UNITED STATES DEPARTMENT OF THE INTERIOR

WATER LEVELS AND ARTESIAN PRESSURE IN OBSERVATION WELLS IN THE UNITED STATES IN 1941

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

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 941

UNITED STATES DEPARTMENT OF THE INTERIOR
Harold L. Ickes, Secretary

GEOLOGICAL SURVEY
W. E. Wrather, Director

Water-Supply Paper 941

WATER LEVELS AND ARTESIAN PRESSURE IN OBSERVATION WELLS IN THE UNITED STATES IN 1941

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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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, for irrigation, or for 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 may indicate depletion or replenishment of the artesian reservoirs.

The regular publication of records of water levels and artesian pressure in the United States was begun by the Geological Survey in 1935, and from that year through 1939 one volume containing these data was published each year. The volumes were issued as Water-Supply Papers 777, 817, 840, 845, and 886. The number of observation wells and the quantity of records on water levels and artesian pressure obtained from them have increased gradually from year to year. As a result the records for 1940 were published in six volumes, Water-Supply Papers 906-911, inclusive. Water-Supply Paper 906 contains the records for the northeastern States, 907 for the southeastern States, 908 for the north-central States, 909 for the south-central States, 910 for the northwestern States, and 911 for the southwestern States and Hawaii. Records for 1941 are being published in six volumes also, each volume covering a section of the United States corresponding to that covered by one of the volumes containing records for 1940. (See fig. 1.) This series of reports is, in a sense, an inventory, year by year, of the ground-water supplies of those parts of the country that are covered.

This volume covers the southwestern section and gives records of water level or artesian pressure in about 1,275 observation wells of the Geological Survey and cooperating agencies in Arizona, California, Territory of Hawaii, and New Mexico. Of these wells about 40 are equipped with automatic water-stage recorders. For some wells for which records have not heretofore been published, complete records of water levels are given in this report, including those for years before 1941. For wells whose previous records have been published, however, this volume gives only current records. If complete descriptions of the wells were given in one of the previous reports, only the well numbers or the well numbers and brief identifying descriptions are given in this report. The report includes about 25,000 individual determinations of water level or artesian pressure.

The water levels in this report are given with reference to datum planes of different kinds. Some are given in depths below measuring point--that is, below the recognized reference mark, at or near the top of the well, from which the depth to water level is usually measured; and some are given in height above an assumed datum plane. As the measuring points on some of the wells were changed in 1941, the records may not be directly comparable with those in previous annual volumes, but changes in measuring points are recorded in this report. Water levels given in height above sea level or above assumed datum planes are generally comparable with those given in the previous volumes. Unless otherwise stated, the depth of wells is usually the measured depth below the measuring point.

Acknowledgments for effective services in the preparation of this report are due Miss Dorothy M. Ireland, Miss Ruthmae Brundage, Mrs. Roxie Lou Davis and Mrs. Margaret F. Monk, who typed the offset copy; and to Rodney Hart, who prepared the illustrations and gave other assistance in preparing the copy.

GENERAL SUMMARY OF CHANGES IN GROUND-WATER LEVELS IN 1941 IN THE SOUTHWESTERN PART OF THE UNITED STATES

In 1941 the precipitation in Arizona, California, and New Mexico was above normal, but in the Territory of Hawaii it was somewhat below normal. Not all the wells, however, had changes in water level that correspond to these moisture conditions, since the fluctuations of the water levels and

artesian pressure in wells depend on many factors besides the amount of precipitation. It is usually not possible to find a simple relation between the changes in water level or artesian pressure and the departures from normal precipitation.

The following statements are taken chiefly from the interpretative text of the several State sections in this volume. They summarize the

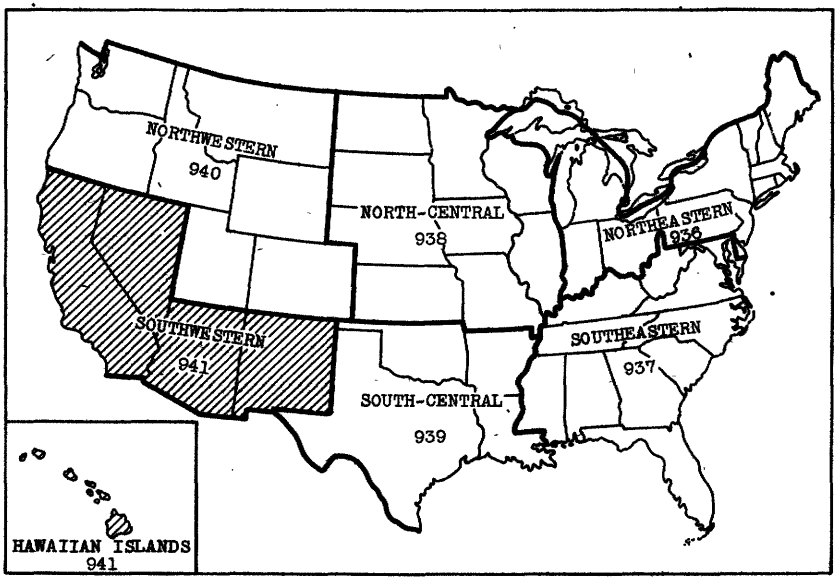

Figure 1.--Outline map of the United States, showing sections of the country covered by the six water-supply papers on water levels and artesian pressure in observation wells in 1941. The shaded section represents the part of the country covered by this volume.

changes in ground-water levels and artesian pressure that occurred in 1941 in the parts of the underground reservoirs in the southwestern States and the Territory of Hawaii that are tapped by observation wells.

Arizona.--During 1941 ground-water levels in the Safford Valley, Graham County, declined in areas immediately adjoining the Gila River and rose in other parts of the valley. The declines along the river occurred because the flow of the river was higher at the beginning than at the end of the year. The rises in water level elsewhere in the valley were due to unusually heavy precipitation from January to May, which resulted in larger summer river flow and more water diverted for irrigation, with consequent increase in ground-water recharge through canal seepage and irrigation.

In Pima County, the average of the water levels in 24 wells northwest of Tucson showed a net rise of 1.75 feet from January 1, 1941, to January 1, 1942. This rise was probably caused by the increased flow of the Santa Cruz River and Rillito Creek during the winter of 1940-41. The average of the water levels in 24 wells south of Tucson showed a net decline of 0.85 foot in 1941.

California.--The water level in well 42a at Baldwin Park, a key observation well in the San Gabriel River Basin, registered a net rise of 26.34 feet in 1941, and the water level in the Williams well, a similar key well in the Santa Ana River Basin, showed a net rise of 12.42 feet. These rises contrast to net declines in the wells of 4.87 feet and 1 foot, respectively, in the previous year. Water levels in 10 wells distributed over the San Jacinto Valley had net changes during 1941 ranging from a rise of 15.5 feet to a decline of 0.26 foot. The average of the water levels in 5 observation wells in the Tia Juana River Basin rose 5.9 feet during the year.

In the San Diego River Basin the water levels in 3 wells in the El Monte Park area rose from 2.9 to 3.8 feet in 1941, and the water levels in 5 wells near Lakeside rose an average of 2.3 feet. An average net rise of 2 feet occurred in 4 wells of the Riverview group, and an average net rise of 1.6 feet occurred in 2 wells near Santee. In Mission Valley 6 wells showed net rises in water level ranging from 0.3 foot to 3.9 feet.

Water levels in 4 observation wells in the San Dieguito River Basin rose 3.2 feet in 1941. In the San Luis Rey Basin, the average of the water levels in 3 observation wells at Monserate Narrows rose 0.6 foot, and the average of the water levels in 2 wells above San Luis Rey rose 6.4 feet. Four observation wells below San Luis Rey and above Oceanside Narrows showed a net average rise in water level of 3.8 feet, and 4 observation wells at the upper end of the Narrows showed an average net rise of 4.2 feet.

Except in the Hinckley-Harper Lake and Newberry localities, water levels in the Mojave River Basin rose during 1941 and reached stages equal to or slightly higher than those recorded in 1938. Water levels in the area from the Forks to Victorville had an average net gain of about 3 feet, and water levels in the valley from Victorville to Hodge showed a net average rise of about 1 foot. In the area between Barstow and Van Dyke ditch intake, water levels rose about 3 feet, and in the sub-basin from Daggett to the Kouns-Newberry sand-dune belt the rises of water level on both sides of the Mojave Basin ranged from 2 to 10 feet.

In Antelope Valley, the downward trend of the water levels, which has been in effect for several years, continued during 1941. Declines during the year ranged from a few tenths of a foot in the northeastern part of the valley to about 3 feet in some localities in the southern part.

The average of the water levels in 24 key observation wells in the Mokelumne area, San Joaquin County, rose an average of 1.34 feet in 1941. At the end of the year, the average was 2.36 feet higher than at the end of 1933.

Territory of Hawaii.--In 1941 losses in ground-water storage occurred in 11 of 12 artesian areas on the island of Oahu. Withdrawals from the underground reservoirs on Oahu amounted to about 134,200 million gallons, an increase of about 14,800 million gallons over 1942.

Water levels in most wells on the windward side of the island of Maui rose slightly in 1941; water levels in wells on the leeward side, however, showed small declines. The ground-water withdrawal on Maui in the year was about 62,450 million gallons.

The water level in central Molokai, as indicated by measurements made in a test boring, showed only very little change from 1940. Water levels in the Olaa shaft, on the island of Hawaii, ranged during 1941 from a low of 13.23 feet above sea level on May 2 to a high of 18.92 feet on October 31. The Kaiwiki shaft showed little variation in water level during the year.

The head at Wailua shaft, on the island of Kauai, reached 12.99 feet above sea level in October 1941--0.04 foot above the previous maximum stage in November 1940. Other artesian heads for Kauai differed only slightly from those observed in 1940.

New Mexico.--More precipitation fell in the Roswell artesian basin in 1941 than had ever been recorded for any other year. During the first 4 months of 1941, the fluctuations of artesian head in the basin followed the pattern of previous years--namely, a lowering of head at an accelerated rate beginning in the early part of January. During the latter part of April and of May a total of about 9 inches of rain fell. This resulted in a pronounced rise of artesian head during May and June. Another marked rise occurred in the latter part of September, when 7 inches of rainfall was recorded. The rise continued on to the end of the year, at which time the artesian head reached stages that were higher than those recorded at any corresponding time since 1928. Significant rises in water level occurred also during the

year in the Roswell shallow-water area. Five key wells showed rises in water level ranging from somewhat less than 3 feet to more than 18 feet.

In Lea County, significant net rises of water level occurred during 1941 in nearly all the wells under observation, but in Luna County, in the Mimbres Valley, rises in some areas were offset by declines in other areas. In an area of about 20 square miles to the west and south of Deming, the water level was higher at the end of 1941 than at the end of 1940, but in an area of approximately 85 square miles south and east of the town, the water levels were lower. The water levels rose in an area of about 44 square miles adjacent to the Florida Mountains and the Little Florida Mountains.

During 1941, net rises in water level of 1 to 2 feet occurred in most of the wells under observation near House, Quay County.

Ground-water levels in Portales Valley rose to unprecedented high stages during 1941 in response to high precipitation and decreased pumping. The rises began soon after heavy rains in May and continued through the rest of the year. The largest net rise recorded in any well was 14.75 feet. Water levels rose more than 8 feet in an area of about 113 square miles lying along the axis of the valley to the south and west of Portales, and in Blackwater Draw north of Portales. Water levels also rose more than 8 feet in a small area of about 6 square miles near Arch.

ARIZONA

INTRODUCTION

By S. F. Turner

The program of water-level measurements in wells in Arizona, which is being carried on in connection with detailed investigations of the ground-water resources in several parts of the State, was continued in 1941 by the Geological Survey, United States Department of the Interior. These studies are being made in cooperation with the State Water Commissioner of Arizona and the United States Engineer Office, War Department.

Work has been progressing in three areas in the State since August 1, 1939: (1) The Safford and Duncan Valleys of the Gila River, in Graham and Greenlee Counties; (2) the Queen Creek area, in Maricopa and Pinal Counties; (3) the Santa Cruz River Valley, in Santa Cruz and Pima Counties. During the spring of 1940, the investigation of the water resources of the Santa Cruz River Valley was extended to the Casa Grande-Eloy area, in Pinal County.

S. F. Turner, of the United States Geological Survey, has supervised the water-level program since its beginning, as well as all other ground-water investigations in Arizona. The entire personnel of the Tucson office of the Division of Ground Water contributed to the water-level reports.

The records of 5,468 measurements of water levels in 478 selected observation wells are given in the following pages. Records of water levels before 1941 are given in Water-Supply Paper 911.

Reports dealing with ground water in Arizona, released by the Geological Survey in 1941, are as follows:

Ground-water inventory in the Upper Gila River Valley, New Mexico and Arizona: Scope of investigation and methods used, by S. F. Turner and L. C. Halpenny. Published in the 1941 Transactions of the American Geophysical Union, Part 3, pp. 738-744, 1942.

Records of wells and springs, well logs, water analyses, and maps showing location of wells and springs in Big Sandy Valley, Mohave County, Arizona, by R. B. Morrison. July 21, 1941. (Unpublished.)

Water resources of Safford and Duncan-Virden Valley, Arizona and New Mexico, by S. F. Turner and others. October 13, 1941. (Unpublished.)

Recharge to ground water from floods in a typical desert wash, Pinal County, Arizona, by H. M. Babcock and E. M. Cushing, given before the American Association for the Advancement of Science, Dallas, Texas, December 30, 1941. (To be published in the Transactions of the American Geophysical Union.)

Graham County, Safford Valley

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

The program of measuring water levels in observation wells in the Safford Valley and of collecting information on the amount of water pumped along with other pertinent data, was continued during 1941 in cooperation with the State Water Commissioner of Arizona, and in conjunction with the flood-control studies carried on by the U. S. Geological Survey for the U. S. Engineer Office of the War Department.

A preliminary report on the "Water resources of Safford and Duncan-Virden Valleys of Arizona and New Mexico" was released in typewritten form in August 1941. A paper entitled "Ground-water inventory of the Upper Gila River Valley, New Mexico and Arizona" was presented at the annual meeting of the American Geophysical Union in Washington, May 1, 1941.

The observation-well program at the end of 1941 included 208 wells measured periodically and 2 wells at the Geological Survey Experiment Station near Safford, on which water-level recorders were operated. A total of 3,370 water-level measurements was made in 1941.

These measurements show a net decline of ground-water levels during the year in areas immediately adjoining the Gila River because at the beginning of 1941 the flow of the river was higher than at the end of the year. Water levels in wells near the river have been found to fluctuate with the flow of the river.

Throughout the other parts of the valley the ground-water levels showed a net rise during the year. This was due to unusually heavy precipitation from January to May 1941, which resulted in a larger summer river flow than usual and more water diverted for irrigation, thereby increasing ground-water recharge through canal seepage and irrigation.

Graham County, Safford Valley--Continued

Seepage to ground water from the river and underflow from tributary washes also increased. Water levels near Blackrock, Goodwin, and Stockton Washes rose greatly; the water level in well 143, near Blackrock, rose 35 feet from December 1940 to February 1941.

Less ground water was withdrawn by pumping during 1941 than in 1940 because more water for irrigation could be diverted from the river. The total water pumped during 1941 was 8,685 acre-feet. This was only one-third the amount pumped during 1940.

Figure 2 shows hydrographs of several typical observation wells, total water pumped by months, and average monthly precipitation in the valley. Well 433 is located in the eastern and upper section of the valley, away from any pumping. Well 597, two miles west of Solomonsville, is in a heavily pumped area and is near a canal. The hydrograph indicates the recharge during the peak irrigations of May, and the effects of pumping from June through August. The hydrograph of well 616, south of Safford and near a canal, shows the effects of recharge from the canal and from the underflow of Stockton and tributary washes. The water-level fluctuations of well 282, near a canal west of Pima, indicate the effects of canal and irrigation recharge with little nearby pumping. Well 76 lies at the western end of the cultivated portion of the valley, away from all pumped wells. This hydrograph shows a rise in water level during the spring of 1941 as a result of recharge from Goodwin Wash, and a decline in water level during the summer and fall because of less recharge and seepage to the river during low flow.

In the following tables water levels are expressed in feet below the measuring points, although elevations above sea level have been carried to most of the wells. The highest and lowest water levels that are given for some periods were obtained with maximum-minimum strip recorders.

Well numbers correspond to those in Water-Supply Paper 911.

1. U. S. Indian Service. No measurements made in 1941.
2. U. S. Indian Service. No measurements made in 1941.
3. U. S. Indian Service. No measurements made in 1941.
4. U. S. Indian Service. No measurements made in 1941.
5. U. S. Indian Service. No measurements made in 1941.

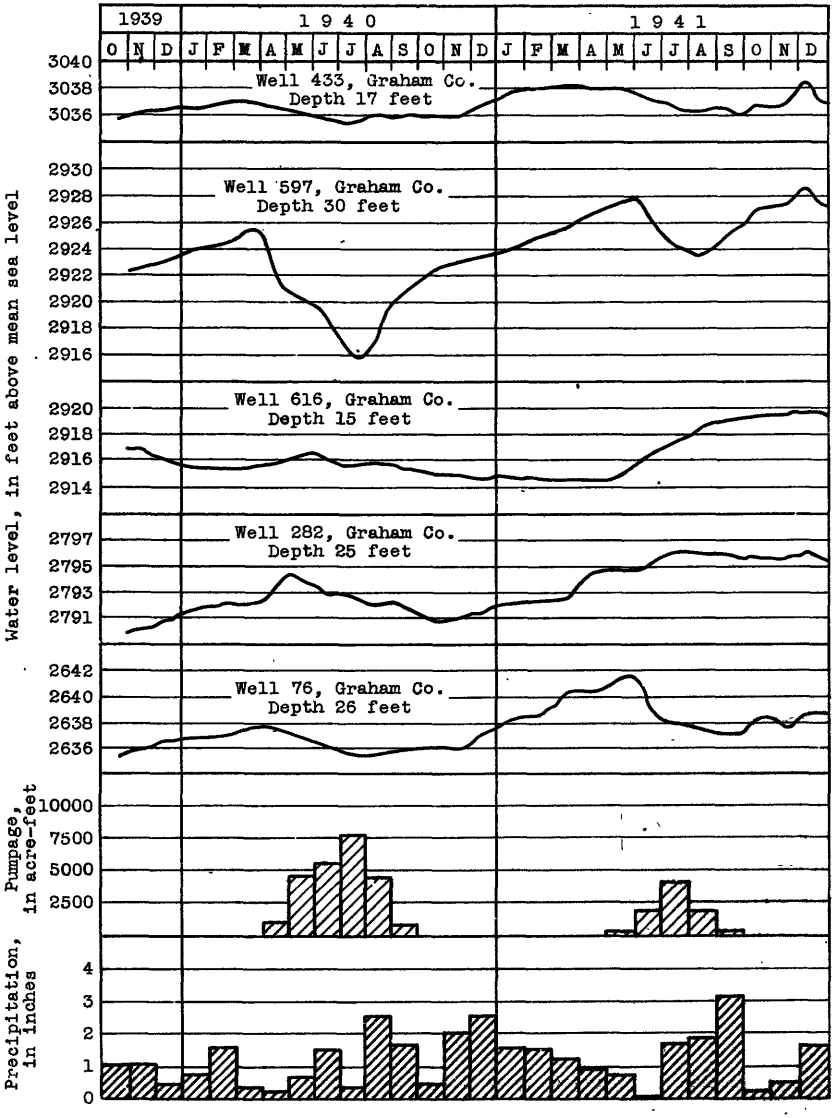

Figure 2.--Graphs showing fluctuations of water level in observation wells in the Safford Valley, Graham County, Ariz.

Graham County, Safford Valley--Continued

6. U. S. Indian Service. No measurements made in 1941.

7. U. S. Indian Service. No measurements made in 1941.

8. U. S. Indian Service. Measuring point, top of pipe, 1.1 feet above land surface and 2,529.90 feet above mean sea level (reported in Water-Supply Paper 911 as 100.00 feet above assumed datum).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	5.57	b	5.39	Apr. 22	6.14	July 25	8.49
a	5.98	Mar. 7	5.49	a	6.16	Aug. 26	8.31
14	5.90	b	3.72	May 6	5.77	Sept.24	8.76
b	5.83	20	4.57	27	6.42	Oct. 8	6.30
28	6.17	27	5.14	June 27	7.86	31	7.04
31	5.74	Apr. 8	5.70	July 10	8.33	Dec. 1	7.30
Feb. 21	5.60						

9. U. S. Indian Service. Measuring point, top of pipe, 1.1 feet above land surface and 2,529.10 feet above mean sea level (reported in Water-Supply Paper 911 as 99.20 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 7	4.38	b	4.24	Apr. 22	5.45	July 25	7.52
14	4.72	Mar. 7	4.59	b	4.69	Aug. 26	7.21
b	4.62	b	3.31	May 6	4.80	Sept.24	7.84
28	5.20	Mar. 20	3.61	27	5.69	Oct. 8	4.93
b	4.30	27	4.40	June 27	7.23	31	6.10
31	4.33	Apr. 8	5.01	July 10	7.64	Dec. 1	6.34
Feb. 21	4.62						

10. U. S. Indian Service.

Water level, in feet below measuring point, 1941

Jan. 7	4.34	Mar. 7	4.59	May 6	4.71	Aug. 26	7.07
14	4.62	20	3.80	27	5.74	Sept.24	7.81
28	5.11	27	4.42	June 27	7.35	Oct. 8	2.60
31	4.16	Apr. 8	5.07	July 10	7.71	Dec. 1	3.62
Feb. 21	4.61	22	5.50	25	7.43		

11. U. S. Indian Service. Measuring point, top of pipe, 1.2 feet above land surface and 2,528.34 feet above mean sea level (reported in Water-Supply Paper 911 as 98.44 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 7	3.24	Feb. 21	3.49	Apr. 22	4.47	July 25	6.23
14	3.34	b	3.35	b	3.39	Aug. 26	5.90
b	3.23	Mar. 7	3.53	May 6	3.64	Sept.24	6.64
28	3.95	20	2.78	27	4.72	Oct. 8	3.19
b	1.95	27	3.47	June 27	6.31	31	4.90
31	2.88	Apr. 8	4.09	July 10	6.64	Dec. 1	5.08

12. U. S. Indian Service. Measuring point, top of pipe, 0.7 foot above land surface and 2,527.99 feet above mean sea level (reported in Water-Supply Paper 911 as 97.09 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 28	3.65	Apr. 22	4.06	July 10	6.28	Sept.24	6.17
Mar. 27	1.97	May 27	4.40	25	5.79	Oct. 31	4.69
Apr. 8	3.60	June 27	6.05	Aug. 26	5.43	Dec. 1	4.77

a Lowest water level in period between tape measurements.
b Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

13. U. S. Indian Service. Measuring point, top of pipe, 2.5 feet above land surface and 2,534.27 feet above mean sea level (reported in Water-Supply Paper 911 as 104.37 feet above assumed datum).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	9.89	Apr. 22	9.94	July 10	12.26	Sept.24	12.54
Mar. 27	8.78	May 27	10.28	25	12.12	Oct. 30	10.98
Apr. 8	9.43	June 27	11.90	Aug. 26	11.90	Dec. 1	11.06

14. U. S. Indian Service. Measuring point, top of pipe, 1.35 feet above land surface and 2,533.92 feet above mean sea level (reported in Water-Supply Paper 911 as 104.02 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 28	9.30	Apr. 22	9.03	July 10	11.25	Sept.24	11.87
Mar. 27	8.12	May 27	9.36	25	11.43	Oct. 30	10.35
Apr. 8	8.62	June 27	10.80	Aug. 26	11.40	Dec. 1	10.41

16. U. S. Indian Service. Measuring point, top of pipe, 2.0 feet above land surface and 2,603.36 feet above mean sea level (reported in Water-Supply Paper 911 as 101.50 feet above assumed datum).

Water level, in feet below measuring point, 1941

Apr. 8	10.40	May 27	11.78	July 10	14.19	Aug. 26	13.38
22	11.20	June 27	13.77	25	13.99	Sept.23	14.05

17. U. S. Indian Service. Measuring point, top of pipe, 1.8 feet above land surface and 2,597.47 feet above mean sea level (reported in Water-Supply Paper 911 as 95.61 feet above assumed datum).

Water level, in feet below measuring point, 1941

Apr. 8	5.77	May 27	6.73	July 10	8.80	Aug. 26	7.63
22	6.29	June 27	8.56	25	8.20	Sept.23	8.33

18. U. S. Indian Service. Measuring point, top of pipe, 1.2 feet above land surface and 2,598.27 feet above mean sea level (reported in Water-Supply Paper 911 as 96.41 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 8	5.60	Feb. 21	5.72	Apr. 22	6.85	Aug. 26	8.12
14	5.42	a	4.98	May 6	5.89	Sept.24	8.86
a	5.40	Mar. 7	5.90	27	7.20	Oct. 8	6.15
26	6.13	20	4.53	June 27	8.88	31	7.64
a	4.31	a	4.47	July 10	9.12	Dec. 1	7.86
31	4.73	Apr. 8	6.40	25	8.64		

19. U. S. Indian Service.

Water level, in feet below measuring point, 1941

Jan. 8	4.24	Mar. 7	4.81	May 27	6.01	Sept.24	8.00
14	4.56	20	3.47	June 27	7.62	Oct. 8	.78
28	5.00	Apr. 8	5.25	July 10	7.98	31	1.62
31	4.15	22	5.75	25	7.81	Dec. 1	2.38
Feb. 21	4.82	May 6	4.91				

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

20. U. S. Indian Service. Measuring point, top of pipe, 1.4 feet above land surface and 2,599.00 feet above mean sea level (reported in Water-Supply Paper 911 as 97.14 feet above assumed datum).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	6.12	Feb. 21	6.48	Apr. 8	6.78	July 25	9.36
14	6.26		a 6.27	22	7.25	Aug. 26	8.94
	a 6.17	Mar. 7	6.55	May 6	6.60	Sept.24	9.46
28	6.82		a 5.18	27	7.63	Oct. 8	6.70
31	5.91	20	5.25	June 27	9.11	31	8.09
	a 5.86		a 5.20	July 10	9.57	Dec. 1	8.33

21. U. S. Indian Serviee. Measuring point, top of pipe, 1.8 feet above land surface and 2,601.86 feet above mean sea level (reported in Water-Supply Paper 911 as 100.00 feet above assumed datum).

Water level, in feet below measuring point, 1941

Jan. 8	8.86	Feb. 21	9.15	May 6	9.28	Aug. 26	11.62
14	9.06		a 8.87	27	10.17	Sept.24	12.18
	a 9.04	Mar. 7	9.17	June 27	11.62	Oct. 8	9.80
28	9.47	20	8.08	July 10	12.00	30	10.80
31	8.83	Apr. 8	9.36	25	11.95	Dec. 1	11.03
	a 8.72	22	9.84				

51. Bert Hinton. SE¼ NW¼ sec. 13, T. 4 S., R. 22 E.

Water level, in feet below measuring point, 1941

Jan. 9	15.82	Mar. 18	14.81	May 29	16.01	Sept.27	18.24
Feb. 6	15.78	Apr. 18	15.88	July 25	17.92	Oct. 15	16.42

52. Bert Hinton. SE¼NW¼ sec. 13, T. 4 S., R. 22 E.

Water level, in feet below measuring point, 1941

Jan. 9	18.63	Mar. 18	14.31	June 27	b 19.83	Sept.27	b 19.77
Feb. 6	15.14	May 29	17.30	July 25	17.42	Oct. 15	15.90

54. Mrs. R. S. Knowles. SE¼SE¼ sec. 13, T. 4 S., R. 22 E.

Water level, in feet below measuring point, 1941

Jan. 9	44.79	May 29	42.58	July 25	43.63	Oct. 15	45.05
Feb. 6	44.26	June 27	42.86	Sept.24	44.43		

56. NW¼NE¼ sec. 24, T. 4 S., R. 22 E.

Water level, in feet below measuring point, 1941

Jan. 9	47.45	Mar. 18	46.11	May 29	43.74	July 25	44.41
Feb. 6	47.91	Apr. 18	45.22	June 27	44.03	Sept.24	45.14

59. Pat Hinton. SW¼SE¼ sec. 35, T. 4 S., R. 22 E. Water levels, in feet below measuring point, 1941: Jan. 3, 29.36; Feb. 6, 28.67. Measurements discontinued. See well 60 for further measurements in this vicinity.

60. Pat Hinton. SE¼SE¼ sec. 35, T. 4 S., R. 22 E., 100 yards east of well 59, 0.5 mile west of Goodwin Wash Road, 4.1 miles southwest of Geronimo. Used drilled stock well, diameter 6 inches, depth 75 feet. Measuring point, red arrow at top north side of casing, 2.0 feet above land surface and 2,861.54 feet above mean sea level. Equipped with windmill.

a Highest water level in period between tape measurements.
b Well 51 nearby, pumping.

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Graham County, Safford Valley--Continued

60.--Continued.

Water level, in feet below measuring point, 1939-41

Date	Water level	Date	Water level	Date	Water level
Oct. 20, 1939	30.69	Apr. 18, 1941	27.83	July 25, 1941	33.98
Dec. 8	30.40	May 29	38.35	Sept.23	27.70
Feb. 8, 1940	31.80	June 27	28.95	Oct. 15	28.10
Mar. 29	41.36				

71. Ed McEuen. SE¼SW¼ sec. 7, T. 4 S., R. 23 E. (Reported in Water-Supply Paper 911 as owned by U. S. Government).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 8	15.85	June 27	17.56	Aug. 26	17.27	Oct. 30	17.21
22	16.25	July 11	17.85	Sept.23	17.76	Dec. 1	17.52
May 29	16.24	25	17.63				

72. Ed McEuen. SE¼SW¼ sec. 7, T. 4 S., R. 23 E. (Reported in Water-Supply Paper 911 a owned by Graham County).

Water level, in feet below measuring point, 1941

Jan. 8	2.34		a 1.41	May 6	2.15	Aug. 26	3.57
14	1.84	Mar. 7	1.71	29	2.91	Sept.23	4.00
28	2.46	20	1.53	June 27	4.05	Oct. 8	2.92
a	.70	Apr. 8	2.58	July 11	4.22	30	4.04
31	1.50	22	2.89	25	3.85	Dec. 1	4.06
Feb. 21	1.65						

73. Graham County. SE¼SW¼ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 3	7.78		a 8.06	Apr. 22	9.11		a 9.92
8	8.42	Feb. 21	8.15		a 8.34	Aug. 26	10.01
14	8.43		a 8.02	May 6	8.41	Sept.23	10.38
a	8.36	Mar. 7	8.20	29	8.87	8	8.70
28	8.78		a 6.80	June 27	10.36	31	10.17
a	8.09	30	7.88	July 11	10.66	Dec. 1	10.22
31	8.14	Apr. 8	8.73	25	10.31		

74. Graham County. SE¼SW¼ sec. 7, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 3	3.79	Feb. 21	4.22	May 6	4.43	Sept.23	6.64
8	4.42	Mar. 7	4.25	29	4.73	Oct. 8	4.83
14	4.55	20	3.81	June 27	6.40	31	6.40
28	4.87	Apr. 8	4.80	July 11	6.75	Dec. 1	6.42
31	4.23	22	5.17	25	6.45		

75. Graham County. NE¼NW¼ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	1.91	Feb. 21	1.69	Apr. 22	2.60	Aug. 26	3.66
14	2.04		a 1.53	May 6	1.91	Sept.23	4.14
	a 1.97	Mar. 7	1.73	29	2.11	Oct. 8	2.35
28	2.36		a .76	June 27	3.95	31	3.84
31	1.73	20	1.29	July 11	4.25	Dec. 1	3.94
	a 1.59	Apr. 8	2.28	25	3.95		

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

76. E. W. Black. NE¼NW¼ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	22.56	Feb. 21	21.34	May 29	20.28	Sept.23	23.14
8	22.30	Mar. 7	21.05	June 27	21.71	Oct. 8	22.06
9	22.29	20	20.76	July 11	22.60	31	22.02
14	22.15	Apr. 8	20.76	25	22.57	Nov. 13	22.50
28	21.93	22	20.88	Aug. 26	22.99	Dec. 1	21.92
31	21.87	May 6	20.64	Sept.17	23.21	16	21.72

77. E. M. Claridge. NW¼SW¼ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	39.85	Apr. 18	37.08	June 27	36.63	Sept.23	38.70
Feb. 6	38.98	May 29	36.39	July 25	37.55	Oct. 15	38.38

79. Fay Rabb. NE¼SE¼ sec. 18, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	23.25		a 22.01	May 6	22.31	Sept.23	24.32
24	23.42	20	22.50	29	21.59	Oct. 8	23.30
a	22.92	Apr. 8	22.60	June 27	22.96	31	24.02
Feb. 21	22.94	22	22.80	July 11	23.90	Dec. 1	23.60
Mar. 7	22.75		b 22.84	25	24.23	16	23.30

80. Fay Rabb. NW¼SW¼ sec. 17, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	14.52	Apr. 18	14.74	June 27	15.72	Sept.24	16.25
Feb. 6	14.62	May 29	14.39	July 25	16.10	Oct. 15	15.23

81. Mrs. J. B. Blessing. NW¼NE¼ sec. 19, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	29.63	Apr. 18	27.92	June 27	28.48	Sept.24	30.28
Feb. 6	29.07	May 29	27.31	July 25	29.61	Oct. 15	29.63
Mar. 18	28.31						

88. W. F. Bolinger. NW¼NE¼ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	13.04	Apr. 17	12.20	June 23	14.17	Sept.24	15.54
Feb. 5	12.61	May 27	12.88	Aug. 1	17.58		

90. Church of Latter Day Saints. NE¼NE¼ sec. 29, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	23.49	Mar. 18	22.88	June 30	22.22	Sept.27	23.05
Feb. 6	23.21	May 29	22.33	July 25	22.89	Oct. 15	22.70

91. Ben Montierth. NW¼SE¼ sec. 29, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	49.17	Mar. 18	46.00	June 30	47.47	Sept.27	48.38
Feb. 6	49.38	May 29	47.85	Aug. 1	48.11	Oct. 15	48.55

92. Wendell Montierth. SE¼NE¼ sec. 33, T. 5 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	59.25	Mar. 18	58.47	May 29	57.92	Sept.27	58.27
Feb. 6	58.90	Apr. 18	58.70	June 30	57.89		

a Highest water level in period between tape measurements.
b Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued

93. Graham County. NE¼SE¼ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	11.17	Mar. 7	10.80	May 6	10.94	Aug. 25	13.76
13	11.39	22	10.21	27	11.63	Sept.24	14.17
28	11.69	Apr. 8	10.60	June 23	13.27	Oct. 7	11.93
31	11.12	22	11.10	July 7	13.59	30	12.18
	a 10.94		b 11.18	25	14.11	Dec. 1	12.58
Feb. 21	10.97						

94. Graham County. NE¼SE¼ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	6.67	Mar. 7	6.15	May 27	7.11	Sept.24	9.52
13	6.80	22	5.80	June 23	8.79	Oct. 6	6.52
28	7.08	Apr. 8	6.15	July 7	9.13	30	7.60
31	5.51	22	6.68	25	9.28	Dec. 1	8.01
Feb. 21	6.22	May 6	6.14	Aug. 26	8.96		

95. Graham County. SE¼SE¼ sec. 27, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	7.80	Mar. 7	7.55	May 27	8.70	Aug. 26	9.77
13	7.74	22	6.50	June 23	10.49	Sept.24	10.50
28	8.50	Apr. 8	7.81	July 7	10.71	Oct. 6	7.00
	a 5.98	22	8.29	25	10.24	30	8.78
31	6.39	May 6	7.15		a 9.47	Dec. 1	9.13
Feb. 21	7.47						

96. Graham County. SW¼SW¼ sec. 26, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	2.56	Feb. 21	2.11	Apr. 22	3.30	July 7	5.49
14	1.92	Mar. 7	2.36	May 6	2.16	25	5.06
28	3.07	22	1.46	27	3.65	Aug. 26	4.65
31	1.22	Apr. 8	2.68	June 23	5.24	Sept.24	5.32

97. Graham County. SW¼SW¼ sec. 26, T. 4 S., R. 23 E. Measurements discontinued after well was filled in August 1941.

Water level, in feet below measuring point, 1941

Jan. 8	2.97	Mar. 22	2.20	June 23	5.13	July 13	5.57
14	2.88	Apr. 8	3.16	July 7	5.45	14	5.59
28	3.73	22	3.71	10	5.50	15	5.62
31	2.15	May 6	2.56	July 11	5.53	16	5.63
Feb. 21	2.85	27	3.71	12	5.55	25	5.44
Mar. 7	3.00						

98. Graham County. NW¼NW¼ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	2.53	Feb. 21	2.29		a 1.56	July 25	a 4.20
14	2.38		a 1.97	May 6	1.96	Aug. 26	4.30
	a 2.36	Mar. 7	2.45	27	2.97	Sept.24	4.93
28	2.99	22	1.68	June 23	4.34	Oct. 7	2.03
	a 1.06	Apr. 8	2.60	July 7	4.76	30	3.50
31	1.79	22	3.10	25	4.50	Dec. 1	3.54
	a 1.76						

a Highest water level in period between tape measurements.
b Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued

99. Graham County. NW¼NW¼ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	0.21	Mar. 7	0.19	May 27	0.33	Sept.24	2.40
14	.07	22	(a)	June 23	1.40	Oct. 7	(a)
28	.70	Apr. 8	.22	July 7	1.94	30	.25
31	(a)	22	.64	25	1.51	Dec. 1	1.06
Feb. 21	.11	May 6	(a)	Aug. 26	1.88		

100. C. N. Higgins. NE¼NE¼ sec. 34, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	10.70	Feb. 21	10.45	May 6	9.65	Aug. 26	11.91
9	10.78	Mar. 7	10.38	27	9.97	Sept.24	12.35
14	10.77	22	9.79	June 23	10.74	Oct. 7	10.06
28	11.09	Apr. 8	10.24	July 7	11.44	31	11.38
31	10.52	22	10.58	25	11.66	Dec. 1	10.76

101. D. C. Kempton. NE¼NW¼ sec. 34, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	19.89	Apr. 18	19.37	June 30	20.10	Sept.27	(b)
Feb. 6	18.92	May 29	19.22	Aug. 1	(b)	Oct. 15	(b)

105. Edward McEuen. SW¼SW¼ sec. 35, T. 4 S., R. 23 E. (erroneously published in Water-Supply Paper 911 as SE¼SW¼ sec. 35).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Feb. 6	47.57	June 23	44.75	Sept.27	48.58
May 29	44.30	Aug. 1	48.29		

106. L. L. Morrison. SW¼SW¼ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	44.16	Apr. 18	43.67	June 23	42.00	Sept.24	44.70
25	44.11	May 29	41.12	Aug. 1	44.65	Oct. 15	44.20
Mar. 18	41.00						

107. Port McEuen. SE¼SW¼ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	46.27	Mar. 7	45.55	May 6	45.78	Aug. 1	46.79
	c 45.94		c 42.17	29	42.54	Sept.24	46.58
24	46.51	22	43.83		c 41.22	Oct. 7	46.25
	c 45.91	Apr. 8	45.33	June 23	43.95	30	46.75
Feb. 21	45.94		c 44.02	July 11	45.66	Dec. 1	42.60
	c 45.02	22	45.99				

108. W. O. Tyler. SE¼SE¼ sec. 35, T. 4 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 9	18.58	May 29	17.93	Aug. 1	19.74	Oct. 15	18.77
Apr. 17	18.64	June 23	18.55	Sept.27	19.16		

126. YL Ranch. SE¼NE¼ sec. 24, T. 5 S., R. 21 E. Water level, in feet below measuring point, 1941: Apr. 10, 5.96.

a Well flowing.
b Dry.
c Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

129. Hinton Ranch. SW¼NE¼ sec. 27, T. 5 S., R. 21 E. No measurements made in 1941.

132. Hinton. SE¼SW¼ sec. 35, T. 4 S., R. 21 E. Water levels, in feet below measuring point, 1941: Feb. 26, 7.02; Apr. 24, 5.29; June 1, 8.33.

143. R. S. Snedigar. NW¼SW¼ sec. 25, T. 5 S., R. 22 E. Water levels, in feet below measuring point, 1941: Feb. 26, 9.30; Apr. 24, 9.28; June 1, 13.88.

156. Roy Layton. SW¼SE¼ sec. 1, T. 5 S., R. 23 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	11.13	Apr. 17	10.37	June 23	10.62	Aug. 26	11.54
Mar. 18	10.45	May 29	9.37	Aug. 1	10.80	Oct. 15	10.56

158. W. C. Rhodes. NE¼SW¼ sec. 2, T. 5 S., R. 23 E.

Water level, in feet below measuring point, 1941

Jan. 8	49.20	Mar. 18	48.31	June 27	46.65	Sept.26	47.07
Feb. 6	48.77	May 29	47.39	Aug. 1	47.50	Oct. 15	46.86

160. W. O. Tyler. NE¼NE¼ sec. 2, T. 5 S., R. 23 E. (erroneously reported in Water-Supply Paper 911 as SW¼SE¼ sec. 1).

Water level, in feet below measuring point, 1941

Jan. 9	30.58	Apr. 17	29.87	June 23	28.72	Sept.27	30.55
Feb. 5	30.46	May 29	28.31	Aug. 1	30.58	Oct. 15	29.87
Mar. 18	29.79						

164. Don Steele. NW¼NW¼ sec. 11, T. 5 S., R. 23 E. (erroneously reported in Water-Supply Paper 911 as SW¼SW¼ sec. 2).

Water level, in feet below measuring point, 1941

Jan. 9	66.50	Apr. 17	66.24	June 30	65.19	Sept.26	64.68
Feb. 6	66.47	May 29	65.49	Aug. 1	65.03	Oct. 15	64.60
Mar. 18	66.49						

166. O. D. Hall. SE¼SW¼ sec. 12, T. 5 S., R. 23 E. (reported in Water-Supply Paper 911 as owner unknown, and erroneously in NW¼SW¼ sec. 12).

Water level, in feet below measuring point, 1941

Jan. 9	21.23	Apr. 17	20.10	July 1	19.68	Sept.26	20.05
Feb. 6	20.92	May 29	19.32	Aug. 1	20.15	Oct. 15	17.00

194. Virgil McEuen. SE¼NE¼ sec. 18, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	21.93	Apr. 17	20.08	June 25	21.03	Sept.27	21.49
Feb. 5	21.35	May 27	20.19	July 25	21.62	Oct. 16	21.00
Mar. 19	20.58						

195. Fay Rabb. SW¼NE¼ sec. 19, T. 5 S., R. 23 E. (erroneously reported in Water-Supply Paper 911 as SE¼NW¼ sec. 19).

Water level, in feet below measuring point, 1941

Jan. 8	16.35	Mar. 18	15.24	May 29	15.13	Aug. 1	16.64
Feb. 6	16.04	Apr. 17	20.41	July 1	16.35	Sept.25	16.68

200. J. R. Thatcher. SE¼SW¼ sec. 20, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	(a)	Apr. 17	19.70	June 25	17.60	Sept.27	18.10
Feb. 5	20.18	May 27	18.30	July 31	17.86	Oct. 16	18.37
Mar. 19	19.93						

a Dry.

Graham County, Safford Valley--Continued

202. A. D. Nelson. SW¼SW¼ sec. 21, T. 5 S., R. 24 E. Measuring point, top of plank cover, at land surface, and 2,763.14 feet above mean sea level. (Published in Water-Supply Paper 911 as measuring point, top of casing south side, and 2,763.01 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 8	39.17	June 25	37.80	Sept.27	36.60
May 27	38.36	July 31	37.18	Oct. 16	36.25

205. W. B. Marshall. NW¼NW¼ sec. 28, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	29.40	Apr. 17	29.00	June 25	27.29	Sept.27	26.05
Feb. 5	29.47	May 27	28.45	July 31	26.91	Oct. 16	26.20

206. J. D. Colvin. SE¼NE¼ sec. 29, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.95	Apr. 17	24.59	June 25	22.08	Sept.27	21.20
Feb. 5	24.96	May 27	24.72	July 31	21.34	Oct. 16	21.55
Mar. 19	24.86						

207. Lamar Kempton. SE¼SW¼ sec. 29, T. 5 S., R. 24 E. (erroneously published in Water-Supply Paper 911 as SE¼SW¼ sec. 24, T. 5 S., R. 24 E).

Water level, in feet, with reference to measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	+0.07	Apr. 17	+2.32	June 25	+0.79	Sept.27	-0.39
Feb. 5	+.15	May 27	+1.14	July 28	+.50	Oct. 16	+.70
Mar. 19	+.72						

208. L. W. Farrington. SW¼SE¼ sec. 30, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	22.72	Apr. 17	22.18	July 1	23.37	Sept.26	23.50
Feb. 5	22.58	May 29	22.25	Aug. 1	23.66	Oct. 15	22.44

210. Boyd Hawkins. SW¼NE¼ sec. 31, T. 5 S., R. 24 E. Measuring point, red arrow, top of casing on northwest side, 1.15 feet above land surface and 2,763.99 feet above mean sea level. (Reported in Water-Supply Paper 911 as measuring point, bottom of hole at south side of pump, 2.6 feet above land surface and 2,765.44 feet above mean sea level).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	32.64	Apr. 17	32.17	July 1	33.12	Sept.26	33.35
Feb. 6	32.48	May 29	32.30	Aug. 1	33.57	Oct. 15	32.90

211. Producers Ginning Co. NW¼NE¼ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	22.45	Feb. 21	22.80	May 6	22.10	July 24	24.12
8	23.08	Mar. 7	22.56	27	22.95	Aug. 25	23.67
13	23.22	22	21.91	June 18	23.80	Sept.23	24.15
27	23.40	Apr. 9	22.62	25	24.00	Oct. 31	23.61
31	22.68	22	22.77	July 10	24.33		

Graham County, Safford Valley--Continued

212. Graham County. NW¼NE¼ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	19.24	Mar. 7	19.37	May 27	19.75	Aug. 25	20.48
8	19.87	22	18.71	June 18	20.64	Sept.23	20.96
13	20.03	Apr. 9	19.44	25	20.84	Oct. 7	19.28
27	20.21	22	19.59	July 10	21.16	30	a 21.36
31	19.48	May 6	18.90	24	20.95	Dec. 1	a 20.60
Feb. 21	19.62						

213. Graham County. NE¼NE¼ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 3	18.18		b 18.55		b 18.03	July 24	20.42
	b 18.15	Feb. 21	18.91	May 6	18.21	Aug. 25	19.88
8	19.12		b 18.44	27	19.25	Sept.23	20.45
13	19.30	Mar. 7	18.65	June 18	20.21	Oct. 7	18.57
	b 19.06	22	17.93	22	20.47	30	19.89
27	19.57	Apr. 9	18.83	July 10	20.77	Dec. 1	20.10
31	18.62	22	18.99				

214. Graham County. NE¼NE¼ sec. 31, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 3	10.59	Feb. 21	11.72		b 10.65	July 24	13.43
8	11.97		b 11.11	May 6	11.11	Aug. 25	12.82
13	12.04	Mar. 7	11.44	27	12.30	Sept.23	13.46
27	12.45	22	10.72	June 18	13.43	Oct. 7	11.44
	b 10.89	Apr. 9	11.78	25	13.68	31	12.73
31	11.24	22	11.94	July 10	13.95	Dec. 1	13.60

215. Graham County. NE¼NE¼ sec. 31, T. 5 S., R. 24 E. Measurements discontinued after well was filled in August 1941.

Water level, in feet below measuring point, 1941

Jan. 3	0.93	Jan. 31	3.56	Apr. 22	2.40	June 18	5.24
8	2.35	Feb. 21	3.96	May 6	3.65	25	5.59
13	2.75	Mar. 7	4.05	27	4.17	July 10	6.31
27	3.52	Apr. 9	2.05				

216. Graham County. NW¼NW¼ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	5.77	Jan. 31	5.26		b 4.76	July 24	7.64
	b 5.27	Feb. 21	5.75	May 6	5.27	Aug. 25	6.88
13	5.92		b 5.15	27	6.37	Sept.23	7.56
	b 5.70	Mar. 7	5.51	June 18	7.53	Oct. 7	5.19
	c 6.51	22	4.64	25	7.86	30	7.00
27	6.44	Apr. 9	5.69	July 10	8.10	Dec. 1	7.30
	b 5.02	22	5.86				

217. Graham County. NW¼NW¼ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	2.76	Mar. 7	2.80	May 27	3.35	Aug. 25	4.03
13	3.08	22	1.89	June 18	4.37	Sept.23	4.62
27	3.57	Apr. 9	2.59	25	4.74	Oct. 7	2.25
31	2.74	22	2.83	July 10	5.07	30	4.02
Feb. 21	2.99	May 6	2.50	24	4.67	Dec. 1	4.35

a Well 211, 100 yards east, pumping.
b Highest water level in period between tape measurements.
c Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued

218. Graham County. NW¼NW¼ sec. 32, T. 5 S., R. 24 E. (erroneously reported in Water-Supply Paper 911 as NE¼NW¼ sec. 32).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	3.12	Feb. 21	3.40	Apr. 22	2.82	July 10	4.90
13	3.40		a 3.20	May 6	2.74	24	4.61
27	3.86	Mar. 7	3.24	27	3.26	Aug. 25	4.17
31	3.40	22	2.40	June 18	4.20	Sept.23	4.76
a	3.33	Apr. 9	2.56	25	4.40	Oct. 9	2.72

219. H. C. Kempton. NE¼NE¼ sec. 32, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	11.48	Apr. 17	8.28	June 25	8.84	Sept.27	10.76
Feb. 5	10.73	May 27	9.46	July 31	9.65	Oct. 16	10.30
Mar. 19	10.23						

220. Lionel Hancock. SW¼NW¼ sec. 33, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	16.44	Apr. 17	14.91	June 25	14.14	Sept.27	15.26
Feb. 5	16.53	May 27	13.29	July 31	14.43	Oct. 16	15.85
Mar. 19	16.28						

222. Dave Hawkins. NE¼NW¼ sec. 33, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	32.15	Apr. 17	28.70	June 25	26.88	Sept.27	26.00
Feb. 5	30.04	May 27	27.58	July 28	26.02	Oct. 16	25.81
Mar. 19	29.36						

223. E. E. Hancock. NE¼SW¼ sec. 33, T. 5 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	28.67	Apr. 17	27.93	July 28	27.83	Oct. 16	27.96
Feb. 5	28.46	May 27	27.91	Sept.27	28.18	31	28.56
Mar. 19	28.28	June 25	27.90				

262. J. Hancock. NE¼SW¼ sec. 2, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	17.56	Mar. 14	17.43	May 27	16.70	July 28	17.95
Feb. 5	17.55	Apr. 17	16.85	June 25	17.47	Sept.27	18.27

264. J. Hancock. SE¼NW¼ sec. 3, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	5.14	Apr. 17	4.46	June 25	5.26	Sept.27	6.08
Feb. 5	5.24	May 27	4.63	July 28	5.68	Oct. 16	5.60
Mar. 14	5.08						

267. Wm. Carpenter. NE¼NE¼ sec. 4, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	22.99	Mar. 14	22.20	Apr. 28	21.76		a 23.21
a	22.76	28	21.50	a	21.48	July 11	23.45
24	22.80		a 21.47	May 27	21.75	28	24.20
Feb. 27	22.19	Apr. 14	21.71	June 25	23.29	Sept.26	23.12
a	22.08						

269. Frank Matthews. SW¼SE¼ sec. 4, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	25.29	Apr. 16	26.93	June 30	27.12	Sept.26	26.74
Feb. 5	26.00	May 26	25.53	July 28	26.79	Oct. 15	27.57
Mar. 18	25.03						

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

270. Frank Matthews. SW¼SE¼ sec. 4, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	23.72	Apr. 16	24.49	June 30	25.58	Sept.26	25.23
Feb. 5	24.36	May 26	23.94	July 28	25.16	Oct. 15	26.00

273. Eldon Palmer. SW¼NE¼ sec. 5, T. 6 S., R. 24 E. (Published in Water-Supply Paper 911 as owned by M. J. Ferguson).

Water level, in feet below measuring point, 1941

Jan. 8	42.28	Mar. 18	41.12	May 29	40.43	Aug. 1	41.80
Feb. 5	40.71	Apr. 16	40.82	June 30	41.11	Sept.26	42.05

274. Dean. SE¼SW¼ sec. 10, T. 6 S., R. 24 E. Measuring point, red arrow at top of south side of casing, 0.7 foot above land surface and 2,817.68 feet above mean sea level. (Published in Water-Supply Paper 911 as measuring point, bottom of hole at north side of pump base, 1.9 feet above land surface and 2,818.88 feet above mean sea level).

Water level, in feet below measuring point, 1941

Jan. 8	49.62	Apr. 16	48.37	June 30	45.95	Sept.26	47.26
Feb. 5	49.15	May 26	45.72	July 28	46.74	Oct. 16	47.76

275. Lamar Bellman. SE¼NE¼ sec. 10, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	24.42	Apr. 16	22.60	June 30	21.87	Sept.26	22.86
Feb. 5	24.04	May 26	21.44	July 28	22.32	Oct. 10	23.06
Mar. 18	23.76						

279. Howard McBride. SW¼SW¼ sec. 12, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	7.43	Mar. 18	6.18	May 26	6.18	July 28	7.01
Feb. 5	7.05	Apr. 16	6.61	June 30	6.51	Sept.23	7.08

280. Graham County. NE¼NE¼ sec. 12, T. 6 S., R. 24 E. (erroneously reported in Water-Supply Paper 911 as SE¼NE¼ sec. 12).

Water level, in feet below measuring point, 1941

Jan. 8	13.07	Mar. 14	12.64	May 27	10.30	July 30	12.31
Feb. 5	12.81	Apr. 17	10.94	June 25	10.92	Sept.26	12.94

282. Guy Anderson. SW¼NE¼ sec. 13, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	22.61	May 26	19.76	Aug. 25	19.06	Oct. 31	19.46
Feb. 5	22.23	June 18	18.97	Sept.17	19.37	Nov. 14	19.38
Mar. 18	22.01	30	19.00	23	19.38	Dec. 1	19.38
Apr. 16	20.12	July 28	18.98	Oct. 7	19.00	16	19.34

285. Guy Anderson. SE¼SE¼ sec. 13, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	32.16	Apr. 16	28.58	June 30	23.72	Sept.26	25.06
Feb. 5	31.63	May 26	25.74	July 28	24.45	Oct. 14	24.40
Mar. 18	30.62						

292. Dick Bryce Estate. SE¼SE¼ sec. 14, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Jan. 8	6.64	Apr. 16	7.37	June 30	5.60	Sept.26	5.75
Feb. 5	6.77	May 26	5.38	July 28	5.19	Oct. 14	5.95
Mar. 18	6.88						

Graham County, Safford Valley--Continued

321.--Continued.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	7.06	Mar. 28	7.09	May 26	7.17	Oct. 31	8.32
	a 6.95	Apr. 9	6.43	June 26	8.64	Dec. 1	8.27
Feb. 22	7.32	14	5.60				

322. Bryce Bros. NE¼NW¼ sec. 18, T. 6 S., R. 25 E. (Reported in Water-Supply Paper 911 as owner unknown).

Water level, in feet below measuring point, 1941

Jan. 3	4.59	Mar. 7	6.91	Apr. 28	6.05	July 24	8.80
8	5.95	14	7.26	29	5.98	Aug. 25	7.93
13	6.52	20	5.77	May 5	6.27	Sept.23	8.46
27	7.30	28	6.70	26	7.67	Oct. 6	6.00
30	5.90	Apr. 9	6.62	June 26	9.24	31	8.49
Feb. 22	6.78	14	6.47	July 10	9.64	Dec. 1	9.40

323. Graham County. NW¼NE¼ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 3	5.00	Feb. 22	6.99		a 6.94	May 26	8.17
8	6.59		a 6.58	Apr. 9	7.04	July 24	9.20
13	6.77	Mar. 7	7.27		a 6.95	Aug. 25	8.23
	a 6.51	14	7.54	14	6.98	Sept.23	8.96
27	7.60		a 5.99	28	6.22	Oct. 6	6.50
	a 5.96	21	6.13	29	6.19	31	8.87
30	5.99	28	7.05	May 5	6.71	Dec. 1	8.81

324. Graham County. SW¼NE¼ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 3	2.85		a 3.86	Apr. 28	3.28	July 10	6.85
8	3.84	Mar. 7	3.98	29	3.05	24	5.97
13	3.92	14	4.09	May 5	3.84	Aug. 25	5.18
a	3.90	21	3.19		a 3.67	Sept.23	5.34
27	4.35	28	3.96	26	4.62	Oct. 6	4.20
a	2.72	Apr. 9	4.38	June 26	6.54	31	5.66
30	3.10	14	3.90		a 6.30	Dec. 2	5.90
Feb. 22	4.20						

325. Graham County. SW¼NE¼ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 3	3.80	Mar. 7	4.76	Apr. 28	4.07	July 24	6.42
8	4.54	14	4.80	29	3.27	Aug. 25	5.67
13	4.73	21	3.85	May 5	4.25	Sept.23	5.70
27	5.05	28	4.34	26	4.80	Oct. 8	3.75
30	4.29	Apr. 9	4.74	June 26	6.77	31	5.98
Feb. 22	5.12	14	4.26	July 10	7.21	Dec. 2	6.34

326. Graham County. SW¼NE¼ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 3	4.55		a 5.08	Apr. 28	4.18	July 10	6.78
8	4.89	Mar. 7	5.17	29	3.24	24	3.12
13	5.12	14	5.13		b 4.18	Aug. 25	5.31
	a 5.11		a 4.15	May 5	4.01	Sept.23	5.26
27	5.37	21	4.17		a 3.92	Oct. 7	4.74
30	5.15	28	4.08	26	4.24	31	5.37
	a 4.77	Apr. 9	4.47	June 26	5.84	Dec. 2	6.08
Feb. 22	5.54	14	4.03				

a Highest water level in period between tape measurements.
b Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued

298. Joe Rogers. NE¼NW¼ sec. 25, T. 6 S., R. 24 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	16.75	Apr. 16	13.50	June 30	10.98	Sept.26	13.34
Feb. 5	16.92	May 26	12.00	July 28	11.42	Oct. 14	13.70
Mar. 18	16.85						

313. Jack Bryce. NW¼NE¼ sec. 7, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 8	60.37	Mar. 14	59.44	May 27	57.38	July 31	57.13
Feb. 5	59.77	Apr. 17	58.91	June 25	56.63	Sept.26	57.78

315. Dick Bryce Estate. NW¼SE¼ sec. 7, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 8	29.22	Mar. 14	28.66	June 25	28.60	Sept.26	28.54
Feb. 5	28.86	May 27	28.79	July 30	28.08	Oct. 16	27.80

317. Wm. Wanslee. NW¼SW¼ sec. 16, T. 6 S., R. 25 E. (Reported in Water-Supply Paper 911 as Wm. Walmsley).

Water level, in feet below measuring point, 1941

Jan. 8	20.12	Apr. 17	17.68	June 26	16.47	Sept.26	19.40
Feb. 5	19.87	May 26	17.20	July 31	18.38	Oct. 16	17.46
Mar. 17	19.70						

318. Vance Marshall. NE¼NE¼ sec. 17, T. 6 S., R. 25 E., on west side of county road, 0.4 mile south from Graham Canal, 2 miles southeast from Bryce. Used drilled irrigation well, diameter 16 inches, depth unknown. Measuring point, top of casing, 1.5 feet above land surface. Equipped with turbine pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Feb. 17, 1940	22.05	May 27,1940	19.15	July 31, 1941	18.18
Mar. 22	17.46	June 26,1941	16.96	Sept.26	20.00
Apr. 29	17.35				

319. Vance Marshall. SE¼NE¼ sec. 17, T. 6 S., R. 25 E. Measurements discontinued after Apr. 17, 1941. See well 318 for further measurements in this area. Water levels, in feet below measuring point, 1941: Jan. 8, 19.68; Feb. 5, 19.27; Mar. 17, 19.01; Apr. 17, 17.60.

320. Vance Marshall. SE¼SE¼ sec. 17, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	12.30	Apr. 17	11.89	June 26	12.74	Sept.26	13.86
Feb. 5	12.56	May 26	11.47	July 31	13.53	Oct. 15	13.50
Mar. 17	11.90						

321. Graham County. SW¼SE¼ sec. 7, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 3	5.38		a 7.12	Apr. 28	6.48	July 10	9.05
8	6.50	Mar. 7	7.36	29	6.40	24	8.77
13	6.99	14	7.59		b 6.48	Aug. 25	8.32
	a 6.97		a 6.31	May 5	6.00	Sept.23	8.54
27	7.59	21	6.51	6	6.21	Oct. 6	5.33

a Highest water level in period between tape measurements.
b Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued.

328. Dodge-Nevada Canal Co. NE¼SW¼ sec. 18, T. 6 S., R. 25 E. (Erroneously reported in Water-Supply Paper 911 as SE¼SW¼ sec. 18.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	6.10	Jan. 30	6.10	Apr. 28	3.18	Sept.23	4.48
6	6.06	Feb. 22	6.29	May 5	3.34	Oct. 7	4.49
8	5.97	Mar. 21	5.14	26	3.80	31	4.64
13	6.13	28	4.30	July 23	4.47	Dec. 2	5.27
27	6.21	Apr. 14	3.26	Aug. 25	4.65		

329. Art Lines. SW¼SW¼ sec. 18, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 8	19.80	Apr. 16	17.10	June 30	15.31	Sept.26	16.22
Feb. 5	20.86	May 26	15.74	July 28	16.22	Oct. 14	16.97
Mar. 18	19.35						

330. W. W. Crockett. NE¼NW¼ sec. 19, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	18.65	Apr. 16	14.13	June 25	14.46	Sept.26	15.90
Feb. 5	19.00	May 26	13.93	July 30	15.76	Oct. 15	15.02
Mar. 18	17.26						

335. E. B. McBride. NW¼SW¼ sec. 20, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	15.09	Apr. 16	12.56	June 30	12.65	Sept.26	14.50
Feb. 4	15.11	May 26	12.29	July 30	13.87	Oct. 14	14.30

342. Ed Howard. SW¼SW¼ sec. 23, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 7	23.84	Apr. 17	21.29	June 26	23.03	Sept.26	24.84
Feb. 4	23.62	May 31	21.43	July 30	25.72	Oct. 14	24.00
Mar. 17	23.22						

344. J. M. Talley. NW¼SW¼ sec. 26, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 7	22.30	Mar. 17	18.37	June 26	20.22	Sept.26	21.88
Feb. 4	21.84	May 31	19.06	July 30	20.60	Oct. 14	21.20

346. Graham County. SE¼NE¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	4.07	Mar. 6	4.38	May 5	3.70	July 23	6.16
14	4.51		a 3.55		a 3.67	Aug. 25	6.15
27	4.89	21	3.68	28	4.41	Sept.23	6.72
30	4.13		a 3.63	June 24	5.45	Oct. 7	4.60
	a 4.09	Apr. 7	3.68	July 10	5.94	31	5.90
Feb. 20	4.46	21	1.79	16	6.32	Dec. 2	6.13
	a 4.28						

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

347. Graham County. SE¼NE¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	5.07	Mar. 6	5.66	May 28	6.42	Aug. 25	7.58
14	5.58	21	4.88	June 24	7.70	Sept.23	8.41
27	6.21	Apr. 7	5.70	July 10	8.05	Oct. 7	5.93
30	4.93	21	5.20	16	8.29	31	7.34
Feb. 20	5.73	May 5	5.31	23	7.70	Dec. 2	7.51

348. Graham County. SE¼NE¼ sec. 27, T. 6 S., R. 25 E. (Erroneously reported in Water-Supply Paper 911 as NE¼SE¼ sec. 27). Measurements discontinued October 1941 as well was destroyed by flood in Gila River.

Water level, in feet below measuring point, 1941

Jan. 6	5.27	Feb. 20	5.70		a 4.77	July 16	8.89
14	5.26	Mar. 6	5.68	May 5	5.70	23	7.79
27	6.30	20	5.20	28	7.18	Aug. 25	7.79
	a 3.82	Apr. 7	6.31	June 24	8.61	Sept.23	8.68
30	4.34	21	6.27	July 10	8.79		

349. Graham County. NE¼SE¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	2.89	Mar. 14	3.66	Apr. 21	4.58	June 24	6.40
13	3.19	20	3.88	28	3.23	July 23	5.73
27	3.87	28	3.80		a 2.99	31	6.51
30	1.85	Apr. 7	4.15	May 5	3.55	Aug. 28	5.53
Feb. 20	3.34	14	4.40	28	5.08	Sept.23	6.41
Mar. 6	3.28						

350. Graham County. NE¼SE¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	3.03	Mar. 20	2.98	May 28	5.01	July 31	6.48
13	3.30	28	3.56	June 18	6.03	Aug. 25	5.58
27	4.05	Apr. 7	4.03	24	6.18	Sept.23	6.30
30	2.21	14	4.29	July 1	6.27	Oct. 9	4.83
Feb. 20	3.52	21	4.59	10	6.61	31	5.04
Mar. 6	3.44	28	3.33	16	6.74	Dec. 2	6.08
14	3.75	May 5	3.58	23	5.88		

351. Graham County. SE¼SE¼ sec. 27, T. 6 S., R. 25 E. (Erroneously reported in Water-Supply Paper 911 as NE¼SE¼ sec. 27.) Measurements discontinued after July 16, 1941, as well was destroyed.

Water level, in feet below measuring point, 1941

Jan. 4	2.87	Jan. 30	2.25	Apr. 7	3.51	May 28	5.14
6	3.07	Feb. 20	3.77	14	3.80	June 18	6.17
8	3.30	Mar. 6	3.70	21	4.02	24	6.35
13	3.98	14	4.11	28	4.15	July 1	6.53
27	4.30	21	3.03	29	5.06	16	(b)
29	2.04	28	3.24	May 5	3.74		

a Highest water level in period between tape measurements.
b Dry.

Graham County, Safford Valley--Continued

352. Graham County. SE¼SE¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	3.62		a 3.93	Apr. 29	3.66	July 16	7.32
9	4.10	Mar. 6	3.94		a 3.39	23	6.48
13	3.88	14	4.21	May 5	4.00	31	7.02
	a 3.66	20	3.47	28	5.42	Aug. 25	6.27
27	4.54	28	3.80	June 18	6.37	Sept.23	6.83
	a 2.24	Apr. 7	4.40	24	6.53	Oct. 9	5.26
29	2.32	14	4.74	July 1	6.79	31	6.48
30	2.78	21	5.02	10	7.22	Dec. 2	6.50
Feb. 20	4.04	28	3.82				

353. Graham County. SE¼SE¼ sec. 27, T. 6 S., R. 25 E. Measurements discontinued after July 16, 1941, as casing was pulled.

Water level, in feet below measuring point, 1941

Jan. 4	2.10	Feb. 20	3.07	Apr. 14	2.90	May 28	3.95
6	3.14	Mar. 6	2.88	21	3.17	June 18	4.92
13	3.18	14	3.27	28	3.26	24	5.10
27	3.56	21	1.81	29	2.91	July 1	5.26
29	.74	28	2.18	May 5	2.68	16	5.71
30	1.64	Apr. 7	2.62				

354. Ned Daley. SE¼SE¼ sec. 27, T. 6 S., R. 25 E. (Erroneously reported in Water-Supply Paper 911 as SW¼SE¼ sec. 27).

Water level, in feet below measuring point, 1941

Jan. 6	7.42	Mar. 14	7.09	May 26	6.29	July 30	9.23
Feb. 4	7.15	Apr. 16	6.30	June 28	8.87	Sept.26	8.81

356. W. T. Watson. SW¼NW¼ sec. 27, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	9.49	Apr. 16	7.60	June 28	9.39	Sept.26	10.94
Feb. 4	9.35	May 26	8.85	July 30	10.71	Oct. 14	9.24
Mar. 14	9.35						

366. Charles M. Beals. NW¼SE¼ sec. 30, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	20.55	Apr. 16	19.32	June 30	17.14	Sept.26	17.66
Feb. 5	19.99	May 26	17.15	July 30	17.95	Oct. 14	17.38
Mar. 18	20.13						

368. G. Chavez. NW¼NW¼ sec. 30, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	46.91	Apr. 16	44.64	June 30	39.70	Sept.26	40.26
Feb. 5	46.52	May 26	41.34	July 30	39.89	Oct. 14	39.45
Mar. 18	46.00						

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

372. George Layton. NE¼SE¼ sec. 32 T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	38.14	Apr. 16	37.57	June 28	35.31	Sept.26	35.13
Feb. 4	38.22	May 26	36.35	July 30	35.93	Oct. 14	34.75
Mar. 14	38.49						

379. Smithville Canal Co. SE¼NE¼ sec. 34, T. 6 S., R. 25 E. (erroneously reported in Water-Supply Paper 911 as SW¼NE¼ sec. 32).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 8	7.26	Mar. 14	6.75	May 26	5.17
Feb. 4	7.00	Apr. 16	5.71		

380. Smithville Canal Co. SE¼NE¼ sec. 34, T. 6 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	4.89	Mar. 14	4.38	Apr. 21	3.98	Aug. 25	5.92
13	4.79	21	3.91	28	3.70	Sept.23	5.66
27	4.87	28	3.80	May 5	3.49	Oct. 7	4.59
30	4.59	Apr. 7	3.30	28	3.56	31	4.68
Feb. 20	4.53	14	2.56	July 23	8.47	Dec. 2	5.05
Mar. 6	4.42						

429. Graham County. SE¼NE¼ sec. 35, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 6	8.12		a 7.42	May 28	7.24	July 31	8.89
14	7.93	Mar. 6	7.45	June 25	7.83	Aug. 25	8.70
	a 7.87	20	7.16	July 2	8.16	Sept.23	9.50
27	7.95	Apr. 7	7.01	10	8.56	Oct. 6	8.25
30	7.80		a 6.30	16	9.06	30	9.70
	a 7.53	21	6.34	24	8.83	Nov. 28	9.78
Feb. 20	7.55	May 5	6.62				

430. Graham County. SE¼NE¼ sec. 35, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 6	3.80		a 3.66	May 28	4.37	July 31	5.70
14	4.00	Mar. 6	3.90	June 25	5.01	Aug. 25	5.33
	a 3.99	20	3.14	July 2	5.21	Sept.23	5.38
27	4.47	Apr. 7	3.87	10	5.53	Oct. 6	3.36
30	3.62	21	3.65	16	5.83	30	4.58
	a 3.53		a 3.32	24	5.10	Nov. 28	4.67
Feb. 20	3.99	May 5	3.46				

431. Jesse Tyler. NE¼SE¼ sec. 35, T. 6 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as owned by Graham County).

Water level, in feet below measuring point, 1941

	a 2.98	Mar. 6	3.82	May 5	3.65	July 24	5.76
Jan. 6	3.43		a 2.52	28	4.90	31	6.21
14	3.70	20	2.93	June 25	5.85	Aug. 25	5.57
27	4.53	Apr. 7	4.10		a 5.73	Sept.23	6.00
30	2.87		a 3.98	July 2	5.97	Oct. 24	4.38
Feb. 20	3.90	21	4.32	10	6.27	30	4.84
	a 3.39		a 3.36	16	6.36	Nov. 28	4.92

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

432. Roy Layton. SE¼SE¼ sec. 35, T. 6 S., R. 27 E. (Reported in Water-Supply Paper 911 as owner unknown.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	12.04	Mar. 14	11.20	May 5	11.05	July 31	13.00
6	11.68	20	10.68	28	11.58	Aug. 25	12.76
13	11.68	28	10.84	June 25	12.39	Sept.23	13.17
27	11.68	Apr. 7	11.01	July 2	12.58	Oct. 6	12.09
30	11.59	14	11.11	10	12.89	30	13.40
Feb. 20	11.24	21	11.21	16	12.96	Nov. 28	13.35
Mar. 6	11.13	28	11.25	24	12.92		

433. W. H. Bates. SW¼SW¼ sec. 36, T. 6 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	17.81	Apr. 21	16.66	July 10	18.18	Sept.17	18.78
Feb. 3	17.11	28	16.71	16	18.61	23	18.93
Mar. 6	16.68	May 5	16.56	24	18.66	Oct. 6	18.15
14	16.70	28	17.03	31	18.75	30	18.44
20	16.41	June 18	17.76	Aug. 21	18.63	Nov. 14	17.95
28	16.40	25	17.99	25	18.55	28	16.97
Apr. 7	16.49	July 2	18.22	Sept. 3	18.62	Dec. 19	17.80
15	16.59						

434. Abel Sanchez. SW¼NW¼ sec. 36, T. 6 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as SE¼NE¼ sec. 35).

Water level, in feet below measuring point, 1941

Jan. 7	20.94	Mar. 17	20.58	May 28	20.24	Sept.25	21.94
Feb. 4	20.77	Apr. 16	19.05	July 28	21.41	Oct. 10	20.85

451. S. A. Clontz. NW¼SW¼ sec. 31, T. 6 S., R. 28 E. (erroneously reported in Water-Supply Paper 911 as SW¼SW¼ sec. 31).

Water level, in feet below measuring point, 1941

Jan. 7	23.52	Apr. 16	20.12	June 25	21.57	Sept.25	25.63
Feb. 4	22.60	May 28	21.35	July 28	23.54	Oct. 10	23.72
Mar. 17	22.00						

452. S. A. Clontz. SW¼SW¼ sec. 31, T. 6 S., R. 28 E. Measuring point, top casing west side, 1.4 feet above land surface and 3,076.86 feet above mean sea level (reported in Water-Supply Paper 911 as 3,077.03 feet above mean sea level).

Water level, in feet below measuring point, 1941

Jan. 7	20.66	Apr. 16	17.84	June 25	18.97	Sept.25	20.90
Feb. 4	19.63	May 28	18.86	July 28	20.82	Oct. 10	19.09
Mar. 17	19.19						

454. Brown Canal Co. NE¼NE¼ sec. 31, T. 6 S., R. 28 E.

Water level, in feet below measuring point, 1941

Jan. 7	19.22	Mar. 17	18.44	May 28	19.08	July 28	20.47
Feb. 4	18.83	Apr. 16	17.14	June 25	18.98	Sept.25	20.48

491. Jim Smith. NW¼SW¼ sec. 17, T. 7 S., R. 24 E. Water levels, in feet below measuring point, 1941: Feb. 21, 6.91; Apr. 9, 6.35; June 1, 6.43.

508. Graham County. NE¼NE¼ sec. 3, T. 7 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	15.24	Mar. 14	14.63	May 26	12.41	July 30	13.76
Feb. 4	14.84	Apr. 16	13.96	June 28	13.09	Sept.26	13.60

Graham County, Safford Valley--Continued

509. Ellis Welker and Eldon Palmer. SE¼SW¼ sec. 3, T. 7 S., R. 25 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	38.01	Apr. 16	37.58	June 26	35.25	Sept.26	34.32
Feb. 4	38.04	May 26	36.10	July 30	34.72		

510. Ted Fergerson. NW¼NW¼ sec. 3, T. 7 S., R. 25 E. (erroneously reported in Water-Supply Paper 911 as Ted Ferguson).

Water level, in feet below measuring point, 1941

Jan. 6	23.88	Apr. 16	23.27	June 28	21.37	Sept.26	21.09
Feb. 4	23.94	May 26	21.83	July 30	21.77	Oct. 14	20.96

516. Roy Layton. NE¼NE¼ sec. 10, T. 7 S., R. 25 E.

Water level, in feet below measuring point, 1941

Jan. 6	44.70	Mar. 12	44.50	Apr. 28	43.30	July 11	41.48
24	44.53	28	44.44	May 26	42.48	28	41.49
Feb. 27	44.51	Apr. 14	43.97	June 25	41.72	Sept.26	40.82

552. Graham Canal Co. SW¼SE¼ sec. 5, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1941: Jan. 7, 12.40; a/ 12.28; Jan. 24, 12.80. Measurements discontinued as casing was sealed.

554. Graham Canal Co. SW¼SE¼ sec. 5, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 7	8.92	Mar. 17	7.16	May 28	8.20	Oct. 14	9.05
Feb. 4	9.43	Apr. 17	8.29	Sept.26	12.10		

557. R. A. Smith. NE¼NE¼ sec. 6, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 7	27.22	Apr. 17	24.29	June 26	25.55	Sept.26	28.32
Feb. 4	26.39	May 31	24.56	July 30	28.65	Oct. 14	26.90
Mar. 17	25.77						

559. J. A. Peterson. NE¼NW¼ sec. 6, T. 7 S., R. 26 E. Measuring point 2,892.59 feet above mean sea level (reported in Water-Supply Paper 911 as 2,992.59 feet above mean sea level). Measurements discontinued after Aug. 1, 1941, as casing was sealed.

