Grizzle. No measurements made in 1942.

11.24.36.333 (*886,p.389; 911,p.165). Wiley Grizzle. Measurements resumed in 1942. Measuring point, edge of pump base at 1/4-inch hole in south side, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 6, 28.45.

11.25.6.123 (*911,p.165; 941,p.203). Henry Russell Estate. Water level, in feet below land-surface datum, 1942: Feb. 6, 13.37.

11.25.6.421a (*941,p.203,207). Mrs. Annie Lee Stewart. Water level, in feet below land-surface datum, 1942: Feb. 12, 4.44.

11.25.22.333 (*886,p.390; 911,p.165; 941,p.203). Mrs. Whitney. Water level, in feet below land-surface datum, 1942: Feb. 6, 5.56.

11.25.28.234 (*886,p.390; 911,p.165; 941,p.203). E. Whitney. Water level, in feet below land-surface datum, 1942: Feb. 6, 5.56.

11.25.28.244 (*886,p.390; 911,p.165; 941,p.203). R. Whitney. Water level, in feet below land-surface datum, 1942: Feb. 6, 4.07.

a Windmill pumping slowly.

b Windmill pumping.

11.25.29.111 (*886,p.390; 911,p.165; 941,p.203). Oasis Gin. Water level, in feet below land-surface datum, 1942: Feb. 6, 6.17.

11.25.29.343 (*886,p.390; 911,p.165; 941,p.203). Albert Hobson. Water level, in feet below land-surface datum, 1942: Feb. 6, 5.70.

11.25.29.444 (*845,p.288; 886,p.390; 911,p.160; 941,p.198). Glenn Wheeler. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1942: Mar. 15, 3.14; Sept. 16, 10.75.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.	Oct.	Nov.	Dec.
1	....	4.85	5.26	5.32	5.60	8.11	9.02	....	7.70	....	7.17
2	....	4.86	5.24	5.45	5.58	8.26	8.95	....	7.65	....	7.18
3	....	4.84	5.16	5.52	5.60	8.50	9.07	....	7.63	7.20	7.15
4	4.59	4.90	5.16	5.88	....	8.40	8.88	....	7.60	7.17	7.16
5	4.64	....	5.02	6.24	....	8.52	8.88	....	7.57	7.23	7.20
6	4.61	4.90	4.99	6.55	5.60	8.45	8.88	....	7.51	7.23	7.24
7	4.61	4.89	5.00	6.90	5.56	8.00	9.01	....	7.46	7.23	....
8	....	4.92	4.94	6.81	5.52	7.95	9.32	....	7.43	7.21	....
9	....	4.94	4.92	6.54	5.48	8.22	9.54	....	....	7.23	....
10	4.61	4.96	4.84	6.58	5.46	8.54	9.74	....	7.25	....	....
11	4.62	4.95	4.26	6.58	5.46	8.68	9.83	10.63	7.20	....	....
12	4.62	4.95	3.56	6.55	5.48	8.88	9.83	10.55	7.15	....	7.26
13	4.67	4.95	....	6.55	5.48	9.01	10.43	10.40	7.13	....	7.25
14	4.65	4.96	3.37	6.63	5.41	9.21	10.50	10.50	7.10	....	7.27
15	4.62	5.01	3.14	6.72	5.00	9.32	10.60	10.52	7.08	....	7.26
16	....	5.02	3.27	6.66	5.00	9.41	10.66	10.75	7.10	7.17	7.24
17	....	5.05	3.65	5.98	4.62	9.84	10.50	10.72	7.15	7.16	7.25
18	4.68	....	3.86	5.45	4.57	10.30	10.30	10.32	7.15	7.15	7.16
19	4.70	....	3.97	5.30	4.88	10.42	....	10.25	7.15	7.15	7.10
20	4.72	....	4.12	5.55	5.45	10.30	....	10.25	....	7.15	7.10
21	4.72	5.14	4.27	5.72	5.90	10.42	....	10.25	....	7.15	....
22	4.71	5.15	4.46	5.40	6.30	....	....	10.25	....	....	....
23	4.71	5.18	4.53	4.92	6.55	....	....	10.25	....	....	....
24	4.71	5.22	4.65	4.92	6.75	....	10.29	10.25	....	....	....
25	4.72	5.18	4.75	5.20	6.75	7.08	10.20	....	....	....	....
26	4.72	....	4.79	5.58	....	7.62	10.03	....	....	....	....
27	4.74	....	4.87	5.61	7.12	8.05	9.92	....	....	....	....
28	4.72	....	4.94	5.68	7.35	8.37	9.76	....	....	7.16	....
29	4.74	....	5.14	5.82	7.55	8.68	9.78	7.75	....	7.17	....
30	4.77	....	....	5.70	7.75	8.80	9.91	7.73	....	7.23	....
31	4.81	....	....	....	7.94	....	10.29	....	....	....	....

11.25.30.333 (*886,p.390; 911,p.165; 941,p.203). J. P. White Co. Water level, in feet below land-surface datum, 1942: Feb. 6, 9.24.

11.25.31.223 (*886,p.390; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 8.60.

11.25.31.433a (*886,p.390; 911,p.165; 941,p.203). Albert Watson. Water level, in feet below land-surface datum, 1942: Feb. 5, 19.85.

11.25.31.433b (*886,p.390; 911,p.165; 941,p.203). Albert Watson. No measurements made in 1942.

11.25.32.333 (*886,p.391; 911,p.165; 941,p.203). George Bogart. Well abandoned, equipment removed. New measuring point, top of wooden well cover, level with land-surface datum. To measure, let tape down through $\frac{3}{4}$ -inch drill hole. Water level, in feet below land-surface datum, 1942: Feb. 5, 16.89.

12.24.12.411 (*886,p.391; 911,p.165; 941,p.203). Mr. Little. Water level, in feet below land-surface datum, 1942: Feb. 5, 52.27.

12.24.13.111. Domestic and stock well equipped with windmill. Measuring point, top of wooden windmill pipe clamps, 0.50 foot above land-surface datum.

12.24.13.111--Continued.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	62.94	May 12	66.68	Sept. 18	66.94
Mar. 14	65.64	June 24	70.08	Nov. 17	64.19
Apr. 14	66.49				

12.24.23.441a (*886,p.391; 911,p.165; 941,p.203). Monte Goodin. Water level, in feet below land-surface datum, 1942: Feb. 9, 75.84.

12.24.23.441b (*886,p.391; 911,p.165; 941,p.203). Monte Goodin. Water level, in feet below land-surface datum, 1942: Feb. 9, 75.64.

12.25.2. Lot 3 (*886,p.391; 911,p.165; 941,p.203). B. F. Heine. New measuring point, bottom edge of hole in west side of pump case, 1.30 feet above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 6, 9.80.

12.25.2. Lot 4 (*886,p.391; 911,p.165; 941,p.203). E. R. Duval. Water level, in feet below land-surface datum, 1942: Feb. 6, 7.27.

12.25.3.334 (*886,p.391; 911,p.165; 941,p.203). J. W. Young. Water level, in feet below land-surface datum, 1942: Feb. 6, 21.21.

12.25.7.144a (*886,p.391; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 38.62.

12.25.7.144b (*886,p.391; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 39.05.

12.25.9.422 (*845,p.288; 886,p.391; 911,p.160; 941,p.198). Cumberland townsite (Welty).

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	39.60	May 12	39.60	July 16	41.04
Mar. 14	39.10	June 24	40.34	Aug. 18	42.10
Apr. 15	39.24			Sept. 18	42.29
				Nov. 16	41.64

12.25.13.111 (*886,p.392; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 9, 12.24.

12.25.15.112 (*886,p.392; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 39.92.

12.25.15.333 (*886,p.392; 911,p.165; 941,p.203). G. M. Starrrett. Pump removed, no equipment at well. Water level, in feet below land-surface datum, 1942: Feb. 5, 53.95.

12.25.16.111 (*886,p.392; 911,p.165; 941,p.203). Ernest Nelson. Water level, in feet below land-surface datum, 1942: Feb. 5, 30.41.

12.25.16.222 (*886,p.392; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 43.41.

12.25.22.231 (*886,p.392; 911,p.160; 941,p.203). W. T. Clardy. Water level, in feet below land-surface datum, 1942: Feb. 5, 56.56.

12.25.23.143 (*941,p.198). M. L. Kuykendall. Water levels, in feet below land-surface datum, 1942: Feb. 5, 45.56; Mar. 14, 45.04; Apr. 15, 46.21; May 12, 48.86.

12.25.25.413. Omar Leach. Drilled irrigation well, equipped with turbine pump. Diameter 12½ inches, depth 186 feet. Measuring point, center of ½-inch tap hole in top of discharge pipe, 1.50 feet above top of concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 5, 17.90.

12.25.26.311 (*886,p.392; 911,p.165; 941,p.203). C. E. Smith. Water level, in feet below land-surface datum, 1942: Feb. 3, 43.37.

12.25.27.211 (*886,p.392; 911,p.165; 941,p.203). W. T. Clardy. Water level, in feet below land-surface datum, 1942: Feb. 5, 52.92.

12.25.30.222 (*886,p.392; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 9, 79.15.

12.25.33.112 (#886,p.392; 911,p.165; 941,p.203). W. A. McLeod. New measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 73.60.

12.25.33.211 (#886,p.393; 911,p.165; 941,p.203). Measurements discontinued.

12.25.34.211. Jack Hubbard. Drilled irrigation well, equipped with turbine pump. Diameter 12 $\frac{1}{2}$ inches, depth 187 feet. Measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 43.73.

12.25.34.311a (#845,p.889; 886,p.393; 911,p.160; 941,p.203). W. T. Clardy. Water level, in feet below land-surface datum, 1942: Feb. 3, 51.90.

12.25.34.311b (#886,p.393; 911,p.165; 941,p.203). W. T. Clardy. No measurements made in 1942.

12.25.34.411 (#886,p.393; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 3, 43.14.

12.25.35.111 (#911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 8, 34.00.

12.25.35.311a (#845,p.290; 886,p.393; 911,p.160; 941,p.198). A. C. Stone.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 5	33.81	Apr. 15	55.71	Sept. 18	56.42
Mar. 14	34.25	May 12	56.03	Nov. 16	47.73

12.25.35.311b (#886,p.394; 911,p.165; 941,p.203). A. C. Stone. Water level, in feet below land-surface datum, 1942: Feb. 5, 36.42.

12.25.35.411 (#886,p.394; 911,p.165; 941,p.203). A. C. Stone. Water level, in feet below land-surface datum, 1942: Feb. 5, 30.13.

12.25.36.121 (#886,p.394; 911,p.165; 941,p.203). O. B. Berry. Measurements discontinued.

12.25.36.133 (#886,p.394; 911,p.165; 941,p.203). H. Kuykendall. Water level, in feet below land-surface datum, 1942: Feb. 5, 28.91.

12.25.36.142 (#886,p.394; 911,p.165; 941,p.203). O. B. Berry. Water level, in feet below land-surface datum, 1942: Feb. 5, 13.85.

12.25.36.315 (#886,p.394; 911,p.165; 941,p.203). M. L. Kuykendall. No measurement made in 1942.

12.26.7.421 (#886,p.394; 911,p.165; 941,p.203). Cecil Johnson. No measurement made in 1942.

12.26.18.221. Domestic well, equipped with windmill. Measuring point, top of casing, 5.10 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 2, 10.87.

12.26.29.333 (#886,p.394; 911,p.165; 941,p.203). Water level, in feet below land-surface datum, 1942: Feb. 5, 15.25.

12.26.30.213 (#886,p.394; 911,p.165; 941,p.203). S. O. Wilburn. Water level, in feet below land-surface datum, 1942: Feb. 5, 13.32.

13.25.1.111 (#886,p.394; 911,p.165; 941,p.203). M. L. Kuykendall. Water level, in feet below land-surface datum, 1942: Feb. 3, 12.73.

13.25.1.331 (#886,p.394; 911,p.165; 941,p.203). Will Schaaphok. Water level, in feet below land-surface datum, 1942: Feb. 3, 9.77.

13.25.1.422 (#845,p.291; 886,p.394; 911,p.161; 941,p.198). O. B. Berry. Measurements discontinued after August 1942.

Water level, in feet below land-surface datum, 1942

Feb. 14	6.59	May 12	6.08	July 16	7.71
Mar. 14	5.95	June 24	7.69	Aug. 18	8.57

a Irrigation well 300 feet east pumping.

13.25.3.111 (*886,p.395; 911,p.165; 941,p.203). Mr. Stanley. Water level, in feet below land-surface datum, 1942: Feb. 3, 50.92.

13.25.5.111 (*886,p.395; 911,p.165; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 3, 60.70.

13.25.6.333 (*886,p.395; 911,p.165; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 3, 79.37.

13.25.8.133 (*886,p.395; 911,p.165; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 3, 59.61.

13.25.10.344 (*886,p.395; 911,p.165; 941,p.204). Mr. Reinecke. Water level, in feet below land-surface datum, 1942: Feb. 3, 62.35.

13.25.11.111 (*886,p.395; 911,p.165; 941,p.204). Mrs. Belle Hurst. New measuring point, top of concrete pump base, 0.67 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 36.01.

13.25.11.343 (*886,p.395; 911,p.165; 941,p.204). J. E. Bockman. New measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.50 feet above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 42.21.

13.25.11.433 (*886,p.395; 911,p.161; 941,p.198). Mr. Beck.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 28	32.75	May 12	43.74	July 16	53.17
Mar. 14	36.08	June 24	48.70	Aug. 18	55.37
Apr. 15	45.51			Sept. 20	51.30
				Nov. 15	42.24

13.25.12.133 (*886,p.395; 911,p.165; 941,p.204). M. E. Colclazier. New measuring point, lower edge of discharge pipe, 5.00 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 17.93.

13.25.12.311 (*886,p.395; 911,p.165; 941,p.204). M. E. Colclazier. Pump removed. No equipment on well. Measuring point, top of concrete pump foundation, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 16.23.

13.25.13.113 (*886,p.395; 911,p.166; 941,p.204). W. F. Kerr. New measuring point, lower edge of discharge pipe, 5.10 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 29.95.

13.25.13.131 (*886,p.395; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Jan. 28, 29.05.

13.25.13.133 Learue Martin. Drilled irrigation well, equipped with turbine pump. Measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 32.76.

13.25.13.233a (*886,p.395; 911,p.166; 941,p.204). W. F. Kerr. Water level, in feet below land-surface datum, 1942: Jan. 28, 21.05.

13.25.233b (*886,p.395; 911,p.166; 941,p.204). W. F. Kerr. Water level, in feet below land-surface datum, 1942: Jan. 28, 22.96.

13.25.13.311 (*911,p.166; 941,p.204). Learue Martin. New measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.20 feet above concrete pump base and 1.40 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 32.13.

13.25.13.433 (*886,p.396; 911,p.166; 941,p.204). Mrs. J. W. Wier. Water level, in feet below land-surface datum, 1942: Jan. 28, 25.54.

13.25.14.131 (*886,p.396; 911,p.166; 941,p.204). Durand & McNeil. Water level, in feet below land-surface datum, 1942: Jan. 28, 48.65.

13.25.14.231 (*911,p.166; 941,p.204). William Zappe. New measuring point, lower edge of opening in east side of pump case, 0.80 foot above concrete pump base and 0.94 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 40.12.

13.25.15.311 (*886,p.396; 911,p.166; 941,p.204). Roswell Insurance & Surety Co. Water level, in feet below land-surface datum, 1942: Jan. 28, 74.87.

13.25.15.422 (*886,p.396; 911,p.166; 941,p.204). Windmill disconnected; well now equipped with pressure pump. Water level, in feet below land-surface datum, 1942: Jan. 28, 49.63.

13.25.17.411 (*886,p.396; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 3, 55.08.

13.25.23.111 (*886,p.396; 911,p.166; 941,p.204). I. F. Wortman. Well now abandoned. A motor to run pump on artesian well 10 feet south is over this observation well. New measuring point, bottom of slot in east side of 10-inch pipe rising above concrete pump base, 0.40 foot above concrete pump base and 2.85 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 51.21.

13.25.24.333 (*886,p.396; 911,p.166; 941,p.204). Hal Bogle. Water level, in feet below land-surface datum, 1942: Jan. 28, 41.34.

13.25.26.211. Hal Bogle. Drilled irrigation well, equipped with turbine pump. Diameter $1\frac{1}{2}$ inches, depth 95 feet. Measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 47.33.

13.25.26.222 (*886,p.396; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Jan. 28, 41.42.

13.25.27.111 (*886,p.396; 911,p.166; 941,p.204). Hal Bogle. Water level, in feet below land-surface datum, 1942: Jan. 28, 73.16.

13.25.27.211b (*886,p.396; 911,p.166; 941,p.204). Hal Bogle. New measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.70 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 28, 61.95.

13.25.32.411 (*886,p.396; 911,p.166; 941,p.204). Windmill removed. Well abandoned. Measuring point, top of casing, 0.75 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 77.43.

13.25.34.433a (*886,p.396; 911,p.166; 941,p.204). O. B. Berry. Water level, in feet below land-surface datum, 1942: Jan. 27, 61.30.

13.25.35.311 (*886,p.397; 911,p.166; 941,p.204). W. F. Kerr. No measurements made in 1942.

13.25.36.421a (*886,p.397; 911,p.166; 941,p.204). R. M. Ware. Water level, in feet below land-surface datum, 1942: Jan. 27, 40.35.

13.25.36.421b (*886,p.397; 911,p.166; 941,p.204). R. M. Ware. Water level, in feet below land-surface datum, 1942: Jan. 27, 39.55.

13.25.36.421c (*886, p.397; 911,p.166; 941,p.204). R. M. Ware. Water level, in feet below land-surface datum, 1942: Jan. 27, 39.79.

13.26.5.111 (*886,p.397; 911,p.166; 941,p.204). Robert H. Aston. Water level, in feet below land-surface datum, 1942: Feb. 5, 7.40.

13.26.5.231a (*886,p.397; 911,p.166; 941,p.204). Mr. Sterrett. Water level, in feet below land-surface datum, 1942: Feb. 5, 11.85.

13.26.5.231b (*886,p.397; 911,p.166; 941,p.204). Mr. Sterrett. Water level, in feet below land-surface datum, 1942: Feb. 5, 7.43.

13.26.5.331 (*886,p.397; 911,p.166; 941,p.204). W. W. Harris. New measuring point, lower edge of 5-inch discharge pipe, 5.95 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 5, 13.27.

13.26.7.333 (*886,p.397; 911,p.161; 941,p.199). Howard Amason. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Jan. 4, 6.28; Aug. 21, 13.06.

13.26.7.533. Howard Amason--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.29	6.54	6.59	7.80	7.67	8.41	10.07	.....	.....	11.32	.....	10.89
2	6.50	6.56	6.63	7.85	7.62	8.43	.....	.....	.....	11.28	.....	10.86
3	6.29	6.56	6.64	7.88	7.60	8.62	9.65	.....	.....	11.27	10.98	10.85
4	6.28	6.59	6.64	7.91	7.57	8.80	9.77	.....	.....	11.27	11.00	10.84
5	6.54	6.80	6.66	8.05	7.57	8.98	9.95	.....	.....	11.27	11.00	10.83
6	6.55	6.61	6.75	8.23	7.65	9.10	10.05	.....	.....	11.27	11.02	.....
7	6.37	6.63	6.82	8.38	7.68	9.08	9.93	.....	.....	.....	11.05	.....
8	6.38	6.62	6.90	8.42	7.67	9.10	9.80	.....	.....	.....	11.07	.....
9	6.38	6.62	6.91	8.16	7.66	9.25	9.70	.....	.....	.....	11.05	.....
10	6.39	6.64	6.93	7.87	7.60	9.45	9.68	12.80	.....	11.32	11.05	.....
11	6.41	6.64	6.98	7.64	7.59	9.52	.....	12.80	11.35	11.24	.....	10.81
12	6.42	6.64	7.03	7.50	7.64	9.45	.....	12.85	11.19	11.18	.....	10.80
13	6.42	6.63	7.07	7.48	7.87	9.41	.....	12.98	11.04	11.13	.....	10.78
14	6.43	6.64	7.10	7.48	7.99	9.43	.....	12.98	10.97	11.08	.....	10.76
15	6.44	6.63	7.04	7.50	8.15	9.55	.....	12.96	10.94	11.05	.....	10.74
16	6.45	6.62	7.00	7.67	8.05	9.69	11.11	12.94	10.94	11.05	11.05	10.72
17	6.43	6.63	6.98	7.87	7.93	9.75	11.23	12.88	10.96	11.01	11.04	10.68
18	6.43	6.65	6.98	7.95	7.84	9.58	11.40	12.86	11.08	.....	11.04	10.66
19	6.45	6.69	6.97	8.07	7.77	9.43	11.57	12.85	.....	.....	11.03	10.64
20	6.47	6.68	6.97	8.20	7.75	9.35	11.61	12.93	.....	.....	11.02	10.61
21	6.50	6.67	6.98	8.33	7.77	9.35	11.55	13.06	.....	.....	11.02	10.56
22	6.50	6.66	6.98	8.50	7.84	9.40	11.55	13.00	.....	.....	11.05	10.52
23	6.50	6.66	6.97	8.42	7.95	9.41	11.58	12.90	.....	.....	11.07	10.48
24	6.49	6.67	6.96	8.37	8.08	9.42	11.70	12.80	.....	.....	.....	10.43
25	6.49	6.67	6.93	8.37	8.17	9.44	11.78	12.65	.....	.....	.....	10.38
26	6.48	6.65	7.00	8.42	8.23	9.50	11.87	.....	.....	.....	.....	.....
27	6.48	6.64	7.14	8.42	8.32	9.55	11.96	.....	.....	.....	.....	.....
28	6.51	6.61	7.36	8.25	8.38	9.67	11.96	.....	.....	.....	10.98	.....
29	6.49	.....	7.50	8.00	8.44	9.83	11.94	.....	11.39	.....	10.96	.....
30	6.49	.....	7.60	7.82	8.45	9.95	11.90	.....	11.35	.....	10.93	.....
31	6.51	.....	7.70	.....	8.42	.....	11.83	.....	.....	.....	.....	.....

13.26.7.433 (*886,p.398; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 8.18.

13.26.8.332 (*886,p.398; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 6.00.

12.26.8.422 (*845,p.291; 886,p.398; 911,p.161; 941,p.199). Jake Mills. Water level, in feet below land-surface datum, 1942: Feb. 2, 13.11.

13.26.14.331 (*941,pp. 204, 207). Zuber Hollow Corporation. Water level, in feet below land-surface datum, 1942: Feb. 2, 0.26.

13.26.16.114a (*886,p.398; 911,p.166; 941,p.204). Fish hatchery. Water level, in feet below land-surface datum, 1942: Feb. 2, 9.29.

13.26.16.114b (*886,p.398; 911,p.166; 941,p.204). Fish hatchery. Water level, in feet below land-surface datum, 1942: Feb. 2, 5.82.

13.26.16.114c (*886,p.398; 911,p.166; 941,p.204). Fish hatchery. Water level, in feet below land-surface datum, 1942: Feb. 2, 7.06.

13.26.17.133 (*845,p.291; 886,p.398; 911,p.161; 941,p.199). Judge Mehlhop. Measurements discontinued.

13.26.17.321 (*845,p.292; 886,p.398; 911,p.162; 941,p.199). Leo Nowak.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 14	12.65	Apr. 15	6.00	Aug. 17	10.66	Nov. 16	10.33
Mar. 14	8.75	June 23	7.00	Sept. 20	14.20		

13.26.17.443 (*886,p.399; 911,p.166; 941,p.204): H. Vandembout. Water level, in feet below land-surface datum, 1942: Feb. 2, 11.28.

a Tape measurement.

13.26.17.444 (*886,p.399; 911,p.166; 941,p.204). H. Vandebout. Water level, in feet below land-surface datum, 1942: Feb. 2, 11.56.

13.26.18.211 (*911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 10.60.

13.26.18.311 (*886,p.399; 911,p.166; 941,p.204). W. F. Kerr. Water level, in feet below land-surface datum, 1942: Feb. 3, 11.50.

13.26.19.222 (*886,p.399; 911,p.166; 941,p.204). A. T. Stone. Water level, in feet below land-surface datum, 1942: Feb. 2, 18.41.

13.26.19.333 (*886,p.399; 911,p.166; 941,p.204). Hal Bogle. Water level, in feet below land-surface datum, 1942: Jan. 28, 20.00.

13.26.19.343 (*886,p.399; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 16.15.

13.26.19.432 (*886,p.399; 911,p.166; 941,p.204). George Weaver. Water level, in feet below land-surface datum, 1942: Feb. 2, 6.19.

13.26.20.113 (*886,p.399; 911,p.166; 941,p.204). Windmill not used. Pressure pump installed in pit. Measuring point, top of steel windmill-pipe clamps, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 2, 17.25.

13.26.20.333 (*886,p.399; 911,p.166; 941,p.204). Mrs. Lockhead. Water level, in feet below land-surface datum, 1942: Feb. 2, 10.89.

13.26.23.111 (*886,p.399; 911,p.166; 941,p.204). Zuber Hollow Corporation. Water level, in feet below land-surface datum, 1942: Feb. 2, 3.55.

13.26.28.111 (*886,p.399; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 9.66.

13.26.28.121 (*886,p.399; 911,p.162; 941,p.199). George Grassie.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 13	14.89	May 12	a19.52	July 16	a18.37	Sept. 20	15.10
Apr. 15	a19.35	June 24	a19.85	Aug. 18	14.57	Nov. 16	16.82

13.26.28.221 (*886,p.399; 911,p.166; 941,p.204). Hal Bogle. New measuring point, lower edge of discharge pipe, 9.64 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 2, 7.81.

13.26.28.233 (*886,p.399; 911,p.166; 941,p.204). Water level, in feet below land-surface datum, 1942: Feb. 2, 9.42.

13.26.28.311 (*886,p.400; 911,p.166; 941,p.204). Mrs. C. L. Appleby. Water level, in feet below land-surface datum, 1942: Feb. 2, 13.19.

13.26.29.111 (*911,p.166; 941,p.204). J. H. Reid. No measurement made in 1942.

13.26.29.113 (*886,p.400; 911,p.166; 941,p.204). J. H. Reid. Water level, in feet below land-surface datum, 1942: Feb. 2, 13.39.

13.26.29.211 (*886,p.400; 911,p.166; 941,p.205). Water level, in feet below land-surface datum, 1942: Feb. 2, 7.65.

13.26.29.333 (*886,p.400; 911,p.167; 941,p.205). M. Y. Monicle. Water level, in feet below land-surface datum, 1942: Feb. 2, 11.04.

13.26.29.424 (*911,p.167; 941,p.205). M. Y. Monicle. Water level, in feet below land-surface datum, 1942: Feb. 2, 6.80.

13.26.31.241 (*886,p.400; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Feb. 2, 6.03.

13.26.31.311 (*886,p.400; 911,p.167; 941,p.205). E. O. Moore. Water level, in feet below land-surface datum, 1942: Jan. 27, 35.37.

13.26.33.421 (*886,p.400; 911,p.167; 941,p.205). E. P. Malone. New measuring point, top of casing at north side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 15.62.

13.26.34.313 (*886,p.400; 911,p.167; 941,p.205). Mrs. West. Windmill gone. Shelter installed over well and pressure pump. Measuring point, top of casing at highest point on west side, 0.42 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 8.55.

a Pressure pump operating.

13.26.34.431 (*941,p.205,207). Water level, in feet below land-surface datum, 1942: Jan. 27, 23.89.

14.25.1.111 (*911,p.167; 941,p.205). Mr. Gentry. Measurements discontinued.

14.25.1.112 (*845,p.292; 886,p.400; 911,p.162; 941,p.200). Mr. Gentry.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	30.17	May 12	34.70	July 16	38.05	Sept. 20	39.53
Mar. 13	29.94	June 24	36.94	Aug. 18	41.41	Nov. 15	36.46
Apr. 15	35.18						

14.25.1.343 (*886,p.400; 911,p.167; 941,p.205). Wm. Langnegger. Water level, in feet below land-surface datum, 1942: Jan. 27, 45.36.

14.25.1.344 (*845,p.292; 886,p.400; 911,p.162; 941,p.200). Wm. Langnegger.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	43.45	May 12	46.69	July 16	50.84	Sept. 20	56.28
Mar. 13	47.55	June 24	34.16	Aug. 18	53.24	Nov. 15	53.90
Apr. 21	46.03						

14.25.2.233a (*911,p.167; 941,p.205). L. T. Lewis. Water level, in feet below land-surface datum, 1942: Jan. 27, 52.13.

14.25.2.444 (*886,p.401; 911,p.167; 941,p.205). J. V. Thomas. Windmill removed and pressure pump installed in pit. Measuring point, top of 10-inch casing, 4.40 feet below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 51.03.

14.25.8.411 (*886,p.401; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 27, 93.24.

14.25.11.333. Drilled irrigation well, equipped with turbine pump. Measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.80 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 78.83.

14.25.12.133a. Chas. H. Whitman. Drilled irrigation well, equipped with turbine pump. Measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 60.82.

14.25.12.133b (*886,p.401; 911,p.167; 941,p.205). C. Whitman. Water level, in feet below land-surface datum, 1942: Jan. 27, 60.82.

14.25.12.234 (*886,p.401; 911,p.167; 941,p.205). Measurements discontinued.

14.25.12.313 (*886,p.401; 911,p.167; 941,p.205). L. T. Lewis. Water level, in feet below land-surface datum, 1942: Jan. 27, 65.74.

14.25.13.213. A. M. Middleton. Drilled irrigation well, equipped with turbine pump. Measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.70 feet above concrete pump base and 2.20 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 59.54.

14.25.13.311 (*886,p.401; 911,p.167; 941,p.205). E. O. Moore. An irrigation well is 10 feet south. Observation well is equipped with hand pump. Measuring point, top of 4 by 4-inch pipe clamps, 0.29 foot above concrete and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 22, 68.62.

14.25.14.131 (*886,p.401; 911,p.167; 941,p.205). O. B. Berry. New measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 2.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 86.80.

14.25.15.431 (*886,p.401; 911,p.167; 941,p.205). H. E. Blackwelder. Measurements discontinued.

a Windmill pumping.

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14.25.20.443 (*886,p.401; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 22, 71.46.

14.25.21.131 (*845,p.293; 886,p.401; 911,p.162; 941,p.200). U. S. Government.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 22	86.06	Apr. 14	87.00	June 23	87.46
Mar. 13	86.80	May 12	87.18	July 15	87.56
				Aug. 17	87.64
				Nov. 15	87.59

14.25.24.133 (*886,p.401; 911,p.167; 941,p.205). E. O. Moore. Water level, in feet below land-surface datum, 1942: Jan. 23, 62.38.

14.25.25.111 (*886,p.401; 911,p.167; 941,p.205). John M. Norris. Well abandoned; pump pulled. New measuring point, top of 16-inch casing at south side of well, 1.35 feet below land-surface datum. Possible discrepancy of several tenths of a foot between preceding and succeeding measurements. Water level, in feet below land-surface datum, 1942: Jan. 20, 62.27.

14.25.25.221 (*845,p.293, designated as 14.25.25.112; 886,p.402; 911,p.162; 941,p.200). John M. Norris. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Mar. 15 and 19, 43.32; Aug. 23 and 24, 48.78.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	43.74	43.40	44.87	45.42	.....	47.83	.....	48.29	.....	46.81
2	.....	.....	43.68	43.41	44.70	45.43	.....	.....	.....	48.27	.....	46.78
3	45.08	.....	43.61	43.42	44.80	45.44a	46.77	.....	.....	48.26a	47.49	46.76
4	45.09	44.25	43.61	43.42	44.82	45.47	46.78	.....	.....	48.25	47.43	46.71
5	45.08	44.23	43.59	43.45	44.90	45.50	46.83	.....	.....	48.22	47.44	46.72
6	45.02	44.20	43.49	43.45	45.03	45.53	46.85	.....	.....	48.18	47.43	.....
7	45.03	44.17	43.60	43.50	45.08	45.55	46.89	.....	.....	.....	47.40	.....
8	44.95	44.15	43.54	43.57	45.12	45.55	46.90a	48.31	.....	.....	47.36	.....
9	44.98	44.15	43.47	43.58	45.15	45.62	46.93	48.32	.....	.....	47.35	.....
10	44.90	44.15	43.44	43.62	45.19	45.68	46.95	48.34	.....a	48.09	47.34	.....
11	44.87	44.08	43.41	43.62	45.24	45.74	.....	48.37a	48.77	48.05	.....a	46.57
12	44.87	44.05	43.38	43.66	45.27	45.80	.....	48.44	48.73	48.03	.....	46.55
13	44.81	44.00	43.37	43.68	45.31	45.87	.....	48.45	48.70	48.02	.....	46.54
14	44.85	43.95	43.37	43.78	45.37	45.93	.....	48.53	48.67	47.98	.....	46.52
15	44.77	43.93	43.32	43.95	45.34	45.99a	47.10	.....	48.64	47.95a	47.14	46.50
16	44.72	43.93	43.35	43.93	45.39	46.06	47.13	.....	48.62	47.92	47.21	46.45
17	44.69	43.91	43.39	43.95	45.43	46.08	47.16a	48.52	48.58	47.92	47.19	46.44
18	44.71	44.00	43.33	43.98	45.45	46.15	47.22	48.55	48.57	.....	47.17	46.40
19	44.69	.....	43.32	44.05	45.46	46.19	47.25	48.60	.....	.....	47.14	.....
20	44.65	.....	43.40	44.15	45.45	46.24	47.32	48.65	.....	.....	47.11	.....
21	.....	43.84	.....	44.19	45.39	46.31	47.37	48.70	.....	.....	47.12	.....
22	44.57	43.81	.....	44.18	45.38	46.35	47.40	48.73	.....	.....	.....	.....
23	44.56	43.83	43.40	44.18	45.36	46.37a	47.46	48.78	.....	.....	.....	.....
24	44.53	43.77	43.34	44.26	45.35	46.40	47.48	48.78	.....	.....	.....	.....
25	.....	43.70	43.35	44.35	45.35	46.43	47.54	.....	.....	.....	.....	.....
26	.....	43.78	43.42	44.40	45.33	46.45	47.58	.....	.....	.....	.....	.....
27	.....	43.70	43.41	44.44	45.36	46.49	47.62	.....	.....	.....	.....	.....
28	.....	43.65	43.38	44.60	45.36	46.51	47.65	.....	.....	.....a	46.89	.....
29	.....	.....	43.39	44.51	45.39	46.56	47.68	.....a	48.36	.....	46.85	.....
30	.....	.....	43.42	44.60	45.38	46.59	47.74	.....	48.32	.....	46.80	.....
31	.....	.....	43.42	.....	45.39	.....	47.80	.....	.....	.....	.....	.....

14.25.25.313 (*886,p.402; 911,p.167; 941,p.205). S. C. Bybee. Measurements discontinued.

14.25.36.111. C. H. Foster. Drilled irrigation well equipped with turbine pump. Diameter 20 inches, depth 121 feet. Measuring point, lower edge of opening in north side of pump case, 0.61 foot above pump base, 0.91 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 20, 55.84.

14.26.3.111 (*886,p.402; 911,p.167). Measurements resumed in 1942. New measuring point, top of steel well curb at north side of well, 0.70 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 27, 12.98.

a Tape measurement.