Water level, in feet below measuring point, 1941

Jan. 7	18.84	Mar. 17	17.46	May 31	16.52	July 30	18.96
Feb. 4	18.12	Apr. 17	15.87	June 26	17.56		

562. Bill Morris. SE¼SE¼ sec. 7, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 6	26.65	Apr. 15	25.19	June 26	23.77	Sept. 26	23.83
Feb. 4	26.24	May 20	24.60	July 30	23.92	Oct. 14	23.48
Mar. 19	25.96	29	24.55				

564. Graham County. NW¼SW¼ sec. 8, T. 7 S., R. 26 E. Measurements discontinued after Feb. 20, 1941, as well was destroyed. See well 564-A for further measurements in this area.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 3	12.00	Jan. 27	11.67	Feb. 20	11.31
13	11.75	30	11.60		

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

564-A. Rose E. Golding. NW¼SW¼ sec. 8, T. 7 S., R. 26 E. At rear of house on corner of 8th Avenue and 2nd Street in city of Safford. Unused drilled well, diameter 6 inches, depth 28 feet. Measuring point, corner of pebble at top of concrete curb on north side, 0.3 foot above land surface. Large stone covers top of curbed casing.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	11.04	Apr. 23 b	8.21	July 1	9.56	Aug. 23	10.45
14	11.04	24	8.43	11	9.93	25	10.60
20	10.84	28	9.00	16	10.41	29	10.84
28	10.74	29	9.11	24	10.93	Sept. 23	11.42
Apr. 7	10.34	May 5	9.42	31	10.10	Oct. 5	10.14
14	9.18	31	9.73	Aug. 21	10.36	Nov. 11	10.50
23 a	8.22	June 23	9.54	22	10.35	Dec. 2	10.84

565. Graham County. SW¼NW¼ sec. 8, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼SW¼ sec. 8, T. 7 S., R. 26 E.). Measurements discontinued after Feb. 25, 1941, as well was destroyed. See well 565-A for further measurements.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	9.67	Jan. 27	9.34	Feb. 20	8.96	Feb. 25	8.93
13	9.38	29	9.28	24	8.93		

565-A. Z. C. Prina. SW¼NW¼ sec. 8, T. 7 S., R. 26 E., 2,950 feet south of Gila River on east side of 8th Street, 500 feet north of Safford city limits. Driven observation well with sand point, diameter 1 inch, depth 13 feet. Measuring point, top of pipe, 1.75 feet above land surface and 2,901.84 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	10.29	Apr. 23 c	7.16	July 1	8.75	Aug. 23	9.71
25	10.29	23 d	7.16	11	9.28	25	9.89
Mar. 6	10.30	24	7.52	16	9.74	29	10.23
14	10.34	28	8.27	24	9.26	Sept. 23	10.82
20	10.07	29	8.40	31	9.19	Oct. 5	9.37
28	10.02	May 5	8.73	Aug. 21	9.25	Nov. 1	9.86
Apr. 7	9.60	31	9.08	22	9.48	Dec. 2	9.65
14	8.59	June 23	8.83				

566. Graham County. SW¼NW¼ sec. 8, T. 7 S., R. 26 E. Measurements discontinued after Feb. 25, 1941, as well was destroyed. See well 566-A for further measurements in this area.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	8.15	Jan. 27	7.89	Feb. 20	7.45	Feb. 25	7.41
13	7.90	30	7.82	24	7.44		

566-A. Z. C. Prina. SW¼NW¼ sec. 8, T. 7 S., R. 26 E., 2,500 feet south of Gila River on east side of 8th Street, 950 feet north of Safford city limits. Driven observation well with sand point, diameter 1 inch, depth 12 feet. Measuring point, top of pipe, 2.5 feet above land surface and 2,900.56 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	9.18	Apr. 23 c	5.81		e 7.24	Aug. 22	8.46
25	9.18	23 d	5.86	July 1	7.93	23	8.71
Mar. 6	9.21	24	6.39	11	8.47	25	8.96
14	9.26	28	7.30	16	8.88	29	9.29
20	8.93	29	7.40	24	8.35	Sept. 23	9.91
28	8.95	May 5	7.75	31	8.30	Oct. 5	8.34
Apr. 7	8.46	31	8.14		e 7.71	Nov. 11	8.93
14	7.57	June 23	7.93	Aug. 21	7.82	Dec. 2	8.78

a Measured at 8:40 a.m.
b Measured at 5:10 p.m.
c Measured at 8:45 a.m.
d Measured at 5:05 p.m.
e Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

567. Graham County. NW¼NW¼ sec. 8, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 8, T. 7 S., R. 26 E.) Measurements discontinued Feb. 25, 1941, as well was destroyed. See well 567-A for further measurements in this area.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	7.01	Jan. 27	6.87	Feb. 20	6.39	Feb. 25	6.37
13	6.81	30	6.75	24	6.36		

567-A. Z. C. Prina. NW¼NW¼ sec. 8, T. 7 S., R. 26 E., 1,950 feet south of Gila River, 1,500 feet north of Safford city limits. Driven observation well with sand point, diameter 1 inch, depth 14 feet. Measuring point, top of pipe, 1.7 feet above land surface and 2,897.51 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	6.59	Apr. 23	a 3.28	July 1	5.73	Aug. 23	6.48
25	6.58	23	b 3.34	11	c 6.20	25	6.65
Mar. 6	6.62	24	4.09	11	d 6.56	29	6.97
14	6.71	28	4.94	24	5.96	Sept. 23	7.57
20	6.28	29	5.00	31	5.93	Oct. 5	5.86
28	6.38	May 5	5.30	Aug. 21	5.79	Nov. 1	6.52
Apr. 7	5.84	31	5.76	22	6.26	Dec. 2	6.40
14	5.14	June 23	5.66				

568. Graham County. NW¼NW¼ sec. 8, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 8, T. 7 S., R. 26 E.) Measurements discontinued after Feb. 20, 1941. See well 568-A for further measurements in this area.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	5.75	Jan. 13	5.75	Jan. 27	5.88	Feb. 20	5.37
	e 5.74		e 5.74	30	5.66		

568-A. Z. C. Prina. NW¼NW¼ sec. 8, T. 7 S., R. 26 E., 1,550 feet south of Gila River on east side of 8th Street, 1,900 feet north of Safford city limits. Driven observation well with sand point, diameter 1 inch, depth 13 feet. Measuring point, top of pipe, 1.6 feet above land surface and 2,896.56 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	6.32	Apr. 23	g 3.95	June 23	5.85	Aug. 22	6.56
Mar. 6	6.39	24	4.43		e 5.51	23	6.64
14	6.53	28	5.02	July 1	6.02	25	6.76
20	5.94	29	5.04	11	6.49	29	7.09
28	6.16	May 5	5.29	16	6.76	Sept. 23	7.66
Apr. 7	5.57		e 5.19	24	5.98	Oct. 5	5.74
14	5.19	31	5.86	31	6.30	Nov. 1	6.55
23	f 3.98		e 5.79	Aug. 21	6.52	Dec. 2	6.47
	e 3.91						

a Measured at 9:00 a.m.
b Measured at 4:20 p.m.
c Measured at 3:18 p.m.
d Measured at 3:43 p.m.
e Highest water level in period between tape measurements.
f Measured at 9:10 a.m.
g Measured at 4:25 p.m.

Graham County, Safford Valley--Continued

569. Graham County. NW¼NW¼ sec. 8, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 8, T. 7 S., R. 26 E.) Measurements discontinued after Feb. 22, 1941, as well was destroyed. See well 569-A for further measurements.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 3	5.38	Jan. 27	5.74	Feb. 20	5.23
13	5.56	30	5.36	22	5.21

569-A. Graham County. NW¼SW¼ sec. 8, T. 7 S., R. 26 E., 1,050 feet south of Gila River on east side of 8th Street, 2,400 feet north of Safford city limits. Driven observation well with sand point, diameter 1 inch, depth 13 feet. Measuring point, 1.7 feet above land surface and 2,895.56 feet above mean sea level.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	5.84	Apr. 23 a	3.91	May 31	5.62	July 31	6.04
Mar. 6	5.92	23 b	3.91	June 23	5.72	Aug. 25	6.47
14	6.09	24	4.36	July 1	5.91	Sept.23	7.33
20	5.38	28	4.75	11	6.35	Oct. 5	5.28
28	5.72	29	4.74	16	6.60	Nov. 1	6.20
Apr. 7	5.20	May 5	4.97	24	5.72	Dec. 2	6.14
14	4.94						

570. Z. C. Prina. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼NW¼ sec. 8, T. 7 S., R. 26 E.)

Water level, in feet below measuring point, 1941

Jan. 9	3.22	Mar. 20	2.22	May 5	2.72	July 31	4.70
13	3.17	28	3.12	31	3.79	Aug. 25	4.36
27	3.68	Apr. 7	3.13	June 23	4.35	Sept.23	5.14
30	2.61	14	3.12	July 1	4.51	Oct. 6	.82
Feb. 20	3.16	23 c	3.07	11	4.96	Nov. 1	3.18
Mar. 6	3.11	23 d	3.09	16	5.09	Dec. 1	3.87
14	3.43	28	2.51	24	4.14		

573. Z. C. Prina. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼NW¼ sec. 8, T. 7 S., R. 26 E.)

Water level, in feet below measuring point, 1941

Jan. 13	4.10	Mar. 28	4.20	May 31	4.96	July 31	6.02
27	4.74	Apr. 7	4.29	June 23	5.67	Aug. 25	5.49
30	3.33	14	4.40	July 1	5.77	Sept.23	6.33
Feb. 20	4.16	23 e	4.44	11	6.24	Oct. 6	3.35
Mar. 6	4.10	23 d	4.46	16	6.34	Nov. 1	3.45
14	4.48	28	3.46	24	5.40	Dec. 1	4.18
20	3.11	May 5	3.76				

574. Z. C. Prina. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼NW¼ sec. 8, T. 7 S., R. 26 E.) Water-stage recorder in operation until May 22, 1941.

a Measured at 9:15 a.m.
b Measured at 4:30 p.m.
c Measured at 9:20 a.m.
d Measured at 4:35 p.m.
e Measured at 9:25 a.m.

Graham County, Safford Valley--Continued

574.--Continued.

Daily noon water level, in feet below measuring point, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	3.25	4.12	4.64	3.83	....	a6.10	....	....	....	a4.48	a5.14
2	....	3.86	4.18	4.69	3.88	....	....	....	....	....	....	....
3	3.16	4.00	4.24	4.61	3.74	....	....	....	....	....	....	....
4	3.36	4.14	4.29	4.51	3.84	....	....	....	....	....	....	....
5	3.55	4.27	4.33	4.49	3.95	....	....	....	....	....	....	....
6	3.74	4.38	4.37	4.50	4.04	....	....	....	....	a3.27	....	....
7	3.84	4.46	4.42	4.55	4.13	....	....	....	....	....	....	....
8	3.96	3.95	4.48	4.60	4.20	....	....	....	....	....	....	....
9	4.16	3.65	4.53	4.65	4.24	....	....	....	....	....	....	....
10	4.31	3.70	4.59	4.71	4.29	....	....	....	....	....	....	....
11	4.39	3.76	4.66	4.76	4.33	....	a6.49	....	....	....	....	....
12	4.48	3.81	4.73	4.79	4.37	....	....	....	....	....	....	....
13	4.45	3.85	4.79	4.81	4.41	....	....	....	....	....	....	....
14	4.23	3.90	4.82	4.79	4.46	....	....	....	....	....	....	....
15	4.19	3.95	3.82	4.80	4.51	....	....	....	....	....	....	....
16	4.23	4.03	1.54	4.81	4.57	....	a6.64	....	....	....	....	....
17	4.33	4.10	2.43	4.82	4.64	....	....	....	....	....	....	....
18	4.42	4.17	2.81	4.84	4.71	....	....	....	....	....	....	....
19	4.51	4.22	3.05	4.62	4.78	....	....	....	....	....	....	....
20	4.58	4.27	3.20	4.57	4.85	....	....	....	....	....	....	....
21	4.65	4.32	3.42	4.61	4.89	....	....	....	....	....	....	....
22	4.71	4.34	3.63	4.66	....	....	....	....	....	....	....	....
23	4.76	4.26	3.81	4.72	....	a5.87	....	....	a6.75	....	....	....
24	4.82	4.17	3.96	4.76	....	....	a5.76	....	....	....	....	....
25	4.86	4.14	4.06	4.81	....	....	....	a5.67	....	....	....	....
26	4.90	4.08	4.14	4.78	....	....	....	....	....	....	....	....
27	4.93	4.02	4.22	4.36	....	....	....	....	....	....	....	....
28	4.95	4.06	4.32	3.81	....	....	....	....	....	....	....	....
29	3.69	....	4.41	3.69	....	....	....	....	....	....	....	....
30	3.64	....	4.51	3.75	....	....	....	....	....	....	....	....
31	3.67	....	4.58	....	a5.21	....	a6.16	....	....	....	....	....

575. Z. C. Prina. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼NW¼ sec. 8, T. 7 S., R. 26 E.)

Daily noon water level, in feet below measuring point, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	(b)	4.48	4.88	5.37	4.61	5.99	6.81	6.97	6.96	(b)	6.32	6.36
2	(b)	4.69	4.96	5.39	4.45	6.02	6.86	7.01	6.76	(b)	6.33	6.37
3	3.69	4.88	4.99	5.25	4.36	6.06	6.91	7.05	6.70	(b)	6.34	6.39
4	4.11	5.05	4.98	5.14	4.60	6.10	6.95	7.09	6.76	4.95	6.35	6.40
5	4.43	5.17	4.95	5.12	4.73	6.13	6.99	7.12	6.86	5.06	6.37	6.42
6	4.66	5.25	4.98	5.18	4.81	6.17	7.03	7.13	6.96	5.25	6.38	6.43
7	4.82	5.28	5.03	5.28	4.85	6.21	7.08	7.06	7.03	5.44	6.40	6.43
8	4.97	4.50	5.10	5.35	4.86	6.25	7.12	7.09	7.10	5.64	6.41	6.43
9	5.10	4.12	5.15	5.42	4.88	6.28	7.16	7.04	7.18	5.70	6.43	6.43
10	5.15	4.36	5.22	5.49	4.92	6.18	7.20	6.99	7.25	(c)	6.43	6.39
11	5.23	4.55	5.30	5.52	4.98	6.21	7.23	7.05	7.32	(c)	6.45	6.19
12	5.30	4.56	5.39	5.55	5.03	6.24	7.26	7.10	7.39	(c)	6.45	4.52
13	4.92	4.58	5.46	5.52	5.07	6.27	7.30	7.15	7.44	(c)	6.45	4.85
14	4.67	4.66	5.43	5.46	5.11	6.27	7.33	7.19	7.46	(c)	6.42	5.29
15	4.73	4.79	4.22	5.49	5.18	6.22	7.37	7.17	7.47	(c)	6.39	5.52
16	4.92	4.87	2.38	5.53	5.27	6.25	7.40	7.11	7.46	(c)	6.41	5.63
17	5.09	4.92	2.82	5.55	5.35	6.31	7.35	5.87	7.47	(c)	6.43	5.70
18	5.20	4.96	3.28	5.57	5.41	6.37	7.18	5.71	7.50	(c)	6.43	5.76
19	5.31	5.00	3.69	5.44	5.50	6.43	7.08	5.92	7.53	(c)	6.43	5.80
20	5.38	5.03	3.95	5.38	5.56	6.50	7.04	6.12	7.55	(c)	6.31	5.83

a Water-level measurement made with a steel tape.
b Recorder not in operation because of flood on Gila River.
c Well silted up.

Graham County, Safford Valley--Continued

575.--Continued.

Daily noon water level, in feet below measuring point, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
21	5.45	5.05	4.21	5.45	5.58	6.56	7.02	6.20	7.57	(a)	6.26	5.84
22	5.52	4.96	4.43	5.52	5.61	6.63	6.64	6.28	7.46	(a)	6.25	5.88
23	5.60	4.79	4.59	5.57	5.65	6.70	6.51	6.25	7.35	6.30	6.25	5.90
24	5.68	4.68	4.70	5.61	5.42	6.74	6.47	6.30	7.28	6.26	6.25	5.91
25	5.71	4.65	4.77	5.68	5.51	6.78	6.51	6.39	7.28	6.19	6.26	5.94
26	5.72	4.57	4.84	5.51	5.61	6.68	6.54	6.50	7.32	6.22	6.29	5.95
27	5.72	4.58	4.93	5.04	5.69	6.64	6.60	6.60	7.38	6.22	6.31	5.98
28	5.68	4.71	5.06	4.3	5.75	6.68	6.68	6.69	7.38	6.24	6.32	5.97
29	4.03	....	5.17	4.26	5.81	6.71	6.76	6.78	5.27	6.27	6.36	5.98
30	4.11	....	5.28	4.44	5.88	6.76	6.84	6.87	(b)	6.28	6.36	5.99
31	4.27	....	5.32	....	5.94	....	6.93	6.93	....	6.30	....	5.99

576. Z. C. Prina. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NW¼NW¼ sec. 8, T. 7 S., R. 26 E.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	4.84	Mar. 14	5.12	Apr. 28	3.94	July 24	6.26
13	4.47	20	3.84	May 5	4.57	31	6.93
27	5.39	28	4.83	31	5.85	Aug. 25	6.27
30	3.64	Apr. 7	5.16	June 23	6.68	Sept.23	7.01
c	3.41	14	5.38	July 1	6.72	Oct. 6	.72
Feb. 20	4.80	23	d 5.56	11	7.17	Nov. 1	3.02
Mar. 6	4.72	23	e 5.56	16	7.15	Dec. 1	4.18

578. Graham County. SE¼SE¼ sec. 6, T. 7 S., R. 26 E. Measurements discontinued after Sept. 23, 1941, as well was buried by flood.

Water level, in feet below measuring point, 1941

Jan. 6	4.00	Mar. 6	4.13	May 31	5.18	July 24	6.41
13	4.18	20	3.11	June 23	6.38	31	6.99
27	5.15	Apr. 7	4.41	July 1	6.45	Aug. 25	6.15
30	3.57	23	5.00	11	7.05	Sept.23	6.73
Feb. 20	4.31	May 5	3.75	16	7.05		

579. Graham County. SW¼SW¼ sec. 5, T. 7 S., R. 26 E. Measurements discontinued after July 16, 1941, as well was destroyed.

Water level, in feet below measuring point, 1941

Jan. 6	7.78	Feb. 20	7.71	Apr. 24	7.69	June 23	8.93
13	7.85	Mar. 6	7.57	29	6.99	July 1	9.24
27	8.37	20	6.82	May 5	6.93	11	10.25
30	7.67	Apr. 7	7.26	31	7.89	16	10.67

580. City of Safford. NE¼SW¼ sec. 8, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NE¼SW¼ sec. 9.)

Water level, in feet below measuring point, 1941

Jan. 4	13.04	Apr. 15	9.27	May 26	10.63	July 26	11.45
Feb. 3	12.66	23	8.78	June 24	11.02	Sept.25	12.80
Mar. 14	12.30	May 20	10.89				

a Well silted up.
b Recorder not in operation because of flood on Gila River.
c Highest water level in period between tape measurements.
d Measured at 9:40 a.m.
e Measured at 4:40 p.m.

Graham County, Safford Valley--Continued

585. Graham Canal Co. NW¼NW¼ sec. 9, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NE¼NW¼ sec. 9).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	11.89	Feb. 27	12.26	Apr. 17	12.39	June 26	15.15
a	13.05	Mar. 17	10.20	28	11.64	July 11	16.70
24	12.93	29	12.03	b	11.30	30	16.05
b	12.22	b	11.82	May 28	12.67	Sept.26	15.96

586. Ted Tidwell. SE¼SE¼ sec. 12, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 7	16.33	Apr. 17	15.08	June 24	15.95	Sept.25	16.43
Feb. 4	15.69	May 28	16.20	Aug. 1	17.42	Oct. 10	14.45
Mar. 17	14.42						

587. Graham County. SE¼SE¼ sec. 12, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

b	5.39	Mar. 6	5.73	May 5	4.93	July 24	6.93
Jan. 14	6.27	b	3.52	28	5.80	Aug. 25	6.50
b	6.18	21	4.54	June 24	6.85	Sept.23	7.06
27	6.64	Apr. 7	5.14	July 1	7.04	Oct. 6	5.35
30	5.64	b	4.49	11	7.24	Nov. 1	7.18
Feb. 20	5.86	21	5.50	16	7.37	28	7.57
b	5.56						

588. Graham County. NE¼NE¼ sec. 13, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 14	5.65	Mar. 6	5.20	May 28	5.30	July 24	6.22
b	5.59	21	3.74	June 24	6.38	Aug. 25	5.57
27	6.12	Apr. 7	4.43	b	6.26	Sept.23	6.54
b	4.85	b	3.82	July 1	6.48	Oct. 6	5.40
30	4.88	21	4.91	11	6.63	Nov. 1	7.25
Feb. 20	5.35	b	3.76	16	6.74	28	8.32
b	4.91	May 5	4.16				

589. Graham County. NE¼NE¼ sec. 13, T. 7 S., R. 26 E. Measurements discontinued after Sept.23, 1941, as well was destroyed by flood.

Water level, in feet below measuring point, 1941

Jan. 14	4.98	Mar. 21	2.88	May 28	4.58	July 16	6.02
27	5.53	Apr. 7	3.67	June 24	5.76	24	5.40
30	4.09	21	4.21	July 1	5.76	Aug. 25	5.05
Feb. 20	4.75	May 5	3.36	11	5.93	Sept.23	5.95
Mar. 6	4.60						

590. Graham County. NE¼NE¼ sec. 13, T. 7 S., R. 26 E. Measurements discontinued after Mar. 6, 1941, as well was destroyed by flood.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 14	4.35	b	2.42	Feb. 20	4.20
27	5.23	Jan. 30	3.23	Mar. 6	4.13

a Lowest water level in period between tape measurements.
b Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

592. E. M. Claridge. SW¼SE¼ sec. 13, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	19.49	Apr. 15	16.14	June 23	14.86	Sept.25	15.84
Feb. 3	18.77	June 2	14.85	July 30	16.32		

593. E. M. Claridge. SE¼SW¼ sec. 13, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	21.42	Apr. 15	18.30	June 24	16.86	Sept.25	17.70
Feb. 6	20.75	June 3	16.92	July 30	18.24	Oct. 13	17.23
Mar. 15	20.12						

594. E. M. Claridge. NE¼SE¼ sec. 14, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 9	12.10	Apr. 15	10.43	June 24	9.88	Sept.25	11.00
Feb. 3	11.85	June 3	9.64	July 30	10.83	Oct. 13	10.45
Mar. 15	11.17						

597. C. M. Pursley. NE¼SE¼ sec. 15, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	14.98	June 24	12.79	Sept. 3	14.00	Nov. 1	11.89
Feb. 3	14.26	July 30	14.92	17	13.33	14	11.66
Apr. 16	12.20	Aug. 21	15.37	23	13.10	28	10.41
June 3	11.05	25	14.95	Oct. 6	12.33	Dec. 19	11.34

598. Union Canal Co. NE¼SE¼ sec. 15, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	17.52	Apr. 16	14.72	June 24	15.50	Sept.23	15.65
Feb. 3	16.78	June 3	13.58	July 30	17.68	Oct. 13	14.54
Mar. 15	16.20						

603. L. A. Nelson. SE¼SW¼ sec. 16, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 6	37.12	Mar. 15	36.56	June 4	33.44	July 26	34.76
Feb. 3	36.91	Apr. 16	35.14	24	34.37	Sept.25	33.62

606. Pedro Solas. NE¼NE¼ sec. 16, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	7.37	Mar. 15	6.80	June 3	5.37	July 7	11.10
Feb. 3	6.86	Apr. 16	5.15	24	8.79	Sept.25	7.85

607. Mrs. Ona Walker. NW¼NW¼ sec. 16, T. 7 S., R. 26 E. Water levels, in feet below measuring point, 1941: Jan. 4, 17.30; Feb. 3, 16.85. Measurements discontinued as casing was pulled.

609. Mrs. Annie Collins. SW¼NE¼ sec. 17, T. 7 S., R. 26 E. (Reported in Water-Supply Paper 911 as NW¼NE¼ sec. 17).

Water level, in feet below measuring point, 1941

Jan. 6	24.78	Mar. 12	24.90	May 26	24.16	July 26	22.80
24	24.78	28	23.98	June 23	23.77	Sept.25	24.20
	a 24.90	Apr. 15	24.70	July 11	24.01	Oct. 21	23.54
Feb. 27	24.84	28	24.29				

a Lowest water level in period between tape measurements.

Graham County, Safford Valley--Continued

610. Bert Hatch. SW¼SW¼ sec. 17, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	53.69	Apr. 15	53.47	June 23	51.96	Sept.25	50.63
Feb. 4	53.36	May 26	52.67	July 26	51.17	Oct. 13	50.35
Mar. 15	53.34						

612. Montezuma Canal Co. SE¼SW¼ sec. 18, T. 7 S., R. 26 E. No measurements made in 1941.

613. Montezuma Canal Co. SW¼SW¼ sec. 18, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 6	63.23	Mar. 12	63.38	May 26	62.85	July 28	61.28
	a 63.18	28	63.42	June 26	61.94	Sept.26	60.70
24	63.28	Apr. 14	63.43	July 11	61.55	Oct. 18	60.45
Feb. 27	63.34	28	63.31				

614. Mrs. Bertha Gietz. SE¼NE¼ sec. 19, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as owned by Charles Gates).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 6	65.08	July 26	64.87	Oct. 13	62.03
May 26	64.69	Sept.26	62.19		

615. Mrs. Bertha Gietz. SE¼NE¼ sec. 19, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as owned by Charles Gates).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	65.11	Apr. 15	65.40	June 23	63.65	Sept.26	62.19
Feb. 4	65.16	May 26	64.71	July 26	62.86	Oct. 13	62.00
Mar. 15	65.36						

616. Kimball and Greenhalgh. NW¼SE¼ sec. 20, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NE¼SW¼ sec. 20, T. 7 S., R. 26 E.)

Water level, in feet below measuring point, 1941

Jan. 6	49.88	June 3	49.01	Sept.17	45.85	Nov. 1	45.40
Feb. 3	49.99	23	48.22	23	45.80	14	45.32
Mar. 12	50.35	July 26	46.93	Oct. 6	45.57	28	45.16
Apr. 16	50.12	Aug. 21	46.24				

618. Willard Welker. SE¼NW¼ sec. 21, T. 7 S., R. 26 E., on north bank of Montezuma Canal, 0.2 mile west of Stockton Wash, 0.5 mile east from county road, 0.4 mile south from Lone Star Road, 2 miles southeast from Safford. Drilled irrigation well, diameter 16 inches. Measuring point, top of casing, 0.4 foot above land surface and 2,958.46 feet above mean sea level. Water levels, in feet below measuring point: Jan. 19, 1940, 39.06; Feb. 12, 1940, 39.04; Oct. 13, 1941, 23.13.

619. Willard Welker. NW¼SE¼ sec. 21, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NE¼SW¼ sec. 21, T. 7 S., R. 26 E.)

Water level, in feet below measuring point, 1941

Jan. 9	47.32		a 46.55	Apr. 28	43.59	July 11	40.74
24	47.06	Mar. 12	46.57	June 4	40.85	26	39.91
	a 46.76	28	45.83	23	39.60	Sept.25	39.96
Feb. 27	46.79	Apr. 15	44.61		a 39.58	Oct. 21	39.48

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

621. Lee Johns. SW¼NW¼ sec. 22, T. 7 S., R. 26 E., on north bank of Montezuma Canal, 50 feet east of county road, 0.5 mile south from Lone Star Road, 0.6 mile southwest from Lone Star filling station. Drilled irrigation well, diameter 16 inches, depth 104 feet. Measuring point, bottom of hole in northwest side of casing, 1.5 feet above land surface and 2,958.06 feet above mean sea level. Water levels, in feet below measuring point: Jan. 9, 1940, 37.30; Feb. 12, 1940, 37.91; Oct. 13, 1941, 31.98.

623. Lee Johns. NE¼NW¼ sec. 22, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	29.76	Apr. 15	27.02	June 24	27.90	Sept.25	25.82
Feb. 3	29.19	June 3	25.40	July 30	28.80	Oct. 13	25.55
Mar. 14	28.72						

625. Willard Welker. NE¼SE¼ sec. 22, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	34.83	Apr. 16	32.75	June 24	29.14	Sept.25	29.45
Feb. 3	34.54	June 3	30.33	July 30	29.64	Oct. 13	30.83
Mar. 15	34.17						

627. Mrs. Mannie Wilson. SW¼NW¼ sec. 24, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 4	25.67	Apr. 15	22.83	June 24	20.84	Sept.25	21.39
Feb. 3	25.09	June 2	21.34	July 30	22.20	Oct. 13	21.05
Mar. 15	24.43						

628. Kempton and Larson. SE¼NW¼ sec. 24, T. 7 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 24).

Water level, in feet below measuring point, 1941

Jan. 4	23.07	Apr. 15	19.98	June 24	18.29	Sept.25	19.06
Feb. 3	22.41	June 3	18.55	July 30	19.79	Oct. 13	18.64
Mar. 15	21.77						

630. E. L. Claridge. NE¼NE¼ sec. 24, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Jan. 3	19.20	Mar. 14	17.72	May 5	15.27	July 31	15.77
6	19.05	21	17.46	28	14.58	Aug. 25	15.34
13	18.81	28	16.99	June 24	14.42	Sept.23	15.50
27	18.53	Apr. 7	15.81	July 1	16.06	Oct. 6	14.85
30	18.47	14	15.51	11	16.22	10	15.34
Feb. 20	18.09	21	15.48	16	17.10	Nov. 28	15.41
Mar. 6	17.84	28	15.40	24	16.36		

639. Amos Cook. NW¼SE¼ sec. 31, T. 7 S., R. 26 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 6	33.92	June 3	30.65	July 26	29.31
Apr. 16	29.13	26	26.78	Sept.25	33.45

661. Louis Michelena. SE¼NW¼ sec. 1, T. 7 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 1).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	31.83	Apr. 15	31.53	June 25	32.39	Sept.25	32.74
Feb. 3	31.62	May 28	31.77	July 28	32.69	Oct. 13	32.39
Mar. 14	31.60						

Graham County, Safford Valley--Continued

662. L. Michelena. NE¼NE¼ sec. 2, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	16.93	Mar. 14	15.54	May 28	15.84	July 31	17.62
6	16.74	20	15.40	June 25	16.80	Aug. 25	17.43
13	16.47	28	15.30	July 2	17.03	Sept.23	17.78
27	16.19	Apr. 7	15.34	10	17.28	Oct. 6	17.25
30	16.16	21	15.47	16	17.44	10	18.63
Feb. 20	15.76	28	15.50	24	17.54	Nov. 28	16.88
Mar. 6	15.58	May 5	15.41				

664. San Jose Canal Co. SW¼NE¼ sec. 2, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 9	17.81	Mar. 20	16.08	May 28	16.14	Sept.23	18.60
24	17.31	Apr. 7	15.20	June 25	17.60	Oct. 6	17.14
Feb. 20	16.69	21	15.39	July 16	19.03	30	16.63
Mar. 6	16.50	May 5	15.51	31	18.51	Nov. 28	16.75

667. Jose B. Garcia. SE¼SW¼ sec. 2, T. 7 S., R. 27 E., 0.2 mile by private road north from county road, 1.3 miles southwest from San Jose Canal diversion dam, and 1.2 miles from State Highway 71. Dug domestic well, depth 19 feet. Measuring point, post top of wood curb on north side, 2.65 feet above land surface and 3,034.42 feet above mean sea level.

Water level, in feet below measuring point, 1939-41

Date	Water level	Date	Water level	Date	Water level
Oct. 11, 1939	19.40	Feb. 13, 1940	19.70	Oct. 13, 1941	17.98
Nov. 24	20.56	Mar. 21	19.10		

669. S. Molino. SW¼SW¼ sec. 2, T. 7 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as SE¼SW¼ sec. 2, T. 7 S., R. 27 E.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	16.38	Apr. 15	57.06	June 26	14.24	Sept.25	13.45
Feb. 3	15.81	May 28	42.82	July 28	13.91	Oct. 13	12.90
Mar. 14	15.41						

674. Louis Michelena. NE¼SW¼ sec. 4, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 7	13.86	Mar. 17	11.40	May 28	10.62	July 28	13.38
Feb. 4	12.44	Apr. 16	10.32	June 25	11.77	Sept.25	14.29

675. Louis Michelena. SE¼SE¼ sec. 4, T. 7 S., R. 27 E., 50 feet south of Brown Canal, 3.9 miles northeast of Solomonsville. Used drilled irrigation well, diameter 16 inches. Measuring point, top of casing on west side, 0.2 foot above land surface.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Jan. 23, 1940	12.01	Feb. 4, 1941	8.91	May 28, 1941	7.84
Mar. 21	11.64	Mar. 17	7.93	June 25	9.02
Apr. 23	10.92	Apr. 17	6.81	Sept.25	11.30
May 24	11.44				

Graham County, Safford Valley--Continued

676. Louis Michelena. SW¼SE¼ sec. 4, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	14.04	Apr. 17	10.91	June 25	12.94	Sept.25	15.10
Feb. 4	12.51	May 28	13.05	July 28	14.20	Oct. 10	13.46
Mar. 17	11.49						

683. NE¼NW¼ sec. 10, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	23.10	Apr. 15	19.91	June 26	24.28	Sept.25	25.40
Feb. 3	22.80	May 28	22.40	July 28	24.85	Oct. 13	22.48
Mar. 14	22.83						

685. Brijido Carrasco. SW¼NW¼ sec. 11, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	27.16	Apr. 15	25.44	June 26	26.59	Sept.25	27.39
Feb. 3	25.95	May 28	25.51	July 28	27.46	Oct. 13	27.07
Mar. 14	24.93						

689. San Jose Canal Co. SW¼SW¼ sec. 16, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	45.83	Mar. 14	41.88	May 28	38.97	Sept.25	41.96
Feb. 3	43.70	Apr. 15	39.05	July 28	45.60		

696. Louis Carrasco. SE¼SE¼ sec. 18, T. 7 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as NE¼NE¼ sec. 19).

Water level, in feet below measuring point, 1941

Jan. 4	19.65	Apr. 15	14.04	June 26	13.74	Sept.25	15.86
Feb. 3	17.76	May 28	13.28	July 28	16.91	Oct. 14	15.12
Mar. 14	15.83						

698. Peciano Pena. SE¼NW¼ sec. 18, T. 7 S., R. 27 E. Water levels, in feet below measuring point, 1941: Feb. 3, 9.83; Mar. 14, 9.67. Well destroyed by flood in Gila River.

699. Graham County. SW¼NW¼ sec. 18, T. 7 S., R. 27 E. Measurements discontinued Aug. 1, 1941.

Water level, in feet below measuring point, 1941

Jan. 3	4.19		a 5.12	Apr. 14	3.93		a 5.23
6	5.23	Mar. 6	5.16	21	4.37	July 1	5.44
13	5.59	14	5.36	28	3.47	11	5.78
	a 5.34		a 3.74		a 3.26	16	5.20
27	6.06	21	3.79	May 5	3.60	24	4.49
	a 4.58	28	4.15	28	4.31		a 4.46
30	4.78	Apr. 7	4.05	June 24	5.41	31	5.55
Feb. 20	5.33						

700. Graham County. SW¼NW¼ sec. 18, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 3	5.66	Mar. 14	6.60	May 5	4.65	July 31	5.92
6	6.78	21	5.45	28	4.88	Aug. 25	3.52
13	6.94	28	5.47	June 24	5.59	Sept.22	6.13
27	7.19	Apr. 7	4.86	July 1	5.67	Oct. 6	4.97
30	6.68	14	4.46	11	6.16	30	6.44
Feb. 20	6.61	21	5.00	16	5.24	Nov. 28	6.43
Mar. 6	6.45	28	4.77	24	4.83		

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

701. Graham County. NW¼SW¼ sec. 18, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	7.90	Mar. 14	7.34	May 5	5.06	July 31	6.04
6	7.97	21	6.87	28	5.14	Aug. 25	5.50
13	8.10	28	6.26	June 24	5.23	Sept.23	6.18
27	8.07	Apr. 7	4.64	July 1	5.02	Oct. 6	5.37
30	7.96	14	4.74	11	6.06	30	6.28
Feb. 20	7.56	21	5.14	16	5.92	Nov. 28	6.13
Mar. 6	7.38	28	5.11	24	5.52		

702. William Waldrom. SW¼SW¼ sec. 18, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	15.74	Apr. 15	11.83	June 24	11.13	Sept.25	12.28
Feb. 3	14.92	June 2	10.74	July 30	12.45	Oct. 31	11.50

703. William Waldrom. NW¼NW¼ sec. 19, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	15.65	Apr. 15	11.71	June 24	11.05	Sept.25	12.13
Feb. 3	14.84	June 2	10.89	July 30	12.36	Oct. 13	11.09
Mar. 15	14.22						

705. J. M. Hatfield. NW¼NE¼ sec. 19, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	22.16	Apr. 15	19.57	June 26	19.23	Sept.25	20.55
Feb. 3	22.40	May 28	19.81	July 28	19.57	Oct. 13	20.34
Mar. 14	22.46						

708. Pete Bertaldo. SE¼NE¼ sec. 20, T. 7 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as NE¼NE¼ sec. 20).

Water level, in feet below measuring point, 1941

Jan. 4	39.28		a 37.45		a 37.05	July 28	39.00
Feb. 3	38.99	Apr. 15	37.48	June 26	37.58	Sept.25	38.40
Mar. 14	38.51	May 28	37.12		a 36.89	Oct. 13	38.98

709. E. E. Taylor. NW¼NW¼ sec. 30, T. 7 S., R. 27 E.

Water level, in feet below measuring point, 1941

Jan. 4	19.20	Apr. 16	17.38	June 24	16.28	Sept.25	16.60
Feb. 3	19.28	June 2	16.99	July 30	16.08	Oct. 13	16.55
Mar. 15	19.40						

758. Mrs. E. Harris. NE¼NW¼ sec. 9, T. 8 S., R. 26 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 6	21.08	Apr. 18	19.90	Sept.25	20.33
Feb. 4	20.66	July 26	20.18		

766. Cluff and Montierth. NE¼NE¼ sec. 19, T. 8 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as NE¼NE¼ sec. 21).

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	47.28	Mar. 19	48.30	June 3	49.06	July 26	49.22
Feb. 4	47.64	Apr. 16	49.00	26	48.28	Sept.25	49.66

a Highest water level in period between tape measurements.

Graham County, Safford Valley--Continued

791. Howard Olsen. SW¼SE¼ sec. 16, T. 8 S., R. 27 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 3	31.18	Apr. 16	32.57	July 1	34.20	Sept.25	34.89
Mar. 19	32.06	June 2	34.64	Aug. 1	35.96		

792. Howard Olsen. NW¼SW¼ sec. 15, T. 8 S., R. 27 E. (erroneously reported in Water-Supply Paper 911 as NW¼SW¼ sec. 21).

Water level, in feet below measuring point, 1941

Feb. 3	32.44	Apr. 16	32.32	July 1	32.70	Sept.25	32.90
Mar. 19	32.30	June 2	32.44	Aug. 1	32.81		

793. Howard Olsen. SW¼NE¼ sec. 16, T. 8 S., R. 26 E. (erroneously reported in Water-Supply Paper 911 as SW¼NE¼ sec. 20).

Water level, in feet below measuring point, 1941

Feb. 3	46.94	Apr. 16	46.48	June 2	46.48	Aug. 1	47.49
Mar. 19	46.64		a 46.44	July 1	47.00	Sept.25	47.82

Greenlee County, Duncan Valley

By H. M. Babcock

The Duncan-Virden Valley includes the Duncan Valley in Arizona, and the Virden Valley, in Hidalgo County, New Mexico. A detailed study was made of the ground-water resources of this valley from October 1, 1939, to May 31, 1941. A preliminary report of this work has been released. Water-level measurements made twice each year (once in the spring and once in the fall) and a pumpage inventory are being continued. Records of water levels in Virden Valley are given in the New Mexico section of this report. During the period of detailed investigation, water-level measurements were made about once a month in 39 wells. During 1941 a total of 278 measurements was made (including Hidalgo County, New Mexico). Water levels are expressed in feet below the measuring point, although levels have been run to most of the wells. The highest and lowest water levels that are given for some periods were obtained with maximum-minimum strip recorders.

The total quantity of water pumped during 1941 was 1,348 acre-feet, which was only about half the amount pumped during 1940. This lesser demand for pumped water was due to a steadier flow in the Gila River as a result of an unusually wet winter and spring. There was a seasonal lowering of

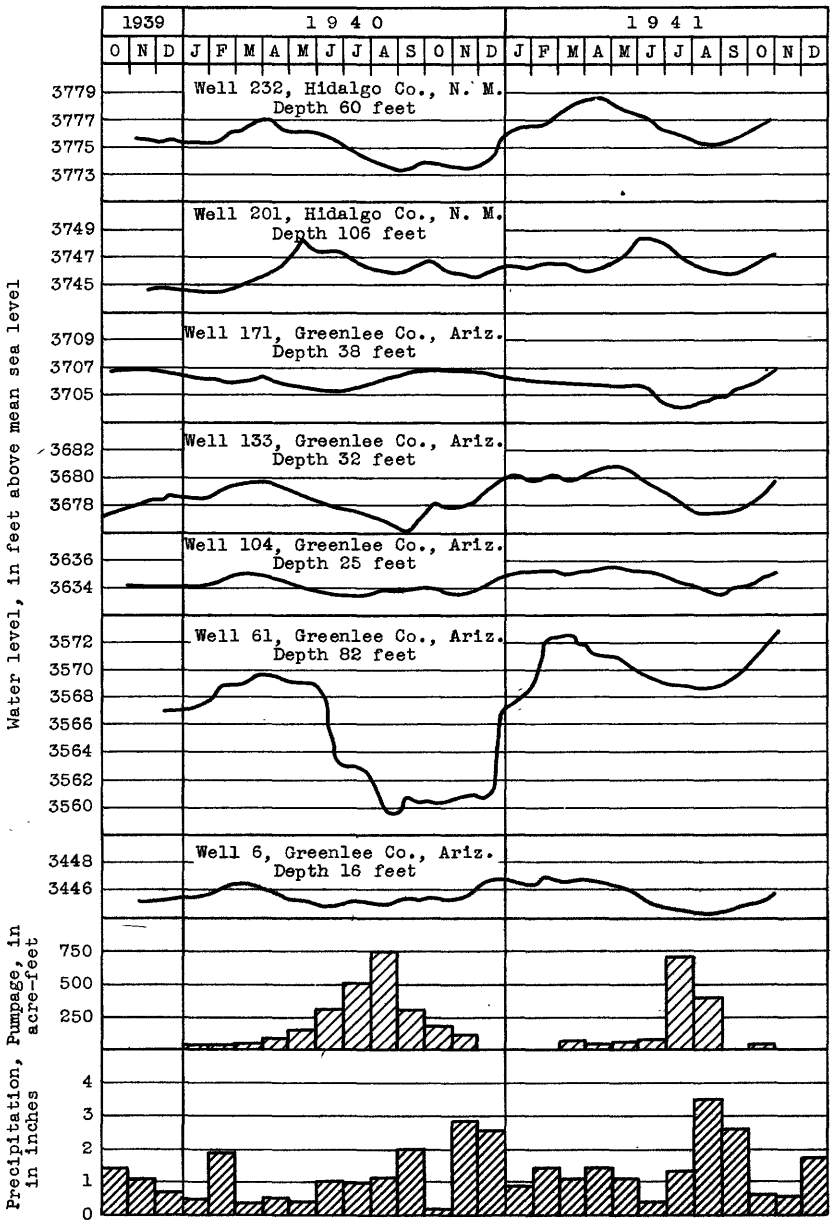

Figure 3.--Graphs showing fluctuations of water level in observation wells in the Duncan-Virden Valley, Greenlee County, Ariz., and Hidalgo County, N. Mex.

Greenlee County, Duncan Valley--Continued

the water levels in the regions of heavy pumping during the summer that was overcome by recharge during the late fall. Figure 3 shows hydrographs of several observation wells, total water pumped, and average monthly precipitation in the valley from October 1, 1939, to December 31, 1941.

Well numbers correspond to those in Water-Supply Paper 911.

5. Warner Foote. SE¼NW¼ sec. 7, T. 6 S., R. 31 E. Five feet east of fence, 750 feet south of CCC camp, 0.5 mile west from State Highway 75, 3.5 miles north from York. Driven observation well with sand point, diameter 1 inch, depth 15 feet. Measuring point, top of pipe, 1 foot above land surface and 3,453.16 feet above mean sea level. Water level, in feet below measuring point, 1941: June 16, 7.99; July 10, 8.66; Aug. 12, 8.82; Oct. 24, 7.44.

6. Warner Foote. SE¼NW¼ sec. 7, T. 6 S., R. 31 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
	a 13.41	Jan. 31	13.92	Feb. 27	13.63	May 5	(b)
Jan. 8	13.58		a 13.46	Apr. 9	13.75		

12. Wilton. NW¼NW¼ sec. 20, T. 6 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 8	21.33	Feb. 27	20.78	May 5	20.44	July 10	22.78
31	21.20	Apr. 9	20.57	June 2	20.98	Oct. 24	21.34

13. Arizona State Highway Department. SE¼NW¼ sec. 20, T. 6 S., R. 31 E. Measurements discontinued.

14. Victor Rowden. SE¼SE¼ sec. 19, T. 6 S., R. 31 E. (erroneously reported in Water-Supply Paper 911 as SW¼NW¼ sec. 29).

Water level, in feet below measuring point, 1941

Jan. 8	33.15	Feb. 27	31.78	May 5	31.06	July 10	33.00
31	32.38	Apr. 15	31.48	June 2	31.48		

31. Jack Merritt. SW¼NW¼ sec. 4, T. 7 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 8	26.36	Feb. 27	25.70	May 5	24.85	July 10	26.77
31	25.99	Apr. 15	25.27	June 2	25.29	Oct. 24	26.09

36. Mussett Cosper. NE¼NW¼ sec. 16, T. 7 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 8	13.34	Feb. 27	11.28	May 5	11.55	July 10	12.60
31	12.04	Apr. 9	10.97	June 2	11.30	Oct. 24	11.91

43. Ernest Campbell. NE¼SW¼ sec. 21, T. 7 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 8	31.70	Feb. 27	27.00	May 5	23.05	July 10	23.70
31	29.49	Apr. 9	24.69	June 2	22.68	Oct. 24	20.90

49. W. M. Zumwalt. NE¼NW¼ sec. 34, T. 7 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 8	49.39	Feb. 27	45.56	May 5	41.06	July 10	42.43
31	48.19	Apr. 9	42.25	June 2	40.10	Oct. 24	36.13

a Highest water level in period between tape measurements.
b Filled up, measurements continued on well 5.

Greenlee County, Duncan Valley--Continued

61. W. M. McKelvey. SW¼NE¼ sec. 3, T. 8 S., R. 31 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	31.86	Feb. 27	26.44	May 5	27.74	July 11	30.10
31	30.11		a 26.24	June 2	28.93	Oct. 23	26.52
	a 26.16	Apr. 9	27.82				

63. W. M. McKelvey. NE¼SE¼ sec. 3, T. 8 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 7	60.44	Feb. 27	51.60	May 5	48.15	July 11	48.87
31	55.35		a 49.22	June 2	48.25	Oct. 23	42.23
	a 51.47	Apr. 9	49.27				

66. Franklin Irrigation District well 4. SW¼NE¼ sec. 11, T. 8 S., R. 31 E. Water level, in feet below measuring point, 1941: Jan. 7, 6.46; Feb. 28, 5.61; Oct. 23, 6.80.

68. Franklin Irrigation District test well 10. SW¼NE¼ sec. 11, T. 8 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 7	10.76	Feb. 28	10.38		a 9.85	July 11	b 20.98
	a 10.11		a 10.03	May 5	10.30	Aug. 12	b 21.30
31	10.20	Apr. 8	10.60	June 2	11.44	Oct. 23	c 11.42
	a 9.91						

69. Franklin Irrigation District well 3. NW¼SE¼ sec. 11, T. 8 S., R. 31 E. Water level, in feet below measuring point, 1941: Jan. 7, 6.18; Feb. 28, 6.22; Oct. 23, 7.37.

72. J. C. Campbell. SE¼SE¼ sec. 12, T. 8 S., R. 31 E.

Water level, in feet below measuring point, 1941

Jan. 7	46.86	Feb. 28	46.67	May 5	44.44	July 10	43.55
30	47.20	Apr. 8	45.17	June 2	43.25	Oct. 23	45.70

84. Lee Beavers. NE¼NE¼ sec. 19, T. 8 S., R. 32 E. Fifty feet southwest of house, 500 feet west from State Highway 75, 0.3 mile north from Duncan. Used drilled domestic well, diameter 6 inches, depth 65 feet. Measuring point, top of casing on east side, 2.2 feet above land surface. Equipped with hand pump. Water level, in feet below measuring point, 1941: July 11, 20.14; Aug. 12, 21.20; Oct. 23, 20.19.

92. Raymond Davis. SW¼SE¼ sec. 17, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	67.22	Feb. 28	66.94	May 5	66.75	July 11	68.14
30	67.22	Apr. 8	67.20	June 2	67.81	Oct. 23	65.50

96. L. Deane. NW¼NW¼ sec. 19, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	26.90	Feb. 28	26.09	May 6	26.65	July 9	27.56
30	26.60	Apr. 8	25.86	June 3	26.11	Oct. 21	26.51

100. W. M. Zumwalt. SW¼SE¼ sec. 19, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	30.50	Feb. 28	30.02	May 6	29.68	July 9	31.30
30	30.33	Apr. 8	29.24	June 3	30.00	Oct. 21	30.35

a Highest water level in period between tape measurements.
b Pumps nearby running.
c Large flood occurred two weeks previous to measurement.

Greenlee County, Duncan Valley--Continued

104. Bill Cosper. NE¼NE¼ sec. 19, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.43	Feb. 28	24.15	May 5	a 21.00		(b)
30	24.31	Apr. 8	24.14	June 3	21.20		

111. Franklin Irrigation District well 8. SE¼SW¼ sec. 28, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	8.02	Apr. 8	7.76	May 27	8.35	Aug. 12	10.93
30	8.05	May 6	8.02	July 9	9.87	Oct. 21	9.50
Feb. 28	7.90						

115. J. D. Wilkins. SE¼NW¼ sec. 29, T. 8 S., R. 32 E. Measurements discontinued.

120. D. E. Wilkins. NE¼NW¼ sec. 32, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	14.20	Feb. 28	14.31	May 6	13.15	July 9	13.32
30	14.26	Apr. 8	13.81	June 3	13.05	Oct. 21	15.08

122. Delbert Moyers. SE¼SW¼ sec. 32, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	32.68	Feb. 28	32.94	May 6	33.50	July 9	33.05
30	32.67	Apr. 8	32.77	June 3	32.35	Oct. 21	31.55

125. V. L. Crotts. SE¼SW¼ sec. 33, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	c 24.35	Feb. 28	24.53	May 6	23.63	July 9	21.75
30	24.21	Apr. 8	24.08	June 3	22.34	Oct. 21	21.98

131. Franklin Irrigation District well 2. SW¼NE¼ sec. 34, T. 8 S., R. 32 E. Measuring point, 3,696.30 feet above mean sea level (erroneously reported as 3,698.01 feet in Water-Supply Paper 911).

Water level, in feet below measuring point, 1941

Jan. 7	18.48	Feb. 28	18.20	May 6	17.18	Aug. 12	20.20
30	18.76	Apr. 8	17.95	June 3	18.06	Oct. 23	19.10

133. Floyd McDaniels. SE¼SW¼ sec. 34, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	4.48	Mar. 14	4.68	June 3	4.28	Aug. 12	7.35
30	4.76	Apr. 8	4.30	July 9	5.94	Oct. 21	5.20
Feb. 28	4.29	May 6	3.65				

136. Franklin Irrigation District well 1. SE¼NE¼ sec. 34, T. 8 S., R. 32 E.

Water level, in feet below measuring point, 1941

Jan. 7	40.50	Feb. 28	39.48	May 6	38.62	July 11	(d)
30	40.15	Apr. 8	38.96	June 3	39.09	Oct. 22	43.34

160. Franklin Irrigation District well 7. NE¼NE¼ sec. 3, T. 9 S., R. 32 E. Water level, in feet below measuring point, 1941: Jan. 7, 7.87; Apr. 8, 7.84; June 3, 7.91; Oct. 21, 9.52.

a Measuring point lowered 2.90 feet.
b Well filled in, discontinued measurements, substituted well 84.
c Water recently drawn out.
d Pump running.

Greenlee County, Duncan Valley--Continued

161. Franklin Irrigation District well 6. NE¼NE¼ sec. 3, T. 9 S., R. 32 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	7.00	Mar. 14	7.16	May 6	6.09	July 9	(a)
30	6.98	Apr. 8	7.04	June 3	7.39	Oct. 21	8.95

162. Franklin Irrigation District well 5. NE¼NE¼ sec. 3, T. 9 S., R. 32 E. Water level, in feet below measuring point, 1941: Jan. 7, 16.27; Apr. 8, 16.28; June 3, 16.45.

171. NE¼NW¼ sec. 9, T. 9 S., R. 32 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	38.70	Apr. 8	39.08	June 3	37.45	Aug. 12	38.70
30	38.70	May 6	b 37.31	July 9	38.90	Oct. 21	36.91
Feb. 28	38.87						

Maricopa County

By E. M. Cushing

Measurements of water levels in 49 wells and of the total water pumped for irrigation were continued during 1941 in the Queen Creek area, in Maricopa and Pinal Counties. The measurements for eleven of these wells in Pinal County are given in the section on that county.

In Maricopa County during the year 274 water-level measurements were made in 38 observation wells. Figure 4 shows hydrographs of typical observation wells, total monthly pumpage in the Queen Creek area (most of the pumpage occurred in Maricopa County), and monthly precipitation at Superior, Arizona. The number of acre-feet of water pumped for irrigation in the Queen Creek area during 1941 was 22,920.

Water pumped from wells, in acre-feet, in Queen Creek and adjacent areas, 1941

	Bulldog-Superstition area	Queen Creek Irrigation District	Roosevelt Water Conservation District	Chandler Heights Citrus District	Magma area
Jan.	2.2	113.1	83.9	3.1	0
Feb.	21.1	107.1	27.6	5.7	0
Mar.	33.4	118.6	144.8	16.2	0
Apr.	230.6	566.6	205.4	47.8	32.5
May	734.4	2,334.1	3,395.9	250.8	121.5
June	1,411.6	4,336.6	10,304.7	564.6	753.5
July	907.9	4,707.6	9,088.2	573.6	1,363.1
Aug.	805.7	4,690.7	9,452.1	386.3	1,154.6

a Pump running.
b Measuring point lowered 1.6 feet.

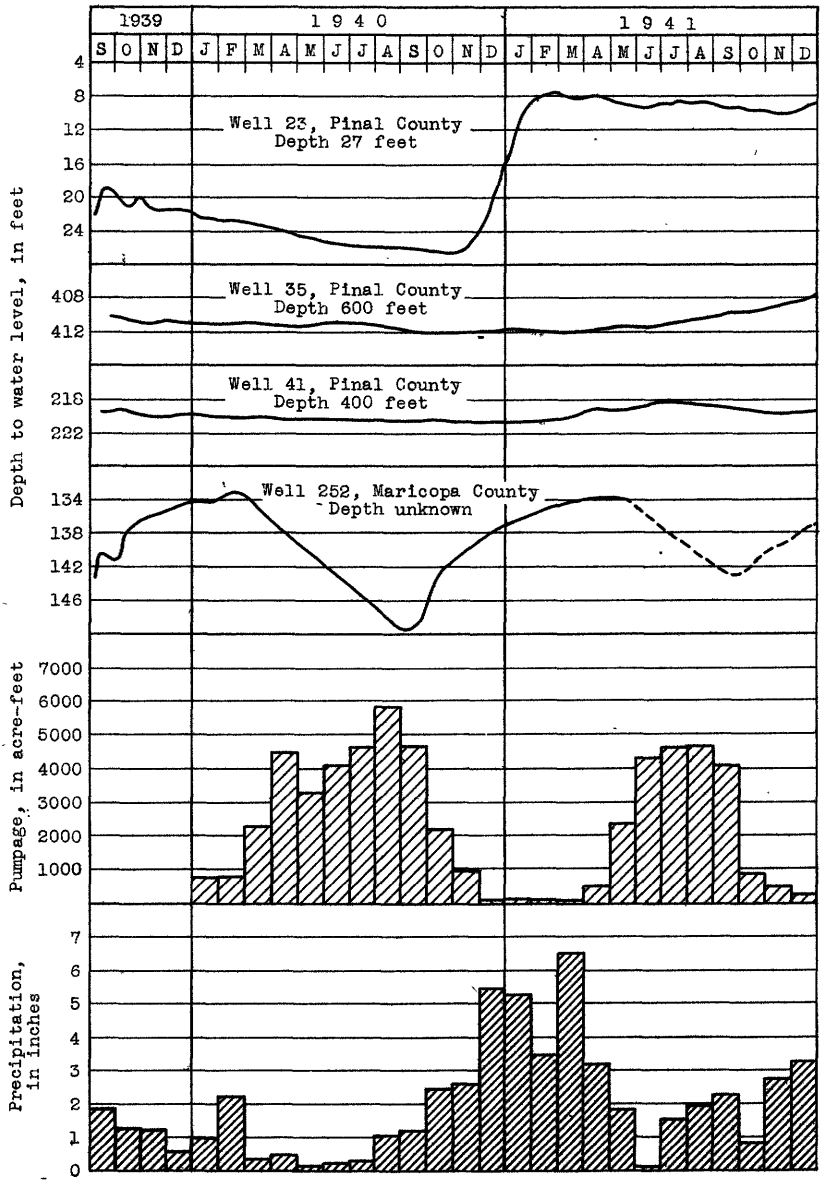

Figure 4.--Graphs showing fluctuations of water level in observation wells in the Queen Creek area, Maricopa and Pinal Counties, Ariz.

Maricopa County--Continued

Water pumped from wells, in acre-feet, in Queen Creek and adjacent areas, 1941--Continued

	Bulldog-Superstition area	Queen Creek Irrigation District	Roosevelt Water Conservation District	Chandler Heights Citrus District	Magma area
Sept.	789.6	4,140.3	7,096.4	427.1	1,768.2
Oct.	529.4	886.5	2,335.2	95.9	252.0
Nov.	116.6	509.4	1,566.3	74.0	0
Dec.	264.7	288.7	1,901.5	33.0	157.5
Total	5,847.2	22,920.3	45,602.0	2,478.1	5,602.9

The winter of 1940-41 was unusually wet, and a large amount of recharge occurred. The water level rose sharply in well 23 (see figure 4), located in the Queen Creek Canyon, about two miles above the entrance of the creek into the desert plain. The water level in well 35, located on the desert plain about half a mile from Queen Creek and a few miles downstream from the mouth of the canyon, rose steadily beginning in April and continuing throughout the year. The water level started rising about four months later in well 35 than in well 23 because of the much greater depth to water. The water level in well 41, on the desert plain a few hundred feet from the Queen Creek channel, rose during the first half of the year due to recharge from flood water in the creek. During the last half of the year the water level in well 41 declined gradually as recharge from floods decreased, and the effect of heavy pumping in the irrigated area several miles downstream became apparent. As a result of the unusually wet winter, the farmers were not able to plant their crops as early as usual, and the growing season was prolonged until late in the fall. Also because of the wet season, only 22,920 acre-feet of water were pumped in 1941, as compared with 31,240 acre-feet in 1940. The minimum water level in 1941 was not as low as in 1940. The hydrograph of well 252, located in the center of the pumped area, demonstrates this (see figure 4).

In the northwest portion of the Queen Creek area, near the head of the Roosevelt Water Conservation District Canal, the water table rose during 1941, probably because of recharge from the Salt River. This rise was observed as far south as U. S. Highway 80, and was still moving southward at the end of 1941.

In the following tables water levels are expressed in feet below the measuring point, although levels were run to most of the wells.

Maricopa County--Continued

Well numbers correspond to those in Water-Supply Paper 911.

1. Roosevelt Water Conservation District. NE¼NW¼ sec. 4, T. 1 N., R. 6 E., 100 feet west of Roosevelt Water Conservation District Canal, 3 miles north from U. S. Highway 80, 6 miles northeast from Mesa, Ariz. Unused drilled irrigation well, diameter 20 inches, depth 360 feet. Measuring point, top of 2 by 4-inch plank, south side, 0.15 foot above land surface.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 30	174.56	May 26	172.49	July 31	169.76	Dec. 5	162.23
May 9	173.30	June 12	173.09	Sept. 2	168.98	24	161.54
12	172.94	27 a	172.33	Nov. 4	163.60	31	161.17
20	172.34	27 b	172.19				

3. Elias Hobeeb. NE¼SE¼ sec. 3, T. 1 N., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	234.70	Mar. 25	233.03	May 27 c	232.47	Sept. 3	231.21
Feb. 27	233.72	Apr. 24	232.06	June 27 c	234.34	Nov. 4	(d)

6. Roosevelt Water Conservation District. NE¼NE¼ sec. 9, T. 1 N., R. 6 E. Water levels, in feet below measuring point, 1941: Jan. 21, 184.81; Feb. 27, 183.04; Mar. 25, 181.79; Apr. 24, 180.04.

10. Win Wylie. NW¼NE¼ sec. 15, T. 1 N., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	196.12	May 27	193.30	Sept. 3	195.51	Dec. 24	183.60
Feb. 27	194.39	June 27	196.36	Nov. 4	188.07		

18. J. Assyd. SE¼NE¼ sec. 21, T. 1 N., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	143.96	Apr. 24	138.36	June 27	138.10	Nov. 4	130.35
Feb. 27	141.83	May 27	137.61	Sept. 3	135.46	Dec. 24	126.92
Mar. 25	140.25						

19. E. D. Edwards. NE¼NE¼ sec. 28, T. 1 N., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	(e)	Apr. 24	132.04	July 31	131.54	Nov. 4	125.99
Mar. 26 f	133.76	June 27	131.50	Sept. 2	130.10		

62. Evans Blewett. SW¼SW¼ sec. 21, T. 1 N., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	292.53	Apr. 26	291.99	June 27	292.54	Nov. 6	292.76
Mar. 25	292.17	May 28	291.94	Sept. 3	293.17		

68. Schmitt. NW¼SE¼ sec. 23, T. 1 N., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	302.70	Apr. 26	302.98	July 31	303.06	Dec. 24	303.24
Mar. 28	302.89	May 27	302.56	Nov. 6	303.20		

84. W. A. Anderson. SW¼SE¼ sec. 11, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	175.63	May 28	176.33	July 31	176.00	Nov. 5	176.07
Mar. 27	175.78	June 25	176.10	Sept. 3	176.03	Dec. 23	176.13
Apr. 25	176.01						

a Measured at 11:00 a.m.
b Measured at 5:40 p.m.
c Nearby well pumping.
d Pump installed, couldn't measure.
e Dry.
f Well deepened.

Maricopa County--Continued

87. Mrs. Gardner. NW¼NW¼ sec. 18, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	116.61	Apr. 24	117.03	June 27	117.28	Dec. 24	116.49
Mar. 26	a 116.97	May 26	117.10	Nov. 4	116.16		

89. NE¼SE¼ sec. 18, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	113.75	Apr. 24	113.83	June 25	114.02	Nov. 5	114.27
Mar. 27	113.82	May 26	113.87	Sept. 2	114.17	Dec. 23	114.30

94. "Old Clifford Place". NE¼NE¼ sec. 21, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	126.52	Apr. 25	126.67	June 25	126.80	Nov. 5	127.10
Feb. 28	126.62	May 28	126.74	Sept. 2	126.96	Dec. 23	127.26
Mar. 27	126.67						

100. A. W. Kelly. SW¼SE¼ sec. 25, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	147.90	Apr. 25	148.08	June 25	148.22	Dec. 23	148.75
Mar. 27	148.02	May 28	148.15	Nov. 5	148.60		

101. Gardiner. NE¼SE¼ sec. 25, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 23	162.06	May 28	162.24	Nov. 5	163.64
Mar. 27	162.11	June 25	162.28	Dec. 23	162.74

102. Florence McEntire. NE¼NE¼ sec. 33, T. 1 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 23	115.48	Apr. 25	115.65	June 25	115.86	Nov. 5	116.47
Mar. 27	115.60	May 28	115.74	Sept. 3	116.25	Dec. 23	116.63

125. J. C. Jenkins. NW¼NW¼ sec. 12, T. 1 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	148.74	Apr. 24	144.39	June 27	150.26	Nov. 4	146.90
Feb. 27	146.86	May 26	145.28	Sept. 2	151.14	Dec. 24	141.79
Mar. 26	145.86						

128. Roosevelt Water Conservation District. SE¼SW¼ sec. 14, T. 1 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 20	113.73	Mar. 26	113.13	May 26	112.59	Nov. 4	113.94
Feb. 27	113.36	Apr. 24	112.69	June 26	113.02	Dec. 24	112.00

130. F. Lockhart. SE¼SW¼ sec. 23, T. 1 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 20	90.83	Mar. 26	90.73	May 26	90.09	Nov. 4	89.57
Feb. 27	90.86	Apr. 24	90.18	June 26	90.39	Dec. 23	89.54

a Measuring point changed to top of casing.

Maricopa County--Continued

136. Roosevelt Water Conservation District. NE¼NE¼ sec. 25, T. 1 S., R. 6 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	96.37	Mar. 26	94.14	May 26	92.96	Dec. 23	94.02
Feb. 27	a 94.80	Apr. 24	93.43	Nov. 4	95.54		

151. Roosevelt Water Conservation District. SW¼SE¼ sec. 13, T. 2 S., R. 5 E.

Water level, in feet below measuring point, 1941

Jan. 21	55.80	Mar. 26	53.26	May 26	54.29	Dec. 23	52.70
Feb. 27	55.05	Apr. 24	52.99	Nov. 4	53.24		

155. Harris. SW¼NE¼ sec. 25, T. 2 S., R. 5 E.

Water level, in feet below measuring point, 1941

Jan. 20	35.67	Apr. 24	33.34	July 31	30.43	Nov. 6	31.74
Feb. 27	35.92	May 26	32.76	Sept. 3	30.24	Dec. 23	33.01
Mar. 26	33.32	June 26	30.78				

164. Roosevelt Water Conservation District. SE¼NW¼ sec. 5, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	82.56	Mar. 26	80.52	May 26	82.80	Nov. 4	77.30
Feb. 27	81.35	Apr. 24	79.33	June 26	82.07	Dec. 23	75.64

170. A. Sanford. SE¼SW¼ sec. 3, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 20	90.78	Mar. 27	90.30	May 26	89.78	Nov. 4	90.28
Feb. 27	90.52	Apr. 25	89.94	June 26	90.19	Dec. 23	89.95

177. J. O. Power. SE¼NW¼ sec. 12, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	113.11	Mar. 26	111.69	May 29	111.54	Nov. 6	113.85
Feb. 27	112.20	Apr. 25	111.14	June 25	112.38	Dec. 23	112.51

185. Gephart. SE¼SE¼ sec. 8, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 20	91.76	Apr. 24	87.88	June 26	93.30	Nov. 4	95.74
Feb. 27	89.92	May 26	89.76	Sept. 3	98.29	Dec. 23	93.83
Mar. 26	88.78						

205. A. J. Schlesinger. SE¼SW¼ sec. 24, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 21	105.52	Mar. 26	103.73	Nov. 6	111.39
Feb. 27	104.39	Apr. 25	104.48	Dec. 23	107.42

208. H. O. Backer. SE¼NE¼ sec. 20, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	80.18	Mar. 26	79.10	May 26	b 81.30	Nov. 4	78.23
Feb. 27	79.46	Apr. 24	78.40	June 26	b 83.09	Dec. 23	77.97

a Measuring point changed to 1 inch hole in base of pump near airline, 0.2 foot above land surface.
b Well pumping 300 feet distant.

Maricopa County--Continued

217. Chandler Heights Citrus Growers. SW¼SE¼ sec. 36, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 21	186.26	Apr. 25	184.66	Dec. 23	187.24
Feb. 27	185.42	Nov. 6	189.49		

218. Fitzgerald. SE¼NW¼ sec. 34, T. 2 S., R. 6 E. Water levels, in feet below measuring point, 1941: Apr. 25, 93.55; Nov. 6, 97.31; Dec. 23, 94.31.

221. Roosevelt Water Conservation District. NE¼NE¼ sec. 31, T. 2 S., R. 6 E.

Water level, in feet below measuring point, 1941

Jan. 21	52.53	Mar. 26	49.57	Nov. 4	54.39
Feb. 27	49.92	Apr. 24	51.81	Dec. 23	49.84

252. Barnes. SE¼SE¼ sec. 9, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	136.30	Mar. 26	134.49	Nov. 5	140.41
Feb. 26	135.18	Apr. 25	134.11	Dec. 23	137.36

254. W. J. Germann. SE¼NE¼ sec. 7, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 23	117.04	Mar. 26	115.60	Dec. 23	118.63
Feb. 26	116.19	Nov. 5	122.04		

260. Lawrence Ellsworth. SE¼SE¼ sec. 16, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 21	137.51	Mar. 26	135.03	May 28	138.83
Feb. 26	136.29	Apr. 25	135.34	Dec. 22	139.73

261. Higley Ward School. NW¼NW¼ sec. 15, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 23	135.94	Apr. 25	133.07	Sept. 3	143.11	Dec. 23	136.79
Mar. 26	133.80	June 25	138.19	Nov. 5	139.47		

266. B. P. Hart. NE¼SE¼ sec. 22, T. 2 S., R. 7 E. In large shed, 100 feet south of house, 1 mile southeast from Ellsworth store at Rittenhouse. Used drilled irrigation well, diameter 20 inches, depth 500 feet. Measuring point, top of casing, northwest side, at land surface and 1,421.38 feet above mean sea level. Equipped with turbine and 100 horsepower Diesel motor.

Water level, in feet below measuring point, 1939-41

Date	Water level	Date	Water level	Date	Water level
Sept. 14, 1939	142.08	Apr. 25, 1941	136.95	Nov. 5, 1941	141.55
Oct. 11	140.30	June 26	141.68	Dec. 22.	140.05
Mar. 26, 1941	137.12				

271. Sossaman Bros.. NE¼NE¼ sec. 19, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Jan. 21	129.79	Mar. 26	127.26	Dec. 23	130.64
Feb. 27	128.56	Nov. 6	a 134.82		

a Measuring point raised 0.4 foot.

Maricopa County--Continued

273. Leo Ellsworth. SE¼NE¼ sec. 28, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 21	132.69	Mar. 26	130.14	May 28	133.74
Feb. 26	131.29	Apr. 25	130.68	Dec. 22	135.69

279. Southern Pacific Railroad. SE¼SE¼ sec. 25, T. 2 S., R. 7 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 22	146.17	Mar. 27	144.78	June 26	145.30	Dec. 22	147.03
Feb. 28	145.70	Apr. 23	144.26	Nov. 5	147.20		

Pima County

By H. R. McDonald

Measurements of water levels in Pima County were continued during 1941 by the United States Geological Survey in cooperation with the Arizona State Water Commissioner and the United States Engineer Office, War Department. During the year a total of 576 water-level measurements was made in 90 observation wells in Pima County. Figure 5 shows hydrographs of typical observation wells, total monthly pumpage in Pima and Santa Cruz Counties during 1941, and monthly precipitation at Tucson, Ariz. Well 199 is a shallow dug well about 500 feet north of Rillito Creek, northeast of Tucson. The hydrograph of this well shows a seasonal lowering caused by pumping and transpiration during the growing season, and a rise during the winter and spring caused by recharge from Rillito Creek. Well 256, east of Tucson, is relatively deep and is not near any area of heavy pumping. During 1940 this well showed a small but continual decline caused by pumping in the city of Tucson, but this decline was stopped during 1941 by recharge from the large surface runoff. Well 96 is in an area of heavy pumping for irrigation. It shows recharge from the Santa Cruz River during the winter and spring and a considerable lowering of the water level by increased pumping during the summer. Well 296 is near the Santa Cruz River, four miles south of Tucson. Its hydrograph shows the effects of recharge to the ground water in the winter and spring and of moderate but

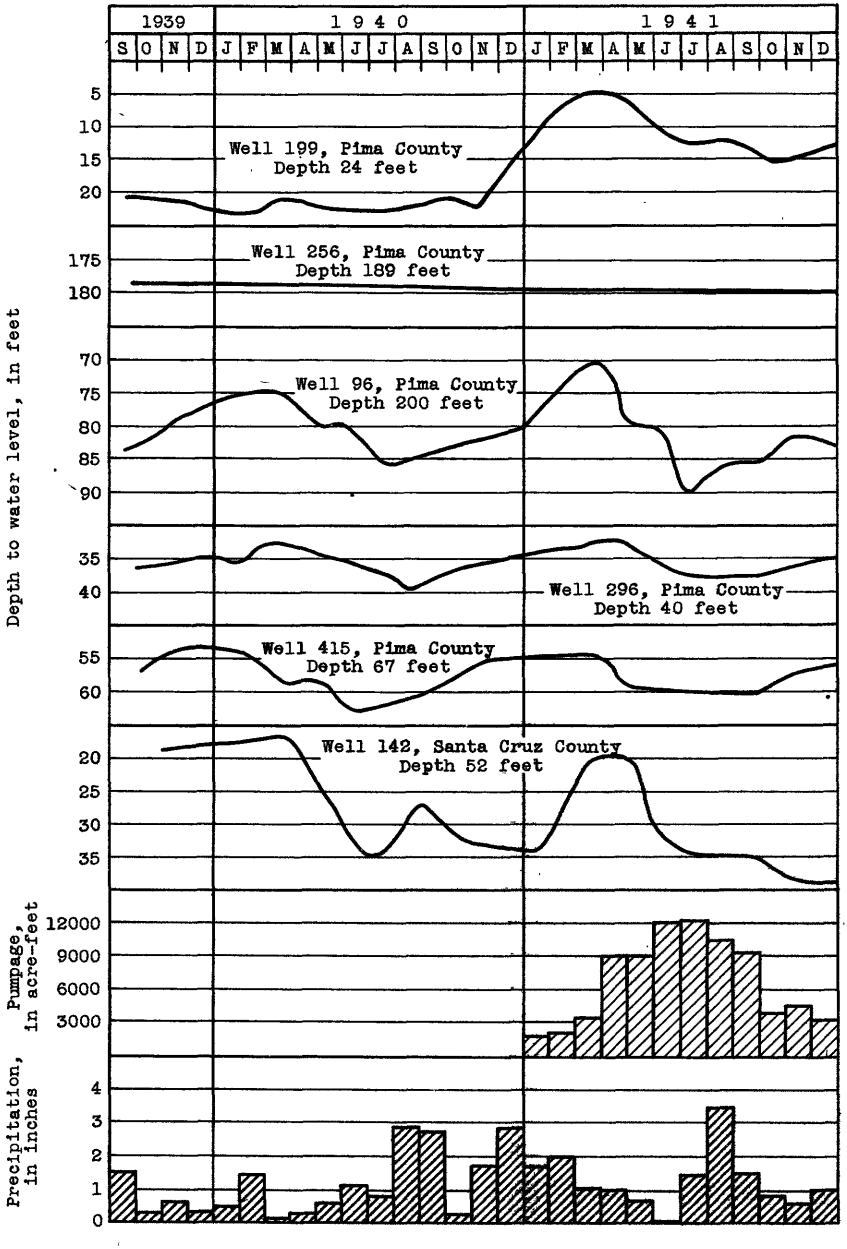

Figure 5.--Graphs showing fluctuations of water level in observation wells in the Santa Cruz Valley, Pima and Santa Cruz Counties, Ariz.

Pima County--Continued.

continuous pumping from wells furnishing water to the city of Tucson. Well 415 is in a heavily pumped region in the vicinity of Sahuarita, and it reflects both recharge and pumping. During the winter of 1940-41 light pumping was continued while recharge was taking place.

The total pumpage in 1941 from the Santa Cruz basin, above the south boundary of Pinal County, was approximately 83,000 acre-feet.

The average water level in 24 observation wells northwest of Tucson showed a rise of 1.75 feet from January 1, 1941, to January 1, 1942. This was probably due to the increased flow of the Santa Cruz River and Rillito Creek during the winter of 1940-41. The average water level of 24 wells south of Tucson showed a decline of 0.85 foot during the same period.

In the following tables water levels are expressed in feet below measuring points. The highest water levels which are given for some of the wells were obtained with maximum-minimum strip recorders.

Well numbers correspond to those in Water-Supply Paper 911.

3. T. J. Smith. SE¼NE¼ sec. 22, T. 11 S., R. 10 E., in galvanized iron shed, 150 feet west of county road, 1.0 mile north of Silver Bell Road. Used drilled irrigation well, diameter 20 inches, depth 600 feet. Measuring point, bottom pump base, north side, 0.9 foot below land surface. Equipped with 170 horsepower diesel engine and turbine pump. Water levels, in feet below measuring point: Feb. 28, 1940, 139.76; Apr. 17, 1940, 140.64.

5. W. E. Anway. SW¼NE¼ sec. 27, T. 11 S., R. 10 E., 50 feet west of frame house, 0.25 mile southwest of Silver Bell Road. Used drilled domestic and stock well, diameter 6 inches, depth 164 feet. Measuring point, top of casing, south side, 1.2 feet above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 17, 1940, 141.96; June 17, 1941, 142.44; Dec. 5, 1941, 142.72.