14.26.3.213 (*886,p.402; 911,p.167; 941,p.205). New measuring point, top of windmill pipe clamps level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 4.78.

14.26.3.413 (*886,p.402; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 9.06.

14.26.3.442 (*886,p.403; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 16.74.

14.26.4.113 (*886,p. 403; 911,p.167; 941,p.205). Measurements discontinued.

14.26.4.133a (*886,p.403; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 27, 18.68.

14.26.4.133b (*886,p.403; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 27, 18.48.

14.26.4.141 (*886,p.403; 911,p.167; 941,p.205). Roy Lockhead. Water level, in feet below land-surface datum, 1942: Jan. 27, 19.38.

14.26.4.231 (*886,p.403; 911,p.167; 941,p.205). George Wade. Water level, in feet below land-surface datum, 1942: Jan. 27, 16.32.

14.26.5.111 (*886,p.403; 911,p.167; 941,p.205). H. L. McKinistry. Measurements discontinued.

14.26.5.131 (*886,p.403; 911,p.167; 941,p.205). Mrs. L. Harter. Water level, in feet below land-surface datum, 1942: Jan. 27, 21.70.

14.26.5.211 (*886,p.403; 911,p.167; 941,p.205). Mr. McKinistry. Water level, in feet below land-surface datum, 1942: Jan. 27, 22.20.

14.26.5.243 (*886,p.403; 911,p.167; 941,p.205). J. D. S. McKinistry. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.25.

14.26.5.433 (*886,p.403; 911,p.167; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 26.58.

14.26.6.111 (*886,p.403; 911,p.167; 941,p.205). Wiley Grizzle. Water level, in feet below land-surface datum, 1942: Jan. 23, 16.60.

14.26.6.142 (*911,p.167; 941,p.205). W. L. Heitmann. Water level, in feet below land-surface datum, 1942: Jan. 27, 19.77.

14.26.6.211 (*886,p.403; 911,p.167; 941,p.205). Wiley Grizzle. New measuring point, mouth of discharge pipe, 3.05 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 18.64.

14.26.6.232 (*911,p.167; 941,p.205). Tom Andrews. Water level, in feet below land-surface datum, 1942: Jan. 27, 26.82.

14.26.6.241 (*886,p.404; 911,p.167; 941,p.205). No measurements made in 1942.

14.26.6.422 (*886,p.404; 911,p.167; 941,p.205). Measurements discontinued.

14.26.7.333 (*845,p.293). O. C. Yarbrough. Measurements resumed in 1942. New measuring point, top of casing level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 46.53.

14.26.7.344 (*911,p.167; 941,p.205). W. W. Adams. Water level, in feet below land-surface datum, 1942: Jan. 23, 42.72.

14.26.7.443 (*845,p.293; 886,p.404; 911,p.163; 941,p.201). W. W. Adams.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 23	33.73	May 12	35.87	July 16	36.02	Sept. 20	34.37
Mar. 14	34.88	June 23	35.00	Aug. 17	33.57	Nov. 16	38.00
Apr. 15	37.04						

14.26.8.112 (*886,p.404; 911,p.167; 941,p.205). G. L. Truitt. New measuring point, lower edge of rectangular opening in east side of pump case, 0.68 foot above concrete pump base and 1.32 feet above land-surface datum. Possible discrepancy of several tenths of a foot between preceding and succeeding measurements. Water level, in feet below land-surface datum, 1942: Jan. 23, 21.84.

14.26.8.312. Jacob Jacobsen. Drilled irrigation well, equipped with turbine pump. Measuring point, center of tap hole in top of discharge pipe, 1.00 foot above concrete pump base and 1.70 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 41.54.

14.26.8.243 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 19.86.

14.26.8.344 (*941,pp.205, 207). William Hobson. Measurements discontinued.

14.26.8.433a (*845,p.294; *886,p.404; 911,p.163; 941,p.201). Tom Ferguson. Measuring point, top of base of pump head at west side of well, level with land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 23, 37.82; Mar. 14, 38.62; May 12, 41.60.

14.26.9.143 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 28.29.

14.26.9.234 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 10.46.

14.26.9.434 (*886,p.404; 911,p.168; 941,p.205). Cave Brothers. Water level, in feet below land-surface datum, 1942: Jan. 23, 8.55.

14.26.9.442 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 12.25.

14.26.10.121 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 13.28.

14.26.10.221. John Langnegger. Drilled irrigation well, equipped with turbine pump. Measuring point, center of tap hole in top of discharge pipe, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 22, 10.88.

14.26.10.433 (*886,p.405; 911,p.168; 941,p.205). Mark Boyce. Water level, in feet below land-surface datum, 1942: Jan. 21, 6.28.

14.26.10.244 (*886,p.404; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 12.36.

14.26.11.111 (*886,p.405; 911,p.168; 941,p.205). J. Langnegger. Water level, in feet below land-surface datum, 1942: Jan. 21, 15.42.

14.26.11.121 (*886,p.405; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 15.35.

14.26.11.322 (*886,p.405; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 11.95.

14.26.11.444 (*886,p.405; 911,p.168; 941,p.205). Water level, in feet below land-surface datum, 1942: Jan. 21, 9.43.

14.26.12.131 (*845,p.295; 886,p.405; 911,p.163; 941,p.201). W. E. Utterback.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 21	20.98	May 12	20.65	July 16	21.50	Sept. 20	21.68
Mar. 14	21.65	June 24	26.85	Aug. 18	21.65	Nov. 16	21.12
Apr. 15	21.14						

14.26.12.433b (*911,p.168; 941,p.205). W. N. Olive. Water level, in feet below land-surface datum, 1942: Jan. 22, 12.50.

14.26.13.121 (*886,p.405; 911,p.168; 941,p.206). L. M. Lang. Water level, in feet below land-surface datum, 1942: Jan. 22, 14.30.

14.26.14.133 (*886,p.405; 911,p.168; 941,p.206). Wiley Grizzle. Measurements discontinued.

14.26.14.212 (*911,p.168; 941,p.206). George Harris. Water level, in feet below land-surface datum, 1942: Jan. 22, 11.36.

14.26.14.343 (*886,p.405; 911,p.168; 941,p.206). F. H. Evans. Measurements discontinued.

14.26.14.441 (*886,p.405; 911,p.168; 941,p.206). M. C. Brown. Water level, in feet below land-surface datum, 1942: Jan. 22, 10.04.
a Windmill pumping.

14.26.15.113 (*886, p. 405; 911, p. 168; 941, p. 206). Water level, in feet below land-surface datum, 1942: Jan. 21, 13.40.

14.26.15.322 (*941, p. 201). F. H. Evans.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 21	5.55	May 12	4.15	July 16	6.52	Sept. 20	11.89
Mar. 14	6.35	June 24	5.10	Aug. 18	6.49	Nov. 16	7.83

14.26.15.333 (*886, p. 405; 911, p. 168; 941, p. 201). E. D. Menoud. Measuring point raised 0.50 foot. Subtract 4.67 feet from tape measurements to correct to land-surface datum. Measuring point is 4.67 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 21	16.99	Apr. 15	18.29	June 24	16.08	Sept. 20	17.55
Mar. 14	17.75	May 12	14.46	July 16	19.43	Nov. 16	19.44

14.26.15.343 (*911, p. 168; 941, p. 206). Measurements discontinued.

14.26.16.111 (*886, p. 406; 911, p. 168; 941, p. 206). Marie O'Dell. Water level, in feet below land-surface datum, 1942: Jan. 23, 23.08.

14.26.16.422 (*886, p. 406; 911, p. 168; 941, p. 206). Marie O'Dell. Water level, in feet below land-surface datum, 1942: Jan. 21, 14.59.

14.26.17.122. Drilled irrigation well, equipped with turbine pump. Measuring point, east edge of 1-inch hole in south side of discharge pipe, 1.70 feet above land-surface datum. To measure, remove plug in hole and let tape down. Water level, in feet below land-surface datum, 1942: Jan. 23, 40.46.

14.26.17.211 (*886, p. 406; 911, p. 168; 941, p. 206). Wm. Saloman. Water level, in feet below land-surface datum, 1942: Jan. 23, 40.97.

14.26.17.334 (*886, p. 406; 911, p. 168; 941, p. 206). Clarence Pearson. Measurements discontinued.

14.26.17.444 (*886, p. 406; 911, p. 168; 941, p. 206). Pearson Bros. Water level, in feet below land-surface datum, 1942: Jan. 23, 38.68.

14.26.18.113 (*886, p. 406; 911, p. 168; 941, p. 206). O. C. Yarbrough. Water level, in feet below land-surface datum, 1942: Jan. 23, 50.83.

14.26.18.131. J. P. White Co. Drilled irrigation well, equipped with turbine pump. Diameter $1\frac{1}{2}$ inches, depth 280 feet. Measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 2.00 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 23, 50.83.

14.26.18.433 (*886, p. 406; 911, p. 168; 941, p. 206). Albert Hobson. Measurements discontinued.

14.26.19.211 (*886, p. 406; 911, p. 168; 941, p. 206). Joseph Hooten. Water level, in feet below land-surface datum, 1942: Jan. 21, 43.23.

14.26.19.242 (*886, p. 406; 911, p. 168; 941, p. 206). Oscar A. Pearson. New measuring point, lower edge of opening in west side of pump case, 0.80 foot above concrete well curb and 1.30 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 51.90.

14.26.19.311 (*886, p. 406; 911, p. 168; 941, p. 206). W. C. West. Water level, in feet below land-surface datum, 1942: Jan. 23, 41.14.

14.26.19.444 (*886, p. 406; 911, p. 168; 941, p. 206). E. E. Lane. Water level, in feet below land-surface datum, 1942: Jan. 20, 53.50.

14.26.20.143 (*886, p. 406; 911, p. 168; 941, p. 206). Pearson Bros. Water level, in feet below land-surface datum, 1942: Jan. 21, 50.99.

14.26.20.334 (911, p. 168; 941, p. 206). E. Langnegger. Domestic well, equipped with windmill. Measuring point, top of casing, 1.12 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 64.36.

14.26.20.343 (*886, p. 406; 911, p. 168; 941, p. 206). E. Langnegger. New measuring point, top of pump base inside of pump case at west side of pump, 0.20 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 59.93.

- 14.26.21.333 (*886,p.406; 911,p.168; 941,p.206). G. E. Wade. Water level, in feet below land-surface datum, 1942: Jan. 21, 33.58.
- 14.26.21.422 (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 23, 14.98.
- 14.26.22.141 (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 23, 21.66.
- 14.26.22.213 (*886,p.407; 911,p.168; 941,p.206). J. L. King. Water level, in feet below land-surface datum, 1942: Jan. 23, 19.08.
- 14.26.22.411 (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 23, 12.26.
- 14.26.23.131 (*886,p.407; 911,p.168; 941,p.206). E. A. White. Water level, in feet below land-surface datum, 1942: Jan. 22, 6.89.
- 14.26.23.214. F. E. Pilley. Drilled irrigation well, equipped with turbine pump. Diameter 13 inches, depth 236 feet. Measuring point, lower edge of pump base, 0.50 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 22, 9.70.
- 14.26.23.413. E. A. White. Stock well, equipped with windmill. Diameter 10 inches, depth 28 feet. Measuring point, top of windmill pipe clamps, 1.30 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 22, 8.99.
- 14.26.27.111 (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 23, 8.43.
- 14.26.28.111. Helen Gilroy. Drilled irrigation well, equipped with turbine pump. Diameter 12 inches, depth 130 feet. Measuring point, center of tap hole in top of discharge pipe, 1.30 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 32.32.
- 14.26.28.114 (*886,p.407; 911,p.168; 941,p.206). Phillip Stoos. Water level, in feet below land-surface datum, 1942: Jan. 21, 29.85.
- 14.26.28.211 (*886,p.407; 911,p.168; 941,p.206). L. T. Lewis. New measuring point, top of concrete pump base at south side of pump, 0.42 foot above top of casing, 1.28 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 24.18.
- 14.26.28.423. L. T. Bealer. Windmill well. Measuring point, top edge of 2-by 12-inch board in platform just south of windmill pump column, 0.45 foot above land-surface datum. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 23, 14.14.
- 14.26.29.112 (*886,p.407; 911,p.168; 941,p.206). Phillip Stoos. New measuring point, center of tap hole in top of discharge pipe, 1.70 feet above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 21, 63.24.
- 14.26.29.213 (*886,p.407; 911,p.168; 941,p.206). Phillip Stoos. New measuring point, lower edge of pump base, 0.30 foot above land-surface datum. To measure, let tape down through hole under north side of pump. Water level, in feet below land-surface datum, 1942: Jan. 21, 53.94.
- 14.26.29.441a (*886,p.407; 911,p.168; 941,p.206). J. W. Wiggins. Water level, in feet below land-surface datum, 1942: Jan. 21, 34.79.
- 14.26.29.441b (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 21, 33.89.
- 14.26.30.441 (*886,p.407; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 20, 55.20.
- 14.26.32.131a. B. F. Knoll. Drilled irrigation well, equipped with turbine pump. Measuring point, top of 1½-inch pipe projecting from west side of pump base, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 20, 53.31.
- 14.26.32.332 (*845,p.295; 886,p.408; 911,p.163; 941,p.201). B. E. Spencer.

14.26.32.332. B. E. Spencer--Continued.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	33.04	May 12	33.57	July 15	32.75	Sept. 20	38.77
Mar. 13	33.75	June 23	32.39	Aug. 17	33.27	Nov. 15	34.26
Apr. 14	34.87						

14.26.35.344 (*886,p.408; 911,p.168; 941,p.206). Water level, in feet below land-surface datum, 1942: Feb. 14, 66.55.

15.24.23.344 (*886,p.408; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Feb. 14, 66.55.

15.24.27.344 (*886,p.408; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 19, 59.85.

15.24.28.244 (*886,p.408; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 19, 88.83.

15.24.32.211 (*911,p. 169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 16, 41.77.

15.24.34.341 (*886,p.408; 911,p.169; 941,p.206). S. Lanning. New measuring point, center of tap hole in top of discharge pipe, 1.30 feet above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 39.82.

15.24.35.143 (*886,p.408; 911,p.169; 941,p.206). E. P. Malone. Water level, in feet below land-surface datum, 1942: Jan. 16, 21.71.

15.24.36.243 (*886,p.408; 911,p.169; 941,p.206). Windmill removed. Well is now equipped with pressure pump. Measuring point, top of casing, 0.40 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 37.67.

15.24.36.321 (*886,p.408; 911,p.169; 941,p.206). Measurements discontinued.

15.25.12.11a (*886, p. 408; 911, p. 169; 941, p. 206). F. U. Gooding. New measuring point, lower edge of slot in north side of pump case, 0.61 foot above pump base and 1.11 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 20, 35.64.

15.25.12.111b (*886,p.408; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 20, 35.64.

15.25.12.231 (*886,p.408; 911,p.169; 941,p.206). Ben Truman. Measurements discontinued.

15.25.24.111 (*886,p.408; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 20, 12.06.

15.25.24.211 (*886,p.409; 911,p.169; 941,p.206). Water level, in feet below land-surface datum, 1942: Jan. 20, 7.65.

15.25.26.423. R. T. Spence. Drilled irrigation well, equipped with turbine pump. Measuring point, top of casing, 1.20 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 20, 3.59.

15.25.27.321 (*886,p.409; 911,p.169; 941,p.206). Chas. W. Nelson. Water level, in feet below land-surface datum, 1942: Jan. 19, 17.50.

15.25.28.331 (*886,p.409; 911,p.169). Carroll Jackson. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 19, 32.35.

15.25.33.112 (*886,p.409; 911,p.169; 941,p.206). Carroll Jackson. Windmill removed. Well is now equipped with pressure pump. Water level, in feet below land-surface datum, 1942: Jan. 19, 11.18.

15.25.35.111 (*845,p.295; 886,p.409; 911,p.163; 941,p.201). Moss Spence.

Water level, in feet below land-surface datum, 1942							
Jan. 19	15.51	May 11	21.75	July 15	21.63	Sept. 20	21.94
Mar. 13	17.47	June 23	21.55	Aug. 17	20.92	Nov. 15	22.42
Apr. 14	19.85						

a Windmill pumping.

15.25.35.311 (*886,p.409; 911,p.169; 941,p.206). R. E. Coleman. Water level, in feet below land-surface datum, 1942: Jan. 19, 28.85.

15.25.36.333a. John M. Norris. Drilled irrigation well, about 200 feet south of well 15.25.36.333. Equipped with turbine pump. Measuring point, top of base plate of pump head, 0.10 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 19, 23.20.

15.25.36.333 (*886,p.409; 911,p.169; 941,p.206). John M. Norris. Water level, in feet below land-surface datum, 1942: Jan. 19, 24.20.

15.26.5.121 (*886,p.409; 911,p.169; 941,p.206). B. E. Spencer. Abandoned well. No equipment. Water level, in feet below land-surface datum, 1942: Jan. 20, 38.24.

15.26.5.142 (*886,p.409; 911,p.169; 941,p.206). H. S. Russell. Water level, in feet below land-surface datum, 1942: Jan. 20, 27.52.

15.26.6.311 (*886,p.409; 911,p.169; 941,p.206). Calvin Graham. Water level, in feet below land-surface datum, 1942: Jan. 20, 33.02.

15.26.9.133 (*911,p.169; 941,p.206). E. M. George. Water level, in feet below land-surface datum, 1942: Jan. 20, 16.68.

15.26.9.222 (*886,p.417; 911,p.163; 941,p.201). Harry Cowan.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	33.14	May 11	33.08	July 15	34.91	Sept. 20	34.49
Mar. 13	33.07	June 23	33.61	Aug. 17	34.64	Nov. 15	34.39
Apr. 14	33.09						

15.26.14.222. Bored well, 2 feet southwest of section corner post. Diameter 2 inches, depth 8 feet. Measuring point, top of casing, 0.15 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 20, 2.38.

15.26.19.211 (*941,p.202). Lake Arthur Cemetery.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	23.87	May 11	25.04	July 15	26.79	Sept. 20	27.90
Mar. 13	23.85	June 23	26.19	Aug. 17	27.72	Nov. 15	27.82
Apr. 14	24.50						

15.26.19.442 (*886,p.418; 911,p.169; 941,p.207). About 6 inches of top of casing removed because of rusting. New measuring point, top of casing at east side of well, 0.10 foot below land-surface datum. Possible discrepancy of a few tenths of a foot between preceding and succeeding measurements. Water level, in feet below land-surface datum, 1942: Jan. 20, 5.47.

15.26.20.144 (*886,p.418; 911,p.169; 941,p.207). Water level, in feet below land-surface datum, 1942: Jan. 20, 18.30.

15.26.20.431 (*886,p.418; 911,p.169; 941,p.207). Hand pump removed. Well now equipped with windmill. New measuring point, top of casing at high point on north side of well, 0.30 foot above land-surface datum. Possible discrepancy of several tenths of a foot between preceding and succeeding measurements. Water level, in feet below land-surface datum, 1942: Jan. 20, 10.15.

15.26.29.111 (*886,p.418; 911,p.169; 941,p.207). E. E. Jackson. Water level, in feet below land-surface datum, 1942: Jan. 20, 3.68.

15.26.29.222 (*886,p.418; 911,p.169; 941,p.207). Water level, in feet below land-surface datum, 1942: Jan. 20, 12.58.

15.26.29.231 (*886,p.418; 911,p.169; 941,p.207). Water level, in feet below land-surface datum, 1942: Jan. 20, 8.80.

15.26.30.131 (*886,p.418; 911,p.169; 941,p.207). Paul Robinson. No measurements made in 1942.

15.26.30.224 (*886,p.418; 911,p.169; 941,p.207). Water level, in feet below land-surface datum, 1942: Jan. 20, 6.27.

15.26.31.111 (*886,p.418; 911,p.169; 941,p.207). E. J. Gromo. Water level, in feet below land-surface datum, 1942: Jan. 20, 9.55.

15.26.31.333. Drilled irrigation well, equipped with turbine pump. Measuring point, top of casing, 0.20 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 19, 15.12.

15.26.32.231 (*886, p. 418; 911, p. 169; 941, p. 207). Water level, in feet below land-surface datum, 1942: Jan. 20, 7.70.

Eddy County

16.25.1. lot 3 (*886, p. 418; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 13.43.

16.25.1.344 (*886, p. 418; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 9.50.

16.25.1.423 (*886, p. 418; 911, p. 172; 941, p. 210). O'Bannon & Meyer. Water level, in feet below land-surface datum, 1942: Jan. 19, 11.94.

16.25.2. lot 9 (*886, p. 419; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 17.74.

16.25.2. lot 15 (*911, p. 172; 941, p. 210). Ralph Pearson. Water level, in feet below land-surface datum, 1942: Jan. 16, 18.78.

16.25.4. lot 12 (*886, p. 419; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 10.58.

16.25.5. lot 4 (*886, p. 419; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 9.22.

16.25.5 lot 5. E. P. Malone. Drilled irrigation well, equipped with turbine pump. Measuring point, top edge of east $\frac{1}{2}$ -inch hole in north side of pump case, 0.10 foot above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 9.48.

16.25.5. lot 13 (*886, p. 419; 911, p. 172; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 6.97.

16.25.5.443 (*886, p. 219; 911, p. 173; 941, p. 210). Winton Ault. Water level, in feet below land-surface datum, 1942: Jan. 16, 8.27.

16.25.6. lot 4 (*845, p. 296; 886, p. 419; 911, p. 169; 941, p. 207). Fred Neilson.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 19	11.42	May 11	10.46	July 15	12.51	Sept. 21	14.23
Mar. 13	12.44	June 23	12.30	Aug. 17	13.23	Nov. 15	13.79
Apr. 14	9.84						

16.25.6. lot 8 (*886, p. 419; 911, p. 173; 941, p. 210). E. P. Malone. Water level, in feet below land-surface datum, 1942: Jan. 16, 11.52.

16.25.6.313 (*845, p. 296; 886, p. 419; 911, p. 169; 941, p. 207). Mr. Childress. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Mar. 24, 27.14; Sept. 29, 27.76.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	27.45	27.46	27.39	27.25	27.31	27.56	27.56	27.56	27.56	27.56	27.62	27.62
2	27.49	27.55	27.34	27.23	27.35	27.56	27.56	27.56	27.56	27.58	27.64	27.64
3	27.50	27.42	27.28	27.32	27.33	27.30a	27.51	27.62	27.63a	27.72	27.70	27.70
4	27.53	27.41	27.31	27.30	27.28	27.33	27.48	27.62	27.68	27.44	27.72	27.72
5	27.67	27.39	27.40	27.34	27.32	27.26	27.46	27.61	27.70	27.55	27.71	27.71
6	27.58	27.52	27.10	27.28	27.41	27.27	27.45	27.58	27.73	27.69	27.76	27.76
7	27.59	27.34	27.25	27.35	27.35	27.26	27.45	27.58	27.70	27.70	27.70	27.70
8	27.42	27.32	27.63	27.44	27.27	27.25	27.42	27.58	27.70	27.70	27.70	27.70
9	27.45	27.48	27.46	27.45	27.22	27.25	27.45	27.58	27.70	27.70	27.70	27.70
10	27.58	27.55	27.42	27.47	27.15	27.28	27.45a	27.68	27.74	27.70	27.70	27.70
11	27.55	27.39	27.37	27.30	27.17	27.25	27.63a	27.68	27.57	27.67	27.67	27.67
12	27.55	27.34	27.32	27.31	27.15	27.30	27.58	27.65	27.51	27.67	27.67	27.67
13	27.45	27.42	27.40	27.40	27.23	27.37	27.56	27.61	27.51	27.64	27.64	27.64
14	27.63	27.32	27.33	27.27	27.29	27.27	27.63	27.58	27.60	27.70	27.70	27.70
15	27.53	27.27	27.18	27.32	27.22	27.26a	27.51	27.67	27.55	27.55a	27.41	27.65

a Tape measurement.

16.25.6.313. Mr. Childress--Continued.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
16	27.35	27.32	27.40	27.42	27.18	27.29	27.46	27.70	27.54	27.60	27.36	27.64
17	27.35	27.44	27.55	27.25	27.23	27.35	27.52	27.67	27.55	27.67	27.56	27.57
18	27.50	27.64	27.37	27.23	27.37	27.33	27.55	27.65	27.57	.....	27.59	27.55
19	27.64	27.50	27.22	27.27	27.42	27.30	27.55	27.65	.....	.....	27.54	.....
20	27.63	27.52	27.32	27.50	27.43	27.33	27.61	27.60	.....	.....	27.70	.....
21	27.59	27.35	27.60	27.43	27.26	27.36	27.68	27.59	.....	.....	27.64	.....
22	27.46	27.26	.....	27.10	27.25	27.40	27.63	27.67	.....	.....	.....	.....
23	27.42	27.31	27.32	27.06	27.27	27.46a	27.45	27.75	.....	.....	.....	.....
24	27.43	27.45	27.14	27.18	27.23	27.37	27.47	27.60	.....	.....	.....	.....
25	27.33	27.25	27.19	27.32	27.20	27.40	27.56	.....	.....	.....	.....	.....
26	27.35	27.46	27.44	27.30	27.17	27.42	27.62	.....	.....	.....	.....	.....
27	27.50	27.43	27.55	27.31	27.20	27.45	27.60	.....	.....	.....	.....	.....
28	27.30	27.28	27.45	27.28	27.22	27.47	27.56	.....	.....	.....	.....	.....
29	27.27	.....	27.46	27.22	27.25	27.53	27.53	.....a	27.76	.....	27.62	.....
30	27.38	.....	27.51	27.25	27.27	27.62	27.56	.....	27.62	.....	27.43	.....
31	27.50	.....	27.50	.....	27.25	.....	27.60	.....	.....	.....	.....	.....

16.25.8.111 (*886, p. 420; 911, p. 173; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 24.77.

16.25.10.311 (*886, p. 420; 911, p. 173; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 30.53.

16.25.10.354 (*886, p. 420; 911, p. 173). Clayton Gray. Measurements resumed in 1942. New measuring point, top of casing level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 48.60.

16.25.10.344 (*886, p. 420; 911, p. 173; 941, p. 210). Water level, in feet below land-surface datum, 1942: Jan. 16, 50.99.

16.25.11.233 (*886, p. 420; 911, p. 173; 941, p. 210). Noah Buck. Water level, in feet below land-surface datum, 1942: Jan. 16, 28.45.

16.25.12.124 (*886, p. 420; 911, p. 173; 941, p. 210). Buck Bros. Water level, in feet below land-surface datum, 1942: Jan. 19, 15.45.

16.25.12.412 (*886, p. 420; 911, p. 173; 941, p. 211). Terry Reser. Water level, in feet below land-surface datum, 1942: Jan. 19, 10.85.

16.25.13.211 (*886, p. 420; 911, p. 173; 941, p. 211). T. J. Terry. New measuring point, top of casing at north side of well, 0.03 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 19.64.

16.25.14.213 (*886, p. 420; 911, p. 173; 941, p. 211). Chas. Buck. Water level, in feet below land-surface datum, 1942: Jan. 16, 30.70.

16.25.15.233 (*886, p. 420; 911, p. 173). J. H. Everest. Measurements resumed in 1942. New measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.90 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 16, 66.74.

16.25.15.331 (*886, p. 421; 911, p. 173). J. W. Everest. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 16, 88.58.

16.25.24.212 (*886, p. 421; 911, p. 173; 941, p. 211). H. C. Powell. Water level, in feet below land-surface datum, 1942: Jan. 19, 30.42.

16.26.5. lot 3 (*886, p. 421; 911, p. 173; 941, p. 211). Mr. Taylor. Water level, in feet below land-surface datum, 1942: Jan. 19, 22.73.

16.26.5. lot 4 (*845, p. 297; 886, p. 421; 911, p. 170; 941, p. 211). H. V. Parker. Water levels, in feet below land-surface datum: Jan. 18, 1941, 31.78; Jan. 19, 1942, 27.35.

16.26.5.331 (*886, p. 421; 911, p. 173; 941, p. 211). Mrs. Nancy Eippers. Water level, in feet below land-surface datum, 1942: Jan. 19, 16.73.

16.26.6 lot 2 (*886, p. 421; 911, p. 173). H. V. Parker. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 19, 24.07.

a Tape measurement.

16.26.6.lot 4 (*886,p.421; 911,p.173). Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 16, 27.15.

16.26.6.333 (*886,p.421; 911,p.173; 941,p.211). O'Bannon & Meyer. Water level, in feet below land-surface datum, 1942: Jan. 19, 10.80.

16.26.7.121 (*886,p.421; 911,p.173; 941,p.211). L. Keith. Not used for irrigation at present. Equipped with hand pitcher pump. New measuring point, top of 1-by 12-inch board forming hand-pump base, 0.08 foot above concrete pump base and 0.68 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 19, 7.20.

16.26.7.521 (*886,p.421; 911,p.173; 941,p.211). C. Buck. Water level, in feet below land-surface datum, 1942: Jan. 19, 3.09.

16.26.7.332 (*886,p.421; 911,p.173; 941,p.211). Water levels, in feet below land-surface datum: Jan. 17, 1941, 14.77; Jan. 19, 1942, 8.58.

16.26.8.111 (*886,p.421; 911,p.173; 941,p.211). Reser & Johnson. Water level, in feet below land-surface datum, 1942: Jan. 19, 12.45.

16.26.15.333. F. A. Manda. Domestic well, equipped with hand pump. Measuring point, top of center of car-wheel drum covering well, 0.30 foot above land-surface datum. To expose measuring point, lift up tin around well. Water level, in feet below land-surface datum, 1942: Jan. 16, 9.66.

16.26.16.313 (*886,p.422; 911,p.173; 941,p.211). V. L. Gates. Water level, in feet below land-surface datum, 1942: Jan. 16, 3.80.

16.26.17.311 (*886,p.422; 911,p.173; 941,p.211). J. L. Muncy. Water level, in feet below land-surface datum, 1942: Jan. 13, 16.68.

16.26.17.331 (*886,p.422; 911,p.173; 941,p.211). Mr. Green. No measurements made in 1942.

16.26.18.331 (*886,p.422; 911,p.173; 941,p.211). Monroe Howard. Pump removed to install new equipment. Measuring point, top east edge of concrete pump foundation west of well, level with land-surface datum, 1.30 feet below top of concrete retaining wall west of well. Water level, in feet below land-surface datum, 1942: Jan. 19, 14.32.

16.26.18.411 (*886,p.422; 911,p.173; 941,p.211). G. G. Golder. Water level, in feet below land-surface datum, 1942: Jan. 19, 13.29.

16.26.19.113 (*886,p.422; 911,p.173; 941,p.211). Henry E. Hall. New measuring point, lower edge of 2-inch pipe on east side of pump, 0.30 foot above concrete pump foundation and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 19, 16.19.

16.26.19.133 (*886,p.422; 911,p.173; 941,p.211). F. M. Privett. Water level, in feet below land-surface datum, 1942: Jan. 19, 16.54.

16.26.19.211 (*886,p.422; 911,p.173; 941,p.211). H. V. Parker. New measuring point, top of base plate of pump head, 0.15 foot above concrete pump foundation and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 15, 9.54.

16.26.19.411 (*886,p.409; 911,p.170; 941,p.208). F. M. Privett.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15	27.84	May 11	34.22	July 15	37.79	Sept. 21	34.72
Mar. 13	28.04	June 23	33.69	Aug. 17	40.86	Nov. 15	31.39
Apr. 14	33.97						

16.26.21.333 (*886,p.409; 911,p.173; 941,p.211). J. H. Everest. Water level, in feet below land-surface datum, 1942: Jan. 14, 2.09.

16.26.28.333 (*886,p.410; 911,p.170; 941,p.208). Ina C. Harrall.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	9.57	May 11	10.65	July 15	13.03	Sept. 21	15.14
Mar. 13	8.17	June 23	11.98	Aug. 17	16.72	Nov. 15	12.02
Apr. 14	9.79						

16.26.28.431 (*886,p.410; 911,p.173; 941,p.211). R. R. Coleman. Water level, in feet below land-surface datum, 1942: Jan. 15, 8.72.

- 16.26.31.413 (*886,p.410; 911,p.173; 941,p.211). T. F. Wilson. Water level, in feet below land-surface datum, 1942: Jan. 15, 38.80.
- 16.26.32.411 (*886,p.410; 911,p.173; 941,p.211). O. V. Moore. Abandoned well; no equipment. New measuring point, top of concrete pump foundation at northeast corner of well, 0.83 foot above top of casing and land-surface datum. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 15.20.
- 16.26.32.421 (*886,p.410; 911,p.173; 941,p.211). W. W. Parker. New measuring point, lower east edge of pump base, 0.20 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 13.78.
- 17.25.13.131 (*886,p.410; 911,p.173; 941,p.211). L. G. Mousehke. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 85.20.
- 17.25.22.223 (*886,p.410; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 135.66.
- 17.25.24.433 (*886,p.410; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 82.40.
- 17.25.26.222 (*886,p.410; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 91.56.
- 17.25.35.411 (*886,p.410; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 13, 110.31.
- 17.26.2.133 (*886,p.410; 911,p.173; 941,p.211). A. L. Jackson. Water level, in feet below land-surface datum, 1942: Jan. 15, 5.62.
- 17.26.3.231 (*886,p.411; 911,p.173; 941,p.211). H. R. Rodgers. Water level, in feet below land-surface datum, 1942: Jan. 15, 4.61.
- 17.26.3.333-Drilled irrigation well, equipped with turbine pump. Measuring point, center of $\frac{3}{4}$ -inch tap hole in top of discharge pipe, 1.60 feet above concrete pump base and 1.90 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 15, 7.04.
- 17.26.3.433 (*886,p.411; 911,p.173; 941,p.211). Mr. Box. Water level, in feet below land-surface datum, 1942: Jan. 15, 5.23.
- 17.26.4.121 (*886,p.411; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 9.25.
- 17.26.4.331a (*886,p.411; 911,p.173; 941,p.211). Howard Stroup. Equipped with turbine pump. New measuring point, lower edge of pump base on west side of pump, 0.40 foot above land-surface datum. To measure, let tape down through hole in casing on west side of well. Water level, in feet below land-surface datum, 1942: Jan. 14, 1.45.
- 17.26.4.331b (*886,p.411; 911,p.173; 941,p.211). Howard Stroup. Abandoned well; no equipment. New measuring point, top of casing, 0.90 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 0.55.
- 17.26.4.413 (*886,p.411; 911,p.173). F. Crawford. Measurements resumed in 1941. New measuring point, center of $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 2.70 feet above concrete pump base and 3.40 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Dec. 6, 9.48. No measurements made in 1942.
- 17.26.5.422 (*886,p.411; 911,p.173; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 14, 9.53.
- 17.26.5.433 (*886,p.411; 911,p.173; 941,p.211). Measurements discontinued.
- 17.26.6.413 (*886,p.411; 911,p.173; 941,p.211). Fred Savoie. Water level, in feet below land-surface datum, 1942: Jan. 14, 34.75.
- 17.26.7.131 (*886,p.411; 911,p.173; 941,p.211). J. W. Collins. Water level, in feet below land-surface datum, 1942: Jan. 14, 42.87.
- 17.26.7.421 (*886,p.412; 911,p.173; 941,p.211). J. W. Jackson. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 19.24.

17.26.7.423 (*911,p.173; 941,p.211). New measuring point, top of casing, 0.34 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 15.87.

17.26.7.344 (*886,p.411;911,p.170; 941,p.208). Everest Scoggins.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	31.53	Apr. 14	36.63	June 23	39.67	Aug. 17	41.28
Mar. 13	31.65	May 11	36.07	July 15	40.98	Nov. 13	35.50

17.26.7.433 (*886,p.411; 911,p.173; 941,p.211). Everest Scoggins. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 26.90.

17.26.7.444 (*886,p.412; 911,p.173; 941,p.211). Albert Blake. Water level, in feet below land-surface datum, 1942: Jan. 14, 20.98.

17.26.9.111 (*886,p.412; 911,p.173; 941,p.211). Measurements discontinued.

17.26.9.333 (*886,p.412; 911,p.174; 941,p.211). Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 8.97.

17.26.10.333 (*886,p.412; 911,p.170; 941,p.208). V. L. Gates.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	4.60	Apr. 14	6.37	June 23	7.08	Sept. 21	7.21
Mar. 13	4.79	May 11	4.81	Aug. 17	7.90	Nov. 13	6.44

17.26.10.433 (*886,p.412; 911,p.174; 941,p.211). D. D. Sullivan. Water level, in feet below land-surface datum, 1942: Jan. 14, 14.41.

17.26.15.113 (*886,p.412; 911,p.174; 941,p.211). G. L. Allison. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 1.48.

17.26.15.121 (*886,p.412; 911,p.174; 941,p.211). Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 5.00.

17.26.15.211 (*886,p.412; 911,p.174; 941,p.211). J. M. Vogel. Water level, in feet below land-surface datum, 1942: Jan. 14, 11.57.

17.26.15.313 (*886,p.412; 911,p.174). J. H. Holloman. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 14, 1.48.

17.26.15.411 (*886,p.412; 911,p.174; 941,p.211). Mrs. A. J. Hardendorf. Water level, in feet below land-surface datum, 1942: Jan. 14, 11.25.

17.26.16.333 (*845,p.298; 886,p.412;911,p.171; 941,p.208). Artesia Cemetery.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	6.14	May 11	11.47	July 15	26.18	Sept. 21	13.99
Mar. 13	7.25	June 23	19.85	Aug. 17	16.77	Nov. 13	9.32
Apr. 14	11.65						

17.26.16.411 (*886,p.413; 911,p.174; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 11.54.

17.26.17.423 (*886,p.413; 911,p.174; 941,p.211). H. A. Denton. No measurements made in 1942.

17.26.18.224 (*886,p.413; 911,p.174; 941,p.211). Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 15, 27.40.

17.26.18.433 (*886,p.413; 911,p.174; 941,p.211). Lowery and Baca. Water level, in feet below land-surface datum, 1942: Jan. 14, 38.61.

17.26.18.442 (*886,p.413; 911,p.174; 941,p.211). Water level, in feet below land-surface datum, 1942: Jan. 15, 26.50.

17.26.20.133 (*886,p.413; 911,p.174; 941,p.211). W. E. Ragsdale. Water level, in feet below land-surface datum, 1942: Jan. 14, 25.48.

17.26.21.112 (*886,p.413; 911,p.174; 941,p.211). Roger Durand. Water level, in feet below land-surface datum, 1942: Jan. 13, 8.63.

17.26.21.341 (*886,p.413; 911,p.174; 941,p.212). W. T. Amstutz. No measurements made in 1942.

17.26.22.233 (*886,p.413; 911,p.174; 941,p.212). R. L. Paris. Water level, in feet below land-surface datum, 1942: Jan. 13, 18.34.

17.26.24.333. Bored well, 2 feet southwest of corner post at northeast corner of road intersection. Diameter 2 inches, depth 6 feet. Measuring point, top of casing, 0.20 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 13, 2.13.

17.26.27.413 (*886,p.413; 911,p.174; 941,p.212). W. E. Simmons. New measuring point, top of casing, 1.67 feet above land-surface datum. Let tape down through perforation in casing at northeast side of well. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 13, 11.16.

17.26.27.423 (*886,p.413; 911,p.174; 941,p.212). Leslie Martin. Pump removed. No equipment at well. New measuring point, top of casing, 0.32 foot below top of concrete pump base, 0.08 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 13, 10.38.

17.26.28.331 (*886,p.413; 911,p.174; 941,p.212). Carl Martin. Water level, in feet below land-surface datum, 1942: Jan. 13, 8.78.

17.26.29.131a (*886,p.413; 911,p.174; 941,p.212). Carl Martin. Water level, in feet below land-surface datum, 1942: Jan. 14, 26.04.

17.26.31.133 (*886,p.413; 911,p.174; 941,p.212). W. Clendenen. New measuring point, top of pump base, 0.15 foot above concrete pump base and top of casing and 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 13, 59.29.

18.25.23.111. Unused stock well, equipped with windmill. Measuring point, top of casing, 1.53 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 90.67.

18.26.2.333 (*886,p.414; 911,p.174; 941,p.212). S. O. Higgins. Water level, in feet below land-surface datum, 1942: Jan. 13, 11.06.

18.26.4.111a (*886,p.414; 911,p.174; 941,p.209). Frank Watkins. Measurements discontinued.

18.26.4.111b (*845,p.298; 886,p.414; 911,p.171; 941,p.212). Frank Watkins.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	19.32	May 11	a20.80	July 15	a21.70	Sept. 21	22.26
Mar. 13	a19.03	June 23	a22.56	Aug. 17	22.68	Nov. 13	20.02
Apr. 14	a20.65						

18.26.4.433 (*886,p.414; 911,p.174; 941,p.212). W. M. Schneider. Water level, in feet below land-surface datum, 1942: Jan. 12, 16.90.

18.26.7.234a (*845,p.299; 886,p.414; 911,p.171; 941,p.209). C. H. Hutsonpillar. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1942: Mar. 15, 43.58; Aug. 23-24, 47.30.

a Windmill pumping.

18.26.7.234a. C. H. Hutsonpillar--Continued.
 Highest daily water level, in feet below land-surface datum, 1942
 (From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	44.40	43.83	43.97	44.33	44.97	.....	46.53	.....	46.38	.....	44.54
2	.....	44.40	43.83	43.98	44.32	45.03	.....	46.57	.....	46.36	.....	44.52
3	45.40	44.33	43.73	43.99	44.36	45.06a	45.69	46.64	.....	46.34a	45.35	44.54
4	45.40	44.30	43.73	43.99	44.35	45.07	45.70	46.70	.....	46.31	45.24	44.52
5	45.41	44.26	43.75	44.01	44.38	45.06	45.67	46.77	.....	46.31	45.27	44.50
6	45.34	44.30	43.60	44.01	44.44	45.06	45.65	46.81	.....	46.26	45.27	.....
7	45.34	44.20	43.68	44.04	44.46	45.04	45.62	.....	.....	.....	45.25	.....
8	45.23	44.15	43.78	44.11	44.45	45.03	45.60	.....	.....	.....	45.17	.....
9	45.23	44.21	43.70	44.11	44.44	45.05	45.58	.....	.....	.....	45.08	.....
10	45.23	44.19	43.67	44.14	44.42	45.07	45.58	.....	.....	46.12	45.21	.....
11	45.17	44.12	43.65	44.12	44.40	45.05	.....	.....	46.87	46.03	.....	44.44
12	45.16	44.07	43.61	44.14	44.40	45.08	.....	.....	46.35	45.97	.....	44.43
13	45.07	44.06	43.65	44.17	44.45	45.10	.....	47.12	46.85	45.96a	45.06	44.38
14	45.13	44.03	43.65	44.18	44.49	45.07	.....	47.14	46.34	45.94	44.98	44.40
15	45.05	43.95	43.58	44.22	44.52	45.07a	45.59	47.16	46.82	45.88	44.89	44.37
16	44.95	43.97	43.70	44.28	44.52	45.10	45.58	47.16	46.82	45.88	44.89	44.35
17	44.88	43.98	43.76	44.30	44.55	45.15	45.63	47.15	46.82	45.88	44.94	44.30
18	44.93	44.05	43.70	44.30	44.63	45.17	45.70	47.16	46.81	.....	44.89	44.26
19	44.93	43.98	43.65	44.33	44.70	45.19	45.76	47.18	.....	.....	44.86	.....
20	44.89	43.98	43.72	44.45	44.73	45.22	45.82	47.20	.....	.....	44.84	.....
21	44.83	43.93	43.79	44.45	44.73	45.27	45.84	47.21	.....	.....	.....	.....
22	44.75	43.87	43.78	44.34	44.75	45.32	45.97	47.24	.....	.....	.....	.....
23	44.70	43.88	43.75	44.33	44.79	45.36a	46.04	47.30	.....	.....	.....	.....
24	44.68	43.90	43.69	44.35	44.79	45.34	46.06	47.30	.....	.....	.....	.....
25	44.60	43.79	43.72	44.38	44.78	45.38	46.13	.....	.....	.....	.....	.....
26	44.60	43.90	43.82	44.37	44.78	45.41	46.20	.....	.....	.....	.....	.....
27	44.59	43.85	43.92	44.37	44.82	45.45	46.25	.....	.....	.....	.....	.....
28	44.50	43.76	43.90	44.34	44.84	45.52	46.28	.....	.....	.....	44.56	.....
29	44.43	.....	43.91	44.28	44.88	45.57	46.33	.....	46.52	.....	44.59	.....
30	44.47	.....	43.94	44.34	44.92	45.63	46.38	.....	46.46	.....	44.50	.....
31	44.45	.....	43.99	.....	44.94	.....	46.46	.....	.....	.....	.....	.....

18.26.7.234c (#845,p.300; #886,p.414; 911,p.174; 941,p.212). C. H. Hutsonpillar. No measurements made in 1942.

18.26.9.311 (#886,p.414; 911,p.174; 941,p.212). B. E. Spencer. Abandoned well; no equipment. New measuring point, top of casing, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 13, 27.74.

18.26.10.233 (#886,p.415; 911,p.174; 941,p.212). Mr. Muncie. Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 13, 9.80.

18.26.15.133 (#886,p.415; 911,p.174; 941,p.212). J. D. Terry. Measurements resumed in 1942: Water level, in feet below land-surface datum, 1942: Jan. 13, 15.78.

18.26.15.311 (#886,p.415; 911,p.174; 941,p.212). J. H. Everest. Water level, in feet below land-surface datum, 1942: Jan. 13, 14.16.

18.26.15.444 (#886,p.415; 911,p.174; 941,p.212). Water level, in feet below land-surface datum, 1942: Jan. 13, 13.14.

18.26.17.112 (#886,p.415; 911,p.174; 941,p.212). Mr. Yates. Water level, in feet below land-surface datum, 1942: Jan. 12, 35.61.

18.26.18.241 (#886,p.415; 911,p.174; 941,p.212). L. McGrory. New measuring point, center of $\frac{3}{8}$ -inch tap hole, in top of discharge pipe, 1.40 feet above concrete pump base, and 1.70 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 38.32.

18.26.18.323 (#886,p.415; 911,p.174; 941,p.212). W. D. McGrory. Water level, in feet below land-surface datum, 1942: Jan. 12, 38.69.

18.26.21.344 (#886,p.415; 911,p.171; 941,p.209). Town of Dayton. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Dec. 18, 33.18; Jan. 1, 36.60.

a Tape measurement.

18.26.21.344. Town of Dayton--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	36.69	.....	34.08	33.83	34.09	34.63	.....	35.64	.....	35.36	.....	33.43
2	36.55	.....	34.02	33.85	34.09	34.68	.....	35.67	.....	35.34	.....	33.35
3	36.49	.....	33.91	33.85	34.15	34.69a	35.15	35.72	.....	35.33a	34.29	33.38
4	36.47	34.69	33.92	33.85	34.12	34.70	.....	35.75	.....	35.28	34.18	33.33
5	36.43	34.72	33.93	33.90	34.17	34.66	.....	35.76	.....	35.30	34.25	33.33
6	36.33	34.70	33.78	33.87	34.25	34.69	.....	35.77	.....	35.25	34.22	.....
7	36.32	34.60	33.90	33.93	34.20	34.69	.....	.....	.....	.....	34.18	.....
8	36.17	34.57	33.95	33.97	34.18	34.69	.....	.....	.....	.....	34.09	.....
9	36.19	34.60	33.85	33.96	34.15	34.70	.....	.....	.....	.....	34.07	.....
10	36.08	34.59	33.80	33.98	34.15	34.73	.....	.....	.....	35.10	34.12	.....
11	36.04	34.49	33.77	33.91	34.17	34.73	.....	.....	35.90	35.04	.....	33.32
12	36.00	34.47	33.73	33.94	34.17	34.77	.....	.....	35.89	34.99	.....	33.30
13	35.90	34.44	33.78	34.00	34.23	34.80	.....	35.91	35.87	35.00a	33.97	33.29
14	35.92	34.35	33.77	33.93	34.28	34.77	.....	35.90	35.84	34.98	33.87	33.30
15	35.80	34.32	33.65	34.00	34.24	34.79a	35.28	35.94	35.81	34.92	33.77	33.27
16	35.72	34.32	33.81	34.06	34.27	34.81	35.25	35.95	35.79	34.92	33.80	33.24
17	35.65	34.31	33.85	33.95	34.33	34.85	35.28	35.96	35.77	34.92	33.84	33.23
18	35.68	34.33	33.72	33.98	34.43	34.85	35.30	35.98	35.77	.....	33.77	33.18
19	35.63	34.26	33.67	34.01	34.48	34.86	35.32	36.01	.....	.....	33.72	.....
20	35.57	34.25	33.78	34.13	34.50	34.91	35.38	36.00	.....	.....	33.68	.....
21	35.50	34.17	33.76	34.07	34.45	34.95	35.43	36.03	.....	.....	.....	.....
22	35.40	34.13	33.73	33.93	34.47	34.99	35.41	36.07	.....	.....	.....	.....
23	35.35	34.17	33.70	33.93	34.50	35.06a	35.40	36.10	.....	.....	.....	.....
24	35.28	34.13	33.62	34.01	34.48	34.97	35.35	36.03	.....	.....	.....	.....
25	35.20	34.03	33.67	34.08	34.47	35.01	35.43	.....	.....	.....	.....	.....
26	35.20	34.17	33.81	34.05	34.45	35.04	35.47	.....	.....	.....	.....	.....
27	35.22	34.05	33.83	34.08	34.48	35.08	35.50	.....	.....	.....	.....	.....
28	.....	33.96	33.78	34.07	34.51	35.10	35.53	.....	.....	.....	33.44	.....
29	.....	.....	33.80	33.98	34.55	35.17	35.51	.....	35.49	.....	33.44	.....
30	.....	.....	33.85	34.06	34.57	35.20	35.57	.....	35.41	.....	33.34	.....
31	.....	.....	33.88	.....	34.59	.....	35.69	.....	.....	.....	.....	.....

18.26.22.314 (*886, p. 416; 911, p. 174). Measurements resumed in 1942. Water level, in feet below land-surface datum, 1942: Jan. 13, 8.32.

18.26.23.213 (*886, p. 416; 911, p. 174; 941, p. 212). Smith & Horner. Water level, in feet below land-surface datum, 1942: Jan. 13, 17.55.

18.26.24.223 (*886, p. 416; 911, p. 174; 941, p. 212). Water level, in feet below land-surface datum, 1942: Jan. 13, 1.26.

18.26.28.132 (*886, p. 416; 911, p. 174; 941, p. 212). Dayton School. Water level, in feet below land-surface datum, 1942: Jan. 13, 52.85.

18.26.28.142 (*886, p. 416; 911, p. 174; 941, p. 212). Water level, in feet below land-surface datum, 1942: Jan. 12, 41.06.

18.26.33.111 (*886, p. 416; 911, p. 174; 941, p. 212). Harvey Yates. Water level, in feet below land-surface datum, 1942: Jan. 12, 66.01.

19.26.12.323 (*886, p. 416; 911, p. 174; 941, p. 212). E. W. Dimock. Abandoned well. Measuring point, top of wooden well curbing at center of west side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 15.74.

19.26.12.333. Unused well, no equipment. Measuring point, top of casing, 1.95 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 13	20.75	May 11	21.18	July 15	23.19	Sept. 21	23.81
Apr. 14	21.50	June 23	22.90	Aug. 17	24.42	Nov. 13	22.96

19.26.13.211 (*886, p. 416; 911, p. 174; 941, p. 212). R. L. House. Water level, in feet below land-surface datum, 1942: Jan. 12, 8.02.

a Tape measurement during day.

19.26.13.344. Bored well, 1 foot south and 2 feet west of U. S. Wildlife Refuge sign marker, on south side of road and on north side of fence. Measuring point, top of casing, 0.80 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 4.30.

19.26.14.431 (*886,p.416; 911,p.174; 941,p.212). Albert Lee. Water level, in feet below land-surface datum, 1942: Jan. 12, 3.55.

19.26.27.233 (*845,p.300; 886,p.416; 911,p.172; 941,p.210). Lakewood School.

Water level, in feet below land-surface datum, 1942							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	446.29	May 11	37.63	July 15	48.28	Sept. 21	47.05
Mar. 13	441.14	June 23	48.65	Aug. 17	46.07	Nov. 13	45.88
Apr. 14	41.37						

19.26.28.334 (*886,p.416; 911,p.174; 941,p.212). Water level, in feet below land-surface datum, 1942: Jan. 12, 46.20.

19.26.28.441 (*886,p.416; 911,p.174; 941,p.212). D. D. Sullivan. Present measuring point, lower edge of discharge pipe. Subtract 5.75 feet from tape measurements to reduce to land-surface datum, which is 0.25 foot below concrete pump base. Water level, in feet below land-surface datum, 1942: Jan. 12, 53.11.

19.26.33.412 (*886,p.416; 911,p.174; 941,p.212). E. G. Kimmel. Water level, in feet below land-surface datum, 1942: Jan. 12, 39.63.

20.26.6.431 (*886,p.416; 911,p.174; 941,p.212). J. G. Moutry. Water level, in feet below land-surface datum, 1942: Jan. 12, 35.67.

20.26.7.122 (*845,p.300; 886,p.417; 911,p.172; 941,p.210). Coats Filling Station.

Water level, in feet below land-surface datum, 1942							
Jan. 12	36.57	May 11	38.21	July 15	42.30	Sept. 21	40.83
Mar. 13	36.47	June 23	40.62	Aug. 17	43.70	Nov. 13	39.43
Apr. 14	39.43						

20.26.7.421 (*886,p.417; 911,p.174; 941,p.212). E. Mantel. Water level, in feet below land-surface datum, 1942: Jan. 12, 30.99.

20.26.8.112 (*886,p.417; 911,p.174; 941,p.212). J. G. Moutry. Water level, in feet below land-surface datum, 1942: Jan. 12, 24.15.

20.26.17.411 (*886,p.417; 911,p.174; 941,p.212). Cecil E. Homeman and Roy D. Angell. Water level, in feet below land-surface datum, 1942: Jan. 12, 43.00.

20.26.21.111 (*886,p.417; 911,p.174; 941,p.212). Measurements discontinued.

HIDALGO COUNTY (VIRDEN VALLEY)

By H. M. Babcock and R. L. Cushman

Virден Valley is the eastern part of the area commonly known as the Duncan-Virден Valley, which lies along the upper Gila River in Greenlee County, Ariz., and Hidalgo County, N. Mex. A detailed investigation of the ground-water resources of the Duncan-Virден Valley was conducted during the period October 1, 1939, to May 31, 1941, by the Geological Survey, United States Department of the Interior, in cooperation with the United States Engineer Office, War Department, and a preliminary report on it was released by the Geological Survey. The work included the periodic measurement of water levels in observation wells, which was continued for the remainder of the year 1941 and all through 1942.

a Windmill pumping.

During 1942 the water levels in most of the observation wells were measured twice, and the amount of water pumped was computed. Hydrographs of two of the observation wells, monthly precipitation, and pumpage are shown in figure 3, in the Arizona section of this volume. Sixteen water-level measurements were made in Hidalgo County.

The water levels reported for Hidalgo County are expressed in feet below a fixed measuring point.

Water-level measurements

181 (*911,p.175; 941,p.213). P. Lunt. SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T. 18 S., R. 21 W. Water levels, in feet below measuring point, 1942: Mar. 10, 55.65; Dec. 16, 44.50.

185 (*911,p.175; 941,p.213). J. Pierce. SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 18 S., R. 21 W. Water levels, in feet below measuring point, 1942: Nov. 10, a/; Dec. 16, a/.

201 (*911,p.175; 941,p.213). J. E. Payne. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 2, T. 19 S., R. 21 W. Water levels, in feet below measuring point, 1942: Mar. 10, 43.42; Dec. 16, 43.55.

204 (*911, p. 176; 941, p. 213). State of New Mexico. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 2, T. 19 S., R. 21 W. Water levels, in feet below measuring point, 1942: Mar. 10, b/; Dec. 16, b/.

215 (*911, p. 176; 941, p. 213). John B. Jones. SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 19 S., R. 21 W. Water level, in feet below measuring point, 1942: Mar. 10, 16.25.

217 (*911,p.176; 941,p.213). Nancy O. Pace. (The name of the owner was published in Water-Supply Papers 911 and 941 as Skaggs.) NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 19 S., R. 21 W. Water levels, in feet below measuring point, 1942: Mar. 10, 21.05; Dec. 16, 21.15.

219 (*911,p.177; 941,p.213). Ruth Skaggs. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 19 S., R. 21 W. Water levels, in feet below measuring point, 1942: Mar. 10, c/; Dec. 12, c/.

232 (*911,p.177; 941,p.214). Floyd Johns. NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 19 S., R. 20 W. Water levels, in feet below measuring point, 1942: Mar. 10, 27.31; Nov. 10, 29.70; Dec. 16, 29.80.

LEA COUNTY

By C. R. Murray and P. D. Akin

The investigation of the ground-water resources of Lea County was continued during 1942 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Progress reports on this investigation, which describe the geologic and hydrologic features of the occurrence of ground water in Lea County, have been published in the 9th to 13th Biennial Reports of the State engineer of New Mexico. Water levels and other hydrologic data on Lea County have been published in Geological Survey

- a Dry, 27.3 feet below measuring point.
- b Dry, 52.3 feet below measuring point.
- c Dry, 14.2 feet below measuring point.

Water-Supply Papers 817, 911, and 941. These reports should be consulted for detailed descriptions of the wells whose water levels are given in the following tables.

Water levels were measured in 28 wells in February, March, July, September, October, and November 1942 and in 56 others in February only. Automatic water-stage recorders were in operation on 3 wells in the county in 1942.

Precipitation, pumpage, and fluctuations in water level

After the extremely wet year of 1941, the precipitation returned to about normal in 1942. As reported by the United States Weather Bureau, the precipitation was 17.63 inches at Lovington, which was 2.46 inches above normal, in contrast to 34.81 inches in 1941; at Hobbs it was 12.75 inches, 2.26 inches below normal, in contrast to 32.19 inches in 1941; and at Tatum, it was 17.68 inches in 1942, in contrast to 36.49 inches in 1941.

The return of the precipitation to about normal necessitated the use of considerable ground water for growing crops. It is estimated that about 3,500 acre-feet of water was used on approximately 3,000 acres of cropland in Lea County in 1942, whereas only about 1,550 acre-feet was used on about 2,600 acres in 1941. It has been previously estimated that about 3,200 acre-feet of ground water was used on approximately 2,950 acres in 1940. The use of ground water for industrial purposes appears to have been about the same in 1942 as in previous years. The total amount of ground water pumped in Lea County during 1942 for agricultural, stock, and industrial use is estimated, on the basis of preliminary data, to have been about 9,550 acre-feet.

The maximum observed rise in water level in any well in Lea County in January 1943, with respect to its position in February 1942, was 2.88 feet, and the largest decline was 2.11 feet; however, all measured water levels were 1 foot to nearly 11 feet higher than they had been at the beginning of 1941. North and northeast of Lovington, water levels rose in nearly all the wells and in certain wells attained stages more than 6 feet above their stages in January 1941. Water levels in observation wells near Tatum were higher in early 1943 with respect to their stages in January 1941 than in any other area in Lea County. In the area immediately surrounding Lovington, water levels in early 1943 were from a few hundredths to a few tenths of a

foot lower than in early 1942 but were in general slightly more than 1 foot higher than in early 1941. In the area west of the highway between Lovington and Hobbs water levels rose slightly during 1942, and in the area east of the highway they maintained about the same level. In the area immediately north of Hobbs, water levels were a few tenths of a foot higher in early 1943 than in early 1942, but in the southern part of Hobbs they were a few tenths of a foot lower than in the previous year. West of Hobbs, along the escarpment of the High Plains, water levels were slightly higher than in early 1942, but in the vicinity of Pearl, below and south of the escarpment, they were, in general, from a few hundredths to more than 2 feet lower. Water levels in a few wells in this area, however, for example, wells 20.35.1.222 and 20.37.9.110, were nearly 3 feet higher in early 1943 than in early 1942 and from 6 to nearly 11 feet higher than in early 1941.

It is believed that the continued rise in water levels in Lea County is the result of recharge from the abnormal precipitation of 1941. Exceptionally large rises in water level in individual wells are probably caused by changes in the pumping regimen near the wells. The fall in water levels near Lovington is believed to be the result of a heavier draft by irrigation pumps on the ground-water supply here than elsewhere in the county. West and south of the High Plains escarpment the lower water levels are probably the result of the natural discharge of temporarily stored ground water toward the Pecos River.

Water-level measurements

12.36.19.223 (#911, p.179; 941, p.218). O. V. Fisher. Water level, in feet below land-surface datum, 1942: Feb. 1, 23.40.

12.36.24.434 (#941, p.218). Jerry Clay. New measuring point, 3.80 feet above land-surface datum, top edge of coupling on 4-inch casing. Water level, in feet above land-surface datum, 1942: Feb. 1, 1.32.

12.36.25.222 (#911, p.180; 941, p.218). State land.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 1	21.70	July 26	21.35	Oct. 23	21.19
Mar. 30	21.57	Sept. 26	21.22	Nov. 25	21.11

12.36.27.212 (#911, p.180; 941, p.218). State land.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 1	32.04	July 26	33.20	Oct. 23	33.52
Mar. 29	32.39	Sept. 26	33.52	Nov. 25	33.52

12.56.29.110 (*911, p. 181; 941, p. 218). E. D. Holt. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Dec. 25-26, 27.89; Jan. 1, 30.48.

Highest daily water levels, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.	Oct.	Nov.	Dec.
1	30.48	30.21	29.97	29.72	29.47	29.23	29.03	.....	28.38	28.17	28.01
2	30.47	30.20	29.97	29.71	29.45	29.22	29.03	.....	28.37	28.17	27.99
3	30.47	30.19	29.94	29.70	29.46	29.21	29.02	.....	28.37	28.16	27.99
4	30.47	30.18	29.94	29.69	29.45	29.21	29.01	.....	28.36	28.14	27.99
5	30.47	30.16	29.93	29.68	29.44	29.20	29.00	.....	28.36	28.15	27.98
6	30.46	30.17	29.90	29.66	29.45	29.19	28.98	.....	28.36	28.15	27.99
7	30.46	30.15	29.91	29.66	29.43	29.18	28.98	.....	28.35	28.15	27.99
8	30.42	30.14	29.92	29.66	29.42	29.18	28.97	.....	28.34	28.13	27.99
9	30.42	30.14	29.90	29.66	29.41	29.16	28.96	.....	28.34	28.12	27.98
10	30.42	30.14	29.89	29.65	29.39	29.16	28.95	.....	28.33	28.15	27.98
11	30.40	30.12	29.88	29.63	29.39	29.14	28.94	.....	28.31	28.15	27.98
12	30.40	30.10	29.87	29.62	29.37	29.14	28.94	.....	28.30	28.13	27.97
13	30.38	30.10	29.86	29.62	29.37	29.14	28.94	.....	28.29	28.12	27.97
14	30.39	30.09	29.85	29.60	29.37	29.13	28.93	.....	28.28	28.11	27.96
15	30.38	30.08	29.82	29.60	29.35	29.13	28.91	.....	28.28	28.09	27.96
16	30.35	30.07	29.84	29.60	29.34	29.12	28.91	.....	28.28	28.08	27.95
17	30.34	30.06	29.84	29.58	29.34	29.11	28.90	.....	28.28	28.09	27.94
18	30.35	30.07	29.82	29.56	29.34	29.10	28.90	.....	28.27	28.08	27.94
19	30.34	30.06	29.80	29.56	29.34	29.10	28.90	.....	28.26	28.07	27.94
20	30.34	30.05	29.81	29.57	29.34	29.09	28.89	.....	28.25	28.06	27.94
21	30.32	30.03	29.82	29.56	29.32	29.08	28.89	.....	28.24	28.08	27.93
22	30.31	30.01	29.79	29.53	29.30	29.08	28.88	.....	28.23	28.08	27.93
23	30.29	30.00	29.78	29.52	29.30	29.06	28.86	.....	28.23	28.06	27.92
24	30.28	30.00	29.74	29.52	29.29	29.06	28.86	.....	28.22	28.04	27.91
25	30.27	29.98	29.75	29.52	29.28	29.06	28.85	.....	28.22	28.03	27.89
26	30.27	30.00	29.76	29.51	29.27	29.05	28.84	28.42	28.21	28.05	27.89
27	30.26	29.98	29.76	29.50	29.26	29.05	28.83	28.42	28.19	28.02	27.93
28	30.23	29.97	29.74	29.50	29.25	29.04	28.82	28.41	28.18	28.01	27.93
29	30.22	.....	29.75	29.47	29.24	29.05	.....	28.40	28.18	28.02	27.90
30	30.22	.....	29.75	29.47	29.24	29.05	.....	28.39	28.19	28.00	27.90
31	30.22	.....	29.74	.....	29.23	.....	.....	.....	28.18	.....	27.90

12.57.20.331 (*941, p. 220). W. O. Dunlap, Jr. New measuring point, 17.71 feet above land-surface datum, top of casing, 17.32 feet above top edge of tee that runs to house. Water level, in feet above land-surface datum, 1942: Feb. 1, 13.87.

12.58.4.312 (*941, p. 220). G. C. Copeland. Water level, in feet below land-surface datum, 1942: Feb. 1, 40.07.

13.35.11.222 (*911, p. 181; 941, p. 220). Ashley G. Green. Water level, in feet below land-surface datum, 1942: Feb. 1, 29.59.

13.35.19.211 (*911, p. 182; 941, p. 220). Seth Alston. Water level, in feet below land-surface datum, 1942: Feb. 1, 45.55.

13.36.6.221 (*911, p. 182; 941, p. 220). R. W. Duncan. Water level, in feet below land-surface datum, 1942: Feb. 1, 34.60.

13.36.33.341 (*911, p. 182; 941, p. 220). Lewis Beaman. Water level, in feet below land-surface datum, 1942: Feb. 2, 40.85.

13.36.35.323 (*911, p. 182; 941, p. 220). J. C. McClish. Water level, in feet below land-surface datum, 1942: Feb. 2, 36.65.

13.37.3.131 (*911, p. 182; 941, p. 220). Jim H. Simpson. Water level, in feet below land-surface datum, 1942: Feb. 2, 37.94.

13.37.3.133 (*911, p. 182; 941, p. 220). Jim H. Simpson. No measurements made in 1942.

13.37.7.121 (*911, p. 182; 941, p. 220). Tom Parsley.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 2	32.59	July 26	32.15	Oct. 23	32.02
Mar. 29	29.41	Sept. 26	32.06	Nov. 25	31.97

13.37.13.132 (*911,p.183; 941,p.220). A. M. Brownfield.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 2	26.46	July 26	26.97	Oct. 23	27.15
Mar. 29	26.64	Sept. 26	27.10	Nov. 25	27.21

13.37.28.411 (*941,p.221). Marvin E. Powell. No measurements made in 1942.

13.38.6.341 (*911,p.184; 941,p.221). Opal Fulton. Water level, in feet below land-surface datum, 1942: Feb. 2, 43.99.

14.35.30.141 (*911,p.184, incorrectly numbered 14.35.30.3; *941,p.221). W. A. Anderson. Water level, in feet below land-surface datum, 1942: Feb. 1, 45.78.

14.35.33.433 (*911,p.184; 941,p.221). W. A. Anderson.

Water level, in feet below land-surface datum, 1942

Feb. 1	40.81	July 26	40.59	Oct. 23	40.50
Mar. 29	40.72	Sept. 26	40.52	Nov. 27	40.44

14.36.2.410(*911,p.185; 941,p.221). Clarence M. King. Water level, in feet below land-surface datum, 1942: Feb. 2, 39.53.

14.36.6.420 (*911,p.185; 941,p.221). S. A. and W. B. Richardson. Water level, in feet below land-surface datum, 1942: Feb. 2, 39.38.

14.36.9.111 (*911,p.185; 941,p.221). L. C. Bivins. Water level, in feet below land-surface datum, 1942: Feb. 2, 38.90.

14.36.9.210(*911,p.185; 941,p.221). Buford Rankins. Water level, in feet below land-surface datum, 1942: Feb. 2, 40.50.

14.36.13.211 (*911,p.185; 941,p.221). Noble L. Hibbits.

Water level, in feet below land-surface datum, 1942

Feb. 2	36.42	July 26	36.19	Oct. 23	36.14
Mar. 29	36.34	Sept. 26	36.18	Nov. 27	36.12

14.36.14.121 (*911,p.186; 941,p.221). V. M. Chamber. Water level, in feet below land-surface datum, 1942: Feb. 2, 41.11.

14.37.3.113 (*911,p.186; 941,p.221). Lois C. Hobbs. No measurements made in 1942.

14.37.14.112 (*911,p.186; 941,p.221). R. W. Smith.

Water level, in feet below land-surface datum, 1942

Feb. 2	35.36	July 26	34.99	Oct. 23	34.85
Mar. 29	35.20	Sept. 26	34.88	Nov. 27	34.82

14.37.16.421 (*911,p.186; 941,p.221). School land. Water level, in feet below land-surface datum, 1942: Feb. 2, 29.13.

14.37.19.211 (*911,p.186; 941,p.221). A. B. Hennington. Measurements discontinued.

14.37.20.410 (*911,p.186; 941,p.221). Doyle Hudgens. Water level, in feet below land-surface datum, 1942: Feb. 2, 34.13.

14.37.27.130 (*911,p.187; 941,p.221). J. R. Fort.

Water level, in feet below land-surface datum, 1942

Feb. 2	36.73	July 26	36.50	Oct. 23	36.41
Mar. 29	36.64	Sept. 26	36.43	Nov. 27	36.35

14.38.27.240 (*911,p.187; 941,p.222). Mal Morrison Gaines. Water level, in feet below land-surface datum, 1942: Feb. 2, 36.96.

14.38.28.120 (*911,p.187; 941,p.222). Ila M. Cox.

Water level, in feet below land-surface datum, 1942

Feb. 2	24.28	July 26	24.43	Oct. 23	24.24
Mar. 30	24.32	Sept. 27	24.30	Nov. 27	24.28

15.35.35.112 (*941,p.222). Will Gorrell. Water level, in feet below land-surface datum, 1942: Feb. 3, 39.97.

15.36.8.131 (#911,p.188; 941,p.222). Orren Beatty. Water levels, in feet below land-surface datum, 1942: July 26, 40.20; Sept. 26, 40.23; Oct. 23, 40.18; Nov. 27, 40.15.