6. Bud Parker. SE¼SE¼ sec. 36, T. 11 S., R. 10 E., 50 feet southeast of galvanized iron tank, 0.4 mile south of Silver Bell Road at cattle guard, 3.25 miles northwest of intersection with county road. Used drilled stock well, diameter 6 inches, depth 176 feet. Measuring point, top of casing, east side, 1.4 feet above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 17, 1940, 165.23; Dec. 5, 1941, 166.67.

8. T. V. Valenzuela. SE¼ sec. 32, T. 11 S., R. 10 E., 50 feet east of corral, on top of small earth mound, 2 miles west of Silver Bell Road. Used dug domestic and stock well, diameter 36 inches, depth 160 feet. Measuring point, bottom of pump base, south side, 1.4 feet above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 17, 1940, 158.29; June 17, 1941, a/159.28.

a Pumping stopped 2 hours before measurement after one-half hour operation.

Pima County--Continued.

25. Cortaro Farms. NE¼NE¼ sec. 30, T. 11 S., R. 11 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 6	173.93	June 4	173.92	Aug. 18	174.23	Nov. 12	173.80
Mar. 24	173.70	July 11	174.24	Sept.30	174.16	Dec. 26	173.79
Apr. 28	173.82						

81. Cortaro Farms. SE¼SW¼ sec. 31, T. 12 S., R. 13 E. (Previously reported as owned by Gauke.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	89.93	June 4	89.11	Aug. 13	90.87	Nov. 12	90.84
Mar. 24	88.34	July 10	90,79	Sept.30	91.00	Dec. 26	90.93
Apr. 28	88.85						

96. Cortaro Farms. NE¼NW¼ sec. 16, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	75.09	June 4	a 81.70	Aug. 13	86.38	Nov. 12	82.12
Mar. 24	70.87	July 10	a 89.74	Sept.30	85.90	Dec. 26	82.75
Apr. 28	a 78.62						

97. Cortaro Farms. NW¼NW¼ sec. 21, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 6	72.31	June 5	79.79	Aug. 19	82.75	Nov. 13	81.02
Mar. 24	78.84	July 11	86.08	Sept.30	83.06		

98. Cortaro Farms. NE¼SW¼ sec. 21, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 6	70.64	June 5	73.05	Aug. 19	79.30	Nov. 13	74.76
Mar. 24	66.32	July 11	77.67	Sept.30	75.83	Dec. 27	73.66
Apr. 28	71.50						

99. Tucson Light and Power Co. NE¼SE¼ sec. 26, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	67.15	Apr. 28	b 70.28	Aug. 13	73.62	Nov. 12	71.70
Mar. 5	65.20	July 10	b 74.85	Sept.30	72.29	Dec. 26	c 72.45
24	63.00						

101. Adams. NE¼NE¼ sec. 33, T. 12 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 6	117.14	June 5	115.66	Aug. 19	120.86	Nov. 13	121.21
Mar. 24	112.40	July 11	119.09	Sept.30	121.98	Dec. 27	121.09
Apr. 28	113.15						

121. Cortaro Farms. SW¼NE¼ sec. 1, T. 12 S., R. 11 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	(d)	June 4	165.03	Aug. 13	166.44	Nov. 12	166.83
Mar. 24	165.18	July 11	165.88	Sept.30	166.95	Dec. 26	166.85
Apr. 28	169.30						

124. J. E. Glover. SE¼SE¼ sec. 18, T. 12 S., R. 11 E., under derrick, 100 feet west of frame house, 2 miles west of county road, 1.75 miles south of intersection with Silver Bell Road. Used drilled domestic and stock well, diameter 10 inches, depth 218 feet. Measuring point, top of casing, west side 1.1 feet above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Mar. 27, 1940, 190.54; June 13, 1941, 190.47; Dec. 5, 1941, 191.05.

a Heavy pumping for irrigation in this vicinity.
b Well 15 feet southwest pumping.
c Measuring point raised 1.37 feet to top of 2 by 12-inch plank.
d Well dry.

Pima County--Continued.

125. P. Johansen. NE¼NE¼ sec. 29, T. 12 S., R. 11 E., 200 feet south of frame house, 1.35 miles west of county road, 1.5 miles north of Avra school house. Used drilled domestic well, diameter 10 inches, depth 270 feet. Measuring point, bottom of pump base, north side, 1.1 feet above land surface. Equipped with cylinder pump and gas engine. Water levels, in feet below measuring point: Mar. 27, 1940, 228.90; June 13, 1941, 230.34; Dec. 5, 1941, 229.70.

128. S. B. Niles. SW¼SW¼ sec. 34, T. 12 S., R. 11 E., 50 feet southeast of frame house, 150 feet east of county road, 0.5 mile north of Avra school house. Used drilled domestic well, diameter 5 inches, depth 315 feet. Measuring point, top casing, north side, 1.7 feet above land surface. Equipped with windmill. Water levels, in feet below measuring point: Mar. 27, 1940, 301.74; Mar. 1, 1941, 302.13; June 13, 1941, 302.13; Dec. 5, 1941, 302.10.

129-A. T. V. Valenzuela. NE¼ sec. 8, T. 12 S., R. 10 E., 250 feet northeast of adobe house, 4.5 miles southwest of Silver Bell Road. Used dug domestic and stock well, diameter 48 inches, depth 165 feet. Measuring point, bottom of 2 by 12-inch board, east side of pump, 0.5 foot above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 17, 1940, 162.62; June 17, 1941, a/163.42.

130. Harry Alexander. NE¼ sec. 26, T. 12 S., R. 10 E., 250 feet north of adobe house, 5.0 miles southwest of intersection of county road and Silver Bell Road. Used drilled domestic and stock well, diameter 6 inches, depth 210 feet. Measuring point, top of casing, north side, 1.6 feet above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Mar. 27, 1940, 195.47; June 13, 1941, 195.29; Dec. 5, 1941, 195.57.

131. Nourse. NE¼NW¼ sec. 2, T. 13 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 6	65.98	Apr. 28	60.71	July 11	70.98	Dec. 27	70.19
Mar. 24	60.73	June 5	68.26	Nov. 13	69.67		

132. W. A. Knapp. SW¼SW¼ sec. 8, T. 13 S., R. 12 E.

Water level, in feet below measuring point, 1941

Feb. 5	43.70	June 4	40.96	Aug. 13	41.42	Nov. 12	42.22
Mar. 24	40.07	July 10	41.53	Sept.30	42.02	Dec. 26	42.22
Apr. 28	40.88						

133. W. A. Hansen. NE¼NW¼ sec. 12, T. 13 S., R. 12 E.

Water level, in feet below measuring point, 1941

Feb. 6	70.92	June 5	73.23	Aug. 19	73.90	Nov. 13	74.80
Mar. 24	70.58	July 11	75.60	Sept.30	74.65	Dec. 27	74.85

141. Cortaro Farms. NW¼NW¼ sec. 6, T. 13 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 5	73.66	June 4	73.20	Aug. 13	74.81	Nov. 12	75.29
Mar. 24	70.72	July 10	75.76	Sept.30	74.98	Dec. 26	75.08
Apr. 28	73.05						

142. Cortaro Farms. SE¼SE¼ sec. 7, T. 13 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 5	31.66	June 4	29.57	Aug. 13	29.86	Nov. 12	30.98
Mar. 24	28.52	July 10	30.35	Sept.30	30.65	Dec. 26	31.04
Apr. 28	29.18						

a Pumping stopped 2 hours before measurement, after 4 hours operation.

Pima County--Continued.

146. Jaynes Station Irrigation District. NE¼SE¼ sec. 16, T. 13 S., R. 13 E. (Erroneously reported in sec. 17 in Water-Supply Paper 911). Water levels, in feet below measuring point, 1941: Feb. 5, 40.54; Mar. 24, 38.86; Apr. 28, 39.30; Dec. 26, 38.51.

147. Hans Benn. SW¼SE¼ sec. 17, T. 13 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 24	32.56	June 4	31.98	Aug. 13	32.04	Nov. 12	31.34
Apr. 28	31.85	July 10	31.97	Sept.30	32.68	Dec. 26	31.43

154. Ralph Wetmore. NE¼SE¼ sec. 24, T. 13 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 5	24.24	June 3	17.57	Aug. 13	20.73	Nov. 10	22.64
Mar. 24	15.90	July 10	19.86	Sept.29	21.86	Dec. 26	22.92
Apr. 26	14.96						

158. Bruce Knapp. SE¼NE¼ sec. 28, T. 13 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 5	33.44	June 4	a 32.87	Aug. 13	31.88	Nov. 12	31.97
Mar. 24	32.64	July 10	a 32.46	Sept.30	31.65	Dec. 26	31.66
Apr. 28	32.50						

185. J. M. Guss. SE¼SW¼ sec. 21, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Mar. 5	b 8.66	June 3	8.53	Aug. 13	11.09	Nov. 10	13.59
24	7.23	July 10	10.62	Sept.29	12.49	Dec. 26	13.43
Apr. 26	6.81						

187. Courtright Stables. SE¼SE¼ sec. 25, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	6.11	June 3	8.85	Aug. 13	9.05	Nov. 12	11.87
Mar. 24	5.85	July 10	11.09	Sept.29	11.28	Dec. 26	6.18
Apr. 26	6.14						

190. D. Hill. (Previously reported in Water-Supply Paper 911 as Bayliss.) SW¼SE¼ sec. 26, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	0.50	Apr. 26	2.10	Sept.29	7.18	Dec. 26	6.10
Mar. 24	c 1.68	Aug. 13	5.20	Nov. 11	8.45		

192. Glenn Bingham. SE¼SW¼ sec. 27, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	26.56	June 4	d 21.78	Aug. 13	23.52	Nov. 12	26.57
Apr. 26	21.71	July 10	23.42	Sept.29	c 25.13	Dec. 26	25.76

196. Southern Arizona Polo Association. SE¼NW¼ sec. 28, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	6.77	Apr. 26	5.67	Aug. 13	10.64	Nov. 10	12.78
Mar. 5	4.74	June 3	8.80	Sept.29	12.30	Dec. 26	12.11
24	4.19	July 10	10.98				

a Pumping.

b Measuring point raised 7.0 feet to top of vertical 2 by ½-inch steel brace on south side of well, 0.6 foot above land surface.

c Measuring point raised 2.4 feet to top of concrete curb on north side.

d Well pumping 250 feet southeast of well 192.

Pima County--Continued.

197. NE¼SE¼ sec. 28, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	5.90	June 4	7.45	Aug. 13	8.96	Nov. 12	11.78
Mar. 24	4.80	July 10	9.03	Sept.29	10.38	Dec. 26	10.01
Apr. 26	5.20						

199. Southern Arizona Polo Association. NE¼SW¼ sec. 28, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	8.55	Apr. 26	7.52	Aug. 13	12.08	Nov. 10	15.16
Mar. 5	6.57	June 3	10.60	Sept.29	13.98	Dec. 26	13.53
24	6.02	July 10	12.51				

201. Urquidas. SE¼SE¼ sec. 30, T. 13 S., R. 15 E. (Erroneously reported as R. 14 E. in Water-Supply Paper 911).

Water level, in feet below measuring point, 1941

Feb. 5	13.34	June 3	8.41	Aug. 13	9.65	Nov. 12	10.55
Mar. 24	10.20	July 10	9.23	Sept.29	10.44	Dec. 26	9.95
Apr. 26	8.67						

207. F. W. Jordan. NW¼NW¼ sec. 36, T. 13 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 5	22.98	June 4	19.78	Aug. 13	21.07	Nov. 12	23.36
Mar. 24	20.65	July 10	21.03	Sept.29	22.10	Dec. 26	22.66
Apr. 26	19.84						

221. W. G. Boyd. SE¼SE¼ sec. 29, T. 13 S., R. 15 E.

Water level, in feet below measuring point, 1941

Feb. 5	20.27	June 3	19.05	Aug. 13	19.66	Nov. 12	19.96
Mar. 24	19.09	July 10	19.40	Sept.29	20.98	Dec. 26	19.05
Apr. 26	19.07						

222. E. T. Wright. NW¼SW¼ sec. 33, T. 13 S., R. 15 E.

Water level, in feet below measuring point, 1941

Feb. 5	12.43	June 3	10.90	Aug. 13	12.12	Nov. 12	12.90
Mar. 24	9.35	July 10	12.23	Sept.29	13.12	Dec. 26	11.37
Apr. 26	9.04						

223. Crouch. SW¼SE¼ sec. 36, T. 13 S., R. 15 E.

Water level, in feet below measuring point, 1941

Feb. 5	15.43	June 3	a 11.75	Aug. 13	14.86	Nov. 12	21.72
Mar. 24	9.20	July 10	13.47	Sept.29	18.40	Dec. 26	22.18
Apr. 26	10.69						

253. NW¼SE¼ sec. 3, T. 14 S., R. 15 E.

Water level, in feet below measuring point, 1941

Feb. 5	61.05	June 4	56.68	Aug. 13	57.12	Nov. 12	57.48
Mar. 24	58.30	July 10	56.98	Sept.29	57.46	Dec. 26	57.03
Apr. 26	56.77						

255. J. S. Sayres. NW¼SW¼ sec. 6, T. 14 S., R. 16 E. (Erroneously reported as R. 15 E. in Water-Supply Paper 911).

Water level, in feet below measuring point, 1941

Feb. 5	8.44	June 4	7.30	Aug. 13	8.51	Nov. 12	11.63
Mar. 24	7.11	July 10	8.92	Sept.29	10.37	Dec. 26	9.45
Apr. 26	7.05						

a Measuring point lowered 0.2 foot to top concrete curb west side.

Pima County--Continued.

256. Charles Raynard. SW¼SE¼ sec. 7, T. 14 S., R. 15 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5	179.38	June 4	179.45	Aug. 13	179.49	Nov. 12	179.29
Mar. 24	179.37	July 10	179.44	Sept.29	179.41	Dec. 26	179.18
Apr. 26	179.40						

284. O. G. Petrie. NE¼NW¼ sec. 3, T. 14 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 5	27.53	Aug. 13	28.54	Nov. 12	27.99	Dec. 26	27.82
July 10	28.34	Sept.30	27.87		a 26.64		(b)
	a 26.30						

288. A. J. Larm. NE¼SW¼ sec. 14, T. 14 S., R. 13 E. Measurements discontinued.

294. Hal Manning. SW¼SE¼ sec. 34, T. 14 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Feb. 24	c 33.13	Apr. 28	34.05	Nov. 13	35.77
Mar. 25	32.56	Sept.30	37.03	Dec. 29	35.15

296. Hal Manning. SE¼NW¼ sec. 35, T. 14 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	33.02	Apr. 28	32.92	Sept.30	37.30	Dec. 29	35.38
Mar. 25	32.58	July 11	37.65	Nov. 13	36.28		

300. Pima County. NW¼NW¼ sec. 6, T. 14 S., R. 12 E., 25 feet east of adobe shed, 0.15 mile east of Park Headquarters, 10 miles northwest of intersection of Tucson Mountain Park Road with Ajo Road. Used dug domestic well, diameter 48 inches, depth 99 feet. Measuring point, ⅛-inch hole in wood cover, east side of pump, 0.4 foot above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 19, 1940, 94.29; Mar. 1, 1941, 88.00; June 16, 1941, 68.90; Dec. 6, 1941, 69.32.

301. Pima County. NW¼NW¼ sec. 17, T. 14 S., R. 12 E., northeast corner of Pima County Preventorium premises, 0.3 mile west of Tucson Mountain Park Road, 6.5 miles northwest of junction with Ajo Road. Used drilled domestic well, diameter 6 inches, depth 110 feet. Measuring point, top of casing, west side, 0.2 foot above land surface. Equipped with cylinder pump and gasoline engine.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Mar. 15, 1940	78.88	Mar. 1, 1941	71.12	Dec. 6, 1941	72.89
Aug. 12	78.68	June 16	72.19		

302. Pima County. NE¼SW¼ sec. 21, T. 14 S., R. 12 E., on top of small knoll, 1.1 miles west of Tucson Mountain Park Road, 3.8 miles northwest of junction with Ajo Road. Unused dug well, diameter 84 by 60 inches, depth 79 feet. Measuring point, top of 8 by 8-inch post at northeast corner of well cribbing, 1.4 feet above land surface.

a Highest water level in period between tape measurements.
b Measurements discontinued.
c Measuring point lowered 1.14 feet to bottom flange on west I-beam, south side of pump.

Pima County--Continued.

302.--Continued.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Mar. 15, 1940	61.53	Mar. 1, 1941	60.68	June 16	a 58.89
Apr. 18	61.54		a 60.39	Dec. 6	59.87
Aug. 12	60.96	June 16	60.72		

305. J. Burrell. Sec. 10, T. 14 S., R. 10 E. At Corcoraqui Ranch, 0.25 mile north of north boundary of Papago Indian Reservation, 10 miles north of Ajo Highway at intersection with Sasabe Road. Unused dug well, diameter 48 inches, depth 26 feet. Measuring point, top of wood curb, south side, 0.6 foot above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 16, 1940	27.09		a 21.41	Dec. 6, 1941	17.55
Feb. 28, 1941	23.54	June 16, 1941	22.48		

306. J. Burrell. Sec. 10, T. 14 S., R. 10 E. At Corcoraqui Ranch, 0.1 mile north of north boundary of Papago Indian Reservation, 10 miles north of Ajo Highway at intersection with Sasabe Road. Used dug domestic and stock well, diameter 48 inches, depth 38 feet. Measuring point, edge of rock, top curb, southeast side, at land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 16, 1940, 15.26; Feb. 28, 1941, 11.24; June 16, 1941, 11.03; Dec. 6, 1941, 11.88.

307. Frank R. Rendon. SW¼ sec. 24, T. 14 S., R. 10 E., 25 feet east of adobe house, 100 feet south of trail, 7 miles north of Tucson-Ajo Highway. Used drilled domestic and stock well, diameter 8 inches, depth 382 feet. Measuring point, bottom of pump base, south side, 0.7 foot above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Apr. 16, 1940, 308.98; Feb. 28, 1941, 307.20; June 16, 1941, 307.67.

308. Everett Inscho. NE¼NE¼ sec. 29, T. 15 S., R. 10 E., 50 feet east of corral fence, 0.1 mile west of small malpais knoll, 1.7 miles north of Ajo Highway at the five wooden bridges. Used drilled stock well, diameter 4 inches, depth 258 feet. Measuring point, bottom of 3 by 4-inch pipe support, north side, 1.7 feet above land surface. Equipped with windmill. Water levels, in feet below measuring point: Apr. 18, 1940, 147.04; Feb. 28, 1941, 146.89; June 16, 1941, 146.45; Dec. 6, 1941, 148.28.

309. C. W. Van Camp. NW¼SE¼ sec. 33, T. 15 S., R. 10 E., 100 feet west of stucco house, 300 feet north of Ajo Road, 1.0 mile west of junction with Sasabe Road. Used drilled domestic and stock well, diameter 8 inches, depth 186 feet. Measuring point, top of ½-inch hole in timber at southeast corner pump base, 0.4 foot above land surface. Equipped with cylinder pump and gasoline engine.

Water level, in feet below measuring point, 1940-41

Mar. 14, 1940	152.00	Feb. 28, 1941	151.75	Dec. 6, 1941	151.57
Aug. 8	151.83	June 16	151.66		

310. C. W. Van Camp. NE¼NE¼ sec. 35, T. 15 S., R. 10 E. In center of small mound, 150 feet north of Ajo Road, 1.5 miles east of junction with Sasabe Road. Unused drilled well, diameter 6 inches, depth 295 feet. Measuring point, top of casing, east side, 1.5 feet above land surface. Water levels, in feet below measuring point: Mar. 14, 1940, 215.74; Feb. 28, 1941, 215.57; June 16, 1941, 215.49; Dec. 6, 1941, 215.48.

311. H. C. Barker. NE¼SW¼ sec. 1, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	51.78	June 5	53.08	Oct. 1	52.42	Dec. 29	52.35
Apr. 28	52.22	Aug. 14	51.86	Nov. 13	52.30		

a Highest water level in period between tape measurements.

Pima County--Continued.

314. San Xavier School. NE¼NE¼ sec. 15, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	37.66	July 11	38.53	Sept.30	38.76	Dec. 29	38.38
June 5	37.91	Aug. 12	38.67	Nov. 13	38.72		

315. Midvale Farms. SE¼SE¼ sec. 15, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	47.89	June 5	49.01	Sept.30	48.72		a 48.30
Mar. 25	47.51	July 11	48.63		a 48.55	Dec. 29	48.38
Apr. 28	47.65	Aug. 14	48.74	Nov. 13	48.70		

319. U. S. Indian Service, San Xavier Reservation. SE¼NE¼ sec. 22, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	32.78	Apr. 28	33.17		a 33.53		a 33.32
	a 32.24	June 5	33.80	Aug. 14	33.95	Nov. 13	33.44
Mar. 25	32.57	July 11	34.37	Sept.30	33.65	Dec. 29	33.05
	a 32.44						

322. U. S. Indian Service, San Xavier Reservation. SW¼SE¼ sec. 22, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	28.50	Apr. 28	28.52	Aug. 14	29.65	Nov. 13	29.34
	a 28.05	June 5	29.00		a 29.50		a 29.26
Mar. 25	28.24	July 11	29.72	Sept.30	29.72	Dec. 29	28.87

327. U. S. Indian Service, San Xavier Reservation. SW¼SW¼ sec. 23, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	31.22	June 5	36.19	Aug. 15	34.52	Nov. 13	32.26
Mar. 25	30.90	July 11	36.47	Sept.30	33.39	Dec. 29	31.27
Apr. 28	34.66						

328. U. S. Indian Service, San Xavier Reservation. SW¼NE¼ sec. 26, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	23.43	June 5	23.85	Aug. 15	24.00	Nov. 13	24.30
Mar. 25	20.62	July 12	25.56	Sept.30	22.69	Dec. 29	23.90
Apr. 28	22.13						

329. Papago Indian Tribe. NW¼NE¼ sec. 27, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	25.81	June 5	26.20	Aug. 14	26.98	Nov. 13	26.68
Mar. 25	25.58	July 11	27.02	Sept.30	27.10	Dec. 29	26.20
Apr. 28	25.75						

330. U. S. Indian Service, San Xavier Reservation. SE¼SE¼ sec. 27, T. 15 S., R. 13 E.

Water level, in feet below measuring point, 1941

Mar. 25	24.30	June 5	24.04	Aug. 14	24.95	Nov. 13	24.72
Apr. 28	23.30	July 11	24.98	Sept.30	25.03	Dec. 29	24.20

363. NW¼NE¼ sec. 7, T. 16 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 24	41.85	June 6	42.50	Aug. 15	42.19	Nov. 25	42.90
Mar. 25	42.23	July 12	42.65	Oct. 1	42.62	Dec. 29	44.08
Apr. 29	42.30						

a Highest water level in period between tape measurements.

Pima County--Continued.

373. Lane Farms. SE¼SW¼ sec. 31, T. 16 S., R. 14 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 24	48.79	June 6 a	52.48	Aug. 12	59.63	Nov. 13	51.82
Mar. 25	48.21	July 12	58.62	Oct. 1	52.03	Dec. 29	48.88
Apr. 29	50.06						

393. Lane Farms. SE¼NW¼ sec. 13, T. 17 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 24	60.05	June 6	61.67	Aug. 12	63.08	Nov. 13	62.46
Mar. 25	59.78	July 12	62.42	Oct. 1	63.24	Dec. 29	61.59
Apr. 29	60.74						

395. Lane Farms. NW¼NE¼ sec. 25, T. 17 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 25	44.14	June 6	47.85	Aug. 12	50.94	Nov. 13	47.34
Mar. 25	44.60	July 12	49.59	Oct. 1	50.14	Dec. 29	47.95
Apr. 29	47.22						

411. Lane Farms. SE¼NW¼ sec. 6, T. 17 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 24	49.04	June 6	51.24	Aug. 12	53.17	Nov. 13	51.39
Mar. 25	49.76	July 12	52.88	Oct. 1	51.14	Dec. 29	50.20
Apr. 29	50.15						

412. Lane Farms. NW¼NW¼ sec. 7, T. 17 S., R. 14 E. Water levels, in feet below measuring point, 1941: Mar. 25, 51.98; Oct. 1, 56.10; Nov. 13, 55.10; Dec. 29, 53.25.

414. H. B. Minelo. SE¼SW¼ sec. 7, T. 17 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 24	55.70	Apr. 29	60.03	July 12	60.57	Nov. 13	56.27
Mar. 25	56.42	June 6	59.20	Aug. 12	58.41	Dec. 29	57.10

415. Arizona State Highway Department. NE¼SW¼ sec. 18, T. 17 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 24	54.80	June 6	58.64	Aug. 12	60.18	Nov. 13	57.44
Mar. 25	54.72	July 12	59.12	Oct. 1	60.05	Dec. 29	56.12
Apr. 29	58.07						

416. Manuel Olivas. NW¼SW¼ sec. 30, T. 17 S., R. 14 E.

Water level, in feet below measuring point, 1941

Feb. 25	54.20	Apr. 29	61.53	Sept.23	57.84	Dec. 29	56.49
Mar. 25	56.33	June 6	61.68	Nov. 25	56.82		

444. J. B. Bull. NW¼SW¼ sec. 1, T. 18 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Feb. 25	45.35	June 6	47.52	Nov. 25	46.74
Apr. 29	48.05	Sept.23	49.10	Dec. 29	46.84

447. Intercontinental Ranch Co. SE¼NW¼ sec. 13, T. 18 S., R. 13 E. Water level, in feet below measuring point, 1941: Feb. 25, 43.85. Measurements discontinued.

a Intensive pumping from nearby wells in this area.

Pima County--Continued.

451. Owner's No. E2. Intercontinental Ranch Co. SE¼NE¼ sec. 26, T. 18 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 25	39.94	June 6	41.45	Aug. 15	45.19	Nov. 25	42.03
Mar. 25	43.98	July 14	44.20	Sept.23	46.97	Dec. 29	41.90
Apr. 29	41.44						

473. Owner's No. W1. Intercontinental Ranch Co. SW¼NW¼ sec. 3, T. 19 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 25	49.77	Apr. 29	50.28	Aug. 15	53.02	Nov. 25	53.06
Mar. 25	50.26	July 14	a 52.98	Sept.23	53.52	Dec. 30	52.13

474. Hal Manning. NE¼SW¼ sec. 9, T. 19 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 25	28.64	June 6	29.49	Sept. 23	29.58	Dec. 30	29.62
Apr. 29	28.91	Aug. 15	29.66	Nov. 25	30.26		

475. Hal Manning. NW¼SW¼ sec. 16, T. 19 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 25	4.70	July 2	6.00	Sept.23	6.60	Dec. 30	b 7.75
Apr. 29	5.35	Aug. 15	5.63	Nov. 25	7.10		

477. Gustavo Amado. NW¼SW¼ sec. 29, T. 19 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 25	30.26	June 6	31.77	Aug. 15	c 30.84	Nov. 25	31.75
Apr. 30	32.02	July 14	c 32.70	Sept.23	c 32.77	Dec. 30	32.57

479. O. Kinsley. SW¼SW¼ sec. 31, T. 19 S., R. 13 E. Well filled up and measurements discontinued.

Pinal County

By E. M. Cushing

Ninety-seven water-level measurements were made on 11 wells in the Queen Creek area during 1941, and 510 water-level measurements were made in 51 wells in the Casa Grande-Eloy area during 1940 and 1941. The discussion of water-table fluctuations in the 11 wells in the Queen Creek area is included in the section on Maricopa County.

a Measuring point changed to top of 3 by 12-inch timber, 3 feet north of south end of timber at center of well, same elevation as old measuring point.
b Well pumping 250 feet south.
c Pumping.

Pinal County--Continued.

Field work began in the Casa Grande-Eloy area in April 1940 as a part of the investigation of the water resources of the Santa Cruz River basin. Water-level measurements were made at irregular intervals during 1940, and at approximately monthly intervals during 1941. This program will be continued in 1942 with measurements being made less frequently than in 1941, but the number of observation wells will be increased to cover a larger area.

A pumpage inventory was conducted for 1940 and 1941 and will be continued at least through 1942, according to present plans. This inventory includes a record of all water pumped from privately owned wells of the San Carlos Irrigation District and the United States Indian Service, as obtained from their records. In 1940, 372,000 acre-feet of water, and in 1941, 351,000 acre-feet of water were pumped from the ground-water reservoir. Heavy pumping usually begins about the first of March, but above-normal rainfall during the winter and spring of 1941 provided sufficient moisture so that no extensive pumping for irrigation was required before the first of May. About 70 more wells were operated in 1941 than in 1940, and it is probable that, with normal rainfall, the pumpage during the next few years will be much greater than in either 1940 or 1941 as production increases to meet wartime needs. About one-third of the total water pumped during the two years was in a rather small area south of Eloy. This concentrated pumpage has resulted in a very rapid lowering of the water table in the Eloy area where the average ground-water level was 4 feet lower on January 4, 1942, than on January 1, 1941.

The accompanying figure shows hydrographs of typical observation wells and monthly precipitation at Casa Grande Ruins. Well 890, located a few miles northwest from Casa Grande near a section which uses mostly surface water, showed a gradual lowering of the water table from April 1940 until about the middle of 1941, when the water table began to rise and continued to rise throughout the rest of the year. This rise was caused by decreased pumpage and increased recharge to the ground water from canal seepage, irrigation, waste water, and surface runoff in the small desert washes. The water level in well 975, northeast of Casa Grande and on the edge of the San Carlos district, rose toward the end of the year principally because of recovery after heavy pumping in 1940, wher the well was used for irrigation. In 1941 this well was not used, and the hydrograph shows only minor variations due to local pumping and recharge.

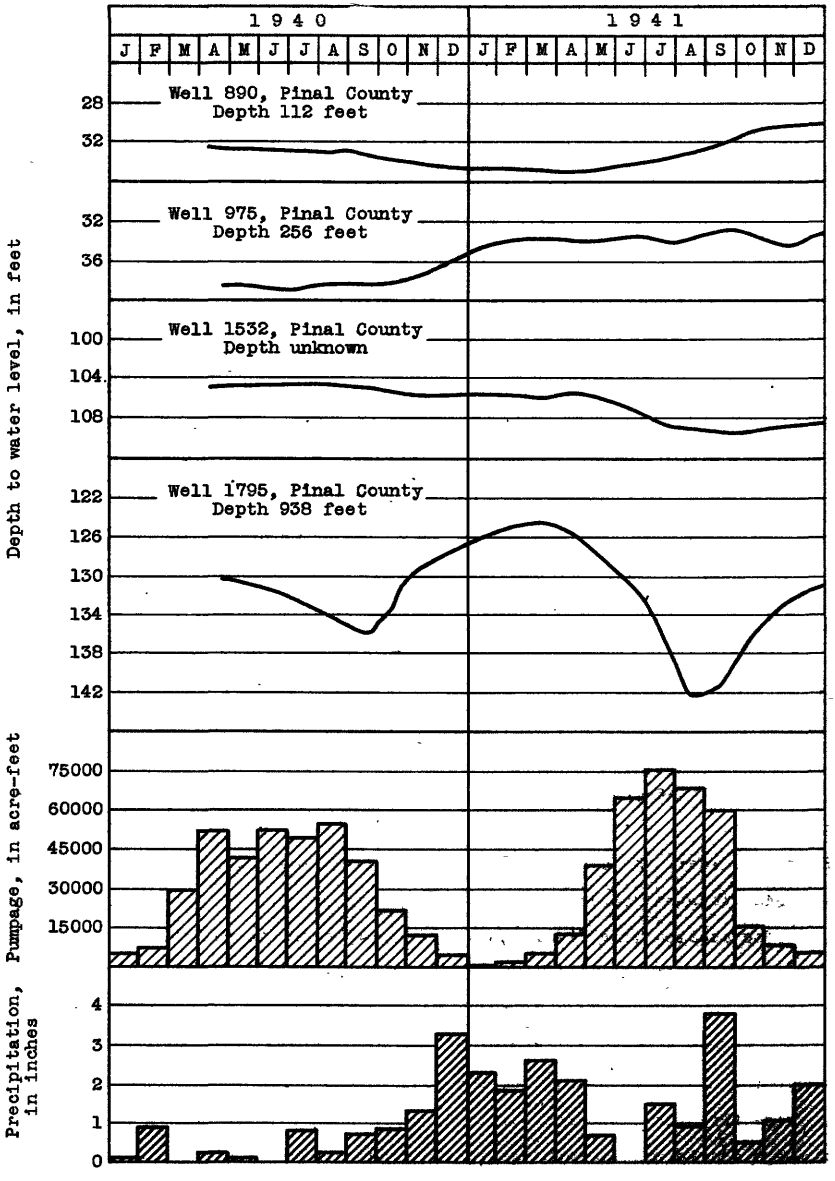

Figure 6.--Graphs showing fluctuations of water level in observation wells in the Casa Grande-Eloy area, Pinal County, Ariz.

Pinal County--Continued.

The water level in well 1532, southwest of Casa Grande and several miles from the San Carlos district, lowered continuously and showed that little recharge occurred in that area and that the water pumped is taken mostly from storage. Well 1795, in the center of the heavily pumped region south of Eloy, showed a rapid lowering of the water level during the pumping seasons in 1940 and 1941. After these seasons the water level partially recovered, but the maximum static water level for each year was several feet lower than the level for the previous year.

Water-level measurements are expressed in feet below measuring point.

Well numbers correspond to those in Water-Supply Paper 911.

1. Rose. SE¼SE¼ sec. 31, T. 1 N., R. 8 E. Water level, in feet below measuring point, 1941: Nov. 6, 271.06.

12. Dobson. SW¼SW¼ sec. 15, T. 1 S., R. 8 E., 30 feet east from large tank, 4 miles southwest from U. S. Highway 80, 6 miles southeast from Apache Junction. Unused drilled well, diameter 6 inches. Measuring point, small hole in top of plank covering casing, 1.0 foot above land surface and 1,582.90 feet above mean sea level.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Jan. 16, 1940	259.40	Sept. 7, 1940	259.73	May 27, 1941	259.92
Feb. 21	259.47	Oct. 22	259.80	June 27	259.90
Apr. 4	259.44	Jan. 24, 1941	259.86	July 31	259.93
May 10	259.58	Mar. 28	259.90	Nov. 6	259.96
June 13	259.52	Apr. 26	259.91	Dec. 31	259.90
July 27	259.60				

22. Hart Mullins. NW¼SE¼ sec. 35, T. 1 S., R. 10 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 22	8.93	Apr. 26	8.17	July 31	9.08	Nov. 3	10.65
Feb. 28	8.13	May 27	9.30	Sept. 2	9.37	Dec. 22	9.10
Mar. 28	8.28	June 28	8.89				

23. Hart Mullins. NW¼SE¼ sec. 35, T. 1 S., R. 10 E.

Water level, in feet below measuring point, 1941

Jan. 22	8.77	Apr. 26	8.00	July 31	8.92	Nov. 3	10.60
Feb. 28	7.94	May 27	9.20	Sept. 2	9.24	Dec. 22	8.95
Mar. 28	8.08	June 28	8.74				

24. Jack Gray. NW¼SW¼ sec. 35, T. 1 S., R. 10 E.

Water level, in feet below measuring point, 1941

Jan. 22	33.83	Apr. 26	30.06	July 31	30.08	Nov. 3	32.83
Feb. 28	30.44	May 27	30.12	Sept. 2	30.37	Dec. 22	29.49
Mar. 28	30.05	June 28	30.53				

32. L. C. Baldwin. SE¼SW¼ sec. 34, T. 1 S., R. 10 E.

Water level, in feet below measuring point, 1941

Jan. 22	7.74	Apr. 26	7.30	July 31	10.38	Nov. 3	14.95
Feb. 28	6.81	May 27	9.57	Sept. 2	12.13	Dec. 22	8.20
Mar. 28	7.52	June 28	12.19				

Pinal County--Continued.

35. E. M. Little. SW¼SW¼ sec. 8, T. 2 S., R. 10 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 24	411.80	Mar. 28	411.90	June 28	411.25	Nov. 3	409.29
Feb. 28	411.92	Apr. 23	411.74	July 31	410.79	Dec. 22	408.11
Mar. 13	411.90	May 27	411.37	Sept. 2	410.03		

36. L. C. Baldwin. SE¼SW¼ sec. 34, T. 1 S., R. 10 E.

Water level, in feet below measuring point, 1941

Jan. 22	13.95	Apr. 26	13.40	July 31	a 16.96	Nov. 3	24.58
Feb. 28	12.19	June 28	17.97	Sept. 2	a 27.42	Dec. 22	13.71
Mar. 28	13.40						

41. Barkley. NW¼SE¼ sec. 27, T. 2 S., R. 8 E.

Water level, in feet below measuring point, 1941

Jan. 22	220.64	Mar. 28	219.46	May 27	218.10	Nov. 5	219.50
Mar. 18	219.90	Apr. 23	218.42	June 26	218.40	Dec. 22	219.77

71. Magma Arizona R. R. NE¼NE¼ sec. 35, T. 3 S., R. 8 E.

Water level, in feet below measuring point, 1941

Jan. 22	149.52	Apr. 25	149.66	June 25	149.93	Nov. 5	150.97
Mar. 27	149.63	May 28	149.77	Sept. 2	150.50	Dec. 22	151.16

278. Arizona Ranches, Inc. SW¼SW¼ sec. 2, T. 4 S., R. 8 E., 0.3 mile northeast of county road, 2 miles south from Magma. Unused drilled irrigation well, diameter 20 inches, depth 237 feet. Measuring point, top of casing, east side, 1.3 feet below land surface and 1,531.78 feet above mean sea level. Water levels, in feet below measuring point, 1941: June 12, 156.66; Aug. 25, 157.09; Nov. 5, 157.50; Dec. 22, 157.81.

801. Jake Stegmeier. SE¼SE¼ sec. 1, T. 6 S., R. 4 E., 400 feet northwest of section marker, 3.0 miles north from State Highway 84, 7.7 miles northwest from Casa Grande. Unused dug well, diameter 48 inches, depth 97 feet. Measuring point, northeast side top of concrete casing, at land surface.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 10, 1940	77.55	Apr. 21, 1941	78.17	Oct. 1, 1941	78.58
Sept.26	77.65	May 22	78.17	30	78.63
Nov. 13	77.91	June 23	78.34	Dec. 1	78.81
Jan. 25, 1941	78.07	July 21	78.54	29	78.82
Mar. 21	78.09	Aug. 26	78.56		

885. P. H. Ethington. SW¼SE¼ sec. 9, T. 6 S., R. 5 E., 30 feet north of fence, 2.0 miles north from State Highway 84, 4.8 miles northwest from Casa Grande. Unused drilled well, diameter 16 inches, depth 106 feet. Measuring point, north side top of casing, 0.4 foot above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 10, 1940	55.80	Apr. 21, 1941	56.84	Oct. 1, 1941	54.49
Sept.26	57.35	May 22	56.91	30	54.20
Nov. 13	57.88	June 23	56.73	Dec. 1	54.67
Jan. 25, 1941	57.52	July 21	56.35	29	54.38
Mar. 21	56.92	Aug. 26	55.59		

a Well had been pumped a short time before measurement.

Pinal County--Continued.

886. Paul Knobloch. SE¼NE¼ sec. 9, T. 6 S., R. 5 E., 30 feet southwest from Casa Grande-Maricopa Highway, 2.7 miles north from State Highway 84, 5.0 miles northwest from Casa Grande. Unused drilled well, diameter 18 inches, depth 149 feet. Measuring point, north side top of casing, at land surface.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 11, 1940	51.88	Apr. 21, 1941	51.72	Oct. 1, 1941	51.96
Sept.26	52.23	May 22	51.64	30	51.94
Nov. 12	52.36	June 23	51.75	Dec. 1	51.74
Jan. 25, 1941	52.27	July 21	51.94	29	51.58
Mar. 21	52.04	Aug. 26	52.01		

887. Paul Knobloch. SE¼NE¼ sec. 9, T. 6 S., R. 5 E., 600 feet southwest from Casa Grande-Maricopa Highway, 2.6 miles north from State Highway 84, 4.9 miles northwest from Casa Grande. Unused drilled well, diameter 20 inches, depth 166 feet. Measuring point, east side top of casing, 1.0 foot above land surface.

Water level, in feet below measuring point, 1940-41

Sept.26, 1940	45.47	May 22, 1941	45.19	Oct. 1, 1941	45.03
Nov. 12	45.65	June 23	45.19	30	44.84
Jan. 25, 1941	45.76	July 21	45.26	Dec. 1	44.64
Mar. 21	45.56	Aug. 26	45.20	29	44.49
Apr. 21	45.30				

890. Mrs. Gus Kratzka. NE¼NE¼ sec. 15, T. 6 S., R. 5 E., 100 feet west from county road, 200 feet north from house, 1.9 miles north from State Highway 84, 3.5 miles northwest from Casa Grande. Unused drilled well, diameter 12 inches, depth 112 feet. Measuring point, top edge of north 6 by 6-inch plank, 0.8 foot above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 11, 1940	32.80	Apr. 21, 1941	34.69	Oct. 1, 1941	31.48
Sept.27	33.45	May 22	34.66	30	30.93
Nov. 12	34.17	June 23	34.32	Dec. 1	30.89
Jan. 25, 1941	34.54	July 21	33.68	29	30.90
Mar. 21	34.65	Aug. 26	32.53		

893. P. H. Ethington. SE¼NE¼ sec. 16, T. 6 S., R. 5 E., 10 feet east from house, 15 feet west from private road, 1.5 miles north from State Highway 84, 4.3 miles northwest from Casa Grande. Unused drilled well, diameter 20 inches, depth 158 feet. Measuring point, south side top of casing, 0.8 foot above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 11, 1940	49.96	Apr. 21, 1941	50.44	Oct. 1, 1941	46.12
Sept.26	51.60	May 22	50.20	30	46.93
Nov. 13	52.30	June 23	47.87	Dec. 1	48.02
Jan. 25, 1941	51.64	July 21	48.77	29	48.17
Mar. 21	50.68	Aug. 26	47.79		

896. P. H. Ethington. SE¼SW¼ sec. 16, T. 6 S., R. 5 E., 25 feet north from private road, 1.0 mile north from State Highway 84, 4.7 miles northwest from Casa Grande. Used drilled irrigation well, diameter 20 inches. Measuring point, north side bottom of pump base, 0.3 foot above land surface. Equipped with turbine pump and 60 horsepower natural gas engine.

Water level, in feet below measuring point, 1940-41

Apr. 10, 1940	66.45	Mar. 21, 1941	64.83	Oct. 30, 1941	67.19
Sept.26	68.14	Apr. 21	65.61	Dec. 29	66.97
Nov. 13	71.05				

Pinal County--Continued.

901. P. H. Ethington. NE¼SW¼ sec. 22, T. 6 S., R. 5 E., 15 feet north from private road, 0.5 mile north from State Highway 84, 3.5 miles west from Casa Grande. Used drilled irrigation well, diameter 20 inches. Measuring point, south side bottom of pump base, at land surface. Equipped with turbine pump and 60 horsepower natural gas engine.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 10, 1940	59.30	Mar. 21, 1941	56.07	Oct. 30, 1941	59.90
Sept.26	61.27	Apr. 21	57.37	Dec. 29	56.40
Jan. 25, 1941	58.81				

905. P. H. Ethington. SE¼SE¼ sec. 22, T. 6 S., R. 5 E., 20 feet north from house, 200 feet north from State Highway 84, 3.0 miles west from Casa Grande. Unused drilled well, diameter 16 inches. Measuring point, lower edge of discharge pipe, 2.0 feet above land surface. Equipped with turbine pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 11, 1940	a 60.08	Apr. 21, 1941	55.08	Oct. 1, 1941	a 55.90
Sept.27	a 62.37	May 22	a 59.02	30	a 55.75
Nov. 13	a 62.60	June 23	a 59.98	Dec. 1	51.65
Jan. 25, 1941	55.98	July 21	a 58.95	29	49.55
Mar. 21	53.68	Aug. 26	a 55.77		

907. Burris Brothers. SE¼SE¼ sec. 23, T. 6 S., R. 5 E., 30 feet northeast from house, 200 feet north from State Highway 84, 2.0 miles west from Casa Grande. Unused dug well, diameter 48 inches. Measuring point, northwest side top of casing, at land surface. Equipped with cylinder pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 12, 1940	42.04	Apr. 21, 1941	41.76	Oct. 1, 1941	35.70
Sept.27	a 45.82	May 22	a 44.14	31	34.87
Nov. 13	44.15	June 23	a 43.42	Dec. 1	34.78
Feb. 1, 1941	42.67	July 21	38.70	29	34.81
Mar. 21	42.07	Aug. 26	a 39.46		

915. United States Indian Service. NE¼NE¼ sec. 36, T. 6 S., R. 5 E., 10 feet west from canal, 30 feet south from county road, 1.0 mile south from State Highway 84, 1.5 miles southwest from Casa Grande. Used irrigation well, diameter 20 inches, depth 114 feet. Measuring point, west side bottom of flange, 1.6 feet above land surface. Equipped with turbine pump and 25 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 20, 1940	37.85	Nov. 13, 1940	41.98	Mar. 21, 1941	41.10
Sept.27	41.64	Feb. 1, 1941	41.53		

961. Floyd Smith. NE¼NE¼ sec. 7, T. 6 S., R. 6 E., 500 feet west of State Highway 187, 0.5 mile north from branch of Santa Cruz Wash, 3.0 miles north from Casa Grande. Unused drilled well, diameter 16 inches. Measuring point, lower edge of discharge pipe, 1.6 feet above land surface. Equipped with turbine pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 9, 1940	29.82	Apr. 22, 1941	30.50	Oct. 3, 1941	31.38
Sept.27	30.88	May 23	30.73	31	30.87
Nov. 13	30.94	June 24	31.19	Dec. 2	30.72
Feb. 1, 1941	30.37	July 28	31.40	29	30.39
Mar. 21	30.12	Aug. 27	31.65		

a Well pumping 300 feet distant.

Pinal County--Continued.

965. J. J. Kirkland. SW¼NW¼ sec. 8, T. 6 S., R. 6 E., 30 feet east from house, 300 feet east from State Highway 187, 0.1 mile north from branch of Santa Cruz Wash, 2.6 miles north from Casa Grande. Unused dug well, diameter 60 inches. Measuring point, southeast side top of casing, 0.2 foot above land surface. Equipped with cylinder pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 13, 1940	21.16	Apr. 22, 1941	20.99	Oct. 3, 1941	21.88
Sept.27	21.90	May 23	21.15	31	21.97
Nov. 13	22.14	June 24	21.26	Dec. 2	21.82
Feb. 1, 1941	21.79	July 28	21.58	29	21.66
Mar. 21	21.28	Aug. 27	21.64		

967. E. E. Rosenberry. SE¼SW¼ sec. 10, T. 6 S., R. 6 E., 75 feet north from fence, 2.5 miles east from State Highway 187, 4.4 miles northeast from Casa Grande. Unused drilled well, diameter 16 inches. Measuring point, north side top of 12-inch iron ring, at land surface.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 17	32.54	July 21	32.69	Oct. 2	32.80	Dec. 2	32.89
24	32.46	Aug. 27	32.87	31	32.83	29	32.87

968. C. E. Sherrill. SE¼SW¼ sec. 13, T. 6 S., R. 6 E., 50 feet southeast from house, 1.0 mile north from Casa Grande-Coolidge Highway, 4.6 miles northeast from Casa Grande. Used dug and drilled irrigation well, diameter 72 inches to depth of 43 feet, from 43 feet to 124 feet, diameter 16 inches. Measuring point, top edge of west 8 by 8-inch plank, 0.67 foot above land surface. Equipped with turbine pump and 50 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 17, 1940	41.43	Mar. 22, 1941	38.36	Oct. 2, 1941	41.57
Sept.27	42.67	May 22	41.42	31	40.78
Feb. 3, 1941	38.73	Aug. 26	42.67	Dec. 29	39.94

970. D. H. Prettyman. SE¼SE¼ sec. 14, T. 6 S., R. 6 E., 50 feet west from canal storm drain, 1.0 mile north from Casa Grande-Coolidge Highway, 4.2 miles northeast from Casa Grande. Unused dug well, diameter 60 inches, depth 35 feet. Measuring point, west side top of curb, at land surface.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 17, 1940	33.98	Apr. 22, 1941	32.49	Oct. 2, 1941	31.77
Sept.27	34.58	May 22	33.13	31	32.74
Nov. 13	34.80	June 23	33.17	Dec. 2	33.39
Feb. 2, 1941	33.90	July 21	32.64	29	33.26
Mar. 22	32.64	Aug. 26	31.72		

975. Gilbert Brothers. SE¼SE¼ sec. 17, T. 6 S., R. 6 E., 50 feet east from house, 40 feet north from fence, 1.0 mile east from State Highway 187, 1.5 miles northeast from Casa Grande. Used dug and drilled irrigation well, diameter 72 inches to depth of 38 feet, from 38 feet to 256 feet diameter 16 inches. Measuring point, top of east railroad rail, 0.2 foot above land surface. Equipped with turbine pump and 37 horsepower John Deere engine.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 17, 1940	38.26	Apr. 22, 1941	34.01	Oct. 1, 1941	33.77
Nov. 13	37.87	May 23	33.55	31	33.73
Feb. 3, 1941	34.52	June 24	33.56	Dec. 2	34.49
Mar. 22	34.20	July 28	34.77	30	33.84

Pinal County--Continued.

977. Mrs. Henry Botts. SE¼NE¼ sec. 17, T. 6 S., R. 6 E., 20 feet southwest from house, 0.3 mile east from State Highway 187, 2.0 miles northeast from Casa Grande. Used dug domestic and stock well, diameter 40 inches, depth 30 feet. Measuring point, southwest corner of wood curb, at land surface. Equipped with hand pump.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 17, 1940	28.18	Apr. 22, 1941	28.40	Oct. 1, 1941	28.09
Sept.27	29.13	May 23	a 28.34	31	28.27
Nov. 13	29.33	June 24	28.02	Dec. 2	28.37
Feb. 3, 1941	28.79	July 28	27.99	30	28.28
Mar. 22	28.60	Aug. 27	28.08		

981. Gilbert Brothers. SE¼SE¼ sec. 20, T. 6 S., R. 6 E., At west end of galvanized iron shed, 250 feet northwest from house, 1.0 mile east from State Highway 187, 1.0 mile east from Casa Grande. Used dug and drilled irrigation well, diameter 96 inches to depth of 47 feet, from 47 feet to 150 feet, diameter 16 inches. Measuring point, top edge of east 2 by 4-inch plank, 0.2 foot above land surface. Equipped with turbine pump and 25 horsepower electric motor.

Water level, in feet below measuring point, 1941

Feb. 3	44.00	Oct. 2	50.15	Dec. 2	44.50
Mar. 22	43.34	31	48.20	29	43.57

991. Mrs. Emma Pennington. SE¼SE¼ sec. 25, T. 6 S., R. 6 E., 40 feet southeast from house, 1.0 mile south from Casa Grande-Coolidge Highway, 5.0 miles southeast from Casa Grande. Used drilled domestic well, diameter 18 inches. Measuring point, west side top of 12-inch concrete casing, 2.4 feet above land surface. Equipped with rope and bucket.

Water level, in feet below measuring point, 1940-41

Apr. 18, 1940	41.40	Apr. 22, 1941	43.61	Oct. 1, 1941	44.36
Sept.27	44.62	May 22	43.90	31	43.51
Nov. 13	45.22	June 24	43.87	Dec. 1	42.97
Feb. 2, 1941	44.07	July 21	44.50	29	42.70
Mar. 22	43.61	Aug. 26	44.60		

995. United States Indian Service. SW¼SW¼ sec. 26, T. 6 S., R. 6 E., 10 feet east from canal, 200 feet southeast from house, 1.0 mile south from Casa Grande-Coolidge Highway, 3.2 miles southeast from Casa Grande. Used drilled irrigation well, diameter 20 inches, depth 116 feet. Measuring point, west edge of one-inch hole in east side of flange, 1.6 feet above land surface. Equipped with turbine pump and electric motor.

Water level, in feet below measuring point, 1940-41

Apr. 20, 1940	42.23	Feb. 3, 1941	44.56	May 22, 1941	43.50
Sept.27	44.21	Mar. 22	44.10	June 24	43.47
Nov. 13	44.87	Apr. 22	43.85	July 21	43.24

1066. Diwan Singh. SE¼SW¼ sec. 22, T. 6 S., R. 7 E., 40 feet west from canal, 0.5 mile north from Casa Grande-Coolidge Highway, 8.5 miles east from Casa Grande, 8.3 miles southwest from Coolidge. Used drilled irrigation well, diameter 20 inches, depth 329 feet. Measuring point, top of ⅛-inch hole in east side pump base, 0.6 foot above land surface. Equipped with turbine pump and 60 horsepower electric motor.

Water level, in feet below measuring point, 1939-41

Mar. 10, 1939	b 42.67	July 14, 1941	67.30	Dec. 2, 1941	54.23
Feb. 29, 1940	b 49	Oct. 1	61.13	29	53.24
May 6	b 56	31	55.77		

a Well had been pumped recently.
b Measured by driller.

Pinal County--Continued.

1118. Dick Shiflet. Lot 9, NE¼ sec. 4, T. 6 S., R. 8 E., 100 feet north from fence, 200 feet west from State Highway 87, 3.4 miles south from Coolidge. Used drilled irrigation well, diameter 20 inches, depth 218 feet. Measuring point, top of ⅛-inch hole in north side pump base, 2.1 feet above land surface. Equipped with turbine pump and 100 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 19, 1940	54.68	Jan. 24, 1941	54.95	Dec. 2, 1941	57.01
Sept.26	60.01	Mar. 22	53.59	29	55.24
Nov. 12	58.74	Oct. 31	61.56		

1413. F. W. Shedd. NE¼SW¼ sec. 19, T. 7 S., R. 7 E., 250 feet southwest from house, 1.3 miles southwest from State Highway 84, 2.6 miles west of Toltec. Unused drilled well, diameter 16 inches, depth 200 feet. Measuring point, top of 3/4-inch hole in east side pump base, 1.0 foot above land surface. Equipped with turbine pump.

Water level, in feet below measuring point, 1940-41

Nov. 13, 1940	70.26	May 23, 1941	70.88	Oct. 3, 1941	72.39
Feb. 3, 1941	70.20	June 24	72.94	31	71.74
Mar. 24	70.31	July 28	75.51	Dec. 2	71.74
Apr. 22	70.57	Aug. 27	75.36	30	71.86

1414. F. W. Shedd. SW¼SE¼ sec. 19, T. 7 S., R. 7 E. At east end of old galvanized iron shed, 0.1 mile north from fence, 0.3 mile west from fence, 1.4 miles southwest from State Highway 84, 2.3 miles west of Toltec. Used drilled irrigation well, diameter 16 inches, depth 200 feet. Measuring point, top of 3/4-inch hole in west side pump base, 0.3 foot above land surface. Equipped with turbine pump and John Deere engine.

Water level, in feet below measuring point, 1940-41

Nov. 13, 1940	71.63	May 23, 1941	72.23	Oct. 31, 1941	73.40
Feb. 3, 1941	71.16	June 24	75.27	Dec. 2	73.17
Mar. 24	71.14	Oct. 3	74.38	30	73.13
Apr. 22	71.69				

1421. F. W. Shedd. SW¼NW¼ sec. 27, T. 7 S., R. 7 E., 30 feet west from fence, 0.2 mile southwest from State Highway 84, 0.5 mile southeast from Toltec. Used drilled irrigation well, diameter 24 inches, depth 300 feet. Measuring point, northeast side top of casing, at land surface. Equipped with turbine pump and 75 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Apr. 24, 1940	79.07	Feb. 3, 1941	80.14	Apr. 22, 1941	79.84
Sept.28	80.88	Mar. 24	79.92	Dec. 30	83.84

1422. D. S. Cramer. SE¼SW¼ sec. 29, T. 7 S., R. 7 E., 50 feet east from old foundation for house in grove of trees, 1.7 miles southwest from State Highway 84, 1.8 miles southwest from Toltec. Unused drilled well, diameter 24 inches. Measuring point, north side top of casing, at land surface.

Water level, in feet below measuring point, 1941

Aug. 12	82.85	Oct. 3	83.12	Dec. 2	82.29
27	82.54	31	82.64	30	82.20

1476. D. A. Trekell. NE¼SE¼ sec. 7, T. 7 S., R. 6 E., 20 feet east from house, 40 feet west from county road, 3.7 miles south from Casa Grande. Used dug domestic well, diameter 48 inches, depth 46 feet. Measuring point, north side top of wood curb, 2.9 feet above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 16, 1940	40.38	Apr. 21, 1941	43.56	Oct. 1, 1941	42.34
Sept.27	42.85	May 22	43.49	30	42.35
Nov. 13	43.49	June 23	43.42	Dec. 1	42.09
Feb. 1, 1941	43.82	July 21	43.27	29	41.86
Mar. 21	43.65	Aug. 26	43.09		

Pinal County--Continued.

1479. Paul Brophy. SW¼SW¼ sec. 12, T. 7 S., R. 6 E., 50 feet north from fence, 0.2 mile east from fence, 0.5 mile southwest from State Highway 84, 1.1 miles south from Arizola. Unused drilled well, diameter 16 inches. Measuring point, one-inch hole east side pump base, 0.2 foot above land surface. Equipped with turbine pump.

Water level, in feet bslow measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Aug. 12	61.35	Oct. 3	61.44	Dec. 2	60.80
27	61.36	31	61.13	30	60.59

1483. N. H. Hanson. SE¼SE¼ sec. 17, T. 7 S., R. 6 E., 1.0 mile east of county road, 3.3 miles southwest from State Highway 84, 5. 1 miles south from Casa Grande. Unused dug well, diameter 54 inches, depth 53 feet. Measuring point, south side top of casing, 1.5 feet above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 16, 1940	47.31	Apr. 21, 1941	49.10	Oct. 1, 1941	49.61
Sept.27	48.21	May 22	49.17	30	49.57
Nov. 13	48.50	June 23	49.29	Dec. 1	49.60
Feb. 1, 1941	48.83	July 21	49.42	29	49.59
Mar. 21	48.97	Aug. 26	49.52		

1485. F. W. Shedd. SE¼SE¼ sec. 27, T. 7 S., R. 6 E., 20 feet southwest from circular adobe ruin, 4.1 miles south from Arizola, 7.6 miles southeast from Casa Grande. Unused drilled irrigation well, diameter 16 inches. Measuring point, south side top of casing, 0.4 foot below land surface. Equipped with turbine pump.

Water level, in feet below measuring point, 1940-41

Apr. 9, 1940	56.71	Apr. 21, 1941	57.68	Oct. 1, 1941	60.16
Sept.27	58.03	May 22	57.83	30	59.99
Nov. 13	58.11	June 23	58.43	Dec. 1	59.85
Feb. 1, 1941	57.80	July 21	59.03	27	59.56
Mar. 21	57.62	Aug. 26	59.64		

1532. Phoenix Church of Brethren. SE¼NE¼ sec. 7, T. 7 S., R. 5 E., 500 feet southwest from adobe ruin, 3.5 miles south from State Highway 84, 7.1 miles southwest from Casa Grande. Unused drilled well, diameter 12 inches. Measuring point, south side top of casing, 2.0 feet below land surface.

Water level, in feet below measuring point, 1940-41

Apr. 12, 1940	105.37	Apr. 21, 1941	105.98	Oct. 1, 1941	109.74
Sept.26	105.60	May 22	106.30	30	109.40
Nov. 12	105.67	June 23	107.90	Dec. 1	109.17
Jan. 25, 1941	105.78	July 21	108.91	29	109.07
Mar. 21	105.99	Aug. 26	109.94		

1533. Southern Arizona Bank and Trust Co. SW¼NW¼ sec. 8, T. 7 S., R. 5 E., on small mound, 300 feet east from adobe ruin, 3.4 miles south from State Highway 84, 6.9 miles southwest from Casa Grande. Unused drilled well, diameter 12 inches. Measuring point, north side top of casing, at land surface.

Water level, in feet below measuring point, 1940-41

Apr. 12, 1940	110.53	Apr. 21, 1941	110.38	Oct. 1, 1941	113.53
Sept.26	110.08	May 22	110.32	30	113.62
Nov. 12	109.92	June 23	111.10	Dec. 1	113.52
Jan. 25, 1941	110.10	July 21	111.87	29	113.43
Mar. 21	110.50	Aug. 26	112.75		

Pinal County--Continued.

1716. Smith-Thornburg Co. SW¼NE¼ sec. 29, T. 8 S., R. 6 E., 0.7 mile northeast from ranch headquarters, 4.5 miles southeast from Chuechu, 12.7 miles south from Casa Grande. Unused drilled well, diameter 20 inches, depth 282 feet. Measuring point, east side top of casing, 0.8 foot above land surface.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Sept.12	64.69	Oct. 29	64.80	Dec. 29	65.03
30	64.77	Dec. 1	65.01		

1775. S. C. Milligan. SE¼NE¼ sec. 9, T. 8 S., R. 7 E., 100 feet west from house, 200 feet west from county road, 3.5 miles south from Toltec, 4.1 miles west from Eloy. Used drilled irrigation well. Measuring point, plug in southeast side of pump, 0.4 foot above land surface. Equipped with turbine pump and John Deere engine. Casing pulled and well filled in, March 1941; measurements continued on well 1776. Water levels, in feet below measuring point: Apr. 24, 1940, 99.78; Sept. 28, 1940, 99.59; Nov. 14, 1940, 96.74; Feb. 3, 1941, 95.52.

1776. S. C. Milligan. SE¼NE¼ sec. 9, T. 8 S., R. 7 E., 150 feet southwest from house, 200 feet west from county road, 3.5 miles south from Toltec, 4.1 miles west from Eloy. Used drilled irrigation well, diameter 20 inches, depth 418 feet. Measuring point, plug in east side of pump, 1.0 foot above land surface. Equipped with turbine pump and 115 horsepower diesel engine.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 24	94.56	July 28	115.47	Nov. 1	102.01	Dec. 30	99.50
Apr. 22	96.53	Oct. 3	106.98	Dec. 2	100.47		

1786. Kenneth Hodgeman. SE¼NE¼ sec. 15, T. 8 S., R. 7 E. South end of transient camp, 40 feet west from county road, 3.4 miles southwest from Eloy, 4.7 miles south from Toltec. Used drilled irrigation well, diameter 20 inches, depth 400 feet. Measuring point, one-inch hole in east side of pump base, 0.5 foot above land surface. Equipped with turbine pump and diesel engine.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 25, 1940	119.90	Mar. 24, 1941	104.95	Oct. 4, 1941	122.10
Sept.28	121.98	Apr. 22	108.97	Nov. 1	115.25
Nov. 14	109.09	May 23	126.12	Dec. 2	112.85
Feb. 3, 1941	105.75	July 28	134.63	30	111.43

1787. Sam Phillips. SE¼SE¼ sec. 15, T. 8 S., R. 7 E., 40 feet southeast from house, 10 feet west from fence, 3.6 miles southwest from Eloy, 5.2 miles south from Toltec. Used drilled irrigation well, diameter 20 inches. Measuring point, one-inch hole in north side pump base, 2.0 feet above land surface. Equipped with turbine pump and diesel engine.

Water level, in feet below measuring point, 1940-41

Apr. 25, 1940	108.90	Feb. 3, 1941	106.44	Oct. 4, 1941	117.30
Sept.28	112.55	Apr. 22	108.90	Dec. 30	111.41
Nov. 14	108.28				

1791. S. G. Wilson. SE¼NE¼ sec. 22, T. 8 S., R. 7 E. At east end of transient camp, 40 feet west from county road, 4.0 miles southwest from Eloy, 5.7 miles south from Toltec. Used drilled irrigation well, diameter 20 inches. Measuring point, one-inch hole in west side pump base, 1.1 feet above land surface. Equipped with turbine pump and 100 horsepower electric motor.

Pinal County--Continued.

1791.--Continued.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 24, 1940	114.53	Mar. 24, 1941	108.60	Nov. 1, 1941	115.35
Sept.28	119.35	July 28	125.37	Dec. 2	114.57
Nov. 14	110.12	Oct. 4	121.36	30	113.23
Feb. 3, 1941	108.65				

1795. Jack Pretzer, Jr. SE¼SE¼ sec. 25, T. 8 S., R. 7 E. At north end of transient camp, 40 feet west from county road, 4.2 miles south from Eloy, 7.7 miles southeast from Toltec. Used drilled irrigation well, diameter 20 inches, depth 938 feet. Measuring point, one-inch hole in east side pump base, 0.4 foot above land surface. Equipped with turbine pump and 150 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Apr. 25, 1940	130.01	Mar. 24, 1941	124.87	Oct. 4, 1941	139.84
Sept.28	136.29	Apr. 22	126.84	Nov. 1	134.60
Nov. 14	128.66	May 23	131.92	Dec. 3	132.88
Feb. 4, 1941	125.79	July 28	142.35	31	131.67

1798. F. W. Shedd. SE¼SE¼ sec. 33, T. 8 S., R. 7 E., 75 feet west from county road, 6.5 miles southwest from Eloy, 8.0 miles south from Toltec. Unused drilled well, diameter 12 inches. Measuring point, north side top of casing, 0.8 foot above land surface.

Water level, in feet below measuring point, 1940-41

Apr. 25, 1940	104.21	Apr. 22, 1941	108.28	Oct. 4, 1941	111.77
Sept.28	106.98	May 23	108.44	Nov. 1	112.02
Nov. 14	107.54	June 24	109.08	Dec. 3	112.51
Feb. 4, 1941	107.94	July 28	109.93	30	112.69
Mar. 24	107.96	Aug. 27	110.71		

1880. Jack Pretzer, Sr. SE¼NE¼ sec. 31, T. 8 S., R. 8 E., 40 feet south of camp, 40 feet west from improved county road, 300 feet northeast from cotton gin, 4.5 miles south from Eloy. Used drilled irrigation well, diameter 20 inches. Measuring point, north side bottom of flange, 0.3 foot above land surface. Equipped with turbine pump and 125 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Apr. 26, 1940	144.83	Mar. 24, 1941	138.04	Nov. 1, 1941	147.98
Sept.28	150.85	Apr. 22	138.57	Dec. 3	145.62
Nov. 14	143.06	Oct. 4	155.01	31	144.30
Feb. 3, 1941	139.40				

1884. Jack Pretzer, Sr. SE¼SW¼ sec. 33, T. 8 S., R. 8 E., 40 feet north from county road, 150 feet south of camp, 3.2 miles southwest from Picacho, 5.3 miles southeast from Eloy. Used drilled irrigation well, diameter 20 inches. Measuring point, one-inch hole in west side pump base, 0.2 foot above land surface. Equipped with turbine pump and 150 horsepower electric motor.

Water level, in feet below measuring point, 1940-41

Apr. 25, 1940	141.33	Apr. 22, 1941	136.43	Nov. 1, 1941	146.07
Sept.28	147.28	May 23	141.77	Dec. 3	143.82
Feb. 3, 1941	137.62	Oct. 4	150.09	31	142.83
Mar. 24	136.69				

2097. Jack Pretzer, Sr. SE¼SE¼ sec. 8, T. 9 S., R. 8 E., 40 feet north of county road, 50 feet south from camp, 5.3 miles southwest from Picacho, 7.3 miles south from Eloy. Used drilled irrigation well, diameter 20 inches. Measuring point, one-inch hole in west side pump base, 1.6 feet above land surface. Equipped with turbine pump and 150 horsepower electric motor.

Pinal County--Continued.

2097.--Continued.

Water level, in feet below measuring point, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 26, 1940	150.87	Mar. 24, 1941	146.31	Nov. 1, 1941	159.10
Sept.28	159.49	Apr. 22	147.15	Dec. 3	157.44
Nov. 14	151.77	June 24	160.83	31	155.59
Feb. 3, 1941	147.70	Oct. 4	164.30		

2104. P. G. Wolfe. SE¼NE¼ sec. 20, T. 9 S., R. 8 E., 30 feet south of red tank, 1.0 mile east of cotton gin, 6.7 miles southwest from Picacho, 8.8 miles south from Eloy. Used drilled irrigation well, diameter 20 inches, depth 500 feet. Measuring point, one-inch hole in west side pump base, 0.6 foot above land surface. Equipped with turbine pump and 250 horsepower diesel engine.

Water level, in feet below measuring point, 1940-41

Apr. 26, 1940	158.25	Mar. 24, 1941	151.54	Nov. 1, 1941	164.30
Nov. 14	155.63	Apr. 22	153.63	Dec. 3	161.94
Feb. 3, 1941	152.26	Oct. 4	171.47	31	160.60

2311. J. C. Kinney. NW¼ sec. 3, T. 10 S., R. 7 E., 10 feet east from corral, 20 feet north from storage tank, 100 feet northwest from house, 12.3 miles southwest from Eloy, 14.5 miles south from Toltec. Used drilled stock well. Measuring point, plug in west side pump, 1.5 feet above land surface. Equipped with windmill.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 8	99.66	Aug. 28	100.30	Nov. 3	98.64	Dec. 30	98.21
29	100.07	Oct. 3	100.67	Dec. 3	98.34		

2314. Roland Curry. NE¼NE¼ sec. 7, T. 10 S., R. 7 E., 300 feet south from county road, 400 feet southwest from school, 15.5 miles southwest from Toltec, 18.0 miles south from Arizola. Unused drilled well. Measuring point, ⅛-inch hole in east side pump, 1.8 feet above land surface. Equipped with cylinder pump.

Water level, in feet below measuring point, 1941

July 15	94.00	Aug. 28	94.26	Nov. 3	94.59	Dec. 30	94.66
29	94.10	Oct. 3	94.49	Dec. 3	94.62		

2332. J. C. Kinney. SE¼SE¼ sec. 5, T. 10 S., R. 8 E., 20 feet south from large iron storage tank, 40 feet east from corral, 150 feet northwest from frame house, 10.1 miles southwest from Picacho, 12.3 miles south from Eloy. Used drilled stock well, diameter 16 inches. Measuring point, northwest side, top of casing, at land surface. Equipped with windmill, cylinder pump and 6 horsepower gasoline engine.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
July 8	144.69	Oct. 3	147.64	Dec. 3	148.60
Aug. 28	146.40	Nov. 3	148.20	30	148.92

2354. H. H. Cake. SW¼NW¼ sec. 10, T. 10 S., R. 9 E., 60 feet west of frame house, 1.5 miles north of county road, 5.0 miles west from Redrock. Used drilled domestic well, diameter 8 inches, depth 140 feet. Measuring point, top of iron casing, east side, 1.0 foot above land surface. Equipped with cylinder pump and 3 horsepower electric motor. Water levels, in feet below measuring point, 1941: July 3, 144.36; Aug. 18, 144.72; Oct. 2, 145.08; Dec. 1, a/146.45.

a Nearby well pumping.

Pinal County--Continued.

2361. King Brothers. NW¼NE¼ sec. 22, T. 10 S., R. 9 E. On top of small knoll, 500 feet north of adobe house, 0.2 mile south of county road, 6.0 miles west from Redrock. Used drilled domestic and stock well, diameter 6 inches, depth 165 feet. Measuring point, top of casing, west side, 0.6 foot above land surface. Equipped with cylinder pump and gasoline engine. Water levels, in feet below measuring point: Feb. 29, 1940, 138.33; Oct. 2, 1941, 137.97.

2363. H. B. Aguirre. SE¼SE¼ sec. 36, T. 10 S., R. 9 E. In sheet iron shed, 200 feet north of frame house at Aguirre ranch, 4.0 miles south of county road, 4.7 miles west of U. S. Highway 84. Used dug domestic and stock well, diameter 42 inches, depth 136 feet. Measuring point, top of concrete curb, west side, at land surface. Equipped with cylinder pump and windmill. Water levels, in feet below measuring point: Oct. 12, 1939, 134.4; Feb. 28, 1940, 133.55; Dec 1, 1941, 134.76.

Santa Cruz County

By H. R. McDonald

Water-level measurements in Santa Cruz County were continued during 1941 by the United States Geological Survey in cooperation with the Arizona State Water Commissioner and the United States Engineer Office, War Department. During the year water-level measurements were made at approximately monthly intervals on 40 observation wells, or a total of 349 individual measurements. The accompanying figure shows the hydrographs of typical observation wells, total monthly pumpage in Pima and Santa Cruz Counties during 1941, and precipitation at Tucson, Ariz. Well 142 is located about 0.2 mile downstream from the infiltration gallery and pumping station, which furnishes water to the city of Nogales, Ariz., and shows the effect of heavy pumping during the summer months.

The total pumpage from the Santa Cruz Basin in Pima and Santa Cruz Counties in 1941 was approximately 83,000 acre-feet.

The average water level in 24 observation wells in Santa Cruz County showed a net decline of 0.85 foot from January 1, 1941, to January 1, 1942. Due to above-average precipitation in December 1940, relatively high water levels existed at the beginning of the year. A return to relatively normal precipitation in 1941 produced this decline.

Water levels are expressed in feet below measuring point. The highest water levels which are given for some of the wells were obtained with maximum-minimum strip recorders.

Santa Cruz County--Continued.

Well numbers correspond to those in Water-Supply Paper 911.

3. R. W. Littlejohn. SE¼NE¼ sec. 13, T. 20 S., R. 12 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	59.31	Apr. 30	60.05	Aug. 15	63.09	Nov. 10	63.37
Feb. 26	59.70	June 6	a 60.00	Sept.23	63.22	Dec. 30	63.34
Mar. 26	59.79	July 15	b 63.20				

12. Steinfeld. NE¼NE¼ sec. 7, T. 20 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	29.85	June 6	30.77	Sept.23	31.77	Dec. 30	31.67
Apr. 30	30.31	July 15	31.42	Nov. 10	32.49		

13. Gene England. SW¼NW¼ sec. 7, T. 20 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	35.84	June 6	38.38	Aug. 15	37.53	Nov. 10	37.35
Feb. 26	35.26	July 15	38.28	Sept.23	37.40	Dec. 30	36.60
Apr. 30	36.32						

21. Otero. SW¼SW¼ sec. 19, T. 20 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 3	38.83	June 6	40.88	Dec. 30	41.37
Feb. 26	39.93	Nov. 10	41.45		

28. Mrs. Schenkel. NW¼SE¼ sec. 31, T. 20 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	40.43	Apr. 30	40.51	July 15	40.90		c 40.84
Feb. 26	40.17		c 40.44		c 39.97	Sept.23	41.32
Mar. 26	40.28	June 6	40.82	Aug. 15	41.12	Nov. 10	(d)

29. NW¼SW¼ sec. 31, T. 20 S., R. 13 E. Measurements discontinued July 15, 1941. Water levels, in feet below measuring point, 1941: Jan. 3, 71.32; Feb. 26, 72.80; July 15, 71.75.

30. Mrs. Schenkel. SW¼NW¼ sec. 32, T. 20 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	27.10	Mar. 26	26.80	Aug. 19	28.21	Nov. 10	28.44
Feb. 26	26.55	Apr. 30	27.25	Sept.23	29.04	Dec. 30	28.18

46. Sinohui. NW¼NW¼ sec. 17, T. 21 S., R. 13 E. Well caved and measurements discontinued June 6, 1941. Water levels, in feet below measuring point, 1941: Jan. 3, 35.25; Feb. 26, 34.88; Mar. 26, 36.05; Apr. 30, 34.80.

48. Mrs. Mary Ellen Cotter. NW¼NE¼ sec. 19, T. 21 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	26.70	Apr. 30	26.45	Aug. 19	27.40	Nov. 25	28.01
Feb. 26	25.48	June 9	27.17	Sept.23	28.21	Dec. 30	27.60
Mar. 26	25.88	July 15	27.99				

a Well deepened to 65 feet.
b Measuring point raised 2.6 feet, to top of wood curb, north side.
c Highest water level in period between tape measurements.
d Well caved and measurements discontinued.

Santa Cruz County--Continued.