15.36.14.311 (#941,p.222). Mr. Graham. Water level, in feet below land-surface datum, 1942: Feb. 3, 42.96.

15.36.29.410 (#911,p.189; 941,p.222). D. A. Hudgens. Water level, in feet below land-surface datum, 1942: Feb. 3, 41.89.

15.36.29.441 (#941,p.222). H. R. Fleming. New measuring point, top edge of south $\frac{3}{4}$ -inch hole in east side of Peerless pump base, 0.14 foot above concrete pump foundation and 0.64 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Feb. 3, 41.55.

15.37.21.330 (#911,p.189; 941,p.222). Robert W. Dean. New measuring point, north edge of south 4- by 4-inch wooden pipe clamp, 0.50 foot above land-surface datum. Reference point, top of 14- by 5/8-inch machine bolt, with cross in top, set in concrete 44 feet slightly north of west of well under north-south fence line, 8.6 feet north of large gatepost on north side of gate, in line with earth tank, 0.32 foot below land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 11	29.55	July 26	29.57	Oct. 23	31.56
Mar. 30	29.56	Sept. 27	31.47	Nov. 27	29.30

15.37.27.110 (#941,p.222). C. L. Naul. Water level, in feet below land-surface datum, 1942: Feb. 3, 29.44.

15.38.22.200 (#911,p.190; 941,p.222). Etta Arnett. Water level, in feet below land-surface datum, 1942: Feb. 3, 28.72.

16.36.1.400 (#911,p.190; 941,p.222). Lorene Basley. Water level, in feet below land-surface datum, 1942: Feb. 3, 39.75.

16.36.4.433 (#911,p.190; 941,p.222). City of Lovington. No measurements made in 1942.

16.36.4. lot 12 (#911,p.190; 941,p.222). E. H. Byers. Equipped with water-stage recorder. Highest and lowest water levels, in feet below land-surface datum, 1942: Mar. 15, 43.41; Aug. 4, 45.19.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.61	43.51	43.47	.....	43.76	43.83	.....	45.03	44.13	44.37	43.97	44.00
2	43.61	43.51	43.45	.....	43.87	43.82	.....	45.11	44.12	44.33	44.08	43.98
3	43.61	43.50	43.44	.....	44.05	43.81	.....	45.12	44.24	44.30	44.11	44.01
4	43.62	43.49	43.45	.....	44.13	43.88	.....	45.13	44.31	44.26	44.09	44.01
5	43.61	43.49	43.43	44.28	44.23	43.97	.....	45.06	44.29	44.23	44.07	44.02
6	43.60	43.50	43.42	44.25	44.24	43.97	.....	44.99	44.26	44.19	44.04	44.13
7	43.60	43.50	43.44	44.21	44.19	43.97	.....	44.93	44.25	44.16	44.01	44.15
8	43.59	43.50	43.45	44.18	44.14	43.93	.....	44.87	44.23	44.13	43.98	44.13
9	43.59	43.52	43.44	44.14	44.13	43.91	.....	44.82	44.17	44.11	43.98	44.10
10	43.58	43.51	43.43	44.10	44.19	43.90	.....	44.76	44.13	44.08	43.95	44.06
11	43.58	43.50	43.43	44.06	44.19	43.99	.....	44.70	44.12	44.04	43.92	44.03
12	43.58	43.49	43.42	44.03	44.29	44.10	.....	44.65	44.12	44.03	43.90	44.00
13	43.57	43.50	43.42	44.01	44.29	44.21	.....	44.62	44.12	44.00	43.88	43.98
14	43.57	43.49	43.42	43.97	44.27	44.35	.....	44.55	44.03	43.99	43.88	43.94
15	43.57	43.48	43.43	43.97	44.21	44.37	.....	44.51	44.02	43.98	43.93	43.92
16	43.56	43.48	43.43	43.93	44.17	44.43	.....	44.48	43.99	43.97	43.96	43.90
17	43.55	43.47	43.49	43.90	44.15	44.49	.....	44.46	43.98	43.95	43.96	43.88
18	43.56	43.49	43.51	43.88	44.12	44.47	.....	44.43	44.02	43.93	43.92	43.85
19	43.55	43.47	43.50	43.87	44.08	44.43	.....	44.39	44.11	43.92	43.90	43.83
20	43.55	43.48	43.56	43.86	44.07	44.45	.....	44.31	44.13	43.91	43.89	43.80
21	43.54	43.47	43.63	43.83	44.07	44.39	.....	44.27	44.11	43.89	43.89	43.80
22	43.53	43.46	43.85	43.79	44.05	44.35	.....	44.25	44.22	43.88	43.90	43.79
23	43.53	43.46	43.89	43.78	44.02	44.29	.....	44.23	44.32	43.86	43.88	43.77
24	43.53	43.47	43.97	43.77	44.00	44.29	.....	44.20	44.41	43.86	43.86	43.76
25	43.53	43.45	43.97	43.77	43.97	44.39	.....	44.18	44.38	43.94	43.84	43.74
26	43.53	43.47	43.97	43.75	43.93	44.49	.....	44.14	44.38	43.98	43.83	43.76
27	43.53	43.45	43.97	43.74	43.92	44.55	.....	44.14	44.54	43.95	43.82	43.74
28	43.52	43.43	43.89	43.72	43.90	.....	44.45	44.13	44.52	43.93	43.86	43.73
29	43.51	.....	.....	43.72	43.89	.....	44.57	44.18	44.49	43.91	43.99	43.70
30	43.53	.....	43.85	43.74	43.87	.....	44.74	44.17	44.42	43.91	44.01	43.70
31	43.52	.....	.....	.....	43.85	.....	44.89	44.15	.....	43.90	.....	43.69

16.36.5. lot 10 (#911,p.192; 941,p.223). Mrs. Mary A. Coxey. Water level, in feet below land-surface datum, 1942: Feb. 3, 44.53.

16.36.5. lot 14 (#911,p.192; #941,p.223). Aubry Bush. Water level, in feet below land-surface datum, 1942: Feb. 3, 45.23.

16.36.5.321 (#911,p.192; 941,p.223). J. T. Phillips. Water level, in feet below land-surface datum, 1942: Feb. 3, 44.81.

16.36.5.411 (#911,p.192; 941,p.223). Mrs. Emma J. Robinson. Water level, in feet below land-surface datum, 1942: Feb. 3, 45.72.

16.36.8.424 (#911,p.192; 941,p.223). Seth Alston and J. S. Eaves. Water level, in feet below land-surface datum, 1942: Feb. 3, 51.10.

16.36.10.233 (#911,p.192; 941,p.223). J. E. Simmons. Water level, in feet below land-surface datum, 1942: Feb. 3, 50.22.

16.36.15.240 (#911,p.192; 941,p.223). J. C. Griffin. Water level, in feet below land-surface datum, 1942: Feb. 3, 47.20.

16.36.27.133 (#911,p.192; 941,p.223). State land.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 4	49.65	July 27	49.59	Oct. 23	49.59
Mar. 30	49.66	Sept. 27	49.60	Nov. 26	49.60

16.37.19.200 (#911,p.193; #941,p.224). H. Taylor Montith. Water level, in feet below land-surface datum, 1942: Feb. 3, 28.60.

16.37.33.110 (#911,p.193; 941,p.224). Elbert Shipp. Water level, in feet below land-surface datum, 1942: Feb. 3, 27.48.

16.38.25.144 (#941,p.224). Raymond Eaves. Water level, in feet below land-surface datum, 1942: Feb. 4, 31.90.

16.38.28.444 (#911,p.193; 941,p.224). J. L. Williams. Windmill placed over well in November 1942.

Water level, in feet below land-surface datum, 1942

Feb. 4	32.66	July 27	31.19	Oct. 24	32.05
Mar. 30	31.49	Sept. 27	31.09	Nov. 26	32.20

16.38.35.110 (#941,p.224). F. B. Spencer. Water level, in feet below land-surface datum, 1942: Feb. 4, 34.63.

17.34.35.130 (#941,p.224). Phillips Petroleum Co.'s Mabel lease.

Water level, in feet below land-surface datum, 1942

Feb. 5	90.57	July 28	90.63	Oct. 23	90.60
Mar. 30	90.61	Sept. 27	90.70	Nov. 26	90.72

17.35.35.120 (#941,p.224). Phillips Petroleum Co.'s lease.

Water level, in feet below land-surface datum, 1942

Feb. 5	39.27	July 28	39.13	Oct. 23	38.99
Mar. 30	39.19	Sept. 27	39.04	Nov. 26	38.98

17.36.3.333 (#941,p.224). State land.

Water level, in feet below land-surface datum, 1942

Feb. 4	42.64	July 27	42.34	Oct. 23	42.22
Mar. 30	42.49	Sept. 27	42.27	Nov. 26	42.22

17.37.13.310 (#911,p.193; 941,p.225). John Catchings. Water level, in feet below land-surface datum, 1942: Feb. 4, 26.08.

17.27.26.330 (#911,p.194; 941,p.225). Mrs. Dave B. Wilhoit. Water level, in feet below land-surface datum, 1942: Feb. 4, 26.69.

17.37.34.441 (#941,p.225). J. D. Merrell. Water level, in feet below land-surface datum, 1942: Feb. 4, 24.68.

17.37.36.141 (#911,p.194). M. J. Waltman. State school land. Water level, in feet below land-surface datum, 1942: Feb. 4, 23.78.

17.38.30.113 (#911,p.194; 941,p.225). W. H. Martin. Water level, in feet below land-surface datum, 1942: Feb. 4, 23.97.

a Windmill pumping.

17.38.30.312 (*911,p.194; *941,p.225). Colan M. Hawkins.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 4	26.47	July 27	26.48	Oct. 24	26.55
Mar. 30	26.51	Sept. 27	26.54	Nov. 26	26.62

18.36.27.111 (*911,p.195; 941,p.225). State land.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 5	38.23	July 28	38.13	Oct. 23	38.09
Mar. 30	38.20	Sept. 27	38.16	Nov. 26	38.18

18.38.2.131 (*911,p.195; 941,p.225). Sam Daimont. Water level, in feet below land-surface datum, 1942: Feb. 4, 27.48.

18.38.4.232 (*911,p.195; 941,p.225). J. R. Isaacs.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Feb. 4	22.32	July 27	22.59	Oct. 24	22.04
Mar. 30	22.36	Sept. 27	22.12	Nov. 26	22.08

18.38.15.400 (*911,p.196; *941,p.225). W. L. Greehon. Equipped with water-stage recorder. Highest water level, in feet below land-surface datum, 1942: Nov. 4-7, 26.65. Lowest water level not determined.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	July	Sept.	Oct.	Nov.	Dec.
1	27.24	27.10	27.07	26.95	26.91	.....	.....	26.78	26.70	26.74
2	27.24	27.10	27.06	26.95	27.12	.....	.....	26.78	26.69	26.72
3	27.23	27.10	27.03	.....	27.62	.....	.....	26.79	26.68	26.71
4	27.24	27.10	27.03	26.99	27.22	.....	.....	26.77	26.65	26.70
5	27.24	27.09	27.04	26.97	27.17	.....	.....	26.72	26.65	26.69
6	27.19	27.11	27.00	26.97	27.97	.....	.....	26.77	26.65	.....
7	27.19	27.08	27.01	26.96	.....	.....	.....	26.78	26.65	.....
8	27.19	27.09	27.06	26.97	.....	.....	.....	26.75	26.75	.....
9	27.19	27.11	27.03	26.99	.....	.....	.....	26.81	26.75	.....
10	27.20	27.10	27.01	.....	31.82	.....	.....	26.80	26.78	.....
11	27.18	27.08	27.02	27.01	31.52	.....	.....	26.78	26.78	.....
12	27.18	27.08	27.00	26.99	31.47	.....	.....	26.79	26.77	26.75
13	27.17	27.07	27.00	27.01	.....	.....	.....	26.79	26.76	26.75
14	27.20	27.07	27.00	26.97	.....	.....	.....	26.79	26.76	26.72
15	27.21	27.06	26.98	26.97	.....	.....	.....	26.78	.....	26.74
16	27.21	27.07	27.01	26.98	28.57	.....	.....	26.78	.....	26.72
17	27.21	27.07	27.03	26.94	28.57	.....	.....	26.79	.....	26.72
18	27.17	27.09	27.00	26.92	28.52	.....	.....	.....	.....	26.73
19	27.16	27.07	26.97	27.02	28.52	.....	.....	.....	.....	26.74
20	27.17	27.07	26.98	27.01	28.52	.....	.....	.....	.....	26.70
21	27.16	27.05	27.04	27.00	28.47	.....	.....	.....	26.70	26.70
22	27.15	27.04	26.99	26.94	28.42	.....	.....	.....	26.68	26.70
23	27.15	27.04	26.97	26.95	28.37	.....	.....	.....	26.69	26.69
24	27.14	27.06	26.96	26.99	.....	.....	.....	.....	26.72	26.67
25	27.11	27.04	26.97	26.95	.....	.....	.....	26.77	26.72	26.67
26	27.12	27.06	26.99	26.92	.....	.....	.....	26.77	26.70	26.67
27	27.15	27.05	27.00	26.93	.....	27.11	26.80	26.75	26.68	26.75
28	27.15	27.00	26.97	26.92	.....	.....	26.80	26.75	26.77	26.72
29	27.12	.....	26.98	26.90	.....	.....	26.80	26.75	26.76	26.71
30	27.12	.....	26.99	26.92	.....	.....	26.79	26.75	26.75	26.69
31	27.13	.....	26.97	.....	.....	.....	.....	26.76	.....	26.69

18.38.22.321 (*911,p.196; *941,p.226). Earl C. Scott. Water level, in feet below land-surface datum, 1942: Feb. 4, 34.63.

18.38.22.412 (*911,p.196; 941,p.226). R. V. Holman. Water level, in feet below land-surface datum, 1942: Feb. 4, 37.36.

18.38.26.343 (*911,p.196; 941,p.226). Mr. Morrison. New measuring point, 9.22 feet above land-surface datum, is base of pump, 0.14 foot above concrete pump base. Water level, in feet below land-surface datum, 1942: Feb. 4, 42.21.

a Tape measurement.

18.38.30.200 (#911,p.196; 941,p.226). Mrs. Sadie Davis.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	23.79	July 28	23.79	Oct. 24	23.73
Mar. 30	23.86	Sept. 27	23.76	Nov. 26	23.75

19.35.13.211 (#911, p.197; 941,p.226). Clara Fowler.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	18.38	July 28	19.55	Oct. 23	20.04
Mar. 30	18.86	Sept. 27	19.94	Nov. 26	20.26

19.35.24.222 (#911,p.197; 941,p.226). A. R. Brashears. Water level, in feet below land-surface datum, 1942: Feb. 5, 18.00.

19.36.19.131 (#911,p.197; 941,p.227). Louis S. Evans Estate. Water level, in feet below land-surface datum, 1942: Feb. 5, 15.18.

19.36.32.111 (#911,p.198; 941,p.227). S. P. Jordan. Water level, in feet below land-surface datum, 1942: Feb. 5, 15.15.

19.37.32.141 (#911,p.198, incorrectly numbered 19.37.32.131; 941,p.227). Mrs. E. A. Anderson. Water level, in feet below land-surface datum, 1941: Nov. 28, 11.12 (erroneously published in Water-Supply Paper 941 as 10.12).

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	11.59	July 28	11.89	Oct. 23	11.89
Mar. 30	11.85	Sept. 27	11.87	Nov. 26	11.95

19.38.2.122 (#941,p.227). A. C. Cheser. Water level, in feet below land-surface datum, 1942: Feb. 4, 43.59.

19.38.2.242 (#941,p.227). Mr. Dunn. Water level, in feet below land-surface datum, 1942: Feb. 4, 44.38.

19.38.2.424 (#941,p.227). A. C. Cheser. No measurements made in 1942.

20.35.1.222 (#911,p.198; 941,p.227). J. L. Wood.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	22.07	July 28	20.68	Oct. 23	20.08
Mar. 30	21.68	Sept. 27	20.24	Nov. 26	19.95

20.37.9.110 (#911,p.199; #941,p.227). W. H. Van Laughlin.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	30.01	July 28	27.91	Oct. 23	27.52
Mar. 30	28.97	Sept. 27	27.68	Nov. 26	27.43

20.37.9.110a (#941,p.227). W. H. Van Laughlin.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Feb. 5	29.13	July 28	27.07	Oct. 23	26.70
Mar. 30	28.19	Sept. 27	26.85	Nov. 26	26.64

LUNA COUNTY (MIMBRES VALLEY)

By C. R. Murray

The investigation of the ground-water resources of the Mimbres Valley was continued in 1942 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Progress reports on this investigation, which was begun in 1927, have been published in the 10th to 13th Biennial Reports of the State engineer of New Mexico and in Geological Survey Water-Supply Paper 637. These reports describe the geologic and hydrologic

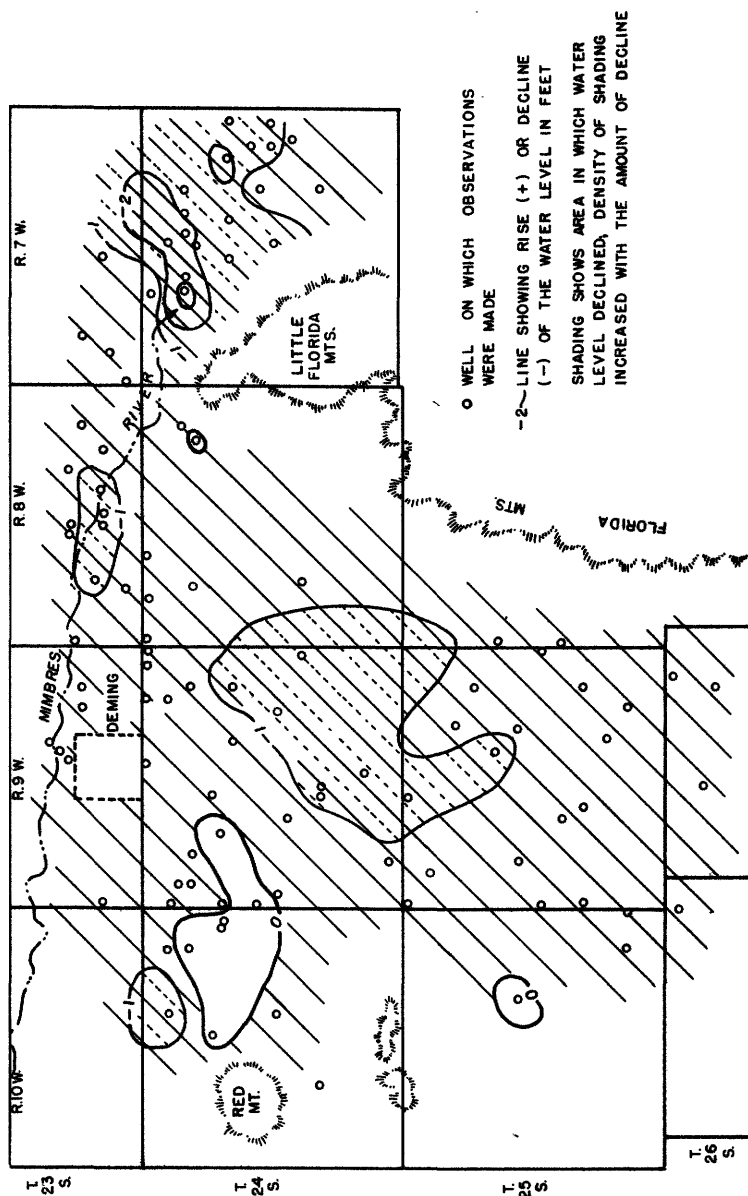


Figure 18.—Change in water level in Mimbres Valley, N. Mex., from January 1942 to January 1943.

features of the occurrence of ground water in the Mimbres Valley. Water levels and other hydrologic data on Luna County have been published in Water-Supply Papers 817, 845, 886, 911, and 941. These reports should be consulted for detailed descriptions of the wells whose water levels are given in the tables that follow.

Precipitation, pumpage, and fluctuations in water level

The precipitation at Deming in 1942, as reported by the United States Weather Bureau, was 10.24 inches. This is 1.24 inches above the normal of 9.00 inches. A large proportion of the precipitation occurred in July, August, and September. In 1941, the total precipitation recorded was 14.89 inches, 5.89 inches above normal.

Approximately 13,000 acres of land was irrigated by ground water in the Mimbres Valley in 1942. The acreages irrigated in 1941 and 1940 have been previously estimated at 12,170 and 11,730 acres, respectively. The amount of ground water used for agricultural and industrial purposes in 1942 is estimated, from preliminary data, at about 24,500 acre-feet. The estimated amounts for 1941 and 1940 were 21,000 and 25,500 acre-feet, respectively.

Water levels were measured in 70 wells in January, March, May, and October 1942, and in 59 additional wells in January only. Automatic water-stage recorders were in operation on 5 wells in Mimbres Valley during the year. The measurements made during January were used in preparing maps showing the yearly change in the ground-water reservoir in Mimbres Valley, and the measurements made on the selected group of wells throughout the year show the seasonal fluctuations of the water table.

Changes of water level from January 1942 to January 1943 are shown on figure 18. Water levels declined during 1942 over about 200 square miles of the area shown. In the area south of Deming, where water levels declined in 1941, they declined again in 1942, and over about 21 square miles they declined more than 1 foot. East of Red Mountain, water levels rose a fraction of a foot over an area of about 7 square miles; but just to the north they declined more than 1 foot over an area of about 2 square miles. It was in this same area that a large rise occurred in 1941. In the vicinity of Deming, and toward the east along the Mimbres River, water levels declined more than 1 foot over an area of nearly 3 square miles.

East of the Little Florida Mountains and the ground-water dam, which extends north of the mountains, water levels continued to decline. A lowering of more than 1 foot took place over an area of about 15 square miles, in about 3.5 square miles of which the lowering was greater than 2 feet, the greatest decline in any one well being 3.19 feet in well 24.7.8.221. Two small, isolated rises in water level are shown on figure 18, one near the center of T.25 S., R. 10 W., and the other just west of the north end of the Little Florida Mountains.

Northwest of the area shown in figure 18, in Tps. 21 and 22 S., Rs. 10 and 11 W., water levels declined about 3.5 feet during 1942. A rise of about 6.5 feet had occurred in this area during 1941 as a result of the abnormal flow of the Mimbres River.

The general lowering of ground-water levels in Mimbres Valley is caused by the removal of ground water from storage by irrigation wells. In the area in which the lowering has been greatest, irrigation with ground water has been most intensive. The rise of water levels east of Red Mountain may be caused partly by the southeasterly movement of water from the area just to the north, where a large rise occurred in 1941. The western part of the area in which the rise occurred in 1942 is only lightly pumped, and a smaller lowering of water levels there is to be expected. Just north of the eastern part, a number of wells have been deepened within the last two years to depths of a few hundred feet. The water in the lower aquifers is under pressure and tends to recharge the shallower aquifers in the vicinity of the deep wells. Use of water from the lower aquifers also lessens the draft on the shallow water, and at least a temporary slackening in the rate of lowering of water levels should occur.

Water-level measurements

21.10.6 (*886,p.427;*911,p.204; 941,p.231). Tom Tigner. Water levels, in feet below land-surface datum, 1942: Jan. 15, 8.17; Mar. 13, 7.54; May 23, 8.67; Oct. 16, 9.35.

21.11.13 (*886,p.427; 911,p.205; *941,p.231). R. A. Gunter. Water levels, in feet below land-surface datum, 1942: Jan. 15, 29.25; Mar. 13, 26.03; May 23, 27.86; Oct. 16, 31.00.

21.11.35.310 (*886,p.427; 911,p.205; 941,p.231). State land, Tigner lease. Water levels, in feet below land-surface datum, 1942: Jan. 15, 18.77; Mar. 13, 20.03; May 22, 23.33; Oct. 16, 21.68.

22.10.6.233 (*941,p.231). State land, Tigner lease. No measurements made in 1942.

22.10.18.121 (*886, p.428; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 70.63; Mar. 11, 70.40; May 22, 70.94; Oct. 16, 71.21.

22.10.20.210 (*911, p.205; 941, p.232). State land. No measurements made in 1942.

22.11.2.210 (*886, p.428; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 21.44; Mar. 13, 22.63; May 22, 25.18; Oct. 16, 25.70.

22.11.13.122 (*886, p.429; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 61.50; Mar. 11, 61.53; May 22, 62.19; Oct. 16, 62.68.

22.11.13.221 (*886, p.429; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 68.89; Mar. 11, 68.77; May 22, 69.29; Oct. 16, 69.77.

22.11.14.222 (*886, p.430; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 52.23; Mar. 11, 52.65; May 22, 53.74; Oct. 16, 54.32.

22.11.23.222 (*886, p.430; 911, p.205; 941, p.232). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 47.43; Mar. 11, 47.61; May 22, 48.52; Oct. 16, 48.88.

23.7.17.200 (*941, p.232). Water levels, in feet below land-surface datum, 1942: Jan. 16, 92.90; Mar. 11, a/95.42; May 22, 93.09; Oct. 15, a/93.69.

23.7.25.331 (*911, p.206). Frank Veslay. Measurements discontinued.

23.7.30. lot 16 (*886, p.431; 911, p.206; 941, p.232). H. T. Foster. Water levels, in feet below land-surface datum, 1942: Jan. 16, 25.44; Mar. 11, 25.31; May 22, 26.03; Oct. 15, 25.75.

23.7.30.400 (*911, p.206; 941, p.232). John Kelly. New measuring point, bottom south edge of south 8- by 8-inch timber supporting 4- by 4-inch pipe clamps, 0.65 foot above concrete well curb and land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 60.84.

23.7.31.120 (*911, p.206; 941, p.232). William Haas. Water level, in feet below land-surface datum, 1942: Jan. 14, 45.07.

23.7.31.140 (*911, p.206; 941, p.232). William Haas. New measuring point, top of concrete curb, east side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 45.79.

23.7.33.211 (*911, p.206; 941, p.232). Lewis and R. S. Sayer. Water level, in feet below land-surface datum, 1942: Jan. 14, a/62.20.

23.8.3.300 (*941, p.233). Water levels, in feet below land-surface datum, 1942: Jan. 16, 131.14; Mar. 13, 131.18; June 14, 131.20; Oct. 16, 131.32.

23.8.13.400 (*886, p.431; 911, p.206; 941, p.233). Bart and John H. Childs. Water levels, in feet below land-surface datum, 1942: Jan. 16, 37.47; Mar. 11, 38.43; May 22, 37.63; Oct. 15, 38.08.

23.8.25.311 (*911, p.206; 941, p.233). Ed Remondini. Water level, in feet below land-surface datum, 1942: Jan. 16, 20.88.

23.8.26.131 (*886, p.431; 911, p.206; 941, p.233). George Snyder. Water levels, in feet below land-surface datum, 1942: Jan. 16, 33.25; Mar. 11, 32.81; May 22, 35.75; Oct. 15, 35.42.

23.8.28.241 (*911, p.206; 941, p.233; designated incorrectly in former reports as 23.8.28.222). C. R. Lewis, Jr. Water level, in feet below land-surface datum, 1942: Jan. 15, 42.78.

23.8.29.433 (*886, p.432; 911, p.206; 941, p.233). B. N. Ruebush. New measuring point, $\frac{1}{2}$ -inch hole in southwest side of pump base, 0.81 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 15, 45.94.

23.8.30.133 (*886, p.432; 911, p.206; *941, p.233). Lee Wilkerson. Water level, in feet below land-surface datum, 1942: Jan. 15, 46.97.

a Windmill pumping.

23.8.32.323 (*886, p.432; 911, p.207; 941, p.233). Jess T. Gosnell. Water levels, in feet below land-surface datum, 1942: Jan. 13, 40.74; Mar. 11, 40.58; May 22, 40.85; Oct. 15, 42.00.

23.8.33.221 (*911, p.207; 941, p.233). A. J. Inderrieden. Water level, in feet below land-surface datum, 1942: Jan. 15, 37.00.

23.8.34.111 (*911, p.207; 941, p.233). A. J. Inderrieden. Water level, in feet below land-surface datum, 1942: Jan. 15, 34.29.

23.8.34.211 (*886, p.432; 911, p.207; 941, p.233). H. T. Foster. Water levels, in feet below land-surface datum, 1942: Jan. 16, 33.87; Mar. 11, 33.64; May 22, 36.02; Oct. 15, 36.08.

23.8.35.211b (*941, p.233). Joe Remondini. Water level, in feet below land-surface datum, 1942: Jan. 16, 28.60.

23.9.7.240 (*911, p.207; 941, p.233). R. M. Wilson ranch. Water level, in feet below land-surface datum, 1942: Jan. 15, 97.81.

23.9.19.131 (*886, p.433; 911, p.207; 941, p.233). Peru Mining Co. Well obstructed. Measurements discontinued.

23.9.22.200 (*886, p.433; 911, p.207; 941, p.234). Roy Perkins. Water levels, in feet below land-surface datum, 1942: Jan. 15, 62.95; Mar. 11, 62.90; May 22, 62.95; Oct. 16, 63.17.

23.9.25.311 (*886, p.434; 911, p.207; 941, p.234). Albert Ernst. New measuring point, top edge of slot in west side of 4-by 4-inch timber pump support on east side of well, 0.20 foot below concrete well curb at north side of well and land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 15, 55.95; Mar. 11, 55.92; Oct. 16, 57.56.

23.9.25.330 (*886, p.434; *911, p.207; 941, p.234). John C. Thompson. Water level, in feet below land-surface datum, 1942: Jan. 15, 60.25.

23.9.26.410 (*886, p.434; 911, p.207; 941, p.234). Hubert Ruebush. New measuring point, top edge of $\frac{1}{2}$ -inch hole in east side of pump base, 0.57 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 15, 55.23.

23.9.27.142 (*886, p.435; *911, p.207; *941, p.234). Mr. Gray. Water levels, in feet below land-surface datum, 1942: Jan. 15, 60.57; Mar. 11, 60.29; May 22, a/60.56; Oct. 16, 60.90.

23.9.27.221 (*886, p.435; 911, p.208; 941, p.234). R. E. Hardaway. Water levels, in feet below land-surface datum, 1942: Jan. 15, 57.80; Mar. 11, 57.83; May 22, a/58.83; Oct. 16, 58.01.

23.9.27.411 (*886, p.435; 911, p.208; 941, p.234). Thelma Austin. Measurements discontinued.

23.9.31.110 (*911, p.208; 941, p.234). Schauer and Lindauer. Water level, in feet below land-surface datum, 1942: Jan. 9, 77.18.

23.10.15 (*886, p.436; 911, p.208; 941, p.234). State land. Water levels, in feet below land-surface datum, 1942: Jan. 15, 92.81; Mar. 11, 91.99; May 22, 92.07; Oct. 16, 92.77.

24.6.29.300 (*941, p.234). Mr. Brownfield. No measurements made in 1942.

24.6.30.111 (*941, p.234). Mr. Brownfield. Water level, in feet below land-surface datum, 1942: Jan. 14, b/57.54.

24.7.4.424 (*886, p.437; 911, p.208; 941, p.234). G. D. Hatfield. Water levels, in feet below land-surface datum, 1942: Jan. 14, 84.58; Mar. 11, 83.89; May 20, 87.80; Oct. 15, b/91.52.

24.7.5.200 (*886, p.437; 911, p.208; 941, p.235). R. M. Williamson. New measuring point, top edge of east 6-by 6-inch timber across well, 0.48 foot above concrete well curb and 0.98 foot above land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 14, a/81.21; May 22, 80.56; Oct. 15, 81.42.

a Windmill pumping slowly.

b Windmill pumping.

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24.7.8.221 (*911, p. 208; 941, p. 235). J. M. McDougall. Water level, in feet below land-surface datum, 1942: Jan. 14, 80.63.

24.7.9.111 (*886, p. 437; 911, p. 208; *941, p. 235). Smyer Bros. Water levels, in feet below land-surface datum, 1942: Jan. 14, 80.88; Mar. 11, 80.52; Oct. 15, 80.67.

24.7.9.241 (*941, p. 235). G. D. Hatfield. Water level, in feet below land-surface datum, 1942: Jan. 14, 87.75.

24.7.10.111 (*911, p. 208; 941, p. 235). G. D. Hatfield. Water level, in feet below land-surface datum, 1942: Jan. 14, 88.02.

24.7.10.211 (*911, p. 208; 941, p. 235). Fred Hassman. Water level, in feet below land-surface datum, 1942: Jan. 14, 86.40.

24.7.11.111 (*911, p. 208; *941, p. 235). Edith E. Pollard. New measuring point, lower edge of rectangular hole in north side of pump, 2.05 feet above concrete well curb and 2.55 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 14, 94.54.

24.7.12.311 (*886, p. 437; 911, p. 209; 941, p. 235). E. N. Odenbaugh. Water levels, in feet below land-surface datum, 1942: Jan. 14, 74.83; Mar. 11, 75.02; May 22, 75.58.

24.7.13.212 (*911, p. 209; 941, p. 235). Percival & Dwyer. Water level, in feet below land-surface datum, 1942: Jan. 14, 68.44.

24.7.13.311 (*886, p. 438; 911, p. 209; 941, p. 235). Jennie Weeks. Water level, in feet below land-surface datum, 1942: Jan. 14, 74.18.

24.7.14.221 (*886, p. 438; *911, p. 209; *941, p. 235). J. H. Winslow. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Feb. 8-12, 77.95; Nov. 25-30, approximately 81.4.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.	Oct.	Nov.	Dec.
1	78.57	78.05	78.65	78.98	79.62	80.11	80.51	80.9	80.7	81.3	
2	78.53	78.04	78.68	78.98	79.65	80.13	80.51	80.9	80.7	81.3	
3	78.50	78.03	78.70	78.98	79.69	80.16	80.53	80.9	80.8	81.3	
4	78.46	78.02	78.74	78.98	79.72	80.19	80.56	80.9	80.8	81.3	
5	78.43	78.00	78.77	78.98	79.75	80.22	80.59	80.9	80.8	81.2	
6	78.42	78.00	78.78	78.98	79.79	80.25	80.61	80.8	80.9	81.2	
7	78.39	77.98	78.82	78.98	79.82	80.29	80.64	80.8	80.9	81.2	
8	78.36	77.95	78.86	78.97	79.84	80.33	80.66	80.8	80.9	81.2	
9	78.36	77.95	78.89	78.98	79.88	80.35	80.68	80.8	81.0	81.1	
10	78.36	77.95	78.92	78.97	79.89	80.39	80.71	80.8	81.0	81.1	
11	78.36	77.95	78.94	78.97	79.91	80.41	80.73	80.8	81.0	81.1	
12	78.35	77.95	78.97	78.98	79.91	80.44	80.75	80.7	81.1	81.0	
13	78.32	77.97	79.00	79.00	79.92	80.47	80.79	80.7	81.1	81.0	
14	78.31	78.01	79.01	79.03	79.92	80.51	80.81	80.7	81.1	81.0	
15	78.29	78.05	79.03	79.07	79.92	80.52	80.83	80.7	81.1	81.0	
16	78.26	78.08	79.03	79.11	79.92	80.54	80.85	80.7	81.1	81.0	
17	78.26	78.11	79.02	79.15	79.93	80.55	80.86	81.0	80.7	81.1	81.0
18	78.24	78.15	78.99	79.18	79.94	80.55	80.86	81.0	80.7	81.1	81.0
19	78.23	78.17	78.98	79.23	79.95	80.55	80.86	81.0	80.7	81.1	81.0
20	78.21	78.23	78.98	79.27	79.96	80.55	81.9	80.7	81.1	81.0	
21	78.19	78.25	78.97	79.30	79.96	80.55	81.0	80.7	81.2	81.0	
22	78.18	78.28	78.96	79.34	79.95	80.55	81.0	80.7	81.2	81.0	
23	78.16	78.33	78.95	79.37	79.94	80.54	81.0	80.7	81.3	81.0	
24	78.16	78.38	78.94	79.41	79.95	80.54	81.0	80.7	81.3	81.0	
25	78.14	78.41	78.94	79.43	79.95	80.53	81.0	80.6	81.4	81.0	
26	78.12	78.48	78.94	79.46	79.96	80.53	81.0	80.6	81.4	80.9	
27	78.10	78.53	78.94	79.49	79.97	80.53	81.0	80.6	81.4	80.9	
28	78.08	78.57	78.94	79.51	79.98	80.52	81.0	80.6	81.4	80.9	
29	78.08	.....	78.94	79.55	80.01	80.51	81.0	80.6	81.4	80.9	
30	78.08	.....	78.95	79.59	80.04	80.51	81.0	80.6	81.4	80.9	
31	78.06	.....	78.97	.....	80.07	.....	80.7	.....	80.9	.....

a Well pumping about 50 gallons per minute.

b Record from Sept. 17 accurate only to tenths of a foot.