53. Favronio. NE¼SW¼ sec. 30, T. 21 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	18.50	Apr. 30	20.41	Aug. 19	23.12	Nov. 25	23.16
Feb. 26	21.72	June 6	22.50	Sept.23	23.44	Dec. 30	22.87
Mar. 26	21.39	July 15	22.95				

73. SW¼SE¼ sec. 18, T. 21 S., R. 13 E. (Erroneously reported in Water-Supply Paper 911 as R. 12 E.)

Water level, in feet below measuring point, 1941

Jan. 3	28.63	Mar. 26	28.05	June 6	29.08	Aug. 19	30.49
Feb. 26	27.73	Apr. 30	28.48	July 15	30.50	Sept.23	(a)

81. T. T. Pendleton. SE¼SE¼ sec. 5, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1941

Feb. 26	19.33	May 2	19.52	July 15	21.54	Sept.23	21.15
Mar. 26	19.58	June 6	20.67	Aug. 19	20.43	Nov. 25	21.64

82. T. T. Pendleton. SW¼SE¼ sec. 5, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	18.64	May 2	18.42	Aug. 19	19.11	Nov. 25	18.82
Feb. 26	18.13	June 6	19.15	Sept.23	b 18.74	Dec. 30	19.36
Mar. 26	18.44	July 15	19.73				

85. T. T. Pendleton. SW¼NW¼ sec. 9, T. 22 S., R. 13 E. Measurements discontinued.

91. T. T. Pendleton. SW¼SE¼ sec. 16, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	14.31	May 2	11.65	Aug. 19	13.23	Nov. 25	19.11
Feb. 26	9.84	June 6	15.89	Sept.23	12.36	Dec. 30	20.46
Mar. 26	8.83	July 15	18.82				

98. T. T. Pendleton. SE¼SE¼ sec. 35, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	26.10	May 2	25.37	Aug. 19	25.76	Nov. 25	29.85
Feb. 26	24.56	June 7	25.20	Sept.23	c 28.50	Dec. 30	31.02
Mar. 26	24.33	July 15	26.94				

99. T. T. Pendleton. SW¼SW¼ sec. 36, T. 22 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	51.36	May 2	50.24	Aug. 19	50.98	Nov. 25	54.76
Feb. 26	50.28	June 7	50.42	Sept.23	52.80	Dec. 30	56.05
Mar. 26	49.73	July 15	51.88				

101. T. T. Pendleton. SW¼NE¼ sec. 2, T. 23 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	28.90	May 2	30.34	July 15	31.13	Sept.23	31.90
Feb. 26	31.00	June 7	30.54	Aug. 19	31.91	Nov. 24	(a)

102. T. T. Pendleton. NE¼NE¼ sec. 12, T. 23 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	26.32	May 2	21.15	Aug. 19	24.40	Nov. 25	30.29
Feb. 26	18.56	June 7	24.72	Sept.23	27.99	Dec. 30	29.64
Mar. 26	19.41	July 15	28.47				

a Measurements discontinued.
b Measuring point lowered 0.3 foot, to top of 3 by 12-inch timber near suction pipe under pitcher pump.
c Measuring point lowered 0.24 foot, to top of casing, south side.

Santa Cruz County--Continued.

103. T. T. Pendleton. NW¼NE¼ sec. 12, T. 23 S., R. 13 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	27.15	May 2	25.25	Aug. 19	27.37	Nov. 25	28.30
Feb. 26	26.07	June 7	26.28	Sept.23	26.86	Dec. 30	28.19
Mar. 26	25.14	July 15	27.83				

105. Peter Malas. SE¼SE¼ sec. 13, T. 23 S., R. 13 E.

Water level, in feet below measuring point, 1941

Jan. 3	6.26	May 2	8.73	Aug. 19	9.94	Nov. 25	5.57
Feb. 26	6.80	June 7	5.13	Sept.23	11.89	Dec. 30	7.08

125. J. F. Dalton. SW¼NW¼ sec. 19, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 3	9.21	June 7	7.66	Aug. 19	10.42	Nov. 25	10.03
Feb. 26	7.30	July 15	a 11.39	Sept.23	10.80	Dec. 30	9.56
May 2	7.06						

126. Carl Peterson. NW¼NE¼ sec. 21, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 16	20.85	June 9	20.20	Aug. 20	20.87	Nov. 26	20.98
Feb. 26	20.66	July 16	21.09	Sept.19	21.28	Dec. 30	20.92
May 2	20.30						

132. Dines Nelson. NE¼NW¼ sec. 27, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 16	18.02		b 16.71	July 16	19.18	Nov. 26	18.76
Feb. 26	17.30	May 2	17.50	Aug. 20	18.86	Dec. 30	18.32
Mar. 26	17.08	June 9	17.87	Sept.19	19.47		

138. Bill Chenoweth. NE¼SW¼ sec. 30, T. 23 S., R. 14 E. (Erroneously reported in Water-Supply Paper 911 as NE¼NW¼ sec. 31).

Water level, in feet below measuring point, 1941

Feb. 26	7.90	June 7	7.43	Aug. 20	8.43	Nov. 25	6.67
May 2	5.26	July 15	8.86	Sept.23	9.40	Dec. 30	6.18

139. Tom Bayze. SE¼SE¼ sec. 31, T. 23 S., R. 14 E. Water levels, in feet below measuring point, 1941: Jan. 3, 18.76; Feb. 26, 19.20; June 7, 18.71. Measurements discontinued Nov. 25, 1941.

142. Camberos Brothers. NW¼NW¼ sec. 36, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 16	33.90	May 2	20.20	Aug. 20	34.20	Nov. 26	38.80
Feb. 26	25.43	June 9	31.27	Sept.19	35.02	Dec. 30	38.80
Mar. 26	18.82	July 16	34.25				

144. George Griffith. SW¼SW¼ sec. 26, T. 23 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 16	11.00	May 2	5.52	Aug. 20	9.25	Nov. 26	12.62
Feb. 26	4.15	June 9	7.88	Sept.19	10.60	Dec. 30	13.12
Mar. 26	3.94	July 16	9.99				

174. D. Peterson. SE¼NE¼ sec. 7, T. 24 S., R. 15 E.

Water level, in feet below measuring point, 1941

Jan. 16	12.06	June 9	12.84	Aug. 20	12.28	Nov. 26	12.94
Feb. 26	11.80	July 16	14.47	Sept.19	12.68		

a Measuring point raised 2.5 feet to top concrete curb, south side.
b Highest water level in period between tape measurements.

Santa Cruz County--Continued.

176. Neilson Brown. SW¼SE¼ sec. 7, T. 24 S., R. 15 E. Water levels, in feet below measuring point, 1941: Jan. 16, 10.80; Feb. 26, 10.20; June 9, 11.73; Nov. 26, 10.69.

177. Neilson Brown. NW¼NE¼ sec. 18, T. 24 S., R. 15 E. Water levels, in feet below measuring point, 1941: Mar. 26, 7.53; Sept. 19, 11.86; Nov. 26, 10.39.

199. Benito Morales. SE¼SE¼ sec. 5, T. 24 S., R. 14 E.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	28.40	May 2	26.07	Aug. 20	28.88	Nov. 25	27.02
Feb. 26	25.84	July 16	31.50	Sept.23	a 25.57	Dec. 30	26.48
Mar. 26	24.73						

202. Simon Mastick. SW¼NE¼ sec. 8, T. 24 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 3	24.05		b 19.80	July 16	24.90	Nov. 25	24.13
Feb. 26	19.56	May 2	20.68	Aug. 20	23.55		b 23.78
Mar. 26	20.20	June 7	21.64	Sept.23	22.12	Dec. 30	24.03

204. P. C. Gallegos. SE¼SE¼ sec. 8, T. 24 S., R. 14 E.

Water level, in feet below measuring point, 1941

	b 14.45		b 15.64	June 7	16.62	Sept.23	16.34
Jan. 16	16.13	Mar. 26	16.00	July 16	17.27	Nov. 25	16.16
Feb. 26	15.92	May 2	16.08	Aug. 20	15.69	Dec. 30	16.13

208. O. D. Bartlett. SW¼SW¼ sec. 9, T. 24 S., R. 14 E.

Water level, in feet below measuring point, 1941

Jan. 16	31.26	May 2	31.77	Aug. 20	27.60	Nov. 26	30.12
Feb. 26	31.00	June 7	c 31.00	Sept.22	28.73	Dec. 30	29.83
Mar. 26	30.98	July 16	31.60				

232. Caulishaw. SW¼NE¼ sec. 33, T. 22 S., R. 15 E.

Water level, in feet below measuring point, 1941

	b 21.15	Mar. 26	21.73	July 16	22.34	Sept.19	18.96
Jan. 16	21.91	May 2	21.75	Aug. 20	20.28	Nov. 26	20.11
Feb. 27	21.79	June 9	21.98		b 18.67	Dec. 31	20.05

233. L. G. Zinsmeister. NW¼NE¼ sec. 28, T. 22 S., R. 15 E.

Water level, in feet below measuring point, 1941

Jan. 16	41.00		b 37.35	June 9	41.36	Sept.19	40.09
	b 37.75	Mar. 26	38.34	July 16	41.15	Nov. 26	42.17
Feb. 27	37.90	May 2	38.26	Aug. 20	37.36	Dec. 31	38.95

234. L. G. Zinsmeister. SW¼SE¼ sec. 21, T. 22 S., R. 15 E.

Water level, in feet below measuring point, 1941

Jan. 16	d 9.67	May 2	d 9.43	Aug. 20	8.03	Nov. 26	d 12.29
Feb. 27	d 10.72	June 9	8.53	Sept.19	8.13	Dec. 31	7.92
Mar. 26	d 9.82	July 16	11.29				

a Measuring point lowered 2.0 feet, to top 2 by 12-inch board, east side of well.

b Highest water level in period between tape measurements.

c Measuring point lowered 0.7 foot, to top of wood curb, northwest side of well.

d Pumping.

Santa Cruz County--Continued.

235. U. S. Civilian Conservation Corps Camp. San Jose de Sonoita Grant.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 16	a 9.24	May 2	8.39	Aug. 20	a 8.95	Nov. 26	7.77
Feb. 27	a 9.22	June 9	a 9.47	Sept.19	7.90	Dec. 31	7.78
Mar. 26	a 8.20	July 16	7.99				

236. Caulishaw. San Jose de Sonoita Grant.

Water level, in feet below measuring point, 1941

Jan. 16	23.69	May 2	23.60	Aug. 20	24.63	Nov. 26	24.11
Feb. 27	b 23.46	June 9	24.54	Sept.19	24.78	Dec. 31	23.96
Mar. 26	22.87	July 16	24.97				

237. Albert Gatlin. SE¼SE¼ sec. 11, T. 22 S., R. 15 E.

Water level, in feet below measuring point, 1941

Jan. 16	15.53	May 2	17.23	Aug. 20	22.91	Nov. 26	28.46
Feb. 27	15.28	June 9	21.75	Sept.19	25.68	Dec. 31	25.95
Mar. 26	14.36	July 16	27.30				

a Pumping.
b Measuring point raised 0.7 foot.

CALIFORNIA

GENERAL SUMMARY

By F. C. Ebert

The Geological Survey continued during 1941 its program of measuring the depth to water level in selected wells in southern California.[1] A water-stage recorder was maintained on well 42a at Baldwin Park, in the upper San Gabriel Valley. Systematic measurements by other agencies of the depth to water level in wells in several areas in California were also continued during 1941. The State of California, Department of Public Works, Division of Water Resources, assembled the records of water level that were collected during 1940 by the agencies interested in the south coastal basins and published them in Bulletin 39-I, Records of ground-water levels at wells for the year 1940.

CLIMATOLOGICAL DATA

The following general summary of climatological data for the calendar year 1941 is taken from a report[2] of the Weather Bureau:

"The annual precipitation for 1941 has been exceeded but twice during the last 45 years, 1906 and 1909 being somewhat wetter. The number of rainy and cloudy days was the greatest of record. June had the normal amount of precipitation, September and November were dry, while the other nine months were all wetter than normal, with excess large in February, April, and December. The annual excess was general, with percentage of excess least from the Sierra Nevada eastward to the Navada State line, and greatest in the southeastern desert regions and along the middle and southern coasts and adjoining portions of the Sacramento and San Joaquin Drainage basins. - -·- .

"The total snowfall approximated the 45-year average at mountain stations. April, October, and December were the only months with excesses. The snowfall during the first half of the year was heavy at high elevations, but mostly deficient at foothill and intermediate levels. The December fall was unusually heavy from the foothills upward and the snow line at the end of the year extended down below the 2,000-foot level in northern and central and to the 3,000-foot level in southern districts. While the average depth of snow cover on December 31 was over three times the normal amount its water content was low as most of this snow fell after December 22 and had not fully settled."

1/ See Water-Supply Papers 817, 840, 845, 886, and 911.

2/ U. S. Department of Commerce, Weather Bureau, Climatological Data, vol. 45, No. 13, 1941.

FLUCTUATIONS OF WATER LEVEL

San Gabriel River Basin

The water level in well 42a[3/] at Baldwin Park rose from a seasonal minimum mean daily altitude of 286.49 feet on January 2 to a mean daily altitude of 320.70 feet, the highest of the year, recorded August 13. The water level then declined during the latter part of the pumping season to a low mean daily altitude of 312.86 feet on December 29-30. On December 31, 1941, the mean daily altitude of the water level was 312.87 feet--7.83 feet below the high stage of the year and 26.34 feet above that of December 31, 1940.

Santa Ana River Basin

San Bernardino area

The water level in the Williams well rose from January 1, 1941, to May 17, when the depth to water was 4.50 feet. The lowest stage reached, following May 17, was 18.50 feet on October 25, when the level was still 5.42 feet above the level on January 4. On December 27, 1941, the water level was 12.42 feet above its stage on December 28, 1940.

Measurements of water level made during 1941 in 10 wells, distributed over the valley, indicate a mean rise in water level of 9.4 feet. The greatest rise occurred in the Williams well and the smallest rise in well 125, west of Redlands.

San Jacinto Valley

Measurements of water level made during 1941 in 10 wells, distributed over the valley, indicate a change in water level ranging from a rise of 15.50 feet to a decline of 0.26 foot. The greatest rise was adjacent to San Jacinto River in the upper end of the valley. The only well to show a decline also was near the river but in the central portion of the valley, at Lakeview, where the water level declined 0.26 foot. A line of 3 wells from Perris to March Field showed rises of 1.00 foot at Perris; 2.56 feet at the middle well, and 2.07 feet near March Field. Wells which may tap the gravels of an ancient channel of San Jacinto River show rises of 3.50 feet west of Hemet; 3.79 feet at Winchester; and 6.27 feet at Menifee School. The average change for all wells measured was a rise of 3.8 feet.

3/ Ebert, F. C., Am. Geophys. Union Trans. 1936, p. 372.

Tia Juana River Basin

The water levels in all five observation wells rose during the year. The net rise from December 1940 to November 1941 ranged from 2.3 feet in well 0140b to 8.8 feet in well 0130b and averaged 5.9 feet in the 5 wells.

Otay River Basin

Well 039a, 40 feet deep, was dry in 1940. In November 1941 the water in this well was 30.95 feet below the measuring point, or about 9 feet deep. The net rise of the water level in well 089a was 3.8 feet.

Sweetwater River Basin

Well 018c, 21 feet deep, was dry in 1940. In November 1941 the water in this well was 12.70 feet below the measuring point, or about 8.3 feet deep.

San Diego River Basin

Water levels in 3 wells in the vicinity of the El Monte pumping plant rose in net amounts of 2.9 to 3.8 feet from November 1940 to October 1941. Water levels in 5 wells in and near Lakeside rose an average net amount of 2.3 feet during this period. The average net rise of water levels in 4 wells of the Riverview group was 2.0 feet, and in 2 wells near Santee, 1.6 feet. In Mission Valley 6 wells showed net rises in water level ranging from 0.3 foot in well K63 to 3.9 feet in well K51b, or an average of 2.0 feet.

San Dieguito River Basin

Water levels in 4 observation wells rose an average net amount of 3.2 feet, ranging from 1.1 feet in well H34b to 5.2 feet in well H31b.

San Luis Rey River Basin

Three observation wells at Monserate Narrows showed an average net rise of 0.6 foot during the year. Water levels in 5 wells listed in downstream order from San Luis Rey Ranch to Highway 395 bridge varied as follows: well C8, net decline of 0.7 foot; well C3a, net rise of 1.5 feet; well C5, net decline of 0.2 foot; well C7b, net rise of 1.2 feet, and well C4, net decline of 1.2 feet. Water levels in two wells above San Luis Rey showed an average net rise of 6.4 feet. Four observation wells below San Luis Rey and above Oceanside Narrows indicated a net average rise in water levels of 3.8 feet, ranging from 2.2 feet in well F17 to 5.2 feet in well F32. At the

San Luis Rey River Basin--Continued

upper end of Oceanside Narrows four observation wells grouped rather closely together showed a net rise in water levels varying less than one foot from an average of 4.2 feet.

Mojave River Basin

Observations of water levels in this basin were continued on 82 wells, most of which were measured in both the spring and the fall. The annual discharge of the Mojave River during 1941 was considerably above average, and continuous flow from the Forks to Barstow was maintained for a number of months. Except in the Hinkley-Harper Lake and the Newberry localities, water levels throughout the basin rose during 1941 and reached stages about equal to or slightly higher than those registered in 1938.

Water levels in the area from the Forks to Victorville had an average net gain of about three feet. The largest rises occurred in the lands adjacent to the river upstream from Hesperia crossing, and rises became proportionately smaller with distance toward Victorville and eastward from the river.

Wells in the valley from Victorville to Hodge indicated their usual seasonal fluctuations in water level, but showed an average net rise of nearly a foot. Water levels in the bottom lands north of the Mojave River downstream from Hodge crossing rose about five feet, whereas those toward the Barstow-Mojave Highway rose less, the amounts generally being in proportion to distance from the river. No definite change in water level was shown in the wells north of this highway; further north, in the Harper Lake locality, the slight downward trend persisted. Water levels in the Lenwood-Barstow area rose about a foot.

In the area between Barstow and the Van Dyke ditch intake, water levels rose about three feet. The water level in L1, just below the ditch intake, rose about 9.6 feet, and reached practically the same stage in the fall of 1941 that it registered in the fall of 1938. In the sub-basin from Daggett to the Kouns-Newberry sand-dune belt, water levels on both sides of the Mojave Basin rose in amounts ranging from about 10 feet near Daggett to 2 feet in the sand-dune belt and decreasing with distance from the river. The 1941 fall stages in some wells here were higher than those of 1938. However, in certain wells in the eastern part of this sub-basin, stages were higher

Mojave River Basin--Continued

prior to 1927 than in 1941. Wells in the area east of the sand-dune belt and in the Newberry-Troy Lake area indicated only slight changes and no definite trend in water level during the year.

Antelope Valley

Observations of water levels in 25 wells were made during the spring and fall of 1941. The measurements indicate that the downward trend of the water levels, which has been in effect for a number of years, was continued. Declines during the year ranged from a few tenths of a foot, in the northeastern part of the valley, to about 3 feet in some localities in the southern part of the valley, and averaged about 1.5 feet.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

On the following pages are given the records for 1941, arranged by basins, of all wells that were published in Water-Supply Paper 911, except 3 in the Mojave River Basin, M64a, M65, and L13, for which measurements were discontinued in 1940.

The 3 key wells, 42a, on which a recorder was maintained, 72c, and the Williams well, are presented first, followed by the records, arranged by basins, of wells in San Diego County and the Mojave River Basin.

For descriptions of the wells not given in this report see Water-Supply Papers 817, 840, 845, 886, and 911.

San Gabriel River Basin

42a. Baldwin Park.

Water level, in feet above mean sea level minus 200, 1941

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	86.50	86.70	88.47	103.41	111.62	116.62
2	86.49	86.72	88.62	103.85	111.77	116.65
3	86.51	86.75	88.81	104.23	112.00	116.74
4	86.55	86.77	89.04	104.74	112.19	116.78
5	86.54	86.80	89.22	105.15	112.43	116.82
6	86.55	86.82	89.45	105.50	112.63	116.89
7	86.57	86.79	89.71	105.86	112.96	117.05
8	86.57	86.77	90.03	106.22	113.17	117.16
9	86.56	86.82	90.43	106.54	113.40	117.17
10	86.56	86.88	90.82	106.83	113.61	117.25
11	86.56	86.94	91.21	107.11	113.83	117.30
12	86.55	86.93	91.64	107.27	114.09	117.48
13	86.57	86.97	92.14	107.48	114.31	117.58
14	86.60	87.01	92.64	107.72	114.53	117.65
15	86.58	87.02	93.16	107.98	114.75	117.72
16	86.57	87.07	93.76	108.26	114.96	117.83
17	86.53	87.12	94.40	108.55	115.16	117.93
18	86.55	87.13	95.06	108.74	115.38	117.95

San Gabriel River Basin--Continued

42a. Baldwin Park--Continued

Water level, in feet above mean sea level minus 200, 1941

Day	Jan.	Feb.	Mar.	Apr.	May	June
19	86.59	87.25	95.76	109.00	115.46	118.04
20	86.59	87.30	96.44	109.26	115.67	118.08
21	86.60	87.39	97.08	109.49	115.79	118.15
22	86.61	87.45	97.70	109.69	115.93	118.22
23	86.61	87.56	98.35	109.93	116.01	118.34
24	86.64	87.70	98.96	110.18	116.11	118.40
25	86.61	87.81	99.45	110.37	116.20	118.49
26	86.65	87.95	100.15	110.54	116.27	118.42
27	86.67	88.12	100.77	110.78	116.32	118.56
28	86.67	88.30	101.30	111.00	116.31	118.67
29	86.67	.....	101.84	111.21	116.41	118.67
30	86.68	.....	102.38	111.44	116.50	118.82
31	86.69	.....	102.97	.....	116.57	.....

Water level, in feet above mean sea level minus 200, 1941

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	118.82	120.28	120.22	118.62	116.29	114.21
2	118.92	120.29	120.22	118.54	116.21	114.14
3	118.97	120.29	120.09	118.37	116.14	114.08
4	118.99	120.31	120.01	118.31	116.10	113.98
5	119.05	120.33	119.97	118.27	116.05	113.94
6	119.18	120.40	119.95	118.07	115.98	113.88
7	119.19	120.51	120.00	118.04	115.88	113.85
8	119.26	120.55	119.92	117.92	115.84	113.82
9	119.32	120.58	119.87	117.82	115.78	113.80
10	119.35	120.60	119.86	117.78	115.71	113.75
11	119.45	120.56	119.86	117.71	115.67	113.62
12	119.47	120.62	119.87	117.62	115.63	113.52
13	119.55	120.70	119.81	117.55	115.46	113.49
14	119.57	120.63	119.77	117.48	115.45	113.46
15	119.65	120.59	119.76	117.43	115.41	113.42
16	119.60	120.62	119.70	117.35	115.37	113.39
17	119.65	120.58	119.63	117.25	115.30	113.36
18	119.60	120.49	119.58	117.12	115.18	113.32
19	119.69	120.43	119.58	117.10	115.07	113.30
20	119.73	120.43	119.46	116.96	115.03	113.24
21	119.83	120.43	119.47	116.88	114.99	113.17
22	119.90	120.37	119.32	116.85	114.86	113.13
23	119.86	120.35	119.18	116.77	114.75	113.20
24	119.90	120.28	119.17	116.69	114.66	113.10
25	119.96	120.31	119.03	116.65	114.56	113.05
26	120.03	120.28	119.00	116.61	114.55	112.99
27	120.11	120.23	118.95	116.56	114.48	112.92
28	120.13	120.23	118.84	116.51	114.41	112.94
29	120.17	120.16	118.77	116.43	114.30	112.86
30	120.16	120.08	118.72	116.35	114.26	112.86
31	120.20	120.17	.....	116.31	.....	112.87

San Bernardino Basin

Williams well. Record furnished by Gage Canal Co. (Location of well given in Water-Supply Papers 817 and 886 should be revised to read: 50 feet south of Santa Ana River.)

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	23.92	Feb. 1	22.00	Mar. 8	9.83	Apr. 5	5.50
11	23.00	15	21.50	15	7.50	12	5.00
18	22.67	22	21.00	22	6.75	19	4.75
25	22.50	Mar. 1	16.33	29	6.25	26	4.75

San Bernardino Basin--Continued

Williams well--Continued

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	5.50	June 14	6.92	Aug. 23	14.50	Nov. 1	18.00
12	5.00	21	7.50	30	15.25	8	17.67
19	4.75	28	8.16	Sept. 6	15.92	15	17.50
26	4.75	July 5	8.83	13	16.33	22	17.08
May 3	5.16	12	9.50	20	17.00	29	17.00
10	4.58	19	10.25	27	17.33	Dec. 6	16.83
17	4.50	26	11.50	Oct. 4	17.67	13	16.66
24	4.92	Aug. 2	12.67	11	17.98	20	16.00
31	5.67	9	13.67	18	18.25	27	14.50
June 7	6.25	16	13.92	25	18.50		

72c. San Jacinto Valley, at Perris, Riverside County.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 15	73.11	May 22	72.99	Nov. 7	72.52
Mar. 11	73.11	Aug. 20	73.74		

Tia Juana River Basin

0118b. Owens ranch. Water levels, in feet below measuring point, 1941: Jan. 28, 14.10; May 15, 8.35; Aug. 23, 10.98; Nov. 14, 10.49.

0120. Hewitt Bros. hog ranch. Water levels, in feet below measuring point, 1941: Jan. 28, 14.30; May 15, 8.46; Aug. 23, 10.48; Nov. 14, 9.91.

0125. Evans ranch. Water levels, in feet below measuring point, 1941: Jan. 28, 10.26; May 15, 6.96; Aug. 23, 10.98; Nov. 14, 9.76.

0130b. Nestor Bridge. Water levels, in feet below measuring point, 1941: Jan. 28, 11.43; Aug. 23, 10.10; Nov. 14, 9.55.

0140b. Mrs. A. W. Jackson. Water levels, in feet below measuring point, 1941: Jan. 28, 7.44; May 15, 7.03; Aug. 23, 7.75; Nov. 14, 6.77.

Otay River Basin

039a. N. Bard. Water levels, in feet below measuring point, 1941: May 15, 27.42; Aug. 23, 30.38; Nov. 14, 30.95.

089a. G. W. St. Clair. Water levels, in feet below measuring point, 1941: Jan. 28, 24.27; May 15, 21.39; Aug. 23, 24.47; Nov. 14, 23.78.

Sweetwater River Basin

018c. L. C. Kincaid. Water levels, in feet below measuring point, 1941: Jan. 28, a/; May 15, 10.56; Aug. 23, 12.19; Nov. 14, 12.70.

San Diego River Basin

L28. San Diego County, El Monte Park. Water levels, in feet below measuring point, 1941: Jan. 20, and May 10, pump operating in well; June 12, 10.12; Aug. 16, 11.76; Oct. 31, 1436.

L29. Pratt test well. Water levels, in feet below measuring point, 1941: Jan. 20, 9.15; May 10, 6.46; Aug. 16, 7.50; Oct. 31, 7.39.

L30. Irrigation District well 6. Water levels, in feet below measuring point, 1941: Jan. 20, 6.80; May 10, 3.20; Aug. 16, 4.19; Oct. 31, 4.01.

a/ Well dry.

San Diego River Basin--Continued

L31. Truttman ranch. Depth, 126 feet. Water levels, in feet below measuring point, 1941: Jan. 20, 5.92; May 10, 3.56; Aug. 16, 4.45; Oct. 31, 4.05.

L32. Dr. Irey ranch. Water levels, in feet below measuring point, 1941: Jan. 20, 9.84; May 10, 7.12; Aug. 16, 9.15; Oct. 31, 8.82.

L33. County yard. Water levels, in feet below measuring point, 1941: Jan. 20, 8.92; May 13, 6.35; Aug. 16, 8.15; Oct. 31, 7.99.

L5a. J. F. Rickerts. Water levels, in feet below measuring point, 1941: Jan. 20, 11.42; May 10, 9.01; Aug. 16, 11.19; Oct. 31, 11.31.

L35. Langdon. Water levels, in feet below measuring point, 1941: Jan. 20, 9.59; May 10, 5.62; Aug. 16, 7.87; Oct. 31, 9.03.

L37. Levi. Water levels, in feet below measuring point, 1941: Jan. 20, 9.57; May 10, 8.32; Aug. 16, 10.32; Oct. 31, 10.89.

L39. Burch. Water levels, in feet below measuring point, 1941: Jan. 20, 8.70; May 13, 6.59; Aug. 16, 8.61; Oct. 31, 8.46.

L2. Riverview well 2. Water levels, in feet below measuring point, 1941: Jan. 20, 2.48; May 10, 1.96; Aug. 16, 4.23; Oct. 31, 2.74.

L44a. Riverview well 3. Water levels, in feet below measuring point, 1941: Jan. 20, 4.56; May 10, 3.31; Aug. 16, 4.91; Oct. 31, 5.01.

L83c. Riverview well 1. Water levels, in feet below measuring point, 1941: Jan. 20, 1.15; May 10, well flooded; Aug. 16, 1.38; Oct. 31, 0.84.

L46. County Farm. Water levels, in feet below measuring point, 1941: Jan. 20, 7.01; May 13, 5.73; Aug. 16, 7.46; Oct. 31, 7.74.

L85. William Thum. Water levels, in feet below measuring point, 1941: Jan. 20, 9.70; May 10, 7.37; Aug. 16, 10.78; Oct. 31, 10.79.

K51a. Jaussaud. Water levels, in feet below measuring point, 1941: Jan. 20, 15.72; May 9, a/18.50; Aug. 19, 15.12; Oct. 30, 15.84.

K51b. Jaussaud. Water levels, in feet below measuring point, 1941: Jan. 20, 14.34; May 9, a/15.86; Aug. 19, 13.73; Oct. 30, 13.48.

K60. Bridges. Water levels, in feet below measuring point, 1941: Jan. 20, 3.07; May 9, b/0.25; Aug. 19, 4.05; Nov. 4, 3.04.

K62. T. J. Goset, formerly Madruga. Water levels, in feet below measuring point, 1941: Jan. 20, 8.52; May 9, 7.86; Aug. 19, 10.31; Oct. 30, 10.67.

K63. Confar. Water levels, in feet below measuring point, 1941: Jan. 20, 10.05; May 9, 8.68; Aug. 19, 12.30; Oct. 30, 13.54.

K33a. Chapman. Water levels, in feet below measuring point, 1941: Jan. 20, 8.01; May 9, 3.90; Aug. 19, 5.52; Oct. 30, 5.43.

San Dieguito River Basin

G17a. Pratt ranch. Water levels, in feet below measuring point, 1941: June 16, 1.40; Aug. 26, 2.33; Nov. 19, 0.83.

G17b. Pratt ranch. Water levels, in feet below measuring point, 1941: June 16, 5.56; Aug. 26, 6.53; Nov. 19, 5.01.

H31b. Ward Estate, formerly Old San Pasqual Creamery. Water levels, in feet below measuring point, 1941: June 16, 7.98; Aug. 26, 7.73; Nov. 19, 8.27.

H1a. Fenton ford. Measurements discontinued.

H1b. Fenton ford. Measurements discontinued.

H34b. Peet ranch. Water levels, in feet below measuring point, 1941: June 16, 4.62; Aug. 26, 4.51; Nov. 19, 4.41.

a/ Pump operating in well.

b/ Water level above measuring point.

San Luis Rey River Basin

C9a. San Luis Rey ranch.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 17	12.02	Apr. 14	10.41	July 14	11.92	Oct. 13	11.68
Feb. 17	11.65	May 12	11.12	Aug. 18	11.64	Nov. 17	11.30
Mar. 17	10.33	June 16	11.68	Sept.15	11.76	Dec. 15	11.29

C9b. San Luis Rey ranch.

Water level, in feet below measuring point, 1941

Jan. 17	9.15	Apr. 14	7.57	July 14	8.87	Oct. 13	8.84
Feb. 17	8.82	May 12	8.44	Aug. 18	8.85	Nov. 17	8.74
Mar. 17	7.58	June 16	8.70	Sept.15	8.87	Dec. 15	8.71

C9c. San Luis Rey ranch.

Water level, in feet below measuring point, 1941

Jan. 17	6.18	Apr. 14	4.61	July 14	5.89	Oct. 13	5.87
Feb. 17	5.89	May 12	5.46	Aug. 18	5.85	Nov. 17	5.77
Mar. 17	4.68	June 16	5.76	Sept.15	5.85	Dec. 15	5.72

C8. Fallbrook Public Utility District observation well on San Luis Rey ranch.

Water level, in feet below measuring point, 1941

Jan. 17	8.40	Apr. 14	8.01	July 14	9.55	Oct. 13	9.43
Feb. 17	8.12	May 12	8.85	Aug. 18	9.58	Nov. 17	9.02
Mar. 17	7.50	June 16	9.32	Sept.15	9.52	Dec. 15	8.97

C3a. Gird ranch.

Water level, in feet below measuring point, 1941

Jan. 17	8.64	Apr. 14	7.06	July 14	8.81	Oct. 13	8.49
Feb. 17	7.82	May 12	7.96	Aug. 18	8.77	Nov. 17	7.84
Mar. 17	6.92	June 16	8.53	Sept.15	8.56	Dec. 15	7.64

C5. Hart Incorporated.

Water level, in feet below measuring point, 1941

Jan. 17	6.19	Apr. 14	5.51	July 14	b 6.53	Oct. 13	6.59
Feb. 17	6.10	May 12	6.05	Aug. 18	6.80	Nov. 17	6.47
24	a 6.10	June 16	b 6.41	Sept.15	b 6.26	Dec. 15	6.34
Mar. 17	5.57						

C7b. Bonsall School well.

Water level, in feet below measuring point, 1941

Jan. 17	9.55	Apr. 14	6.53	July 14	9.37	Oct. 13	9.91
Feb. 17	9.16	May 12	8.04	Aug. 18	9.73	Nov. 17	9.40
Mar. 17	6.03	June 16	8.94	Sept.15	9.92	Dec. 15	9.35

C4. Fallbrook Public Utility District observation well on San Diego County Water Company property.

Water level, in feet below measuring point, 1941

Jan. 17	11.28	Apr. 14	9.97	July 14	12.86	Oct. 13	12.83
Feb. 17	10.89	May 12	11.78	Aug. 18	12.96	Nov. 17	12.51
Mar. 17	9.09	June 16	12.48	Sept.15	12.95	Dec. 15	12.49

F36. City of Oceanside observation well on Stokes property.

Water level, in feet below measuring point, 1941

Jan. 12	a 10.81	Apr. 14	a 8.13	July 14	a .94	Oct. 20	a 11.61
Feb. 24	a 9.34	May 12	a 8.74	Aug. 18	a 10.93	Nov. 17	a 9.69
Mar. 17	a 8.37	June 9	a 9.45	Sept.15	a 11.59	Dec. 15	a 9.49

a Measurement by D. C. Muckel, Soil Conservation Service.
b Pump operating in nearby well.

San Luis Rey River Basin--Continued

F22. Santa Fe well.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	a 11.27	Apr. 14	a 9.19	July 14	ab	Oct. 20	a 12.98
Feb. 24	a 10.19	May 12	a 9.89	Aug. 18	a 12.62	Nov. 17	ac
Mar. 17	a 9.22	June 9	a 10.87	Sept.15	ab	Dec. 15	a 10.65

F30. Carlsbad Mutual Water Company observation well near north abutment of County road bridge at San Luis Rey.

Water level, in feet below measuring point, 1941

Jan. 12	a 8.36	Apr. 14	a 6.72	July 14	a 8.55	Oct. 20	a 9.74
Feb. 24	a 7.42	May 12	a 7.53	Aug. 18	a 8.98	Nov. 17	a 8.23
Mar. 17	a 6.78	June 9	a 8.12	Sept.15	a 9.60	Dec. 15	a 8.07

F17. Old San Luis Rey Store. Measurements have been referenced to the measuring point used prior to Dec. 30, 1929 by adding 3.1 feet.

Water level, in feet below measuring point, 1941

Jan. 12	a 11.95	Apr. 14	a 9.19	July 14	a 9.49	Oct. 20	a 10.71
Feb. 24	a 11.51	May 12	a 8.98	Aug. 18	a 9.59	Nov. 17	a 10.95
Mar. 17	a 10.10	June 9	a 9.19	Sept.15	a 10.29	Dec. 15	a 10.71

F32. Carlsbad Mutual Water Company observation well, 0.25 mile east of pumping plant.

Water level, in feet below measuring point, 1941

Jan. 12	a 11.36	Apr. 14	a 7.97	July 14	a 20.00	Oct. 20	a 18.71
Feb. 24	a 9.11	May 12	a 8.73	Aug. 18	a 19.98	Nov. 17	a 10.20
Mar. 17	a 11.85	June 9	a 13.17	Sept.15	a 19.85	Dec. 15	a 8.99

F13b. City of Oceanside.

Water level, in feet below measuring point, 1941

Jan. 12	a 9.91	Apr. 14	a 6.57	July 14	a 13.90	Oct. 20	a 14.71
Feb. 24	a 7.89	May 12	a 7.97	Aug. 18	a 14.43	Nov. 17	a 8.51
Mar. 17	a 10.81	June 9	a 9.52	Sept.15	a 14.85	Dec. 15	a 7.78

F13c. City of Oceanside.

Water level, in feet below measuring point, 1941

Jan. 12	a 10.22	Apr. 14	a 5.39	July 14	a 9.88	Oct. 20	a 13.04
Feb. 24	a 8.04	May 12	a 6.45	Aug. 18	a 10.95	Nov. 17	a 9.25
Mar. 17	a 5.90	June 9	a 7.35	Sept.15	a 11.90	Dec. 15	a 7.91

F13d. City of Oceanside.

Water level, in feet below measuring point, 1941

Jan. 12	a 9.96	Apr. 14	a 7.53	July 14	a 11.47	Oct. 20	a 12.81
Feb. 24	a 8.56	May 12	a 9.38	Aug. 18	a 12.24	Nov. 17	a 8.86
Mar. 17	a 9.48	June 9	a 8.47	Sept.15	a 12.67	Dec. 15	a 8.56

F13e. City of Oceanside.

Water level, in feet below measuring point, 1941

Jan. 12	a 7.56	Apr. 14	a 5.29	July 14	a 8.54	Oct. 20	a 8.84
Feb. 24	a 6.33	May 12	a 6.16	Aug. 18	a 9.26	Nov. 17	a 6.46
Mar. 17	a 6.78	June 9	a 6.90	Sept.15	a 9.68	Dec. 15	a 6.21

F37. City of Oceanside observation well on Williams ranch.

Water level, in feet below measuring point, 1941

Jan. 12	a 9.60	Apr. 14	a 6.54	July 14	a 9.77	Oct. 20	a 11.90
Feb. 24	a 8.01	May 12	a 7.33	Aug. 18	a 9.80	Nov. 17	a 8.38
Mar. 17	a 6.82	June 9	a 7.84	Sept.15	a 10.84	Dec. 15	a 8.21

a Measurement by D. C. Muckel, Soil Conservation Service.
b Pump operating in well.
c Pump house locked.

Mojave River Basin

U1. Olive. SE cor. NW¼ SE¼ sec. 13, T. 3 N., R. 4 W. Water level, in feet below measuring point, 1941: June 10, 68.05.

U4. Near cen. SE¼ sec. 12, T. 3 N., R. 4 W. Water level, in feet below measuring point, 1941: June 10, 7.19.

U6. Mike Spranger. Near center of east line SW¼NW¼ sec. 6, T. 3 N., R. 3 W. Water level, in feet below measuring point, 1941: Nov. 18, 21.55.

U9. A. W. Cole. Near NE cor. SW¼ NW¼ sec. 30, T. 4 N., R. 3 W. Water level, in feet below measuring point, 1941: Nov. 12, 36.24.

U13. Arrowhead Reservoir and Power Co. Near west line SE¼SE¼ sec. 19, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 12.30; June 17, 12.25; Nov. 12, 26.68.

U14. O. A. Minister. Near SW cor. sec. 20, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 14.7; Nov. 18, 26.38.

U15. J. M. Allison. Near center of south line NE¼SW¼ sec. 20, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 21.00; Nov. 12, 28.05.

U16. N. F. Marsh. Near center of south line NW¼SE¼ sec. 20 T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10; 111.05; Nov. 12, 121.15.

U17. W. O. Wade. SW cor. NE¼NE¼ sec. 21, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 249.6; Nov. 12, 249.25.

U18a. W. E. Tussing. NE cor. SE¼SE¼ sec. 10, T. 4 N., R. 3 W. Well caved, no measurements made in 1941.

U19. E. D. S. Pope. Near SW cor. NW¼SW¼ sec. 1, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 198.70; Nov. 12, 198.59.

U21. A. B. Sheridan. SW cor. sec. 5, T. 4 N., R. 2 W. Water levels, in feet below measuring point, 1941: June 10, 235.90; Nov. 12, 235.65.

U23. G. W. McLister. Near center south line NE¼ sec. 19, T. 4 N., R. 3 W. Water level, in feet below measuring point, 1941: June 17, 14.68.

U26. Arrowhead Reservoir and Power Co. Near NW cor. SW¼ sec. 17, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 17, 12.51; Nov. 18, 17.14.

U28. C. O. Evans. Near SE cor. SW¼NW¼ sec. 18, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 17, 16.25; Nov. 12, 22.55.

U31. Center of east line of SE¼SW¼ sec. 5, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 17, 165.25; Nov. 12, 164.81.

U43. A. W. Phillips. Near NE cor. NW¼NW¼ sec. 6, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 17, 53.18; Nov. 12, 54.69.

U44. A. J. Lintner. Near NE cor. NW¼NE¼ sec. 6, T. 4 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 17, 52.00; Nov. 12, 51.29.

U55. F. A. Fletcher. Near center of west line SE¼ sec. 9, T. 5 N., R. 3 W. Water levels, in feet below measuring point 1941: June 10, 89.86; Nov. 12, 89.93.

U57. J. D. Humiston. SE¼NW¼ sec. 18, T. 5 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 103.80; Nov. 12, 103.69.

U59. Lee Saul. SE¼SW¼ sec. 11, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 17, 56.40; Nov. 12, 56.48.

U59a. Lee Saul. SE¼SW¼ sec. 11, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 17, 45.15; Nov. 12, 46.72.

U61. SW¼ sec. 10, T. 5 N., R. 4 W., in Victorville. Water level, in feet below measuring point, 1941: Nov. 12, 46.12.

Mojave River Basin--Continued

U68. A. Sorenson, Verde ranch. Near NW cor. NE¼NE¼ sec. 35, T. 5 N., R. 4 W. No measurements made in 1941.

U72. Verde ranch. Near SW cor. sec. 36, T. 5 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 10, 2.85; Nov. 12, 2.88.

M3. John Bennetts. SW¼NE¼ sec. 19, T. 6 N., R. 4 W. Water level, in feet below measuring point, 1941: Nov. 13, 18.96.

M7. NE cor. NW¼ sec. 30, T. 7 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 12, 56.53; Nov. 13, 57.46.

M15. SE cor. sec. 31, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 12, 15.37; Nov. 13, 15.48.

M19. F. H. Merrell.. In center and near west line of NW¼NW¼ sec. 31, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 12, 44.40; Nov. 25, 47.94.

M22. Lord. In center and near south line SW¼SW¼ sec. 20, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 12, 3.95; Nov. 25, 4.87.

M26. Near SW cor. SE¼ sec. 2, T. 8 N., R. 4 W. Water levels, in feet below measuring point, 1941: June 12, 24.30; Nov. 25, 25.70.

M30. Holcomb Brothers. SW cor. SE¼ sec. 12, T. 8 N., R. 4 W. Water level, in feet below measuring point, 1941: June 12, pumping, no measurement; Nov. 13, 10.26.

M38. Everett Swing. SE cor. NW¼SW¼ sec. 4, T. 8 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 12, 13.40; Nov. 13, 14.80.

M40. L. S. Emerson. SW¼SW¼ sec. 34, T. 9 N., R. 3 W. Well caved; Measurements discontinued.

M41a. Nellie Storey. SE¼SE¼ sec. 34, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 12, 126.07; Nov. 13, 125.78.

M43. Shobel. Near NE cor. NW¼NE¼ sec. 19, T. 9 N., R. 2 W. Water levels, in feet below measuring point, 1941: June 12, 65.91; Nov. 13, 65.34.

M51. J. Slagill. NE¼NE¼ sec. 28, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 6.66; Nov. 13, about 14, (tree roots in well).

M52. SE¼SW¼ sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 91.42; Nov. 13, 90.88.

M52b. Near center of north line NW¼ sec. 32, T. 10 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 57.39; Nov. 13, 57.57.

M53. NE cor. sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 75.54; Nov. 13, 74.23.

M56. Osborn. SE cor. sec. 10, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 9.58; Nov. 13, 11.50.

M56a. Bullock. SW cor. NW¼NW¼ sec. 14, T. 9 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 8.56; Nov. 13, 12.94.

M64. NE. cor. SE¼ sec. 28, T. 11 N., R. 3 W. Water level, in feet below measuring point, 1941: June 10, 44.52.

M66. Near center of south line SE¼NW¼ sec. 34, T. 11 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 31.39; Nov. 13, 31.50.

M71. A. H. Harris. Near SW cor. sec. 23, T. 10 N., R. 3 W. Water levels, in feet below measuring point, 1941: June 10, 35.48; Nov. 13, 35.75.

M74. J. D. Rich. SE cor. SW¼SW¼ sec. 30, T. 10 N., R. 2 W. Water levels, in feet below measuring point, 1941: June 10, 23.43; Nov. 13, 20.77.

M75. Loftus. NE cor. SE¼SW¼ sec. 19, T. 10 N., R. 2 W. Water levels, in feet below measuring point, 1941: June 10, 67.15; Nov. 13, 66.72.

M82. Water Company in Barstow. Near center of west line NW¼NE¼ sec. 6, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 10, 5.51; Nov. 25, 7.12.

Mojave River Basin--Continued

M84. Nelson. SE cor. NE¼NW¼ sec. 31, T. 10 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 10, 46.62; Nov. 13, 48.50.

M88. Sandoz. NW¼NW¼ sec. 33, T. 10 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 10, 25.70; Nov. 25, 26.62.

M91. R. Harlan. NW¼NW¼ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 10, a/ 9.40; Nov. 25, 7.05.

M92. Gibbs. NE¼NE¼ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 10, 1.93; Nov. 25, 2.54.

M97. Greystone Auto Camp. NW¼SW¼ sec. 10, T. 9 N., R. 1 W. Water levels, in feet below measuring point, 1941: June 12, 50.45; Nov. 25, 51.63.

M100. F. Ryerse. NW¼NE¼ sec. 13, T. 9 N., R. 1 W. Water level, in feet below measuring point, 1941: Nov. 25, 8.99.

L1. B. A. Funk. SW cor. NW¼ sec. 18, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1941: June 12, 11.02; Nov. 25, 13.29.

L8. Center of west line NW¼ sec. 24, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1941: June 11, 64.20; Nov. 26, 64.66.

L10. E. D. Barry. Near NW cor. SW¼ sec. 20, T. 9 N., R. 2 E. Well caved, measurements discontinued.

L10a. E. D. Barry. Near NW cor. SW¼ sec. 20, T. 9 N., R. 2 E. Water level, in feet below measuring point, 1941: June 11, 45.86.

L19. Clinkenbeard. NW cor. NW¼ sec. 34, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 30.20; Nov. 26, 30.94.

L21. Lyle Graham. NW cor. NE¼ sec. 4, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 3.76; Nov. 26, 4.11.

L22. Lyle Graham. NW cor. NE¼ sec. 4, T. 8 N., R. 3 E., in pump house near ranch house. Water levels, in feet below measuring point, 1941: June 11, 5.00; Nov. 26, 4.37.

L23. C. W. Beaverstock. SW cor. NW¼ sec. 3, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 5.98; Nov. 26, 6.82.

L24. SE cor. NW¼ sec. 3, T. 8 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 23.89; Nov. 26, 24.17.

L28. C. E. Burckhartt. Near SW cor. SW¼ sec. 7, T. 8 N., R. 4 E. Water levels, in feet below measuring point, 1941: June 11, 38.63; Nov. 26, 38.51.

L31. A. M. Monroe. Near NW cor. SE¼ sec. 31, T. 9 N., R. 4 E. Water levels, in feet below measuring point, 1941: June 11, 16.11; Nov. 26, 16.26.

L32. Near SW cor. SW¼ sec. 4, T. 8 N., R. 4 E. Water level, in feet below measuring point, 1941: June 11, 6.50; Nov. 26, ground moist at 7.0.

L37. Mojave Camp Service station. Near center SW¼ sec. 12, T. 8 N., R. 4 E. Water levels, in feet below measuring point, 1941: June 11, 33.42; Nov. 26, 33.17.

L42. G. Linguenfelder. Near center SW¼ sec. 15, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1941: June 12, 48.08; Nov. 26, 58.52.

L43. Near SW cor. NW¼ sec. 13, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1941: June 11, 56.00; Nov. 26, 58.89.

L43a. Near SW cor. NW¼ sec. 13, T. 9 N., R. 1 E., about 300 feet south of well 43. Water levels, in feet below measuring point, 1941: June 11, 57.00; Nov. 26, 60.33.

L47. Near NW cor. NW¼ sec. 12, T. 9 N., R. 1 E. Water levels, in feet below measuring point, 1941: June 11, 37.60; Nov. 27, 39.46.

L49. Yermo Mutual Water Co. SE cor. SW¼ sec. 32, T. 10 N., R. 2 E. Water levels, in feet below measuring point, 1941: June 11, 25.02; Nov. 27, 24.88.

a/ Pump operating well.

Mojave River Basin--Continued

L50. Near NW cor. NW¼ sec. 4, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1941: June 11, 17.60; Nov. 27, 17.56.

L51. Bruce McCormick. Near center NE¼ sec. 3, T. 9 N., R. 2 E., near corral. Water levels, in feet below measuring point, 1941: June 11, 12.93; Nov. 27, 14.04.

L51a. Bruce McCormick. Near center NE¼ sec. 3, T. 9 N., R. 2 E., at east end of ranch house. Water levels, in feet below measuring point, 1941: June 11, 16.50; Nov. 27, 17.94.

L54. Near center SW¼ sec. 34, T. 10 N., R. 2 E. Water levels, in feet below measuring point, 1941: June 11, 57.05; Nov. 27, 55.69.

L63. Near center sec. 18, T. 9 N., R. 2 E. No measurements in 1941, pump operating in well.

L64. Annie Escholtz. Near center SE¼ sec. 8, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1941: June 11, 37.40; Nov. 26, 37.99.

L67. Hunter. Near SW cor. SW¼ sec. 12, T. 9 N., R. 2 E. Water levels, in feet below measuring point, 1941: June 11, 5.05; Nov. 26, 4.15.

L68. Scobel and Haimut. Near SW cor. SW¼ sec. 14, T. 9 N., R. 2 E., north of ranch house. Water levels, in feet below measuring point, 1941: June 11, 24.30; Nov. 26, 24.08.

L68a. Scobel and Haimut. Near SW cor. SW¼ sec. 14, T. 9 N. R. 2 E., about 200 feet northeast of well L68. Water levels, in feet below measuring point, 1941: June 11, 20.55; Nov. 26, 19.90.

L68c. Scobel and Haimut. Near SW cor. SW¼ sec. 14, T. 9 N., R. 2 E., southeast of well L 68. Water levels, in feet below measuring point, 1941: June 11, 18.95; Nov. 26, 18.46.

L76. Bozarth. Near center west line NW¼ sec. 10, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 34.35; Nov. 26, 34.32.

L77. NW cor. sec. 3, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 43.05; Nov. 26, 41.32.

L78. Henderson. South of center NW¼ sec. 34, T. 10 N., R. 3 E. Water level, in feet below measuring point, 1941: Nov. 26, 9.19.

L83. H. G. Tienken. Near SW cor. NW¼ sec. 18, T. 9 N., R. 4 E. Water level, in feet below measuring point, 1941: June 11, 26.49; Nov. 26, well caved, measurements discontinued.

L93. B. Nicholas. SW¼NE¼ sec. 12, T. 9 N., R. 3 E. Water levels, in feet below measuring point, 1941: June 11, 26.70; Nov. 26, 22.69.

L97. G. F. Getty. Near NE cor. sec. 21, T. 10 N., R. 3 E. No measurements made in 1941.

COASTAL PLAIN IN PARTS OF LOS ANGELES AND ORANGE COUNTIES

By J. F. Poland

The Geological Survey is currently engaged in a cooperative investigation of the ground-water bodies that underlie a considerable part of the coastal plain in Los Angeles and Orange Counties, with special reference to contamination of those bodies by salt water along the coast and to the perviousness or imperviousness of the Newport-Inglewood fault zone, the so-called coastal barrier. This investigation has been undertaken 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. It includes intensive study in a coastal zone that extends from the Dominguez Hills on the northwest to Costa Mesa on the southeast; also, a general study of the contiguous area inland to the mountains. The area covered is about 560 square miles.

The several thousand water wells within the coastal plain draw their supplies chiefly from gravel and sand which are of Pleistocene or Recent age and which are in part continental and in part marine in origin. Between the coast and the Newport-Inglewood fault zone the water-bearing beds are primarily of Pleistocene age and are interbedded with marine silt and clay. Inland from the fault zone, the coastal plain was formed chiefly by interfering alluvial cones built in a synclinal trough by the three major streams--the Los Angeles, the San Gabriel, and the Santa Ana Rivers. Toward the coast the alluvial materials interfinger with marine deposits, chiefly silt and clay of low permeability; these materials of low permeability confine the water beneath about two-thirds of the coastal plain.

Initially the confined water was under sufficient head to produce flowing wells over about one-quarter of the plain. By 1928, the piezometric surface almost universally had declined below the land surface, and about all wells had ceased to flow. In 1940-41, flow by artesian pressure was rejuvenated in an area of about 16 square miles lying immediately northeast of

the Newport-Inglewood fault zone and extending from Long Beach to Huntington Beach.

The agencies that have measured ground-water levels and the periods of their activity are: (1) The United States Geological Survey, in 1903-4, irregularly from 1904 to 1923, and during the present investigation, commencing in 1940; (2) the Division of Water Rights in the California Department of Public Works, in cooperation with Los Angeles County and the city of Pasadena, periodically from 1923 to 1928; (3) the Los Angeles Department of Water and Power, beginning in 1923; (4) J. B. Lippincott, for several county and municipal agencies, intermittently since 1923; (5) the city of Long Beach, beginning in 1924; (6) the San Gabriel Valley Protective Association, beginning in 1928; (7) the Los Angeles County Flood Control District, beginning in 1928; (8) the city of Pasadena, from 1928 to 1933; (9) the Orange County Flood Control District, beginning in 1930; (10) the Irvine Company, beginning in 1931; (11) the I. W. Hellman Ranch, beginning in 1933; (12) the several Bixby interests, beginning in 1933; and (13) the Montana Land Company beginning in 1935. Altogether, about 2,280 observation wells have been established by these several agencies within the area of the present investigation; in about 32 percent of these wells the measurements of ground-water have been periodic.

Nearly all the water-level records by the several agencies just listed have been deposited with and so made available to the public through the Division of Water Resources in the California Department of Public Works. The earlier records of the Geological Survey and representative records from selected observation wells have been published.[1/]

Since the early thirties, measurements of depth to water have been made monthly on several hundred wells and weekly on several additional scores of

1/ 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, 160 pp., 1905; Development of underground waters in the western coastal-plain region of southern California: U. S. Geol. Survey Water-Supply Paper 139, 103 pp., 1905.

Ebert, F. C., Records of water levels in wells in southern California: U. S. Geol. Survey Water-Supply Paper 468, pp. 39-46, 1921.

Conkling, Harold, San Gabriel investigation, Report for the period July 1, 1923, to September 30, 1926: California Dept. Public Works, Div. of Water Rights, Bull. No. 5, pp. 593-640, 1927; San Gabriel investigation: California Dept. Public Works, Div. Water Rights, Bull. 6, pp. 171-200, 1929.

Gleason, G. B., South Coastal Basin investigation, records of ground-water levels at wells: California Dept. Public Works, Div. Water Resources, Bull. 39, 590 pp., 1932. Also annual supplements (mimeographed), as follows: Bull. 39-A, for 1932; Bull. 39-B, for 1933; Bull. 39-C, for 1934; Bull. 39-D, for 1935; Bull. 39-E, for 1936; Bull. 39-F, for 1937; Bull. 39-G, for 1938.

wells; as of December 1941, measurements were being made weekly in about 92 wells within the project area. In addition, water-level recorders have been operated for a year or more on 64 wells within the area of the present investigation, as follows: By the San Gabriel Valley Protective Association, on 19 wells for 1 to 13 years each; by the Orange County Flood Control District, on 12 wells for 1 to 12 years each; by the city of Long Beach, on 29 wells for 1 to 9 years; by the Los Angeles County Flood Control District,

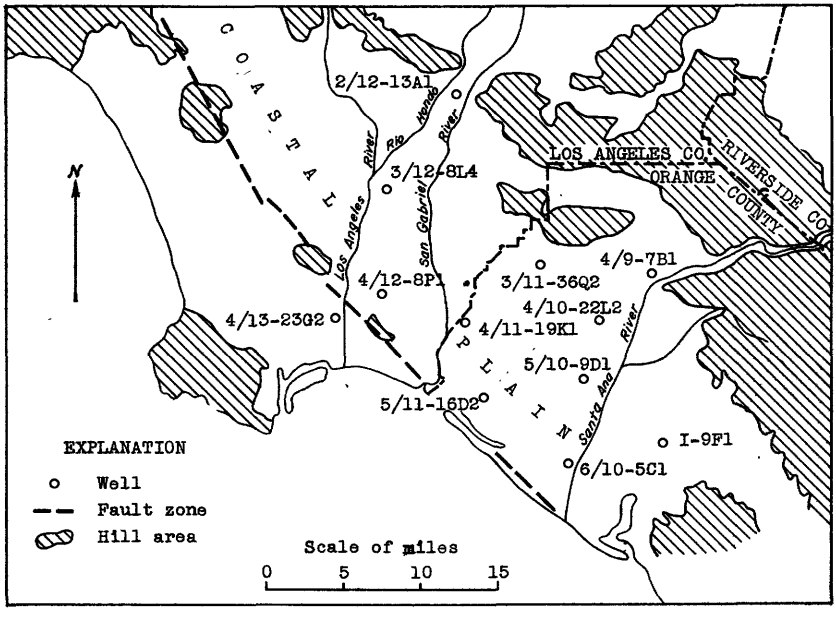

Figure 7.--Sketch map of the coastal plain in Los Angeles and Orange Counties, Calif., showing location of observation wells.

on 1 well for 2 years; and by the Geological Survey, on 3 wells for 1 year. Altogether, these records cover 100 wells and about 400 well-years. Water-level recorders are currently in operation on 56 wells.

The bulletins of water levels published by the California Division of Water Resources for the period since 1928 cover numerous selected wells but ordinarily list only one measurement a month, even though measurements may have been made more frequently. These published records are expressed as depth to water to the nearest tenth of a foot.

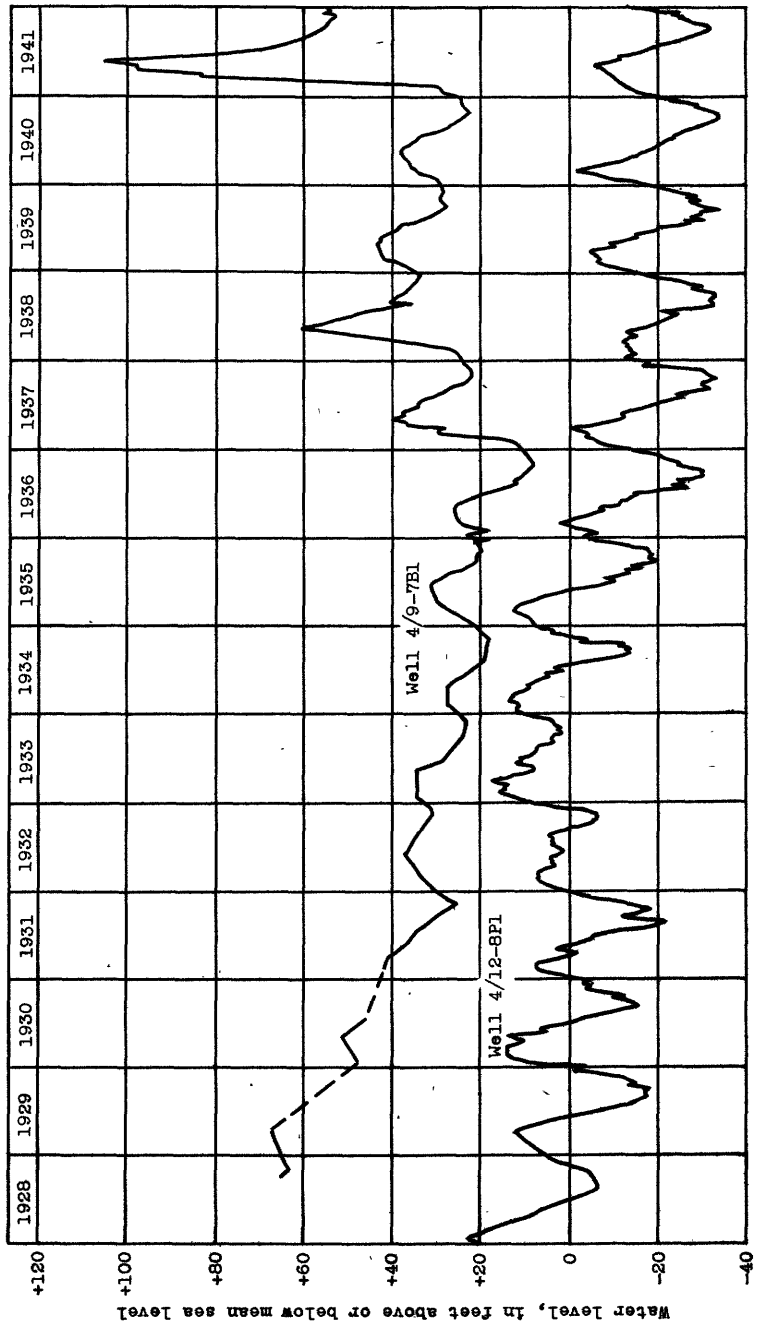

Figure 8.--Graphs showing fluctuations of water level in wells 4/9-7B1 and 4/12-8P1 on the coastal plain in Los Angeles and Orange Counties, Calif.

To show typical fluctuations of water level in the central and eastern parts of the coastal plain, the Geological Survey has selected 10 wells that afford representative distribution by location and depth, and for which there are available records of water levels spanning a term of about 10 years at intervals of a week or less. In addition, well 4/10-22L2 (formerly no. 41b), has been included to extend the record published in Water-Supply Papers 840, 845, and 886; also well 5/10-9D1, with a record of monthly measurements, for uniform geographical coverage. The accompanying sketch map shows the locations of these 12 wells. The records of water levels are tabulated beyond to amplify the monthly measurements on several scores of observation wells published annually by the California Division of Water Resources.

Of the 12 wells for which records of water level follow, 2 are water-table wells; the other 10 tap confined aquifers, and 8 of these lie within the initial area of artesian flow.

The following table summarizes the observed range of water level in the 12 wells.

Summary of water-level fluctuations in 12 selected observation wells on the coastal plain in Los Angeles and Orange Counties, California, 1903-41

Well	First measured	Lowest observed water level above (+) or below (-) mean sea level		Highest observed water level above (+) or below (-) mean sea level		Net change in water level, feet[1]		
		Water level (feet)	Date	Water level (feet)	Date	1930-40	1933-40	1941
2/12-13A1	Aug. 28, 1928	+129.36	Oct. 19, 1934	+163.49	Aug. 4, 1941	+5.4	+13.4	+13.5
3/11-36Q2	May 24, 1930	a+.52	Sept.15, 1937	a+40.46	Feb. 19, 1931	.....	-6.4	+11.2
3/12- 8L3	Jan. 14, 1930	a+48.75	Aug. 19, 1936	a+77.87	Mar. 23, 1930	b-9.0	b-2.1	+7.5
4/9- 7B1	Oct. 1, 1928	+8.21	Oct. 28, 1936	+103.32	May 14, 1941	b-21.4	b-6.4	+28.8
4/10-22L2	Apr. 11, 1928	+8.3	Dec. 3, 1936	+55.8	Apr. 11, 1928	.....	b-5.9	b+13.7
4/11-19K1	Aug. 20, 1903	a-6.00	Sept.23, 1936	+28.5	Aug. 20, 1903	b-11.5	b-3.5	+7.1
4/12- 8P1	July 30, 1903	-33.68	Sept.20, 1939	+68.5	July 30, 1903	a-16.8	-27.6	b+5.7
4/13-23G2	Oct. 22, 1932	-53.2	Aug. 30, 1940	-28.43	Feb. 6, 1939	.....	+4.6	b-1.4
5/10- 9D1	June 13, 1922	+1.78	Sept. 4, 1936	+56.8	June 13, 1922	b-22.8	b-7.3	b+6.8
5/11-16D2	July 19, 1929	a-9.75	Oct. 10, 1936	a+17.32	Feb. 6, 1930	a-3.87	-2.9	+6.46
6/10- 5C1	Dec. 23, 1931	-7.8	Aug. 8, 1936	+15.0	Feb. 25, 1932	.....	-5.1	+6.8
I- 9F1	Mar. 29, 1932	-13.13	Apr. 27, 1936	+24.72	Mar. 15, 1933	.....	-7.3	b+13.40

a From water-level recorder.
b Approximate.
1/ From water levels interpolated for Dec. 31 of each year.

Los Angeles County

2/12-13A1. Numbered C-803g-I-12 in Bulletin 39, California Division of Water Resources; "location" 2919B. Lycan Brothers. NE¼NE¼ sec. 13, T. 2 S., R. 12 W. About 1 mile east of Montebello, 70 feet south of Union Pacific Railroad, 100 feet east of Lexington Road. Drilled irrigation well now used solely for observation; water-table well. Diameter 8 inches, depth 85.4 feet. Measuring point, top of casing, 1.9 feet above land surface and 182.9 feet above mean sea level. Water-level recorder maintained on well since May 22, 1937, by San Gabriel Valley Protective Association; water-level measurements supplied through courtesy of same agency.

Water level, in feet above sea level, 1928-41

Date	Water level	Date	Water level	Date	Water level
Aug. 28, 1928	141.7	Apr. 1, 1933	142.1	July 9, 1936	134.55
Sept. 5	140.7	May 15	139.5	30	132.73
Oct. 26	150.7	June 19	137.6	Aug. 20	131.28
May 28, 1929	155.9	30	136.8	Sept.10	130.48
June 27	152.9	Aug. 3	134.14	Oct. 1	130.03
Aug. 2	149.7	24	132.75	22	129.97
Sept.30	146.3	Sept.14	131.87	Nov. 12	131.13
Nov. 11	144.8	Oct. 5	131.51	Dec. 3	131.56
Dec. 31	143.9	26	131.18	24	132.15
Jan. 2, 1930	143.8	Nov. 16	131.16	Jan. 14, 1937	135.39
Feb. 15	147.3	Dec. 7	131.20	Feb. 4	138.12
Mar. 4	148.1	28	132.29	25	141.35
Apr. 17	150.3	Jan. 16, 1934	136.87	Mar. 18	145.06
May 15	149.9	Feb. 8	139.97	Apr. 8	148.24
June 26	146.6	Mar. 1	141.14	29	150.15
Aug. 7	143.0	22	141.85	May 20	150.86
Sept.25	140.7	Apr. 12	140.99	22	150.83
Oct. 2	140.2	May 3	139.45	26	150.69
23	140.4	24	137.36	June 2	150.47
30	140.3	June 14	135.76	7	150.12
Nov. 6	140.1	July 5	134.37	14	149.48
Dec. 24	140.00	26	132.81	21	148.70
31	139.86	Aug. 16	131.30	28	147.81
Jan. 7, 1931	139.98	Sept. 6	130.38	July 5	146.86
14	140.5	27	129.70	12	145.91
15	140.63	Oct. 19	129.36	19	145.07
22	141.23	Nov. 8	130.97	26	144.27
29	141.66	30	132.88	Aug. 2	143.41
Feb. 5	141.97	Dec. 20	134.52	9	142.70
19	143.4	Jan. 10, 1935	137.07	16	141.98
Mar. 26	143.8	31	139.13	23	141.28
Apr. 16	141.9	Feb. 21	141.13	30	140.66
30	141.2	Mar. 14	142.63	Sept. 6	140.11
May 28	142.5	Apr. 4	143.76	13	139.60
July 23	137.8	25	145.02	20	139.11
Sept. 3	134.7	May 16	145.84	27	138.73
Oct. 28	133.2	June 6	144.76	Oct. 4	138.54
Nov. 11	132.9	27	142.55	11	138.35
Dec. 23	135.2	July 18	140.24	18	138.07
Jan. 13, 1932	137.8	Aug. 8	137.60	25	137.91
Feb. 3	139.2	29	135.33	Nov. 1	137.90
Mar. 30	148.7	Sept.19	134.04	8	137.87
May 10	147.0	Oct. 10	133.20	15	137.85
June 20	143.1	31	132.68	22	137.87
July 5	141.6	Nov. 21	132.77	29	137.97
Aug. 16	137.9	Dec. 14	133.54	Dec. 6	138.02
Sept.30	135.7	Jan. 2, 1936	133.84	13	138.08
Oct. 24	135.4	23	134.08	20	138.70
Nov. 18	135.0	Feb. 14	134.54	27	139.42
Dec. 3	134.9	Mar. 5	137.72	Jan. 3, 1938	140.31
29	135.8	26	139.79	10	141.09
Jan. 11, 1933	136.7	Apr. 16	141.61	17	141.61
24	137.8	May 7	141.16	24	142.25
31	139.0	28	139.06	31	142.83
Feb. 25	142.0	June 18	136.79	Feb. 7	143.45

Los Angeles County--Continued

2/12-13A1--Continued.

Water level, in feet above sea level, 1928-41

Date	Water level	Date	Water level	Date	Water level
Feb. 14, 1938	144.34	Apr. 24, 1939	157.84	July 8, 1940	155.37
21	145.35	May 1	157.84	15	155.06
28	145.95	8	157.69	22	154.43
Mar. 7	149.28	15	157.59	29	153.56
14	151.04	22	157.29	Aug. 5	152.78
21	152.25	29	156.88	12	151.90
28	153.21	June 5	156.44	19	151.03
Apr. 4	154.03	12	156.00	26	150.16
11	154.75	19	155.46	Sept. 2	149.41
18	155.42	26	154.82	9	148.72
25	155.90	July 3	154.15	16	148.06
May 2	156.37	10	153.51	23	147.46
9	156.63	17	152.90	30	146.88
16	156.72	24	152.43	Oct. 7	146.34
23	156.84	31	151.91	14	145.85
30	156.64	Aug. 7	151.43	21	145.36
June 6	156.27	14	150.85	28	145.05
13	155.87	21	150.32	Nov. 4	145.68
20	155.41	28	149.70	11	146.35
27	154.99	Sept. 4	149.04	18	146.95
July 4	154.51	11	148.45	25	147.49
11	154.02	18	147.85	Dec. 2	147.80
18	153.63	25	147.10	9	147.93
25	153.35	Oct. 2	147.78	16	147.95
Aug. 1	153.62	9	148.74	23	148.35
8	154.04	16	149.48	30	149.22
15	154.51	23	149.97	Jan. 6, 1941	149.92
22	154.91	30	150.27	13	150.53
29	155.20	Nov. 6	150.38	20	151.10
Sept. 5	155.43	13	150.54	27	151.68
12	155.61	20	150.50	Feb. 3	152.21
19	155.28	29	150.35	10	152.71
26	154.69	Dec. 4	150.15	19	153.30
Oct. 3	153.95	11	150.00	24	154.09
10	153.21	18	149.90	Mar. 3	155.13
17	152.47	26	149.89	10	156.74
24	151.82	Jan. 2, 1940	150.14	17	158.10
31	151.22	8	150.42	24	159.03
Nov. 7	150.76	15	151.06	31	159.77
14	150.46	22	151.70	Apr. 7	160.40
21	150.22	29	152.28	14	160.94
28	150.02	Feb. 5	152.93	21	161.40
Dec. 5	149.85	12	153.58	28	161.74
12	149.72	19	154.09	May 5	162.09
19	150.09	26	154.51	12	162.32
27	151.07	Mar. 4	155.06	19	162.47
Jan. 3, 1939	152.05	11	155.48	26	162.39
9	152.72	18	155.73	June 2	162.34
16	153.38	25	155.97	9	162.46
23	153.93	Apr. 1	156.20	16	162.56
30	154.53	8	156.50	23	162.69
Feb. 6	155.00	15	156.66	30	162.91
13	155.49	22	156.77	July 7	163.10
20	155.86	29	156.90	14	163.27
27	156.15	May 6,	157.12	21	163.35
Mar. 6	156.38	13	157.20	28	163.42
13	156.61	20	157.17	Aug. 4	163.49
20	156.85	27	157.04	11	163.44
27	157.14	June 3	156.82	18	163.31
Apr. 3	157.41	10	156.34	25	163.23
10	157.66	24	155.23	Sept. 1	163.34
17	157.80	July 1	155.23	8	163.36

Los Angeles County--Continued

2/12-13A1.--Continued.

Water level, in feet above sea level, 1928-41

Date	Water level	Date	Water level	Date	Water level
Sept.15, 1941	163.26	Oct. 29, 1941	162.79	Dec. 3, 1941	162.63
24	163.12	Nov. 5	162.82	10	162.77
Oct. 1	163.05	12	162.80	17	162.76
8	162.90	19	162.70	23	162.76
15	162.80	26	162.64	31	162.83
22	162.74				

3/12-8L3. Numbered C-872a-K-11 in Bulletin 39, California Division of Water Resources; "location" 1537A. Los Angeles County Farm. NE¼SW¼ sec. 8, T. 3 S., R. 12 W. About 2 miles southwest of Downey, 400 feet south and 3,350 feet west of the intersection of Imperial Highway and Paramount Boulevard, about 180 feet west of Eucalyptus Street, in basement of "Ward 30"; access to well is had through basement door in center of north wall of building. Drilled public-supply well, now used solely for observation. Diameter 8 inches, depth 248.2 feet. Measuring point, top of recorder platform at hole, 5 feet below land surface and 87.0 feet above mean sea level. Water-level recorder maintained on well since Jan. 14, 1930, by San Gabriel Valley Protective Association; water-level measurements supplied through courtesy of same agency.