24.7.14.331 (*911,p.209; 941,p.236). Catherine Nordhaus. Water level, in feet below land-surface datum, 1942: Jan. 14, 80.82.

24.7.15.122 (*886,p.438; *911,p.209; 941,p.236). J. N. McDougall. Water level, in feet below land-surface datum, 1942: Jan. 14, 85.49.

24.7.16.211 (*886,p.438; 911,p.209; 941,p.236). George Snyder. No measurements made in 1942.

24.7.16.211b (*941,p.236). George Snyder. Water levels, in feet below land-surface datum, 1942: Jan. 14, 81.08; Mar. 11, 81.30; May 22, 81.57; Oct. 15, 82.30.

24.7.21.222 (*911,p.210; *941,p.236). Hiram Jeter. Water level, in feet below land-surface datum, 1942: Jan. 14, 72.55.

24.7.24.111 (*886,p.438; 911,p.210; 941,p.236). Jasper Wilson. Water levels, in feet below land-surface datum, 1942: Jan. 14, 72.54; Mar. 11, 72.68; May 22, 72.78; Oct. 15, 73.35.

24.7.24.211 (*911,p.210; 941,p.236). J. S. Hack. Water level, in feet below land-surface datum, 1942: Jan. 14, 68.82.

24.7.24.312 (*911,p.210; 941,p.236). H. E. Emory (?). Water levels, in feet below land-surface datum, 1942: Jan. 14, 69.62; Mar. 11, 69.74; May 22, 69.86; Oct. 15, 70.25.

24.7.26.113 (*941,p.237). Mr. Brownfield. Water levels, in feet below land-surface datum, 1942: Jan. 14, 72.19; Mar. 11, 69.06; Oct. 15, 69.42.

24.8.1.333 (*886,p.438; 911,p.210; 941,p.237). F. K. Kretek. Water levels, in feet below land-surface datum, 1942: Jan. 14, 15.57; Mar. 11, 15.29; May 27, 16.82; Oct. 15, 16.24.

24.8.1.333b (*941,p.237). F. K. Kretek. Water levels, in feet below land-surface datum, 1942: Jan. 14, 16.20; Mar. 11, 15.93; May 22, 17.43.

24.8.4.111 (*941,p.237). Water levels, in feet below land-surface datum, 1942: Jan. 14, 35.99; Mar. 11, 35.68; May 22, 35.62; Oct. 15, 37.19.

24.8.5.110 (*886,p.439; *911,p.210; 941,p.237). R. A. Hackebell. Water level, in feet below land-surface datum, 1942: Jan. 13, 42.74.

24.8.7.500 (*941,p.237). Paul Hrma. Water level, in feet below land-surface datum, 1942: Jan. 12, 39.06.

24.8.8.120 (*886,p.440; 911,p.210; 941,p.237). J. F. Holiday. Water level, in feet below land-surface datum, 1942: Jan. 13, 42.09.

24.8.11.200 (*886,p.439; 911,p.210; 941,p.237). F. K. Kretek. Water levels, in feet below land-surface datum, 1942: Jan. 14, 18.10; Mar. 11, 15.87; May 22, 16.36; Oct. 15, 16.42.

24.8.18.331 (*886,p.440; 911,p.210; 941,p.237). Chas. Peters. Well filled; measurements discontinued.

24.8.19.433 (*886,p.440; 911,p.210; 941,p.237). A. G. Rudd. Well dry; measurements discontinued.

24.8.20.411 (*886,p.440; 911,p.210; 941,p.237). J. W. Jones. Water levels, in feet below land-surface datum, 1942: Jan. 12, 41.78; Mar. 10, 41.79; May 21, 42.04; Oct. 14, 42.73.

24.9.2.221 (*886,p.441; 911,p.210; 941,p.237). R. G. Folk. Water levels, in feet below land-surface datum, 1942: Jan. 13, 54.48; Mar. 11, 54.39; May 21, 54.86; Oct. 14, 55.04.

24.9.2.421 (*886,p.441; *911,p.210; *941,p.238). J. H. Winslow. New measuring point, top edge of USGS washer on south top edge of north 4-by 4-inch stringer north of windmill pump column, 0.42 foot above surface of concrete well curb east of well and land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 13, 53.33; Mar. 11, 53.68; May 21, 53.77; Oct. 14, 54.18.

24.9.3.121 (*941,p.238). Jim Swartz. Water level, in feet below land-surface datum, 1942: Jan. 13, 59.09.

24.9.6.311 (*886,p.441; *911,p.211; *941,p.238). J. B. Wells. Water levels, in feet below land-surface datum, 1942: Jan. 9, 75.95; Mar. 10, 74.82; May 20, 76.28; Oct. 13, 79.03.

a Windmill pumping.

24.9.6.431 (*941,p.238). State of New Mexico. The casing in this well is perforated only between 303 and 442 feet, and therefore the shallower aquifers tapped by most of the wells in the valley are shut off. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1942: Feb 15, 57.28; July 28, 70.48.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.	Oct.	Nov.
1	.....	57.46	58.22	57.74	59.83	61.43	65.90	.....	61.30	60.21
2	.....	57.48	58.19	57.83	59.60	64.17	65.26	.....	61.26	60.21
3	.....	57.48	58.39	57.69	59.22	64.90	65.27	.....	61.22	60.15
4	.....	57.45	58.29	57.67	59.00	65.42	65.30	.....	61.16	60.07
5	.....	57.45	58.17	57.66	58.89	65.16	64.71	.....	61.14	60.08
6	.....	57.45	58.28	57.64	58.80	65.25	64.43	.....	61.05	60.08
7	.....	57.39	58.57	57.64	58.69	65.65	64.70	.....	.....	60.17
8	.....	57.36	58.46	57.74	58.66	66.05	65.10	.....	.....	.....
9	57.90	57.39	58.23	58.02	58.95	66.22	66.95	.....	60.98	.....
10	57.89	57.37	58.00	58.28	58.69	66.28	67.35	.....	60.88	.....
11	57.86	57.37	57.85	58.50	.....	66.33	66.50	.....	60.78	.....
12	57.83	57.36	57.82	58.67	.....	66.44	65.55	.....	60.71	.....
13	57.76	57.32	58.17	58.83	.....	66.70	67.10	.....	60.67	.....
14	57.81	57.31	58.69	59.23	.....	67.16	68.12	.....	60.66	.....
15	57.79	57.28	58.69	59.36	.....	67.48	68.71	.....	60.58	.....
16	57.72	57.30	58.37	59.41	.....	67.84	68.99	.....	60.56	.....
17	57.71	57.31	58.89	59.47	.....	68.10	69.31	62.84	.....	.....
18	57.74	57.34	58.83	59.65	60.66	68.43	68.40	62.70	60.52	.....
19	57.74	.....	58.20	59.69	60.21	68.71	67.35	62.55	60.47	.....
20	57.76	.....	58.14	60.03	60.08	68.93	68.85	62.42	60.44	.....
21	.....	.....	58.10	60.07	59.88	69.13	69.80	62.28	60.44	.....
22	.....	.....	58.00	60.25	59.72	69.26	69.56	62.13	60.34	.....
23	.....	57.50	57.94	60.13	59.63	68.71	69.19	62.00	60.33	.....
24	57.67	57.75	57.83	59.95	59.58	67.77	69.65	61.91	60.32	.....
25	57.62	57.90	57.84	59.76	59.73	68.00	69.00	61.77	60.32	.....
26	57.62	.....	57.84	59.54	60.29	67.37	68.13	61.73	60.29	.....
27	57.62	.....	57.83	59.37	60.32	67.21	70.04	61.66	60.23	.....
28	57.59	.....	57.78	59.24	60.48	66.70	70.48	.....	60.17	.....
29	57.54	.....	57.76	59.62	61.50	66.36	.....	61.51	60.43	.....
30	57.51	.....	57.76	59.45	61.56	66.21	.....	61.41	60.44	.....
31	57.45	.....	57.74	.....	61.43	.....	.....	.....	60.34	.....

24.9.7.211 (*886,p.442; 911,p.211; *941,p.238). Emanuel Vocale. Well deepened to approximately 400 feet. New measuring point, top edge of 1-inch hole in northwest side of pump base, 0.76 foot above surface of concrete well curb at south side of well and land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 9, 67.49; Mar. 10, 67.68; Oct. 13, 70.41.

24.9.7.331 (*886,p.442; *911,p.211; 941,p.238). Smitty R. Moir. Water levels, in feet below land-surface datum, 1942: Jan. 9, 74.33; Mar. 10, 74.72; May 21, 74.30; Oct. 13, 75.89.

24.9.8.111 (*886,p.442; 911,p.211; 941,p.238). Ben F. Jonas. Water levels, in feet below land-surface datum, 1942: Jan. 9, 74.09; Mar. 10, 73.68; May 20, 74.02.

24.9.8.112 (*886,p.443; 911,p.211; 941,p.238). Ben F. Jonas. Water levels, in feet below land-surface datum, 1942: Jan. 9, 73.77; Mar. 10, 72.63; May 20, 72.79; Oct. 13, 75.62.

24.9.8.121 (*886,p.443). Ben F. Jonas. Measurements discontinued.

24.9.8.440 (*911,p.211; 941,p.238). Frank A. Bredecko. Water level, in feet below land-surface datum, 1942: Jan. 9, 71.12.

24.9.9.411 (*886,p.444; *911,p.211; *941,p.238). Joe Clary.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 9	66.48	May 23	67.23	Oct. 13	68.66
Mar. 10	65.86	Sept. 17	69.52	Nov. 25	67.83

24.9.12.111 (*886,p.444; 911,p.211; 941,p.238). Ed H. Hatcher. Water level, in feet below land-surface datum, 1942: Jan. 13, 53.53.

24.9.13.111 (*886,p.444; 911,p.211; 941,p.239). Mary E. Barrett. Water levels, in feet below land-surface datum, 1942: Jan. 12, 22.67; Mar. 10, 22.25; May 21, 22.87; Oct. 14, 26.18.

24.9.15.221 (*941,p.239). Joe Lutonsky. New measuring point, top edge of casing, east side of well, 1.30 feet above concrete curb at north side of well and 1.80 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 61.79.

24.9.18.311 (*911,p.211; 941,p.239). Chas. Peter. Water level, in feet below land-surface datum, 1942: Jan. 10, 74.17.

24.9.19.121 (*911,p.211; 941,p.239). Francis Ligocky. Water levels, in feet below land-surface datum, 1942: Jan. 10, 74.75; Mar. 10, 74.25; May 21, 74.08; Oct. 13, 76.58.

24.9.21.131 (*886,p.445; 911,p.212; 941,p.239). L. L. Gaskill. Water levels, in feet below land-surface datum, 1942: Jan. 10, 70.68; Mar. 12, 70.45; May 23, 79.59; Oct. 13, 71.89.

24.9.23.211 (*886,p.446; *911,p.212; 941,p.239). J. H. Winslow. Water levels, in feet below land-surface datum, 1942: Jan. 12, 67.76; Mar. 10, 67.55; Oct. 14, 70.22.

24.9.28.221 (*941,p.239). John Hrma. Water level, in feet below land-surface datum, 1942: Jan. 12, 65.05.

24.9.32.311 (*911,p.212; 941,p.239). H. C. Wheeler. Water level, in feet below land-surface datum, 1942: Jan. 10, 71.27.

24.9.34.111 (*941,p.239). H. C. Norwood. Water level, in feet below land-surface datum, 1942: Jan. 12, 60.82.

24.10.1.311 (*941,p.239). R. V. Griggs. Water level, in feet below land-surface datum, 1942: Jan. 9, 78.45.

24.10.3.411 (*886,p.446; *911,p.212; 941,p.239). Josh Bryan. Water levels, in feet below land-surface datum, 1942: Jan. 9, 82.01; Mar. 10, 81.93; May 20, 82.12; Oct. 13, 83.36.

24.10.3.411b (*941,p.239). Josh Bryan. Measuring point raised 1.20 feet above land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 9, 75.34; Mar. 10, 75.33; May 20, 75.94; Oct. 13, 76.91.

24.10.10.311 (*886,p.446; *911,p.213; 941,p.240). G. F. Ackerman. Water levels, in feet below land-surface datum, 1942: Jan. 9, 80.43; Mar. 10, 80.06; May 21, 80.00; Oct. 13, 80.42.

24.10.12.111 (*886,p.447; 911,p.213; 941,p.240). Morgan Garrett. Water level, in feet below land-surface datum, 1942: Jan. 9, 82.60.

24.10.12.431 (*886,p.447; 911,p.213; 941,p.240). Steve Hrma. Equipped with water-stage recorder. Highest and lowest water levels, in feet below land-surface datum, 1942: Mar. 6, 78.74; Aug. 23, 83.87.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.99	79.78	78.94	78.84	79.16	80.05	81.67	83.25	83.24	81.87	80.74	79.97
2	79.94	79.74	78.89	78.80	79.16	80.09	81.74	83.33	83.20	81.83	80.73	79.93
3	79.94	79.69	78.84	78.77	79.16	80.13	81.78	83.34	83.15	81.79	80.69	79.91
4	79.93	79.64	78.86	78.74	79.12	80.16	81.83	83.40	83.12	81.75	80.66	79.39
5	79.91	79.60	78.81	78.71	79.13	80.17	81.88	83.44	83.09	81.71	80.64	79.89
6	79.86	79.56	78.74	78.69	79.14	80.19	81.90	83.47	83.05	81.66	80.62	79.89
7	79.86	79.51	78.81	78.69	79.15	80.23	81.92	83.50	83.00	81.62	80.59	79.88
8	79.81	79.48	78.78	78.69	79.15	80.26	81.96	83.53	82.94	81.58	80.55	79.87
9	79.81	79.44	78.75	78.68	79.13	80.34	82.01	83.50	82.90	81.54	80.53	79.85
10	79.78	79.41	78.77	78.67	79.10	80.43	81.98	83.49	82.90	81.49	80.52	79.83
11	79.75	79.37	78.79	78.65	79.08	80.54	81.99	83.50	82.93	81.44	80.50	79.82
12	79.73	79.34	78.84	78.67	79.06	80.65	82.00	83.53	82.95	81.40	80.46	79.80
13	79.68	79.31	78.90	78.69	79.06	80.75	82.04	83.59	82.86	81.37	80.44	79.78
14	79.70	79.27	78.94	78.70	79.03	80.87	82.11	83.63	82.82	81.33	80.39	79.76
15	79.67	79.24	78.98	78.75	79.01	80.97	82.19	83.64	82.76	81.28	80.35	79.74
16	79.63	79.22	79.05	78.89	79.03	81.05	82.29	83.65	82.70	81.26	80.34	79.72

a Well 20 feet to southwest pumped recently.

24.10.12.431. Steve Hrna--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
17	79.61	79.20	79.09	78.97	79.10	81.12	82.33	83.65	82.65	81.24	80.33	79.69
18	79.60	79.17	79.12	79.04	79.16	81.20	82.40	83.68	82.61	81.21	80.29	79.66
19	79.59	79.15	79.14	79.12	79.23	81.24	82.49	83.72	82.55	81.17	80.26	79.64
20	79.58	79.12	79.21	79.18	79.29	81.27	82.54	83.75	82.48	81.14	80.24	79.63
21	79.56	79.07	79.21	79.21	79.33	81.27	82.59	83.79	82.41	81.09	80.24	79.61
22	79.54	79.04	79.16	79.18	79.36	81.26	82.66	83.81	82.35	81.06	80.20	79.59
23	79.54	79.04	79.10	79.21	79.47	81.25	82.73	83.82	82.28	81.03	80.17	79.56
24	79.56	78.99	79.05	79.23	79.55	81.26	82.79	83.74	82.23	81.01	80.13	79.54
25	79.58	78.96	79.07	79.22	79.61	81.30	82.85	83.67	82.18	80.98	80.09	79.49
26	79.61	78.95	79.05	79.19	79.65	81.38	82.90	83.59	82.13	80.94	80.08	79.49
27	79.68	78.93	79.02	79.19	79.69	81.48	82.94	83.52	82.08	80.89	80.04	79.51
28	79.71	78.91	78.97	79.16	79.76	81.53	82.99	83.45	82.02	80.85	80.02	79.47
29	79.77	.....	78.94	79.11	79.84	81.54	83.05	83.38	81.97	80.83	80.01	79.44
30	79.83	.....	78.91	79.19	79.92	81.60	83.14	83.32	81.92	80.82	79.97	79.43
31	79.81	.....	78.87	.....	80.00	.....	83.20	83.28	.....	80.78	.....	79.41

24.10.12.432a (*911, p. 213; 941, p. 240). Steve Hrna. Well deepened to 230 feet. New measuring point, top north edge of south 8- by 10-inch timber pump support, near pump shaft, 0.69 foot above concrete well curb and land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 9, 78.58; Mar. 10, 78.71; May 21, 79.06; Oct. 13, 79.81.

24.10.12.432b (*911, p. 214; 941, p. 240). Steve Hrna. Water levels, in feet below land-surface datum, 1942: Jan. 9, 79.27; Mar. 10, 79.13; May 21, 79.08; Oct. 13, 80.27.

24.10.22.211 (*941, p. 241). Mr. Hurt. Water levels, in feet below land-surface datum, 1942: Jan. 9, 69.61; Mar. 10, 69.43; May 21, 69.27; Oct. 13, 69.76.

24.10.29.222 (*911, p. 214; 941, p. 241). State land. Water levels, in feet below land-surface datum, 1942: Jan. 9, 64.07; Mar. 10, 64.02; May 21, 63.95; Oct. 13, 64.21.

25.8.18.111 (*911, p. 214; *941, p. 241). George McCann. Water levels, in feet below land-surface datum, 1942: Jan. 12, 51.71; Mar. 10, 52.89; Oct. 14, 53.71.

25.9.4.211 (*911, p. 215; 941, p. 241). Val Miller.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 10	65.03	May 21	65.13	Oct. 13	65.93
Mar. 12	65.01	Sept. 17	65.82	Nov. 24	66.04

25.9.6.111 (*941, p. 241). Paul M. Yates. Water level, in feet below land-surface datum, 1942: Jan. 10, 65.70.

25.9.6.421 (*866, p. 447; *911, p. 215; 941, p. 241). Roderick & Wheeler. Water levels, in feet below land-surface datum, 1942: Jan. 10, 69.67; Mar. 12, 69.18; Oct. 13, 71.81.

25.9.11.114 (*886, p. 447; *911, p. 215; *941, p. 241). J. B. Anderson. Water levels, in feet below land-surface datum, 1942: Jan. 12, 62.65; Mar. 10, 62.33; May 21, 63.94; Oct. 14, 63.78.

25.9.12.311 (*911, p. 215; 941, p. 241). Jo Willa Cheek. Water level, in feet below land-surface datum, 1942: Jan. 12, 58.26.

25.9.14.311 (*911, p. 215; 941, p. 241). George W. McCann. Water level, in feet below land-surface datum, 1942: Jan. 12, 58.53.

25.9.15.211 (*886, p. 448; 911, p. 215; 941, p. 241). C. H. Paulk. New measuring point, top west edge of east, lowest, 6- by 6-inch timber pump support, 0.43 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 62.15.

25.9.17.311 (*911, p. 215; 941, p. 241). Tom Tigner. Water level, in feet below land-surface datum, 1942: Jan. 10, 66.83.

25.9.19.111 (*911,p.215; 941,p.241). Tom Marcak. Water level, in feet below land-surface datum, 1942: Jan. 10, 63.63.

25.9.21.311 (*886,p.448; 911,p.215; 941,p.242). A. W. Speir. Water levels, in feet below land-surface datum, 1942: Jan. 12, 65.38; Mar. 13, 66.02; May 21, 66.98; Oct. 13, 67.27.

25.9.24.222 (*886,p.447; 911,p.215; 941,p.242). George F. Watkins. Water levels, in feet below land-surface datum, 1942: Jan. 12, 49.35; Mar. 10, 49.10; May 21, 49.77; Oct. 14, 50.80.

25.9.25.111 (*911,p.215; *941,p.242). Alan Crotchett. New measuring point, top west edge of pump base, 0.19 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 12, 47.74.

25.9.27.422 (*911,p.216; *941,p.242). H. A. Graff. Water level, in feet below land-surface datum, 1942: Jan. 12, 54.79.

25.9.28.121 (*941,p.242). Owner unknown. Water levels, in feet below land-surface datum, 1942: Jan. 12, 66.03; Mar. 13, 65.82; May 21, 68.09; Oct. 13, 68.44.

25.9.30.111 (*911,p.216; *941,p.242). Frank Chvojka. No measurements made in 1942.

25.9.35.210 (*886,p.448; *911,p.216; 941,p.242). Sigman Lindauer Estate. Water levels, in feet below land-surface datum, 1942: Jan. 12, 49.33; Mar. 10, 49.20; May 21, 50.16; Oct. 14, 50.79.

25.10.15.422 (*941,p.242). C. H. Graves. Water level, in feet below land-surface datum, 1942: Jan. 10, 58.49.

25.10.36.111 (*911,p.216; 941,p.242). State land. Water level, in feet below land-surface datum, 1942: Jan. 10, 60.34.

25.10.36.222 (*886,p.448; *911,p.216; 941,p.242). State land. Water levels, in feet below land-surface datum, 1942: Jan. 10, 60.25; Mar. 13, 59.63; May 21, 60.69; Oct. 13, 61.91.

26.9.2.221 (*941,p.242). Tom R. Taylor. Water levels, in feet below land-surface datum, 1942: Mar. 10, 40.24; May 21, 40.14; Oct. 14, 40.58.

26.9.4.331 (*941,p.242). Water level, in feet below land-surface datum, 1942: Jan. 13, 52.65.

26.9.11.211 (*886,p.448; 911,p.216; 941,p.243). State land. Water levels, in feet below land-surface datum, 1942: Jan. 12, 38.08; Mar. 10, 38.13; May 21, 38.11; Oct. 14, 38.45.

26.10.1.100 (*886,p.448; *911,p.216; 941,p.243). W. F. Kerr. Irrigation pump placed on well. New measuring point, top edge of south 6- by 6-inch timber pump support at a point about 6 inches west of pump base, 0.59 foot above concrete well curb and 0.29 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 10, 59.27.

27.8.8.411 (*911,p.216; 941,p.243). Pearl Verdick. Water levels, in feet below land-surface datum, 1942: Jan. 12, 23.45; Mar. 10, 23.40; May 21, 23.20; Oct. 14, 23.57.

27.9.2.211 (*911,p.217; 941,p.243). State land. Water levels, in feet below land-surface datum, 1942: Jan. 12, 11.17; Mar. 10, 13.73; May 21, 15.67; Oct. 14, 6.55.

29.7.4.111 (*911,p.217; 941,p.243). Francis S. Connatt. No measurements made in 1942.

29.7.18.211 (*911,p.217; 941,p.243). R. M. Marshall. Water level, in feet below land-surface datum, 1942: Jan. 13, 6.45.

29.8.12.244 (*911,p.217; 941,p.243). A. G. Anderson. Water level, in feet below land-surface datum, 1942: Jan. 13, 7.13.

29.8.13.111 (*911,p.217; 941,p.243). L. L. Burkhead. Water level, in feet below land-surface datum, 1942: Jan. 13, 6.44.

a Windmill pumping slowly.

b Well pumping 215 gallons per minute.

QUAY COUNTY (HOUSE AREA)

By C. R. Murray and P. D. Akin

The investigation of the occurrence and use of ground water for irrigation in the House area, Quay County, was continued in 1942 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. This investigation was begun in 1940 and has been conducted successively by C. S. Conover and P. D. Akin under the immediate supervision of C. V. Theis. Water levels, well descriptions, and other hydrologic data on the House area are published in Geological Survey Water-Supply Paper 941.

Precipitation, pumpage, and fluctuations in water level

The precipitation at Hassell in 1942, as reported by the United States Weather Bureau, was 21.56 inches, which is 8.27 inches above the normal of 13.29 inches. Hassell is about 7 miles west and 4 miles north from House. Most of the precipitation occurred during the period April to October. Although the precipitation in 1942 was considerably above normal, it was only slightly more than half of the 42.52 inches recorded in 1941.

A rough survey of crop acreage in 1942 by Mr. Akin indicated that about 1,250 acres in the House area was irrigated with ground water, and it is estimated that approximately 2,500 acre-feet of water was used for this irrigation. This was considerably more than the 580 acre-feet pumped in 1941 for irrigating about 720 acres and the 1,570 acre-feet used in 1940 on 785 acres.

Water levels changed appreciably during 1942 in the House area, the largest rise being 1.26 feet, in well 5.29.5.342, and the greatest decline, 1.22 feet, in well 5.29.18.233. They declined in a strip about a mile wide along Alamosa Creek from the center of T. 5 N., R. 30 E. to the center of sec. 31, T. 6 N., R. 29 E. It was in this strip that they had risen more than 4 feet in 1941. In the vicinity of House, the strip along the creek in which the water levels declined in 1942 widens to about $1\frac{1}{2}$ miles, forming a pronounced embayment over the same area in which exceptional rises occurred in 1941.

Most of the observation wells in the House area outside the part of it in which levels declined showed rises ranging from about 0.45 foot to 1.25 feet. This part of the area coincides roughly with the part in which rises

of 2 to 4 feet had occurred in 1941, but it also includes sec. 13, T. 5 N., R. 29 E., where water levels declined in 1941. It is apparent that these adjustments in water level are working toward a condition of equilibrium after the unusual amount of recharge following the heavy precipitation in 1941.

Water-level measurements

5N.29.5.341 (*941,p.245). Joe D. Hardcastle.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	30.24	Sept. 22	32.10	Nov. 20	30.49
Mar. 26	29.84	Oct. 20	31.16		

5N.29.5.342 (*941,p.245). Joe D. Hardcastle. Pump removed. New measuring point, top of concrete curb east of well, 0.37 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 21	31.15	Sept. 22	31.42	Nov. 20	30.64
Mar. 26	30.63	Oct. 20	31.03		

5N.29.5.411 (*941,p.245). A. R. Wallace.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Mar. 26	38.57	Sept. 22	39.44	Nov. 20	38.63
July 16	42.13	Oct. 20	39.03		

5N.29.5.413 (*941,p.245). A. R. Wallace. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: Dec. 25, 31.10; Aug. 8, 32.72.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	32.21	31.85	31.69	31.44	.....	31.42	32.17	32.60	32.34	31.96	31.55	31.31
2	32.18	31.88	31.66	31.45	.....	31.43	32.22	32.62	32.36	31.93	31.57	31.27
3	32.18	31.85	31.60	31.45	.....	31.45	32.23	32.63	32.34	31.93	31.62	31.30
4	32.19	31.85	31.66	31.45	.....	31.48	32.26	32.65	32.32	31.92	31.54	31.26
5	32.18	31.84	31.62	31.46	.....	31.49	32.28	32.66	32.31	31.93	31.52	31.26
6	32.16	31.86	31.56	31.46	.....	31.51	32.30	32.67	32.28	31.90	31.58	31.29
7	32.15	31.81	31.63	.....	.....	31.55	32.31	32.68	32.28	31.88	.....	.....
8	32.11	31.80	31.66	.....	31.40	31.55	32.33	32.68	32.28	31.87	31.50	31.28
9	32.14	31.83	31.60	31.55	31.38	31.62	32.33	32.67	32.27	31.88	31.50	31.25
10	32.12	31.83	31.59	31.55	31.36	31.65	32.32	32.67	32.24	31.85	31.54	31.25
11	32.10	31.81	31.57	31.52	31.36	31.67	32.33	32.65	32.24	31.81	31.52	31.27
12	32.10	31.78	31.55	31.52	31.33	31.69	32.37	32.63	32.22	31.79	31.49	31.26
13	32.07	31.79	31.55	31.56	31.36	31.67	32.38	32.60	32.20	31.76	31.48	31.24
14	32.10	31.75	31.53	31.52	31.40	31.71	32.37	32.62	32.18	31.78	31.41	31.25
15	32.06	31.75	31.50	31.54	31.52	31.71	32.36	32.62	32.17	31.76	31.39	31.22
16	32.02	31.75	31.54	31.58	31.31	31.69	32.38	32.62	32.15	31.77	31.41	31.22
17	32.01	31.75	31.58	31.49	31.34	31.71	32.42	.....	32.14	31.77	31.45	31.22
18	32.07	31.78	31.52	31.48	31.37	31.75	32.44	.....	32.14	31.75	31.45	31.20
19	32.05	31.75	31.48	31.52	31.35	.....	32.45	.....	32.17	31.73	31.40	31.21
20	32.03	31.75	31.57	31.58	31.36	31.74	32.48	.....	32.13	31.72	31.38	31.17
21	32.01	31.71	31.59	31.53	31.33	31.85	32.49	.....	32.10	31.67	31.45	31.13
22	31.98	31.68	31.52	31.43	31.34	31.90	32.50	.....	32.06	31.67	31.39	31.18
23	31.96	31.69	31.48	31.41	31.34	31.90	32.52	32.49	32.05	31.67	31.37	31.13
24	31.96	31.69	31.44	31.48	31.34	31.98	32.53	32.45	32.05	31.64	31.33	31.14
25	31.94	31.65	31.46	31.47	31.34	32.01	32.51	32.43	32.00	.....	31.32	31.10
26	31.94	31.73	31.53	31.47	31.33	32.05	32.56	32.43	32.04	31.63	31.37	31.12
27	31.94	31.67	31.51	31.48	31.35	32.08	32.56	32.41	32.02	31.60	31.30	31.21
28	31.91	31.64	31.50	31.44	31.35	32.11	32.57	32.39	32.01	31.59	31.31	31.16
29	31.88	.....	31.50	31.40	31.36	32.15	32.58	32.38	32.00	.....	31.29	31.13
30	31.90	.....	31.51	31.40	31.38	32.18	32.59	32.38	31.97	.....	31.26	31.15
31	31.90	.....	31.49	.....	31.39	.....	32.60	32.36	.....	.....	.....	31.12

5N.29.7.142 (*941,p.246). Elmer Phillips.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	14.31	July 15	14.49	Oct. 19	15.14
Mar. 26	14.51	Sept. 22	14.95	Nov. 19	15.28

5N.29.7.143 (*941,p.246). Elmer Phillips.

Water level, in feet below land-surface datum, 1942

Jan. 21	22.46	July 15	22.42	Oct. 19	22.60
Mar. 26	22.64	Sept. 22	22.54	Nov. 19	22.63

5N.29.7.221 (*941,p.246). C. P. McBride.

Water level, in feet below land-surface datum, 1942

Jan. 21	25.49	Sept. 22	25.38	Nov. 19	26.42
July 15	26.73	Oct. 19	26.44		

5N.29.8.114 (*941,p.246). J. C. Davenport.

Water level, in feet below land-surface datum, 1942

Jan. 21	22.75	July 16	24.66	Oct. 19	23.62
Mar. 26	22.67	Sept. 22	23.74	Nov. 19	22.51

5N.29.8.232 (*941,p.247). Joe D. Hardcastle.

Water level, in feet below land-surface datum, 1942

Jan. 21	35.38	Sept. 22	35.67	Nov. 20	34.61
Mar. 26	34.74	Oct. 20	35.03		

5N.29.8.412 (*941,p.247). Byron W. Jones.

Water level, in feet below land-surface datum, 1942

Jan. 21	28.45	July 14	31.80	Oct. 20	28.80
Mar. 26	27.87	Sept. 22	29.33	Nov. 20	28.39

5N.29.8.422. Frank W. Gray. Windmill well, diameter 10 inches, depth 42 feet. Measuring point, top north edge of south 2- by 4-inch wooden pipe clamp at point just west of pump column, 1.40 feet above land-surface datum

Water level, in feet below land-surface datum, 1942

Jan. 21	29.86	July 14	30.80	Oct. 20	29.35
Mar. 26	31.50	Sept. 22	29.73	Nov. 20	29.03

5N.29.9.400 (*941,p.247). W. Y. Head.

Water level, in feet below land-surface datum, 1942

Jan. 21	21.33	July 14	23.72	Oct. 20	21.89
Mar. 26	21.43	Sept. 22	23.70	Nov. 20	21.70

5N.29.13.113 (*941,p.247). Emil Kirschenmann. Formerly owned by Scott & Ferguson.

Water level, in feet below land-surface datum, 1942

Jan. 22	78.55	July 16	78.62	Oct. 20	78.88
Mar. 26	78.33	Sept. 23	79.14	Nov. 20	78.63

5N.29.13.131 (*941,p.247). Emil Kirschenmann. Formerly owned by Scott & Ferguson. Pump removed October 1942. New measuring point, top of casing at west side of well, 0.30 foot below land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 22	58.55	Sept. 23	59.81	Nov. 20	59.09
Mar. 26	58.17	Oct. 20	59.80		

5N.29.13.412 (*941,p.247, incorrectly designated 5N.29.13.142). Emil Kirschenmann. Formerly owned by Scott & Ferguson.

Water level, in feet below land-surface datum, 1942

Jan. 22	47.97	July 16	48.93	Oct. 20	47.02
Mar. 26	47.53	Sept. 23	47.26	Nov. 20	46.89

a Windmill pumping.

5N.29.15.311 (*941,p.247). R. A. Tullis. Water level, in feet below land-surface datum, 1942: Jan. 22, a/23.11; Mar. 26, a/23.27; July 16, 15.87. Measurements discontinued.