Water level, in feet above sea level, 1930-41

Jan. 14, 1930	76.17	Nov. 13, 1930	67.54	Sept. 3, 1931	58.98
25	77.00	20	69.96	10	58.29
Feb. 1	76.98	27	69.70	17	61.36
8	76.95	Dec. 4	71.81	24	60.23
13	76.96	11	71.27	Oct. 1	63.98
20	75.60	18	70.25	8	63.11
27	76.55	24	70.20	15	63.46
Mar. 6	76.20	31	70.76	22	64.09
13	73.30	Jan. 7, 1931	72.95	29	64.01
20	77.55	15	73.93	Nov. 5	63.85
27	76.12	22	73.30	12	65.87
Apr. 3	74.55	29	71.72	19	68.17
10	73.50	Feb. 5	73.92	26	68.24
17	72.53	12	74.48	Dec. 3	69.29
24	69.28	19	73.82	10	69.81
May 1	69.02	26	71.16	17	70.73
8	73.43	Mar. 5	70.18	24	71.13
15	70.02	12	69.31	31	71.72
22	67.50	19	66.52	Jan. 7, 1932	72.04
June 5	65.97	26	64.30	14	72.05
12	65.10	Apr. 2	63.82	21	72.33
19	64.79	9	62.74	28	71.83
26	63.96	16	61.70	Feb. 4	72.55
July 3	63.78	23	61.45	11	72.80
10	63.28	30	68.83	18	73.22
17	61.55	May 7	68.20	25	73.54
24	62.05	14	66.49	Mar. 3	72.48
31	61.06	21	63.45	9	71.00
Aug. 7	60.37	28	66.74	16	70.21
14	62.60	June 4	63.07	23	68.13
21	61.00	11	60.93	30	68.13
28	60.99	18	59.89	Apr. 6	65.63
Sept. 4	59.98	25	58.00	13	65.33
11	62.00	July 2	57.92	20	64.08
18	63.29	9	57.80	27	66.05
25	64.28	16	58.44	May 4	64.57
Oct. 2	64.01	23	57.46	11	64.30
9	63.45	30	57.93	18	65.15
16	65.77	Aug. 6	58.46	25	62.19
23	67.10	13	59.40	June 1	60.72
30	66.65	20	58.66	8	62.04
Nov. 6	66.01	27	56.67	15	61.70

Los Angeles County--Continued

3/12-8L3.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
June 22, 1932	60.68	Aug. 28, 1933	58.32	Oct. 31, 1934	62.67
29	59.00	Sept. 4	59.69	Nov. 7	63.04
July 6	61.21	11	59.05	14	63.52
13	60.20	18	59.89	21	64.44
20	58.05	25	60.36	28	64.76
27	59.24	Oct. 2	61.75	Dec. 5	64.96
Aug. 3	58.55	9	60.80	12	65.17
10	57.82	16	61.67	19	65.60
17	58.34	23	60.84	26	65.92
24	57.83	30	62.74	Jan. 2, 1935	66.12
31	58.37	Nov. 6	63.24	9	66.44
Sept. 7	59.69	13	62.55	16	66.67
14	60.23	20	63.60	23	66.86
21	60.77	27	63.52	30	66.78
28	62.45	Dec. 4	64.26	Feb. 6	67.07
Oct. 5	63.70	6	64.20	13	67.06
12	64.65	13	65.04	20	66.64
19	63.71	20	66.08	27	66.33
26	63.54	27	66.58	Mar. 6	67.21
Nov. 2	64.14	Jan. 3, 1934	67.38	13	67.45
9	63.08	10	67.80	20	67.19
16	64.83	17	67.90	27	67.46
23	63.54	24	67.94	Apr. 3	67.24
30	65.50	31	67.40	10	67.57
Dec. 7	66.26	Feb. 7	67.53	17	67.21
14	68.28	14	66.31	24	65.59
21	68.92	21	67.81	May 1	66.32
28	69.50	28	68.52	8	63.89
Jan. 4, 1933	69.18	Mar. 7	68.16	15	62.45
11	68.32	14	66.29	22	60.76
18	68.92	21	65.79	29	59.27
25	70.25	28	64.80	June 5	58.13
Feb. 1	70.77	Apr. 4	62.61	12	57.60
8	70.87	11	61.20	19	56.86
15	70.24	18	60.77	26	56.67
22	69.77	25	60.01	July 3	56.59
Mar. 1	69.01	May 2	58.47	10	55.34
8	67.89	9	57.68	17	54.71
15	71.20	16	56.21	24	55.00
22	68.76	23	56.27	31	54.13
29	66.88	30	56.31	Aug. 7	54.25
Apr. 5	66.20	June 6	59.30	14	53.66
12	64.02	13	59.12	21	53.59
19	63.17	20	57.65	28	55.44
26	63.84	27	56.72	Sept. 4	56.85
May 3	65.28	July 4	57.84	11	55.95
10	64.93	11	56.15	18	55.08
17	62.50	18	55.71	25	56.40
24	61.68	25	55.29	Oct. 2	57.43
31	61.55	Aug. 1	54.15	9	57.66
June 7	63.76	8	54.81	16	59.20
14	61.48	15	55.14	23	59.29
21	60.21	22	54.97	30	58.76
28	58.89	29	55.57	Nov. 6	61.14
July 5	59.21	Sept. 5	54.92	13	61.53
12	58.86	12	56.25	20	62.72
19	58.95	19	54.96	27	63.57
24	59.05	26	56.80	Dec. 4	63.52
31	58.84	Oct. 3	56.45	11	63.60
Aug. 7	59.14	10	57.12	18	63.09
14	57.95	17	59.48	24	63.25
21	58.18	24	61.84	31	64.30

Los Angeles County--Continued

3/12-8L3.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1936	64.59	Mar. 24, 1937	65.78	June 8, 1938	58.74
15	63.73	31	65.65	15	59.40
22	61.81	Apr. 7	65.04	22	58.39
27	62.11	14	63.51	29	57.73
Feb. 5	64.11	21	61.66	July 6	57.40
12	64.70	28	61.71	13	58.07
19	65.59	May 5	59.98	20	56.24
26	65.85	12	58.89	27	56.10
Mar 4	65.15	19	58.61	Aug. 3	55.19
11	64.33	26	58.43	10	54.78
18	63.96	June 2	60.20	17	54.45
25	63.82	9	58.00	24	55.19
Apr. 1	64.29	16	56.02	31	55.05
8	62.57	23	54.99	Sept. 7	56.32
15	60.85	30	53.01	14	55.50
22	59.35	July 7	53.27	21	55.12
29	58.78	14	53.94	28	57.59
May 6	57.52	21	53.78	Oct. 5	58.22
13	55.71	28	52.73	12	59.15
20	54.54	Aug. 4	53.24	19	60.40
27	54.78	11	52.75	26	60.45
June 3	54.77	18	53.81	Nov. 2	62.14
10	52.92	25	52.47	9	61.72
17	52.33	Sept. 1	52.83	16	62.09
24	52.15	8	52.49	23	63.34
July 1	51.53	15	52.30	30	62.68
8	52.00	22	53.31	Dec. 7	63.27
15	50.32	29	54.31	14	64.14
22	50.27	Oct. 6	55.51	21	66.65
29	51.36	13	54.65	28	67.21
Aug. 5	50.53	20	57.04	Jan. 4, 1939	67.89
12	51.11	27	57.50	11	68.47
19	49.56	Nov. 3	58.59	18	68.21
26	50.81	10	59.01	25	69.23
Sept. 2	50.21	17	59.98	Feb. 1	69.60
9	50.76	24	60.51	8	69.96
16	50.93	Dec. 1	61.02	15	70.09
23	52.00	8	60.57	22	68.81
30	52.54	15	62.35	Mar. 1	68.29
Oct. 7	53.75	22	62.77	8	68.16
14	54.31	29	63.66	15	69.05
21	57.99	Jan. 5, 1938	63.76	22	69.03
28	58.31	12	63.35	29	69.41
Nov. 4	59.67	19	64.21	Apr. 5	69.35
11	58.77	26	64.30	12	66.50
18	58.52	Feb. 2	64.57	19	64.04
25	59.30	9	65.19	26	64.54
Dec. 2	58.96	16	65.46	May 3	63.41
9	60.12	23	65.43	10	61.65
16	60.78	Mar. 2	66.32	17	61.20
23	61.71	9	66.82	24	59.63
30	62.33	16	67.13	31	59.61
Jan. 6,	62.92	23	66.83	June 7	58.25
13	63.02	30	66.26	14	56.22
20	63.22	Apr. 6	65.54	21	56.40
27	62.81	13	64.67	28	55.81
Feb. 3	63.46	20	63.39	July 5	56.56
10	63.70	27	64.83	12	54.76
17	64.38	May 4	65.14	19	55.09
24	64.38	11	61.34	26	54.25
Mar. 3	64.89	18	62.39	Aug. 2	53.93
10	64.31	25	61.22	9	54.39
17	65.17	June 1	60.06	16	55.42

Los Angeles County--Continued

3/12-8L3.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
Aug. 23, 1939	53.49	June 12, 1940	58.94	Mar. 26, 1941	72.01
30	53.91	19	57.54	Apr. 2	73.19
Sept. 6	54.05	26	57.56	9	73.72
13	53.34	July 3	57.34	16	74.22
20	52.12	10	55.20	23	72.37
27	58.52	17	55.68	30	73.23
Oct. 4	62.21	24	54.60	May 7	72.52
11	63.54	31	55.58	14	70.33
18	62.33	Aug. 7	54.37	21	69.38
25	63.03	14	54.33	28	67.22
Nov. 1	62.58	21	54.30	June 4	67.60
8	64.40	28	54.82	11	66.99
15	64.59	Sept. 4	54.64	18	67.05
22	63.98	11	54.13	25	65.96
29	64.44	18	54.85	July 2	65.49
Dec. 6	64.80	26	55.97	9	64.32
13	65.72	Oct. 2	56.14	16	64.22
20	64.86	9	57.65	23	63.82
27	66.46	16	57.96	30	64.22
Jan. 3, 1940	67.30	23	58.75	Aug. 6	63.99
10	68.09	30	62.42	13	62.58
17	68.35	Nov. 6	63.27	20	63.20
24	68.41	13	63.09	27	64.44
31	68.95	20	63.92	Sept. 3	64.39
Feb. 7	69.52	27	64.36	10	63.13
14	69.50	Dec. 4	62.83	17	65.10
21	69.23	11	64.05	22	63.44
28	69.86	18	65.61	29	65.18
Mar. 6	69.08	24	66.80	Oct. 6	65.21
13	67.17	31	67.20	13	66.80
20	67.62	Jan. 8, 1941	67.66	20	67.16
27	67.58	15	67.83	27	69.98
Apr. 3	68.83	22	68.26	Nov. 3	71.15
10	67.82	29	68.62	10	70.68
17	64.82	Feb. 5	68.37	17	71.08
24	64.81	12	69.27	24	69.90
May 1	65.92	19	69.74	Dec. 1	71.01
8	64.24	26	70.41	8	72.46
15	61.75	Mar. 5	71.37	15	73.69
22	62.66	12	71.97	22	74.05
29	60.52	19	72.61	29	74.70
June 5	59.25				

4/12-8P1. Numbered C-926-M-11 in Bulletin 39, California Division of Water Resources; "location" 936; Bouton well 1; J. B. Lippincott, well 936-A; Water-Supply Paper 138, well 934. Montana Land Company. SE¼SW¼ sec. 8, T. 4 S., R. 12 W. About 2 miles north of Signal Hill, 735 feet north of Carson Street and 143 feet east of the Union Pacific Railroad, and 5 feet northwest of large concrete head box. Drilled public-supply well now used solely for observation. Diameter 14 inches, reported depth 714 feet; reported perforated 674-714 feet below land surface. Measuring point from Aug. 16, 1923, to Sept. 24, 1924, top of hole bored in board floor, assumed to be 2-inch plank resting on top of casing, 0.18 foot above top of casing and 68.66 feet above mean sea level; measuring point from Sept. 24, 1924, to June 6, 1929, top of casing 0.2 foot above land surface and 68.48 feet above mean sea level; measuring point from June 6, 1929, to Sept. 26, 1929, top of 2-inch plank, 0.18 foot above top of casing and 68.66 feet above mean sea level; measuring point since Sept. 26, 1929, top of recorder platform 0.42 foot above top of casing and 68.90 feet above mean sea level. Water-level recorder maintained on well since Oct. 1, 1929, by the San Gabriel Valley Protective Association. Water-level measurements supplied through courtesy of the city of Long Beach and the San Gabriel Valley Protective Association except for measurements

Los Angeles County--Continued

4/12-8P1.--Continued.

from Jan. 5 to Sept. 3, 1926, which are taken from Bulletin 5, California Division of Water Rights, p. 625. Water-level in this well probably affected by heavy pumping from public-supply wells to south.

Water level, in feet above or below (-) sea level, 1903, 1923-41

Date	Water level	Date	Water level	Date	Water level
July 30, 1903	a 68.5	Oct. 4, 1929	-17.03	Nov. 21, 1930	- 7.86
Aug. 16, 1923	34.21	11	-15.82	28	- 3.93
Sept. 7	31.98	18	-13.40	Dec. 5	- 4.15
Oct. 11	35.25	25	-16.03	12	- 2.33
Nov. 2	35.26	Nov. 1	-16.08	19	- 3.25
17	35.39	8	-12.31	26	- 4.47
Jan. 8, 1924	45.51	15	-11.78	Jan. 2, 1931	- 3.10
Feb. 1	51.08	22	-11.39	9	1.43
28	40.16	26	-10.09	16	3.44
Mar. 26	46.53	Dec. 6	- 6.91	23	4.56
May 8	45.75	13	- 3.16	30	5.07
June 5	32.16	20	- 1.51	Feb. 6	6.57
July 13	23.46	27	- 2.55	12	7.45
Aug. 6	24.66	Jan. 3, 1930	- 3.91	19	7.99
27	19.87	10	2.50	26	8.08
Sept. 24	16.79	17	5.15	Mar. 5	7.23
Jan. 3, 1925	39.5	24	6.71	12	5.04
Feb. 2,	37.5	31	8.57	19	2.99
Mar. 11	39.0	Feb. 7	10.30	26	2.05
Apr. 7	37.3	14	11.18	Apr. 2	1.27
May 1	37.8	21	11.85	9	.41
June 1	31.3	28	12.56	16	- 1.79
July 1	26.0	Mar. 10	13.69	23	- 1.81
Aug. 1	15.2	17	14.26	30	1.77
Sept. 1	10.0	21	14.25	May 7	2.96
Oct. 1	8.3	28	14.18	14	2.58
Nov. 1	17.5	Apr. 4	14.31	21	- .95
Dec. 1	22.5	11	13.40	28	- 1.43
Jan. 5, 1926	29.0	18	12.32	June 4	- .59
28	26.2	25	10.11	11	- 3.73
Mar. 8	26.9	May 2	11.61	18	- 4.77
Sept. 3	b 5.5	9	13.37	25	- 3.94
Dec. 13	17.28	16	12.60	July 2	- 6.53
Jan. 26, 1927	25.08	23	8.91	9	- 6.94
Mar. 14	32.28	30	6.20	16	- 6.09
28	31.48	June 6	5.08	23	-13.00
June 2	b 20.88	13	1.10	30	-18.25
Sept. 15	3.48	20	4.17	Aug. 6	-19.34
Nov. 14	14.68	27	4.85	13	-19.18
Jan. 27, 1928	22.48	July 4	.69	20	-20.27
Aug. 21	- 6.24	11	1.37	27	-22.09
Oct. 11	- 4.17	18	- 2.18	Sept. 3	-15.16
Dec. 24	5.37	25	- 2.98	10	-12.20
Apr. 18, 1929	11.90	Aug. 1	- 4.04	14	-14.05
May 2	9.76	8	- 6.96	17	-14.29
13	5.86	15	- 9.05	24	-14.10
14	4.23	22	- 6.31	Oct. 1	-13.37
June 6	.56	29	- 7.41	8	-16.48
19	- .38	Sept. 5	-13.01	14	-17.33
28	- 3.47	12	-15.60	21	-18.83
July 13	- 4.55	19	-13.93	28	-17.16
26	-10.46	26	-13.35	Nov. 4	-17.32
Aug. 5	-13.95	Oct. 3	-13.20	11	-16.30
15	-12.81	10	- 9.37	18	- 9.36
27	-16.45	17	-12.61	25	- 9.04
29	-17.61	24	-12.19	Dec. 2	- 7.19
Sept. 4	-18.60	31	-12.45	9	- 4.57
26	-17.94	Nov. 7	-11.63	16	- 2.21
Oct. 1	-18.14	14	- 8.13	23	- .75

a Measurement from Water-Supply Paper 138, p. 74.
b Well 600 feet to northeast pumping.

Los Angeles County--Continued

4/12-8P1.--Continued.

Water level, in feet above or below (-) sea level, 1903, 1923-41

Date	Water level	Date	Water level	Date	Water level
Dec. 30, 1931	.51	Mar. 1, 1932	15.48	May 9, 1934	5.79
Jan. 6, 1932	1.77	8	14.75	16	5.13
13	2.81	15	15.19	23	5.25
20	3.53	22	14.07	30	4.25
27	4.10	28	17.34	June 6	6.80
Feb. 3	4.76	Apr. 5	14.47	13	5.36
10	5.38	12	13.00	20	5.48
17	5.99	19	10.25	27	1.04
24	6.56	26	9.01	July 4	2.72
Mar. 2	7.32	May 3	8.49	11	3.51
9	6.94	10	7.51	18	2.09
16	7.18	17	8.56	25	- .06
23	6.74	24	7.53	Aug. 1	- 3.28
30	6.47	31	8.62	8	- 4.49
Apr. 6	5.77	June 7	10.22	15	- 8.06
13	5.13	14	12.43	22	-10.42
20	3.09	21	11.25	29	-11.50
27	3.84	28	10.70	Sept. 5	-12.03
May 4	3.70	July 5	11.27	12	-13.49
11	4.37	12	9.55	19	-12.80
18	4.25	19	9.26	26	-10.74
25	3.85	26	8.30	Oct. 3	-12.59
June 1	2.46	Aug. 2	7.77	10	-11.52
8	2.57	9	7.62	17	-10.41
15	1.72	16	7.55	24	- 1.83
22	1.45	23	5.19	31	- 3.80
29	2.44	30	3.53	Nov. 7	- 2.02
July 6	3.55	Sept. 6	3.31	14	- .14
13	3.85	13	3.16	21	2.74
16	3.41	20	4.03	28	4.68
20	3.58	27	4.05	Dec. 5	2.47
27	3.51	Oct. 4	3.10	12	6.20
Aug. 3	4.03	11	3.42	19	7.76
10	4.03	18	1.52	26	7.74
17	4.42	25	2.27	Jan. 2, 1935	8.41
24	3.93	Nov. 1	2.82	9	8.86
31	1.55	8	2.32	16	8.86
Sept. 7	.52	15	1.61	23	9.00
14	.49	22	2.56	30	9.17
21	- 2.34	29	2.87	Feb. 6	9.76
28	- 3.67	Dec. 6	3.43	13	10.28
Oct. 5	- 4.87	13	4.73	20	10.88
12	- 4.25	20	7.94	27	12.00
19	- 4.42	27	9.26	Mar. 6	12.68
26	- 5.25	Jan. 3, 1934	10.31	13	12.92
Nov. 2	- 5.47	10	11.26	20	12.01
9	- 5.24	17	12.09	27	11.63
16	- 6.12	24	12.37	Apr. 3	11.69
23	- 5.61	31	11.85	10	11.72
30	- 3.48	Feb. 7	11.94	17	11.54
Dec. 7	- 1.30	14	11.97	24	10.90
14	2.42	21	12.64	May 1	7.51
21	5.11	28	13.93	8	3.31
28	6.95	Mar. 7	14.04	15	1.83
Jan. 4, 1933	8.60	14	12.90	22	.78
11	9.76	21	12.69	29	- .63
18	10.72	28	12.17	June 5	- 4.55
25	12.89	Apr. 4	10.66	12	- 7.75
Feb. 1	14.00	11	9.24	19	- 9.28
8	14.97	18	8.95	26	- 9.84
15	15.51	25	9.68	July 3	- 7.50
22	15.43	May 3	8.54	10	- 8.70

Los Angeles County--Continued

4/12-8P1.--Continued.

Water level, in feet above or below (-) sea level, 1903, 1923-41

Date	Water level	Date	Water level	Date	Water level
July 17, 1935	-11.25	Sept. 16, 1936	-29.61	Nov. 24, 1937	-29.89
24	-12.18	23	-29.36	Dec. 1	-26.02
31	-13.08	30	-29.47	8	-24.25
Aug. 7	-13.04	Oct. 7	-30.00	15	-16.72
14	-13.81	14	-29.55	22	-18.80
21	-12.24	21	-26.93	29	-18.57
28	-17.03	28	-26.66	Jan. 5, 1938	-15.08
Sept. 4	-13.36	Nov. 4	-24.04	12	-12.27
11	-16.60	11	-25.84	19	-13.74
18	-16.62	18	-24.39	26	-14.92
25	-19.32	25	-20.97	Feb. 2	-15.12
Oct. 2	-17.69	Dec. 2	-21.08	9	-14.63
9	-17.71	9	-18.58	16	-13.94
16	-18.86	16	-17.72	23	-13.64
18	-17.67	23	-16.47	Mar. 2	-12.37
23	-17.41	30	-14.43	9	-12.48
30	-18.80	Jan. 6, 1937	-12.00	16	-12.07
Nov. 6	-17.92	13	- 9.82	23	-11.79
13	-17.59	20	- 7.93	30	-12.02
20	-17.54	27	- 6.73	Apr. 6	-13.46
27	-12.34	Feb. 3	- 5.52	13	-12.93
Dec. 4	- 9.98	10	- 5.99	20	-15.72
11	- 7.21	17	- 5.26	27	-12.95
18	- 5.02	24	- 4.07	May 4	-12.60
24	- 6.27	Mar. 3	- 3.10	11	-15.29
31	- 3.68	10	- 3.31	18	-15.38
Jan. 8, 1936	- 2.20	17	- 2.65	25	-17.72
15	- 2.45	24	- 1.32	June 1	-18.63
22	- 6.20	31	- .26	8	-19.11
29	- 4.48	Apr. 7	- 1.08	15	-19.52
Feb. 5	- 1.90	14	- 3.35	22	-24.08
12	.10	21	- 6.48	29	-21.87
19	1.72	28	- 7.53	July 6	-24.40
26	2.32	May 5	- 8.96	13	-20.95
Mar. 4	1.95	12	-10.59	20	-24.51
11	1.14	19	-12.24	27	-25.53
18	.90	26	-12.12	Aug. 3	-27.43
25	- 1.19	June 2	-11.41	10	-29.57
Apr. 1	- 1.30	9	-13.48	17	-31.37
8	- 2.73	16	-16.24	24	-32.23
15	- 3.56	23	-16.36	31	-32.80
22	- 5.65	30	-18.60	Sept. 2	-31.78
29	- 7.44	July 7	-20.29	7	-31.80
May 6	- 6.15	14	-22.48	14	-31.91
13	-11.22	21	-22.39	21	-33.15
20	-11.27	28	-23.64	28	-33.05
27	-11.39	Aug. 4	-26.03	Oct. 5	-32.15
June 3	-12.42	11	-24.94	12	-33.31
10	-15.31	18	-24.68	19	-31.45
17	-13.97	25	-26.52	26	-32.32
24	-15.63	Sept. 1	-26.37	Nov. 2	-27.45
July 1	-18.71	8	-27.50	9	-30.75
8	-20.32	15	-31.39	16	-28.23
15	-20.40	22	-31.19	23	-26.70
22	-25.36	29	-29.70	30	-24.30
29	-26.60	Oct. 6	-30.22	Dec. 7	-24.42
Aug. 5	-23.73	13	-32.15	14	-22.05
12	-26.20	20	-32.74	21	-18.59
19	-24.30	27	-31.75	28	-16.79
26	-27.00	Nov. 3	-31.48	Jan. 4, 1939	-13.98
Sept. 2	-26.53	10	-30.17	11	-11.55
9	-27.43	17	-30.18	18	-10.00

Los Angeles County--Continued

4/12-8P1.--Continued.

Water level, in feet above or below (-) sea level, 1903, 1923-41

Date	Water level	Date	Water level	Date	Water level
Jan. 25, 1939	- 9.18	Jan. 24, 1940	-12.64	Jan. 22, 1941	-15.45
Feb. 1	- 7.75	31	-12.35	29	-14.30
8	- 5.90	Feb. 7	-11.25	Feb. 5	-13.41
15	- 5.44	14	-10.90	12	-12.45
22	- 5.96	21	- 7.74	19	-11.33
Mar. 1	- 6.30	28	- 3.67	26	-10.56
8	- 6.34	Mar. 6	- 1.54	Mar. 5	- 9.71
15	- 5.93	13	- 3.95	12	- 9.13
22	- 5.57	20	- 5.26	19	- 8.05
29	- 4.70	27	- 6.20	26	- 7.96
Apr. 5	- 4.35	Apr. 3	- 6.48	Apr. 2	- 7.65
12	- 9.13	10	- 7.40	9	- 6.70
19	- 7.47	17	- 9.22	16	- 6.11
26	- 8.78	24	-11.14	23	- 5.91
May 3	- 8.54	May 1	- 9.50	30	- 6.23
10	-12.09	8	-11.26	May 7	- 6.35
17	-10.77	15	-14.35	14	- 8.76
24	-13.40	22	-15.52	21	-10.40
31	-15.90	29	-17.17	28	-12.25
June 7	-14.26	June 5	-18.84	June 4	-12.82
14	-19.13	12	-19.52	11	-11.45
21	-20.32	19	-20.24	18	-11.06
28	-19.36	26	-21.66	25	-13.95
July 5	-19.91	July 3	-23.44	July 2	-16.46
12	-25.20	10	-23.33	9	-19.14
19	-27.19	17	-24.07	16	-20.21
26	-27.57	24	-24.58	23	-20.18
Aug. 2	-25.95	31	-25.30	30	-20.76
9	-30.31	Aug. 7	-25.46	Aug. 6	-24.70
16	-30.50	14	-26.03	13	-25.90
23	-27.22	21	-28.89	20	-27.84
30	-31.14	28	-29.14	27	-28.84
Sept. 6	-30.68	Sept. 4	-29.82	Sept. 3	-29.59
13	-33.21	11	-30.97	10	-30.14
20	-33.68	18	-32.16	17	-30.71
27	-30.59	25	-32.65	22	-30.95
Oct. 4	-30.67	Oct. 2	-33.46	29	-31.52
11	-29.95	9	-33.38	Oct. 6	-31.19
18	-29.89	16	-32.11	13	-30.63
25	-26.63	23	-33.50	20	-30.31
Nov. 1	-30.20	30	-30.24	27	-25.60
8	-25.51	Nov. 6	-30.73	Nov. 3	-25.81
15	-29.47	13	-28.45	10	-22.61
22	-26.60	20	-29.62	17	-23.40
29	-24.60	27	-26.75	24	-20.66
Dec. 6	-23.31	Dec. 4	-28.42	Dec. 1	-24.14
13	-21.38	11	-25.82	8	-19.24
20	-21.78	18	-23.48	15	-17.03
27	-19.58	24	-21.41	22	-15.74
Jan. 3, 1940	-18.79	31	-19.93	29	-14.24
10	-17.19	Jan. 8, 1941	-17.82		
17	-15.70	15	-16.57		

Los Angeles County--Continued.

4/13-23G2. Numbered B-1251 by California Division of Water Resources; "location" 888H; owner's Silverado well 1. City of Long Beach. SW¼NE¼ sec. 23, T. 4 S., R. 13 W. About 4,000 feet north of Willow Street and 1,500 feet west of west bank of Los Angeles River channel, 60 feet south and 80 feet west of 32d Street and Delta Avenue, in stucco pumphouse by large tank. Unused drilled municipal well. Diameter, 26 inches to 288 feet, 16 inches to 1,068 feet, depth 1,074 feet. Perforations 650 to 900 feet below land surface. Measuring point, edge of hole, top of pump base, 1.3 feet above land surface and 28.50 feet above mean sea level. Water-level recorder maintained on well from Oct. 22, 1932, to Jan. 21, 1933, and pressure-type recorder since Apr. 1, 1937, by city of Long Beach; water-level measurements supplied through courtesy of same agency. Water level probably is affected by intermittent pumping in irrigation well about half a mile to north. Water-level measurements to Jan. 21, 1933, are from recorder charts; after 1933, measurements to hundredths of a foot are tape readings by city of Long Beach and measurements to tenths are from pressure-type recorder charts.

Water level, in feet below sea level, 1932-41

Date	Water level	Date	Water level	Date	Water level
Oct. 22, 1932	40.88	June 14, 1935	46.98	Mar. 16, 1937	32.59
26	41.04	July 1	47.31	Apr. 1	32.3
Nov. 2	40.98	22	50.70	6	33.80
10	41.91	23	49.16	May 1	37.0
16	41.99	Aug. 19	47.67	17	39.03
23	42.19	Sept. 3	47.53	June 1	37.9
30	41.47	10	46.12	8	39.01
Dec. 7	40.69	16	47.86	21	41.2
14	38.30	17	48.16	July 1	42.1
21	37.45	23	49.45	15	43.11
28	37.60	30	47.20	19	42.6
Jan. 4, 1933	37.26	Oct. 7	46.95	26	42.7
11	38.86	14	46.70	Aug. 2	42.5
18	38.57	21	47.45	9	42.5
21	37.68	25	48.58	16	43.7
Jan. 12, 1934	35.20	Nov. 18	39.37	20	43.34
19	35.52	Dec. 16	37.66	23	43.0
26	36.13	Jan. 13, 1936	35.23	31	40.2
Feb. 2	36.56	Feb. 18	32.21	Sept. 7	43.7
9	36.10	Mar. 2	38.86	13	44.7
16	37.21	20	36.35	14	44.33
23	34.94	Apr. 2	37.37	20	43.1
Mar. 2	33.39	20	38.02	30	41.7
9	34.92	30	38.28	Oct. 11	39.7
16	36.59	May 15	41.46	18	39.5
20	37.46	June 1	41.37	22	39.05
23	37.72	9	43.17	25	38.2
30	39.06	30	43.70	Nov. 1	37.3
Apr. 6	41.47	July 28	45.38	8	38.0
21	43.16	Aug. 3	44.45	12	36.10
May 18	48.89	14	43.79	15	35.7
June 12	43.59	17	43.37	22	34.2
26	46.81	24	43.78	30	33.3
July 14	49.48	31	44.50	Dec. 6	32.7
20	50.32	Sept. 18	44.18	13	31.7
24	49.42	Oct. 1	42.20	20	31.2
Oct. 29	41.66	13	42.39	27	30.3
Nov. 7	42.97	Nov. 2	36.53	Jan. 3, 1938	29.6
Dec. 15	40.72	19	41.06	10	29.6
Jan. 15, 1935	36.70	30	39.70	17	30.5
Feb. 18	37.51	Dec. 12	38.47	24	29.3
Mar. 22	37.75	Jan. 2, 1937	33.70	25	29.18
Apr. 16	37.72	12	33.35	31	29.2
23	39.20	Feb. 4	33.45	Feb. 7	28.6
May 14	42.06	8	32.14	14	28.63

Los Angeles County--Continued.

4/13-23G2.--Continued.

Water level, in feet below sea level, 1932-41

Date	Water level	Date	Water level	Date	Water level
Feb. 21, 1938	28.7	Mar. 31, 1939	29.7'	May 31, 1940	45.3
Mar. 7	28.86	Apr. 8	31.52	June 8	46.2
7	29.1	15	33.1	15	47.2
14	30.2	22	33.0	22	47.8
28	31.9	May 1	33.2	July 1	46.9
Apr. 1	33.6	6	36.1	6	44.7
11	34.9	9	36.49	13	46.8
18	34.7	13	37.9	20	47.8
25	34.4	20	37.8	Aug. 1	47.2
May 2	32.4	31	41.0	10	49.3
6	33.10	June 9	41.18	17	52.9
9	34.0	10	42.6	24	50.8
16	35.1	17	43.0	30	53.2
23	34.4	30	43.6	Sept. 7	51.4
June 1	34.2	July 8	41.62	14	49.4
7	35.58	15	43.9	21	43.6
13	35.2	22	46.8	Oct. 1	44.4
20	36.5	31	48.4	11	43.0
30	39.2	Aug. 5	47.5	19	42.4
July 11	38.58	12	48.2	26	41.8
18	40.1	18	44.16	Nov. 1	38.7
25	39.4	19	47.4	9	38.2
Aug. 1	39.5	26	47.3	16	40.1
3	40.41	Sept. 1	47.9	23	39.7
8	40.2	11	43.2	Dec. 2	37.8
15	40.9	16	41.09	7	38.7
22	39.8	16	40.9	14	37.2
31	40.6	23	44.5	21	36.4
Sept. 12	42.0	30	39.6	Jan. 2, 1941	32.8
17	40.6	Oct. 7	36.51	11	32.7
24	39.9	7	36.8	18	32.1
26	39.44	14	37.8	25	31.8
Oct. 1	40.9	21	38.2	31	31.8
8	41.9	Nov. 1	38.9	Feb. 8	32.0
15	41.1	13	36.8	15	31.1
22	39.2	18	40.2	21	30.3
25	42.26	25	39.4	28	29.9
31	37.7	Dec. 1	39.8	Mar. 8	30.3
Nov. 5	36.4	8	39.3	15	30.1
12	35.2	15	41.7	22	31.5
14	38.49	23	38.7	31	31.9
19	35.7	Jan. 2, 1940	34.9	Apr. 12	30.9
Dec. 1	34.8	6	34.3	19	32.3
10	35.09	12	33.7	30	35.5
10	35.2	19	32.3	May 10	36.2
17	33.8	30	32.0	17	38.2
24	30.2	Feb. 9	31.2	24	37.2
31	30.0	16	30.8	June 2	38.0
Jan. 7, 1939	29.9	23	31.6	7	44.9
13	29.36	Mar. 1	31.2	14	38.7
14	29.8	9	33.3	21	40.0
21	29.4	16	35.7	July 1	43.1
31	28.5	23	35.4	7	43.1
Feb. 6	28.43	Apr. 1	33.2	12	44.4
11	30.0	6	32.1	19	39.5
20	29.0	13	36.5	26	40.4
Mar. 1	31.2	20	36.7	Aug. 1	40.8
7	31.81	May 1	36.0	9	43.9
11	30.6	11	39.5	23	51.0
18	29.9	18	42.6	Sept. 2	52.9
25	29.9	24	41.5	13	52.4

Los Angeles County--Continued.

4/13-23G2.--Continued.

Water level, in feet below sea level, 1932-41

Date	Water level	Date	Water level	Date	Water level
Sept.20, 1941	45.2	Oct. 25, 1941	50.2	Nov. 15, 1941	42.5
Oct. 1	48.7	31	48.1	Dec. 13	35.4
11	48.2	Nov. 8	40.5	20	34.2
18	51.2				

Orange County

3/11-36Q2. Numbered C-981n by California Division of Water Resources; "location" 1114D. M. Del Giorgio. SW¼SE¼ sec. 36, T. 5 S., R. 11 W. About 1 mile southeast of Buena Park, 40 feet north of Orangethorpe Avenue and 900 feet east of the intersection of Manchester and Orangethorpe Avenues. Drilled irrigation well now used solely for observation. Diameter 12 inches, reported depth 666 feet. Measuring point, top of casing at land surface and 91.58 feet above mean sea level. Water-level recorder maintained on well since May 24, 1930, by Orange County Flood Control District; water-level measurements supplied through courtesy of same agency. Water level probably is affected by intermittent pumping in irrigation well 640 feet west which is about same depth; perforations in both wells reported at intervals between 500 and 650 feet below land surface.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
May 24, 1930	37.78	Feb. 7, 1931	39.88	Oct. 15, 1931	18.82
31	35.36	13	40.29	22	20.08
June 7	28.73	20	40.44	29	19.77
14	26.83	27	40.19	Nov. 5	19.43
21	27.44	Mar. 6	38.21	12	23.83
28	27.78	13	38.04	19	27.21
July 4	25.36	20	35.09	26	27.80
11	21.83	27	28.64	Dec. 3	30.10
18	19.78	Apr. 3	24.04	10	31.46
25	20.02	10	23.23	17	32.66
Aug. 1	19.25	17	22.77	24	33.49
8	19.00	23	22.72	31	34.16
15	19.35	30	30.59	Jan. 7, 1932	34.90
22	19.79	May 7	33.01	14	34.49
29	17.60	14	30.82	21	35.93
Sept. 5	17.82	21	28.59	28	35.93
12	18.27	28	28.11	Feb. 4	36.47
19	20.38	June 4	23.97	11	37.21
26	21.27	11	19.16	18	37.71
Oct. 3	21.51	18	18.84	25	37.99
10	20.85	25	17.08	Mar. 3	37.80
17	22.10	July 2	16.89	10	37.96
24	24.51	9	15.60	17	37.06
31	23.01	16	14.74	24	36.31
Nov. 7	21.83	23	15.00	31	34.10
14	23.84	30	13.12	Apr. 7	31.48
21	29.99	Aug. 6	12.16	14	27.14
28	32.04	13	14.20	21	24.05
Dec. 12	35.34	20	13.81	28	28.64
19	33.74	27	13.10	May 5	25.98
26	33.30	Sept. 3	12.19	12	25.18
Jan. 2, 1931	31.37	10	13.48	19	25.13
9	36.22	17	13.09	26	21.48
16	37.91	24	15.89	June 1	20.85
23	38.80	Oct. 1	17.88	8	21.48
30	38.57	8	17.50	15	19.45

Orange County--Continued.

3/11-36Q2.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
June 22, 1932	18.74	Aug. 30, 1933	12.83	Oct. 31, 1934	19.67
29	16.14	Sept. 6	13.16	Nov. 7	21.15
July 6	16.11	13	13.97	14	22.13
13	16.52	20	12.59	21	23.35
20	16.21	28	14.86	28	23.98
27	15.82	Oct. 4	11.32	Dec. 5	24.34
Aug. 3	14.10	13	13.32	13	25.42
10	13.90	18	14.10	19	25.76
17	16.87	25	14.93	26	26.30
24	16.11	Nov. 1	17.53	Jan. 2, 1935	26.75
31	14.08	8	16.82	10	27.26
Sept. 7	14.38	15	16.45	16	27.56
14	15.78	22	17.75	23	27.97
21	16.09	29	18.24	30	28.29
28	15.85	Dec. 6	19.78	Feb. 6	28.71
Oct. 5	19.14	13	21.66	13	29.06
13	22.69	20	24.80	20	29.06
20	23.77	27	26.26	27	29.01
27	19.84	Jan. 3, 1934	27.80	Mar. 6	29.49
Nov. 3	19.13	10	28.13	13	29.73
10	17.65	17	28.74	20	29.89
17	19.62	24	29.14	27	30.15
23	18.26	31	29.06	Apr. 3	30.22
30	21.10	Feb. 7	29.16	11	30.46
Dec. 7	23.84	14	28.03	17	30.33
14	27.63	21	29.50	24	29.36
21	29.37	28	30.36	May 1	29.48
28	30.78	Mar. 7	30.58	8	28.56
Jan. 4, 1933	31.40	14	29.86	15	26.14
11	31.20	21	28.73	22	24.13
18	31.36	28	27.88	29	20.14
25	32.71	Apr. 4	26.11	June 5	16.93
Feb. 1	33.53	11	21.52	12	16.37
8	33.84	18	21.36	19	13.28
15	33.94	25	18.18	26	10.83
21	33.91	May 2	14.33	July 3	12.86
28	33.30	9	13.09	10	11.41
Mar. 14	33.55	16	12.36	17	8.41
21	31.51	23	11.52	24	9.35
28	29.23	29	12.23	31	8.15
Apr. 4	25.80	June 5	11.69	Aug. 7	8.18
11	23.40	12	14.43	14	6.83
18	21.01	19	14.51	21	7.91
25	21.07	26	12.62	28	8.09
May 2	23.63	July 3	9.48	Sept. 4	11.11
9	23.86	10	10.79	11	8.63
16	22.72	17	8.72	18	10.26
23	20.55	24	10.12	25	9.39
31	17.55	31	6.80	Oct. 2	10.17
June 7	17.89	Aug. 7	6.82	9	12.79
14	15.91	15	7.67	16	13.74
21	13.88	22	8.12	23	13.47
28	12.72	29	9.23	30	11.64
July 5	14.12	Sept. 5	9.63	Nov. 6	14.82
12	14.49	12	8.82	13	14.91
19	14.26	19	7.63	20	18.25
26	10.51	26	8.99	27	20.54
Aug. 2	9.89	Oct. 3	6.82	Dec. 4	20.94
9	12.08	10	9.28	11	22.10
16	11.05	17	12.28	18	20.56
23	10.98	24	17.74	26	20.47

Orange County--Continued.

3/11-36Q2.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1936	22.71	Mar. 11, 1937	23.36	May 25, 1938	18.93
9	22.76	18	24.01	June 1	18.14
16	22.53	25	24.55	8	15.21
23	20.48	Apr. 1	24.76	15	13.42
30	18.48	8	24.85	22	14.27
Feb. 6	22.61	15	24.88	29	13.00
13	24.22	22	23.50	July 6	14.17
20	25.01	29	23.38	12	11.84
27	25.46	May 6	21.81	20	9.99
Mar. 5	25.54	12	18.76	27	9.00
12	25.58	19	16.70	Aug. 3	6.41
19	24.85	26	15.55	10	6.96
26	24.88	June 2	15.82	17	7.47
Apr. 2	25.00	9	15.33	24	7.71
9	23.96	16	13.06	31	6.63
16	21.99	23	9.61	Sept. 7	7.72
23	21.50	30	9.34	14	8.07
30	19.41	July 7	7.40	21	7.49
May 7	15.10	14	7.23	28	7.99
14	12.14	21	5.28	Oct. 5	8.33
21	11.16	28	5.55	13	11.38
28	11.75	Aug. 4	4.98	19	11.29
June 4	10.52	11	3.78	26	13.65
11	9.53	18	4.16	Nov. 2	14.81
18	8.31	25	4.78	9	13.48
25	7.23	Sept. 1	4.73	16	12.48
July 2	6.93	8	4.31	23	14.04
9	5.23	15	2.68	30	15.47
16	4.43	22	3.39	Dec. 7	14.38
23	3.04	29	5.18	14	17.15
30	2.74	Oct. 6	7.34	21	21.90
Aug. 5	3.21	13	5.24	28	23.58
12	4.93	20	7.00	Jan. 4, 1939	24.82
20	4.00	27	9.22	11	25.80
27	3.04	Nov. 3	10.29	18	26.49
Sept. 3	2.94	10	10.88	25	27.20
10	3.06	17	11.42	Feb. 1	27.76
17	3.89	24	12.61	8	28.46
24	5.11	Dec. 1	13.58	15	28.77
Oct. 1	6.61	8	13.39	22	29.07
8	5.66	15	17.42	Mar. 1	29.09
15	6.88	22	18.53	8	29.16
22	9.82	29	19.79	15	29.75
29	8.33	Jan. 5, 1938	20.80	22	29.94
Nov. 5	12.26	12	20.08	29	30.55
12	10.61	19	20.94	Apr. 5	30.64
19	8.53	26	21.81	12	28.96
25	7.80	Feb. 2	22.56	19	28.00
Dec. 2	9.82	9	23.18	26	26.37
9	11.89	16	23.70	May 3	24.16
16	13.89	23	23.94	10	19.36
23	16.58	Mar. 10	24.52	17	19.84
30	18.12	16	25.32	24	18.09
Jan. 7, 1937	19.32	23	25.71	31	14.40
14	19.80	30	26.02	June 7	12.96
21	20.09	Apr. 6	26.07	14	11.71
28	19.31	13	25.64	21	10.87
Feb. 4	20.55	20	24.76	28	10.54
11	21.58	27	23.75	July 5	11.33
18	22.36	May 4, 1938	25.00	12	9.34
25	22.88	11	23.04	19	7.64
Mar. 4	23.13	18	21.57	26	6.20

Orange County--Continued.

3/11-36Q2.--Continued.

Water level, in feet above sea level, 1930-41

Date	Water level	Date	Water level	Date	Water level
Aug. 2, 1939	7.41	May 29, 1940	17.75	Mar. 19, 1941	31.03
9	8.38	June 5	16.16	26	31.71
16	8.42	12	14.54	Apr. 2	32.77
23	8.48	19	13.41	9	33.52
30	6.16	26	11.06	16	34.44
Sept. 6	7.23	July 3	12.55	23	34.93
13	8.16	10	10.75	30	35.57
20	5.83	17	7.06	May 7	36.39
27	10.26	24	7.30	14	36.19
Oct. 4	16.08	31	7.01	21	34.23
11	18.74	Aug. 7	6.82	28	32.38
18	20.14	14	5.59	June 4	28.94
25	20.89	21	6.53	11	25.67
Nov. 1	18.81	28	6.59	18	24.41
8	17.48	Sept. 4	8.46	27	22.54
15	17.62	11	7.82	July 2	22.95
22	13.71	18	7.89	9	23.25
29	17.08	25	7.02	16	19.84
Dec. 6	18.72	Oct. 2	7.88	23	19.18
13	21.18	9	10.35	30	17.20
20	20.57	15	8.87	Aug. 6	17.62
27	22.66	22	10.39	13	19.46
Jan. 3, 1940	24.35	31	15.75	20	16.78
10	25.90	Nov. 6	17.11	27	17.38
17	26.71	13	16.36	Sept. 3	19.08
24	27.30	20	18.51	10	19.00
31	27.84	27	19.64	17	18.42
Feb. 7	28.52	Dec. 4	19.25	24	18.37
14	28.82	11	20.28	Oct. 1	19.08
21	29.06	18	21.96	8	19.38
28	29.47	26	24.00	15	20.68
Mar. 6	29.50	Jan. 2, 1941	24.86	22	22.56
13	29.14	8	25.51	29	27.00
20	28.48	15	26.13	Nov. 5	29.03
27	28.58	22	26.61	12	30.67
Apr. 3	29.18	29	27.20	19	31.26
10	29.66	Feb. 5	27.35	26	30.42
17	29.25	11	27.87	Dec. 3	30.46
24	28.57	19	28.51	10	31.74
May 1	29.36	26	29.04	17	33.97
8	27.84	Mar. 5	29.75	24	35.08
15	24.59	12	30.23	31	35.79
22	21.94				

4/9-7B1. Numbered C-1059-M-17 in Bulletin 39, California Division of Water Resources; "location" 15635B. Dowling and Prentice (formerly White Star Water Company). NW¼NE¼ sec. 7, T. 4 S., R. 9 W. About 3 miles east of Anaheim, 400 feet south and 2,700 feet east of the intersection of Rio Vista and North Streets, under pepper tree 25 feet west of south end of land in orange grove. Drilled irrigation well now used solely for observation, pump removed November 1934; water-table well. Diameter 16 inches, depth 208.3 feet. Perforations reported from 140 to 230 feet below land surface. Measuring point to May 31, 1935, and from Sept. 25, 1935, to July 30, 1941, except as noted, top of casing 1.0 foot above land surface and 215.0 feet above mean sea level; measuring point from May 31, 1935, to Sept. 25, 1935, top of recorder floor at hole, 0.21 foot above top of casing and 215.21 feet above mean sea level; measuring point since July 30, 1941, top edge of center hole in cover-insert welded on casing, 0.1 foot below top of casing and 214.9 feet above mean sea level. Water-level recorder maintained on well from May 31 to Sept. 25, 1935, by Orange County Flood Control District. Water-level measurements to Jan. 11, 1932, made by San Gabriel Valley Protective Association; all subsequent measurements made by and supplied through courtesy of Orange County Flood Control District.

Orange County--Continued.

4/9-7B1.--Continued.

Water level, in feet above sea level, 1928-41

Date	Water level	Date	Water level	Date	Water level
Oct. 1, 1928	65.0	Nov. 20, 1935	20.12	May 12, 1937	39.26
Nov. 1	63.2	27	20.41	19	38.43
Dec. 14	64.4	Dec. 5	20.90	26	37.66
Apr. 22, 1929	66.8	11	21.10	June 2	38.45
Jan. 15, 1930	47.5	18	21.54	9	37.82
Apr. 30	51.0	23	18.23	16	35.88
May 5	51.3	Jan. 2, 1936	21.62	23	34.87
July 28	45.8	9	21.89	30	34.02
Feb. 24, 1931	41.5	16	22.21	July 7	33.34
Mar. 30	40.9	23	21.97	14	32.75
Apr. 28	38.7	30	19.25	21	32.02
July 14	34.8	Feb. 6	17.60	28	31.14
Oct. 5	27.4	20	22.92	Aug. 4	30.01
Nov. 2	25.1	27	23.47	11	29.24
Dec. 8	28.8	Mar. 3	24.10	18	28.82
Jan. 11, 1932	31.3	10	24.34	25	27.88
June 3	37.80	19	25.15	Sept. 1	27.06
28	(a)	26	25.35	8	26.51
July 25	(a)	Apr. 2	25.65	15	25.79
Aug. 29	34.22	9	25.94	22	24.84
Sept. 23	(a)	23	26.12	29	24.13
Oct. 17	31.79	30	25.95	Oct. 6	23.86
Nov. 16	30.72	May 8	25.45	13	23.05
Dec. 17	31.40	14	24.83	20	22.34
Jan. 6, 1933	32.84	21	24.00	27	22.26
Feb. 10	34.55	28	23.28	Nov. 3	22.21
Mar. 24	(a)	June 4	23.02	10	22.33
30	(a)	11	22.50	17	22.29
May 24	34.54	25	21.00	24	22.08
July 6	28.34	July 2	20.28	Dec. 1	22.58
27	(a)	7	19.45	8	22.22
Sept. 14	(a)	9	19.14	15	22.78
Oct. 16	23.53	16	18.24	22	23.18
Dec. 11	23.25	23	16.44	29	23.58
Feb. 6, 1934	27.62	30	16.16	Jan. 5, 1938	23.98
May 1	27.37	Aug. 18	12.25	12	24.39
Aug. 9	19.36	27	13.04	19	24.62
Nov. 26	17.91	Sept. 3	12.22	26	25.12
Feb. 18, 1935	25.00	10	11.48	Feb. 2	25.28
Mar. 11	26.85	18	11.11	16	26.00
Apr. 12	29.94	24	10.59	23	26.31
May 31	31.69	Oct. 8	9.94	Mar. 10	30.98
June 5	31.66	22	8.30	16	37.33
12	31.23	28	8.21	23	43.58
26	30.09	Jan. 14, 1937	11.93	30	48.38
July 3	29.41	21	12.55	Apr. 6	51.42
10	29.07	27	13.00	13	53.16
17	28.47	Feb. 4	13.73	20	54.68
24	27.49	10	14.66	27	55.75
Aug. 7	25.85	18	18.78	May 4	57.94
14	25.23	25	27.62	11	60.82
21	24.16	Mar. 2	29.27	18	60.0
Sept. 4	23.14	4	29.63	25	58.83
11	22.94	11	29.40	June 1	57.39
18	22.41	18	28.45	8	55.22
Oct. 2	21.14	25	30.43	15	52.78
9	21.12	Apr. 1	34.93	22	51.17
16	20.96	8	36.82	29	49.70
23	20.62	15	36.84	July 6	48.98
30	20.22	23	38.58	13	48.20
Nov. 6	19.43	29	40.57	20	47.34
13	19.76	May 6	40.36	27	45.83

a Well pumping.

Orange County--Continued.

4/9-7B1.--Continued.

Water level, in feet above sea level, 1928-41

Date	Water level	Date	Water level	Date	Water level
Aug. 3, 1938	44.29	Oct. 4, 1939	28.17	Dec. 11, 1940	24.53
10	43.65	11	28.71	18	24.89
17	42.46	18	29.16	Jan. 2, 1941	26.09
24	35.38	25	29.50	8	27.32
31	40.75	Nov. 1	29.06	15	28.75
Sept. 7	40.39	8	29.03	22	28.96
14	40.22	15	28.73	29	29.45
21	38.40	22	28.51	Feb. 5	30.16
28	37.77	29	28.78	11	30.61
Oct. 5	37.17	Dec. 6	28.66	19	31.34
13	36.33	13	29.02	26	35.28
18	36.09	20	29.03	Mar. 5	49.62
26	35.35	27	29.20	12	64.90
Nov. 2	35.27	Jan. 3, 1940	29.47	19	77.77
9	34.97	10	29.82	26	83.35
16	34.46	17	30.25	27	83.25
23	34.12	24	30.61	Apr. 2	82.77
30	33.88	31	31.32	3	83.17
Dec. 7	33.80	Feb. 7	32.12	8	87.89
14	33.73	21	34.00	9	88.97
21	34.14	28	34.30	15	93.45
28	34.45	Mar. 6	34.82	16	94.46
Jan. 4, 1939	34.86	13	35.26	23	98.03
11	35.43	20	35.75	30	97.48
18	36.00	27	36.09	May 6	98.98
25	36.66	Apr. 3	36.43	7	99.71
Feb. 1	37.39	10	36.92	14	103.32
8	38.20	17	37.50	21	103.06
15	39.92	24	38.04	28	94.88
22	41.47	May 2	38.64	June 4	86.93
Mar. 1	42.20	8	38.93	11	81.95
8	42.56	15	38.48	18	78.00
15	42.80	22	38.51	27	74.78
22	42.99	29	38.21	July 2	72.21
29	43.23	June 5	37.77	9	70.25
Apr. 5	43.56	12	36.95	16	68.53
12	43.77	19	36.18	30	65.04
19	44.12	26	35.49	Aug. 6	62.92
26	44.10	July 3	34.62	13	62.48
May 3	43.89	10	34.32	20	61.28
10	43.02	17	33.14	27	60.00
17	43.65	24	31.95	Sept. 3	59.35
24	43.12	31	30.75	10	58.49
31	a 41.93	Aug. 7	30.15	17	57.95
June 7	41.11	14	28.90	24	57.47
14	40.61	21	27.81	Oct. 1	56.50
21	39.86	28	27.82	8	55.38
28	39.67	Sept. 4	26.30	15	54.80
July 5	38.83	11	25.44	23	54.34
12	38.02	18	24.98	29	54.80
19	36.49	25	24.76	Nov. 5	54.74
26	35.40	Oct. 2	24.19	12	55.10
Aug. 2	34.16	9	23.54	19	54.95
9	33.18	15	23.23	26	53.64
16	32.28	22	22.57	Dec. 3	53.10
23	31.39	Nov. 6	23.40	10	55.80
30	30.74	13	23.73	17	54.50
Sept. 6	29.68	20	24.10	24	54.71
13	28.95	27	24.51	31	54.93
20	28.40	Dec. 4	24.52		
27	27.65				

a Measured from top edge of center hole in cover plate, 0.1 foot below top of casing.

Orange County--Continued.

4/10-22L2. Formerly numbered 41b and described in Water-Supply Paper 840, p. 28; Water-Supply Paper 845, p. 18; Water-Supply Paper 886, p. 24. Halderman and Callens. Located 17 feet north and 4 feet east of well 4/10-22L1 (formerly no. 41 in Water-Supply Paper 468, p. 44; Water-Supply Paper 817, p. 7) instead of 7 feet north as stated in Water-Supply Paper 840. Used drilled irrigation well, reported perforated between 140-158, 370-401, and 410-457 feet below land surface. Measuring point, hole in east side of pump base, 0.1 foot above land surface and 136.09 feet above mean sea level. Water-level measurements supplied through courtesy of Orange County Flood Control District and San Gabriel Valley Protective Association.

Water level, in feet above sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	a 18.17	Apr. 3	a 24.98	July 14	bc 12.53	Oct. 21	a 26.83
14	b 18.46	22	b 27.99	Aug. 15	b 24.16	Nov. 17	b 28.81
30	a 19.18	24	a 28.18	Sept.18	a 24.41	21	a 28.79
Feb. 10	b 19.87	May 20	b 30.17	19	bc 14.49	Dec. 11	a 29.58
20	a 20.38	June 5	a 27.98	Oct. 9	a 23.57	16	b 30.11
Mar. 11	b 22.08	16	b 28.09	14	bc 11.84		

4/11-19K1. Numbered C-909k by California Division of Water Resources; "location" 1038F; owner's well 6; well 1183 in Water-Supply Paper 138. Los Alamitos Sugar Co. (Dr. W. J. Ross Co., lessee). NW¼SE¼ sec. 19, T. 4 S., R. 11 W. About half a mile north of Los Alamitos, 66 feet south of Spring Street and 1,330 feet east of Los Alamitos Boulevard, 30 feet south of high board fence. Drilled industrial well now used solely for observation. Diameter 12 inches, measured depth 448.4 feet. Reported to be perforated between 440 and 460 feet below land surface. Measuring point to Jan. 6, 1933, top of casing, at land surface and 28.50 feet above mean sea level; measuring point from Jan. 6 to July 7, 1933, and Sept. 29, 1933, to Mar. 23, 1935, top of iron plate 0.09 foot above top of casing and 28.59 feet above mean sea level; measuring point from July 8 to Sept. 29, 1933, top of recorder platform, 0.06 foot above top of casing and 28.56 feet above mean sea level; measuring point since Mar. 23, 1935, top of recorder platform, 0.22 foot above land surface datum and 28.72 feet above mean sea level. Water-level recorder maintained on well from July 8 to Sept. 29, 1933, by Orange County Flood Control District, and since Mar. 23, 1935, by city of Long Beach. Water-level measurements supplied through courtesy of the above agencies, also the Los Angeles County Flood Control District.

Water level, in feet above or below (-) sea level, 1901,1903, 1929-41

Date	Water level	Date	Water level	Date	Water level
1901	(d)	Nov. 1, 1933	7.0	Mar. 21, 1934	17.8
Aug. 20, 1903	(d)	8	7.2	28	16.8
Sept.13, 1929	11.6	15	8.0	Apr. 4	15.6
Jan. 21, 1930	28.1	22	8.7	11	13.7
Apr. 23	e 28.0	29	9.7	18	7.6
Nov. 26	e 19.0	Dec. 6	10.6	25	7.5
Apr. 15, 1931	6.1	13	11.6	25	7.7
May 20	14.2	20	13.2	May 2	4.8
Nov. 7	18.6	20	13.3	9	3.7
May 6, 1932	18.5	27	14.1	15	2.2
Jan. 6, 1933	20.1	Jan. 3, 1934	16.3	23	.8
Apr. 24	13.4	10	17.3	29	.3
26	14.0	17	17.9	June 5	.1
July 7	7.1	24	18.2	11	4.7
8	7.1	31	18.2	12	4.8
12	5.2	Feb. 7	18.5	26	5.0
19	6.1	14	18.3	July 3	4.8
26	6.2	21	18.1	10	5.0
Oct. 11	5.9	28	18.7	18	3.9
18	4.6	Mar. 7	18.9	26	3.7
25	4.7	14	18.5	31	3.2

a Tape measurements by San Gabriel Valley Protective Asspciation.
b Tape measurements by Orange County Flood Control District.
c Well pumping.
d Flowing.
e Measuring point 5.6 feet above top of casing.

Orange County--Continued.

4/11-19K1.--Continued.

Water level, in feet above or below (-) sea level, 1901, 1903, 1929-41

Date	Water level	Date	Water level	Date	Water level
Aug. 7, 1934	- .1	Sept.25, 1935	4.87	Dec. 2, 1936	3.64
15	1.1	Oct. 2	3.02	9	2.81
22	2.5	9	5.20	16	6.88
29	3.1	16	3.59	23	8.83
Sept. 5	3.1	23	6.65	30	10.96
12	2.5	30	5.78	Jan. 6, 1937	12.09
19	2.0	Nov. 6	6.53	13	12.73
26	2.2	13	7.59	20	13.29
Oct. 3	- .4	20	8.48	27	13.21
10	- .9	27	10.36	Feb. 3	13.67
17	2.9	Dec. 4	11.14	10	14.74
24	6.5	11	12.87	17	15.77
31	8.8	18	13.58	24	16.23
Nov. 7	10.6	24	13.54	Mar. 3	16.59
7	10.1	31	14.12	10	16.73
14	12.1	Jan. 8, 1936	14.79	17	17.14
21	13.4	15	11.42	24	17.42
28	14.1	22	10.06	31	17.51
Dec. 5	15.0	29	11.19	Apr. 7	17.81
13	15.1	Feb. 5	13.69	14	17.64
19	16.0	12	14.37	21	17.28
26	16.6	19	15.65	28	16.77
Jan. 2, 1935	17.1	26	16.20	May 5	14.67
9	17.1	Mar. 4	16.43	12	12.29
16	17.9	11	16.39	19	10.43
23	18.4	18	16.05	26	11.70
30	17.8	25	15.58	June 2	12.15
Feb. 6	19.1	Apr. 1	15.35	9	11.51
13	19.6	8	15.22	16	10.00
20	20.0	15	13.75	23	8.47
27	19.4	22	12.73	30	5.45
Mar. 6	19.6	29	8.16	July 7	5.06
13	19.9	May 6	7.62	14	3.96
15	20.0	13	3.85	21	- .72
20	20.1	20	2.02	28	-2.41
23	20.27	27	5.01	Aug. 4	- .16
27	20.36	June 3	2.06	11	-2.70
Apr. 3	20.44	10	.51	18	- .40
10	20.49	17	3.05	25	-2.93
17	20.55	24	- .67	Sept. 1	-1.18
24	20.04	July 1	-3.52	8	-4.21
May 1	19.49	8	-4.48	15	-4.33
8	19.18	15	- .96	22	-2.31
15	18.44	22	-1.02	29	-3.84
22	17.39	29	-1.61	Oct. 6	.22
29	15.55	Aug. 5	-1.52	13	-1.35
June 5	14.55	12	-1.30	20	-1.15
12	9.23	19	-1.10	27	- .31
19	6.97	26	-1.03	Nov. 3	3.69
26	5.14	Sept. 2	-4.87	10	5.12
July 3	4.24	9	-5.87	17	3.04
10	7.46	16	-5.82	24	3.68
17	6.23	23	-5.91	Dec. 1	7.58
24	4.97	30	-4.60	8	5.48
31	4.90	Oct. 7	-3.52	15	10.12
Aug. 7	4.67	14	-4.71	22	11.67
14	3.44	21	1.60	29	12.85
21	1.20	28	3.51	Jan. 5, 1938	13.94
28	-1.39	Nov. 4	4.58	12	14.16
Sept. 4	4.04	11	4.88	19	14.56
11	5.00	18	5.42	26	14.86
18	4.60	25	6.06	Feb. 2	15.20

Orange County--Continued.

4/11-19K1.--Continued.

Water level, in feet above or below (-) sea level, 1901, 1903, 1929-41

Date	Water level	Date	Water level	Date	Water level
Feb. 9, 1938	15.67	Apr. 19, 1939	16.72	June 26, 1940	3.67
16	16.26	26	17.54	July 3	2.28
23	16.47	May 3	16.35	10	1.47
Mar. 2	17.17	10	12.01	17	- .71
9	18.44	17	10.45	24	-1.95
16	19.07	24	8.71	31	-2.48
23	19.36	31	4.94	Aug. 7	-2.31
30	19.53	June 7	3.50	14	-2.58
Apr. 6	19.28	14	3.10	21	-2.67
13	18.74	21	1.86	28	-2.89
20	15.81	28	.33	Sept. 4	-1.98
27	17.74	July 5	.09	11	-1.47
May 4	18.02	12	.89	18	-1.26
11	14.85	19	-1.24	25	- .33
18	13.60	26	-1.70	Oct. 2	.76
25	14.56	Aug. 2	-2.29	9	1.41
June 1	10.63	9	-1.95	16	2.22
8	8.98	16	-1.91	23	2.80
15	8.09	23	-1.63	30	6.81
22	7.19	30	-2.08	Nov. 6	8.05
29	5.83	Sept. 6	-2.41	13	9.24
July 6	4.52	13	-2.99	20	10.54
13	3.29	20	-3.95	27	12.18
20	2.92	27	.36	Dec. 4	12.63
27	2.49	Oct. 4	4.42	11	13.37
Aug. 3	3.75	11	7.23	18	14.46
10	.51	18	8.75	24	15.66
17	.64	25	8.69	31	16.57
24	.83	Nov. 1	8.59	Jan. 8, 1941	17.24
31	1.82	8	11.22	15	18.88
Sept. 7	- .11	15	12.03	22	18.31
14	1.96	22	9.75	29	18.99
21	- .59	29	9.94	Feb. 5	19.32
28	1.85	Dec. 6	13.19	12	19.61
Oct. 5	.41	13	14.06	19	20.17
12	1.40	20	12.38	26	20.99
19	2.75	27	15.28	Mar. 5	21.93
26	5.39	Jan. 3, 1940	16.28	12	22.28
Nov. 2	6.50	10	17.47	19	23.09
9	5.82	17	18.17	26	23.38
16	8.70	24	18.89	Apr. 2	23.86
23	9.41	31	19.29	9	24.29
30	8.57	Feb. 7	19.93	16	24.69
Dec. 7	11.24	14	20.20	23	24.83
14	11.60	21	20.31	30	25.00
21	14.03	28	20.55	May 7	25.15
28	15.49	Mar. 6	20.65	14	24.89
Jan. 4, 1939	16.67	13	20.20	21	24.29
11	17.61	20	17.54	28	23.20
18	18.39	27	19.29	June 4	21.98
25	19.05	Apr. 3	19.46	11	20.77
Feb. 1	19.67	10	19.87	18	19.67
8	20.26	17	16.73	25	18.55
15	20.54	24	15.88	July 2	17.42
22	20.96	May 1	18.41	9	16.28
Mar. 1	20.74	8	14.61	16	15.02
8	20.35	15	13.22	23	13.42
15	20.65	22	10.84	30	11.08
22	20.72	29	7.70	Aug. 6	9.52
29	20.72	June 5	7.07	13	8.95
Apr. 5	18.41	12	6.09	20	8.68
12	17.66	19	5.32	27	8.20

Orange County--Continued.

4/11-19K1.--Continued.

Water level, in feet above or below (-) sea level, 1901, 1903, 1929-41

Date	Water level	Date	Water level	Date	Water level
Sept. 3, 1941	9.42	Oct. 13, 1941	9.86	Nov. 24, 1941	19.55
10	9.36	20	10.93	Dec. 1	19.68
17	7.75	27	14.15	8	20.58
22	8.12	Nov. 3	16.30	15	21.79
29	9.30	10	17.65	22	22.89
Oct. 6	9.22	17	19.13	29	23.71

5/10-9D1. Numbered C-1168-0-15 in Bulletin 39, California Division of Water Resources; "location" 14464. Julio Martinez (formerly J. A. Lipscomb). NW¼NW¼ sec. 9, T. 5 S., R. 10 W. About 1 mile south of Garden Grove, 60 feet south of Westminster Avenue and 180 feet east of Verano Street, in east end of galvanized steel pumphouse. Used drilled public supply well. Diameter 12 inches, reported depth 250 feet. Measuring point to Feb. 6, 1939, top of casing, 0.5 foot above land surface and 75.2 feet above mean sea level; measuring point since Feb. 6, 1939, base of hole in north side of pump at air pipe, 0.05 foot above concrete base, 0.30 foot above top of casing and 75.5 feet above mean sea level. Water-level measurements to Apr. 24, 1928, from California Division of Water Resources; since Apr. 24, 1928, from Orange County Flood Control District.

Water level, in feet above sea level, 1922-41

June 13, 1922	56.8	July 14, 1933	10.45	Aug. 4, 1938	b 6.35
July 1924	53.2	Aug. 4	7.40	Sept.22	8.13
Jan. 1925	42.2	Sept. 8	11.09	Oct. 20	11.00
Sept.21	37.8	Oct. 23	13.38	Nov. 7	b 11.32
Nov. 7, 1927	43.98	Dec. 18	19.49	Dec. 5	13.09
Apr. 24, 1928	39.0	Mar. 16, 1934	18.86	Jan. 16, 1939	18.48
Nov. 28	41.5	May 25	10.65	Feb. 6	c 19.65
Feb. 19, 1930	36.5	July 11	7.89	Mar. 13	20.33
Apr. 3	35.07	Aug. 31	(a)	Apr. 13	18.96
May 22	27.73	Dec. 18	18.76	May 22	13.46
Sept.10	18.73	Feb. 26, 1935	20.46	June 23	(a)
Oct. 6	22.38	Apr. 22	20.62	24	8.20
Nov. 25	26.27	June 24	12.46	July 10	(a)
Dec. 23	25.85	Aug. 19	6.92	Sept.15	6.91
Jan. 21, 1931	32.51	Mar. 20, 1936	13.68	Oct. 16	14.76
Feb. 20	31.86	Apr. 15	12.10	Nov. 14	13.52
Mar. 16	21.99	May 16	8.77	Dec. 8	14.02
Apr. 6	17.80	June 15	(a)	Jan. 11, 1940	18.00
May 20	22.79	July 14	2.13	Feb. 13	19.12
June 5	21.34	Sept. 4	1.78	Mar. 11	17.35
July 11	13.88	23	5.15	Apr. 11	18.13
Aug. 15	15.93	Nov. 3	9.02	May 13	16.72
Sept.16	15.72	Dec. 3	7.49	June 10	10.32
Oct. 10	19.93	Feb. 2, 1937	13.47	July 11	6.10
Nov. 13	22.47	Apr. 12	16.78	Aug. 6	5.90
Jan. 18, 1932	28.83	May 27	12.08	Sept.12	(a)
Feb. 23	29.67	June 25	(a)	Oct. 8	5.05
Mar. 21	25.49	July 19	4.85	Dec. 10	14.97
Apr. 5	21.61	Aug. 12	5.50	Jan. 14, 1941	17.78
15	18.25	Sept.10	5.00	Feb. 6	18.77
May 18	18.57	Oct. 8	6.89	Mar. 11	20.56
June 21	14.09	Nov. 5	8.92	Apr. 22	22.62
July 14	12.61	Dec. 9	9.65	May 20	21.06
Aug. 15	13.56	Jan. 7, 1938	13.65	June 16	15.55
Sept.16	13.86	Feb. 7	14.48	July 14	13.13
Oct. 21	17.72	Mar. 17	16.96	Aug. 18	12.03
Nov. 22	17.20	Apr. 5	(a)	Sept.18	12.71
Dec. 19	23.11	May 6	17.61	Oct. 14	14.35
Jan. 28, 1933	25.44	June 6	11.96	Nov. 17	22.00
Feb. 24	24.45	July 5	(a)	Dec. 16	23.51
Mar. 17	24.26				

a Well pumping. b Motor warm. c Pump shut down 5 minutes.

Orange County--Continued.

5/11-16D2. Numbered C-991e-0-13 in Bulletin 39, California Division of Water Resources; "location" 565A. Anaheim Sugar Co., (A. L. Kavanaugh, lessee) NW¼NW¼ sec. 16, T. 5 S., R. 11 W. About 4 miles east of Seal Beach, 620 feet south of Bolsa Avenue and 1,030 feet east of Bolsa Chica Road. Drilled irrigation well now used solely for observation. Diameter 10 inches, reported depth 400 feet. Measuring point to Jan. 21, 1930, top of casing 0.8 foot above land surface and 16.70 feet above mean sea level; measuring point from Jan. 21, 1930, to May 5, 1933, top of wooden platform 10.28 feet above top of casing and 26.98 feet above mean sea level; measuring point since May 5, 1933, top of wooden platform 1.54 feet above top of casing and 18.24 feet above mean sea level. Water-level recorder maintained on well from July 19, 1929, to Jan. 29, 1936, by San Gabriel Valley Protective Association and since Mar. 2, 1936, by Orange County Flood Control District. Water-level measurements supplied through courtesy of above agencies.

Water level, in feet above or below (-) sea level, 1929-41

Date	Water level	Date	Water level	Date	Water level
July 19, 1929	9.75	June 13, 1930	14.06	May 15, 1931	8.76
26	9.05	20	12.27	22	8.91
Aug. 2	8.51	27	11.69	29	8.24
9	6.22	July 4	11.25	June 5	7.75
16	3.57	11	10.54	12	6.69
23	1.73	18	9.18	19	5.75
30	.74	25	8.56	26	4.10
Sept. 6	.78	Aug. 1	7.18	July 3	2.97
13	1.32	8	4.08	10	3.26
20	2.32	15	1.10	17	2.33
27	4.08	22	- .18	24	2.06
Oct. 4	4.00	29	-1.32	31	.91
11	3.35	Sept. 5	-1.46	Sept. 4	-4.35
18	5.29	12	-1.13	11	-3.66
25	5.95	19	- .40	18	-3.81
Nov. 1	6.21	26	-1.08	25	-1.47
8	6.54	Oct. 3	- .30	Oct. 2	.03
15	6.36	10	1.70	9	.93
22	7.75	17	2.48	15	.75
29	7.90	24	3.10	22	.08
Dec. 6	8.57	31	3.35	29	1.99
13	8.77	Nov. 7	3.91	Nov. 5	1.29
20	8.91	14	4.76	12	1.37
27	9.13	21	6.88	19	3.96
Jan. 3, 1930	11.17	28	7.27	26	5.48
10	14.02	Dec. 5	6.82	Dec. 3	7.55
17	15.70	12	8.66	10	8.82
21	16.11	19	9.45	17	10.32
24	16.42	26	8.28	24	11.08
31	16.92	Jan. 2, 1931	9.98	31	11.80
Feb. 7	17.18	9	12.04	Jan. 7, 1932	12.25
14	16.91	16	13.17	14	12.53
21	15.33	23	13.64	21	12.87
28	14.41	30	13.03	28	12.87
Mar. 7	13.83	Feb. 6	13.43	Feb. 4	13.14
14	12.59	13	12.54	11	13.70
21	13.55	20	11.72	18	14.15
28	13.67	27	11.19	25	14.33
Apr. 4	15.30	Mar. 6	8.99	Mar. 3	14.29
11	15.79	13	8.18	10	14.23
18	15.40	20	7.65	17	13.96
25	14.81	27	6.42	24	13.38
May 2	14.70	Apr. 3	4.74	31	12.31
9	15.84	10	3.58	Apr. 4	11.67
16	16.02	17	3.31	11	10.68
23	15.98	24	4.44	18	9.81
30	15.08	May 1	7.27	25	9.09
June 6	14.30	8	8.47	May 2	8.97

Orange County--Continued.

5/11-16D2.--Continued.

Water level, in feet above or below (-) sea level, 1929-41

Date	Water level	Date	Water level	Date	Water level
May 9, 1932	9.11	June 29, 1933	2.30	Sept. 5, 1934	-3.37
16	8.65	July 6	2.96	12	-4.01
23	8.33	13	2.37	19	-1.82
30	7.11	19	2.04	26	-5.64
June 6	6.57	26	1.60	Oct. 3	-5.58
13	5.83	Aug. 2	1.04	10	-5.40
20	5.79	9	1.03	18	-3.37
27	5.15	16	1.05	24	- .47
July 4	4.71	23	1.19	31	1.36
11	4.80	30	1.35	Nov. 7	1.60
18	4.54	Sept. 6	- .56	14	3.24
25	4.32	13	-1.58	21	5.12
Aug. 1	3.69	20	-3.41	28	5.49
5	3.43	27	-2.99	Dec. 5	3.70
11	3.93	Oct. 4	-1.99	12	5.50
18	3.26	11	-2.20	19	6.36
25	3.34	18	-2.45	26	7.18
Sept. 1	2.80	25	-2.26	Jan. 2, 1935	7.89
8	2.65	Nov. 1	- .06	9	8.36
15	-2.14	8	.68	16	8.70
22	-2.23	15	1.05	23	8.96
29	-2.36	22	2.43	30	9.19
Oct. 6	-1.94	29	3.86	Feb. 6	9.58
13	- .65	Dec. 6	2.85	13	9.77
20	- .05	13	4.63	20	9.78
27	- .73	20	6.28	27	9.65
Nov. 3	.54	27	7.25	Mar. 3	9.95
10	1.39	Jan. 3, 1934	8.48	13	10.41
17	2.54	10	9.09	20	10.44
24	1.92	17	9.44	27	10.54
Dec. 1	4.95	24	9.58	Apr. 3	10.55
8	5.88	31	9.69	10	10.71
15	7.96	Feb. 2	9.63	17	10.62
22	8.51	14	8.42	24	10.44
29	9.56	21	6.55	May 1	10.33
Jan. 5, 1933	9.34	28	6.24	8	10.10
12	8.88	Mar. 7	5.23	15	9.58
19	9.34	14	3.71	22	8.87
26	10.73	21	2.48	29	7.99
Feb. 2	11.75	28	3.23	June 5	7.31
9	12.23	Apr. 4	4.20	12	6.31
16	12.20	11	3.23	19	5.38
23	11.85	18	4.33	26	4.13
Mar. 2	11.37	25	3.69	July 3	3.37
9	8.20	May 2	2.91	10	2.38
16	11.51	9	2.22	17	1.10
23	9.23	16	1.30	24	.93
30	7.58	23	.65	31	.25
Apr. 6	6.90	30	.75	Aug. 7	.27
13	6.03	June 6	.36	14	- .33
20	5.23	13	.98	21	- .49
27	5.89	20	1.08	28	- .61
May 4	6.15	27	.21	Sept. 4	-1.11
5	5.88	July 4	- .13	11	.12
6	5.80	11	.56	18	- .08
11	6.32	18	- .28	25	-1.91
18	6.28	25	- .86	Oct. 2	-1.78
25	5.39	Aug. 1	-1.80	9	-1.23
June 1	4.58	8	-1.91	16	-2.09
8	4.41	15	-1.87	23	-2.07
15	4.16	22	-1.19	30	-3.70
22	2.82	29	-2.79	Nov. 6	-2.87

Orange County--Continued.

5/11-16D2.--Continued.

Water level, in feet above or below (-) sea level, 1929-41

Date	Water level	Date	Water level	Date	Water level
Nov. 13, 1935	-2.75	Feb. 18, 1937	6.11	Apr. 13, 1938	8.13
20	.91	23	6.4	20	8.04
27	2.03	25	6.50	27	8.11
Dec. 4	1.97	Mar. 4	6.71	May 4	8.53
11	3.67	11	6.88	11	8.03
18	4.43	18	7.25	18	7.91
24	5.24	25	7.59	25	6.68
31	6.72	29	7.68	June 1	5.97
Jan. 8, 1936	5.93	Apr. 1	7.74	8	5.09
15	4.71	8	7.8	15	4.35
22	3.81	15	7.8	22	3.05
27	2.73	22	7.7	29	2.90
Mar. 5	.91	26	7.3	July 6	3.29
12	.18	29	7.2	7	2.6
19	- .46	May 6	6.48	13	1.9
26	.66	12	6.59	20	1.5
Apr. 2	.92	19	5.9	27	1.5
9	1.40	26	4.81	Aug. 3	.9
16	2.31	June 2	4.88	10	.01
23	3.19	9	4.41	17	- .79
30	3.27	16	4.06	24	- .91
May 7	2.69	23	2.85	31	-3.25
14	1.74	30	1.92	Sept. 7	-3.70
21	.38	July 7	1.29	14	-4.33
28	.25	14	- .04	21	-5.72
June 4	- .33	21	- .84	28	-5.52
11	- .20	28	-1.14	Oct. 5	-4.01
18	-1.99	Aug. 4	-1.31	13	-4.34
25	-2.67	11	-1.82	19	-1.26
July 2	-3.48	18	-2.10	26	.00
9	-4.28	25	-2.03	Nov. 2	.49
16	-5.10	Sept. 1	-2.30	9	- .02
23	-5.64	8	-2.27	16	1.84
30	-5.26	11	-2.49	23	2.47
Aug. 5	-4.80	15	-2.59	30	3.52
12	-4.66	22	-2.18	Dec. 7	4.07
20	-4.85	29	-1.66	14	4.63
27	-4.51	Oct. 6	-1.93	21	6.27
Sept. 3	-4.55	13	-3.90	28	7.22
10	-6.13	20	-5.20	Jan. 4, 1939	7.92
17	-6.84	27	-5.66	11	8.48
24	-7.16	Nov. 3	-4.68	18	8.85
Oct. 1	-8.22	10	-4.69	25	9.30
8	-8.98	17	-4.98	Feb. 1	9.63
15	-8.39	24	-3.45	8	10.15
22	-5.60	Dec. 1	-1.24	15	10.21
29	-5.18	8	- .24	22	10.26
Nov. 5	-4.41	15	.2.08	Mar. 1	10.33
12	-4.83	22	2.99	8	10.41
19	-2.84	29	4.17	15	10.54
25	-2.56	Jan. 5, 1938	4.91	22	10.34
Dec. 2	-1.87	12	5.05	29	10.13
9	-1.35	19	5.34	Apr. 5	9.82
16	- .53	26	3.54	12	9.29
23	.83	Feb. 2	2.85	19	9.15
30	2.00	16	2.86	26	9.02
Jan. 7, 1937	3.06	23	2.47	May 3	7.86
14	3.59	Mar. 10	7.02	10	7.50
21	3.99	16	7.81	17	6.08
28	4.02	23	8.14	24	4.12
Feb. 4	4.41	30	8.28	31	3.12
11	5.25	Apr. 6	8.37	June 7	1.75

Orange County--Continued.

5/11-16D2.--Continued.

Water level, in feet above or below (-) sea level, 1929-41

Date	Water level	Date	Water level	Date	Water level
June 14, 1939	1.93	May 1, 1940	8.09	Mar. 5, 1941	10.07
21	.92	8	7.96	12	10.34
28	.68	15	6.07	19	10.87
July 5	- .25	22	5.10	26	11.00
12	-1.26	29	4.63	Apr. 2	11.43
19	- .91	June 5	2.22	9	11.82
26	-1.38	12	1.88	12	12.04
Aug. 2	-2.63	19	1.15	16	12.20
9	-2.40	26	- .24	23	12.22
16	-1.32	July 3	- .11	30	12.56
23	-2.47	10	-1.10	May 7	12.81
30	-4.18	17	-1.86	14	12.57
Sept. 6	-5.15	24	-3.16	21	12.01
13	-5.19	31	-3.63	28	11.16
20	-5.86	Aug. 7	-3.68	June 4	10.59
27	-5.36	14	-4.05	11	9.93
Oct. 4	-3.21	21	-4.22	18	9.47
11	-2.18	28	-6.22	27	8.59
18	- .99	Sept. 4	-5.89	July 2	8.06
25	2.64	11	-7.12	9	7.69
Nov. 1	2.76	18	-6.94	16	6.76
8	2.84	25	-7.71	23	5.70
15	3.58	Oct. 2	-7.41	30	5.34
22	3.53	9	-6.65	Aug. 6	2.29
29	3.26	15	-6.53	13	2.26
Dec. 6	4.39	22	-4.64	20	2.44
13	5.42	31	-1.41	27	.69
20	5.84	Nov. 6	-1.11	Sept. 3	- .10
27	6.33	13	- .87	10	-1.24
Jan. 3, 1940	6.99	20	1.32	17	.05
10	7.62	27	2.66	24	- .33
17	8.01	30	2.77	Oct. 1	1.65
24	7.21	Dec. 4	3.09	8	1.23
31	6.22	11	3.76	15	1.46
Feb. 7	7.24	18	5.06	22	3.52
14	6.67	26	6.22	29	6.98
21	6.07	Jan. 2, 1941	6.79	Nov. 5	7.84
28	6.26	8	7.18	12	8.44
Mar. 6	6.02	15	7.51	19	9.62
13	5.12	22	7.76	26	7.75
20	4.14	29	8.18	Dec. 3	9.64
27	4.29	Feb. 5	8.34	10	10.66
Apr. 3	5.68	11	8.60	17	11.80
10	7.34	19	9.03	24	12.46
17	7.54	26	9.51	31	13.06
24	7.82				

6/10-5C1. Numbered C-1258r by California Division of Water Resources; "location" 1325lA. Robert Gisler. NE¼NW¼ sec. 5, T. 6 S., R. 10 W. About 3 miles northeast of Huntington Beach, 30 feet south of Garfield Avenue and 660 feet west of Ward Street in galvanized pump shed. Used drilled irrigation well. Diameter 14 inches, depth 209 feet; reported perforated 85-92, 126-144, and 165-184 feet below land surface. Measuring point top of casing, 0.9 foot above land surface and 20.14 feet above mean sea level. Water-level measurements supplied through courtesy of Orange County Flood Control District.

Water level, in feet above or below (-) sea level, 1931-41

Dec. 23, 1931	12.9	May 18, 1932	11.2	Nov. 26, 1932	9.3
Feb. 25, 1932	15.0	July 27	6.3	Dec. 21	12.0
Apr. 1	12.6	Aug. 20	6.1	Feb. 4, 1933	14.1
19	10.5	Oct. 26	8.9	Mar. 2	12.1

Orange County--Continued.

6/10-5C1.--Continued.

Water level, in feet above or below (-) sea level, 1931-41

Date	Water level	Date	Water level	Date	Water level
Mar. 13, 1933	(a)	Aug. 18, 1934	- .8	Nov. 16, 1935	4.7
17	(a)	25	.4	23	5.9
Apr. 17	5.1	Sept. 1	.2	30	6.4
July 11	5.1	8	.4	Dec. 7	6.6
20	2.3	15	1.1	14	7.1
22	3.1	22	1.3	21	7.0
29	4.6	29	1.5	28	7.3
Aug. 5	4.2	Oct. 6	1.9	Jan. 4, 1936	7.6
12	1.9	13	2.3	11	7.2
19	1.2	20	4.1	18	6.6
26	4.4	27	5.5	25	4.9
Sept. 2	4.8	Nov. 3	6.4	Feb. 1	4.6
9	4.3	10	6.8	8	4.7
16	4.8	17	7.4	21	(a)
23	5.5	24	7.9	29	(a)
30	4.9	Dec. 1	7.0	Mar. 7	(a)
Oct. 6	4.3	15	8.9	14	(a)
14	5.8	21	9.2	21	(a)
21	5.4	29	9.6	28	-3.9
28	6.1	Jan. 12, 1935	10.1	30	-2.0
Nov. 4	6.6	19	10.3	Apr. 4	-1.3
10	6.6	26	10.4	11	-1.1
13	5.7	Feb. 2	11.0	18	.8
18	6.4	9	11.0	22	.4
25	6.7	16	11.1	May 2	- .1
Dec. 2	7.9	23	11.1	9	1.6
9	7.9	Mar. 9	11.6	16	1.4
16	8.7	16	11.8	20	.7
23	9.4	21	11.7	23	1.1
30	9.4	23	11.7	29	.6
Jan. 6, 1934	10.9	30	12.0	June 6	- .2
13	11.3	Apr. 6	11.9	13	-1.4
20	11.4	13	11.9	20	-2.4
27	11.2	20	11.5	22	-2.2
Feb. 3	11.6	27	10.8	27	-3.3
10	10.8	May 4	10.9	July 3	-5.1
17	8.8	11	9.9	11	-5.1
26	(a)	18	9.6	18	-6.1
Mar. 3	(a)	25	8.7	24	-7.6
10	(a)	June 1	8.2	Aug. 1	-6.5
17	(a)	8	7.1	8	-7.8
24	(a)	15	6.1	15	-7.4
31	.0	22	5.3	22	-6.5
Apr. 7	.7	29	3.8	29	-6.5
14	1.5	July 6	3.4	Sept. 2	-7.5
21	2.4	13	1.7	5	-6.4
28	3.0	20	.8	12	-5.4
May 5	3.3	27	.5	19	-4.3
12	3.0	Aug. 3	- .4	26	-2.6
19	3.1	10	- .7	Oct. 3	-2.6
26	2.1	17	-1.1	10	-2.3
June 2	2.0	24	- .9	17	-1.0
9	3.6	31	- .1	24	- .2
16	3.6	Sept. 7	.5	31	.4
23	2.9	14	.2	Nov. 7	.7
30	2.5	21	.3	14	.8
July 7	2.2	28	1.7	21	.6
14	.8	Oct. 5	2.7	28	.5
21	.4	19	3.7	Dec. 5	.9
28	- .6	26	3.5	12	1.2
Aug. 4	- .9	Nov. 2	4.0	19	2.3
11	- .7	9	4.7	26	3.0

a Well pumping.

Orange County--Continued.

6/10-5C1.--Continued.

Water level, in feet above or below (-) sea level, 1931-41

Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1937	3.7	Feb. 26, 1938	(a)	May 13, 1939	6.92
11	4.3	Mar. 12	8.6	20	5.65
16	4.6	19	9.2	27	(a)
23	4.8	26	8.9	June 3	(a)
29	4.9	Apr. 2	8.7	10	4.14
Feb. 13	6.3	9	8.6	17	(a)
20	7.0	16	8.5	24	(a)
27	7.3	23	8.7	July 1	(a)
Mar. 6	7.6	30	9.6	8	1.99
13	7.9	May 7	9.9	15	- .11
20	8.0	14	9.7	22	- .29
27	7.8	21	9.3	29	-1.42
Apr. 3	8.5	28	8.2	Aug. 1	-62.95
10	8.6	June 4	6.9	5	-58.51
17	8.6	11	6.8	12	-1.33
24	8.1	18	6.3	19	-1.21
May 1	8.1	25	5.6	26	-2.18
8	7.3	July 1	5.0	Sept. 2	(a)
15	6.8	9	4.5	8	(a)
22	6.3	16	3.0	16	- .36
29	6.3	23	2.1	23	-1.11
June 5	5.6	30	1.8	30	2.85
12	4.8	Aug. 6	1.2	Oct. 7	4.53
19	4.4	13	1.1	14	5.07
26	3.0	20	1.0	21	5.63
July 3	1.5	27	.9	28	(a)
10	.6	Sept. 3	1.1	Nov. 4	5.54
17	- .6	10	1.6	10	6.27
24	- .9	16	1.7	18	6.20
31	-1.5	24	2.6	25	6.16
Aug. 7	-1.7	Oct. 1	2.7	Dec. 2	6.24
14	-1.2	8	3.3	8	6.67
21	-1.4	15	3.6	16	6.31
28	-1.4	22	4.1	23	6.19
Sept. 4	-1.2	29	5.1	30	7.08
11	-2.0	Nov. 5	5.5	Jan. 6, 1940	8.24
18	-1.1	12	5.5	13	8.92
25	.2	19	5.9	20	9.06
Oct. 2	1.2	26	6.0	27	8.82
9	1.6	Dec. 3	6.1	Feb. 3	8.97
16	1.6	8	6.1	10	9.24
23	1.8	10	6.3	17	9.06
30	2.1	17	7.2	24	(a)
Nov. 6	2.8	24	8.4	Mar. 1	(a)
13	3.1	31	8.9	9	(a)
20	3.4	Jan. 7, 1939	9.42	16	(a)
27	3.7	14	9.61	23	-2.28
Dec. 4	3.9	21	10.08	30	(a)
11	3.3	28	10.42	Apr. 6	3.05
13	4.4	Feb. 4	10.92	13	5.15
18	4.9	11	10.80	20	(a)
24	5.3	24	10.99	27	(a)
31	5.9	Mar. 4	11.22	May 4	7.57
Jan. 8, 1938	5.9	11	9.62	11	(a)
15	5.4	18	6.52	18	(a)
22	5.8	25	4.84	June 1	2.74
29	5.3	Apr. 1	5.08	8	1.79
Feb. 5	5.1	8	6.43	15	(a)
8	4.1	15	7.77	22	(a)
11	4.7	22	8.43	29	(a)
19	5.0	29	8.76	July 3	.60
24	3.9	May 6	8.41	6	.46

a Well pumping.

Orange County--Continued.

6/10-5C1.--Continued.

Water level, in feet above or below (-) sea level, 1931-41

Date	Water level	Date	Water level	Date	Water level
July 13, 1940	(a)	Dec. 14, 1940	5.94	June 21, 1941	(a)
20	(a)	21	6.54	28	(a)
27	(a)	28	7.22	July 12	(a)
Aug. 3	-3.33	Jan. 4, 1941	7.74	19	(a)
10	-4.14	11	8.09	26	(a)
17	-3.22	18	8.16	Aug. 2	(a)
24	(a)	25	8.29	8	(a)
26	-2.10	Feb. 1	8.26	16	(a)
31	-1.88	8	8.74	23	4.22
Sept. 7	(a)	15	8.77	Sept. 6	4.81
14	(a)	Mar. 8	11.32	13	5.00
21	(a)	22	12.28	Oct. 11	6.81
28	(a)	29	12.26	18	7.53
Oct. 4	(a)	Apr. 5	12.87	25	9.41
8	.31	12	13.25	Nov. 1	10.37
11	1.33	19	13.43	8	11.01
19	1.48	26	13.51	15	11.76
26	2.13	May 3	13.95	22	11.91
Nov. 2	3.34	10	13.82	29	11.68
9	3.84	17	13.63	Dec. 6	12.22
16	4.18	24	12.97	13	13.12
23	4.92	June 7	10.76	20	13.66
30	5.33	14	(a)	27	14.08
Dec. 7	5.49				

I-9F1. Numbered C-1231f and C-1231i by California Division of Water Resources; "location" 14559B and 14559C, respectively; owner's plant 91, well 1252. The Irvine Company. Block 9, Irvine Tract. About 3 miles south of Santa Ana, 3,300 feet south and 900 feet west of the intersection of Newport Boulevard and Delhi Road, in wooden pumphouse under derrick and 40 feet south of booster pumphouse. Used drilled irrigation well. Diameter 20 inches to 404 feet, 10 inches to 1,208 feet; reported depth 1,208 feet. Perforations reported from 410 to 1,208 feet below land surface. Measuring point to Jan. 30, 1936, top of coupling on casing; 0.4 foot above land surface and 51.4 feet above mean sea level; measuring point since Jan. 30, 1936, bottom of pump base at hole in base ring, 0.15 foot above top of casing and 51.55 feet above mean sea level. Water-level recorder maintained on well from June 4, 1935, to Feb. 6, 1936, by Orange County Flood Control District. Water-level measurements supplied through courtesy of same agency.

Water level, in feet above or below (-) sea level, 1932-41

Mar. 29, 1932	22.87	Jan. 28, 1935	15.28	Nov. 6, 1935	-3.22
June 24	15.40	May 7	20.43	13	-3.92
July 19	9.23	June 4	14.14	19	-2.29
Aug. 22	7.36	11	14.69	27	(a)
Sept. 20	6.26	25	11.70	Dec. 18	(a)
Oct. 27	4.58	July 2	6.66	26	4.92
Nov. 28	10.61	9	2.00	Jan. 2, 1936	6.59
Dec. 27	16.71	16	-3.57	9	6.94
Feb. 6, 1933	22.66	23	-5.22	16	4.71
Mar. 7	23.04	30	-4.85	23	6.30
15	24.72	Aug. 6	-3.42	Feb. 6	6.99
Apr. 18	9.36	14	-4.71	20	(a)
May 25	11.69	21	-4.48	Mar. 19	(a)
July 6	8.52	Sept. 4	-3.01	26	(a)
28	.14	11	-2.34	31	(a)
Sept. 5	2.67	18	-1.25	Apr. 16	a -137.96
Nov. 9	1.96	Oct. 2	-1.90	27	-13.13
Jan. 8, 1934	15.45	16	-3.56	May 7	-9.55
June 20	1.64	23	-3.34	14	a -137.32
Sept. 4	-4.52	30	-3.47	22	-3.49

a Well pumping.

Orange County--Continued.

I-9Fl.--Continued.

Water level, in feet above or below (-) sea level, 1932-41

Date	Water level	Date	Water level	Date	Water level
June 4, 1936	-5.60	Oct. 6, 1937	-1.21	Dec. 28, 1938	11.39
12	a -109.40	13	-1.39	Jan. 4, 1939	12.55
24	-6.30	20	-1.25	11	13.79
July 2	-10.20	27	-3.02	18	14.48
9	a -113.05	Nov. 3	-1.91	25	15.56
16	a -130.40	10	-2.89	Feb. 1	16.47
24	a -116.80	17	-1.22	8	17.40
30	a -118.56	24	- .60	15	17.98
Aug. 27	a -132.83	Dec. 1	- .40	22	18.47
Sept. 4	-12.39	8	- .81	Mar. 1	18.63
10	a -128.08	15	2.88	8	18.23
17	-11.25	22	4.50	15	16.51
24	-9.98	29	5.96	29	14.80
Oct. 1	-11.06	Jan. 5, 1938	7.30	Apr. 5	11.13
14	-12.20	12	8.24	12	7.97
Nov. 5	-9.41	19	7.61	19	7.10
12	-11.75	26	8.57	26	8.54
19	-9.50	Feb. 2	8.81	May 3	9.32
25	-9.53	16	9.00	10	9.45
Dec. 2	-9.13	23	8.82	17	a -108.33
9	a -115.45	Mar. 10	9.59	24	8.04
23	-3.73	17	10.69	31	7.30
Jan. 7, 1937	.30	23	10.80	June 7	a -111.67
14	1.51	30	11.26	14	1.28
21	2.96	Apr. 6	11.70	21	a -114.81
28	4.99	13	12.17	28	a -108.72
Feb. 4	6.13	20	12.69	July 5	a -107.19
11	7.85	27	13.66	12	a -107.13
18	8.90	May 4	14.52	19	a -106.16
26	7.92	11	15.03	26	a -98.40
Mar. 4	10.34	18	16.12	Aug. 2	a -101.30
11	11.13	25	13.44	9	-4.85
18	10.96	June 1	10.21	16	-1.68
25	12.67	8	9.35	23	-3.96
Apr. 1	13.23	15	8.20	30	-3.57
8	13.70	22	5.00	Sept. 6	-3.05
15	14.04	29	a -104.29	13	-4.39
22	9.35	July 6	a -101.25	20	-3.06
29	8.16	13	a -105.24	27	-1.94
May 6	a -121.20	20	a -104.61	Oct. 4	.11
12	10.75	27	a -116.57	11	1.45
19	8.86	Aug. 3	a -115.58	18	1.45
26	9.12	10	-5.27	25	2.90
June 2	9.39	17	-1.65	Nov. 1	3.63
9	a -118.53	24	-2.30	8	5.05
16	7.30	31	-2.91	15	6.30
23	5.20	Sept. 7	-3.61	22	6.04
30	2.45	14	-3.93	29	6.35
July 7	a -105.67	21	-3.08	Dec. 6	6.80
14	a -111.60	28	-2.97	13	7.72
21	a -104.05	Oct. 5	-3.53	20	8.55
28	a -114.88	13	-3.42	27	9.56
Aug. 4	-7.72	19	-1.46	Jan. 3, 1940	10.36
11	-5.38	26	- .31	10	11.61
18	-3.82	Nov. 2	-2.58	17	12.95
25	-2.59	9	-2.64	24	13.85
Sept. 1	-3.57	16	2.92	31	14.71
8	-2.47	23	3.29	Feb. 7	15.38
15	-1.66	30	4.69	21	15.87
17	-2.53	Dec. 7	6.80	28	15.29
22	-2.39	14	7.14	Mar. 6	14.83
29	-1.74	21	9.96	13	14.22

a Well pumping.

Orange County--Continued.

I-9F1.--Continued.

Water level, in feet above or below (-) sea level, 1932-41

Date	Water level	Date	Water level	Date	Water level
Mar. 20, 1940	13.05	Oct. 15, 1940	-3.45	May 21, 1941	20.07
27	10.89	22	-4.41	28	18.46
Apr. 3	11.52	Nov. 6	.82	June 4	19.35
10	12.16	13	1.89	11	18.59
24	11.57	20	3.63	18	18.75
May 1	12.33	27	5.05	27	14.04
8	-111.56	Dec. 4	5.61	July 2	a -84.41
15	11.79	11	6.38	9	7.45
22	a-105.81	18	6.67	16	a -106.09
29	a-101.15	26	9.24	30	a -105.59
June 5	7.21	Jan. 2, 1941	10.35	Aug. 6	a -119.41
12	6.56	8	11.24	13	4.00
19	5.27	15	11.99	20	6.13
26	a -95.22	22	12.76	27	2.36
July 3	a -98.15	29	13.35	Sept. 3	8.40
10	a-103.73	Feb. 5	13.75	10	8.46
17	a-106.00	19	14.38	17	9.10
24	a-105.67	26	15.25	24	9.81
31	a-102.46	Mar. 5	16.27	Oct. 1	9.60
Aug. 7	-7.69	12	17.00	8	7.25
14	-6.23	19	18.01	15	9.97
21	-6.10	26	18.70	29	12.91
28	-6.28	Apr. 2	19.36	Nov. 5	14.40
Sept. 4	-9.17	9	20.17	12	15.47
11	-9.33	16	20.86	19	17.71
18	-8.00	23	20.81	26	18.11
25	-7.62	30	20.58	Dec. 3	18.23
Oct. 2	-7.05	May 7	19.96	17	21.73
9	-5.35	14	19.79	24	22.85

a Well pumping.

SAN JOAQUIN COUNTY

MOKELUMNE AREA

By J. W. Robinson

During 1941 the East Bay Municipal Utility District continued measurements of water level in typical observation wells in the Mokelumne area, in the central part of the Great Valley. From these wells, 24 have been selected to afford in this report an approximate index to fluctuations in ground-water storage. In each of the 24 wells the water level was measured monthly; 282[1/] measurements were made during the year. No water-level recorders or float gages were operated on these wells.

The following table of average year-end water levels in the selected wells, beginning with 1933, shows that ground-water storage was replenished considerably during 1941.

Average ground-water levels, in feet above mean sea level, in 24 observation wells of the Mokelumne area, on or about December 31, 1933-41

Year	Water level (feet)	Rise (+) or decline (-) during the year (feet)	Accumulative rise (+) or decline (-) since 1933 (feet)
1933	30.38	....	....
1934	29.66	- .72	- .72
1935	29.73	+.07	-.65
1936	31.26	+1.53	+.88
1937	32.43	+1.17	+2.05
1938	33.67	+1.24	+3.29
1939	30.09	-3.58	-.29
1940	31.40	+1.31	+1.02
1941	32.74	+1.34	+2.36

A second table compares net water-level changes during the periods of increasing withdrawal for irrigation and of diminishing withdrawal, respectively, in 1941.

1/ In Water-Supply Paper 911, p. 130, a corresponding total for 1940 should read 278 rather than 254.

San Joaquin County--Continued

Summary of net water-level changes, in feet, at 24 observation wells in the Mokelumne area, 1941

Period	Greatest rise	Greatest recession	Average
Jan. 1 to May 31 (increasing withdrawal for irrigation)	+7.20	-4.69	+2.10
June 1 to Dec. 31 (diminishing withdrawal)	+5.89	-5.79	-.74
The year	+3.07	-2.3	+1.36

Mean yearly rainfall on the Mokelumne River Basin--taken as the average of rainfall at Electra, West Point, and Twin Lakes--averaged 37.98 inches in the 35 years ending with 1940. The mean rainfall of 1940 exceeded that average by 15.18 inches; that of 1941, by 5.68 inches. The rainfall of 1940 is exceeded only by that of 1906, 1907, 1909, and 1911 during the 35-year period; the rainfall of December 1940 was the greatest on record for that month. In 1941 rainfall was excessive during February, April, and December.

The preceding table of net water-level changes in 1941 indicates that replenishment exceeded withdrawal during the first five months of the year, which ordinarily is the period of increasing withdrawal for irrigation. In fact, for most of the observation wells the highest water level of the year occurred in May or June. The fluctuation of water level was similar in 1937, 1938, and 1940, although in each of the preceding 10 years the water level was highest during December, January, and February, and lowest at the midyear. This net increase in ground-water storage between January and June has occurred in years of heavy rainfall, in part owing to deep penetration of water that falls as rain, but, in part, to diminution of the withdrawals for irrigation in those years.

363L3. F. B. Mills.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	26.22	Apr. 1	28.17	July 1	25.70	Nov. 3	27.21
Feb. 3	26.35	May 1	28.75	Aug. 1	25.16	Dec. 2	27.04
Mar. 3	29.42	June 2	28.38				

3617A1. Otto Helmie.

Water level, in feet above mean sea level, 1941

Jan. 3	12.17	Apr. 1	18.81	July 1	14.46	Oct. 3	9.81
Feb. 3	14.78	May 1	19.54	Aug. 1	11.05	Nov. 3	11.36
Mar. 3	18.21	June 2	18.34	Sept. 2	10.17	Dec. 2	11.96
6	18.69						

San Joaquin County--Continued

3636R2. Leland W. Bunch.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	a 20.19	Apr. 1	24.04	July 1	21.52	Nov. 3	b 21.23
Feb. 3	21.85	May 1	24.77	Oct. 7	20.75	Dec. 2	21.30
Mar. 3	24.33	June 2	24.31				

373B1. Jacob Knoll.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	45.07	Apr. 1	46.70	July 1	50.05	Oct. 6	46.12
Feb. 3	45.38	May 1	52.11	Aug. 1	48.05	Nov. 3	45.80
Mar. 3	46.28	June 2	51.21	Sept. 2	46.87	Dec. 2	45.71

376J8. R. E. and Ruth F. Coker.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	29.62	Apr. 1	30.81	July 1	32.53	Oct. 7	31.89
Feb. 3	30.15	May 1	31.01	Aug. 1	32.37	Nov. 3	32.17
Mar. 3	30.07	June 2	33.01	Sept. 2	32.00	Dec. 2	32.29

377J1. J. and Rachel K. Goetken. Measuring point (4) after Nov. 3, 1941, top of 2-inch floor flange at 1½-inch pipe, level with concrete floor, 0.1 foot above land surface, and 52.73 feet above mean sea level.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	24.06	May 1	23.58	Aug. 1	23.34	Nov. 3	25.66
Feb. 3	24.94	June 2	23.69	Sept. 2	23.76	7	25.71
Mar. 3	25.80	July 1	23.91	Oct. 7	24.79	Dec. 2	26.51
Apr. 1	24.65						

3710K3. Edward Preszler.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	34.35	Apr. 1	c 29.29	July 1	c 27.79	Oct. 6	33.22
Feb. 3	34.52	May 1	c 24.65	Aug. 1	29.65	Nov. 3	34.28
Mar. 3	34.64	June 2	29.66	Sept. 2	31.72	Dec. 2	35.21

3710K4. Edward Preszler.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	34.47	Apr. 1	c 28.44	July 1	30.02	Oct. 6	33.47
Feb. 3	34.57	May 1	c 25.31	Aug. 1	29.98	Nov. 3	34.54
Mar. 3	34.70	June 2	30.18	Sept. 2	31.97	Dec. 2	35.42

3715P2. Eugene R. Hieb.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	28.33	Apr. 1	29.29	July 1	25.62	Oct. 6	26.91
Feb. 3	28.77	May 1	28.95	Aug. 1	24.71	Nov. 3	27.91
Mar. 3	29.22	June 2	28.28	Sept. 2	25.74	Dec. 2	28.68

3719A2. C. M. Ferdun.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	19.78	Apr. 1	22.30	July 1	19.64	Oct. 7	20.05
Feb. 3	20.61	May 1	22.01	Aug. 1	19.21	Nov. 3	20.95
Mar. 3	21.46	June 2	20.52	Sept. 2	19.05	Dec. 2	21.90

a Creek or river flowing nearby.
b Pump in observation well stopped a short time before measurement.
c Power or windmill pump operating in adjacent well within distance of 100 yards.

San Joaquin County--Continued

3727F3. John F. Heitzmann.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.70	Apr. 1	26.37	July 1	24.19	Oct. 6	24.70
Feb. 3	25.07	May 1	26.96	Aug. 1	23.12	Nov. 3	24.55
Mar. 3	25.75	June 2	27.05	Sept. 2	22.14	Dec. 2	25.26

3730E2. W. L. Flanigan.

Water level, in feet above mean sea level, 1941

Jan. 7	19.89	Apr. 1	23.55	July 1 a	17.25	Oct. 7	18.46
Feb. 3	21.00	May 1	24.83	Sept. 2	16.72	Dec. 2	21.86
Mar. 3	22.86	June 2	25.13				

4612R1. G. A. Jahant.

Water level, in feet above mean sea level, 1941

Jan. 6	25.64	Apr. 1	29.09	July 1	27.02	Oct. 7	25.56
Feb. 3	26.53	May 1	30.36	Aug. 1	25.16	Nov. 3	26.50
Mar. 3	27.79	June 2	30.03	Sept. 2	25.12	Dec. 2	27.57

4634R1. E. M. Smith. Measuring point (4) since Dec. 2, 1941, top of steel casing, 0.9 foot above land surface, and 44.18 feet above mean sea level.

Water level, in feet above mean sea level, 1941

Jan. 3	30.76	Apr. 1	29.44	July 1	28.93	Oct. 2	28.54
Feb. 3	29.12	May 1	28.86	Aug. 1	28.50	Nov. 3	28.81
Mar. 3	28.46	June 2	29.08	Sept. 2	28.31	Dec. 2	28.82

4636A1. D. D. Smith and S. H. and I. Zimmerman.

Water level, in feet above mean sea level, 1941

Jan. 6	28.80	Apr. 1	30.35	July 1	29.65	Oct. 7	31.24
Feb. 3	29.37	May 1	31.05	Aug. 1 b	25.64	Nov. 3	31.83
Mar. 3	30.46	June 2	30.47	Sept. 2	30.91	Dec. 2	31.25

4715C3. Robert L. Carter.

Water level, in feet above mean sea level, 1941

Jan. 7	42.40	Apr. 1	44.03	July 1	43.78	Oct. 3	41.54
Feb. 3	42.97	May 1	44.54	Aug. 1	41.34	Nov. 3	41.30
Mar. 3	43.61	June 2	44.40	Sept. 2	41.18	Dec. 2	43.17

4718N3. Martha Eddlemon.

Water level, in feet above mean sea level, 1941

Jan. 6	25.46	Apr. 1	28.12	July 1	22.55	Oct. 7	25.34
Feb. 3	26.01	May 1	29.18	Aug. 1	20.81	Nov. 3	26.28
Mar. 3	27.04	June 2	27.63	Sept. 2	23.46	Dec. 2	27.30

4722Q4. Adolphus Eddlemon.

Water level, in feet above mean sea level, 1941

Jan. 7	44.33	Apr. 1	45.63	July 1	44.13	Oct. 3	43.86
Feb. 3	44.68	May 1	45.97	Aug. 1	43.26	Nov. 3	44.43
Mar. 3	45.15	June 2	45.69	Sept. 2	43.18	Dec. 2	44.91

4722Q5. Adolphus Eddlemon.

Water level, in feet above mean sea level, 1941

Jan. 7	44.11	Apr. 1	45.47	July 1	38.05	Oct. 3	42.64
Feb. 3	44.50	May 1	45.18	Aug. 1	39.36	Nov. 3	44.08
Mar. 3	45.21	June 2	42.11	Sept. 2	36.73	Dec. 2	44.68

a Pump in observation well stopped a short time before measurement.
b Power or windmill pump operating in adjacent well within distance of 100 yards.

San Joaquin County--Continued

4727P1. Frank H. and Leonard W. Buck.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	48.21	Apr. 1	50.98	July 1	52.91	Oct. 3	48.12
Feb. 3	48.88	May 1	50.16	Aug. 1	49.83	Nov. 3	48.09
Mar. 3	50.98	June 2	53.59	Sept. 2	48.42	Dec. 2	48.38

4730J2. Clara A. Barton.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	28.32	Apr. 1	29.83	July 1	28.81	Oct. 7	29.21
Feb. 3	28.94	May 1	a 27.88	Aug. 1	27.35	Nov. 3	29.81
Mar. 3	29.46	June 13	28.04	Sept. 2	27.89	Dec. 2	30.51

4731J3. Charles H. Woest.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	33.48	May 1	33.12	Aug. 1	35.07	Nov. 3	35.61
Mar. 3	36.14	June 2	38.03	Sept. 2	36.02	Dec. 2	34.87
Apr. 1	35.68	July 1	37.14	Oct. 7	b 34.76		

4731N5. Jacob Goehring.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	34.07	Apr. 1	35.82	July 1	38.97	Oct. 7	b 37.25
Feb. 3	34.88	May 1	36.08	Aug. 1	37.86	Nov. 3	37.05
Mar. 3	36.26	June 2	41.27	Sept. 2	37.45	Dec. 2	35.74

4734G1. John J. Schmiedt.

Water level, in feet above mean sea level, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	49.41	Apr. 1	51.66	July 1	52.46	Oct. 6	49.06
Feb. 3	50.03	May 1	50.12	Aug. 1	50.53	Nov. 3	48.86
Mar. 3	c 55.30	June 2	55.28	Sept. 2	49.31	Dec. 2	49.02

a Pump in observation well stopped a short time before measurement.
b Creek or river flowing nearby.
c Adjacent land flooded.

Santa Barbara County

By G. A. La Rocque, Jr.

An inventory of the ground-water resources of Santa Barbara County, Calif., was begun in January 1941 by the Geological Survey, United States Department of the Interior, in cooperation with the county. In connection with this inventory during 1941, measurements of water level were made by the Geological Survey at intervals of two weeks or one month in 177 observation wells. Among the wells, at the end of the year, six were equipped with water-level recorders and five with float gages having stops to indicate the highest and lowest water levels for the interval. Records of water-level fluctuations in certain of these wells prior to 1941 were made available to the Geological Survey by public and private agencies, principally by the Santa Maria Valley Water Conservation District, San Joaquin Power Division of Pacific Gas and Electric Co., and the Union Sugar Co. One such record covers monthly water levels beginning in 1920; several others span the greater part of the decade 1930-39. From all these, records for 44 wells have been selected for this report as typical of the area; it is contemplated that all others will be published in a subsequent report or reports on the county-wide inventory. During 1941 water-level measurements were made by G. F. Brown, J. E. Upson, G. F. Worts, Jr., H. Vaughan, W. T. Jamison, and G. A. La Rocque, Jr., of the Geological Survey.

Santa Barbara County has four principal lowland areas that are separated by transverse ridges of the Coast Range. In order, from the north, these areas are the Cuyama Valley, the Santa Maria-Sisquoc Valley (or, commonly, the Santa Maria Valley), the Santa Ynez Valley, and the coastal plain, which includes the Carpinteria and Goleta districts near Santa Barbara. (See figures 9, 10, and 11. Only the central alluvial plains of these lowland areas are suitable for extensive cultivation. For irrigation and all other uses on these alluvial plains nearly all water is withdrawn from wells.

Santa Barbara County, like much of the Pacific slope, has its heaviest rainfall during the winter, and little or none during the summer. The amount of rainfall varies considerably from place to place. At Surf, which is on the l v western coast, the average yearly rainfall is about 10 inches, but

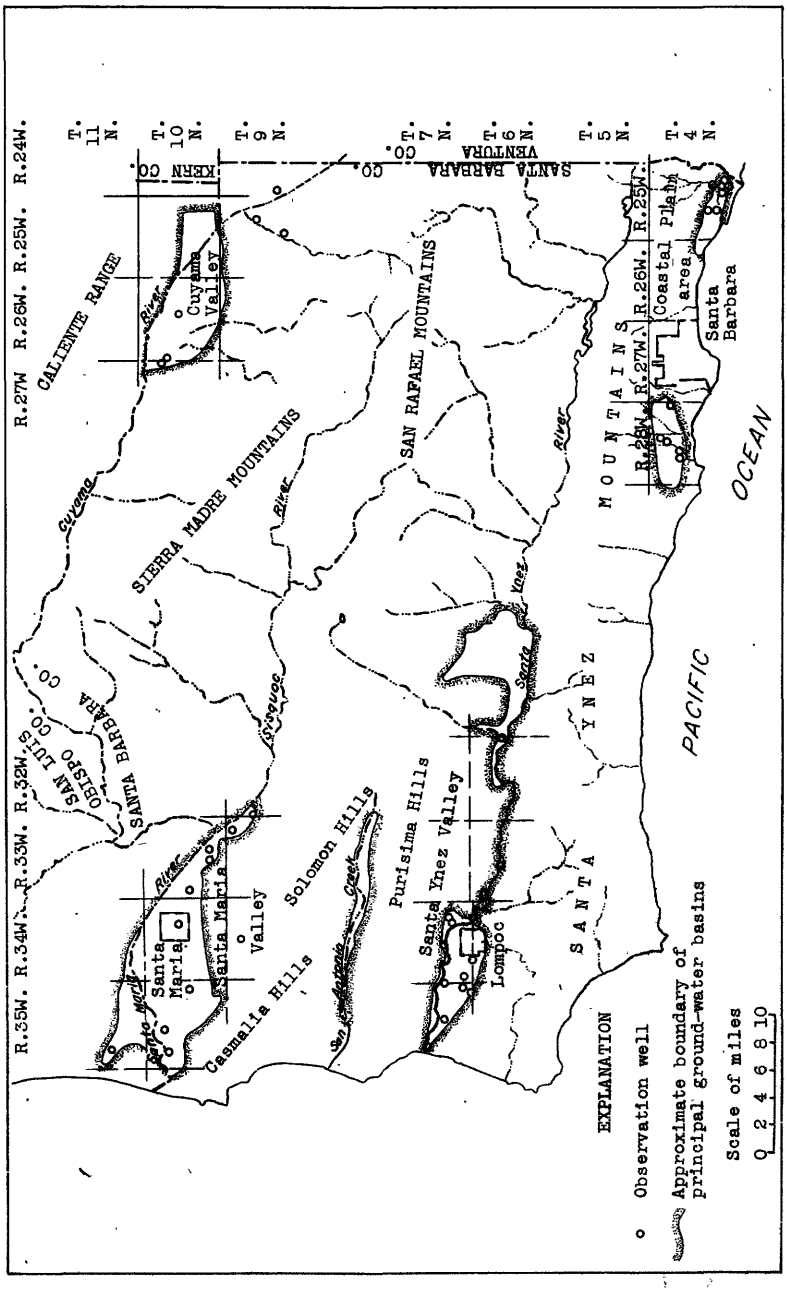

Figure 9.--Map showing location of representative observation wells in Santa Barbara County, Calif.

to the east, in the mountainous headwater terrane of the Santa Ynez and Sisquoc Rivers, the yearly precipitation is commonly from 30 to 40 inches, in part as snow. At Santa Barbara, on the coastal plain, the average yearly rainfall is about 18 inches, but along the northern edge of the county, in the center of the Cuyama Valley, it is only about 10 inches.

In the year ending June 30, 1941, the rainfall in Santa Barbara County was greater than in any previous year of record; at climatologic stations for which there are 40 years or more of record, it ranged from about 205 percent to about 245 percent of the over-all average. Owing to this excessive rainfall and to the ensuing short irrigation season both ground-water storage and the pressure head of confined ground-water bodies were replenished considerably in all parts of the county.

In the Santa Maria Valley, and the Lompoc Valley of the Santa Ynez River Basin, both the pressure head of confined water and the level of unconfined water appear to have risen higher than at any time during the prior decade. In the coastal plain area the water level in many wells recovered or rose to an altitude higher than any other for several years past. In certain wells of the Santa Maria Valley, and of the coastal-plain area, the rise of water level induced by the excessive rainfall apparently had not halted by the end of 1941.

Descriptions of wells and records of water levels

On the following pages are given the descriptions and records of water levels for the 44 observation wells selected as typical for Santa Barbara County. These descriptions and records are grouped according to the principal four lowland areas. Water levels are expressed in feet with respect to preliminary sea-level datum, which has been determined as follows: In the Santa Maria Valley and the Santa Ynez Valley, largely by interpolation from topographic maps prepared for local agencies with respective contour intervals of 2 feet and 5 feet; for two wells in the Santa Ynez Valley, all wells in the coastal-plain area, and all wells in the Cuyama Valley by "precise" aneroid in closed traverses from Federal bench marks.

Figure 9 shows the general location of the wells. Figures 10 and 11 show typical fluctuations of water level, by years during the period 1921 to 1941 and by months during 1941.

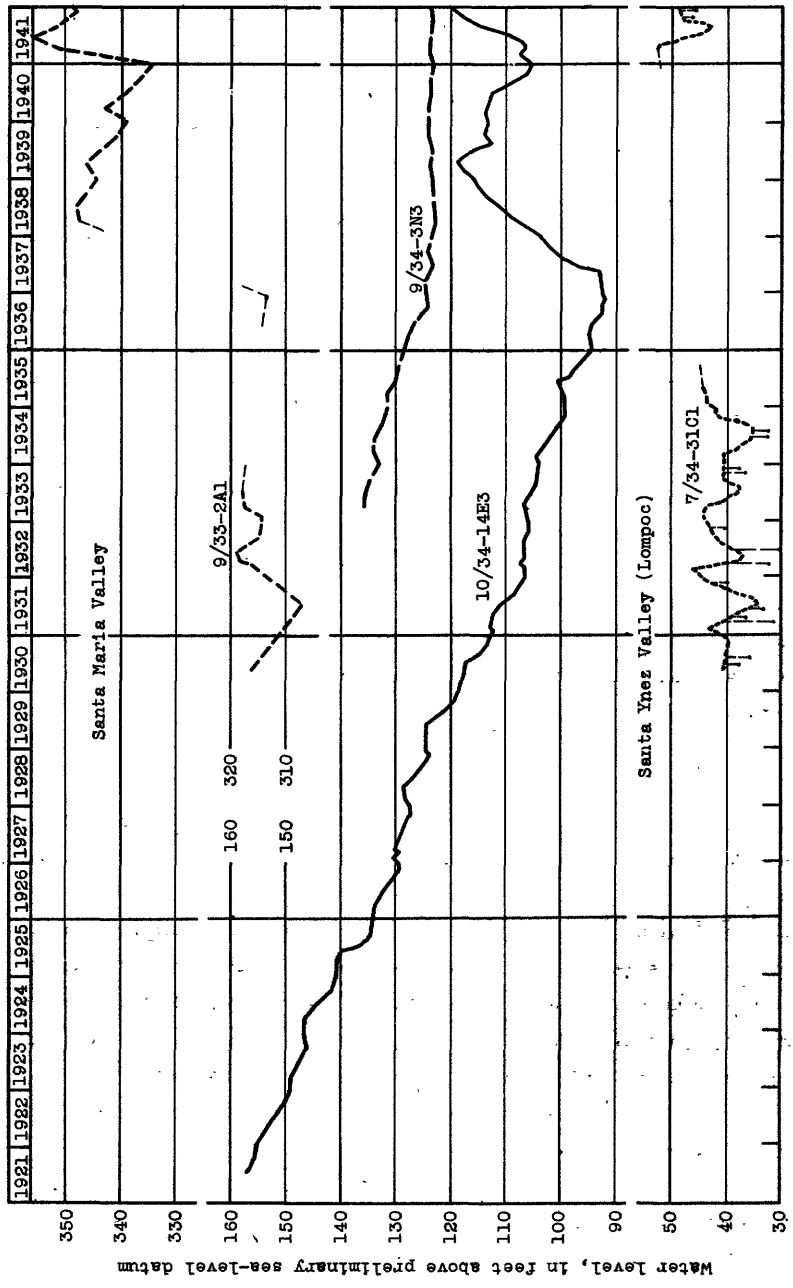

Figure 10.--Graphs showing fluctuations of water level in four wells in Santa Barbara County, Calif., 1921-41.

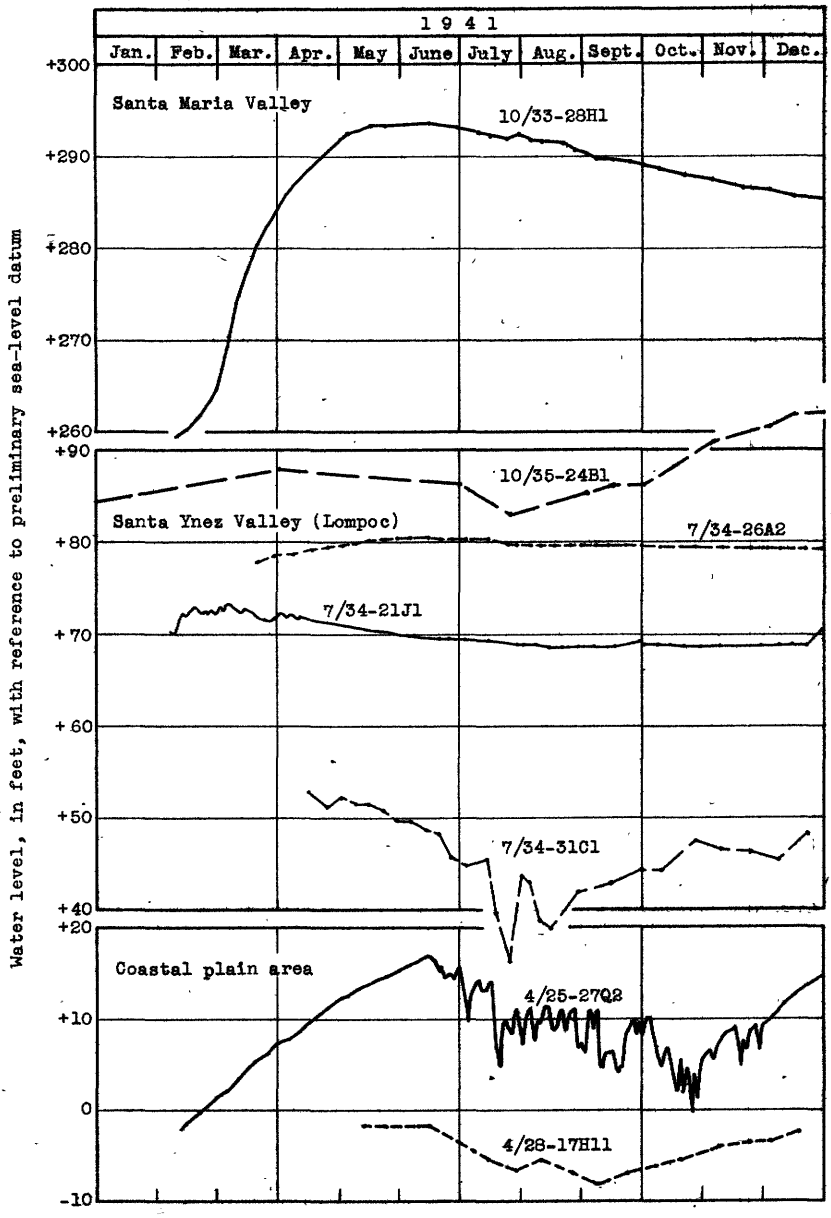

Figure 11.--Graphs showing fluctuations of water level in seven wells in Santa Barbara County, Calif., 1941.

Observation wells in the Cuyama Valley

9/24-19P1.[a] U. S. Department of Agriculture, Forest Service. About 0.4 mile south of Cuyama Ranger Station, 140 feet west of U. S. Highway 399, beneath frame windmill tower. Unused drilled well, diameter 5-5/8 inches, measured depth 90.5 feet. On main alluvial plain of Cuyama Valley. Measuring point, top of 5-5/8 inch coupling of casing, 1.3 feet above land surface and 2,784 feet above preliminary sea-level datum. Water levels, in feet above preliminary datum minus 2,700, 1941: Aug. 6, 64.16; Sept. 8, 62.67; Oct. 21, 60.85; Dec. 15, 58.33.

9/25-14K1. Snedden Land and Cattle Co. About 2 miles west of Cuyama Ranger Station, in Santa Barbara Canyon, 1.8 miles south of U. S. Highway 399, 0.2 mile west of road; about 25 feet south and 25 feet west of angle in corral fence, 15 feet north of galvanized tank. Drilled stock well, diameter 5-5/8 inches, equipped with windmill. On alluvial plain of Santa Barbara Canyon. Measuring point, top of 5-5/8 coupling of casing, 0.2 foot above land surface and 2,646 feet above preliminary sea-level datum. Water levels, in feet above preliminary datum minus 2,500, 1941: Aug. 6, 94.55; Sept. 8, 92.67; Oct. 21, 92.66; Dec. 15, 91.33.

9/25-27C1. U. S. Dept. of Agriculture, Forest Service. About 2.3 miles southwest of well 9/25-14K1, in Santa Barbara Canyon, beneath steel windmill tower and east of galvanized tank. Drilled stock well, diameter 5-5/8 inches, equipped with windmill. On alluvial plain of Santa Barbara Canyon. Measuring point, top of 5-5/8 inch coupling, 1.2 feet above land surface and 2,810 feet above preliminary sea-level datum. Water levels, in feet above preliminary datum minus 2,700, 1941: Aug. 6, 57.86; Sept. 8, 56.78; Oct. 21, 54.64; Dec. 15, 50.21.

10/26-18F1. H. S. Russell. About 60 feet north of State Highway 166, 3 miles west of lane to Cuyama Ranch. Drilled irrigation well, diameter 12 inches, depth more than 200 feet. Equipped with deep-well turbine pump, reported capacity 650 gallons a minute, direct connected to 40-horsepower Diesel motor. Drawdown about 34 feet while pumping 650 gallons a minute. On main alluvial plain of Cuyama Valley. Measuring point, edge of cut-out below pump base on southeast side, at land surface and 2,081 feet above preliminary sea-level datum. Water levels, in feet above preliminary datum minus 1,900, 1941: Aug. 4, 136.88; Sept. 8,[b] 97.30; Oct. 21, 126.36; Dec. 15, 128.95.

10/26-22C1. H. S. Russell. About 100 feet south of State Highway 166, 0.45 mile east of lane to Cuyama Ranch headquarters. Abandoned drilled irrigation well, diameter 12 inches, depth more than 200 feet. On main alluvial plain of Cuyama Valley. Confined water in fine white sand; static level above land surface when well was drilled. Measuring point, low point of cut-out in casing, north side, 0.5 foot above land surface and 2,200 feet above preliminary sea-level datum. Water level draws down when irrigation wells in nearby vicinity are pumped. Water levels, in feet above preliminary datum minus 2,100, 1941: Spring,[c] 100+; Aug. 4, 83.29; Sept. 8, 84.74; Oct. 21, 89.44; Dec. 15, 98.92.

a The symbol used to designate a well shows the location of that well according to the rectangular system for subdivision of public land. Thus, the part of the symbol that precedes the hyphen indicates the township and range (T. 9 N., R. 24 W.). The one digit or two digits following the hyphen indicate the section (sec. 19), and the letter indicates the 40-acre tract subdivision of the section as shown in the accompanying diagram.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Within each 40-acre tract the wells are numbered serially as indicated by the final digit of the symbol. Thus, well 19P1 is the first well to be listed in the SE¼ SW¼ sec. 19. As virtually all of Santa Barbara County is in the northwest quadrant of the San Bernardino Meridian and Base Line, the foregoing abbreviation of the township and range is specific for the County. Some parts of the County have never been public land; for these the rectangular system of subdivision has been projected.

b Pump operating in well.

c Well flowing.

Cuyama Valley--Continued

10/27-12R1. H. S. Russell. About 700 feet north of State Highway 166, 8 feet north of galvanized steel tank house at headquarters of W. Kershenmann, lessor. Drilled domestic and irrigation well, diameter 12 inches, measured depth 120.8 feet. Tractor driven deep-well turbine. Drawdown about 10 feet. On main alluvial plain of Cuyama Valley. Measuring point, rolled edge of cut-out, below pump base, on southeast side, at land surface and 2,036 feet above preliminary sea-level datum. Water level does not seem to be drawn down by pumping in nearby wells. Water levels in feet above preliminary datum minus 1,900, 1941: Aug. 4, 92.88; Sept. 8, 93.37; Oct. 21, 94.03; Dec. 15, 95.77.

Observation wells in the Santa Maria Valley

9/32-7N1 (JBL no. 29-E, WCD no. 6)[a] V. Tognazzini. In field about 1,000 feet north of State Highway 140, 650 feet northeast of Pacific Coast Railway warehouse at Sisquoc, in corrugated steel pump house about 100 feet north of property line fence. Drilled irrigation well, diameter 12 inches, reported depth 190 feet. Deep-well turbine and direct-connected 50-horsepower electric motor. Drawdown about 16 feet. On main alluvial plain of Santa Maria Valley, above confluence of Sisquoc and Cuyama Rivers. Water-bearing zones as follows: sandy silt, from 35 to 45 feet below land surface; rotten shale and blue clay, 60 to 75 feet; hard "sand rock," 104 to 116 feet. Measuring point, lower face of pump base on east side, level with concrete foundation, 2.0 feet above land surface and 424 feet above preliminary sea-level datum. Highest observed static water level, 384.50 feet above datum, July 1, 1941; lowest observed static water level above datum, 332.25 feet, above datum, Sept. 11, 1930.

Water level, in feet above preliminary datum,
1924, 1930, 1932-33, 1938-41
(Record for period prior to 1941 by or through
Santa Maria Valley Water Conservation District)

Date	Water level	Date	Water level	Date	Water level
May 3, 1924	356.00	July 1, 1938	372.50	July 16, 1941	c 365.29
Sept.11, 1930	332.25	Oct. 1	380.33	31	c 364.13
Apr. 5, 1932	337.00	Jan. 1, 1939	371.10	Aug. 13	c 364.31
May 24	340.85	Apr. 1	379.51	27	c 361.78
June 25	337.60	July 1	373.91	Sept. 9	c 360.84
July 22	338.00	Oct. 1	372.90	Oct. 1	b 376.20
Sept.19	340.25	Jan. 1, 1940	370.00	8	c 362.74
Oct. 27	337.90	Apr. 1	368.75	22	380.99
Dec. 13	340.33	July 1	362.27	Nov. 5	380.99
Feb. 2, 1933	339.84	Oct. 1	359.50	19	c 360.65
Apr. 1	341.50	Jan. 1, 1941	b 358.17	Dec. 3	379.49
July 17	341.00	Apr. 1	b 376.50	17	379.02
Sept.20	341.00	June 4	c 366.86	31	378.80
Apr. 1, 1938	371.00	July 1	b 384.50		

9/33-2A1 (JBL no. 62-H, WCD no. 5). Santa Maria Realty Co. In Garey, about 400 feet north of Wicks Avenue and 40 feet west of Andrews Avenue, in galvanized steel pump house. Drilled irrigation well, diameter 12 inches, reported depth 168 feet. Deep-well turbine and direct-connected 40-horsepower electric motor. On main alluvial plain of Santa Maria Valley above confluence of Sisquoc and Cuyama Rivers. Measuring point, lower face of pump base on north side, level with concrete foundation, 0.5 foot above land surface and 380 feet above preliminary sea-level datum. Highest observed static water level, 355.88 feet above datum, June 4, 1941; lowest observed static water level 307 feet above datum, July 14, 1931.

a In this report the symbols JBL, WCD and SJP indicate agencies other than the Geological Survey, as follows: JBL, J. B. Lippincott, Engineering Offices, Los Angeles; WCD, Santa Maria Valley Water Conservation District; and SJP, San Joaquin Power Division of Pacific Gas and Electric Co.

b By Santa Maria Valley Water Conservation District.

c Pump operating in well.

Santa Maria Valley--Continued

9/33-2A1 (JBL no. 62-H, WCD no. 5).--Continued.

Water level, in feet above preliminary datum, 1930-33, 1936, 1938-41
(Record for period prior to 1941 by or through the Santa Maria Valley Water Conservation District.)

Date	Water level	Date	Water level	Date	Water level
May 21, 1930	316.	July 1, 1938	348.00	July 1, 1941 a	354.67
July 14, 1931	307.	Oct. 1	346.00	31	352.86
Mar. 21, 1932	316.	Jan. 1, 1939	344.17	Aug. 13	352.02
Apr. 19	315.25	Apr. 1	346.00	27	b 342.33
May 24	318.5	July 1	343.75	Sept. 9	350.39
June 25	318.5	Oct. 1	340.50	24	350.31
July 22	317.5	Jan. 1, 1940	339.00	Oct. 1	350.08
Sept.19	316.33	Apr. 1	342.59	8	b 340.78
Oct. 27	314.6	July 1	339.00	22	b 340.73
Dec. 13	314.25	Oct. 1	336.50	Nov. 5	348.97
Feb. 2, 1933	314.33	Jan. 1, 1941 a	334.00	19	b 340.21
Apr. 1	317.4	Apr. 1 a	351.10	Dec. 3	348.21
July 17	317.36	May 14	355.65	17	347.83
Dec. 21, 1936	313.4	June 4	355.88	31	348.05
Apr. 1, 1938	347.19				

9/34-3N3. Owner's no. 3. City of Santa Maria, Water Division. About 5 miles south of Santa Maria, 900 feet north of the most southerly of four wells in field, 400 feet east of Lower Orcutt Road, in galvanized steel pump house. Drilled public supply well, diameter 18 inches, reported depth 220 feet. Deep-well turbine and direct-connected 50-horsepower electric motor. On broad terrace south of main alluvial plain of the Santa Maria Valley. Confined water in sand from 200 to 220 feet below land surface. Measuring point, center of air gage, 0.8 foot above land surface and 280 feet above preliminary sea-level datum. Highest observed static water level, 135.8 feet above datum, Mar. 3, 1933; lowest observed static water level, 122.9 feet above datum, Mar. 31, 1938.

Water level, in feet above preliminary datum, 1933-41
(By city of Santa Maria, Water Division, on last day of each month.)

	1933	1934	1935	1936	1937	1938	1939	1940	1941
Jan.	.....	134.1	131.7	128.2	124.2	123.1	123.8	124.2	123.1
Feb.	.....	134.1	131.7	128.0	124.2	123.1	123.8	124.2	123.1
Mar.	135.8	134.1	131.7	127.8	124.7	122.9	123.8	.....	123.8
Apr.	135.8	134.0	131.7	127.8	124.7	123.1	123.8	.....	124.2
May	135.6	134.0	131.4	127.5	123.4	123.1	123.8	124.2	124.0
June	135.6	133.8	130.0	126.6	123.4	.....	123.3	.....	123.8
July	135.2	133.8	129.6	125.2	.....	123.1	123.3	123.1	.....
Aug.	134.9	.....	128.9	124.5	124.3	.....	123.1	124.0	123.3
Sept.	134.5	132.6	129.2	124.5	.....	123.1	124.0	123.8	123.1
Oct.	134.4	131.6	128.9	125.2	124.3	123.1	123.5	123.1	.....
Nov.	133.5	131.6	128.9	124.5	124.3	123.1	123.8	.....	123.1
Dec.	133.0	131.6	128.4	124.2	123.3	123.1	.....	123.1	123.3

10/33-19B1 (JBL no. 134-G, WCD no. 3, SJP no. 4). O. T. Rice. About 3 miles southeast of Santa Maria, in field, 40 feet south of East Stowell Road (State Highway 140), 1,350 feet west of Telephone Road, in galvanized steel pump house. Drilled irrigation well, reported depth 307 feet. Deep-well turbine pump and direct-connected 50-horsepower electric motor. On main alluvial plain of Santa Maria Valley. Water in, boulders and gravel from 85 to 98 feet below land surface, gravel and sand from 114 to 125 feet, interbedded clay and gravel from 190 to 200 feet, gravel from 200 to 211 feet, and clay and rocks from 238 to 286 feet. Measuring point, lower face of pump base, at land surface and 275 feet above preliminary sea-level datum. Seasonal rise in water level begins with winter rains and may continue several months after stream flow diminishes. Highest observed static water level, 198.17 feet above datum, Nov. 5, 1941; lowest observed static water level, 156 feet above datum, Mar. 21, 1932.

a By Santa Maria Valley Water Conservation District.
b Pump operating in well.

Santa Maria Valley--Continued

10/33-19B1--Continued.

Water level, in feet above preliminary datum, 1927, 1929-41 (Except as indicated by footnote, record for period prior to 1941 by or through Santa Maria Valley Water Conservation District.)

Date	Water level	Date	Water level	Date	Water level
Dec. 14, 1927	191.	Apr. 1, 1933	170.83	July 1, 1940	174.55
Aug. 1-15, 1929	a173.43	July 17	170.0	Aug. 1-15	a171.50
Oct. 7	171.	Aug. 1-15	a167.00	Oct. 1	172.10
Nov. 5	170.	Aug. 1-15, 1934	a163.34	Jan. 1, 1941	b173.25
Aug. 1-15, 1930	a171.90	Aug. 6, 1935	a159.67	Apr. 1	b174.50
June 18, 1931	158.17	May 21, 1936	166.	May 14	183.94
26	159.5	Aug. 1-15	a184.50	July 1	b189.80
Aug. 1-15	a159.00	Feb. 3, 1937	170.5	16	191.40
Mar. 21, 1932	156.	Aug. 2	185.5	Aug. 1-15	a193.50
Apr. 7	156.	Apr. 1, 1938	188.04	Sept. 3	195.93
19	157.42	July 1	195.67	9	196.33
May 24	163.5	Aug. 1-15	a193.84	Oct. 1	b197.33
June 25	166.5	Oct. 1	197.30	8	197.78
July 22	166.	Jan. 1, 1939	195.53	22	197.89
Aug. 1-15	a166.67	Apr. 1	193.00	Nov. 5	198.17
Sept. 19	166.7	July 1	187.07	19	198.01
Nov. 5	168.	Aug. 1-15	a186.17	Dec. 3	197.65
Dec. 13	170.67	Oct. 1	179.50	17	197.48
Feb. 2, 1933	172.60	Jan. 1, 1940	182.59	31	197.53
23	173.5	Apr. 1	183.58		

10/33-27K1 (JBL no. 100-F). Newhall Land and Farming Co. About 2 miles northwest of Garey, in open field 1,700 feet north of State Highway 140, 50 feet northeast of Pacific Coast Railway (abandoned), 330 feet southeast of well 10/33-27G2, in galvanized steel pump house. Abandoned drilled irrigation well, diameter 12 inches, reported depth 255 feet. On main alluvial plain of Santa Maria Valley. Semi-confined or confined water in coarse sand from 95 to 110 feet below land surface and gravel and boulders from 138 to 156 feet. Measuring point, top of base panel of instrument shelter at bored hole, 0.23 foot above top of casing, 0.4 foot above land surface and 345 feet above preliminary sea-level datum. Seasonal decline of water level begins as stage of the Cuyama and Sisquoc Rivers falls to a certain low level. Water level recorder installed May 19, 1941.

Daily noon water level, in feet above preliminary datum, 1941 (from recorder charts)

Day	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	319.09	318.57	316.70	313.83	311.13	308.89	307.21
2	.....	319.12	318.40	316.57	313.78	311.05	308.86	307.15
3	.....	319.07	318.30	316.51	313.77	310.98	308.84	307.14
4	.....	318.98	318.32	316.41	313.72	310.87	308.77	307.08
5	.....	318.92	318.40	316.30	313.55	310.84	308.72	307.08
6	.....	318.89	318.39	316.21	313.41	310.82	308.60	307.07
7	.....	318.86	318.30	316.05	313.27	310.63	308.58	307.08
8	.....	318.91	318.22	.....	313.31	310.55	308.33	307.10
9	.....	318.94	318.14	.....	313.09	310.52	308.31	307.13
10	.....	318.90	318.10	.....	312.98	310.44	308.21	307.19
11	.....	318.83	318.04	.....	312.84	310.40	308.14	.....
12	.....	318.79	317.97	.....	312.74	310.23	308.08	.....
13	.....	318.73	317.98	.....	312.63	310.18	308.07	.....
14	.....	318.59	.....	.....	312.50	310.09	308.00	.....
15	.....	318.49	.....	315.33	312.48	309.95	307.95	.....
16	.....	318.52	317.79	315.23	312.48	309.92	307.91	.....
17	.....	318.49	317.69	315.17	312.42	309.80	307.89	307.17
18	.....	318.47	317.63	315.09	312.32	309.72	307.83	307.19
19	c319.49	318.48	317.53	.....	312.27	309.61	307.73	307.24

a By San Joaquin Power Division of Pacific Gas and Electric Co.
b By Santa Maria Valley Conservation District.
c Water-level recorder installed.

Santa Maria Valley--Continued

10/33-27K1 (JBL no. 100-F).--Continued.

Daily noon water level, in feet above preliminary datum, 1941 (from recorder charts)

Day	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
20	319.48	318.41	317.46	314.94	312.18	309.62	307.71	307.23
21	319.47	318.38	317.49	314.90	312.19	309.44	307.67	307.24
22	319.47	318.54	317.44	314.83	312.10	309.48	307.67	307.25
23	319.36	318.54	.....	314.77	311.92	.....	307.57	307.30
24	319.18	318.46	.....	314.61	311.84	.....	307.47	307.31
25	319.09	318.40	.....	314.49	311.66	.....	307.43	307.31
26	319.09	318.45	.....	314.37	311.54	.....	307.34	307.30
27	319.07	318.47	.....	314.28	311.41	.....	307.32	307.33
28	319.03	318.41	.....	314.20	311.37	.....	307.28	307.46
29	319.02	318.53	.....	314.05	311.25	309.07	307.30	307.45
30	319.06	318.50	.....	314.93	311.16	309.01	307.24	307.54
31	.....	.....	316.77	313.86	.....	308.94	.....	307.88

10/33-28H1. J. Soares. About 3 miles northwest of Garey, at dairy farm of L. and R. Detamanti Bros., 50 feet west of State Highway 140, in galvanized steel pump house. Drilled domestic and dairy well, diameter 16 inches, measured depth 156.8 feet. Deep-well turbine and direct-connected 7.5-horsepower electric motor. On main alluvial plain of the Santa Maria Valley. Measuring point, Feb. 11, to May 17, 1941, top of base panel of instrument shelter, at 1-inch bored hole, 0.60 foot above concrete foundation, 1.2 feet above land surface, and 327 feet above preliminary sea-level datum; May 23 to June 29, 1941, top east side of 16-inch casing, 326.43 feet above preliminary sea-level datum; after July 10, 1941, lower face of pump base at square hole in concrete foundation, 326.46 feet above preliminary sea-level datum.

Water level, in feet above preliminary datum, 1941 (in part, daily noon levels from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 11	a 259.45	Mar. 13	276.30	Apr. 12	287.75	May 12	293.03
12	259.63	14	276.93	13	287.93	13	293.20
13	259.81	15	277.46	14	288.16	14	293.25
14	259.98	16	278.05	15	288.41	15	293.23
15	260.14	17	278.59	16	288.65	16	293.30
16	260.39	18	279.17	17	288.91	17	b 293.32
17	260.61	19	279.74	18	289.12	23	293.43
18	260.85	20	280.23	19	289.35	June 15	293.70
19	261.11	21	280.70	20	289.55	29	293.06
20	261.41	22	281.17	21	289.76	July 10	292.56
21	261.74	23	281.60	22	289.96	16	292.29
22	262.04	24	281.96	23	290.17	23	291.94
23	262.35	25	282.34	24	290.39	30	292.36
24	262.77	26	282.70	25	290.59	Aug. 6	291.58
25	263.20	27	283.00	26	290.79	13	291.66
26	263.73	28	283.36	27	290.98	20	291.16
27	264.20	29	283.69	28	291.16	27	290.53
28	264.78	30	284.02	29	291.38	Sept. 3	290.07
Mar. 1	265.50	31	284.36	30	291.60	9	289.80
2	266.29	Apr. 1	284.64	May 1	291.79	17	289.64
3	267.29	2	284.93	2	291.96	24	289.30
4	268.29	3	285.24	3	292.16	Oct. 1	289.00
5	269.16	4	285.58	4	292.29	8	288.64
6	270.32	5	285.84	5	292.37	22	288.01
7	271.31	6	286.14	6	292.50	Nov. 5	287.41
8	272.35	7	286.41	7	292.62	19	286.61
9	273.40	8	286.66	8	292.74	Dec. 3	286.10
10	274.25	9	286.97	9	292.78	17	285.65
11	274.99	10	287.22	10	292.86	31	285.39
12	275.62	11	287.52	11	292.98		

a Water-level recorder installed.
b Water-level recorder removed.

Santa Maria Valley--Continued

10/34-14E3. City of Santa Maria, Water Division. In Santa Maria, about 175 feet north of Santa Maria Valley Railroad, 275 feet east of South Broadway (U. S. Highway 101), in garage. Abandoned drilled public supply well, diameter 18 inches, measured depth 160.5 feet. On main alluvial plain of Santa Maria Valley. Well 50 feet away found water in gravel and clay, from 87 to 109 feet below land surface and in sand and gravel from 164 to 181 feet. Measuring point, top of metal cover through opening, level with land surface and 225 feet above preliminary sea-level datum. The seasonal rise in water level commonly begins in December and continues far into the pumping season. Highest observed static water level, 157.00 feet above datum, July 1920; lowest observed static water level, 92.33 feet above datum, Sept. 30, 1936.

Water level, in feet above preliminary datum, 1920-41
(By city of Santa Maria, Water Division, beginning in July 1932, water level measured last day of each month)

Year	Jan.	Feb.	Mar.	Apr.	May	June
1921	154.75	154.25	154.04	153.33	152.88	152.29
1922	149.00	148.67	148.50	148.58	148.79	149.17
1923	149.42	149.23	149.08	148.50	148.17	147.62
1924	146.77	146.54	146.08	145.73	145.17	144.17
1925	140.88	140.67	140.50	139.92	139.67	137.75
1926	134.17	133.75	133.75	133.25	132.92	132.17
1927	130.17	129.83	130.12	129.83	129.67	129.08
1928	128.25	128.42	128.67	128.67	127.75	127.00
1929	124.58	124.88	124.75	124.75	124.33	.....
1930	118.08	118.08	117.83	117.71	116.50	117.33
1931	112.08	112.75	112.58	112.17	111.42	110.58
1932	106.50	106.96	107.33	106.88	106.75	106.62
1933	105.92	106.42	106.83	106.75	106.00	105.08
1934	104.58	104.58	104.50	103.38	102.75	102.08
1935	99.46	99.46	99.83	100.00	100.21	100.21
1936	94.33	94.67	94.83	94.92	94.83	94.29
1937	92.69	92.79	92.75	93.08	93.58	96.88
1938	105.50	106.54	108.08	109.08	110.54	111.71
1939	116.60	117.90	118.19	118.62	117.17	116.52
1940	113.65	113.62	113.62	113.02	113.73	112.17
1941	105.88	107.25	107.17	106.52	107.23	109.04

Water level, in feet above preliminary datum, 1920-41
(By city of Santa Maria, Water Division, beginning in July 1932, water level measured last day of each month)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.
1920	157.00	156.34	156.17	155.61	155.46	155.12
1921	151.58	150.92	150.46	149.83	149.46	149.21
1922	149.35	149.54	149.50	149.46	149.35	149.50
1923	147.12	146.17	146.31	146.12	147.00	146.90
1924	143.17	142.29	141.85	141.38	141.21	140.96
1925	137.25	135.17	134.50	134.33	134.17	134.08
1926	131.25	130.62	130.25	129.67	129.50	129.83
1927	128.88	128.42	127.92	127.33	127.58	127.50
1928	126.75	126.00	125.67	124.42	123.75	124.58
1929	121.75	121.33	120.50	119.17	118.67	118.46
1930	115.67	115.00	114.33	113.38	112.92	112.58
1931	110.00	108.62	108.00	107.58	106.46	106.38
1932	106.71	106.54	106.33	105.79	106.00	105.92
1933	105.17	104.75	104.42	104.17	103.67	104.00
1934	101.50	101.08	100.33	99.17	99.00	99.33
1935	97.58	97.42	96.33	96.08	94.08	94.06
1936	93.08	92.42	92.33	92.42	92.29	92.42
1937	98.83	99.88	101.25	102.02	103.00	103.83
1938	112.38	113.27	113.94	114.85	115.94	115.79
1939	115.08	112.38	113.46	113.79	113.33	113.27
1940	110.58	109.46	108.81	106.00	105.42	105.46
1941	110.46	114.33	116.08	117.67	119.29	120.25

Santa Maria Valley--Continued.

10/35-7F1 (JBL no. 116-c, WCD no. 18). M. J. Ellis. About 1.7 miles west of Guadalupe, 185 feet north of State Highway 166, 20 feet west of ranch road, in galvanized steel pump house. Drilled irrigation well, diameter 16 inches, reported depth 248 feet. Deep-well turbine and direct-connected 20-horsepower electric motor. On main alluvial plain of Santa Maria Valley. Confined water in gravel from 140 to 145 feet and 200 to 225 feet below land surface. Measuring point, lower face of pump base on east side, level with concrete foundation, 1.5 feet above land surface and 50 feet above preliminary sea-level datum. The highest yearly water level commonly lags 9 to 11 months after the rainy season. Low water level from April through October indicates loss of head due to widespread pumping for irrigation. Highest observed water level, 49.19 feet (well flowing about 10 gallons a minute), Dec. 31, 1941; lowest observed water level, 37.00 feet, Oct. 1, 1940.

Water level, in feet above preliminary datum, 1938-41
(Record for period prior to 1941 by or through Santa Maria Valley Water Conservation District.)

Date	Water level	Date	Water level	Date	Water level
Apr. 1, 1938	43.33	Apr. 1, 1940	a 40.00	Sept. 3, 1941	39.21
July 1	a 31.00	July 1	a 31.75	17	41.05
Oct. 1	42.08	Oct. 1	37.00	Oct. 1	b 42.58
Jan. 1, 1939	46.60	Jan. 1, 1941	b 46.08	Nov. 5	45.51
Apr. 1	43.75	Apr. 1	b 46.83	Dec. 3	47.53
July 1	a 29.40	July 1	ab 29.17	17	c 48.93
Oct. 1	43.80	Aug. 6	39.60	31	c 49.19
Jan. 1, 1940	46.60				

10/35-9F1 (JBL no. 119-H, WCD no. 17). Waller-Franklin. About 0.3 mile north of Guadalupe, 0.45 mile north and 0.27 mile east of crossing of State Highway 166 and Southern Pacific Railroad, in wooden shelter at east end of greenhouse. Drilled irrigation well, diameter 12 inches, reported depth 198 feet. Deep-well turbine and direct-connected 20-horsepower electric motor. On main alluvial plain of the Santa Maria Valley. Confined water in gravel from 110 to 119 feet and 152 and 195 feet below land surface. Measuring point, lower face of pump base on north side, level with concrete foundation, 1.0 foot above land surface and 89 feet above preliminary sea-level datum. The highest yearly water level commonly lags 9 to 11 months after the rainy season. Low water level May through September indicates loss of head due to widespread pumping for irrigation. Highest observed static water level, 71.61 feet above datum, Dec. 31, 1941; lowest observed static water level, 47.4 feet above datum, June 21, 1935.

Water level, in feet above preliminary datum, 1933, 1935-36, 1938-41
(Record for period prior to 1941 by or through the Santa Maria Valley Water Conservation District)

Date	Water level	Date	Water level	Date	Water level
June 9, 1933	65.25	Jan. 1, 1940	65.20	Aug. 20, 1941	59.93
25, 1935	47.4	Apr. 1	59.80	Sept. 3	61.86
May 27, 1936	50.	July 1	49.25	17	62.06
Apr. 1, 1938	69.46	Oct. 1	53.90	Oct. 1	b 63.00
July 1	54.67	Jan. 1, 1941	b 63.83	8	63.43
Oct. 1	63.75	Apr. 1	b 66.33	22	65.22
Jan. 1, 1939	65.83	May 19	64.74	Nov. 19	64.15
Apr. 1	67.30	July 1	b 57.70	Dec. 3	65.53
July 1	51.00	24	60.20	17	70.42
Oct. 1	61.33	Aug. 6	59.75	31	71.61

10/35-24B1 (Owner's no. N6, WCD no. 21) Union Sugar Company. About 4.5 miles west of Santa Maria, 30 feet south of Brown Road and 50 feet west of Ray Road in corrugated steel pump house. Drilled irrigation well, diameter 16 inches, reported depth 290 feet. Deep-well turbine and direct-connected 50-horsepower electric motor. On main alluvial plain of Santa Maria Valley. Confined in gravel from 122 to 153 feet, 169 to 175 feet,

a Pump stopped 5 minutes before measurement.
b By Santa Maria Valley Water Conservation District.
c Water level about 0.7 foot above land surface, in standpipe, and drawn down somewhat by artesian flow of about 10 gallons a minute.

Santa Maria Valley--Continued.

10/35-24B1--Continued.

and 178 to 288 feet below land surface. Measuring point, lower face of pump base on west side, level with concrete foundation, at land surface and 144 feet above preliminary sea-level datum. The highest yearly water level commonly lags 9 to 11 months after the rainy season. Low water level July through September indicates loss of head due to widespread pumping for irrigation. Highest observed static water level, 93.99 feet above datum, Dec. 17, 1941; lowest observed static water level, 77.25 feet above datum, Oct. 1, 1940.

Water level, in feet above preliminary datum, 1938-41
(Record for period prior to 1941 by or through the Santa Maria Valley Water Conservation District)

Date	Water level	Date	Water level	Date	Water level
Apr. 1, 1938	86.00	Oct. 1, 1940	77.25	Oct. 1, 1941	85.11
July 1	79.58	Jan. 1, 1941	b 84.33	8	c 77.81
Oct. 1	83.00	Apr. 1	b 88.00	17	88.17
Jan. 1, 1939	87.25	July 1	b 86.20	22	89.69
Apr. 1	89.25	24	82.98	Nov. 5	90.94
July 1	81.30	Aug. 6	c 75.86	19	c 81.78
Oct. 1	83.88	20	c 76.06	Dec. 3	92.61
Jan. 1, 1940	85.40	Sept. 3	85.35	17	93.99
Apr. 1	86.17	17	86.08	31	93.98
July 1	a 76.50	Oct. 1	b 86.30		

11/35-20E1 (Owner's no. F-3, WCD no. 15). Union Sugar Company. About 4.5 miles north of Guadalupe, 65 feet north of road between Nipomo and Oso Flaco Lake, 0.65 mile west of Southern Pacific Railroad, in frame pump house. Drilled irrigation well, diameter 18 to 16 inches, reported depth 440 feet. Deep-well turbine and direct-connected 50-horsepower electric motor. On main alluvial plain of Santa Maria Valley. Confined water in gravel and sand from 281 to 309 feet and 343 to 445 feet below land surface. Measuring point, lower face of pump base on west side, level with concrete foundation and land surface and 49 feet above preliminary sea-level datum. The highest yearly water level commonly lags 8 to 10 months after the rainy season. Low water level April through October indicates widespread pumping for irrigation. Highest observed static water level, 48.77 feet above datum, Dec. 31, 1941; lowest observed static water level, 37.40 feet above datum, Oct. 1, 1941.