5N.29.17.133 (*941,p.248). Byron W. Jones.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	29.82	July 14	31.61	Oct. 19	31.20
Mar. 26	30.36	Sept. 22	31.49	Nov. 19	30.95

5N.29.17.331 (*941,p.248). L. V. Vaughan.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	32.92	July 16	43.46	Oct. 19	34.01
Mar. 26	32.81	Sept. 22	34.40	Nov. 19	33.76

5N.29.18.213 (*941,p.248). A. R. Wallace.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	36.00	Sept. 22	36.61	Nov. 19	35.58
Mar. 26	36.13	Oct. 19	36.07		

5N.29.18.233 (*941,p.248). M. R. Wallace.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	45.74	Sept. 22	48.20	Nov. 19	46.60
Mar. 26	49.71	Oct. 19	47.95		

5N.29.18.444 (*941,p.249). L. M. Head.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	36.70	July 14	39.53	Oct. 19	38.10
Mar. 26	36.70	Sept. 22	38.54	Nov. 19	37.82

5N.29.19.244 (*941,p.249). William Martin.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	46.66	July 16	50.77	Oct. 19	47.42
Mar. 26	46.62	Sept. 22	47.64	Nov. 19	47.31

5N.29.20.433a (*941,p.249). Spence E. Morris. Water levels, in feet below land-surface datum, 1942: Jan. 21, 47.48; Mar. 26, 47.23; July 15, 47.97. Measurements discontinued.

5N.29.20.433b (*941,p.249). Spence E. Morris. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: July 23, 46.75; July 15, 52.94.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	47.46	47.29	47.30	47.05	.....	47.28	47.12	47.09	47.03	47.05
2	.....	47.32	47.25	47.05	.....	47.30	.....	47.09	47.07	47.03
3	.....	47.29	47.20	47.05	.....	47.32	47.10	47.10	47.04	47.03
4	47.50	47.28	47.26	47.05	.....	47.26	47.08	.....	47.00	47.05
5	47.48	47.28	47.20	47.05	.....	47.26	47.10	.....	47.07	47.03
6	47.47	47.28	47.16	47.05	.....	47.25	47.08	.....	.....	47.06
7	.....	47.25	47.23	47.07	.....	47.24	47.13	47.06	.....	47.06
8	.....	47.25	.....	47.00	.....	47.22	47.12	47.07	.....	47.03
9	.....	47.27	.....	47.08	.....	47.20	47.12	.....	47.12	47.05
10	.....	47.27	.....	.....	.....	47.20	47.11	.....	47.11	47.00
11	.....	47.26	.....	.....	.....	47.17	47.11	.....	47.09	46.98
12	.....	47.25	.....	.....	.....	47.16	47.12	.....	47.08	47.04
13	.....	47.25	.....	47.02	.....	47.15	47.10	.....	47.07	47.06
14	.....	47.22	.....	47.02	.....	47.15	47.10	47.03	47.05	47.07
15	.....	47.22	47.26	47.02	47.85	47.14	47.11	47.04	47.02	47.06
16	.....	47.21	47.25	47.00	48.03	47.13	47.10	.....	47.05	47.05
17	.....	47.22	47.25	46.95	47.83	47.15	47.09	.....	47.05	47.03
18	47.43	47.22	47.23	46.98	47.80	47.14	47.10	47.07	47.08	46.95
19	47.42	.....	47.20	47.00	47.65	47.08	47.13	47.05	47.05	46.93
20	47.39	.....	47.31	46.95	46.85	47.07	47.14	47.08	47.04	47.05
21	47.38	.....	47.30	46.95	46.82	47.08	47.12	47.03	47.10	47.05

a Windmill pumping.

5N.29.20.433b. Spence E. Morris--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	July	Aug.	Sept.	Oct.	Nov.	Dec.
22	47.37	47.24	.....	47.00	46.80	47.09	47.05	47.03	47.07	.....
23	47.37	47.27	.....	46.96	46.75	47.10	47.08	47.08	47.10	47.06
24	47.35	47.25	47.02	47.05	46.75	47.09	47.08	47.05	47.10	47.02
25	47.34	47.22	47.05	47.02	46.79	47.08	.....	47.08	47.08	47.04
26	47.36	47.30	47.10	47.05	46.90	47.09	47.10	47.03	47.04	46.99
27	47.35	47.23	47.08	.....	46.93	47.09	47.09	47.02	47.08	47.05
28	47.32	47.23	47.07	.....	47.40	47.07	47.09	47.02	47.10	.....
29	47.32	.....	47.07	.....	47.39	47.08	47.08	47.00	47.08	.....
30	47.36	.....	47.09	.....	47.33	47.10	47.08	47.05	47.05	.....
31	47.33	.....	47.08	.....	47.30	47.08	.....	47.05	.....	.....

5N.29.29.111 (*941,p.250). C. A. Morrow.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 21	66.70	Sept. 22	66.29	Nov. 19	66.11
Mar. 26	66.50	Oct. 19	66.27		

5N.29.36.242 (*941,p.250). State land. Water levels, in feet below land-surface datum, 1942: Jan. 22, 96.28; Mar. 26, 96.32. Measurements discontinued.

5N.30.19.132 (*941,p.250). Ralph Hendricks.

Water level, in feet below land-surface datum, 1942

Jan. 22	24.64	July 16	24.75	Oct. 20	24.58
Mar. 26	25.13	Sept. 23	24.33	Nov. 20	24.75

5N.30.19.313 (*941,p.250). Ralph Hendricks.

Water level, in feet below land-surface datum, 1942

Jan. 22	15.94	July 16	16.02	Oct. 20	16.19
Mar. 26	15.96	Sept. 23	16.22	Nov. 20	16.35

5N.30.20.333 (*941,p.250). Emil Kirschenmann.

Water level, in feet below land-surface datum, 1942

Jan. 22	16.82	July 16	a18.33	Oct. 20	16.83
Mar. 26	16.74	Sept. 23	18.13	Nov. 20	a18.02

6N.29.30.112 (*941,p.250). R. W. Dean.

Water level, in feet below land-surface datum, 1942

Jan. 22	48.56	July 14	48.32	Oct. 19	48.03
Mar. 26	48.59	Sept. 22	48.25	Nov. 20	47.98

6N.29.30.113 (*941,p.250). R. W. Dean.

Water level, in feet below land-surface datum, 1942

Jan. 22	51.81	July 14	53.58	Oct. 19	51.39
Mar. 26	51.79	Sept. 22	51.45	Nov. 20	51.37

6N.29.31.114 (*941,p.250). L. M. McDaniels.

Water level, in feet below land-surface datum, 1942

Jan. 22	36.40	July 16	b53.66	Oct. 19	37.38
Mar. 26	37.83	Sept. 22	37.33	Nov. 20	37.13

a Windmill pumping.

b Pumping.

ROOSEVELT COUNTY (PORTALES VALLEY)

By C. R. Murray and P. D. Akin

The investigation of the ground-water resources of Portales Valley was continued in 1942 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. It was begun in 1931 by Charles V. Theis and has since been conducted under his supervision. Results of the investigation have been published in the 10th to 13th Biennial Reports of the State engineer of New Mexico. Water levels, descriptions of wells, and other hydrologic data on Portales Valley have been published in Geological Survey Water-Supply Papers 845, 886, 911, and 941.

Water-level measurements were made on 55 wells in January, March, July, September, October, and November 1942, and in 125 others in January only. Five automatic water-stage recorders were in operation in Portales Valley in 1942.

Precipitation, pumpage, and fluctuations in water level

The precipitation at Portales in 1942, as recorded by the United States Weather Bureau, was 17.35 inches, 0.72 inch below the normal of 18.07 inches. This was much less than the 44.10 inches recorded in 1941, and the amount of ground water needed for irrigation was correspondingly much larger than that used in the preceding years. A rough survey of croplands in Portales Valley by Mr. Akin indicated that about 15,700 acres was irrigated in 1942, and it is estimated that about 23,500 acre-feet of water was pumped for irrigation. In 1941 only about 9,750 acre-feet of ground water was used on 15,000 acres, but in 1940 about 25,800 acre-feet of ground water was used on 13,700 acres.

Changes in water levels from January 1942 to January 1943 are shown in figure 19. In general, water levels declined along the axis of Portales Valley and in Blackwater Draw but rose in the intervening sand-hills area. The amount of decline of the water levels along Portales Valley was not uniform, as there were three areas of exceptional lowering. A decline in water level of 3.73 feet was observed in observation well 1.32.3.440, in sec. 3, T. 1 S., R. 32 E., at the west end of the area shown in figure 19. In well 2.34.4.441, southwest of Portales, a decline of 4.35 feet was

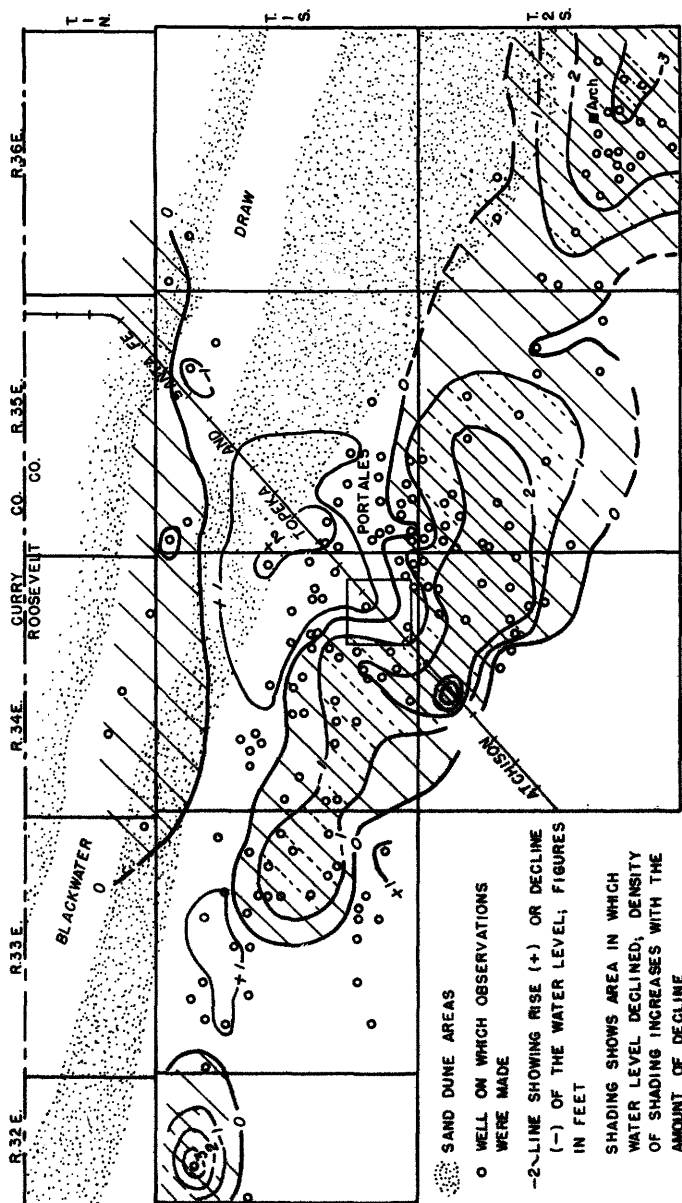


Figure 10.—Change in water level in Portales Valley, N. Mex., from January 1942 to January 1943.

recorded. This well was surrounded by an elliptical area of about 33 square miles in which water levels declined more than 1 foot. Water levels in about 11 square miles in this elliptical area declined more than 2 feet. In well 2.36.26.423, about a mile southeast of Arch, the water level declined 3.42 feet. Surrounding this well is a second elliptical area, in which water levels declined considerably in 1942; only the western part of the second area is shown in figure 19. Separating the three areas of large decline are two small areas; in the one in the north half of T. 1 S., R. 33 E. water levels rose more than 1 foot, and in the other, along the boundary between Rs. 35 and 36 E., T. 2 S., they declined only a fraction of a foot. Water levels along Portales Valley began to decline about the middle of March and declined rather rapidly until the middle of August, after which they remained stationary or rose slightly.

In Blackwater Draw most water levels declined a fraction of a foot, the maximum recorded decline being 1.06 feet in well 1.35.6.141. Lowering of water levels took place over a stretch of at least 15 miles along the draw, as shown in figure 19.

In the sand-hills area between Blackwater Draw and Portales Valley, water levels in general rose a fraction of a foot; in an area of about 14½ square miles northeast of Portales, however, the rises amounted to more than 1 foot. The largest observed rise was 2.91 feet, in well 1.35.19.432.

The pattern of water-level fluctuations during 1942 appears to be the result of the very heavy precipitation in 1941. The water levels declined during 1942 in the two valley areas consisting of Portales Valley proper and Blackwater Draw, where they had risen many feet in 1941, and they rose during 1942 in the sand-hill area lying between, where they had risen only a few feet in 1941. Neither the changes in 1941 nor those in 1942 appear to be correlated primarily with the localities of heavy pumping. The valley areas ordinarily form a locality of discharge by transpiration and evaporation for part of the ground water, as is shown by the shape of the water table, but in 1941, because of the accumulation of surface water in these low areas, they became localities of unusually heavy recharge. During the nearly normal year of 1942, transpiration and evaporation almost certainly disposed of more water in these low valley areas than in 1941, because of the extraordinarily high water table in 1942, with the result that the water levels

in these low areas declined more rapidly than usual. However, because the water table in the low valley areas was still high in 1942, percolation of ground water from the sand-hill areas could not take place as rapidly as usual, with the result that the water accumulated more or less in place in the sand-hill areas and the water levels there rose. Perhaps the accumulation under the sand-hill areas may be due in part to the very slow penetration of the 1941 rainfall, but, if so, the lag before reaching the water table was of the order of a year.

Water-level measurements

1N.32.7.300 (*845,p.249; 886,p.453; 911,p.222; 941,p.255). W. J. Crenshaw.

Water level, in feet below land-surface datum, 1942					
Date	Water level	Date	Water level	Date	Water level
Jan. 26	15.27	July 23	15.76	Oct. 20	15.30
Mar. 27	15.93	Sept. 23	16.01	Nov. 24	15.92

1N.33.16.100a (*941,p.255). Mr. Hardwick. New measuring point, lower edge of rectangular hole in west side of pump case, 2.63 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 26, 19.24.

1N.33.16.100b (*941,p.255). Mr. Hardwick. Water level, in feet below land-surface datum, 1942: Jan. 26, 18.71.

1N.33.26.120 (*886,p.453; 911,p.222; 941,p.255). Mary E. Miller. Water level, in feet below land-surface datum, 1942: Jan. 26, 3.54.

1N.33.36.400a (*845,p.250; *886,p.453; *911,p.222; 941,p.255). A. C. Woodburn. Recorder installed on new dug well 10 feet southeast of original well Jan. 24; replaced on original well July 22; flooded after Oct. 16; installed on new dug well 50 feet east-southeast of original well Dec. 5. Measuring point at last well, top of shelf in recorder shelter at $\frac{3}{4}$ -inch hole on south side of shelf, 3.37 feet above land-surface datum at new well and 5.90 feet above land-surface datum of original well. All readings are referred to land-surface datum at original well. Highest and lowest recorded water levels, 1942: Apr. 23, 1.61 feet above land-surface datum; Aug. 13, 1.48 feet below land-surface datum.

Highest daily water level, in feet, with reference to
land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Dec.
1	+1.53	+1.57	+1.05	+0.95	.....	-0.38	-1.30	-0.44	-0.94	.....
2	+1.48	+1.44	+1.03	+0.96	.....	-.38	-1.33	-.45	-.72	.....
3	+1.49	+1.43	+1.02	+0.90	.....	-.40	-1.36	-.48	-.71	.....
4	+1.45	+1.37	+1.01	+0.92	.....	-.40	-1.36	-.53	-.77	.....
5	+1.44	+1.39	+0.98	+0.90	.....	-.44	-1.37	-.54	-.82	+0.96
6	+1.41	+1.38	+1.01	+0.85	.....	-.52	-1.42	-.55	-.84	+1.12
7	+1.43	+1.29	+1.29	+0.83	.....	-.56	-1.46	-.60	-.86	+1.20
8	+1.41	+1.33	+1.45	+0.84	.....	-.62	-1.20	-.62	-.89	+1.14
9	+1.41	+1.31	+1.27	+0.80	.....	-.69	-1.27	-.70	-.91	+1.12
10	+1.41	+1.29	+1.11	+0.75	.....	-.76	-1.34	-.71	-.90	+1.08
11	+1.42	+1.30	+1.12	+0.69	.....	-.50	-1.39	-.74	-.90	+1.09
12	+1.41	+1.29	+1.37	+0.65	.....	-.51	-1.42	-.79	-.88	+1.10
13	+1.39	+1.24	+1.14	+0.59	.....	-.62	-1.43	-.80	-.64	+1.08
14	+1.40	+1.24	+1.14	.....	.....	-.70	-.97	-.72	+1.17	+1.10
15	+1.38	+1.24	+1.10	.....	.....	-.77	-.66	-.65	+0.23	+1.10
16	+1.35	+1.18	+1.08	.....	-.41	-.81	-.64	-.72	+0.45	+1.10
17	+1.34	+1.15	+1.39	.....	-.48	-.78	-.66	-.78	....	+1.10

a Windmill pumping slowly.

1N.33.36.400a. A. C. Woodburn--Continued.

Highest daily water level, in feet, with reference to
land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Dec.
18	.....	+1.30	+1.17	+1.41	.....	-0.52	-0.71	-0.70	-0.77	.....	+1.10
19	.....	+1.30	+1.17	+1.11	.....	-.58	-.68	-.74	-.67	.....	+1.07
20	.....	+1.33	+1.13	+1.13	.....	-.62	-.68	-.77	-.67	.....	+1.43
21	.....	+1.41	+1.14	+1.13	.....	-.68	-.83	-.82	-.68	.....	+1.43
22	.....	+1.38	+1.14	+1.19	.....	-.76	-.90	-.85	-.73	.....	+1.27
23	.....	+1.35	+1.14	+1.61	.....	-.78	-.88	-.91	-.74	.....	+1.26
24	+1.57	+1.35	+1.14	+1.39	.....	-.54	-.98	-.79	-.77	.....	+1.25
25	+1.55	+1.35	+1.10	+1.20	.....	-.62	-.88	-.75	-.73	.....	+1.27
26	+1.54	+1.29	+1.03	+1.17	.....	-.74	-.99	-.82	-.85	.....	+1.22
27	+1.52	+1.32	+1.07	+1.13	.....	-.78	-1.06	-.85	-.88	.....	+1.17
28	+1.54	+1.47	+1.07	+1.13	.....	-.79	-1.12	-.73	-.90	.....	+1.20
29	+1.51	.....	+1.06	+1.12	.....	-.78	-1.17	-.73	-.92	.....	+1.24
30	+1.48	.....	+1.03	+1.01	.....	-.58	-1.20	-.80	-.92	.....	+1.22
31	+1.51	.....	+1.04	.....	.....	.....	-1.26	-.49	.....	.....	+1.24

1N.33.36.400b (*845, p. 250; 886, p. 453; *911, p. 222; 941, p. 256).
A. C. Woodburn.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	1.98	July 22	4.37	Oct. 22	2.14
Mar. 27	2.55	Sept. 23	4.18	Nov. 25	2.50

1N.34.29.444 (*886, p. 453; 911, p. 222; 941, p. 256). Mr. Tiefenteller.
Water level, in feet below land-surface datum, 1942: Jan. 23, 10.78.

1N.34.33.224 (*886, p. 453; 911, p. 222; 941, p. 256). Mrs. Lee.
Water level, in feet below land-surface datum, 1942: Jan. 23, a/10.96.

1N.34.35.432 (*886, p. 453; 911, p. 222; 941, p. 256). Earl McCollum.
Water level, in feet below land-surface datum, 1942: Jan. 23, b/26.42.

1.32.3.440 (*845, p. 251; 886, p. 453; 911, p. 223; 941, p. 256).
M. Nall.

Water level, in feet below land-surface datum, 1942

Jan. 26	24.35	July 23	27.79	Oct. 20	27.57
Mar. 27	25.83	Sept. 23	27.62	Nov. 24	27.29

1.32.15.111 (*911, p. 223; 941, p. 256). Mrs. J. P. Nash.

Water level, in feet below land-surface datum, 1942

Jan. 26	42.35	July 23	42.20	Oct. 20	42.06
Mar. 27	42.28	Sept. 23	42.11	Nov. 24	41.98

1.33.5.231 (*845, p. 252; *886, p. 454; 911, p. 223; *941, p. 256).
Ina L. Hoover. Measurements discontinued.

1.33.5.432 (*845, p. 252; *886, p. 454; 911, p. 223; 941, p. 256).
Clay Jones. Water level, in feet below land-surface datum, 1942: Jan. 26,
13.79.

1.33.5.442 (*845, p. 252; 886, p. 454; 911, p. 223). George Thedford.
Measurements discontinued.

1.33.7.111 (*911, p. 223; 941, p. 256). I. G. Hall.

Water level, in feet below land-surface datum, 1942

Jan. 26	12.17	July 23	12.63	Oct. 20	12.32
Mar. 27	12.33	Sept. 23	12.50	Nov. 24	12.15

1.33.8.112 (*845, p. 252; *886, p. 454; 911, p. 223; *941, p. 256).
A. Q. Smith. Measuring point raised to 2.71 feet below land-surface datum.
Water level, in feet below land-surface datum, 1942: Jan. 26, 12.57

a Windmill pumping slowly.

b Windmill pumping rapidly.

1.33.8.311 (*886, p. 454; 911, p. 223; 941, p. 256). W. F. Marcus. Reference point, top of nail holding USGS copper washer in top of 2- by 2-inch stake driven flush with ground, 8 inches south and 6 inches east of northeast corner of shed 20 feet west of well, 0.09 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 26, 13.33.

1.33.9.111 (*886, p. 454; *911, p. 223; 941, p. 256). G. C. Kennedy. Water level, in feet below land-surface datum, 1942: Jan. 26, 14.28.

1.33.9.442 (*845, p. 253; 886, p. 454; 911, p. 223; 941, p. 256). B. J. Perkins. Water level, in feet below land-surface datum, 1942: Jan. 24, 13.94.

1.33.10.211 (*886, p. 454; 911, p. 223; 941, p. 256). O. B. Sherman. Water level, in feet below land-surface datum, 1942: Jan. 24, 20.15.

1.33.10.313 (*845, p. 253; *886, p. 454; 911, p. 223; 941, p. 256). C. E. Deahl. Formerly owned by W. A. Bullock.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	15.69	July 23	16.04	Oct. 20	13.76
Mar. 27	15.69	Sept. 23	15.72	Nov. 24	14.31

1.33.11.312 (*845, p. 253; *886, p. 454; 911, p. 223; *941, p. 256). C. F. Williams. New measuring point, lower east edge of 9-inch steel I-beam just west of pump, 0.55 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 24, 19.17.

1.33.12.144 (*845, p. 253; 886, p. 454; *911, p. 223; 941, p. 257). A. C. Woodburn.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	29.28	July 22	30.58	Oct. 22	29.52
Mar. 27	29.30	Sept. 23	29.93	Nov. 25	29.06

1.33.13.111 (*845, p. 254; 886, p. 455; 911, p. 254; *941, p. 257). E. Elkins. Water level, in feet below land-surface datum, 1942: Jan. 24, 18.79.

1.33.13.431 (*845, p. 254; 886, p. 455; 911, p. 224; *941, p. 257). Mr. Spires. Water level, in feet below land-surface datum, 1942: Jan. 26, 19.23.

1.33.14.111 (*845, p. 254; *886, p. 455; 911, p. 224). R. D. Loy. Measurements discontinued.

1.33.14.131 (*845, p. 254; *886, p. 455; 911, p. 224; 941, p. 257). J. V. Miller. Water level, in feet below land-surface datum, 1942: Jan. 24, 13.89.

1.33.14.311 (*845, p. 254; 886, p. 455; 911, p. 224; 941, p. 257). J. T. Elder Estate. New measuring point, base of electric pump, east side, 1.63 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 24, 11.81.

1.33.14.331 (*845, p. 254; 886, p. 455; 911, p. 224; 941, p. 257). J. T. Elder Estate.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	12.06	July 22	14.39	Oct. 20	14.71
Mar. 27	12.52	Sept. 23	14.90	Nov. 24	14.05

1.33.14.331b (*941, p. 257). J. T. Elder Estate.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	12.01	July 22	14.24	Oct. 20	14.47
Mar. 27	12.44	Sept. 23	14.77	Nov. 24	13.95

1.33.14.421 (*845, p. 255; 886, p. 455; 911, p. 224; 941, p. 257). Leon Jones. Water level, in feet below land-surface datum, 1942: Jan. 24, 15.33.

1.33.15.212 (*845, p. 255; *886, p. 455; 911, p. 224; 941, p. 257). Mrs. Ollie Minick. New measuring point, top edge of casing, east side of well under Peerless electric pump, 0.80 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 24, 13.44.

1.33.16.222 (*941, p. 257). Bethel Church.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	11.45	July 23	13.07	Oct. 20	11.05
Mar. 27	11.60	Sept. 23	12.28	Nov. 24	10.98

1.33.17.221 (*845, p. 255; 886, p. 455; *911, p. 224; *941, p. 257). R. P. Campbell.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	11.82	July 23	12.16	Oct. 20	10.44
Mar. 27	12.03	Sept. 23	12.11	Nov. 24	10.60

1.33.23.111 (*941, p. 257). Tom Terry. Measurements discontinued.

1.33.23.311 (*845, p. 255; *886, p. 455; 911, p. 224; 941, p. 257).

Dan H. Smith. New measuring point, top inside edge of 8-inch vertical discharge pipe, 0.16 foot below land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 24, 15.84.

1.33.23.433 (*845, p. 255; 886, p. 455; 911, p. 224; 941, p. 257).

Dr. H. A. Miller. Water level, in feet below land-surface datum, 1942: Jan. 26, 15.73.

1.33.24.111 (*845, p. 255; *886, p. 455; 911, p. 224; *941, p. 257).

J. E. Dictson. New electric pump installed. New measuring point, top outside edge of north $\frac{3}{4}$ -inch hole in west side of Peerless pump base, 0.12 foot above concrete pump base and land-surface datum. New measuring point could not be accurately referred to old; possible discrepancy of a few tenths of a foot compared with old record. Water level, in feet below land-surface datum, 1942: Jan. 24, 18.40.

1.33.24.433 (*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258).

J. E. Jones. Water level, in feet below land-surface datum, 1942: Jan. 27, 15.82.

1.33.25.213 (*845, p. 256; 886, p. 455; 911, p. 224; *941, p. 258).

Drew West. Measurements discontinued.

1.33.26.221 (*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258).

D. E. Thomas. Water level, in feet below land-surface datum, 1942: Jan. 26, 15.54.

1.33.26.331 (*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258).

Luther Thomas. Water level, in feet below land-surface datum, 1942: Jan. 26, 23.58.

1.33.27.311 (*941, p. 258). Joseph A. Henley. No measurements made in 1942.

1.33.27.322 (*845, p. 256; *886, p. 456; 911, p. 224). Joseph A.

Henley. Measurements discontinued.

1.33.28.311 (*886, p. 456; 911, p. 224; 941, p. 258). R. L. Jolly.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 27	40.22	July 23	39.75	Oct. 20	39.69
Mar. 28	39.69	Sept. 25	39.87	Nov. 24	39.39

1.33.29.333 (*911, p. 225; 941, p. 258).

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 27	30.19	July 23	29.89	Oct. 20	29.63
Mar. 28	29.91	Sept. 25	29.95	Nov. 24	29.48

1.33.30 (*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258). Joe S. Lewis. No measurements made in 1942; water above land surface.

1.33.34.211 (*886, p. 456; 911, p. 225; 941, p. 258). John E. Plummer.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 27	19.77	July 23	20.94	Oct. 20	20.13
Mar. 28	19.74	Sept. 25	19.71	Nov. 24	19.78

1.33.36.113 (*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258; erroneously designated 1.33.36.133). Edwin Johnson. Water level, in feet below land-surface datum, 1942: Jan. 27, 33.72.

1.34.8.434 (*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258). W. H. Marsh. Water level, in feet below land-surface datum, 1942: Jan. 24, 28.73.

1.34.13.412 (*886, p. 456; 911, p. 225; 941, p. 258). Ben Donathan.
Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	54.69	July 17	53.63	Oct. 22	53.19
Mar. 27	54.27	Sept. 25	53.31	Nov. 23	53.06

1.34.14.432 (*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258).
Lucille Blackman. Measurements discontinued.

1.34.16.422 (*911, p. 225; 941, p. 258). Ed White.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	44.12	July 21	43.10	Oct. 22	42.93
Mar. 27	43.40	Sept. 23	43.02	Nov. 23	42.76

1.34.17.111 (*845, p. 258; *886, p. 456; 911, p. 225; 941, p. 258).
L. E. Eyster. Water level, in feet below land-surface datum, 1942; Jan. 24, 29.01.

1.34.17.122 (*845, p. 258; *886, p. 456; 911, p. 225; 941, p. 259).
George O. Donnell. Water level, in feet below land-surface datum, 1942; Jan. 24, 28.15.

1.34.17.233 (*845, p. 258; 886, p. 457; 911, p. 225; 941, p. 259).

D. L. Ray.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 24	25.88	July 22	27.49	Oct. 22	23.98
Mar. 27	25.72	Sept. 23	26.46	Nov. 23	25.46

1.34.17.241 (*845, p. 258; *886, p. 457; 911, p. 225; *941, p. 259).
B. F. Ray. Water level, in feet below land-surface datum, 1942; Jan. 24, 23.17.

1.34.18.343 (*845, p. 258; *886, p. 457; 911, p. 225; 941, p. 259).
J. W. Terry. Water level, in feet below land-surface datum, 1942; Jan. 24, 21.19.

1.34.19.223 (*845, p. 258; *886, p. 457; 911, p. 225; 941, p. 259).
Lewis P. Kirby. Water level, in feet below land-surface datum, 1942; Jan. 26, 19.03.

1.34.19.341 (*941, p. 259). Tusco Walker. Water level, in feet below land-surface datum, 1942; Jan. 27, 16.62.

1.34.21.121 (*845, p. 259; *886, p. 457; 911, p. 226; 941, p. 259).
L. H. Lee. Water level, in feet below land-surface datum, 1942; Jan. 23, 26.36.

1.34.21.141 (*845, p. 259; *886, p. 457; 911, p. 226; *941, p. 259).
Douglas Owens. Water level, in feet below land-surface datum, 1942; Jan. 23, 25.82.

1.34.21.222 (*845, p. 259; *886, p. 457; 911, p. 226; 941, p. 259).
Elizabeth Tipton. Water level, in feet below land-surface datum, 1942; Jan. 23, 34.15.

1.34.22.131 (*845, p. 259; 886, p. 457; 911, p. 226; 941, p. 259).
Mrs. W. E. Jergins. Water level, in feet below land-surface datum, 1942; Jan. 23, 27.47.

1.34.22.222 (*845, p. 260; 886, p. 457; 911, p. 226; 941, p. 259).

Mrs. A. J. Goodwin.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	39.84	July 17	38.41	Oct. 22	38.19
Mar. 27	38.78	Sept. 23	38.27	Nov. 23	38.19

1.34.22.421 (*886, p. 458; 911, p. 226; 941, p. 259). Bob C. Grunig.
Water level, in feet below land-surface datum, 1942; Jan. 23, 28.89.

1.34.22.443 (*845, p. 260; *886, p. 458; 911, p. 226; 941, p. 259).
R. M. Cox. Water level, in feet below land-surface datum, 1942; Jan. 23, 23.65.

1.34.23.211 (*845, p. 260; 886, p. 458; 911, p. 226; 941, p. 259).
Hazel Hall. Water level, in feet below land-surface datum, 1942; Jan. 23, 36.89.

1.34.23.311 (*845, p. 260; *886, p. 458; 911, p. 226; 941, p. 259).
J. R. Mahaffey. Water level, in feet below land-surface datum, 1942; Jan. 23, 29.34.

1.34.23.313a (*845, p. 261; 886, p. 458; 911, p. 226; 941, p. 259).
F. A. Buchanan.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	27.75	July 17	28.23	Oct. 22	28.42
Mar. 27	28.86	Sept. 23	28.90	Nov. 23	28.01

1.34.23.422 (*845, p. 261; *886, p. 458; 911, p. 226; 941, p. 259).
E. L. Yandell. Water level, in feet below land-surface datum, 1942:
Jan. 23, 29.29.

1.34.23.442 (*845, p. 261; 886, p. 458; 911, p. 226). J. C. Hicks.
Measurements discontinued.

1.34.23.442a (*941, p. 260). J. C. Hicks. Water level, in feet below land-surface datum, 1942: Jan. 23, 29.80.

1.34.24.112 (*886, p. 458; 911, p. 226; 941, p. 260). J. A. Pensens.
Well filled; measurements discontinued.

1.34.24.243 (*845, p. 261; *886, p. 458; 911, p. 226; 941, p. 260).
J. T. Gorrell. Water level, in feet below land-surface datum, 1942:
Jan. 29, 42.65.

1.34.24.312 (*845, p. 261; 886, p. 458; 911, p. 226; *941, p. 260).
W. A. Cummings. No measurements made in 1942.

1.34.25.200 (*845, p. 262; 886, p. 458; 911, p. 227; 941, p. 261).
J. B. H. Young & Smith Feed Pens. Water level, in feet below land-surface datum, 1942: Jan. 29, 29.20.

1.34.25.211 (*845, p. 261; *886, p. 458; *911, p. 227; 941, p. 260).
J. B. H. Young. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: Dec. 21, 32.96;
Jan. 1, 35.05.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	35.05	34.45	(a)	33.78	33.53	33.54	33.73	33.82	33.95	33.62	.....	33.17
2	35.01	(a)	(a)	33.77	33.52	.....	33.73	33.81	33.97	33.61	.....	33.14
3	35.00	(a)	(a)	33.75	33.52	.....	33.74	33.81	33.94	33.62	.....	33.16
4	35.00	(a)	(a)	33.75	33.52	.....	33.74	33.81	33.93	33.61	.....	33.13
5	34.97	(a)	(a)	33.74	33.52	33.55	33.74	33.81	33.92	33.62	.....	33.13
6	34.93	(a)	(a)	33.72	33.53	33.56	33.74	33.81	33.90	33.60	33.37	33.13
7	34.93	(a)	(a)	33.72	33.52	33.56	33.74	33.83	33.90	33.59	33.36	33.12
8	34.88	(a)	(a)	.....	33.49	33.57	33.73	33.85	33.90	33.59	.....	33.12
9	34.89	(a)	(a)	.....	33.49	33.57	33.74	33.85	33.89	33.59	.....	33.10
10	34.86	(a)	(a)	33.72	33.48	33.59	33.75	33.86	33.87	33.57	.....	33.10
11	34.84	(a)	(a)	33.70	33.48	33.58	33.76	33.87	33.88	33.55	33.33	33.10
12	34.83	(a)	(a)	33.69	33.47	33.60	33.77	33.88	33.86	33.54	33.31	33.09
13	34.79	(a)	(a)	33.69	33.48	33.60	33.80	33.88	33.84	33.52	33.32	33.09
14	34.80	(a)	(a)	33.67	33.49	33.60	33.80	33.91	33.83	33.53	33.29	33.08
15	34.76	(a)	(a)	33.67	33.49	33.62	33.79	33.92	33.81	33.52	33.27	33.07
16	34.73	(a)	(a)	.....	33.48	33.63	33.79	33.95	33.80	33.52	33.28	33.06
17	34.71	(a)	(a)	33.64	33.50	33.63	33.82	.....	33.79	33.53	33.29	33.05
18	34.71	(a)	(a)	33.63	33.52	33.65	33.83	.....	33.80	33.52	33.27	33.04
19	34.69	(a)	(a)	33.64	33.52	33.65	33.84	.....	33.82	33.51	33.26	33.05
20	34.67	(a)	33.89	33.65	33.53	33.67	33.85	.....	33.78	33.50	33.24	33.04
21	34.66	(a)	33.86	33.63	33.52	33.68	33.88	33.95	33.76	33.48	33.28	33.01
22	34.64	(a)	33.83	.....	33.51	33.70	33.87	33.97	33.74	33.47	33.23	33.03
23	34.63	(a)	33.83	.....	33.51	33.75	33.85	33.99	33.69	33.46	33.22	33.00
24	34.59	(a)	.....	33.58	33.50	.....	33.85	33.97	33.69	33.44	33.20	33.00
25	34.56	(a)	.....	33.57	33.49	.....	33.87	33.97	33.65	.....	33.20	32.98
26	34.55	(a)	.....	33.54	33.50	33.70	33.87	33.99	33.68	.....	33.21	32.99
27	34.53	(a)	33.81	33.55	33.53	33.71	33.87	33.97	33.67	33.42	33.17	33.03
28	34.51	(a)	33.80	33.55	33.52	33.71	33.86	33.96	33.67	33.42	33.18	32.99
29	34.48	.....	33.80	33.52	33.52	33.74	33.84	33.96	33.66	33.40	33.20	32.97
30	34.49	.....	33.80	.....	33.52	33.75	33.84	33.97	33.63	.....	33.15	32.98
31	34.48	.....	33.79	.....	33.53	.....	33.83	33.95	.....	.....	.....	32.96

1.34.26.400 (*911, p. 227; 941, p. 261). Water level, in feet below land-surface datum, 1942: Jan. 27, 25.55.

a Recorder out of order; water level between 34.4 and 33.8 feet.