Water level, in feet above preliminary datum, 1938-41
(Records for years prior to 1941 by or through Santa Maria Valley Water Conservation District.)

Apr. 1, 1938	47.70	Jan. 1, 1940	43.70	July 1, 1941	ab 7.75
July 1	a 13.80	Apr. 1	a 12.80	24	33.46
Oct. 1	41.17	July 1	a -0.75	Aug. 6	c 49.49
Jan. 1, 1939	44.60	Oct. 1	a 5.25	Oct. 1	ab 11.00
Apr. 1	a 23.50	Jan. 1, 1941	b 44.08	Dec. 17	47.74
July 1	a 0.20	Apr. 1	ab 19.50	31	48.77
Oct. 1	37.40	May 16	a 10.95		

Observation wells in the Santa Ynez Valley

6/32-12J2. A. Bodine. In Buellton, about 50 feet south and 200 feet west of intersection of U. S. Highway 101 and State Highway 150, in rear of residence and store. Unused drilled well, diameter 6 inches, measured depth 126.0 feet. On terrace remnant above main alluvial plain. Confined water in coarse sand from 80 to 100 feet below land surface. Measuring point, top of 6-inch casing, level with land surface and 361 feet above preliminary sea-level datum.

a Pump stopped 5 minutes before measurement.
b By Santa Maria Valley Water Conservation District.
c Pump operating in well.

Santa Ynez Valley--Continued.

6/32-12J2.--Continued.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept.11	338.02	Oct. 25	337.08	Nov. 21	335.89	Dec. 23	335.26
Oct. 9	337.00	Nov. 8	336.54	Dec. 11	335.36	30	335.16

6/33-9P1. Hollister Estate. About 8 miles east of Lompoc. 35 feet north of Santa Rosa Road, 1,400 feet west of property line, in corrugated steel pump house. Unused drilled irrigation well, diameter 16 inches, measured depth 83.0 feet. On terrace remnant above Santa Ynez River. Measuring point, top west side of 16-inch casing, 0.5 foot below concrete foundation, 0.5 foot below land surface and 200 feet above preliminary sea-level datum.

Water level, in feet above preliminary datum, 1941

June 5	174.28	Aug. 28	171.41	Oct. 25	169.60	Dec. 11	168.36
July 28	172.38	Sept.17	170.72	Nov. 8	169.19	23	168.22
Aug. 16	171.79	Oct. 3	170.25	21	168.89	29	168.13

6/34-2A1. C. Madsen. About 2 miles east of Lompoc, on southwest side of walnut orchard, 150 feet north of Santa Ynez River at Narrows. Drilled irrigation well, diameter 12 inches, reported depth 210 feet. Deep-well turbine, reported capacity 1,000 gallons a minute, direct-connected 25-horsepower electric motor. Drawdown about 6 feet while pumping 1,000 gallons a minute. On terrace remnant about 45 feet above inner channel of Santa Ynez River. Confined water in gravel member of younger alluvium from 105 to 184 feet below land surface. Measuring point, lower face of pump base at cut-out in south side of 12-inch casing 0.5 foot above land surface and 126 feet above preliminary sea-level datum. Water level seems to follow stage of Santa Ynez River.

Water level, in feet above preliminary datum, 1941

Mar. 5	97.18	May 29	87.79	July 25	86.65	Oct. 10	86.77
29	90.14	June 6	87.75	Aug. 1	a 80.73	27	86.92
Apr. 18	89.13	13	87.58	15	86.93	Nov. 10	86.82
25	99.05	20	87.42	29	86.86	24	86.81
May 2	88.92	26	87.39	Sept.15	86.40	Dec. 9	86.88
16	88.23	July 3	87.35	30	86.83	22	87.06
23	88.02	18	86.76				

7/34-21J1. Union Oil Company. About 2.5 miles north of Lompoc, 0.22 mile north of Santa Ynez River, 50 feet south of base of terrace, 250 feet west of road between Lompoc and Santa Maria (H Street extended). Abandoned drilled well, diameter 12 inches, measured depth 63.5 feet. On main alluvial plain of Lompoc Valley. Unconfined water in coarse gravel from 27 to 57 feet below land surface; also in sand, gravel, and boulders from 64 to 74 feet. Level of unconfined water about 5 feet above that of water confined in the main water-bearing zone of the younger alluvium. Measuring points, Feb. 6 to July 3, 1941 and after Nov. 28, 1941, top of 12-inch casing at chalked arrow, 0.1 foot above land surface and 79 feet above preliminary sea-level datum; July 15 to Nov. 10, 1941, index pointer of float gage, 80.55 feet. Water level fluctuates with stage of Santa Ynez River. Water-level recorder in operation Feb. 6 to July 3, 1941. "High-low" float gage installed July 15, 1941.

Daily noon water levels, in feet above preliminary datum, 1941
(from recorder charts)

Day	Feb.	Mar.	Apr.	May	June	July
1	.....	72.85	72.14	70.96	69.97	69.41
2	.....	72.68	72.10	70.88	69.93	69.38
3	.....	72.58	71.96	70.86	69.94	b 69.36
4	.....	73.27	71.94	70.82	69.96	.....
5	.....	73.12	72.10	70.75	69.90	.....

a Pump operating in well.
b Water-level recorder removed.

Santa Ynez Valley--Continued.

7/34-21J1--Continued.

Daily noon water levels, in feet above preliminary datum, 1941 (from recorder charts)

Day	Feb.	Mar.	Apr.	May	June	July
6	a 70.14	72.95	71.97	70.74	69.88	.....
7	70.16	72.72	71.94	70.71	69.86	.....
8	70.03	72.54	71.93	70.67	69.84	.....
9	70.00	72.52	71.81	70.62	69.82	.....
10	71.01	72.43	71.80	70.58	69.81	.....
11	71.40	72.29	71.98	70.45	69.79	.....
12	72.05	72.30	71.91	70.43	69.78	.....
13	71.88	72.80	71.70	70.41	69.76	.....
14	72.47	72.94	71.61	70.39	69.72	.....
15	72.55	72.55	71.53	70.35	69.69	.....
16	72.53	72.36	71.44	70.32	69.68	.....
17	72.98	72.21	71.42	70.29	69.66	.....
18	72.71	72.13	71.34	70.26	69.63	.....
19	72.43	72.00	71.30	70.27	69.59	.....
20	72.28	71.90	71.28	70.23	69.55	.....
21	72.38	71.80	71.23	70.22	.....	.....
22	72.48	71.71	71.18	70.20	.....	.....
23	72.22	71.66	71.13	70.16	69.57	.....
24	72.46	71.57	71.14	70.13	69.54	.....
25	72.31	71.42	71.07	70.11	69.57	.....
26	72.10	71.41	70.98	70.12	69.51	.....
27	71.99	71.40	70.98	70.09	69.49	.....
28	72.15	71.41	70.95	70.06	69.50	.....
29	.....	71.74	70.94	70.02	69.49	.....
30	.....	71.64	70.97	70.01	69.47	.....
31	.....	71.97	.....	69.99	.....	.....

Water level, in feet above preliminary datum, 1941 (from float gage; undated levels are highest and lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 15	69.21		68.59		68.53	Dec. 2	68.70
28	68.96		68.57	Oct. 10	68.60		68.73
	b 68.96	Aug. 29	68.59		68.67		68.63
Aug. 2	68.89		68.65		68.55	8	68.72
	68.89		68.59	28	68.65		68.81
	68.81	Sept. 6	68.65		68.68		68.69
8	68.88		68.67		68.54	15	68.75
	68.88		68.36	Nov. 10	68.67		c 68.64
	68.62	15	68.60		b 68.72	22	68.81
15	68.62		68.98	28	68.68		70.31
	68.62		68.21		68.71		68.78
	68.54	Oct. 4	68.63		68.63	29	70.31
22	68.59		68.63				

7/34-26A2. Mrs. K. McConnell. About 2 miles northeast of Lompoc, at edge of field, 40 feet north of State Highway 150 extended and 1,000 feet west of junction with Orcutt Road, in galvanized steel pump house. Abandoned drilled irrigation well, diameter 12 inches, measured depth 149.2 feet. On main alluvial plain of Lompoc Valley. Confined water in gravel and sand of older alluvium from 47 to 62 feet and 135 to 153 feet below land surface. Measuring point, top north side of 12-inch casing, level with land surface and 113 feet above preliminary sea-level datum. Water level fluctuates as much as 0.2 foot with changes in barometric pressure. Water levels seemingly not affected by widespread pumping for irrigation.

a Water-level recorder installed.
b High level of period.
c Low level of period.

Santa Ynez Valley--Continued.

7/34-26A2.--Continued.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 20	77.87	June 13	80.41	Aug. 1	79.76	Oct. 10	79.56
29	78.48	20	80.22	4	79.78	27	79.50
Apr. 7	78.71	26	80.29	11	79.73	Nov. 10	79.40
18	79.25	July 3	80.29	18	79.80	24	79.37
25	79.54	8	80.25	25	79.82	25	79.43
May 2	79.73	14	80.22	Sept. 1	79.78	30	79.33
8	79.97	15	80.29	8	79.73	Dec. 2	79.35
16	80.12	18	80.22	15	79.69	8	79.31
23	80.24	21	80.02	22	79.66	15	79.26
29	80.29	25	79.86	23	79.61	22	79.24
June 6	80.33	28	79.77	30	79.58	29	79.23

7/34-26F1. (Owner's no. L13.) Union Sugar Company. About 2 miles northeast of Lompoc, 0.16 mile south of State Highway 150 extended and 0.52 mile west of junction with Orcutt Road, in pump house west of eucalyptus grove. Drilled irrigation well, diameter 16 inches, reported depth 230 feet. Deep-well turbine belt driven from 25-horsepower electric motor. On main alluvial plain of Lompoc Valley. Unconfined water in sand and gravel of younger alluvium from 38 to 50 feet below land surface; confined water in sand and "rock" of older alluvium from 132 to 140 feet below land surface. In adjacent wells, level of unconfined water about 4 feet above that of confined water. Measuring point, May 19, 1930, to Apr. 30, 1935, top of 16-inch casing, level with land surface and 105.70 feet above preliminary sea-level datum; after Mar. 22, 1941, upper face of pump base, through hole on west side, 106 feet above preliminary sea-level datum. Highest observed static water level, 76.24 feet above datum, May 8, 1941; lowest observed static water level, 69.0 feet above datum, Sept. 29, 1934.

Water level, in feet above preliminary datum, 1930-35, 1941
(Water levels prior to 1941 by owner)

Date	Water level	Date	Water level	Date	Water level
May 19, 1930	73.3	Oct. 26, 1932	71.5	Feb. 26, 1935	70.7
June 20	73.1	Dec. 1	71.2	Mar. 29	71.2
July 22	72.5	30	71.4	Apr. 30	71.6
Aug. 22	72.5	Jan. 27, 1933	71.7	Mar. 22, 1941	74.94
Sept.26	72.3	Feb. 28	72.1	Apr. 18	75.93
Oct. 29	72.3	Mar. 30	a 49.5	25	76.14
Nov. 26	72.1	Apr. 25	a 50.7	May 2	76.07
Dec. 22	72.1	June 8	71.9	8	76.24
Feb. 2, 1931	72.4	30	a 49.4	16	76.17
Mar. 16	72.9	July 31	71.5	23	76.13
Apr. 20	73.2	Aug. 26	a 48.7	29	76.12
May 21	a 48.2	Sept.30	71.1	June 6	75.99
June 18	72.0	Nov. 3	70.7	113	76.01
July 22	a 47.8	29	70.3	20	75.81
Aug. 20	71.5	Dec. 28	70.3	26	75.81
Sept.19	71.9	Jan. 30, 1934	71.0	July 3	75.67
Oct. 22	70.9	Feb. 28	71.2	14	75.50
Nov. 20	70.8	Mar. 30	a 52.7	25	a 48.30
Dec. 30	71.2	May 4	71.2	Aug. 15	74.96
Jan. 22, 1932	71.9	June 2	a 53.2	29	74.90
Feb. 19	72.7	30	a 52.9	Sept.15	74.90
Mar. 24	a 47.5	July 31	69.9	30	74.80
Apr. 22	a 47.9	Aug. 31	a 47.5	Oct. 10	74.78
May 25	a 47.8	Sept.29	69.0	27	74.76
June 30	a 48.7	Oct. 30	69.6	Nov. 10	74.72
July 23	a 48.0	Nov. 27	69.8	24	74.64
Aug. 30	a 47.7	Dec. 28	69.8	Dec. 9	74.67
Sept.27	71.6	Jan. 29, 1935	70.3	22	74.64

a Pump operating in well.

Santa Ynez Valley--Continued.

7/34-31C1. (Owner's no. L16) Union Sugar Company. About 2.5 miles west of Lompoc, 2,100 feet north of Southern Pacific Railroad, 400 feet west of Legge Avenue. About 125 feet south of 2-story frame dwelling, painted yellow, 8 feet east of wood tank, beneath frame windmill tower. Drilled domestic well, diameter 6 inches, measured depth 170.8 feet. On main alluvial plain of Lompoc Valley. Confined water from gravel in main water-bearing zone of younger alluvium. Measuring point, May 19, 1930, to Apr. 30, 1935, top of 6-inch casing, 1.8 feet above land surface and 62.67 feet above preliminary sea-level datum; after Apr. 16, 1941, top of 4 by 4-inch wood clamp at 5/8-inch bored hole, 63 feet above preliminary sea-level datum. Water level draws down 4 to 12 feet when nearby irrigation wells are pumped. Highest water level reached about 6 weeks after seasonal decline in flow of Santa Ynez River begins. Low water levels May through October indicate loss of head due to widespread pumping for irrigation. Highest observed static water level, 52.92 feet above datum, Apr. 16, 1941; lowest observed static water level, 32.2 feet above datum, Mar. 24, 1932.

Water level, in feet above preliminary datum, 1930-35; 1941
(Water levels prior to 1941 by owner)

Date	Water level	Date	Water level	Date	Water level
May 19, 1930	40.7	Dec. 1, 1932	40.2	Apr. 30, 1935	44.00
June 20	37.5	30	43.4	Apr. 16, 1941	52.92
July 22	35.9	Jan. 27, 1933	44.1	25	51.16
Aug. 22	40.3	Feb. 28	44.1	May 2	a 52.27
Sept.25	37.3	Mar. 30	43.5	8	a 51.57
Oct. 29	39.4	Apr. 25	a 40.2	15	51.51
Nov. 26	39.5	June 8	39.9	22	50.90
Dec. 22	40.7	30	37.8	29	49.89
Feb. 2, 1931	43.2	July 31	37.7	June 5	49.66
Mar. 16	a 31.3	Aug. 26	39.3	12	48.70
Apr. 20	36.5	Sept.30	40.6	20	48.32
May 21	37.2	Nov. 3	a 36.8	26	a 45.83
June 18	33.7	29	37.7	July 3	44.74
July 22	34.0	Dec. 28	a 31.7	14	a 45.49
Aug. 20	a 35.0	Jan. 30, 1934	40.5	18	b 39.59
Sept.19	38.0	Feb. 28	40.4	25	b 34.04
Oct. 22	39.4	Mar. 30	38.3	Aug. 1	b 43.71
Nov. 20	39.6	May 4	37.7	4	b 43.01
Dec. 30	43.8	June 8	35.9	8	b 38.72
Jan. 22, 1932	44.8	30	32.5	15	b 37.96
Feb. 19	46.2	July 31	a 32.6	29	ab 41.85
Mar. 24	32.2	Aug. 31	35.5	Sept.15	42.93
Apr. 22	37.8	Sept.29	37.2	30	44.40
May 25	a 36.8	Oct. 30	41.3	Oct. 10	44.23
June 30	a 30.1	Nov. 27	42.1	27	47.56
July 23	39.7	Dec. 28	42.3	Nov. 10	46.55
Aug. 30	41.2	Jan. 29, 1935	43.3	24	46.22
Sept.27	42.0	Feb. 26	43.5	Dec. 8	b 45.45
Oct. 26	42.4	Mar. 29	43.7	22	b 48.47

7/34-32R2. Lewis Bros. About 1.5 miles west of Lompoc in field, 40 feet north of State Highway 150 (West Ocean Avenue), 0.26 mile east of Bailey Avenue. Unused drilled irrigation well, diameter 15 inches, measured depth 72.6 feet. On main alluvial plain of Lompoc Valley. Confined water in gravel and sand of the older alluvium, from 56 to 71 feet below land surface. Level of confined water from 3 to 6 feet below water table. Measuring point, Feb. 6 to Sept. 22, 1941, top north side of 15-inch casing, 1.0 foot above land surface and 81 feet above preliminary sea-level datum; after Sept. 25, 1941, index pointer of float gage, 82.39 feet above preliminary sea-level datum. Water level fluctuates as much as 0.15 foot with flash flow in San Miguelito Creek and draws down from 3 to 4 feet when irrigation well 1,500 feet southeast is pumped. Highest water level reached about 3 months after seasonal decline in flow of Santa Ynez River begins and after flow of San Miguelito Creek has diminished to about 2 second-feet. Low water level July through mid-December indicates loss of head due to widespread pumping for irrigation. Water-level recorder in operation Feb. 6 to Sept. 22, 1941; "high-low" float gage installed Sept. 25, 1941.

a Pump operating in well.
b Pump operating in nearby well.

Santa Ynez Valley--Continued.

7/34-32R2.--Continued.

Daily noon water level, in feet above preliminary datum, 1941
(from recorder charts)

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	.....	57.19	61.34	63.70	64.01	63.58	61.52	b 62.15
2	.....	57.36	61.45	63.79	64.16	63.45	61.55	62.20
3	.....	57.58	61.58	63.86	64.19	63.43	61.31	62.28
4	.....	57.98	61.73	63.91	64.18	.....	61.30	62.32
5	.....	58.17	61.83	63.87	64.18	.....	62.53	b 62.60
6	a 54.67	58.42	61.98	63.96	64.30	63.82	62.28	62.47
7	54.70	58.57	62.10	63.82	64.36	63.90	62.30	62.80
8	54.76	58.73	62.22	63.73	64.28	63.82	62.27	62.87
9	54.82	58.91	62.36	b 63.74	64.33	63.65	62.18	62.83
10	54.93	.....	62.37	61.59	64.25	63.37	62.16	62.86
11	55.12	.....	62.63	62.85	64.23	63.23	62.30	62.86
12	55.10	.....	62.69	62.78	b 64.24	63.19	62.37	62.92
13	55.21	.....	62.77	63.42	63.54	63.30	63.36	62.84
14	55.35	.....	62.86	60.85	61.18	63.06	b 62.36	62.74
15	55.41	.....	62.96	60.63	62.85	62.89	62.02	62.72
16	55.47	59.81	63.02	62.47	64.04	62.79	61.62	62.55
17	55.73	.....	63.11	63.66	64.14	62.74	61.22	62.47
18	55.88	.....	63.15	63.98	63.77	62.58	61.39	62.39
19	56.01	.....	63.20	64.06	63.52	b 62.36	61.37	62.30
20	56.12	60.31	63.29	63.71	63.50	62.47	61.32	62.47
21	56.25	60.40	63.30	63.71	63.37	b 62.36	61.70	62.73
22	56.36	60.49	63.33	64.26	63.28	60.86	61.44	c 62.82
23	56.43	60.59	63.32	64.27	63.43	60.88	61.41	.....
24	56.59	60.65	63.27	64.04	62.78	61.00	61.42	.....
25	56.66	60.64	63.24	63.72	63.67	61.00	61.81	.....
26	56.78	60.69	63.23	63.55	63.25	59.99	62.03	.....
27	56.90	60.76	63.30	62.39	63.50	b 61.07	61.75	.....
28	57.08	60.95	63.40	63.11	63.30	61.19	61.77	.....
29	.....	.....	63.52	63.29	63.67	61.36	61.91	.....
30	.....	61.07	63.58	62.95	b 63.75	61.43	61.85	.....
31	.....	61.28	.....	b 63.88	.....	61.50	61.95	.....

Water levels, in feet above preliminary datum, beginning September 1941
(from float gage; undated levels are highest and lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 25	62.52		62.69		62.33		62.67
	62.81		62.32		62.25		62.42
	60.03	Nov. 10	62.53	Dec. 2	62.33	15	62.58
Oct. 4	62.73		62.59		62.37		62.90
	62.77		62.29		62.18		62.57
	61.49	24	62.29	8	62.27	22	62.90
10	62.61		62.42		62.49		63.68
	62.68		62.26		62.27		62.90
	62.49	29	62.26	11	62.42	29	63.59
27	62.68						

7/35-18J1. Santa Barbara County. About 0.4 mile north of Surf, at Ocean Park, 400 feet east of Southern Pacific Railroad, 20 feet north of County road to Ocean Park, and 0.25 mile south of Santa Ynez River estuary. Abandoned drilled well, diameter 10 inches, measured depth 111.2 feet. On mail alluvial plain of Lompoc Valley about 0.3 mile east of the mouth of the Santa Ynez River. Confined water in gravel of main water-bearing zone of younger alluvium. Measuring point, Apr. 18 to July 25, 1941, top east side of 10-inch casing, 2.2 feet above land surface and 10 feet above preliminary sea-level datum; July 19 to Aug. 15, 1941, index pointer of float gage, 11.16 feet; Aug. 18 to Sept. 23, 1941, index pointer of float gage, 11.86 feet; after Sept. 23, 1941, top base panel of instrument shelter at

a Water-level recorder installed.

b Highest level of the day, water-level depressed by draft from adjacent well, May 9 to 31, June 12 to 30, July 19, 21 to 27, August 14 to 31, September 1, 5.

c Water level recorder removed.

Santa Ynez Valley--Continued.

7/35-18J1.--Continued.

1-inch bored hole, 11.27 feet. Water level seemingly not affected by tidal fluctuations in estuary or ocean but fluctuates diurnally in response to changes in barometric pressure and to withdrawals from wells farther east. Diurnal range as much as 0.15 foot and lags 3 to 6 hours after heaviest withdrawals from wells. "High-low" float gage in operation from July 19 to Sept. 23, 1941, water-level recorder, Sept. 23 to Nov. 25, 1941.

Water level, in feet above preliminary datum, 1941
(July 19 to Nov. 24, from float gage and water-level recorder; undated levels are highest and lowest levels between dates of observation)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 18	6.18	Aug. 1	5.05		5.00	Nov. 3	5.52
25	6.02		5.14	23	5.09		5.78
May 2	5.93		5.05		5.20		5.47
8	5.78	8	5.12		5.02	10	5.54
15	5.71	15	4.95	30	5.15		5.83
22	5.46	18	4.98		5.33		5.51
29	5.22		5.02		5.12	17	5.81
June 6	5.22		4.94	Oct. 6	5.30		5.90
12	5.32	22	5.00		5.31		5.67
20	5.14		5.08		5.17	24	5.67
25	5.10		4.94	13	5.18	25	5.61
July 3	5.07	29	4.94		6.00	29	5.51
14	5.04		5.14		5.18	Dec. 2	5.75
18	5.04		4.88	20	6.00	5	5.79
19	5.08	Sept. 6	5.09		6.06	8	5.93
	5.22		5.12		5.57	11	6.05
	5.08		5.00	27	5.58	15	6.60
25	5.20	15	5.00		5.62	22	6.56
	5.20		5.10		5.51	29	7.58
	5.05						

7/35-24J1. T. Parks. 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. Abandoned drilled irrigation well, diameter 12 inches, measured depth 170.6 feet. On main alluvial plain of Lompoc Valley. Confined water in main water-bearing zone of younger alluvium. Measuring point, top of 12-inch casing at seam, level with concrete foundation, 1.4 feet above land surface and 57 feet above preliminary sea-level datum. Water level draws down as much as 4 feet when wells are pumped within 2,500 feet. Water-level recorder installed Sept. 23, 1941.

Daily highest water level, in feet above preliminary datum, 1941
(from recorder charts)

Sept. 24	a 30.89	Oct. 13	30.79	Nov. 1	32.84	Nov. 25	32.88
25	30.30	14	30.79	2	32.94	26	32.98
26	29.74	15	30.86	3	32.92	27	31.87
27	29.53	16	30.72	4	32.53	28	31.58
28	30.44	17	31.28	5	32.63	29	31.95
29	30.82	18	31.56	6	32.85	30	32.23
30	31.07	19	32.06	7	32.87	Dec. 1	32.42
Oct. 1	30.85	20	32.19	8	32.77	2	32.22
2	30.44	21	31.96	9	32.68	3	32.21
3	30.38	22	32.09	10	32.90	4	32.53
4	30.57	23	32.03	11	32.70	5	32.68
5	30.96	24	32.14	12	32.57	6	32.53
6	31.31	25	31.76	13	32.40	7	32.17
7	31.25	26	32.10	14	32.56	8	32.34
8	31.34	27	32.75	15	32.67	9	32.86
9	31.70	28	32.85	16	32.73	10	33.23
10	30.69	29	32.80	17	32.95	11	33.38
11	31.14	30	32.81	18	33.01	12	33.49
12	30.37	31	32.55	24	32.39	13	33.60

a Water-level recorder installed.

Santa Ynez Valley--Continued.

7/35-24J1.--Continued.

Daily highest water level, in feet above preliminary datum, 1941
(from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Dec. 14,	33.71	Dec. 19	33.97	Dec. 24	34.10	Dec. 28	34.57
15	33.76	20	33.99	25	34.14	29	34.39
16	33.81	21	33.99	26	34.16	30	34.70
17	33.86	22	34.02	27	34.31	31	34.81
18	33.91	23	34.09				

7/35-27C2. Southern Pacific Railroad. About 5.5 miles west of Lompoc, about 20 feet north of Southern Pacific Railroad, 150 feet west of Renwick Avenue, in frame tool house. Abandoned drilled railroad well, diameter 15 inches, measured depth 118 feet. On main alluvial plain of Lompoc Valley. Confined water in main water-bearing zone of younger alluvium. Level of confined water from 2 to 4 feet above water table. Measuring point, top south side of 15-inch casing, level with concrete floor and land surface and 32 feet above preliminary sea-level datum. Water level draws down 3 to 5 feet when irrigation well 200 feet to the east is pumped, also fluctuates with storm runoff in Lompoc Canyon. Water level 26.25 feet above datum, Apr. 9, 1941. Water level recorder installed July 15, 1941.

Daily noon water level, in feet above preliminary datum, 1941
(from recorder charts)

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	b 18.03	20.53	b 20.64	21.00	21.07
2	.....	18.64	20.74	b 20.77	21.12	20.92
3	.....	18.34	20.94	b 20.11	21.20	20.67
4	.....	18.89	20.88	b 19.53	21.09	20.88
5	.....	19.42	20.82	b 20.00	20.98	21.07
6	.....	b 19.61	20.50	b 20.79	21.24	20.92
7	.....	b 19.13	20.43	b 20.32	21.23	20.82
8	.....	b 19.60	20.14	b 20.12	21.15	20.98
9	.....	19.82	19.02	b 20.25	21.18	21.10
10	.....	20.06	18.72	b 19.87	21.26	21.29
11	.....	20.25	19.06	b 19.76	21.08	21.29
12	.....	20.36	19.38	b 19.48	20.81	21.32
13	.....	20.42	19.45	b 19.51	20.89	21.37
14	.....	20.48	20.35	b 19.43	21.09	21.44
15	(a)	20.52	20.78	19.66	21.20	21.50
16	b 17.47	20.54	20.90	20.04	21.17	21.52
17	b 16.77	20.73	20.94	20.21	21.05	21.54
18	b 12.81	20.90	20.71	20.49	21.20	21.58
19	b 13.51	20.98	b 20.71	20.68	20.87	21.63
20	b 13.80	20.88	b 20.17	20.85	20.77	21.63
21	b 15.49	20.67	20.83	20.85	20.81	21.60
22	b 14.34	20.45	20.70	21.01	20.64	21.63
23	b 16.33	20.68	b 20.56	21.07	20.53	21.69
24	b 14.80	20.89	b 19.88	21.00	20.80	21.71
25	b 16.46	20.57	b 19.68	b 20.87	20.77	21.75
26	b 17.32	20.64	.....	b 20.69	20.70	21.74
27	b 18.38	20.49	19.62	20.76	20.74	21.73
28	b 18.60	20.35	20.05	21.02	20.74	22.60
29	b 17.54	20.42	20.45	21.16	20.74	23.86
30	b 17.37	19.52	b 20.53	21.18	20.95	24.15
31	b 17.18	19.75	.....	21.01	.....	24.35

7/35-36B1. Union Sugar Company. About 3.5 miles west of Lompoc, 0.52 mile south of Central Avenue, 50 feet north of tenant home, 300 feet east of De Wolff Avenue, beneath windmill tower. Drilled domestic and stock well. On main alluvial plain of Lompoc Valley. Confined water in main water-bearing zone of the younger alluvium. Level of confined water ranges from about 4 feet below to 5 feet above water table. Measuring point, top of 2 by 4-inch

a Water-level recorder installed.
b Water level depressed by draft from adjacent well; highest level of day.

Santa Ynez Valley--Continued.

7/35-36B1.--Continued.

wood clamp supporting pump column, 0.5 foot above land surface and 52 feet above preliminary sea-level datum. Low water level May to December due to widespread pumping for irrigation. Highest observed static water level, 49.13 feet above datum, Apr. 10, 1941; lowest observed static water level, 36.7 feet above datum, Aug. 31, 1934.

Water level, in feet above preliminary datum, 1930-35; 1941
(Water levels prior to 1941 by owner)

Date	Water level	Date	Water level	Date	Water level
May 19, 1930	37.7	Oct. 26, 1932	39.2	Feb. 26, 1935	37.3
June 20	39.3	Dec. 1	a 38.1	Mar. 29	37.3
July 22	40.6	30	38.6	Apr. 30	37.4
Aug. 22	39.9	Jan. 27, 1933	38.5	Apr. 10, 1941	49.13
Sept.25	39.5	Feb. 28	39.1	25	47.66
Oct. 29	a 37.6	Mar. 30	39.3	May 2	47.42
Nov. 26	39.2	Apr. 25	39.0	8	46.88
Dec. 22	39.0	June 8	39.5	15	46.25
Feb. 2, 1931	39.6	30	38.7	22	46.39
Mar. 16	a 35.3	July 31	39.2	29	a 40.40
Apr. 20	40.7	Aug. 26	39.6	June 6	45.44
May 21	40.7	Sept.30	39.3	12	45.25
June 18	39.8	Nov. 3	a 33.9	26	44.13
July 22	a 36.0	29	37.8	July 3	44.93
Aug. 20	40.3	Dec. 28	a 36.4	14	44.42
Sept.19	39.2	Jan. 30, 1934	37.0	18	a 41.05
Oct. 22	38.6	Feb. 28	37.2	25	44.26
Nov. 20	a 30.5	Mar. 30	36.8	Aug. 1	43.85
Dec. 30	39.7	May 4	a 32.0	15	43.29
Jan. 22, 1932	41.9	June 2	38.5	29	a 41.29
Feb. 19	43.6	30	37.4	Sept.15	42.54
Mar. 24	42.3	July 31	37.0	30	41.32
Apr. 22	42.4	Aug. 31	36.7	Oct. 10	41.95
May 25	41.1	Sept.29	37.0	27	41.40
June 30	40.8	Oct. 30	37.0	Nov. 10	41.57
July 23	40.5	Nov. 27	36.9	Dec. 8	41.75
Aug. 30	a 37.6	Dec. 28	36.7	22	41.86
Sept.27	39.8	Jan. 29, 1935	37.0		

7/35-36P3. Mrs. B. Carr. About 3.7 miles west of Lompoc, 0.3 mile south of State Highway 150 (West Ocean Avenue), 0.2 mile east of Rodeo Canyon Road, 300 feet southwest of residence, beneath windmill tower. Drilled domestic and stock well, diameter 10 inches, measured depth 103.7 feet. On main alluvial plain of Lompoc Valley near mouth of Rodeo Canyon. Confined water in main water-bearing zone of older alluvium. Measuring point, top south side of well deck at 3/4-inch bored hole, 1.0 foot above land surface and 96 feet above preliminary sea-level datum. Low water level June through December due to widespread pumping for irrigation.

Water level, in feet above preliminary datum, 1941

Apr. 6	58.08	June 20	a 58.04	Aug. 15	54.89
25	58.90	26	57.19	29	54.50
May 2	58.01	July 3	57.03	Sept.15	55.03
8	58.66	14	56.81	30	54.22
15	58.56	18	55.22	Oct. 27	54.27
22	58.38	25	55.53	Nov. 10	54.71
29	a 57.52	Aug. 1	55.09	Dec. 8	54.89
June 6	a 57.54	8	a 54.23	22	54.92
12	a 57.62				

a Pump operating in well.

Observation wells in the coastal plain area.

4/25-21N2. E. S. Pillsbury. About 80 feet north of State Highway 150 (Foothill Road), 1,500 feet east of Linden Avenue and 75 feet east of property line and cypress hedge, in frame pump house beneath tower. Drilled irrigation well, diameter 12 inches, reported depth 310 feet. Deep-well turbine, reported capacity 90 gallons a minute, direct-connected 15-horsepower electric motor. On main alluvial plain of Carpinteria Valley. Confined water. Measuring point, top south side of pump base, 0.1 foot above land surface and 51 feet above preliminary sea-level datum. Low water level July through November due to widespread pumping for irrigation. Well reported to have flowed by artesian pressure in 1927. Highest observed static water level, 15.62 feet, June 12, 1941; lowest observed static water level, 7.83 feet, Nov. 13, 1941.

Water level, in feet, with respect to preliminary datum, 1938, 1941

Date	Water level	Date	Water level	Date	Water level
Apr. 25, 1938	a 10.4	May 29, 1941	14.86	Aug. 7, 1941	b-109
May 28	a 13.9	June 5	15.16	14	b-112
Apr. 11, 1941	9.44	12	15.62	Oct. 23	c -13.76
19	11.36	26	14.57	30	c -11.58
30	11.72	July 3	3.61	Nov. 13	7.83
May 2	13.15	10	2.15	27	c .82
8	8.79	17	b-119	Dec. 11	13.10
15	14.43	24	c -11.98	24	14.98
22	14.00	31	b-101		

4/25-22R1. A. H. Young. About 2 miles northeast of Carpinteria, 2,700 feet north along Carpinteria Creek, from State Highway 150 (Casitas Pass Road), and 25 feet south of private lane 110 feet east of the creek, at edge of lemon grove in galvanized steel pump house. Drilled irrigation and domestic well, diameter 8 inches, measured depth 130.0 feet. Deep-well turbine, reported capacity 160 gallons a minute, direct-connected 10-horsepower electric motor. On flood plain of Carpinteria Creek in canyon. Measuring point, lower face of 3/8-inch steel pump support at discharge pipe, 1.0 foot above concrete foundation, 1.1 feet above land surface and 212 feet above preliminary sea-level datum.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 8	197.87	June 12	197.80	July 31	198.24	Oct. 30	197.40
19	197.73	July 3 d	123.5	Aug. 28	197.80	Nov. 13	197.15
May 2	197.53	10	197.53	Sept.11	198.08	27	196.01
8	197.62	17	197.94	Oct. 9	196.61	Dec. 11	197.42
15	197.60	24	198.29	23	197.26	24	171.57
June 5	193.17						

4/25-27Q2. A. F. Heimlick. About 1.5 miles east of Carpinteria. About 70 feet south of T-lane east and 140 feet east of property-line road through citrus groves, at east base of lemon tree in fourth row south and sixth row east of road junction. Abandoned drilled irrigation well, diameter 10 inches, measured depth 198.0 feet. On main alluvial plain of Carpinteria Valley. Measuring point, top of base panel of instrument shelter at 1-inch bored hole, 0.15 foot above top of casing, 0.75 foot above land surface and 128 feet above preliminary sea-level datum. Water level draws down as much as 12 feet when wells are pumped within 800 feet. Low water level July through November due to widespread pumping for irrigation and domestic uses. Water-level recorder installed Jan. 30, 1941.

a Through Santa Barbara County Planning Commission.
b Approximate pumping level.
c Pump operating in nearby well.
d Pump operating in well.

Observation wells in the coastal plain area--Continued.

4/25-27Q2.--Continued.

Daily water level with respect to preliminary datum, in feet, 1941 (from recorder charts; except as indicated by footnote, water level at noon)

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.46	7.10	12.19	15.02	12.79	7.26	7.19	9.68	5.64	b 9.30
2	.....	1.61	7.14	12.05	15.30	11.69	8.63	6.32	9.92	6.38	9.44
3	.....	1.80	7.23	12.22	15.55	11.09	9.35	10.51	10.12	6.54	10.02
4	.....	1.98	7.46	12.31	15.79	9.83	10.38	10.90	10.16	5.89	10.11
5	.....	2.05	7.69	12.40	15.85	12.57	11.18	10.24	9.84	5.57	10.39
6	.....	2.33	7.82	12.61	15.95	12.81	7.69	8.92	9.08	5.25	10.63
7	.....	2.58	8.03	12.83	16.12	12.86	7.38	10.66	8.57	6.97	10.82
8	.....	2.89	8.18	13.00	16.22	12.95	8.62	10.95	8.27	7.45	11.08
9	.....	3.20	8.44	13.15	16.34	14.18	9.76	4.78	7.22	7.99	11.37
10	.....	3.50	8.65	13.31	16.43	13.31	9.59	4.79	6.02	8.17	11.69
11	.....	3.74	9.01	13.35	16.52	13.34	10.00	4.51	4.88	8.36	11.64
12	a-2.03	3.99	9.07	13.29	16.63	13.44	10.77	6.27	6.21	8.54	11.67
13	-1.90	4.13	9.12	13.42	16.76	13.38	11.13	6.42	6.82	8.54	11.84
14	-1.58	4.40	9.45	13.62	16.79	14.02	11.03	6.38	4.86	8.57	12.05
15	-1.52	4.46	9.53	13.70	16.69	13.98	11.06	6.68	3.43	8.66	12.20
16	-1.35	4.68	9.66	13.82	b16.93	10.24	8.66	6.26	2.47	9.03	12.37
17	-1.13	4.87	10.02	13.94	16.84	6.74	8.61	4.78	.2.21	9.11	12.55
18	-0.92	5.07	9.71	14.06	16.68	4.81	8.71	3.88	1.96	5.88	12.71
19	-0.68	5.30	9.95	14.10	.....	4.87	9.05	4.67	4.18	4.84	.....
20	-0.48	5.50	10.27	14.18	15.99	8.14	10.63	4.99	5.47	7.08	13.03
21	-0.27	5.64	10.51	14.32	15.31	9.00	10.96	6.80	1.73	7.66	13.09
22	+0.02	5.68	10.65	14.46	15.72	9.60	9.19	7.87	4.42	6.69	13.24
23	0.12	5.90	10.82	14.52	14.89	9.15	8.80	8.45	-0.14	8.00	13.50
24	0.44	6.07	11.04	14.61	14.76	8.49	10.52	8.82	4.42	8.34	13.64
25	0.58	6.18	11.24	14.74	14.98	8.26	10.81	9.60	3.20	8.82	13.72
26	0.76	6.33	11.27	14.88	14.97	9.50	10.85	9.78	-0.57	9.14	13.89
27	1.01	6.51	11.40	14.96	14.78	10.55	10.99	8.22	3.87	9.28	13.93
28	1.34	6.70	11.61	15.04	14.48	11.18	11.10	8.82	1.01	6.41	14.18
29	.....	6.80	11.80	14.97	15.13	10.33	6.91	9.56	4.52	7.96	14.29
30	.....	6.79	12.07	15.07	15.68	8.55	6.94	8.13	5.18	9.11	14.36
31	.....	7.15	.....	14.99	.....	8.35	7.18	.....	5.52	....	14.60

4/25-27J1. J. Rock. About 2 miles east of Carpinteria, 0.4 mile east of Carpinteria Creek, 60 feet south of State Highway 150 (Casitas Pass Road), and 15 feet east of property-line road, beneath south side of frame loading dock. Abandoned drilled well (at times used as a recharge well), diameter 10 inches, depth over 200 feet. On main alluvial plain of Carpinteria Valley. Measuring point, top west side of 10-inch casing, 0.8 foot below concrete curb, 0.2 foot above land surface and 142 feet above preliminary sea-level datum. Low water level July through November due to widespread pumping for irrigation.

Water level, in feet, with respect to preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 7	-0.61	May 8	9.79	July 3	14.00	Sept.25	12.20
13	2.09	15	10.75	10	12.85	Oct. 9	12.85
21	3.07	22	11.85	17	13.30	23	12.07
29	4.00	29	12.72	31	14.01	30	11.56
Apr. 5	4.93	June 5	13.64	Aug. 7	13.95	Nov. 13	10.72
12	6.16	12	14.55	14	14.20	27	11.04
19	6.95	19	14.68	28	12.84	Dec. 11	12.80
May 2	8.89	26	15.63	Sept. 11	11.37	24	14.24

4/25-28M1. Mrs. A. Baylor. About 0.3 mile northeast of Carpinteria. About 200 feet northwest of State Highway 150 (Casitas Pass Road), 8 feet south and 10 feet east of northeast corner of dwelling, in frame pump house. Abandoned drilled well, diameter 2 inches, measured depth 151.7 feet. On main alluvial plain of Carpinteria Valley. Confined water. Measuring point, top of 2-inch casing, 0.52 foot above concrete foundation of pump house,

a Water-level recorder installed.

b From June 16 through Dec. 1, water level depressed by continual draft from adjacent wells; highest level of each day.

Observation wells in the coastal plain area--Continued.

4/25-28M1.--Continued.

0.5 foot above land surface and 58 feet above preliminary sea-level datum. Low water level July through November due to widespread pumping for irrigation. Well flowed by artesian pressure in 1928.

Water levels, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 10	18.94	June 5	25.31	July 24	9.22	Oct. 9	10.71
18	20.41	12	22.92	31	5.00	23	6.44
26	21.50	19	25.28	Aug. 7	7.50	30	11.02
May 2	22.53	26	24.55	14	1.17	Nov. 13	9.06
8	23.08	July 23	21.16	28	4.76	27	14.36
15	23.70	10	22.04	Sept.11	16.92	Dec. 11	21.45
22	24.39	17	14.50	25	9.25	24	24.20
29	24.91						

4/25-35D1. W. B. Knowlton. About 2 miles east of Carpinteria. About 35 feet south of property line, 350 feet west of turn in State Highway 150 (Casitas Pass Road), in pump house painted green. Drilled irrigation and domestic well, diameter 8 inches, reported depth 348 feet. Deep-well turbine, reported capacity 90 gallons a minute, direct-connected 10-horsepower electric motor. On hillside about 25 feet above main alluvial plain of Carpenteria Valley. Confined(?) water. Measuring point, lower face west side of pump base, at groove for air line in concrete foundation, 3 feet above land surface and 146 feet above preliminary sea-level datum. Low water level July through November due to widespread pumping for irrigation. Highest observed static water level, 6 feet above datum, May 1934 and Apr. 28, 1938; lowest observed static water level, 8.12 feet below datum, Mar. 7, 1941.

Water level, in feet, with respect to preliminary datum, 1934-35; 1937-38; 1941

Date	Water level	Date	Water level	Date	Water level
May 1934 a 6		Apr. 19, 1941	-3.36	Sept.11, 1941	-3.39
May 29, 1935 a 5		May 2	-1.80	25	-3.33
July 20, 1937 a -9		15	- .59	Oct. 9	-3.57
Apr. 29, 1938 a 6		22	- .01	23	-1.70
Mar. 7, 1941	-8.12	29	-1.33	Nov. 13	-5.64
13	-7.30	June 2	- .40	27	.21
21	-6.30	19	.92	Dec. 11	1.55
Apr. 5	b-13.41	July 3	-2.10	24	3.02
12	-4.12	31	-4.90		

4/28-4R1. L. M. Cavaletto. About 1 mile northeast of Goleta. In lemon grove, about 0.8 mile north of Southern Pacific Railroad, 0.15 mile west of Patterson Avenue, 45 feet south of T-lane west (property-line), at northeast base of lemon tree in second row south of lane. About 50 feet s south and 1,000 feet east of irrigation well 4/28-4R3. Abandoned drilled irrigation well, diameter 16 inches, depth more than 200 feet. On main alluvial plain of Goleta Valley, east of San Jose Creek. Confined water. Use of water from well reported discontinued owing to sulphurous odor and taste. Measuring point, Jan. 28 to July 18, 1941, top of base panel of instrument shelter, 1.0 foot above land surface and 98 feet above preliminary sea-level datum; after July 18, 1941, top of 16-inch casing, 97.78 feet. Water level not drawn down by pumping in nearby wells. Highest water level not reached until 3 months after end of rainy season. Low level July through December due to widespread pumping for irrigation. Water-level recorder in operation Jan. 28 to July 18, 1941.

a Through Santa Barbara County Planning Commission.
b Pump operating in nearby well.

Observation wells in the coastal plain area--Continued.

4/28-4R1.--Continued.

Water level, in feet above preliminary datum, 1941
(daily noon level in part, from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	38.92	40.24	42.46	44.49	46.21	47.26	.....	.....	.....	.....	.....
2	.....	38.95	40.29	42.53	44.55	46.26	47.28	46.73	.....	.....	.....	.....
3	.....	38.98	40.35	42.59	44.61	46.31	47.28	.....	.....	.....	.....	.....
4	.....	39.01	40.44	42.67	44.68	46.36	47.28	.....	.....	45.85	.....	.....
5	.....	39.05	40.51	42.77	44.74	46.41	47.30	.....	.....	.....	.....	45.93
6	.....	39.09	40.57	42.86	44.79	46.45	47.32	.....	45.59	.....	.....	.....
7	.....	39.13	40.63	42.93	44.86	46.49	47.34	.....	.....	.....	.....	.....
8	.....	39.17	40.68	43.00	44.91	46.49	47.38	.....	.....	.....	46.09	.....
9	.....	39.20	40.73	43.07	44.97	46.52	47.38	46.35	.....	.....	.....	.....
10	.....	39.24	40.80	43.13	45.03	46.56	47.39	.....	.....	.....	.....	.....
11	.....	39.28	40.86	43.23	45.09	46.60	47.40	.....	.....	.....	.....	.....
12	.....	39.34	40.94	43.29	45.15	46.64	47.42	.....	.....	.....	.....	.....
13	.....	39.39	41.03	43.35	45.21	46.68	47.42	.....	.....	.....	.....	.....
14	.....	39.44	41.11	43.41	45.22	46.73	47.42	.....	.....	.....	.....	.....
15	.....	39.48	41.18	43.47	45.33	46.77	47.41	.....	.....	.....	.....	.....
16	.....	39.53	41.24	43.54	45.40	46.82	47.41	45.98	.....	.....	.....	.....
17	.....	39.58	41.31	43.61	45.45	46.85	b47.40	.....	.....	.....	.....	.....
18	.....	39.63	41.37	43.72	45.51	46.89	47.40	.....	.....	.....	.....	.....
19	.....	39.68	41.43	43.74	45.57	.....	.....	.....	.....	.....	.....	46.28
20	.....	39.73	41.51	43.79	45.62	.....	.....	.....	.....	46.03	.....	.....
21	.....	39.78	41.60	43.86	45.68	46.98	.....	.....	.....	.....	.....	.....
22	.....	39.84	41.66	43.92	45.74	47.02	.....	.....	45.73	.....	45.93	.....
23	.....	39.88	41.71	43.99	45.80	47.06	.....	45.56	.....	.....	.....	.....
24	.....	39.93	41.78	44.05	45.86	47.10	.....	.....	.....	.....	.....	.....
25	.....	39.97	41.86	44.12	45.91	47.13	.....	.....	.....	.....	.....	.....
26	.....	40.05	41.93	44.18	45.97	47.17	46.90	.....	.....	.....	.....	.....
27	.....	40.11	42.00	44.24	46.02	47.17	.....	.....	.....	.....	.....	.....
28	.....	40.17	42.07	44.29	46.07	47.19	.....	.....	.....	.....	.....	.....
29	a38.82	.....	42.19	44.36	46.09	47.22	.....	.....	.....	.....	.....	.....
30	38.86	.....	42.27	44.42	46.14	47.24	.....	.....	.....	.....	.....	.....
31	38.89	.....	42.35	.....	46.19	.....	.....	.....	.....	.....	.....	.....

4/28-4R2. G. M. Gallagher. About 1 mile northeast of Goleta. In lemon grove, about 0.9 mile north of Southern Pacific railroad and 0.35 mile west of Patterson Avenue, 90 feet south of T-lane west (property line), 100 feet east of San Jose Creek, 75 feet southeast of large eucalyptus tree, at base of lemon tree. About 530 feet north and 50 feet east of well 4/28-4R1. Unused drilled well, diameter 12 inches, measured depth 70.1 feet. On main alluvial plain of Goleta Valley, above flood plain of San Jose Creek. Unconfined water. Measuring point, top northwest side of 12-inch casing, level with land surface and 103 feet above preliminary sea-level datum. Low water level August through November results from depleted flow in San Jose Creek.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 10	64.50	May 23	66.68	July 12	67.80	Sept. 22	66.89
14	64.80	31	66.89	19	67.84	Oct. 4	67.46
19	65.03	June 6	67.04	26	67.73	20	66.66
25	65.35	13	67.30	Aug. 2	67.60	Nov. 8	66.64
May 1	65.73	20	67.35	16	67.34	22	66.47
9	66.09	27	67.47	23	67.21	Dec. 5	66.43
16	66.38	July 5	67.40	Sept. 6	67.23	19	66.58

4/28-4R3. L. M. Cavaletto and G. M. Gallagher. About 1 mile northeast of Goleta. In lemon grove, about 0.8 mile north of Southern Pacific Railroad, 0.35 mile along T-lane west from Patterson Avenue, 15 feet north of lane, and 50 feet north and 1,000 feet west of well 4/28-4R1. Drilled

a Water-level recorder installed.
b Water-level recorder removed.

Observation wells in the coastal plain area--Continued.

4/28-4R3.--Continued.

irrigation well, diameter 16 inches, reported depth 230 feet. Deep-well turbine, reported capacity 400 gallons a minute, direct-connected 30-horsepower electric motor. On main alluvial plain of Goleta Valley, east of San Jose Creek. Confined water in fine sand from 128 to 148 feet, 164 to 174 feet, and 190 to 210 feet below land surface. Measuring point, lower face west side of pump base, level with I-beam turbine support and 96 feet above preliminary sea-level datum. Low level August through December due to widespread pumping for irrigation. Highest reported static water level, 56 feet above datum, August 1927; highest observed static water level, 23.33 feet above datum, July 5, 1941; lowest observed static water level, 3.15 feet above datum, Sept. 22, 1941.

Water level, in feet above preliminary datum, 1927, 1938, 1941

Date	Water level	Date	Water level	Date	Water level
Aug. 1927	a 56	May 16, 1941	16.85	Aug. 16, 1941	11.66
Mar. 1938	a 8.5	23	18.89	23	13.43
May 3	a 6	31	18.05	Sept. 6	8.71
Apr. 10, 1941	11.90	June 6	18.88	22	3.15
14	12.09	13	19.70	Oct. 4	3.19
19	13.73	20	20.60	20	6.98
25	13.73	27	21.49	Dec. 5	8.32
May 1	14.58	July 5	23.33	19	11.55
9	15.35				

4/28-9A3. L. M. Cavaletto. About 0.8 mile northeast of Goleta. In lemon grove about 0.5 mile north of Southern Pacific Railroad and 0.35 mile along T-lane west from Patterson Avenue, 60 feet north and 10 feet east of northeast corner of residence, and 250 feet northeast of domestic and irrigation well 4/28-9A2. Abandoned drilled irrigation well, diameter 12 inches, depth over 200 feet. On main alluvial plain of Goleta Valley, east of San Jose Creek. Confined water. Measuring point, Apr. 8, to July 19, 1941, top east side of 12-inch casing, 1.5 feet above land surface and 89 feet above preliminary sea-level datum; after July 19, 1941, top of base panel of instrument shelter, 0.21 foot above top of casing, 89.21 feet. Water level draws down as much as 7 feet when well 4/28-9A2 is pumped. Low level July through November due to widespread pumping for irrigation.

Water level, in feet above preliminary datum, 1941
(in part from recorder charts; except as indicated by footnote, daily water level at noon)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	41.85	.....	.....	39.44	42.14	40.16	41.59	41.85
2	.....	.....	.....	.....	39.92	36.24	40.26	41.89	42.10
3	.....	.....	.....	.....	40.62	35.35	40.12	42.06	42.34
4	.....	.....	.....	.....	40.98	35.09	39.47	42.16	42.41
5	.....	.....	.....	44.07	41.18	36.94	40.21	42.23	42.54
6	.....	.....	43.70	.....	41.43	37.79	40.38	41.65	42.70
7	.....	.....	.....	.....	41.68	39.75	34.97	40.79	42.77
8	.....	.....	.....	.....	41.80	41.18	39.05	40.92	42.94
9	39.96	42.08	.....	.....	41.89	40.75	39.21	40.74	43.11
10	.....	.....	.....	.....	41.44	41.27	39.72	40.87 b	43.01
11	.....	.....	.....	.....	41.69	41.62	40.00	39.02	42.23
12	.....	.....	.....	b 39.53	41.12	41.70	39.74	40.20	42.30
13	.....	.....	43.31	.....	41.64	41.10	39.98	40.57	42.43
14	40.67	.....	.....	.....	41.88	39.71	40.18	40.99	42.62
15	.....	.....	.....	.....	41.73	40.92	40.42	41.44	42.80
16	.....	42.06	.....	.....	41.90	41.13	40.71	41.67	42.93
17	.....	.....	.....	.....	41.81	38.87	40.88	41.06	43.10
18	.....	.....	.....	.....	42.03	38.06	40.63	35.85	43.24
19	.....	.....	..... b	35.91	42.15	35.16	41.11	37.35 b	41.73
20	.....	.....	43.20 cd	38.07	41.62	34.40	41.25	39.70	42.63
21	.....	.....	.....	36.85	41.79	37.47	40.81	40.39 b	42.73

a Through Santa Barbara County Planning Commission.
b Pump operating or recently operated in adjacent well.
c Water level recorder installed.
d From July 20 through Nov. 28, level depressed by continual draft from adjacent well; table shows highest level of day.

Observation wells in the coastal plain area--Continued

4/28-9A3.--Continued.

Water level, in feet above preliminary datum, 1941
(in part from recorder charts; except as indicated by footnote, daily water level at noon)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
22	.....	.....	.....	36.09	41.97	38.81	41.28	35.34	42.56
23	.....	41.86	.....	37.13	42.18	39.43	41.58	37.96	42.88
24	.....	.....	.....	36.55	42.10	39.92	41.67	39.47	43.15
25	42.28	.....	.....	36.58	42.27	40.57	41.11	40.03	42.25
26	.....	.....	.....	38.21	42.40	40.66	41.23	40.57	43.34
27	.....	.....	42.69	39.48	42.48	39.94	41.64	41.03 a	43.34
28	.....	.....	.....	40.01	42.54	39.85	41.97 a	41.33	42.86
29	.....	.....	.....	40.18	42.61	39.93	42.04	41.44	43.29
30	.....	.....	.....	39.27	42.62	40.05	41.43	41.62	43.37
31	.....	42.87	.....	39.51	42.04	.....	41.37	.....	43.64

4/28-12L4. L. Moore. About 3 miles east of Goleta. In walnut orchard, about 155 feet north and 520 feet east of underpass of U. S. Highway 101 beneath Southern Pacific Railroad, in abandoned pump house. Abandoned drilled irrigation well, diameter 12 inches, reported depth 410 feet. On main alluvial plain of Goleta Valley. Confined water in boulders and gravel from 220 to 222 feet below land surface. Measuring point, top east side of 12-inch casing, at land surface and 141 feet above preliminary sea-level datum. Water level draws down as much as 23 feet when well 4/28-12L3 is pumped 135 feet away.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 30	89.46	Sept.23	b 60.57	Nov. 10	95.65	Dec. 5	97.64
Aug. 26	81.63	Oct. 6	86.96	24	97.67	20	102.62
Sept. 9	79.99	21	90.50				

4/28-17G1. Santa Barbara Packing Company. About 0.5 mile south of Goleta. At rear of stockyards, about 0.35 mile south of U. S. Highway 101, 250 feet west of Fairview Avenue, in frame pump house below timber derrick. Drilled stock and industrial well, diameter 10 inches, reported depth 240 feet. Deep-well turbine, direct-connected 2-horsepower electric motor. On main alluvial plain of Goleta Valley. Confined water in coarse sand from 164 to 168 feet below land surface and in fine sand from 176 to 188 feet. Measuring point, lower face north side of pump base, between wood blocks supporting pump, 1.8 feet above land surface and 16 feet above preliminary sea-level datum. Low level June through December due to widespread pumping for irrigation.

Water level, in feet, with respect to preliminary datum, 1941

May 5	2.76	June 21	2.68	Aug. 4	-1.66	Oct. 20	-0.53
17	2.44	30	c -16.81	11	-1.95	Nov. 8	.66
24	2.60	July 7	+0.05	23	-1.29	22	c -4.45
June 2	1.43	16	-.60	Sept.22	-.70	Dec. 5	1.39
9	1.31	21	-.57	Oct. 4	-2.05	19	2.40

4/28-17H3. J. T. Mathews. About 0.5 mile south of Goleta. About 50 feet north of Mathews Avenue, 260 feet east of Fairview Avenue, 50 feet south of residence. Bored domestic well, diameter 12 inches, measured depth 12.4 feet. Pitcher pump. Unconfined water. On main alluvial plain of Goleta Valley. Measuring point, top west side of 12-inch casing, at slot in galvanized steel cover, 0.8 foot above land surface and 12 feet above preliminary sea-level datum. Companion to confined water wells 4/28-17G1 and 17H11.

a Pump operating or recently operated in adjacent well.
b Pump operating in adjacent well.
c Pump operating in well.

Observation wells in the coastal plain area--Continued

4/28-17H3.--Continued.

Water level, in feet above preliminary datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 6	9.42	June 21	8.84	Aug. 11	8.40	Oct. 20	6.78
19	8.91	30	8.68	23	8.16	Nov. 8	6.57
24	8.89	July 7	8.68	Sept. 8	7.92	22	6.43
June 2	8.80	16	8.60	22	7.48	Dec. 5	6.52
9	7.97	21	8.99	Oct. 4	7.12	19	7.53
16	8.90	Aug. 4	8.47				

4/28-17H11. Mrs. Leslie Oakley and Mrs. Mary Bonetti. About 480 feet west along power line from Nectarine Avenue, 15 feet northwest of wood tank and tower. Drilled domestic and irrigation well, diameter 6 inches, measured depth 119.0 feet. Lift pump, 2-horsepower electric motor. On main alluvial plain of Goleta Valley. Confined water. Measuring point, top east side of 6-inch casing, level with concrete foundation of pump, 0.5 foot above land surface and 11 feet above preliminary sea-level datum. Companion to water-table well 4/28-17H3. Low level July through December due to widespread pumping for irrigation.

Water level, in feet, with respect to preliminary datum, 1941

May 13	-1.63	July 7	-4.69	Aug. 11	-5.62	Oct. 20	-5.48
24	-1.81	16	-5.54	25	-6.97	Nov. 8	-4.14
June 9	-1.78	21	a-12.32	Sept. 8	-8.02	24	-3.69
16	-1.72	28	-6.51	22	-6.98	Dec. 5	-3.45
30	a-25.80	Aug. 4	a-27.98	Oct. 4	-9.05	19	-2.55

a Pump operating in well.

HAWAII

By H. T. Stearns

INTRODUCTION

The total draft of ground water during 1941 in the Territory of Hawaii was 204,701 million gallons (about 628,000 acre-feet, or an average of about 560,000,000 gallons a day). This was 8,021 million gallons more than in 1940. The increase was caused largely by the heavy pumpage on Oahu. Pumpage on Maui and Hawaii was less than last year. Water levels in Oahu continued to decline from the low levels of 1940. Water levels in typical wells on the island of Hawaii and in windward Maui showed a net rise in 1941; those in the observation wells in Molokai, Lanai, and leeward Maui did not show much change. Average rainfall for the Territory was 78.7 inches, which is slightly above the 1940 average but still 5.7 inches below normal.

ISLAND OF OAHU

All 12 artesian areas on Oahu had losses in ground-water storage except Area 9, on the northeast coast, where there is little draft from wells. The water levels in the Honolulu and Pearl Harbor artesian areas declined persistently.

The pumpage from wells on Oahu totaled 134,209 million gallons, an increase of 14,819 million gallons over that of the previous year. The artesian head dropped nearly to its 1926 low in Areas 3 and 4, and to its all time low in Area 6. These areas comprise the strip of land extending westward 14 miles from the middle of Honolulu through the towns of Aiea, Waipahu, and Ewa, around Pearl Harbor. Records of measurements of the artesian head in some of the wells extend back to 1890. The pumpage from these areas in 1941 amounted to 92,860 million gallons, an increase of 10,296 million gallons over that of 1940, and 21,706 million gallons over that of 1939. This large increase resulted from the need for additional irrigation water, as the drought conditions continued, and for increased domestic and industrial supplies necessitated by the rapid increase in the population for defense construction. Most of the increase in pumpage was

Oahu--Continued.

in Area 6, which lies west of Honolulu. The rainfall in the uplands, which are the recharge areas that supply the artesian basins, continued below normal. The average rainfall on Oahu for the year was 45.3 inches, which is 20.2 inches below normal.

The development of ground water along the north shore of Pearl Harbor is increasing rapidly. The total pumping capacity of wells that have been completed during the past few years or are under construction approximates 100 million gallons per day. Only part of this amount, however, represents new pumping, as some of the new pumping stations are to replace abandoned ones, and others have large stand-by capacity. A serious situation may arise soon from salt-water encroachment if the drought continues. Therefore, regulation is needed as to the spacing and construction of the large wells and the quantity of water pumped. The domestic supplies will be the first to be damaged, because water can be used for irrigation that is far too salty for domestic use.

Time of high and low heads in artesian areas and net gain or loss in static level, in feet, for 1941, as shown by typical wells on the island of Oahu.

Area	Name	Well	High	Low	Loss
1	St. Louis Heights	2	January	July	-1.97
2	Makiki-Pacific Heights	83	February	August	- .82
3	Kapalama	132	January	August	-1.20
4	Moanalua	144	January	August	-1.65
5	Wilhelmina Rise	1A	January	July	- .41
6	Pearl Harbor	201	January	August	-1.21
		244	January and October	August	-2.71
		266	January and October	August	-2.56
7	Waialua	326	January, October, and December	June	- .10
8	Kahuku	356	November and December	May and July	- .96
		396	November and December	July	- .20
9	Kahana	405	November and December	August	+ .38
10	Kaaawa	406	January	August	- .46
11	Gilbert	a T5	January	July	- .46
12	Mokuleia	286	October	June	- .42
		308	October and December	April	0.00

In the following records the head of the water in the wells is expressed in feet with reference to mean sea level. In some of the wells this is the measured water level in the well; in others, it is the height

a Nonartesian, but indicative of adjacent artesian conditions.

Oahu--Continued.

to which the water would rise in a casing or tube, as indicated by the shut-in pressure. For each well that is not described in this report, there is given the page reference to the water-supply paper in which the description has been published.

Schofield Barracks shaft 4.

Water level, in feet above mean sea level, 1941
(from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	279.20	Apr. 5	277.82	July 5	276.67	Oct. 4	(a)
11	279.10	12	277.72	12	276.56	11	275.81
18	279.03	19	277.60	19	276.51	18	275.77
25	279.02	26	277.45	26	276.43	25	275.81
Feb. 1	278.87	May 3	(a)	Aug. 2	276.31	Nov. 1	(a)
8	278.70	10	277.35	9	276.28	8	(a)
15	278.67	17	277.28	16	(a)	15	275.72
22	278.57	24	277.16	23	276.17	22	275.75
Mar. 1	278.38	31	277.13	30	276.10	29	275.71
8	278.32	June 7	276.99	Sept. 6	276.10	Dec. 6	275.65
15	278.18	14	(a)	13	(a)	13	275.60
22	278.10	21	(a)	20	275.93	20	275.58
29	277.93	28	276.70	27	275.86	27	275.53

Artesian head, in feet above sea level in five wells in the Honolulu district, 1941
(Mean daily measurements furnished by Board of Water Supply, City and County of Honolulu from recorder charts)

Area / Well	1 / 2	2 / 83	3 / 132	4 / 144	5 / 1A
Jan. 1	28.45	29.60	28.97	26.90	8.74
8	28.35	.....	28.95	26.71	8.68
15	28.24	29.67	28.91	26.55	8.63
22	28.10	.....	28.89	26.44	8.61
29	28.07	.....	28.84	26.40	8.71
Feb. 5	27.51	29.75	28.83	26.32	8.67
12	26.63	29.85	28.81	26.19	8.64
19	26.32	29.82	28.83	26.15	8.56
26	26.49	29.59	28.73	.....	8.59
Mar. 5	26.41	29.45	28.55	26.00	8.50
12	26.24	29.35	28.47	25.87	8.50
19	26.17	29.26	28.40	25.85	8.51
26	26.19	.....	28.22	25.72	8.40
Apr. 2	26.35	.....	28.16	25.57	8.42
9	26.36	28.99	28.05	25.47	8.42
16	26.18	28.79	27.93	25.40	8.42
23	25.88	28.71	27.75	.....	.....
30	25.54	28.51	27.58	25.09	8.36
May 7	25.29	.....	27.42	25.03	8.34
14	25.44	28.26	27.37	25.00	8.37
21	25.33	28.14	27.33	24.96	8.39
28	25.14	28.00	27.16	24.80	8.43
June 4	25.00	27.83	27.04	24.78	8.41
11	24.76	27.78	26.92	24.75	8.44
18	.....	27.49	26.77	24.55	8.35
25	24.50	27.49	26.71	.....	8.27
July 2	24.55	27.30	26.52	24.44	8.25
9	24.48	27.16	.....	24.44	8.24
16	24.26	26.92	26.11	24.37	8.18
23	24.15	26.67	25.84	.....	8.16

a Pump running.

Oahu--Continued.

Artesian head, in feet above sea level in five wells in the Honolulu District, 1941--Continued

Area	1	2	3	4	5
Well	2	83	132	144	1A
July 30	24.08	26.40	25.67	24.09	8.10
Aug. 6	24.09	26.35	25.57	23.89	8.16
13	24.41	26.28	25.63	23.91	8.20
20	24.33	26.28	25.61	23.78	8.18
27	24.26	26.33	25.77	23.78	8.21
Sept. 3	24.61	26.58	25.94	23.89	8.25
10	24.69	26.74	26.09	24.00	....
17	24.57	26.82	26.17	23.93	8.18
24	24.48	26.80	26.19	23.86	8.22
Oct. 1	24.54	.....	26.21	23.81	8.20
8	24.75	27.10	26.27	23.93	8.23
15	25.09	27.36	26.44	24.22	8.22
22	25.23	27.49	26.62	24.35	8.24
29	25.64	27.64	26.82	24.69	....
Nov. 5	25.70	27.88	27.01	24.85	8.30
12	25.80	27.91	27.12	24.81	8.29
19	25.90	27.91	27.12	24.76	8.29
26	26.00	.....	27.18	24.75	8.28
Dec. 3	26.15	28.02	27.17	24.66	8.21
10	26.43	28.20	27.34	24.83	8.31
17	26.48	.....	27.52	25.10	8.27
24	26.49	28.64	27.65	25.15	8.28
31	26.50	28.76	27.76	25.17	8.32

Artesian head, in feet above sea level, and chloride, in parts per million, in typical wells in Oahu, 1941

Well 1B (Area 5). (Water-Supply Paper 777, p. 50; Water-Supply Paper 817, p. 37).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 24	8.62	223	May 22	8.37	236	Sept.24	8.29	243
Feb. 27	8.54	208	June 23	8.27	229	Oct. 28	8.38	184
Mar. 26	8.37	232	July 21	8.29	225	Nov. 28	8.31	223
Apr. 25	8.36	227	Aug. 26	8.25	232	Dec. 30	8.34	184

Well 9 (Area 1). (Water-Supply Paper 777, p. 49).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 24	27.61	53	May 22	24.83	53	Sept.24	24.08	50
Feb. 27	26.18	51	June 23	24.00	49	Oct. 28	25.39	50
Mar. 26	25.81	49	July 21	23.85	50	Nov. 28	25.61	49
Apr. 25	25.28	50	Aug. 26	24.01	50	Dec. 24	26.09	50

Well 81 (Area 2). (Water-Supply Paper 777, p. 49).

Jan. 24	29.56	39	May 22	27.95	37	Sept.24	26.69	36
Feb. 27	29.50	37	June 23	27.42	39	Oct. 28	27.39	37
Mar. 26	29.06	37	July 21	26.62	37	Nov. 28	27.76	37
Apr. 25	28.58	39	Aug. 26	26.16	39	Dec. 24	28.64	36

Well 119 (Area 3). (Water-Supply Paper 777, p. 49).

Jan. 24	28.22	340	May 22	26.32	340	Sept.24	25.24	338
Feb. 27	27.82	330	June 23	26.22	339	Oct. 28	26.71	342
Mar. 26	27.93	326	July 21	25.22	326	Nov. 28	26.43	329
Apr. 25	27.40	326	Aug. 26	25.02	338	Dec. 24	26.81	332

Oahu--Continued.

Artesian head, in feet above sea level, and chloride, in parts per million, in typical wells in Oahu, 1941--Continued

Well 153 (Area 4). (Water-Supply Paper 777, p. 50).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 24	26.20	57	May 21	24.66	59	Sept.24	23.70	55
Feb. 25	25.89	54	June 23	24.30	56	Oct. 28	24.47	55
Mar. 26	25.47	57	July 22	24.02	53	Nov. 24	24.64	53
Apr. 24	24.97	58	Aug. 25	23.67	55	Dec. 22	25.01	57

Well 187B (Area 6) 1/ (Water-Supply Paper 817, p. 37).

Jan. 4	21.87	..	May 10	19.48	..	Sept. 2	19.06	..
11	21.36	..	17	19.32	..	10	19.01	..
18	21.34	..	24	19.16	80	17	18.51	..
25	21.30	85	31	19.15	..	25	18.38	80
Feb. 1	21.02	..	June 10	19.06	..	Oct. 1	18.26	..
8	20.78	..	20	18.76	..	9	18.96	..
15	20.86	..	28	18.81	87	15	19.56	..
25	20.88	80	July 7	19.32	..	22	19.36	94
Mar. 8	20.41	..	14	19.14	..	29	20.46	..
15	20.66	..	21	18.84	87	Nov. 3	20.66	..
22	20.34	76	28	18.76	..	13	20.01	..
29	20.06	..	Aug. 5	18.76	..	19	19.51	..
Apr. 6	20.16	..	11	18.96	..	27	19.64	88
8	20.06	..	19	18.56	..	Dec. 5	19.26	..
19	19.56	..	20	18.66	..	11	20.36	..
26	19.38	72	26	18.56	88	20	20.76	91
May 3	19.46	..	28	18.38	..			

Well 190 (Area 6). (Water-Supply Paper 777, p. 51).

Jan. 22	21.20	55	May 21	.....	56	Sept.23	18.74	51
Feb. 25	20.75	52	June 23	.....	53	Oct. 27	20.34	50
Mar. 24	20.53	53	July 21	19.09	51	Nov. 24	19.99	67
Apr. 22	.....	54	Aug. 26	18.68	51	Dec. 22	20.73	53

Well 193 (Area 6). (Water-Supply Paper 777, p. 51).

Jan. 22	20.49	119	May 21	18.57	124	Sept.23	17.73	119
Feb. 25	20.14	111	June 23	18.30	114	Oct. 27	19.66	120
Mar. 24	19.85	120	July 21	18.06	119	Nov. 24	19.03	114
Apr. 22	18.87	115	Aug. 26	17.77	114	Dec. 22	20.03	127

Well 201 (Area 6). (Water-Supply Paper 777, p. 52).

Jan. 22	18.69	625	May 21	17.12	510	Sept.24	16.58	440
Feb. 25	18.65	615	June 23	17.02	484	Oct. 27	18.07	492
Mar. 24	18.30	585	July 21	16.71	452	Nov. 24	17.88	542
Apr. 22	17.39	497	Aug. 26	16.35	400	Dec. 22	18.17	580

Well 244 (Area 6). (Water-Supply Paper 777, p. 52).

Jan. 22	20.71	126	May 21	18.04	129	Sept.23	17.29	128
Feb. 25	19.90	127	June 23	17.71	132	Oct. 27	20.04	126
Mar. 24	19.40	136	July 21	17.29	127	Nov. 24	19.38	127
Apr. 22	18.09	126	Aug. 25	17.10	126	Dec. 22	19.47	130

Well 266 (Area 6). (Water-Supply Paper 777, p. 52).

Jan. 22	19.61	185	May 21	15.76	192	Sept.23	15.12	198
Feb. 25	18.81	172	June 23	15.46	191	Oct. 27	19.60	198
Mar. 24	17.87	173	July 21	15.13	181	Nov. 24	17.89	181
Apr. 22	16.38	177	Aug. 25	15.05	194	Dec. 22	18.50	198

1/ All measurements between Oct. 30, 1935, and Dec. 27, 1940, should be decreased 2.04 feet due to error in graduations of measuring device.

Oahu--Continued.

Well 276 (Area 11). (Water-Supply Paper 817, p. 38).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan.	13.30	615	May	12.77	618	Sept.	12.31	619
Feb.	13.24	617	June	(a)	621	Oct.	12.63	595
Mar.	13.09	624	July	12.79	614	Nov.	12.68	617
Apr.	13.48	625	Aug.	(a)	623	Dec.	12.86	607

Well 286.(Area 12). (Water-Supply Paper 777, p. 54).

Jan. 23	17.90	120	May 23	17.71	123	Sept.26	17.61	121
Feb. 26	17.79	112	June 24	17.54	120	Oct. 29	18.24	110
Mar. 25	17.64	117	July 22	17.63	107	Nov. 26	17.75	105
Apr. 24	17.64	110	Aug. 27	17.76	122	Dec. 26	17.96	122

Well 308 (Area 12). (Water-Supply Paper 777, p. 54).

Jan. 23	19.03	97	May 23	18.83	94	Sept.26	19.20	95
Feb. 26	18.88	97	June 24	18.70	93	Oct. 29	19.67	98
Mar. 25	18.99	95	July 22	18.60	92	Nov. 26	19.16	95
Apr. 24	18.58	90	Aug. 27	19.10	95	Dec. 26	19.57	101

Well 326 (Area 7) (Water-Supply Paper 777, p. 52).

Jan. 23	11.68	74	May 23	10.49	74	Sept.26	10.87	70
Feb. 26	11.03	70	June 24	10.09	72	Oct. 29	11.85	68
Mar. 25	11.11	72	July 22	10.17	70	Nov. 26	11.11	71
Apr. 24	11.01	73	Aug. 27	10.51	70	Dec. 26	11.81	70

Well 337 (Area 8). (Water-Supply Paper 777, p. 53).

Jan. 23	14.10	165	May 23	13.92	157	Sept.26	13.52	142
Feb. 26	14.02	164	June 24	13.56	155	Oct. 29	13.70	146
Mar. 25	13.89	151	July 22	13.41	152	Nov. 26	13.60	142
Apr. 24	13.95	145	Aug. 27	13.70	157	Dec. 26	13.47	149

Well 356 (Area 8). (Water-Supply Paper 777, p.53).

Jan. 23	13.08	133	May 23	10.89	144	Sept.26	11.15	146
Feb. 26	12.39	126	June 24	12.23	143	Oct. 29	13.51	146
Mar. 25	12.02	135	July 22	10.94	137	Nov. 26	13.99	145
Apr. 24	11.18	128	Aug. 27	13.48	147	Dec. 26	13.91	144

Well 396 (Area 8). (Water-Supply Paper 777, p. 53).

Jan. 23	20.42	50	May 23	19.56	51	Sept.26	19.37	54
Feb. 26	20.17	50	June 24	19.23	51	Oct. 29	19.90	52
Mar. 25	20.02	46	July 22	18.74	51	Nov. 26	20.63	51
Apr. 24	19.50	51	Aug. 27	19.76	53	Dec. 26	20.56	52

Well 405 (Area 9). Mary E. Foster Estate. In Kahana Valley about 700 feet southeast of the highway and about 1,000 feet south of the old Mary E. Foster home. Drilled in 1932 by the Kahuku Plantation Co. Altitude 6 feet. Depth 441 feet, diameter 10 inches. Use, domestic. Casing, 177 feet. Bench mark, top of blind flange on top of casing; altitude, 5.76 feet.