- 1.34.27.211 (*845, p. 263; 886, p. 459; 911, p. 227; 941, p. 261). J. F. Bowman. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.95.
- 1.34.27.331 (*886, p. 459; 911, p. 227; 941, p. 261). Lewis Kirby. Water level, in feet below land-surface datum, 1942: Jan. 27, 18.90.
- 1.34.27.341 (*845, p. 263; *886, p. 459; 911, p. 227; 941, p. 261). B. F. Smith. Water level, in feet below land-surface datum, 1942: Jan. 27, 17.24.
- 1.34.27.412 (*845, p. 264; *886, p. 459; 911, p. 227; *941, p. 261). J. D. Cyphers. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.17.
- 1.34.27.431 (*845, p. 264; 886, p. 459; 911, p. 227). T. E. Willman. Measurements discontinued.
- 1.34.28.211 (*911, p. 228; 941, p. 261). H. M. Livingston. Water level, in feet below land-surface datum, 1942: Jan. 27, 19.74.
- 1.34.28.311a (*941, p. 261). Mrs. Nora Teague. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.49.
- 1.34.29.211 (*845, p. 264; *886, p. 459; 911, p. 228; 941, p. 261). George & King. Water level, in feet below land-surface datum, 1942: Jan. 27, 17.98.
- 1.34.30.121 (*845, p. 264; *886, p. 459; 911, p. 228; 941, p. 261). R. M. Pember. Water level, in feet below land-surface datum, 1942: Jan. 27, 16.55.
- 1.34.30.221 (*845, p. 264; *886, p. 459; 911, p. 228; *941, p. 261). John Davidson. Measurements discontinued.
- 1.34.33.223 (*845, p. 264; *886, p. 460; 911, p. 228). C. P. Yadon. Measurements discontinued.
- 1.34.33.431 (*845, p. 264; 886, p. 460; 911, p. 228; 941, p. 261). F. E. DeGuire.
- Water level, in feet below land-surface datum, 1942
- | Date | Water level | Date | Water level | Date | Water level |
|---------|-------------|----------|-------------|---------|-------------|
| Jan. 27 | 7.24 | July 21 | 8.99 | Oct. 21 | 9.37 |
| Mar. 28 | 7.40 | Sept. 24 | 9.75 | Nov. 23 | 9.43 |
- 1.34.34.143 (*845, p. 265; 886, p. 460; 911, p. 228; 941, p. 261). J. A. Sanders. No measurements made in 1942.
- 1.34.34.232 (*845, p. 265; *886, p. 460; 911, p. 228; 941, p. 261). J. W. Owens. Water level, in feet below land-surface datum, 1942: Jan. 27, 19.90.
- 1.34.34.322 (*845, p. 265; *886, p. 460; 911, p. 228; *941, p. 262; erroneously designated 1.34.34.411). W. L. Patton. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.70.
- 1.34.35.300 (*845, p. 265; *886, p. 460; 911, p. 228; 941, p. 262). Eastern New Mexico College. Water level, in feet below land-surface datum, 1942: Jan. 27, 20.06.
- 1.34.36.212 (*911, p. 228; 941, p. 262). R. R. Laird. Measurements discontinued.
- 1.34.36.324 (*845, p. 266; *886, p. 460; 911, p. 228; 941, p. 262; incorrectly designated 1.34.36.233). Mr. Disney. Water level, in feet below land-surface datum, 1942: Jan. 28, 23.05.
- 1.34.35.332 (*845, p. 266; 886, p. 460; 911, p. 228; 941, p. 262). T. R. Chambers. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.94.
- 1.34.36.333 (*941, p. 262). Jim Landiss. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.84.
- 1.34.36.421 (*845, p. 266; *886, p. 460; 911, p. 228; 941, p. 262). Earl McCollum. No measurements made in 1942.
- 1.34.36.443 (*845, p. 266; *886, p. 460; 911, p. 228; 941, p. 262). Foy Williams. Water level, in feet below land-surface datum, 1942: Jan. 28, 19.37.

1.35.2.300 (*845, p. 266; 886, p. 460; *911, p. 229; 941, p. 262).
Eastern New Mexico State Park.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 25	44.98	July 18	44.32	Oct. 22	43.89
Mar. 27	44.64	Sept. 25	43.93	Nov. 23	43.80

1.35.6.141 (*886, p. 461; 911, p. 229; 941, p. 262). Aubrey & Ellis.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	0.54	July 17	3.32	Oct. 22	1.48
Mar. 27	1.29	Sept. 25	3.04	Nov. 23	1.99

1.35.6.400 (*845, p. 266; 886, p. 460; 911, p. 229; 941, p. 262).
Dr. W. M. Brown.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 23	5.24	July 17	6.57	Oct. 22	5.84
Mar. 27	5.44	Sept. 25	6.93	Nov. 23	5.69

1.35.11.241 (*941, p. 262).

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 25	14.26	July 18	14.45	Oct. 22	14.15
Mar. 27	14.37	Sept. 25	14.24	Nov. 23	14.09

1.35.19.332 (*845, p. 267; 886, p. 461; 911, p. 229; 941, p. 262).

S. D. Foreman. Water level, in feet below land-surface datum, 1942:
Jan. 29, 40.63.

1.35.19.432 (*845, p. 267; 911, p. 229; *941, p. 262). D. A. Carroll.
Water level, in feet below land-surface datum, 1942: Jan. 29, 44.03.

1.35.27.344 (*941, p. 263). Designated as 1.35.27.340 in previous report.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 29	29.50	July 18	29.49	Oct. 21	28.93
Mar. 28	29.42	Sept. 24	29.03	Nov. 23	28.82

1.35.28.143 (*845, p. 267; 886, p. 461; 911, p. 229; *941, p. 263).
J. C. Dick.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 29	45.41	July 18	44.88	Oct. 21	44.68
Mar. 28	44.99	Sept. 24	44.79	Nov. 23	44.44

1.35.29.111 (*911, p. 229; *941, p. 263). Clara Nullmeyer. Water level, in feet below land-surface datum, 1942: Jan. 29, 35.87.

1.35.29.231 (*845, p. 267; *886, p. 461; 911, p. 229; 941, p. 263).
R. E. Lee. Water level, in feet below land-surface datum, 1942: Jan. 29, 33.90.

1.35.30.111 (*845, p. 267; 886, p. 461; 911, p. 229; *941, p. 263).
E. F. Foreman. Water level, in feet below land-surface datum, 1942:
Jan. 29, 35.53.

1.35.30.212 (*941, p. 263). A. G. Kenyon. Measurements discontinued.

1.35.30.343 (*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263).
B. E. Fickling. Water level, in feet below land-surface datum, 1942:
Jan. 29, 23.06.

1.35.31.122 (*845, p. 268; 886, p. 461; 911, p. 229; *941, p. 263).
Mary M. Kenyon. Water level, in feet below land-surface datum, 1942:
Jan. 29, 22.09.

1.35.31.231 (*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263).
W. L. Rogers. Water level, in feet below land-surface datum, 1942:
Jan. 29, 21.86.

1.35.31.331 (*845, p. 268; *886, p. 461; 911, p. 229; 941, p. 263).
R. A. Young. Water level, in feet below land-surface datum, 1942: Jan. 29, 18.31.

1.35.31.342 (*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263).
E. F. Moore. Water level, in feet below land-surface datum, 1942: Jan. 29, 19.52.

1.35.31.421 (*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263). Henry Beebe. Water level, in feet below land-surface datum, 1942: Jan. 29, 18.98.

1.35.32.112 (*845, p. 268; *886, p. 461; 911, p. 230; *941, p. 263). George & King. Water level, in feet below land-surface datum, 1942: Jan. 29, 21.07.

1.35.32.212 (*911, p. 230; *941, p. 263). H. M. Livingston. Water level, in feet below land-surface datum, 1942: Jan. 29, 19.42.

1.35.32.311 (*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 263). Lee and Nelle Carter. New pump installed. New measuring point, top edge of east $\frac{1}{2}$ -inch hole in south side of Peerless pump case, 0.14 foot above concrete pump base and 0.64 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 29, 17.41.

1.35.32.332 (*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 264). Lee and Nelle Carter. Water level, in feet below land-surface datum, 1942: Jan. 29, 17.12.

1.35.32.411 (*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 264). Quincy Haynes. Water level, in feet below land-surface datum, 1942: Jan. 29, 14.77.

1.35.33.112 (*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264). Roy Newberry. Water level, in feet below land-surface datum, 1942: Jan. 29, 23.15.

1.35.33.331 (*845, p. 260; *886, p. 462; 911, p. 230; 941, p. 264). Lowell C. Green. New electric pump installed. New measuring point, top west edge of west 4- by 4-inch wooden beam supporting Peerless pump, level with west edge of pump base, 1.21 feet above land-surface datum. Reference point No. 2, top edge of square tap on lower bolt holding switch and meter box to west side of Rural Electrification Administration pole about 10 feet west of well, about 3 feet above ground level at pole, 2.72 feet above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 29, 13.03.

1.36.5.300 (*886, p. 462; 911, p. 230; 941, p. 264). H. Pieper. Water levels, in feet below land-surface datum, 1942: Jan. 25, 33.30; Mar. 27, a/33.67; July 18, a/33.79.

1.36.6.100 (*886, p. 462; 911, p. 230; 941, p. 264). Julian L. Bivins. Water level, in feet below land-surface datum, 1942: Jan. 25, a/37.08.

1.36.16.100 (*886, p. 462; 911, p. 230; 941, p. 264). State land. New measuring point, top of pipe clamps, 2.40 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 25	a28.37	July 18	a28.13	Oct. 22	a26.92
Mar. 27	a26.93	Sept. 25	a28.47	Nov. 23	a19.64

2.34.1.114 (*845, p. 269; *886, p. 462; 911, p. 230; 941, p. 264). E. C. Murrill. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.24.

2.34.1.133 (*845, p. 269; *886, p. 462; 911, p. 230; 941, p. 264). Hugh R. Knox. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.18.

2.34.1.221 (*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264). Foy Williams. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.98.

2.34.2.233 (*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264). A. G. Trout. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: Mar. 19, 32.77; Oct. 31, 34.94.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33.66	33.04	32.90	32.92	32.97	33.46	33.83	.....	34.68	34.80	34.71	34.74
2	33.57	33.08	32.90	32.95	32.94	33.46	33.79	.....	34.73	.....	34.75	34.71
3	33.58	33.02	32.78	32.95	33.04	33.49	33.83	34.37	34.69	.....	34.77	34.74

a Windmill pumping.

2.34.2.233. A. G. Troutt--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
4	33.61	33.01	32.86	32.96	33.01	33.49	33.83	34.41	34.68	34.83	34.72	34.73
5	33.56	33.00	32.81	32.97	33.01	33.47	33.81	34.41	34.69	34.86	34.80	34.72
6	33.52	33.05	32.71	32.96	33.11	33.48	33.84	34.43	34.66	34.83	34.82	34.81
7	33.53	32.99	32.89	33.01	33.04	33.47	33.85	34.46	34.68	34.82	34.83	34.81
8	33.41	32.98	32.93	33.00	33.04	33.47	33.87	34.50	34.70	34.83	34.75	34.83
9	33.50	33.03	32.83	33.04	33.04	33.50	33.87	34.48	34.69	34.87	34.73	34.81
10	33.45	33.03	32.81	33.07	33.00	33.50	33.91	34.51	34.67	34.82	34.84	34.80
11	33.42	32.95	32.79	32.99	.....	33.50	33.90	34.54	.....	34.78	34.81	34.85
12	33.42	32.95	32.76	32.98	.....	33.53	33.92	34.57	.....	34.77	34.77	34.82
13	33.36	32.97	32.79	33.02	.....	33.61	33.98	34.59	34.71	34.80	34.78	34.83
14	33.46	32.93	32.77	33.00	.....	33.55	34.04	34.61	34.67	34.74	34.72	34.85
15	33.34	32.91	32.71	33.00	.....	33.58	34.00	34.63	34.67	34.79	34.66	34.81
16	33.28	32.93	32.80	33.05	.....	33.62	34.02	34.63	34.67	34.82	34.67	34.82
17	33.26	32.94	32.90	.....	33.25	33.65	34.06	34.62	34.67	34.86	34.78	34.80
18	33.36	33.00	32.82	.....	33.28	33.67	34.13	34.62	34.69	34.85	34.77	34.79
19	33.33	32.93	32.77	.....	33.32	33.67	34.14	34.62	34.75	34.81	34.73	34.82
20	33.28	32.95	32.90	33.10	33.34	33.68	34.16	34.61	34.78	34.81	34.71	34.82
21	33.25	32.89	.....	33.07	33.34	33.68	34.18	34.62	.....	34.75	34.66	34.73
22	33.21	32.84	.....	32.93	33.33	.....	34.14	34.64	.....	34.74	34.81	34.81
23	33.17	32.88	32.88	32.88	33.38	.....	34.10	34.67	.....	34.78	34.77	34.78
24	33.17	32.93	32.81	32.94	33.33	.....	34.11	34.62	34.68	34.77	34.70	34.77
25	33.11	32.79	32.82	32.99	33.33	.....	34.15	34.63	34.60	34.84	34.70	34.71
26	33.13	32.98	32.97	32.97	33.33	.....	34.15	34.67	34.74	34.79	34.80	34.75
27	33.15	32.89	32.99	32.97	33.34	.....	.....	34.69	34.74	34.73	34.70	.....
28	33.06	32.83	32.98	32.95	33.36	.....	.....	34.68	34.77	34.73	34.71	.....
29	33.04	.....	32.97	32.90	33.38	33.88	.....	34.69	34.80	34.73	34.74	.....
30	33.11	.....	33.02	32.95	33.41	33.87	.....	34.70	34.80	34.78	34.68	.....
31	33.11	.....	32.98	.....	33.41	.....	.....	34.68	.....	34.77	.....	.....

2.34.4.441 (*886, p. 462; 911, p. 231; 941, p. 265). Maud Wallace.
Water level, in feet with reference to land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 27	+4.17	July 21	+1.76	Oct. 21	+0.15
Mar. 28	+3.76	Sept. 24	-.05	Nov. 24	-.12

2.34.10.343 (*845, p. 270; 886, p. 463; 911, p. 231; 941, p. 265).
H. J. Bollen. Water level, in feet below land-surface datum, 1942: Jan. 28, 33.14.

2.34.11.122 (*941, p. 265). D. W. Bedinger. Water level, in feet below land-surface datum, 1942: Jan. 28, 19.20.

2.34.12.143 (*886, p. 463; 911, p. 231; 941, p. 265). E. J. Pendergraft
Water level, in feet below land-surface datum, 1942: Jan. 28, 9.27.2.34.13.111 (*886, p. 463; 911, p. 231; 941, p. 265). Lon J. Partin.
Water level, in feet below land-surface datum, 1942: Jan. 28, 8.56.

2.34.13.224 (*941, p. 265). Water level, in feet below land-surface datum, 1942: Jan. 28, 1.25.

2.34.14.113 (*845, p. 271; *886, p. 463; 911, p. 231; 941, p. 265).
E. E. McNew. Water level, in feet below land-surface datum, 1942: Jan. 28, 20.56.

2.34.14.122 (*941, p. 265). Water levels, in feet below land-surface datum, 1942: Jan. 28, 6.10; Mar. 28, 6.60.

2.34.14.412 (*845, p. 271; 886, p. 463; 911, p. 231; 941, p. 265).
N. R. Blackard.

Water level, in feet below land-surface datum, 1942					
Jan. 28	17.33	July 21	18.41	Oct. 21	19.05
Mar. 28	17.54	Sept. 24	18.89	Nov. 24	19.10

2.34.14.443 (*845, p. 271; *886, p. 463; 911, p. 231; 941, p. 265).
J. M. Shim. Water level, in feet below land-surface datum, 1942: Jan. 28, 29.22.

2.34.15.212 (*845, p. 271; *886, p. 463; 911, p. 232; 941, p. 265).
Mrs. R. B. Rogers. New measuring point, base of priming pump, 0.50 foot
above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 28	24.68	July 21	23.98	Oct. 21	24.15
Mar. 28	24.20	Sept. 24	24.07	Nov. 24	24.23

2.35.4.111 (*845, p. 272; *886, p. 464; 911, p. 232; 941, p. 266).
W. W. Hampton. Old measuring point destroyed. New measuring point, top
east edge of west stringer of automobile frame supporting pump, 0.75 foot
above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 29	12.94	July 18	14.82	Oct. 21	14.18
Mar. 28	13.45	Sept. 24	14.05	Nov. 23	14.12

2.35.5.311 (*845, p. 272; 886, p. 464; 911, p. 232; 941, p. 266).
H. G. Black. Water level, in feet below land-surface datum, 1942: Jan. 28,
12.87.

2.35.5.341 (*845, p. 272; *886, p. 464; 911, p. 232; 941, p. 266).
H. R. Sadler. Water level, in feet below land-surface datum, 1942: Jan. 28,
13.45.

2.35.6.121 (*845, p. 273; *886, p. 464; 911, p. 232; *941, p. 266).
Wayne Culpepper.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 28	16.73	Sept. 24	19.04	Nov. 23	18.26
Mar. 28	16.92	Oct. 21	18.79		

2.35.6.213 (*845, p. 273; *886, p. 464; 911, p. 232; *941, p. 266).
Mrs. Beulah Ownby. Water level, in feet below land-surface datum, 1942:
Jan. 28, 16.87.

2.35.6.312 (*845, p. 273; 886, p. 464; 911, p. 232; 941, p. 266).
Ray Snelson. Water level, in feet below land-surface datum, 1942: Jan. 28,
14.45.

2.35.6.331 (*845, p. 273; *886, p. 464; 911, p. 232; 941, p. 266).
J. K. Akers. Water level, in feet below land-surface datum, 1942: Jan. 28,
12.96.

2.35.6.411 (*886, p. 464; 911, p. 232; 941, p. 266). F. A. Jewell.
Water level, in feet below land-surface datum, 1942: Jan. 28, 14.25.

2.35.6.443 (*845, p. 273; *886, p. 464; *911, p. 232; 941, p. 266).
B. H. Howard. Equipped with water-stage recorder. Highest water level,
in feet below land-surface datum, 1942: Feb. 25, 12.97. Lowest water
level, due to pumping effects, not determinable.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.36	13.15	13.06	13.17	13.38	14.65	14.56	15.27	15.78	15.61	15.24	15.00
2	13.28	13.15	.....	13.15	.....	14.64	14.51	15.44	15.80	15.59	15.34	14.96
3	13.31	13.12	.....	13.13	13.73	14.49	14.47	15.42	15.77	15.60	15.23	14.98
4	13.55	13.09	.....	13.12	13.72	14.25	14.61	15.67	15.74	15.62	15.19	14.96
5	13.37	13.19	.....	13.13	13.99	14.14	14.69	16.07	15.73	15.66	15.24	14.95
6	13.33	13.16	.....	13.11	14.21	14.07	14.65	16.17	15.70	15.63	15.25	15.02
7	13.34	13.07	.....	13.22	14.03	14.01	14.64	16.10	15.69	15.61	15.22	15.01
8	13.25	15.06	.....	13.22	13.96	13.99	14.63	16.11	15.70	15.61	15.19	15.03
9	13.32	13.17	.....	13.25	14.09	14.17	14.61	15.95	15.68	15.63	15.19	15.01
10	13.33	13.17	.....	13.39	14.11	14.39	15.51	15.92	15.68	15.61	15.23	15.00
11	13.31	13.07	.....	13.29	.....	14.73	15.52	16.17	15.78	15.58	15.22	15.03
12	13.31	13.05	.....	13.24	.....	.....	15.34	16.64	15.74	15.56	15.16	15.03
13	13.26	13.09	.....	13.28	.....	.....	15.29	16.47	15.70	15.57	15.16	15.02
14	13.35	13.03	.....	13.47	.....	.....	15.43	16.36	15.61	15.57	15.08	15.02
15	13.28	13.01	.....	13.45	.....	14.59	15.34	16.26	15.67	15.55	15.03	15.00
16	13.22	13.01	13.05	13.58	.....	14.46	15.29	16.13	15.66	15.56	15.03	15.01

2.35.6.443. B. H. Howard--Continued.

Highest daily water level, in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
17	13.21	13.07	13.12	13.75	13.79	14.73	15.39	16.07	15.64	15.57	15.11	14.99
18	13.29	13.19	13.04	13.57	13.81	14.93	15.32	16.02	15.65	15.55	15.09	14.98
19	13.34	13.11	12.98	13.57	13.83	15.03	15.32	13.99	15.69	15.51	15.05	15.00
20	13.33	13.13	13.13	13.57	14.08	15.04	15.39	15.94	15.69	15.50	15.03	15.00
21	13.31	13.04	13.22	13.79	14.33	14.89	15.37	15.94	15.64	15.43	15.14	14.92
22	13.25	12.99	13.15	13.58	14.31	14.90	15.29	15.94	15.63	15.42	15.09	14.99
23	13.22	13.02	13.08	13.47	14.44	15.47	15.23	15.90	15.61	15.43	15.05	14.94
24	13.22	13.04	13.00	13.49	14.35	14.91	15.20	15.87	15.65	15.39	14.99	14.94
25	13.17	12.97	13.01	13.47	14.33	14.74	15.28	15.85	15.59	15.41	14.98	14.90
26	13.17	13.10	13.15	13.44	14.31	14.64	15.23	16.03	15.67	15.39	15.07	14.92
27	13.29	13.07	13.20	13.43	14.34	14.58	15.23	15.71	15.68	15.34	14.98	15.05
28	13.10	13.01	13.17	13.57	14.53	14.52	15.21	15.99	15.67	15.32	14.97	15.01
29	13.07	.....	13.15	13.51	14.62	14.73	15.20	15.90	15.67	15.29	14.99	14.97
30	13.13	.....	13.25	13.33	14.81	14.61	15.24	15.85	15.63	15.32	14.94	15.01
31	13.15	.....	13.23	.....	14.73	.....	15.29	15.80	.....	15.29	.....	14.98

2.35.7.134 (*845, p. 273; *886, p. 464; 911, p. 233; 941, p. 267).

A. L. Kelley. Water level, in feet below land-surface datum, 1942: Jan. 28, 24.01.

2.35.7.311 (*845, p. 273; 886, p. 464; 911, p. 233; 941, p. 267).

W. H. Seefield.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 28	7.04	July 20	10.24	Oct. 21	9.88
Mar. 28	7.50	Sept. 24	10.21	Nov. 23	9.72

2.35.8.331 (*845, p. 274; 886, p. 464; 911, p. 233; 941, p. 267).

G. C. Cooper. Water level, in feet below land-surface datum, 1942: Jan. 28, 18.28.

2.35.9.211 (*886, p. 464; 911, p. 233; 941, p. 267). Fred Smith.

Water level, in feet below land-surface datum, 1942: Jan. 29, 10.26.

2.35.10.211 (*911, p. 233; 941, p. 267). C. H. Hare. Water level, in feet below land-surface datum, 1942: Jan. 29, 10.30.

2.35.14.313 (*886, p. 465; 911, p. 233; 941, p. 267). First National Bank of Portales.

Water level, in feet below land-surface datum, 1942

Jan. 30	6.79	July 23	8.45	Oct. 21	7.91
Mar. 28	7.16	Sept. 24	8.20	Nov. 24	7.89

2.35.14.414 (*886, p. 465; *911, p. 233; 941, p. 267). First National Bank of Portales.

Water level, in feet, with reference to land-surface datum, 1942

Jan. 30	+0.02	July 23	-2.19	Oct. 21	+0.04
Mar. 28	-.11	Sept. 25	-1.01	Nov. 24	-.04

2.35.15.131 (*886, p. 465; 911, p. 233; 941, p. 267). First National Bank of Portales.

Water level, in feet, with reference to land-surface datum, 1942

Jan. 29	+0.02	July 20	-1.15	Oct. 21	-0.05
Mar. 28	-.02	Sept. 25	-.54	Nov. 24	-.18

2.35.16.333 (#886, p. 465; 911, p. 233; 941, p. 267). A. J. Cline.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 29	4.12	July 20	6.86	Oct. 21	6.31
Mar. 28	4.62	Sept. 25	6.80	Nov. 24	6.25

2.35.18.211 (#886, p. 465; 911, p. 233; 941, p. 267). Water levels, in feet below land-surface datum, 1942: July 20, 1.99; Sept. 25, 3.49; Oct. 21, 2.55; Nov. 24, 3.30.

2.35.19.154 (#845, p. 274; 886, p. 465; 911, p. 234; #941, p. 267). J. S. Martin.

Water level, in feet below land-surface datum, 1942

Jan. 28	24.68	July 23	24.67	Oct. 21	24.75
Mar. 28	24.67	Sept. 24	24.83	Nov. 24	24.95

2.35.25.123 (#845, p. 274; #886, p. 466; 911, p. 234; #941, p. 268). Dr. L. C. Buchanan.

Water level, in feet below land-surface datum, 1942

Jan. 30	16.67	July 23	16.68	Oct. 21	16.15
Mar. 28	17.04	Sept. 24	16.14	Nov. 24	16.15

2.35.26.111 (#941, p. 268). T. M. McCrary. Pump removed. New measuring point, top of board over well, 0.25 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 30, 28.07.

2.36.8.432 (#886, p. 466; 911, p. 234; #941, p. 268). S. W. Davie. Water levels, in feet below land-surface datum, 1942: Jan. 30, 13.26; Sept. 25, 14.82; Oct. 21, 13.06; Nov. 24, 12.84.

2.36.9.431 (#886, p. 466; 911, p. 234; 941, p. 268). J. E. Polly. Water level, in feet below land-surface datum, 1942: Jan. 30, 15.92.

2.36.18.341 (#845, p. 275; 886, p. 466; 911, p. 234; 941, p. 268). Bob Stokes.

Water level, in feet below land-surface datum, 1942

Jan. 29	9.42	Sept. 25	9.35	Nov. 24	9.81
Mar. 28	9.66	Oct. 21	9.64		

2.36.19.113 (#941, p. 268). J. S. Hobbs. New pump installed. New measuring point, top edge of south $\frac{1}{2}$ -inch hole in east side of Peerless pump base, 0.14 foot above concrete well curb and 0.64 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 29, 16.93.

2.36.20.321 (#845, p. 275; 886, p. 466; 911, p. 234; 941, p. 268). W. O. Davis.

Water level, in feet below land-surface datum, 1942

Jan. 30	8.12	July 24	9.13	Oct. 21	9.66
Mar. 28	9.09	Sept. 24	10.70	Nov. 24	9.49

2.36.21.432 (#886, p. 466; 911, p. 234; 941, p. 268). Sam H. McGarson. No measurements made in 1942.

2.36.25.112 (#886, p. 466; 911, p. 234; 941, p. 268). W. D. Pate. Water level, in feet below land-surface datum, 1942: Jan. 30, 8.13.

2.36.26.131 (#845, p. 276; 886, p. 466; 911, p. 234; #941, p. 268). L. L. Bugg.

Water level, in feet below land-surface datum, 1942

Jan. 30	5.29	July 24	7.13	Oct. 21	8.59
Mar. 28	5.55	Sept. 24	8.50	Nov. 24	8.19

2.36.26.311 (*845,p.276; 886,p.466; 911,p.234; 941,p.268). J.S. Riley. Water level, in feet below land-surface datum, 1942: Jan. 30, 5.09.

2.36.26.423 (*911,p.234; 941,p.269). W. B. Cox. Water level, in feet below land-surface datum, 1942: Jan. 30, 8.15.

2.36.27.111 (*886,p.467; 911,p.234; 941,p.269). B. L. Kennedy. Water level, in feet below land-surface datum, 1942: Jan. 30, 6.27.

2.36.27.131 (*845,p.276; *886,p.467; 911,p.234; 941,p.269). B. L. Kennedy. Water level, in feet below land-surface datum, 1942: Jan. 30, 6.54.

2.36.27.211 (*845,p.276; 886,p.467; 911,p.234; 941,p.269). M.O. Pate. Water level, in feet below land-surface datum, 1942: Jan. 30, 5.58.

2.36.27.311 (*845,p.277; 886,p.467; 911,p.234; 941,p.269). J.M. Riley.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 30	7.04	July 24	8.16	Oct. 21	9.52
Mar. 28	7.29	Sept. 24	9.37	Nov. 24	9.44

2.36.28.114b (*845,p.277; *886,p.467; 911,p.235; 941,p.269). Morgan Trammel. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: Jan. 1, 7.37; Oct. 14, 10.26.

Highest daily water level, in feet below land-surface datum, 1942

(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.37	7.49	7.58	7.65	7.50	8.07	8.73	9.33	9.80	10.07	9.90	9.84
2	7.39	....	7.64	7.65	7.50	8.08	8.70	9.36	9.81	10.10	9.92	9.81
3	7.41	....	7.56	7.64	7.53	8.09	8.70	9.41	9.80	10.13	9.90	9.83
4	7.45	....	7.58	7.64	7.51	8.11	8.70	9.43	9.79	10.15	9.87	9.83
5	7.45	....	7.59	7.64	7.51	8.13	8.68	9.46	9.79	10.16	9.92	9.89
6	7.43	....	7.51	7.64	7.57	8.16	8.68	9.48	9.78	10.16	9.86	9.89
7	7.42	....	7.59	7.66	7.55	8.16	8.68	9.51	9.79	10.16	....	9.89
8	7.39	7.50	7.66	7.67	7.54	8.17	8.68	9.54	9.81	10.17	....	9.90
9	7.42	7.55	7.61	7.68	7.54	8.20	8.69	9.56	9.82	10.20	....	9.88
10	7.47	7.56	7.60	7.72	7.54	8.22	8.72	9.58	9.82	10.20	....	9.91
11	7.47	7.52	7.59	7.67	....	8.24	8.74	9.61	9.84	10.20	....	9.92
12	7.47	7.51	7.56	7.67	....	8.27	8.75	9.64	9.85	10.20	....	9.92
13	7.45	7.55	7.59	7.67	....	8.33	8.79	9.66	9.85	10.22	....	9.92
14	7.45	7.51	7.57	7.66	....	....	8.82	9.70	9.86	10.25	....	9.91
15	7.44	7.50	7.53	7.66	....	....	8.84	9.72	9.87	10.24	....	9.90
16	7.43	7.51	7.57	7.68	....	....	8.86	9.73	9.88	10.24	9.84	9.92
17	7.43	7.53	7.62	7.62	7.71	....	8.89	9.73	9.90	10.24	9.86	9.92
18	7.48	7.60	7.59	7.60	7.73	....	8.92	9.74	9.91	10.21	9.87	9.88
19	7.52	7.56	7.54	7.61	7.77	....	8.96	9.74	9.98	10.18	9.84	....
20	7.52	7.60	7.60	7.69	7.80	....	9.00	9.75	9.96	10.15	9.83	9.87
21	7.52	7.55	7.68	7.68	7.79	8.55	9.02	9.76	9.93	10.07	9.91	9.87
22	7.49	7.50	7.63	7.59	7.79	8.57	9.05	9.77	9.96	10.06	9.88	9.87
23	7.47	7.52	7.59	7.58	7.82	8.59	9.05	9.80	9.97	10.05	9.85	9.87
24	7.49	7.59	7.55	7.58	7.82	8.61	9.07	9.78	9.99	10.06	9.80	9.87
25	7.45	7.52	7.55	7.60	7.85	8.63	9.11	9.79	9.98	10.05	9.80	9.88
26	7.45	7.60	7.62	7.59	7.86	8.65	9.15	9.82	10.03	9.99	9.88	9.97
27	7.49	7.59	7.66	7.59	7.88	8.68	9.17	9.84	10.03	9.94	9.80	9.96
28	7.46	7.55	7.66	7.55	7.91	8.71	9.19	9.82	10.07	9.91	....	9.94
29	7.44	....	7.65	7.49	7.94	8.74	9.22	9.82	10.07	9.91	9.81	9.91
30	7.47	....	7.67	7.50	7.98	8.77	9.26	9.83	10.07	9.91	9.80	9.94
31	7.51	....	7.68	....	8.00	....	9.30	9.80	....	9.91	....	9.90

2.36.28.411 (*845,p.277; 886,p.467; 911,p.235; 941,p.269). C. A. Tevis. Water level, in feet below land-surface datum, 1942: Jan. 30, 7.06.

2.36.28.421 (*845,p.277; *886,p.467; 911,p.235; 941,p.269). C. A. Tevis. Water level, in feet below land-surface datum, 1942: Jan. 30, 8.26.

2.36.28.441 (*845,p.277; 886,p.467; 911,p.235; 941,p.269). J. W. Robinson. No measurements made in 1942.

2.36.30.111 (#941,p.270). Measuring point (top of casing) lowered to 0.17 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Date	Water level	Date	Water level	Date	Water level
Jan. 30	0.70	July 23	2.81	Oct. 21	0.71
Mar. 28	1.27	Sept. 24	2.10	Nov. 24	1.21

2.36.34.111 (#845,p.278; 911,p.235; 941,p.270). M. F. Riley. Water level, in feet below land-surface datum, 1942: Jan. 30, 8.18.

2.36.34.221 (#845,p.278; #886,p.467; 911,p.235; 941,p.270). W. H. Davenport. Water level, in feet below land-surface datum, 1942: Jan. 30, 4.01.

2.36.34.341 (#845,p.278; 886,p.467; #911,p.235; 941,p.270). W. J. Murrill.

Water level, in feet below land-surface datum, 1942

Jan. 30	12.39	Sept. 24	14.66	Nov. 24	14.84
Mar. 28	12.69	Oct. 21	14.88		

2.36.34.421 (#886,p.467; 911, p.235; #941,p.270). I. F. Dacus. Water level, in feet below land-surface datum, 1942: Jan. 30, 4.24.

2.36.35.212 (#845,p.278; #886,p.467; 911,p.235; 941,p.270). A. E. Whitehead. Old measuring point destroyed. New measuring point, top south edge of north 4- by 4-inch beam lying across pit at point 1 foot east of north upright, 0.42 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942

Jan. 30	3.81	July 24	6.80	Oct. 21	7.52
Mar. 28	4.31	Sept. 24	7.60	Nov. 24	7.21

2.37.19.331 (#886,p.467; 911,p.235; 941,p.270). W. H. McDougal.

Water level, in feet below land-surface datum, 1942

Jan. 30	12.74	July 24	13.19	Oct. 21	13.90
Mar. 28	13.20	Sept. 24	13.63	Nov. 24	13.93

2.37.19.341 (#886,p.467; 911,p.235; 941,p.270). C. R. Anderson. Water level, in feet below land-surface datum, 1942: Jan. 30, 12.97.

SIERRA COUNTY (HOT SPRINGS AREA)

By C. R. Murray

The investigation of the thermal waters at Hot Springs, conducted by the Federal Geological Survey in cooperation with the State engineer of New Mexico was continued in 1942 by making periodic measurements of water level in wells in the area. Well descriptions, water-level measurements, and other geologic and hydrologic data on the Hot Springs area have been published in Geological Survey Water-Supply Papers 911 and 941. A general report giving the results of the investigation will be published in a forthcoming biennial report of the State engineer of New Mexico.

Water-level measurements were made in 14 observation wells in the area in March, August, and November 1942. Three automatic water-stage recorders were in operation during the year--two on wells deriving water from the Magdalena limestone and one on a shallow well dug into the alluvium.

Fluctuations in water level and artesian head

Water levels and artesian head were most strongly influenced, in 1942 as formerly, by the stage of the Rio Grande at Hot Springs. Pumping or artesian flow of water from wells caused the principal daily fluctuations of artesian head, and evaporation and transpiration caused the principal daily fluctuations of the water table. Judging by the record obtained by the recorder on well 6, the artesian head rose sharply, beginning April 13, in response to a sudden increase in the discharge of water from Elephant Butte Reservoir. By early June it had risen approximately 1.7 feet, after which it declined, except for temporary rises caused by several heavy rains in August, until the end of September. It then rose slightly, but at the end of the year it was about 0.5 foot lower than at the beginning of the year. Artesian head at its lowest stage in 1942 was about as high as its highest stage in 1939 and 1940, in which years the flow of the Rio Grande at Hot Springs was regulated according to seasonal irrigation requirements rather than by the more uniform needs of the hydroelectric plant now operating at Elephant Butte Dam. The fluctuations of the water table, as shown by the recorder on well 6a, are similar to the fluctuations of the artesian head. Water levels began rising about April 10 and by May 22 had risen 2 feet. They then declined sharply, and, except for very large flash rises occasioned by heavy rains in August, they continued to decline until the end of September. After a slight rise during the last 3 months of 1942, water levels at the end of that year were about 0.2 foot below their stages at the beginning of the year, but they were about 0.2 foot above their stages at the time the record for well 6a began, in March 1941.

Water-level measurements ^{1/}

2 (*941, p. 272). Lot 17, block 1. H. L. Lockhart. Water levels, in feet above land-surface datum, 1942: Mar. 17, 1.20; Aug. 19, 0.95; Nov. 24, 0.83.

3 (*941, p. 272). Lot 17, block 1. H. L. Lockhart. Water levels, in feet above land-surface datum, 1942: Mar. 17, 1.23; Aug. 19, 1.00; Nov. 24, 0.88.

4 (*911, p. 237; 941, p. 272). Lot 21, block 2. C. E. James. Water levels, in feet above land-surface datum, 1942: Mar. 17, 1.28; Aug. 19, 1.07; Nov. 24, 0.89.

5 (*911, p. 237; 941, p. 272). Lot 12, block 9. J. E. Malone. Water levels, in feet, with reference to land-surface datum, 1942: Mar. 17, +0.13; Aug. 19, -0.12; Nov. 24, -0.21.

6 (*911, p. 237; 941, p. 272). Lot 4, block 8. C. E. James. Equipped with water-stage recorder. Highest and lowest water level, in feet above land-surface datum, 1942: May 28, 2.98; Sept. 29, 0.98.

^{1/} The lot and block numbers in each of the following entries refer to Hot Springs townsite.

G. C. E. James--Continued.

Water level at 4:00 a.m., in feet above land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.57	1.57	1.53	....	....	2.94	2.24	1.57	1.13	....	1.08	1.13
2	1.58	1.58	1.51	....	....	2.97	2.25	1.58	1.12	....	1.07	1.12
3	1.57	1.59	1.57	....	....	2.98	2.23	1.63	1.06	1.00	1.06	1.14
4	1.56	1.58	1.56	....	....	2.94	2.08	1.71	1.07	....	1.12	1.15
5	1.54	1.60	1.52	....	....	2.78	2.04	1.64	1.06	....	1.07	1.14
6	1.54	1.55	1.56	....	....	2.71	2.01	1.57	1.05	1.00	1.08	1.14
7	1.55	1.57	1.54	1.38	....	2.71	2.00	1.46	1.03	1.01	1.07	1.12
8	1.57	1.58	1.48	....	....	2.68	2.00	1.31	....	1.00	1.08	1.09
9	1.58	1.54	1.50	....	....	2.61	1.95	1.62	....	1.00	1.08	1.15
10	1.54	1.59	1.50	....	....	2.59	1.92	1.52	....	....	1.06	1.15
11	1.55	1.58	1.51	....	....	2.58	1.80	....	1.02	1.02	1.05	1.14
12	1.58	1.58	1.50	....	....	2.70	2.56	1.71	....	1.14	1.03	1.07
13	1.60	1.58	1.48	....	....	2.73	2.52	1.64	....	1.10	1.00	1.09
14	1.57	1.59	1.50	1.46	2.74	2.51	1.60	....	1.10	....	1.09	....
15	1.59	1.60	1.50	1.48	2.78	2.52	1.57	....	1.06	....	1.09	1.11
16	1.62	1.57	1.46	1.49	2.84	2.49	1.54	....	1.05	....	1.15	1.09
17	1.62	1.54	1.44	1.52	2.85	2.48	1.50	....	1.04	....	1.09	1.13
18	1.57	1.51	1.46	1.54	2.85	2.48	1.58	1.24	1.03	....	1.09	1.13
19	1.57	1.54	1.51	1.54	2.87	2.48	1.61	1.22	1.02	....	1.12	1.14
20	1.57	1.51	1.44	1.51	2.88	2.46	1.61	1.21	1.01	1.05	1.14	1.11
21	1.57	1.54	1.40	1.53	2.89	2.39	1.62	1.19	1.00	1.03	1.07	1.16
22	1.58	1.58	1.44	1.62	2.92	....	1.62	1.17	....	1.08	1.08	1.14
23	1.60	1.54	1.45	1.66	2.91	2.31	1.62	1.13	.99	1.07	1.09	1.15
24	1.60	1.53	1.48	1.70	2.91	2.32	1.65	1.20	....	1.06	1.10	1.14
25	1.59	1.59	1.46	1.74	2.91	2.30	1.63	....	....	1.06	....	1.18
26	1.59	1.51	....	....	2.95	2.28	1.60	....	....	1.05	....	1.16
27	1.57	1.55	....	....	2.97	2.28	1.58	....	....	1.08	....	1.09
28	1.60	1.58	....	....	2.98	2.24	1.60	....	....	1.09	....	1.12
29	1.62	....	....	....	2.97	2.21	1.60	....	.98	1.08	....	1.14
30	1.56	....	....	....	2.93	2.21	1.59	....	....	1.06	....	1.12
31	1.58	....	....	....	2.94	....	1.58	....	....	1.06	....	1.15

6a (#941, p. 273). Lot 4, block 8. G. C. E. James. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet, with reference to land-surface datum, 1942: May 28, +0.55; Sept. 28-Oct. 6, -1.58.

Water level at 4:00 a.m., in feet, with reference to
land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	-1.27	-1.26	-1.25	-1.36	-0.17	+0.45	-0.45	-1.17	....	-1.58	-1.55	-1.50
2	-1.26	-1.26	-1.27	-1.36	-.13	+.53	-.44	-1.15	....	-1.58	-1.55	-1.50
3	-1.26	-1.23	-1.24	-1.37	-.10	+.51	-.43	-1.04	....	....	-1.55	-1.49
4	-1.26	-1.23	-1.24	-1.37	-.08	+.45	-.68	-.57	....	....	-1.54	-1.49
5	-1.28	-1.22	-1.26	-1.37	-.02	+.06	-.78	-.78	....	....	-1.54	-1.48
6	-1.27	-1.26	-1.24	-1.36	-.01	-.01	-.82	-.98	....	-1.58	-1.55	-1.49
7	-1.26	-1.25	-1.25	-1.35	-.02	-.07	-.82	-1.16	....	-1.57	-1.56	-1.50
8	-1.25	-1.24	-1.30	-1.36	-.05	-.09	-.77	-1.24	....	-1.57	-1.56	-1.50
9	-1.25	-1.26	-1.30	-1.35	+.08	-.15	-.86	+1.04	....	....	-1.56	-1.48
10	-1.27	-1.23	-1.29	-1.36	+.15	-.18	-.88	+.90	....	....	-1.55	-1.47
11	-1.27	-1.24	-1.29	-1.35	+.16	-.17	-1.03	....	....	....	-1.56	-1.47
12	-1.26	-1.24	-1.29	-1.33	+.33	-.19	-1.14	....	....	....	-1.55	-1.48
13	-1.25	-1.24	-1.31	-1.34	+.39	-.21	-1.20	-.89	....	....	-1.54	-1.49
14	-1.23	-1.24	-1.30	-1.29	+.41	-.24	-1.24	-1.14	....	....	-1.54	-1.50
15	-1.23	-1.24	-1.30	-1.25	+.41	-.24	-1.26	-1.26	-1.30	....	-1.53	-1.50
16	-1.22	-1.24	-1.32	-1.24	+.47	-.23	-1.28	-1.29	-1.40	....	-1.51	-1.50
17	-1.22	-1.25	-1.32	-1.22	+.48	-.24	-1.30	-1.34	-1.45	-1.55	-1.52	-1.49
18	-1.25	-1.26	-1.32	-1.20	+.46	-.25	-1.18	-1.37	-1.48	-1.56	-1.53	-1.48
19	-1.26	-1.26	-1.30	-1.20	+.51	-.25	-1.22	-1.38	-1.48	-1.55	-1.52	-1.48
20	-1.25	-1.27	-1.32	-1.21	+.52	-.31	....	-1.40	-1.51	-1.55	-1.51	-1.49
21	-1.25	-1.27	-1.35	-1.18	+.53	-.41	-1.11	-1.41	-1.52	-1.56	-1.52	-1.42
22	-1.24	-1.25	-1.34	-1.10	+.54	-.48	-1.10	-1.43	-1.52	-1.55	-1.54	-1.44
23	-1.24	-1.26	-1.33	-1.06	+.53	-.48	-1.10	-1.46	-1.53	-1.54	-1.52	-1.45
24	-1.23	-1.27	-1.31	-.93	+.49	-.44	-1.08	-.97	-1.54	-1.55	-1.51	-1.46

6a. C. E. James--Continued.

Water level at 4:00 a.m., in feet, with reference to
land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
25	-1.24	-1.24	-1.32	-0.86	+0.49	-0.46	-1.10	-1.00	-1.55	-1.56	-1.50	-1.46
26	-1.23	-1.27	-1.34	-.67	+.53	.....	-1.12	-.52	-1.56	-1.56	-1.51	-1.45
27	-1.24	-1.26	-1.35	-.62	+.53	.....	-1.14	-1.02	-1.57	-1.54	-1.51	-1.48
28	-1.24	-1.24	-1.34	-.37	+.55	.....	-1.14	-1.28	-1.58	-1.53	-1.50	-1.48
29	-1.22	.....	-1.34	-.26	+.53	.....	-1.15	-1.35	-1.58	-1.53	-1.51	-1.47
30	-1.25	.....	-1.35	-.21	+.46	.....	-1.16	-1.41	-1.58	-1.54	-1.51	-1.47
31	-1.26	.....	-1.37	.....	+.46	.....	-1.17	.....	-1.56	.....	.....	-1.47

12 (*911,p.238; 941,p.273). Lot 8, block 40. Mr. Mathis. Water levels, in feet above land-surface datum, 1942: Mar. 17, 4.53; Aug. 19, 4.24; Nov. 24, 4.17.

18 (*911,p.238; 941,p.273). Lot 7, block 105. Mrs. J. Schauer. Water levels, in feet below land-surface datum, 1942: Mar. 17, 1.19; Aug. 19, 1.38; Nov. 24, 1.49.

19 (*911,p.238; 941,p.273). Lot 12, block 105. Bill Green. Water level, in feet below land-surface datum, 1942: Mar. 17, 0.20; Aug. 19, 0.45; Nov. 24, 0.53.

25 (*911,p.238; 941,p.273). Lot 4, block 93. Jim Knox. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: May 13, 6.80; Sept. 9, 11, and 15, 7.81.

Water level at 4:00 a.m., in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.99	6.91	.....	.....	.....	.....	6.81	.....	7.73	.....	7.65	7.64
2	6.97	6.92	.....	.....	.....	.....	6.81	.....	7.71	.....	7.66	7.64
3	6.98	6.90	6.95	.....	.....	.....	6.83	.....	7.69	7.68	7.65	7.62
4	6.99	6.91	7.08	.....	.....	.....	6.95	7.04	7.78	7.71	7.60	7.62
5	7.00	6.90	7.13	.....	.....	.....	.....	7.25	7.77	7.71	7.64	7.60
6	7.00	7.00	7.08	.....	.....	.....	.....	7.31	7.76	7.71	7.63	7.63
7	7.00	6.98	.....	7.51	.....	.....	.....	7.78	7.68	7.64	7.67	.....
8	6.98	6.96	.....	7.52	.....	.....	.....	7.79	7.69	7.69	7.69	7.69
9	6.98	7.00	.....	.....	.....	.....	.....	7.09	7.81	7.69	7.62	7.62
10	7.01	6.96	7.27	.....	.....	.....	.....	7.26	7.80	7.70	7.69	7.64
11	7.00	6.98	7.26	.....	.....	.....	.....	7.81	7.68	7.67	7.77	.....
12	6.98	6.97	7.27	.....	6.65	.....	.....	7.76	7.73	7.69	7.69	.....
13	6.90	7.01	.....	.....	6.60	.....	7.45	7.45	7.77	7.70	7.65	7.64
14	6.92	.....	.....	.....	6.62	.....	.....	7.73	7.65	7.64	7.66	.....
15	6.91	.....	.....	.....	6.64	.....	.....	7.81	7.63	7.64	7.68	.....
16	6.89	.....	.....	.....	6.77	.....	.....	7.45	7.72	7.63	.....	7.67
17	6.88	6.99	7.34	.....	6.68	.....	.....	7.74	7.59	7.63	7.64	.....
18	6.91	7.01	7.34	7.47	6.65	.....	.....	7.78	.....	7.68	7.64	.....
19	6.91	6.98	7.32	.....	.....	.....	7.73	7.73	7.76	.....	7.63	7.65
20	6.93	7.18	.....	.....	.....	.....	7.60	7.60	7.73	.....	.....	7.65
21	6.94	7.15	.....	.....	.....	.....	7.48	7.48	7.68	.....	7.67	7.58
22	6.93	.....	.....	.....	.....	.....	7.50	7.51	7.72	.....	7.66	7.57
23	6.92	.....	.....	.....	.....	.....	7.55	7.55	7.72	.....	7.68	7.73
24	6.90	6.98	7.33	.....	.....	.....	7.50	7.50	7.71	7.64	7.67	7.79
25	6.91	6.98	7.35	.....	.....	.....	7.48	7.69	7.68	7.67	7.73	.....
26	6.91	7.08	7.32	.....	.....	.....	7.53	.....	7.68	7.70	7.77	.....
27	6.92	7.07	.....	.....	.....	.....	7.55	.....	7.61	7.66	7.79	.....
28	6.91	7.03	.....	.....	.....	.....	7.59	.....	7.66	7.66	7.80	.....
29	6.88	.....	.....	.....	.....	.....	7.59	7.71	7.64	7.69	7.79	.....
30	6.94	.....	.....	.....	.....	6.83	.....	7.66	7.72	7.69	7.64	7.80
31	6.91	.....	7.44	.....	.....	.....	7.71	.....	7.68	.....	7.77	.....

27 (*911,p.239; 941,p.274). Lot 4, block 42. Ben Graham. Water levels, in feet above land-surface datum, 1942: Mar. 17, 2.97; Aug. 19, 2.83; Nov. 24, 2.68.

30 (*911,p.240; 941,p.274). Lot 1, block 102. George L. Mills. New measuring point, top of extended casing, west side, 1.18 feet above weld at top of former casing and 0.98 foot above land-surface datum. Water levels, in feet below land-surface datum, 1942: Mar. 17, 0.63; Aug. 19, 0.82; Nov. 24, 0.97.

31 (*911,p.240; 941,p.274). Lot 3, block 104. Mrs. M. J. Scarborough. Water levels, in feet above land-surface datum, 1942: Mar. 17, 2.01; Aug. 19, 1.67.

32 (*911,p.240; 941,p.274). Lot 4, block 103. Tom Jones. No measurements made in 1942.

33 (*941,p.274). Lot 2, block 106. C. E. James. Water levels, in feet with reference to land-surface datum, 1942: Mar. 17, +0.28; Aug. 19, +0.07; Nov. 24, -0.04.

TORRANCE COUNTY (ESTANCIA VALLEY)

By C. R. Murray

The investigation of the ground-water resources of Estancia Valley by the Federal Geological Survey in cooperation with the New Mexico State engineer was continued in 1942 by making periodic water-level measurements in observation wells. Geological Survey Water-Supply Paper 275, published in 1911, is a detailed report by O. E. Meinzer on geologic and hydrologic conditions in Estancia Valley. Water levels, well descriptions, and a very brief description of ground-water conditions in Estancia Valley have been published in Water-Supply Paper 941.

Precipitation, pumpage, and fluctuations in water level

The amount of precipitation received in Estancia Valley is the major factor influencing the position of the water table, as only a small amount of water is pumped for irrigation and industrial use. The precipitation at Estancia in 1942, as reported by the United States Weather Bureau, was 13.50 inches, 0.09 inch above normal, and at McIntosh, near the north end of the valley, it was 12.24 inches, 1.25 inches below normal. The number of acres of commercial vegetables irrigated decreased from about 160 in 1941 to about 100 in 1942, of which 70 was dry beans. Irrigation was less intensive in 1942 than in the previous year, and the amount of ground water used decreased from about 500 acre-feet in 1941 to about 75 acre-feet in 1942.

Water levels were measured in about 64 wells in January, April, and August 1942. One automatic water-stage recorder was in operation throughout the year. In the areas in which the depth to the water table is less than 20 feet, most water levels declined several tenths of a foot from April to August, and although some recovery took place in the later part of the year,

the water levels in most wells in these areas were slightly lower at the end than at the beginning of the year. In wells in which the depth to the water table was greater than 20 feet, water levels generally rose throughout the year, but in some wells the effect of the natural discharge in the shallow-water areas produced some lowering of their water levels in the summer months. Water levels in wells northwest of Estancia rose more consistently than in those to the southwest, where rises had been greatest in 1941.

Water-level measurements

4.8.1.144 (#941,p.277). J. M. Harper. Windmill installed over well sometime between Apr. 7 and Aug. 12, 1942. Water levels, in feet below land-surface datum, 1942: Jan. 20, 54.33; Apr. 7, 54.08.

4.8.24.222 (#941,p.277). M. E. Ottoson. Water levels, in feet below land-surface datum, 1942: Jan. 21, 56.45; Apr. 9, 56.38; Aug. 12, 56.35.

4.9.6.444 (#941,p.277). Red Ball Camp. Water levels, in feet below land-surface datum, 1942: Jan. 20, 35.70; Apr. 7, 35.62; Aug. 12, 35.58.

4.9.7.441 (#941,p.277). Water levels, in feet below land-surface datum, 1942: Jan. 21, 52.68; Apr. 9, 52.61; Aug. 12, 52.74.

4.9.8.144 (#941,p.277). Atchison Topeka and Santa Fe Railway. No measurements made in 1942.

4.9.10.133 (#941,p.277). Homer Orwn. Water levels, in feet below land-surface datum, 1942: Jan. 21, 17.57; Apr. 9, 17.47; Aug. 12, 17.63.

5.7.15.212 (#941,p.277). Ewing School. Water levels, in feet below land-surface datum, 1942: Jan. 21, 117.37; Apr. 8, 117.11; Aug. 13, 116.66.

5.8.4.343 (#941,p.277). Water levels, in feet below land-surface datum, 1942: Jan. 21, 30.24; Apr. 8, 29.98; Aug. 13, 30.18.

5.8.11.221 (#941,p.278). J. V. Chamberlin. Water levels, in feet below land-surface datum, 1942: Jan. 20, 7.63; Apr. 7, 7.66; Aug. 12, 9.20.

5.8.12.111 (#941,p.278). J. V. Chamberlin. Water levels, in feet below land-surface datum, 1942: Jan. 20, 12.40; Apr. 7, 11.80; Aug. 12, 11.99.

5.8.17.241 (#941,p.278). Ray Brown. Water levels, in feet below land-surface datum, 1942: Jan. 21, 40.94; Apr. 8, 40.67; Aug. 13, 41.20.

5.8.17.311 (#941,p.278). Ray Brown. Water levels, in feet below land-surface datum, 1942: Jan. 21, 26.92; Apr. 8, 26.70; Aug. 13, 28.51.

5.8.17.323 (#941,p.278). Ray Brown. Water levels, in feet below land-surface datum, 1942: Jan. 21, 26.05; Apr. 8, 25.86; Aug. 13, 28.13.

5.8.17.334 (#941,p.278). New measuring point, top of USGS washer on plank cover over well, 0.45 foot above land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 21, 9.80; Apr. 8, 9.50; Aug. 13, 11.61.

5.8.18.224 (#941,p.278). S. W. Hodgson. Water levels, in feet below land-surface datum, 1942: Jan. 21, 43.35; Apr. 8, 43.07; Aug. 13, 43.15.

5.8.25.212 (#941,p.278). Mrs. Frances Backer. Water levels, in feet below land-surface datum, 1942: Jan. 20, 22.45; Apr. 7, 22.45; Aug. 12, 22.51.

5.8.25.222a (#941,p.278). Mrs. Frances Backer. Water level, in feet below land-surface datum, 1942: Jan. 20, 26.28. Measurements discontinued.

5.8.25.222b (#941,p.278). Mrs. Frances Backer. Water levels, in feet below land-surface datum, 1942: Jan. 20, 23.33; Apr. 7, 23.42; Aug. 12, 23.62.

- 5.8.30.121 (*941,p.278). Water levels, in feet below land-surface datum, 1942: Jan. 21, 22.68; Apr. 7, 22.56; Aug. 12, 23.95.
- 5.8.32.333 (*941,p.278). Frank Meder. Water levels, in feet below land-surface datum, 1942: Jan. 21, 65.77; Apr. 7, 66.75; Aug. 12, 67.84.
- 5.8.36.341 (*941,p.279). Mrs. Iva Dena Moe. Water levels, in feet below land-surface datum, 1942: Jan. 20, 45.99; Apr. 7, 45.78; Aug. 12, 45.53.
- 5.9.31.331 (*941,p.279). G. L. McBeth. Water levels, in feet below land-surface datum, 1942: Jan. 20, 33.20; Aug. 12, 32.86.
- 5.10.27.444 (*941,p.279). Water levels, in feet below land-surface datum, 1942: Jan. 21, 40.72; Apr. 9, 40.70; Aug. 12, 40.62.
- 5.10.31.133 (*941,p.279). Water levels, in feet below land-surface datum, 1942: Jan. 21, 19.39; Apr. 9, 20.52; Aug. 12, 23.45.
- 6.8.1.244 (*941,p.279). Water levels, in feet below land-surface datum, 1942: Jan. 22, 21.15; Apr. 8, 21.09; Aug. 13, 21.45.
- 6.8.2.333 (*941,p.279). Water levels, in feet below land-surface datum, 1942: Jan. 22, 12.22; Apr. 8, 11.95. Measurements discontinued.
- 6.8.3.221' (*941,p.279). Ellison Timmins. New measuring point, ground level at well, equivalent to land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 22, 26.18; Apr. 8, 26.09; Aug. 13, 26.09.
- 6.8.8.424 (*941,p.279). Water levels, in feet below land-surface datum, 1942: Jan. 21, 75.50; Apr. 8, 75.40; Aug. 13, 75.20.
- 6.8.11.433 (*941,p.279). Pablo Lucero. Water levels, in feet below land-surface datum, 1942: Jan. 21, 5.62; Apr. 8, 5.12; Aug. 13, 7.14.
- 6.8.12.133 (*941,p.279). Aurileo Brito. Water levels, in feet below land-surface datum, 1942: Jan. 21, 17.18; Apr. 8, 16.92; Aug. 13, 17.43.
- 6.8.15.444 (*941,p.279). Estancia Cemetery. Water levels, in feet below land-surface datum, 1942: Jan. 21, 30.20; Apr. 8, 29.98; Aug. 13, 30.27.
- 6.8.16.222 (*941,p.279). McGee Estate. Water levels, in feet below land-surface datum, 1942: Jan. 21, 59.15; Apr. 8, 59.00; Aug. 13, 58.90.
- 6.8.24.111 (*941,p.279). Used dug domestic and stock well. Water levels, in feet below land-surface datum, 1942: Jan. 20, 6.22; Apr. 9, 6.22; Aug. 12, 9.80.
- 6.8.27.134 (*941,p.280). Water levels, in feet below land-surface datum, 1942: Jan. 21, 19.75; Apr. 8, 19.47; Aug. 13, 19.89.
- 6.8.30.434 (*941,p.280). J. W. Langley. Water levels, in feet below land-surface datum, 1942: Jan. 21, 25.63; Apr. 8, 27.26; Aug. 13, 27.44.
- 6.9.9.222 (*941,p.280). Water levels, in feet below land-surface datum, 1942: Jan. 22, 7.05; Apr. 8, a/27.41; Aug. 14, 7.13.
- 6.10.25.344 (*941,p.280). C. A. Blackwell. Water levels, in feet below land-surface datum, 1942: Jan. 21, 42.38; Apr. 9, 42.23; Aug. 12, 42.13.
- 6.10.27.444 (*941,p.280). Fred Lick. Water levels, in feet below land-surface datum, 1942: Jan. 21, 20.65; Apr. 9, 20.61; Aug. 12, 20.56.
- 7.7.12.342 (*941,p.280). DeHart Estate. Water levels, in feet below land-surface datum, 1942: Jan. 22, 43.24; Apr. 9, 42.76; Aug. 14, 41.96.
- 7.7.12.444 (*941,p.280). C. B. Roland. Water levels, in feet below land-surface datum, 1942: Jan. 22, 44.85; Apr. 9, 44.58; Aug. 14, 44.31.
- 7.8.1.231 (*941,p.280). Myrtle A. Homan Estate. Water levels, in feet below land-surface datum, 1942: Jan. 22, 26.06; Apr. 9, 25.96; Aug. 14, b/26.30.
- 7.8.1.423 (*941,p.280). Floyd Stump. Water levels, in feet below land-surface datum, 1942: Jan. 23, 24.79; Apr. 8, 24.69; Aug. 14, 28.00.
- a Windmill had been pumping.
- b Nearby windmill wells pumping.

7.8.9.444 (*941,p.280). Water levels, in feet below land-surface datum, 1942: Jan. 22, 62.14; Apr. 9, 61.96; Aug. 14, 61.59.

7.8.10.221 (*941,p.280). H. W. Rice. Water levels, in feet below land-surface datum, 1942: Jan. 22, 17.52; Apr. 9, 17.44; Aug. 14, 17.51.

7.8.10.244 (*941,p.280). Water levels, in feet below land-surface datum, 1942: Jan. 22, 18.65; Apr. 9, 18.56; Aug. 14, 18.57.

7.8.12.433 (*941,p.280). W. A. Deatherage. Water levels, in feet below land-surface datum, 1942: Jan. 22, 22.57; Apr. 8, 22.45; Aug. 14, 22.67.

7.8.16.422 (*941,p.281). B. F. Strotman. New measuring point, top of concrete collar of well, 0.50 foot above top of concrete platform and 0.70 foot above land-surface datum. Water levels, in feet below land-surface datum, 1942: Jan. 22, 45.40; Apr. 9, 45.41; Aug. 14, 45.42.

7.8.23.311 (*941,p.281). James P. Morgan. Water levels, in feet below land-surface datum, 1942: Jan. 22, 17.85; Apr. 9, 17.79; Aug. 13, 17.95.

7.8.23.324 (*941,p.281). James P. Morgan. Equipped with water-stage recorder. Highest and lowest water level, in feet below land-surface datum, 1942: Mar. 12, 1.98; Aug. 23, 3.46.

Water level at 4:00 a.m., in feet below land-surface datum, 1942
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	2.06	2.04	2.07	2.07	2.38	2.90	3.33	3.27	2.88	2.72	2.56
2	....	2.05	2.04	2.07	2.07	2.39	2.90	3.34	3.26	2.86	2.71	2.54
3	....	2.06	2.01	2.07	2.08	2.41	2.91	3.35	3.25	2.86	2.71	2.54
4	....	2.06	2.01	2.07	2.08	2.43	2.93	3.36	3.22	2.86	2.69	2.54
5	....	2.06	....	2.07	2.09	2.43	2.94	3.37	3.20	2.86	2.69	2.53
6	....	2.07	....	2.07	2.11	2.44	2.95	3.38	3.19	2.85	2.69	2.53
7	....	2.06	....	2.06	2.11	2.46	2.97	3.39	3.19	2.85	2.69	2.53
8	....	2.06	2.02	2.06	2.11	2.47	2.98	3.39	3.18	2.85	2.69	2.53
9	....	2.06	2.00	2.07	2.11	2.49	2.98	3.41	3.18	2.85	2.68	2.53
10	....	2.06	1.99	2.08	2.12	2.51	3.00	3.42	3.19	2.84	2.70	2.53
11	....	2.05	1.99	2.08	2.12	2.52	3.01	3.41	3.19	2.83	2.69	2.52
12	....	2.04	1.98	2.06	2.13	2.54	3.03	3.39	3.15	2.82	2.68	2.52
13	....	2.05	1.99	2.07	2.14	2.56	3.05	3.39	3.05	2.82	2.67	2.52
14	....	2.04	2.00	2.07	2.15	2.57	3.07	3.41	3.05	2.82	2.66	2.51
15	....	2.04	2.01	2.07	2.16	....	3.08	3.38	3.03	2.81	2.65	2.51
16	....	2.04	2.02	2.07	2.17	....	3.10	3.37	3.01	2.81	2.60	2.51
17	....	2.04	2.03	2.07	2.18	....	3.11	3.37	3.00	2.80	2.61	2.50
18	2.07	2.06	2.04	2.07	2.20	....	3.12	3.38	2.99	2.79	2.61	2.50
19	2.07	2.06	2.02	2.07	2.21	....	3.15	3.40	2.97	2.78	2.60	2.49
20	2.07	2.06	2.03	2.08	2.22	....	3.17	3.42	2.96	2.77	2.59	2.50
21	2.07	2.06	2.05	2.09	2.22	....	3.18	3.43	2.93	2.77	2.60	2.43
22	2.06	2.05	2.05	2.09	2.23	2.82	3.19	3.44	2.92	2.76	2.59	2.43
23	2.06	2.04	2.04	2.05	2.24	2.80	3.20	3.46	2.91	2.75	2.59	2.43
24	2.06	2.05	2.04	2.06	2.25	2.82	3.21	3.42	2.91	2.76	2.58	2.43
25	2.05	2.04	2.03	2.07	2.26	2.83	3.23	3.35	2.90	2.76	2.57	2.42
26	2.05	2.05	2.05	2.08	2.28	2.85	3.24	3.35	2.90	2.75	2.59	2.41
27	2.06	2.05	2.06	2.07	2.30	2.87	3.25	3.36	....	2.74	2.57	2.43
28	2.05	2.03	2.06	2.08	2.31	2.89	3.26	3.35	2.89	2.73	2.56	2.43
29	2.04	....	2.06	2.07	2.33	2.89	3.27	3.36	2.89	2.73	2.57	2.42
30	2.05	....	2.07	2.05	2.34	2.91	3.29	3.34	2.88	2.73	2.55	2.42
31	2.06	....	2.07	....	2.36	....	3.31	3.33	....	2.73	....	2.42

7.8.23.334 (*941,p.281). James P. Morgan. Water levels, in feet below land-surface datum, 1942: Jan. 22, 6.03; Apr. 9, 5.88; Aug. 13, 6.65. Measurements discontinued.

7.8.24.433 (*941,p.281). R. T. Floyd. Water levels, in feet below land-surface datum, 1942: Jan. 22, 23.68; Apr. 8, 23.75; Aug. 13, 24.45.

7.8.25.411 (*941,p.281). R. T. Floyd. Water levels, in feet below land-surface datum, 1942: Jan. 22, 21.26; Apr. 8, 21.29; Aug. 13, 21.27.

7.8.27.221 (*941,p.282). Wagner Estate. Water levels, in feet below land-surface datum, 1942: Jan. 22, 19.42; Apr. 9, 19.26; Aug. 13, 19.36.

7.8.33.123 (*941,p.282). B. A. Kincheloe. Water levels, in feet below land-surface datum, 1942: Jan. 22, 29.24; Apr. 8, 29.28; Aug. 13, 29.54.

7.8.33.424 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 22, 53.34; Apr. 8, 53.27; Aug. 13, 53.14.

7.8.35.111 (*941,p.282). Homer Voss. Water levels, in feet below land-surface datum, 1942: Jan. 22, 17.95; Apr. 8, 18.03; Aug. 13, 18.18.

7.8.35.332 (*941,p.282). Homer Voss. Water levels, in feet below land-surface datum, 1942: Jan. 22, 14.99; Apr. 8, 14.91; Aug. 13, 15.39.

7.9.5.211 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 23, 19.22; Apr. 9, 19.20; Aug. 14, 19.42.

7.9.10.333 (*941,p.282). Mrs. Minnie Farnsworth. Water levels, in feet below land-surface datum, 1942: Jan. 23, 15.10; Apr. 8, 15.22; Aug. 14, 15.31.

8.8.10.244 (*941,p.282). Dennis Willie. No measurements made in 1942.

8.8.26.222 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 23, 7.52; Apr. 9, 7.57; Aug. 14, 7.69.

8.9.8.111 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 23, 23.77; Apr. 9, 24.12; Aug. 14, 24.40.

8.9.29.111 (*941,p.282). Mrs. Harry Bigger. Water levels, in feet below land-surface datum, 1942: Jan. 22, 20.89; Apr. 9, 20.87; Aug. 14, 21.42.

9.8.25.111 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 23, 7.26; Apr. 9, 7.59; Aug. 12, 8.54. Measurements discontinued.

9.8.26.121 (*941,p.282). Water levels, in feet below land-surface datum, 1942: Jan. 23, 20.39; Apr. 9, 20.20; Aug. 12, 20.11.

9.9.32.131 (*941,p.282). G. L. Deen. Water levels, in feet below land-surface datum, 1942: Jan. 23, a/6.08; Apr. 9, 5.93; Aug. 12, 6.51.

a Windmill had been pumping.