Jan. 23	18.13	42	May 23	17.58	42	Sept.26	17.31	42
Feb. 26	17.78	40	June 24	17.50	43	Oct. 29	17.87	41
Mar. 25	17.79	42	July 22	17.30	40	Nov. 26	18.86	40
Apr. 24	17.78	44	Aug. 27	17.20	41	Dec. 26	18.67	41

a Pump running.

Oahu--Continued.

Well 406 (Area 10). (Water-Supply Paper 777, p. 53).

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 23	16.12	196	May 23	15.21	210	Sept.26	14.87	212
Feb. 26	15.68	188	June 24	15.03	196	Oct. 29	15.17	209
Mar. 25	15.58	205	July 22	14.86	200	Nov. 26	15.59	198
Apr. 24	15.53	190	Aug. 27	14.78	210	Dec. 26	15.79	202

Water levels, in feet, and chloride, in parts per million in test borings in Oahu, 1940-41

Test boring Oahu T1 (tributary to Area 12). (Water-Supply Paper 845, p. 60.)

Date	Water level	Chloride	Date	Water level	Chloride
Dec. 31, 1940	19.54	21	July 1, 1941	19.85	52
Feb. 2, 1941	18.29	52	Aug. 2	19.58	36
Mar. 1	18.16	42	Sept. 2	19.02	42
Apr. 1	18.91	52	Oct. 2	18.66	52
May 1	19.58	42	Nov. 2	18.60	52
June 2	19.51	42	Dec. 2	18.45	42

Test boring Oahu T2 (tributary to Area 7). (Water-Supply Paper 845, p. 60.)

Dec. 31, 1940	6.68	114	July 1, 1941	6.12	125
Feb. 2, 1941	6.24	135	Aug. 2	5.78	130
Mar. 1	5.97	145	Sept. 2	5.99	156
Apr. 1	5.83	156	Oct. 2	6.33	156
May 1	6.04	135	Nov. 2	6.64	166
June 2	5.93	145	Dec. 2	7.14	177

Test boring Oahu T5 (tributary to Area 11). (Water-Supply Paper 886, p. 84.)

Date	Water level	Chloride	Date	Water level	Chloride	Date	Water level	Chloride
Jan. 21	4.92	151	May 26	4.34	480	Sept.23	4.37	500
Feb. 28	4.73	232	June 26	4.12	479	Oct. 27	4.54	516
Mar. 27	4.57	273	July 23	4.10	461	Nov. 25	4.55	484
Apr. 28	4.43	328	Aug. 25	4.37	495	Dec. 29	4.60	502

Test boring Oahu T15 (Water-Supply Paper 911, p. 142).

Jan. 21	2.40	98	May 26	2.09	100	Sept.23	2.01	95
Feb. 28	2.24	98	June 26	2.11	94	Oct. 27	1.96	98
Mar. 27	2.14	95	July 23	2.05	96	Nov. 25	2.00	92
Apr. 28	2.12	89	Aug. 25	2.04	93	Dec. 29	2.12	103

ISLAND OF MAUI

The water levels in the wells owned by the Hawaiian Commercial and Sugar Company and the Maui Agricultural Company, on the windward side of the island, showed slight increases over those reported for 1940, except for pump 4, H. C. & S. Co., which showed a loss of 0.26 foot, and Lower Paia (pumps 1, 5, and 6), M. A. Co., which showed a loss of 0.12 foot. Wells of the Pioneer Mill Company, on the leeward side of West Maui, showed slight losses for the year.

Maui--Continued.

The East Maui Irrigation Company ditch delivered to the Isthmus 80,019.58 million gallons during 1941. All pumps of the Hawaiian Commercial and Sugar Co. were started in January and shut down in December except two, which shut down in October and November. The pumping season of the Maui Agricultural Company began in January when all pumps were started. They were shut down in October, November, and December. The Pioneer Mill Company's pumping season began in January and closed in December.

The data in the following table were furnished by R. E. Hughes, H. J. Eby, and C. K. Brown.

Chloride, in parts per million, water levels, in feet above sea level, and net change in static level, in feet, on the island of Maui, 1941

Location	Chloride	Water level Dec. 31, 1941	Gain or loss 1941
Hawaiian Commercial and Sugar Co.			
1 (Kihei)	613	4.65	+0.10
2	301	5.43	+ .23
3	291	4.36	+ .28
4	436	3.06	- .26
5	447	4.79	+ .26
6	353	5.42	+ .05
7	322	5.58	+ .04
8	416	5.18	+ .10
3 (Kihei)	322	6.90	+ .23
Maui Agricultural Co.			
Lower Paia (pumps 1, 5 and 6)	364	4.30	- .12
Kaheka (pumps 3 and 4)	150	5.25	+ .29
7 Paia School	229	4.10	+ .27
12 Kuau	197	4.35	+ .10
Pioneer Mill Co.			
Kaanapali	727	2.24	- .02
Kahoma	281	2.75	- .15
Lahaina	831	2.40	- .28
Mill	1,039	3.33	- .30
Olowalu	332	3.60	- .30
Ukumehame	468	5.40	-1.00

Water levels, in feet, and chloride, in parts per million, in test borings in Maui, 1941
(Measurements furnished by Wailuku Sugar Co.)

Test boring Maui T102 (Iao Valley). (Water-Supply Paper 911, p. 144.)

Date	Water level	Chloride	Date	Water level	Chloride	Date	Water level	Chloride
Jan.	(a)	20	May 15	32.13	19	Sept. 19	34.93	19
Feb.	(a)	..	June 20	33.14	19	Oct. 16	35.71	19
Mar.	(a)	19	July 16	32.98	19	Nov. 20	35.74	19
Apr. 16	31.28	19	Aug. 19	34.12	20	Dec. 31	34.18	19

a Measurements discarded because of error in measuring device. This was corrected in March.

Maui--Continued.

Water levels, in feet, and chloride, in parts per million, in test borings in Maui, 1941--Continued.

Test boring Maui T110 a/ (Puu Hele). (Water-Supply Paper 911, p. 143).

Date	Water level	Chloride	Date	Water level	Chloride	Date	Water level	Chloride
Jan.	(b)	308	May 15	6.94	303	Sept.19	7.28	299
Feb.	(b)	...	June 20	7.13	308	Oct. 16	7.24	291
Mar.	(b)	316	July 16	7.07	305	Nov. 20	8.01	293
Apr. 16	7.16	312	Aug. 19	7.15	293	Dec. 31	7.74	270

ISLAND OF MOLOKAI

The water level in central Molokai, as indicated by measurements of test boring T1, showed little change from the previous year. Water levels ranged in the Conant well from 1.42 to 1.67 feet; in the Kamalo well, from 1.75 to 2.17 feet; and in the Ualapue well, from 4.17 to 4.42 feet.

Test boring Molokai T1. (Water-Supply Paper 845 , p. 62.)

Water level, in feet, and chloride, in parts per million, 1941
(Measurements made by Mitchell Pauole, Hawaiian Homes Commission)

Jan. 23	5.27	541	May 23	5.44	560	Sept.17	5.27	560
Feb. 17	5.27	512	June 18	5.36	518	Oct. 16	5.36	570
Mar. 17	5.27	532	July 18	5.27	528	Nov. 17	5.44	547
Apr. 18	5.36	(c)	Aug. 21	5.36	534	Dec. 17	5.27	550

Water levels, in feet, in observation wells on Molokai, 1941
(Measurements made by H. Wilson)

Conant well. (Water-Supply Paper 845, p. 63.)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15	1.67	Apr. 15	1.50	July 15	1.42	Oct. 15	1.58
Feb. 15	1.67	May 16	1.58	Aug. 15	1.50	Nov. 15	1.42
Mar. 15	1.58	June 15	1.58	Sept.15	1.58	Dec. 15	1.58

Kamalo well. (Water-Supply Paper 845, p. 63.)

Jan. 15	2.17	Apr. 15	1.83	July 15	1.75	Oct. 15	1.83
Feb. 15	1.83	May 16	1.83	Aug. 15	1.83	Nov. 15	1.75
Mar. 15	1.83	June 15	1.75	Sept.15	1.83	Dec. 15	1.83

Ualapue well. (Water-Supply Paper 845, p. 63.)

Jan. 15	4.42	Apr. 15	4.42	July 15	4.17	Oct. 15	4.25
Feb. 15	4.42	May 16	4.25	Aug. 15	4.25	Nov. 15	4.33
Mar. 15	4.33	June 15	4.17	Sept.15	4.33	Dec. 15	4.42

a Formerly T2.
b Measurements discarded because of error in measuring device. This was corrected in March.
c. Bottle broken in mail.

ISLAND OF LANAI

The highest water level reached in the Maunalei shaft No. 1 during 1941 was 2.69 feet on January 3. This was 0.09 foot below the 1940 high level.

Water level, in feet, in the Maunalei shaft 1, Lanai, 1941
(Water-Supply Paper 817, p. 41. Records furnished by Hawaiian Pineapple Co.)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	2.69	Apr. 1	2.57	July 1	2.48	Oct. 1	2.51
Feb. 1	2.66	May 1	2.57	Aug. 1	2.52	Nov. 1	2.52
Mar. 1	2.59	June 2	2.66	Sept. 1	2.51	Dec. 1	2.55

ISLAND OF HAWAII

Water levels in the Olaa shaft ranged during 1941 from a low of 13.23 feet on May 2 to a high of 18.92 feet on October 31. The Kaiwiki shaft showed little variation in water level throughout the year. The chloride content ranged from 12 to 16 parts per million during 1941. The chloride content in Water-Supply Paper 911 for 1940 should have read 12.5 to 16.6 parts per million instead of 125 to 166 parts per million.

Olaa shaft. (Water-Supply Paper 817, p. 42.)

Water level, in feet above sea level, 1941
(Records furnished by George Duncan, Olaa Sugar Co.)

Jan. 3	14.87	Apr. 4	13.28	July 4	14.11	Oct. 3	16.33
10	14.68	11	13.31	11	14.50	10	17.71
17	14.59	18	13.29	18	14.69	17	17.71
24	14.42	25	13.33	25	15.08	24	17.84
31	14.12	May 2	13.23	Aug. 1	15.12	31	18.92
Feb. 7	14.20	9	13.25	8	15.19	Nov. 7	18.42
14	13.92	16	13.28	15	15.12	14	17.86
21	13.87	23	13.31	22	15.19	21	17.84
28	14.00	30	13.50	29	15.31	28	17.68
Mar. 7	13.92	June 6	13.81	Sept. 5	15.46	Dec. 5	17.13
14	13.62	13	13.82	12	15.75	12	17.00
21	13.58	20	13.90	19	15.75	19	16.86
28	13.25	27	13.94	26	16.02	26	16.68

Kaiwiki shaft. (Water-Supply Paper 840, p. 66).

	Water level, in feet, 1941						
Jan. 21	4.08	Apr. 14	b 5.50	July 4	5.42	Sept. 16	a 5.42
30	a 5.25	30	5.17	12	a 5.25	24	5.67
Feb. 1	a 5.29	May 5	a 5.25	25	5.00	Oct. 3	a 5.50
16	a 5.25	14	5.42	30	5.25	9	5.75
25	5.17	19	5.38	Aug. 2	a 5.17	18	5.42
Mar. 1	a 5.25	30	b 5.33	8	5.42	24	a 5.58
8	5.17	June 2	a 5.25	18	5.50	Nov. 7	a 5.33
17	a 5.42	11	b 5.17	26	a 5.42	17	a 5.50
27	a 5.29	18	a 5.17	Sept. 1	a 5.25	Dec. 13	a 5.25
Apr. 4	a 5.33	25	a 5.33	8	5.50	20	5.42
9	a 5.08						

a Two pumps operating. b No pumps operating.

ISLAND OF KAUAI

The head at Wailua well 8 reached 12.99 feet in October, which was 0.04 foot above the previous maximum in November 1940. Other artesian heads for Kauai varied slightly from those reported in 1940. Except for well 37, which showed an average increase of 100 parts per million, the chloride content in these wells showed little change during 1941.

Head, in feet, and chloride content, in parts per million, in typical artesian wells in Kauai, 1941

Well 2F. Kealia, Kauai (Water-Supply Paper 840, p. 67). (Records furnished by East Kauai Water Co.)

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 21	10.74	46	May 21	10.52	45	Sept.22	10.48	45
Feb. 20	10.36	41	June 21	10.04	43	Oct. 20	10.39	41
Mar. 25	10.46	43	July 25	10.24	43	Nov. 19	10.50	42
Apr. 21	10.32	42	Aug. 20	9.89	43	Dec. 22	10.36	43

Well 7. Wailua, Kauai (Water-Supply Paper 840, p. 68). (Records furnished by Lihue Plantation Co.

Jan. 16	.....	131	May 16	.....	140	Sept.16	.....	130
Feb. 18	.....	131	June 16	.....	128	Oct. 16	.....	128
Mar. 17	.....	132.	July 15	.....	125	Nov. 17	.....	127
Apr. 15	.....	126	Aug. 15	.....	128	Dec. 16	.....	132

Well 8. Wailua, Kauai (Water-Supply Paper 840, p. 68). (Records furnished by Lihue Plantation Co.)

Jan. 16	12.75	105	May 16	12.50	(a)	Sept.16	12.85	125
Feb. 18	12.74	100	June 16	12.58	112	Oct. 16	12.99	122
Mar. 17	12.54	100	July 15	12.61	111	Nov. 17	12.93	97
Apr. 15	12.53	95	Aug. 15	12.69	116	Dec. 16	12.72	101

Well 14N. Koloa, Kauai (Water-Supply Paper 840, p. 68). (Records furnished by Koloa Sugar Co.

Jan. 30	b11.94	453	May 30	b10.69	453	Sept.29	b 8.35	453
Feb. 27	b10.85	453	June 26	b 8.77	453	Oct. 30	28.60	453
Mar. 28	b10.10	453	July 30	b10.02	464	Nov. 27	b11.27	432
Apr. 28	b10.69	453	Aug. 29	b 8.19	453	Dec.	(c)	...

Head, in feet, and chloride, in parts per million, in the Kekaha Sugar Co.'s artesian wells, Kauai, 1941
(Records furnished by the Kekaha Sugar Co.)

Well 35. (Water-Supply Paper 840, p. 68.)

Jan. 19	10.67	194	May	.....	...	Sept.	.....	...
Feb. 15	9.80	425	June 16	9.22	479	Oct.	.....	...
Mar. 18	9.64	322	July 15	9.22	571	Nov.	.....	...
Apr. 22	9.52	419	Aug. 16	.....	...	Dec.	.....	...

Well 37. (Water-Supply Paper 840, p. 68.)

Jan. 19	9.66	158	May	.....	...	Sept.	.....	...
Feb. 15	9.77	152	June 16	9.32	115	Oct.	.....	...
Mar. 18	9.51	327	July 15	9.33	194	Nov. 20	9.98	194
Apr. 22	9.63	109	Aug. 16	9.68	261	Dec.	.....	...

a Bottle broken in mail.
b Pumps running.
c No record received from Koloa Plantation.

Kauai--Continued.

Head, in feet, and chloride, in parts per million, in the Kekaha Sugar Co.'s artesian wells, Kauai, 1941--Continued.

Well 43. (Water-Supply Paper 840, p. 68.) No record due to a leaky well casing.

Well 56. (Water-Supply Paper 840, p. 68.)

Date	Head	Chloride	Date	Head	Chloride	Date	Head	Chloride
Jan. 19	9.89	218	May	.....	...	Sept.	.....	...
Feb. 15	9.96	218	June 16	9.55	118	Oct.	.....	...
Mar. 18	9.52	231	July 15	9.52	218	Nov. 20	9.72	212
Apr. 22	9.70	207	Aug. 16	9.52	194	Dec.	.....	...

PUMPAGE OF GROUND WATER

The following table gives the draft from all important ground-water pumping plants in the Hawaiian Islands. The draft from individual wells on Oahu, which is not included, is estimated to be about 25 million gallons a day. Numbers in parentheses for the Oahu and Maui pumpage records are the Federal Geological Survey well numbers. Total pumpage during 1941 exceeded the 1940 total pumpage by 8,021.43 million gallons, caused largely by the unusually heavy draft on Oahu.

Ground-water draft, in millions of gallons, from wells for irrigation, domestic, and industrial use in the Hawaiian Islands, 1941
(Data furnished by the owners)

Island of Hawaii		
Kaiwiki Sugar Co.		a 67.49
Kohala Sugar Co.		
Hoea Pump	62.24	
Kohala Pump	667.10	
Waikane Pump	89.29	818.63
Olaa Sugar Co.		a 415.00
Total		1,301.12
Island of Kauai[b]		
County of Kauai		
Waimea water works	155.48	
Hanapepe water works	104.03	259.51
Kekaha Sugar Co.		
Wells 3-6, 12-14, 16, and 19 [c]	150.00	
Well 9	516.00	
Wells K-1 to K-5 (inc. 5, 7, & 11)	764.00	
Wells M-1 to M-12	1,743.00	
Kekaha Pump	730.00	
Mana Pump	118.00	
Waiawa Pump	623.00	4,644.00
Koloa Sugar Co. (3 pumps)		978.15
Lihue Plantation Co.		
Shaft	467.00	
Kealia wells	a 200.00	667.00
Total		6,548.66
Island of Lanai		
Hawaiian Pineapple Co.		
Tunnels 1 and 2	135.65	
Shaft 2	55.73	191.38
Island of Maui		
Hawaiian Commercial & Sugar Co.		
Pump 1 (14)(Kihei)		1,403.10
Pump 2 (25)		3,328.08
Pump 3 (22)		2,514.30
Pump 4 (24)		1,605.37
Pump 5 (19)		1,724.35
Pump 6 (18)		5,123.97
Pump 7 (16)		6,169.23
Pump 8 (17)		3,494.30
Pump 3 (15)(Kihei)		5,203.97
Central Power Plant Co.		1,933.03
		32,499.70

a Estimated.

b 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.

c Wells 3-6, pumping discontinued during 1941.

Ground-water draft, in millions of gallons, from wells for irrigation, domestic, and industrial use in the Hawaiian Islands, 1941--Continued.

Maui--Continued.		
Maui Agricultural Co.		
Lower Paia (30) (pumps 1, 5 & 6)	2,780.30	
Kaheka (27) (pumps 3 & 4)	2,115.31	
Jap. School (28) (pump 7)	2,297.50	
Maliko (32) (pumps 10 & 11)	911.85	
Kuau (31) (pump 12)	1,169.05	
Mill (29) (pumps 8 & 13)	4,295.55	
		13,569.56
Pioneer Mill Co.		
Pump A (9) Lahaina	2,832.53	
Pump B (8) Lahaina	2,200.36	
Pump C (7) Mill	2,597.52	
Pump D (3) Kaanapali	1,707.84	
Pump E (9) Lahaina	414.41	
Pump F (2) Honokowai	501.83	
Pump G (4) Hahakea	859.38	
Pump H (3) Kaanapali	2,077.40	
Pump L (6) Wahikuli	216.08	
Pump M (5) Kahomal	661.63	
Pump N (10) Olowalu	737.05	
Pump O (11) Olowalu	174.25	
Pump P (12) Ukumehame	400.38	
		16,380.66
Total		62,449.92
Island of Molokai		
Estimate		1.00
Island of Oahu		
Ewa Plantation Co.		
Pump 1 (268)	1,432.46	
Pump 2 (257)	1,423.33	
Pump 3 (264)	3,531.00	
Pump 4 (264)	3,375.00	
Pump 5 (259)	2,591.69	
Pump 6 (259)	3,129.76	
Pump 7 (263)	2,300.61	
Pump 8 (270)	708.19	
Pump 9A(273)	609.38	
Pump 9B(273)	19.30	
Pump 9C(273)	864.42	
Pump 9D(273)	42.70	
Pump 9E(273)	426.02	
Pump 10(276)	3,016.39	
Pump 11 (276)	1,720.27	
Pump 12 (276)	1,775.75	
Pump 13 (276)	1.32	
Pump 15 (shaft 3)	3,858.80	
Pump 16 (dug well 16)	5,111.41	
Pump 20 (dug well 20)	693.63	
Pump 21 (dug well 21)	447.59	
Pump 22 (dug well 22	179.57	
Pump 23 (dug well 23)	3,430.51	
Pump 24 (dug well 24)	830.74	
Pump 25 (254)	465.48	
		41,985.32
Hawaiian Electric Co.		
Wells & tunnel (199-1 & shaft 8)	3,769.00	
Kaluaoopu Spring	3,139.00	
		6,908.00
Honolulu Board of Water Supply		
Kalihi Station (shaft 6)	1,452.00	
Waialae Station (shaft 7)	258.00	
Kaimuki Station (7)	2,432.00	
Beretania Station (88)	2,292.00	
Kalihi Station (128)	2,273.00	
		8,707.00
Honolulu Plantation Co.		
Pump 1 (185)	1,815.54	
Pump 2 (196)	1,374.68	
Pump 3 (186)	3,068.02	
Pump 4 (197)	2,677.00	
Pump 5 (189)	1,683.29	
Pump 6 (Kalawao Spring)	798.63	
Pump 16 [a] (199-1)	3,404.70	
		14,821.86
Honolulu Rural Water Works		
Lualualei (shaft 2)		90.74
Kahuku Plantation Co.		
Pump 1 (353)	1,178.89	
Pump 2 (341)	2,636.79	
Pump 3 (362)	2,169.78	
Pump 5 (352)	1,372.85	
Pump 6 (362-1)	393.68	
Pump 7 (363)	223.98	
Pump 8 (357)	266.72	
Pump 12 (361)	107.79	
Pump 14 (338)	367.78	
Pump 15 (348)	178.36	
Pump 17 (362)	130.70	

a Includes an inseparable amount from Kaluaoopu Spring, obtained from Hawaiian Electric Co.

Ground-water draft, in millions of gallons, from wells for irrigation, domestic, and industrial use in the Hawaiian Islands, 1941--Continued.

Oahu--Continued.		
Kahuku Plantation Co.--Continued.		
Pump 20 (377)	948.43	
Pump 23 (387)	161.30	
Pump 25 (373)	103.00	
Pump 26 (392)	85.83	
Pump 27 (398)	100.83	
Mill Pump (355) a/	680.83	
		11,107.58
Oahu Sugar Co.		
Pump 1 (247)	2,551.82	
Pump 2 (249)	2,762.98	
Pump 3 (249)	2,013.14	
Pump 4 (248)	1,702.13	
Pump 4B (tunnel)	602.69	
Pumps 5 & 5B (274)	3,499.70	
Pump 6 (239)	2,683.49	
Pump 6B (239)	1,153.90	
Pump 7 (246)	3,272.99	
Pumps 8 & 8A (Waikele Spring)	1,690.97	
Pump 9 (Waiawa Spring)	795.37	
		22,729.18
Private wells in Honolulu		4,884.00
U. S. Army		
Schofield (shaft 4)		1,470.72
U. S. Navy		
Aiea (shaft 5)	2,918.46	
Aiea wells (187)	303.60	3,212.06
Waialua Agricultural Co.		
Pump 1 (321)	1,052.00	
Pump 2 (322)	4,188.00	
Pump 3 (331)	3,618.00	
Pump 4 (334)	1,656.00	
Pump 5 (285)	1,059.00	
Pump 6 (298, 299, & 301)	289.00	
Pump 7 (324)	884.00	
Pump 8 (329)	539.00	
Pump 9 (327)	131.00	
Pump 10 (323)	2,405.00	
Pump 11 (296)	91.00	
Pump 12 (332)	179.00	
Mill (319)	3,125.00	
Pump 13 (328)	185.00	
Pump 15 (317)	69.00	
Pump 16 (316)	136.00	
		19,613.00
Waianae Co.		
Puko (dug well 1)	95.33	
Makaha (dug well 1B)	63.99	
Makaha (dug well 2)	77.55	
Lehano (dug well 3)	75.26	
Kuaiwa (dug well 4)	13.24	
Paheehee (dug well 5)	34.43	
Keekee (dug well 6)	23.99	
Pahoa (dug well 7)	147.71	
Kahoolanakio (dug well 10)	66.88	
Kamaile (277)	1,006.99	
Shaft 17 (shaft 1)	223.79	
Makaha wells (wells 277-9)	00.0	
Mill	254.88	
		2,084.04
Total		b 134,208.80
Grand total		204,700.88

a Omitted from 1940 report--Kahuku Plantation Co. Mill Pump (355) 869.92 million gallons.

b Pump 16, Honolulu Plantation Co., not included in Oahu total because it boosts water already listed under Hawaiian Electric Co. well.

NEW MEXICO

INTRODUCTION

By C. V. Theis

In the following sections on New Mexico, the land-surface datum referred to in the descriptions and tables corresponds to the actual land surface in the vicinity of the well as closely as the surface can be determined and is defined accurately by reference to the measuring point and reference point of the well. Nearly all measurements given are referred to this land-surface datum.

The system of numbering wells in New Mexico used herein, except for Sierra County, Hot Springs area, is based upon the common land subdivisions and serves the dual purpose of designating and locating the well. The number of the well is separated into segments by decimal points. The first segment denotes the township, the second the range, the third the section, and the fourth the location within the section. The section is divided into quarters, numbered respectively 1, 2, 3, and 4 for the northwest, northeast, southwest, and southeast quarters, and each quarter section is divided into 40-acre tracts on the same basis. Likewise, the 40-acre tracts are divided into 10-acre tracts. The first, second, and third digits of the last segment denote respectively the quarter of the section, the 40-acre tract within the quarter section, and the 10-acre tract within the 40-acre tract. Thus, a well in NE¼NW¼SE¼ sec. 29, T. 14 S., R. 26 E. is designated as 14.26.29.412. If for some reason a well could not be located accurately to the 10-acre tract or 40-acre tract, a zero replaces the respective digits of the last segment of the well number. For instance, the well referred to above is designated as 14.26.29.400 if the location is accurate only to the quarter section. If two or more wells are in the same 10-acre tract, a letter a, b, c, or d is arbitrarily added to the number designating the tract. For townships north of the base line, an N is added after the township digit. No letter is added to the number to denote whether the range is east or west of the New Mexico principal meridian, as in no single area are there wells on both sides of the meridian.

In former reports, if a well could not be located within a specific 40-acre or 10-acre tract, places in the number representing these units were simply omitted, causing some confusion in the arrangement of the data. Thus, the well now designated as 14.26.29.400 would have been shown in former reports as 14.26.29.4. This rule should be followed in comparing the records given herein with those in former reports. If the number of the well ends in 0 herein, the same well was designated in former reports by the same number exclusive of the final 0 or 0's.

CHAVES AND EDDY COUNTIES

ROSWELL BASIN

By O. J. Loeltz

Water used for irrigating land in the Roswell artesian basin is derived from artesian, shallow, and surface sources. Artesian water[1/] obtained from the San Andreas limestone is the most important of the three, constituting somewhat more than half of the water used for irrigation. Shallow water[2/] from the valley fill supplies about one-third, and surface water, principally from the Pecos River, the perennial flows of the lower courses of its larger tributaries, and the flow of drains, supplies about one-sixth of the total normal requirements for water.

According to estimates obtained from the Agricultural Adjustment Administration offices at Roswell and Carlsbad, N. Mex., about 81,000 acres of irrigated land in the basin are in Chaves County and 33,000 acres in Eddy County, making a total of 114,000 acres of irrigated cropland in the entire basin. This total exceeds a similar estimate for 1940 by about 2,000 acres.

After studying data from various sources in an effort to determine the trend in the number of acres of irrigated land in the basin during recent years, it is the writer's opinion that there has been a slight increase in the total irrigated acreage in the basin each year since 1939, the increase over the 1939 total being about 5,000 acres in 1940, and 7,000 acres in 1941. A large part of the increase of 2,000 acres of irrigated cropland

1/ Fiedler, A. G., and Nye, S. S., Geology and ground-water resources of the Roswell artesian basin, N. Mex.: U. S. Geol. Survey Water-Supply Paper 639, pp. 134-155, 194-260, 1933.

2/ Idem, pp. 120-128, 260-263. Morgan, A. M., Geology and shallow-water resources of the Roswell artesian basin: N. Mex. State engineer 12th and 13th Bienn. Rept., pp. 155-249, 1939.

in the basin in 1941, as compared with 1940, was brought about by irrigating for the first time new land having shallow water rights, which until 1941, for one reason or another, could not be exercised by the holders of such rights.

Further increases in the number of acres irrigated with shallow ground water can be expected to the extent that to date there are still permits in good standing which entitle the holders of such permits to irrigate approximately an additional 2,000 acres of land with shallow ground water. When these permits to appropriate shallow ground water shall have been fulfilled, there should be no further increase in the number of acres of cropland watered from underground sources caused by exercising for the first time the right to irrigate land in the Roswell basin.

More precipitation fell in the Roswell artesian basin in 1941 than had ever been recorded for any other year. In the vicinity of Roswell 34.33 inches of precipitation were recorded--19.39 inches more than the normal of 14.94 inches, and the largest annual rainfall of a record begun in 1877. The precipitation in the vicinity of Artesia was 35.45 inches--22.93 inches above the normal of 12.52 inches, and the largest annual rainfall of a record begun in 1906. Such abnormally large amounts of rainfall in the basin itself, together with similar abnormally large amounts of precipitation in the principal intake area of the artesian basin to the west of the basin proper, caused significant rises in both the artesian and shallow water levels. A more detailed discussion of the extent of these rises will be found later in this report. To make a general statement, however, it appears that the artesian head at the end of 1941 was roughly the same as the maximum head for the year 1920. This general recovery of artesian head, averaging somewhat more than 15 feet over the entire basin, is very encouraging. It would seem to indicate that the artesian source of supply can, by the exercising of judicious conservation measures, be made a permanent source of water supply.

The amount of rise of the shallow water levels cannot be generalized so easily, as the rises range from a fraction of a foot to more than 17 feet. A significant point, however, seems to be that in those areas where shallow water is used extensively for irrigation, the rise, although more than 14 feet in some instances, was not sufficient to restore the shallow water

levels to corresponding levels in January and February 1938. This, together with the fact that the shallow ground-water levels in these same areas had dropped from 5 to 29 feet during the years 1927 to 1938, shows a serious overappropriation of this source of water in the highly developed areas irrigated with shallow ground water.

As a result of field work done by the writer, it was estimated that in 1939 and in 1940, years of slightly less than normal precipitation, the average amount of water annually used for irrigation was 2.75 acre-feet per acre. A similar estimate for 1941 has not yet been completed, but a comparison of electrical power consumption figures for a number of pumped wells in the northern part of the basin indicates that the 1941 use will probably be between 50 and 60 percent of the 1940 use. Had the heavy rains come before the spring irrigation was completed, and had the 8 inches or more of rain which fell in the latter part of September come in August instead, the use of water in 1941 would have been considerably less.

Fluctuations in artesian head

Six continuous water-stage recorders on selected observation wells, distributed over the basin, were used to indicate the fluctuations of artesian head in 1941. The mean monthly and annual artesian heads for each recorder well were computed in a manner similar to that used for computing comparable heads in 1940. Briefly, the method is as follows: The daily maximum and the daily minimum artesian head for each well were obtained by inspection of the recorder charts. From these figures a mean monthly maximum and a mean monthly minimum head were obtained. The average of the mean monthly maximum and the mean monthly minimum head was then considered to be the mean monthly artesian head. The average annual artesian head was computed as the average of the mean monthly artesian heads.

During the first 4 months of 1941, the artesian head followed the pattern of previous years, namely, a lowering of head at an accelerated rate beginning in the early part of January. During the latter part of April and of May a total of about 9 inches of rain fell. This resulted in a pronounced rise of artesian head during May and June, until in the first half of June the artesian head ranged from 1.5 to 10 feet higher than the head during the first half of January. The least amount of rainfall during

the growing season was recorded in June, when the precipitation was only about half of normal. In August the artesian head dropped sharply, but in no well was the head in August as low as the corresponding head in April. In the latter part of September, when a recovery of artesian head caused by a marked decrease in the amount of water used for irrigation normally occurs, 7 inches of rainfall was recorded. This combination of favorable influences brought about a very pronounced increase in head, which was continued at a lessening rate until by the latter part of December the artesian head had reached a higher stage than any recorded since 1928. The maximum head recorded at the Artesia well exceeded by 7.08 feet the maximum head previously recorded since the installation of the continuous water-stage recorder in 1931. The maximum head at the Orchard Park well exceeded the former maximum head noted since the installation of the recorder in 1925 by 5.80 feet. The maximum head at the Berrendo well, however, was 0.62 foot less than the maximum head previously recorded in 1926.

Records of artesian head in 1941 for the 6 wells equipped with continuous water-stage recorders are given in the following tables.

Berrendo well. SW¼SW¼ sec. 9, T. 10 S., R. 24 E. (Water-Supply Paper 777, p. 112). Beginning of record: June 1926. Extremes: Highest mean annual water level, 3,571.7 feet (1927). 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 annual artesian head, in feet above sea level, 1941

Month	Water level	Month	Water level	Month	Water level
Jan.	3,565.3	June	3,567.9	Oct.	3,571.5
Feb.	3,565.2	July	3,566.1	Nov.	3,572.8
Mar.	3,564.8	Aug.	3,565.1	Dec.	3,573.5
Apr.	3,562.4	Sept.	3,567.9	Annual	3,567.5
May	3,566.9				

Berrendo-Smith well. NE¼NW¼NE¼ sec. 21, T. 10 S., R. 24 E. (Water-Supply Paper 911, p. 153). Beginning of record: June 1940. Extremes: Highest mean monthly water level, 3,573.6 feet (December 1941). Lowest mean monthly water level, 3,557.9 feet (August 1940).

Mean monthly and annual artesian head, in feet above sea level, 1941

Jan.	3,564.5	June	3,566.1	Oct.	3,570.9
Feb.	3,563.8	July	3,563.9	Nov.	3,572.8
Mar.	3,563.4	Aug.	3,563.2	Dec.	3,573.6
Apr.	3,560.5	Sept.	3,566.7	Annual	3,566.2
May	3,565.2				

Mountain View well. NE¼SF¼NF¼ sec. 29, T. 11 S., R. 24 E. (Water-Supply Paper 911, p. 153). Beginning of record: July 1940. Extremes: Highest mean monthly water level, 3,573.1 feet (December 1941). Lowest mean monthly water level, 3,553.4 feet (August 1940).

Mountain View well.--Continued.

Mean monthly and annual artesian head, in feet above sea level, 1941

Month	Water level	Month	Water level	Month	Water level
Jan.	3,562.3	June	3,563.7	Oct.	3,569.6
Feb.	3,561.5	July	3,562.1	Nov.	3,572.0
Mar.	3,560.8	Aug.	3,561.2	Dec.	3,573.1
Apr.	3,557.4	Sept.	3,564.4	Annual	3,564.2
May	3,561.9				

Orchard Park well. NW¼NW¼ sec. 23, T. 12 S., R. 25 E. (Water-Supply Paper 777, p. 112). Beginning of record: August 1925. Extremes: Highest mean annual water level, 3,527.6 feet (1941). Lowest mean annual water level, 3,516.1 feet (1940). Highest mean monthly water level, 3,543.7 feet (December 1941). Lowest mean monthly water level, 3,501.7 feet (August 1940).

Mean monthly and annual artesian head, in feet above sea level, 1941

Jan.	3,526.1	June	3,527.9	Oct.	3,540.4
Feb.	3,523.0	July	3,525.0	Nov.	3,542.7
Mar.	3,521.5	Aug.	3,517.4	Dec.	3,543.7
Apr.	3,509.6	Sept.	3,529.7	Annual	3,527.6
May	3,524.3				

Greenfield well. NW¼NW¼NE¼ sec. 27, T. 13 S., R. 25 E. (Water-Supply Paper 911, p. 154). Beginning of record: May 1940. Extremes: Highest mean monthly water level, 3,534.9 feet (December 1941). Lowest mean monthly water level, 3,485 feet (August 1940).

Mean monthly and annual artesian head, in feet above sea level, 1941

Jan.	3,516.7	June	a 3,516.8	Oct.	3,531.8
Feb.	3,513.3	July	3,515.1	Nov.	3,534.5
Mar.	3,511.0	Aug.	3,507.4	Dec.	3,534.9
Apr.	3,495.4	Sept.	3,519.7	Annual	3,517.5
May	a 3,513.0				

Artesia well. SW¼SW¼ sec. 5, T. 18 S., R. 26 E. (Water-Supply Paper 777, p. 113). Beginning of record: April 1931. Extremes: Highest mean annual water level, 3,384.1 feet (1932). Lowest mean annual water level, 3,376.0 feet (1940). Highest mean monthly water level, 3,399.1 feet (December 1941). Lowest mean monthly water level, 3,365.0 feet (August 1940).

Mean monthly and annual artesian head, in feet above sea level, 1941

Jan.	3,381.0	June	3,385.9	Oct.	3,392.1
Feb	3,378.4	July	3,378.1	Nov.	3,396.4
Mar.	3,378.7	Aug.	3,371.9	Dec.	3,399.1
Apr.	3,372.8	Sept.	3,383.5	Annual	3,383.5
May	3,384.0				

Water levels in the artesian intake area

Beginning in May 1940, monthly measurements of water level were made in 6 wells near the eastern edge of the principal intake area for the Roswell artesian basin. Measurements of water level made in 1927 in four of these wells are given in Water-Supply Paper 639. Because of the abnormally large amount of precipitation received in 1941, the water levels in these wells averaged about 8 feet higher at the end of 1941 than at the beginning of the year. Indications are that when the maximum stages are reached, sometime in the spring of 1942, they will approach very closely the levels of 1927.

All the data pertinent to these wells are given in the following tables.

a Estimated.

R. H. Rosenberg well. NE¼NE¼ sec. 30, T. 10 S., R. 23 E. (Water-Supply Paper 639, p. 355, well No. 1648). Measuring point, top of casing, 1.2 feet above land-surface datum. No equipment.

Water level, in feet below land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
Apr. 19, 1940	247.6	Nov. 5, 1940	249.85	June 6, 1941	247.12
May 14	248.94	Dec. 9	248.97	July 15	245.58
June 5	248.81	Jan. 7, 1941	248.65	Aug. 15	245.72
26	249.05	Feb. 12	248.32	Sept. 8	245.58
Aug. 2	249.50	Mar. 3	248.48	Oct. 14	243.84
Sept. 6	250.02	31	248.44	Nov. 17	241.21
Oct. 7	250.19	May 12	248.61	Dec. 8	240.38

J. Herbst well. NW¼SW¼ sec. 5, T. 12 S., R. 23 E. (Water-Supply Paper 639, p. 358, well No. 1684). Measuring point, top of casing, 0.3 foot above land-surface datum. Equipped with windmill.

Water level, in feet below land-surface datum, 1940-41

Apr. 23, 1940	a242.9	Jan. 7, 1941	243.33	July 11, 1941	235.47
June 26	243.43	Feb. 12	b243.11	Aug. 15	234.45
Sept. 6	b244.42	Mar. 3	243.30	Sept. 8	233.53
Oct. 7	b244.64	31	243.32	Oct. 14	b231.48
Nov. 5	244.38	May 12	243.25	Nov. 17	c228.75
Dec. 9	243.69	June 5	239.68	Dec. 8	c228.98

Diamond A Cattle Co. well. SE¼SW¼ sec. 8, T. 14 S., R. 23 E. (Water-Supply Paper 639, p. 361, well No. 1728). Measuring point, top of casing, 1.0 foot above land-surface datum. Equipped with windmill.

Water level, in feet below land-surface datum, 1940-41

Apr. 25, 1940	a269.3	Jan. 7, 1941	270.01	July 11, 1941	267.71
June 26	b269.82	Feb. 12	269.78	Aug. 15	b267.22
Aug. 2	270.22	Mar. 3	269.94	Sept. 8	266.70
Sept. 6	b270.68	31	269.92	Oct. 14	b264.45
Oct. 7	b270.92	May 12	269.92	Nov. 17	b262.55
Nov. 5	270.79	June 5	268.65	Dec. 8	261.81
Dec. 9	270.22				

D. W. Runyan well. SW¼NE¼SW¼ sec. 15, T. 16 S., R. 23 E. Abandoned oil test, depth 1,485 feet. Measuring point, top of casing, 0.7 foot above land-surface datum. No equipment.

Water level, in feet below land-surface datum, 1940-41

May 25, 1940	225.22	Jan. 1, 1941	225.70	July 11, 1941	225.35
June 26	225.50	Feb. 12	225.68	Aug. 18	224.77
Aug. 2	226.00	Mar. 3	225.98	Sept. 9	224.50
Sept. 6	226.33	31	225.91	Oct. 14	221.78
Oct. 7	226.13	May 13	225.81	Nov. 17	220.08
Nov. 5	225.86	June 5	225.04	Dec. 8	219.29
Dec. 9	225.58				

Fite Community well. NE¼NE¼SE¼ sec. 4, T. 18 S., R. 23 E. Abandoned oil test, depth 1,100 feet. Measuring point, top of casing, 3.0 feet above land-surface datum. No equipment.

Water level, in feet below land-surface datum, 1940-41

May 21, 1940	411.2	Jan. 7, 1941	411.76	July 11, 1941	411.30
June 26	411.30	Feb. 12	411.40	Aug. 15	410.74
Aug. 2	411.55	Mar. 3	411.72	Sept. 9	410.05
Sept. 6	411.82	31	411.72	Oct. 14	408.53
Oct. 7	411.74	May 12	411.73	Nov. 17	402.80
Nov. 5	411.91	June 5	411.54	Dec. 8	398.89
Dec. 9	411.43				

a Windmill pumping intermittently.
b Windmill shut down 10 minutes prior to measurement.
c Windmill shut down 20 minutes prior to measurement.

C. R. Coffin well. NW¼NW¼ sec. 27, T. 19 S., R. 23 E. (Water-Supply Paper 639, pp. 205, 254, 365; well No. 1771). Measuring point, top of casing, 0.4 foot above land-surface datum. Equipped with pump jack.

Water level, in feet below land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
May 24, 1940	377.63	Feb. 12, 1941	379.14	July 11, 1941	378.40
Sept. 6	378.10	Mar. 3	379.53	Aug. 15	376.42
Oct. 7	378.63	31	379.70	Sept. 8	375.41
Nov. 5	379.03	May 12	379.39	Nov. 17	371.27
Dec. 9	378.86	June 5	379.71	Dec. 8	370.51
Jan. 7, 1941	379.30				

Shallow water

The investigation of the shallow ground-water resources of the Roswell basin, in Chaves and Eddy Counties, N. Mex., begun in 1937, was continued through 1941 by the United States Geological Survey in financial cooperation with the State engineer.

An average of 11 measurements of water level were made in each of 37 observation wells distributed over the basin. An additional five wells were equipped with weekly recorders to provide a continuous record of the fluctuations of shallow-water levels. A study of the hydrographs for these observation wells shows them to be alike in one respect, namely, that in all instances the water levels at the end of the year were higher than corresponding levels at the beginning of the year. The rise of water levels ranged from somewhat less than 3 feet to more than 18 feet, the latter rise occurring in well 11.24.28.113. A large part of this rise was probably caused by the downward percolation of flood waters from the Hondo River, which on two occasions spread over large areas in this portion of the basin.

The hydrographs further indicate that considerable recharge to the shallow ground-water reservoir is brought about by direct downward percolation of water from heavy rains. After the heavy rains in the latter part of April and May, the shallow-water levels in most instances showed marked rises until, by June, they were several feet higher than their corresponding levels the previous January. The levels in July generally were not as high as those in June, and in August, because of the rather heavy draft caused by pumping for irrigation, most of the levels were even lower. The September measurements were made in the early part of the month. Therefore, the pronounced rise in water levels, caused in part by a decrease in irrigation

draft, which normally occurs at this time of the year, and in part by the large amount of precipitation that fell in the latter part of September, was first reflected in the October measurements. The water-level measurements made in November and December--both months of below-normal precipitation--were not, for the most part, significantly higher than the October measurements.

In order to determine the change in water level between January and February of 1941 and the corresponding months of 1942, measurements of water level were made in 472 wells and 14 auger holes. Where possible, each of these water-level measurements was then compared with a corresponding measurement made the previous year. To show more clearly the areal distribution and the amount of these changes, a change-in-water-level map was drawn. (See figs. 12 and 13).

This map is notably different from similar maps prepared each year since 1938, especially as regards the nature of the change in water-level. Instead of showing areas of equal decline, as in previous years, the map for the current year shows areas of equal rise of water level. The areas of heavy shallow-water development, which normally show the greatest decline, this year show the greatest rise, that is, except for limited areas where other pronounced rises were caused by strictly local conditions, such as the building up of ground-water mounds along the influent stretches of streams having permeable or semi-permeable beds, or underlying areas extensively covered by flood waters. The building of a ground-water mound by the flood waters was probably the principal reason for the marked rise in water levels in T. 10 S., R. 24 E.

Evidences of rises caused by the building up of ground-water mounds beneath the influent stretches of intermittent streams having permeable or semi-permeable beds were noted along Zuber Hollow Draw in T. 13 S., along Eagle Draw in T. 17 S., and along the Rio Peneasco in T. 18 S. The average rise for the above mentioned areas was probably somewhat in excess of 10 feet, whereas the rise for those areas of the basin where the ground-water levels normally reflect moderate changes in irrigation draft or precipitation averaged about 7 feet.

Although the water levels in the basin as a whole were higher than they were the previous year, there were two regions in which the water

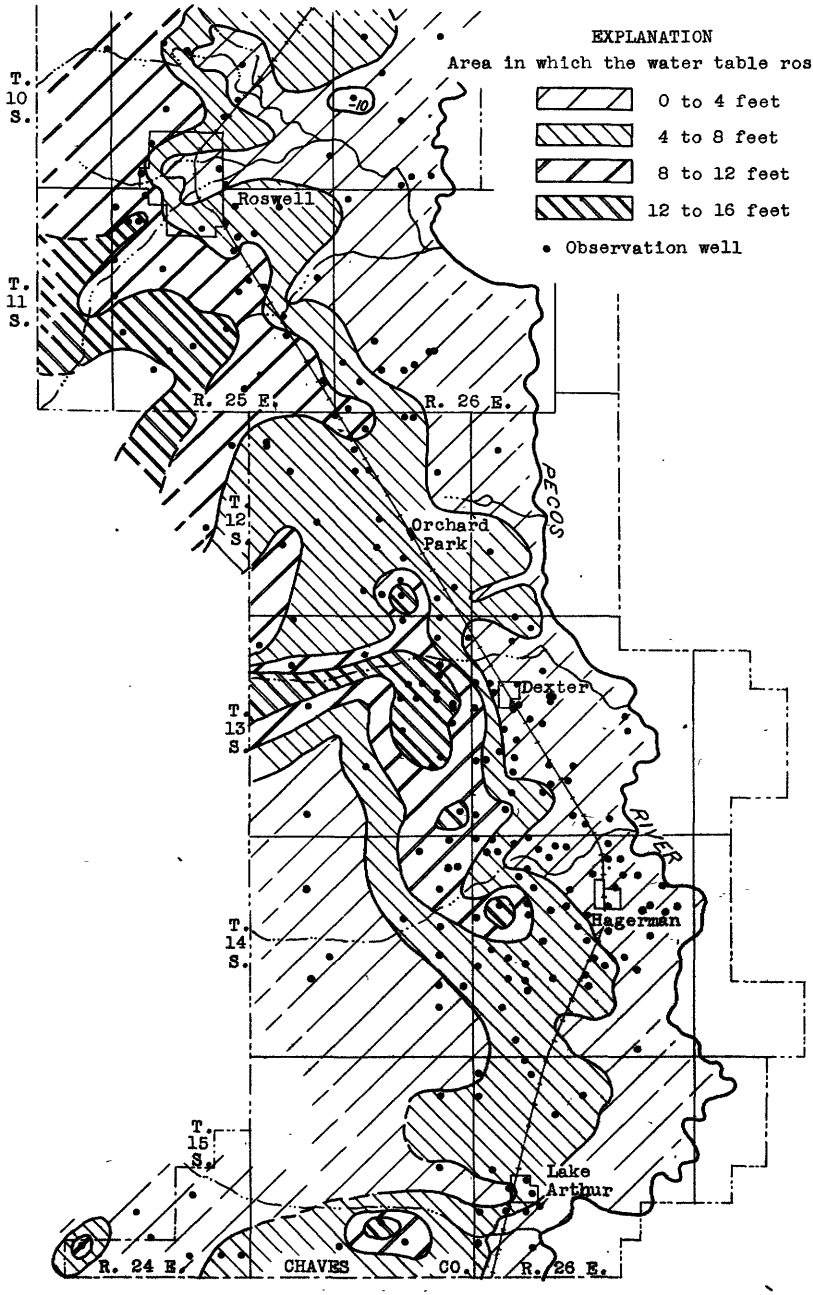

Figure 12.--Map of the northern part of the Roswell artesian basin (Chaves County), N. Mex., showing change in ground-water level from January 1941 to January 1942.

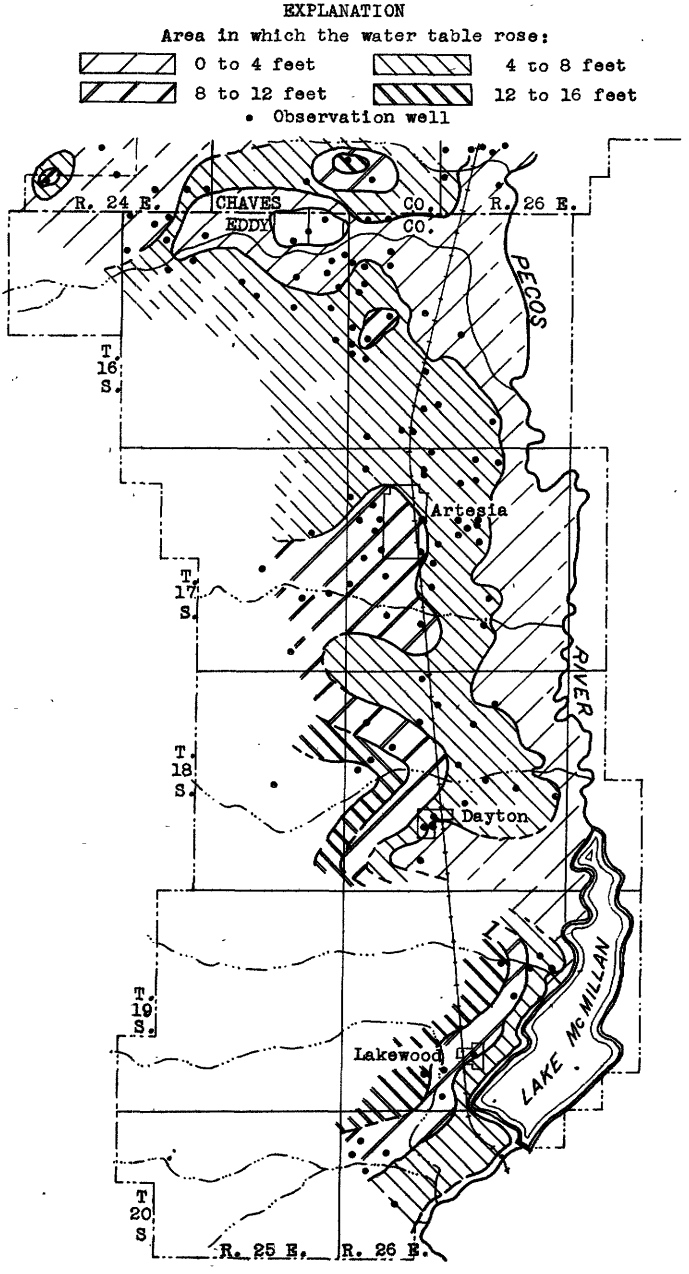

Figure 13.--Map of the southern part of the Roswell artesian basin (Eddy County), N. Mex., showing change in ground-water level from January 1941 to January 1942.

levels were lower. One region, having an area of about 2 square miles and lying mostly in the northeast corner of T. 16 S., R. 25 E., had a maximum decline of 0.56 foot, and the other, in the vicinity of well 10.25.19.411, had a decline of 10.03 feet. This large decline, fortunately over a very limited area, was probably caused by the plugging of three badly leaking artesian wells less than half a mile away, thus shutting off a local source of recharge.

In order to show more clearly the significance of the rises that were observed during the current year, a second map, showing the changes in water level between January and February of 1938 and January and February of 1942, was drawn. (See accompanying illustrations.) Although the data for drawing this map were somewhat more limited than the data used for drawing the map showing the changes in water level between January and February of 1941 and the corresponding months of 1942, nevertheless they were complete enough to show some important trends.

The water levels in Tps. 9 and 10 S., Rs. 24 and 25 E., were higher than in 1938, and indications are that they roughly equaled the winter levels of 1927. The extensive flooding of this portion of the basin by water from the Hondo River is partly responsible for this encouraging condition. A large area in which the 1942 levels were lower than the 1938 levels lies in Tps. 13 and 14 S., R. 25 E., and extends northward almost 4 miles along the north-south axis of T. 12 S., R. 25 E. The portion of the region of decline in T. 12 S., R. 25 E. has an area of about 11 square miles, 3 square miles of which had a decline of about 5 feet. In T. 13 S., R. 25 E. the region of decline was roughly symmetrical about the north-south axis of the township, and had an area of about 10 square miles, 3 square miles of which had a decline of more than 5 feet. An area of 18 square miles, mostly in the east half of T. 14 S., R. 25 E., and an area of 15 square miles, mostly in the west half of T. 14 S., R. 26 E., also showed a decline of water levels. This region of decline covered practically all the area of heavy shallow-water development in this tier of townships and included an area of 5 square miles about 3 miles southwest of Hagerman, where the declines ranged from 4.4 to 6.2 feet.

The thing that adds significance to these declines is that they occur for the most part in the areas of maximum decline from 1927 to 1938. To

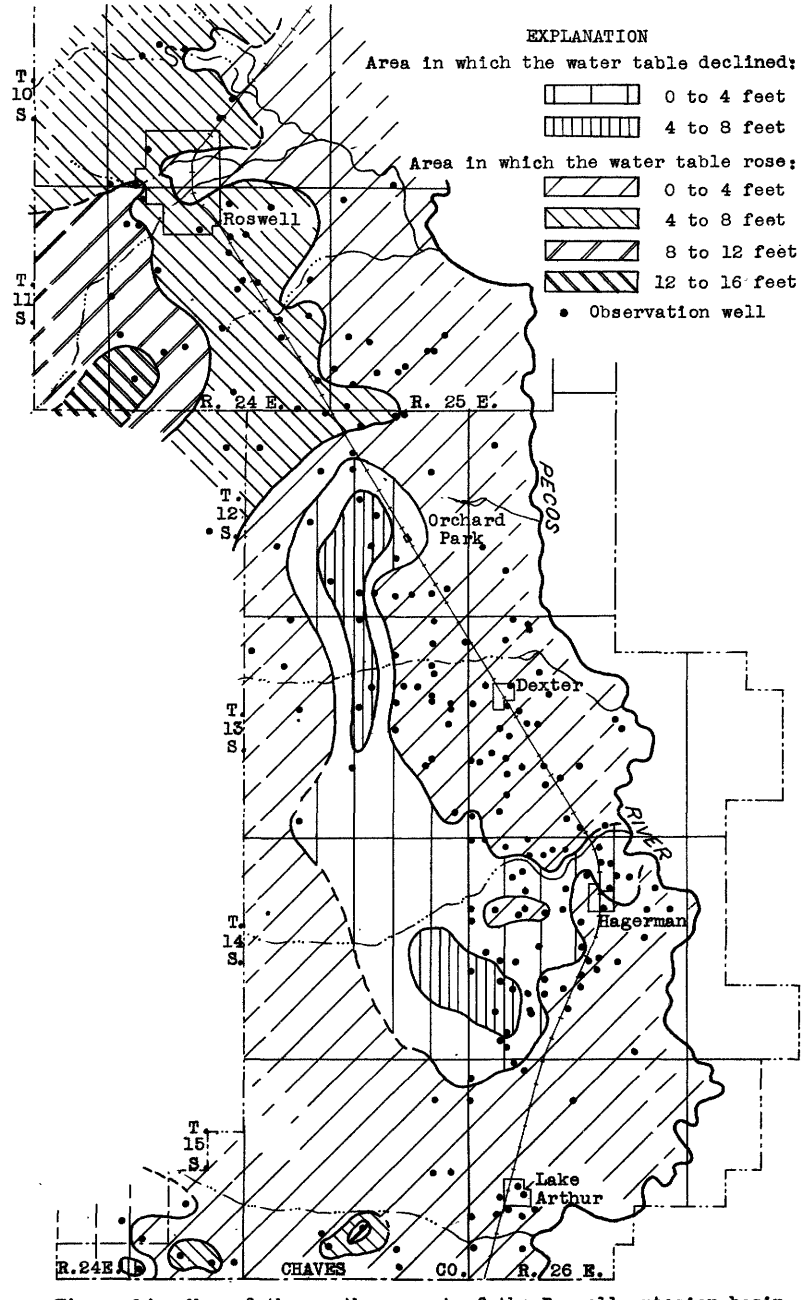

Figure 14.--Map of the northern part of the Roswell artesian basin (Chaves County), N. Mex., showing change in ground-water level from January 1938 to January 1942.

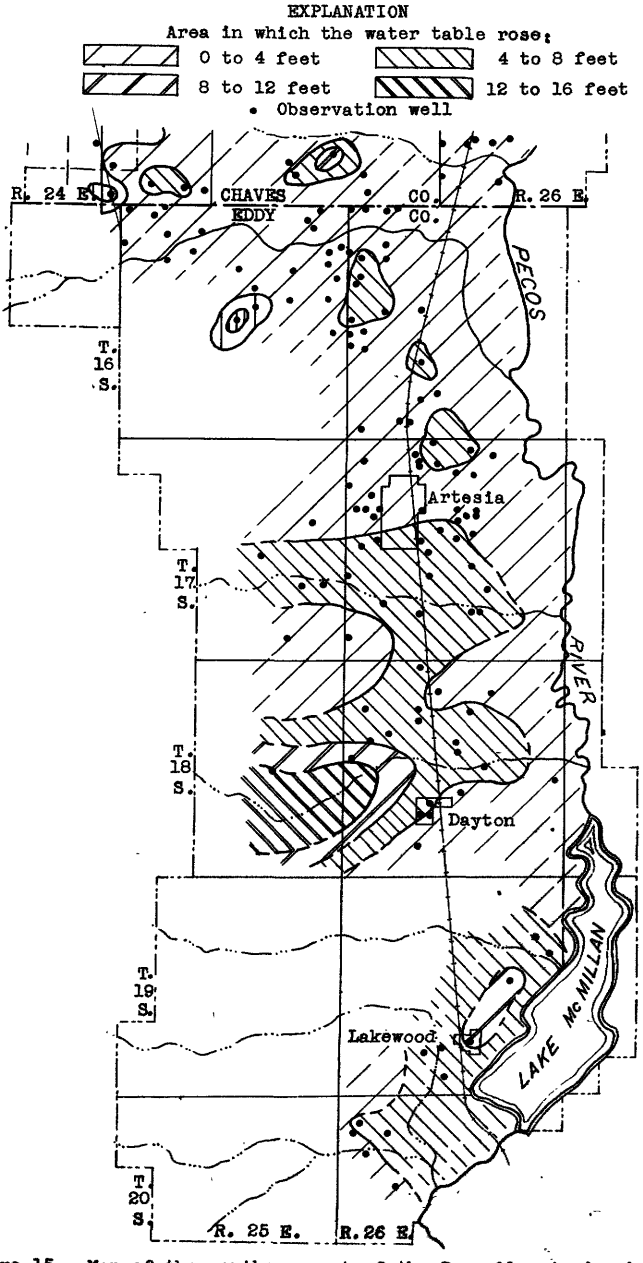

Figure 15.--Map of the southern part of the Roswell artesian basin (Eddy County), New Mexico, showing change in ground-water level from January 1938 to January 1942.

cite an extreme case, the small area southwest of Hagerman mentioned above lies within the area of greatest decline from 1927 to 1938, so that the levels in January and February of 1942 in this area were probably 20 to 25 feet below corresponding levels in 1927. No other declines south of Tps. 14 S., Rs. 25 and 26 E. were observed.

In the developed areas in T. 16 S., the rise probably averaged about 2 feet, in T. 17 S., about 3½ feet, and in T. 18 S., about 5 feet. The average rise of water level in 5 wells in T. 19 S., R. 26 E. was 7.4 feet, and in 5 wells in T. 20 S., R. 26 E., was 3.9 feet.

A rough comparison of the measurements made in the first two months of 1942 with measurements made in 1927 indicates that in the developed areas of T. 16 S., the 1942 levels are from 5 to 10 feet lower, in T. 17 S., as much as 5 feet lower, and in T. 18 S., about the same or slightly higher.

Chaves County

10.24.17.122. Howard. (Water-Supply Paper 836, p. 385.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	33.67	May 15	32.90	Aug. 12	35.95	Nov. 14	26.04
Mar. 6	34.10	June 11	30.30	Sept.10	31.40	Dec. 9	25.22
Apr. 5	35.90	July 15	24.49	Oct. 16	27.68		

10.24.28.122. Gale M. Nellis. Domestic well. Measuring point, top of wooden pipe clamp, 1.00 foot above land-surface datum, 0.30 foot above wooden platform. Equipped with windmill.

Water level, in feet below land-surface datum, 1941

Mar. 6	31.35	June 11	23.51	Sept.10	21.81	Dec. 9	22.40
Apr. 5	27.00	July 15	24.34	Oct. 16	21.86		
May 15	26.19	Aug. 12	b 30.94	Nov. 14	22.20		

10.24.31.444. Star Tourist Camp. (Water-Supply Paper 845, p. 285.)

Water level, in feet below land-surface datum, 1941

Jan. 9	25.08	May 15	22.38	Aug. 12	19.37	Nov. 14	13.10
Mar. 6	25.42	June 11	19.10	Sept.10	20.10	Dec. 12	14.08
Apr. 5	24.83	July 15	18.34	Oct. 16	12.40		

11.24.10.224. C. E. Smith. (Water-Supply Paper 845, p. 286.)

Water level, in feet below land-surface datum, 1941

Jan. 9	19.59	May 15	a 20.53	Aug. 12	a 27.04	Nov. 14	11.59
Mar. 6	a 23.04	June 9	b 17.11	Sept.10	20.51	Dec. 10	11.14
Apr. 5	b 25.06	July 15	22.63	Oct. 16	13.03		

11.24.14.313b. Fairbanks Filling Station. (Water-Supply Paper 845, p. 287.)

Water level, in feet below land-surface datum, 1941

Jan. 9	38.45	May 15	39.17	Aug. 12	48.10	Nov. 14	28.66
Mar. 6	41.58	June 10	35.33	Sept.10	39.25	Dec. 9	27.85
Apr. 5	46.51	July 15	42.50	Oct. 16	30.60		

a Windmill pumping.
b Windmill pumping intermittently.

Chaves County--Continued.

11.24.28.113. Rocky Arroyo School House. (Water-Supply Paper 886, p. 389.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	69.20	May 15	a 69.77	Aug. 12	a 64.17	Nov. 14	50.78
Mar. 5	68.69	June 10	62.44	Sept.10	a 62.95	Dec. 9	54.35
Apr. 5	a 70.18	July 15	63.96	Oct. 16	58.96		

11.25.29.422. Neil Wheeler. (Water Supply Paper 845, p. 390.) Water levels, in feet below land-surface datum, 1941: Jan. 9, 8.14; Mar. 6, b/ 8.09; Apr. 5, b/6.19. Well filled with debris. Measurements discontinued.

11.25.29.444. Glenn Wheeler. (Water-Supply Paper 845, p. 390.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	8.52	May 15	6.28	Aug. 12	c 8.20	Nov. 14	4.17
Mar. 6	c 12.49	June 10	4.24	Sept.10	c 8.75	Dec. 10	4.31
Apr. 5	c 10.95	July 15	7.65	Oct. 16	4.38		

12.25.4. Lot 4. Cross Roads Filling Station. (Water-Supply Paper 886, p. 391.) Measurements discontinued.

12.25.9.422. Cumberland townsite (Welty). (Water-Supply Paper 845, p. 288.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	46.22	May 15	45.88	Aug. 12	45.72	Nov. 14	40.76
Mar. 6	45.71	June 10	45.20	Sept.10	45.46	Dec. 9	40.71
Apr. 5	45.69	July 15	45.32	Oct. 16	38.64		

12.25.23.143. M. L. Kuykendall. Stock well, diameter 8 inches. Measuring point, top of casing, 0.70 foot above land-surface datum. Equipped with windmill and pump jack.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 6	51.29	June 10	a 52.10	Sept.10	52.25	Dec. 9	c 47.72
Apr. 5	51.47	July 15	51.91	Oct. 16	d 49.45		
May 15	52.85	Aug. 12	51.35	Nov. 14	47.97		

12.25.35.311a. A. C. Stone. (Water-Supply Paper 845, p. 290.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	46.81	May 15	53.94	Aug. 12	53.87	Nov. 14	33.43
Mar. 6	47.81	June 10	43.07	Sept.10	44.08	Dec. 9	33.64
Apr. 5	e 69.18	July 15	43.24	Oct. 16	38.36		

13.25.1.422. O. B. Berry. (Water-Supply Paper 845, p. 291.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	10.49	May 15	6.55	Aug. 12	6.77	Nov. 14	5.57
Mar. 6	7.70	June 10	6.02	Sept.10	6.79	Dec. 9	5.95
Apr. 5	7.82	July 15	5.64	Oct. 16	5.34		

13.25.11.433. Beck. (Water-Supply Paper 886, p. 394.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 9	48.00	May 13	56.10	Aug. 12	53.18	Nov. 12	35.07
Mar. 6	48.67	June 10	49.10	Sept.10	47.52	Dec. 9	33.78
Apr. 5	53.75	July 15	47.79	Oct. 15	37.58		

a Windmill pumping.
b Irrigation well ¼ mile south pumping.
c Irrigation well 600 feet east pumping.
d Windmill pumping intermittently.
e Irrigation well 300 feet east pumping.

Chaves County--Continued.

13.26.7.333. Howard Amason. (Water-Supply Paper 886, p. 397.)

Highest daily water level, in feet below land-surface datum, 1941

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.48	14.00	13.37	13.07	14.23	6.65	9.73	8.54	8.73	4.45	4.77	5.68
2	14.47	13.97	13.32	13.18	14.15	6.72	9.73	8.71	8.74	4.45	4.70	5.70
3	14.46	13.96	13.27	13.38	14.00	6.88	9.74	8.92	8.76	4.45	4.69	5.75
4	14.45	13.93	13.22	13.57	13.55	7.07	9.76	9.13	8.78	4.45	4.70	5.75
5	14.43	13.86	13.13	13.80	13.28	7.18	9.78	9.53	8.97	4.45	4.71	5.76
6	14.39	13.79	13.06	13.93	13.20	7.25	9.78	9.82	9.22	4.47	4.75	5.80
7	14.37	13.77	13.06	14.03	13.05	7.30	9.31	10.05	9.45	4.53	4.77	5.87
8	14.35	13.73	13.05	14.05	12.80	7.33	8.93	10.27	9.67	4.61	4.83	5.88
9	14.33	13.70	12.96	14.10	12.61	7.37	8.75	10.43	9.58	4.68	4.90	5.90
10	14.31	13.68	12.90	14.00	12.62	7.43	8.63	10.61	9.50	4.76	4.92	5.90
11	14.28	13.66	12.85	14.00	12.55	7.50	8.59	10.76	9.47	4.85	4.95	5.90
12	14.23	13.62	12.84	14.15	12.35	7.57	8.57	10.90	9.44	4.90	5.00	5.92
13	14.20	13.66	12.88	14.30	12.20	7.70	8.56	10.90	9.44	4.94	5.02	5.92
14	14.15	13.72	12.86	14.40	12.10	7.85	8.43	10.25	9.46	4.97	5.04	5.95
15	14.10	13.74	12.80	14.50	12.02	7.97	8.27	9.75	9.50	5.04	5.09	5.98
16	14.09	13.69	12.76	14.62	11.98	8.10	8.17	9.44	9.52	5.12	5.12	6.00
17	14.09	13.66	12.75	14.75	11.95	8.20	8.17	9.16	9.58	5.17	5.14	6.01
18	14.12	13.65	12.69	14.77	11.87	8.27	8.25	8.97	9.63	5.19	5.16	6.01
19	14.13	13.65	12.58	14.77	11.82	8.33	8.22	8.95	9.64	5.21	5.19	6.04
20	14.11	13.65	12.51	14.79	11.83	8.57	8.20	8.95	9.59	5.25	5.28	6.08
21	14.10	13.67	12.52	14.83	11.91	8.87	8.20	8.99	9.35	5.30	5.36	6.10
22	14.10	13.70	12.56	14.89	10.92	9.20	8.20	9.05	8.15	5.34	5.38	6.09
23	14.09	13.68	12.47	14.97	9.45	9.46	8.16	9.05	7.50	5.42	5.40	6.09
24	14.09	13.64	12.39	15.02	8.22	9.70	8.15	8.97	5.75	5.45	5.49	6.11
25	14.09	13.58	12.39	15.02	7.33	9.85	8.15	8.90	5.42	5.31	5.54	6.11
26	14.08	13.47	12.57	14.78	6.73	9.98	8.15	8.84	5.29	5.19	5.55	6.15
27	14.09	13.44	12.83	14.60	6.48	9.98	8.16	8.81	5.23	5.18	5.59	6.22
28	14.09	13.40	13.00	14.52	6.45	9.95	8.19	8.80	5.15	5.18	5.62	6.25
29	14.08	.....	12.96	14.52	6.48	9.85	8.23	8.77	4.82	5.17	5.64	6.30
30	14.05	.....	12.97	14.32	6.54	9.77	8.29	8.74	4.57	5.10	5.65	6.29
31	14.03	.....	13.03	.....	6.60	.....	8.39	8.73	.....	4.92	.....	6.30

13.26.8.422. Jake Mills. (Water-Supply Paper 845, p. 291.) Measurements discontinued after Oct. 16, 1941.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	a 15.68	May 13	a 13.50	July 15	12.48	Sept.10	13.19
Mar. 6	a 15.82	June 10	10.59	Aug. 12	13.43	Oct. 16	11.95
Apr. 5	a 14.99						

13.26.17.133. Judge Melhop. (Water-Supply Paper 845, p. 291.) Well flowed continuously in 1941.

13.26.17.321. Leo Nowak. (Water-Supply Paper 845, p. 292.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	10.98	May 13	7.12	July 14	7.22	Sept.10	a 25.65
Mar. 6	8.29	June 9	8.19	Aug. 12	9.18	Nov. 12	10.25
Apr. 5	7.95						

13.26.28.121. George Grassie. (Water-Supply Paper 886, p. 399.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	a 20.79	May 13	16.29	Aug. 12	a 20.72	Oct. 16	a 17.94
Mar. 6	17.88	June 10	a 17.21	Sept.10	15.09	Dec. 9	13.35
Apr. 5	13.99	July 15	a 20.22				

a Pumping.

Chaves County--Continued.

14.25.1.112. Gentry. (Water-Supply Paper 845, p. 292.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	42.09	May 14	a 43.87	Aug. 11	39.55	Nov. 14	31.29
Mar. 5	a 40.76	June 9	39.45	Sept.10	b 41.20	Dec. 9	30.62
Apr. 5	a 42.05	July 15	39.22	Oct. 15	32.72		

14.25.1.344. Wm. Langnegger. (Water-Supply Paper 845, p. 292.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	53.82	May 14	a 55.37	Aug. 11	c 57.45	Nov. 14	44.51
Mar. 5	(a)	June 9	51.18	Sept.11	ac 57.04	Dec. 9	43.96
Apr. 5	c 58.38	July 15	53.11	Oct. 16	(a)		

14.25.21.131. (Water-Supply Paper 845, p. 293.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	88.83	May 13	87.99	Aug. 11	87.55	Nov. 12	84.43
Mar. 5	88.90	June 9	87.19	Sept. 9	86.82	Dec. 9	85.62
Apr. 5	88.93	July 14	87.62	Oct. 15	85.60		

14.25.25.221. John M. Norris. (Water-Supply Paper 845, p. 293.)

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	49.64	49.16	48.91	48.95	49.72	49.61	48.85	49.65	50.05	49.27	47.42	46.12
2	49.63	49.16	48.93	48.95	49.82	49.55	48.88	49.66	50.07	49.19	47.35	46.08
3	49.63	49.15	48.94	48.96	49.84	49.49	48.91	49.65	50.08	49.12	47.32	46.02
4	49.59	49.11	48.91	48.97	49.90	49.44	48.93	49.64	50.08	49.02	47.25	46.00
5	49.57	49.07	48.90	48.93	49.93	49.37	48.95	49.66	50.08	48.95	47.22	46.03
6	49.57	49.06	48.95	48.97	49.95	49.35	48.98	49.68	50.07	48.88	47.16	45.95
7	49.54	49.04	48.95	48.99	50.01	49.27	49.00	49.70	50.06	48.82	47.15	45.93
8	49.53	49.05	48.92	49.00	50.03	49.23	49.01	49.73	50.05	48.76	47.07	45.87
9	49.53	49.02	48.90	49.00	50.05	49.20	49.04	49.76	50.04	48.75	47.03	45.83
10	49.50	49.02	48.92	49.02	50.05	49.19	49.07	49.77	50.04	48.64	47.00	45.82
11	49.49	49.00	48.90	49.05	50.08	49.13	49.12	49.80	50.03	48.59	46.95	45.76
12	49.46	49.00	48.95	49.07	50.13	49.09	49.18	49.82	50.02	48.52	46.86	45.76
13	49.45	49.04	48.94	49.10	50.16	49.05	49.23	49.86	50.04	48.45	46.83	45.73
14	49.42	49.00	48.90	49.13	50.19	49.00	49.26	49.89	50.08	48.40	46.78	45.69
15	49.42	49.00	48.93	49.17	50.22	48.96	49.32	49.89	50.08	48.30	46.72	45.67
16	49.39	49.00	48.93	49.19	50.24	48.93	49.35	49.90	50.09	48.23	46.66	45.63
17	49.40	49.01	48.95	49.23	50.22	48.90	49.35	49.90	50.10	48.17	46.63	45.58
18	49.35	48.99	48.93	49.25	50.24	48.87	49.35	49.90	50.10	48.11	46.59	45.57
19	49.33	48.98	48.92	49.35	50.25	48.84	49.39	49.88	50.09	48.05	46.59	45.57
20	49.30	48.98	48.91	49.39	50.25	48.82	49.40	49.88	50.10	48.00	46.54	45.50
21	49.30	48.97	48.93	49.42	50.23	48.80	49.42	49.89	50.12	47.94	46.47	45.45
22	49.25	48.96	48.96	49.46	50.20	48.78	49.46	49.93	50.10	47.90	46.46	45.45
23	49.27	48.95	48.96	49.50	50.20	48.77	49.49	49.95	50.04	47.85	46.47	45.41
24	49.24	48.95	48.95	49.55	.....	48.75	49.48	49.98	49.98	47.79	46.40	45.38
25	49.24	48.94	48.95	49.58	.....	48.75	49.48	50.00	49.87	47.72	46.34	45.39
26	49.21	48.95	48.97	49.55	50.01	48.77	49.50	50.01	49.73	47.69	46.31	45.36
27	49.22	48.93	48.97	49.60	49.94	48.76	49.53	50.00	49.60	47.69	46.28	45.35
28	49.19	48.92	48.97	49.65	49.87	48.77	49.56	50.01	49.55	47.65	46.23	45.30
29	49.17	.....	48.93	49.70	49.78	48.80	49.60	50.04	49.45	47.58	46.20	45.27
30	49.19	.....	48.96	49.72	49.72	48.83	49.62	50.07	49.35	47.57	46.15	45.23
31	49.16	.....	48.95	.....	49.65	.....	49.62	50.07	.....	47.47	.....	45.20

a Windmill pumping.
b Irrigation well 400 feet north pumping
c Irrigation well ¼ mile west pumping.

Chaves County--Continued.

14.26.7.443. W. W. Adams. (Water-Supply Paper 845, p. 293.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	46.34	May 13	47.82	Aug. 11	40.84	Nov. 14	32.75
Mar. 5	45.02	June 9	a 46.36	Sept. 9	40.92	Dec. 9	32.65
Apr. 5	51.12	July 14	a 43.86	Oct. 16	36.27		

14.26.8.433a. Tom Ferguson. (Water-Supply Paper 845, p. 294; Water-Supply Paper 836, p. 494.) Water levels, in feet below land-surface datum, 1941: Jan. 8, 47.47; Mar. 5, 47.75; Apr. 5, pit dry.

14.26.8.433b. Town of Hagerman. (Water-Supply Paper 845, p. 294.) Measurements discontinued.

14.26.8.433c. Town of Hagerman. (Water-Supply Paper 845, p. 295.) Measurements discontinued.

14.26.12.131. W. E. Utterback. (Water-Supply Paper 845, p. 295.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	21.94	May 13	a 28.05	Aug. 12	19.84	Nov. 14	19.40
Mar. 5	21.75	June 10	a 26.81	Sept.10	a 25.38	Dec. 9	b 20.65
Apr. 5	a 24.78	July 14	22.20	Oct. 16	a 27.80		

14.26.15.322. F. H. Evans. Stock and domestic well, diameter 6 inches. Measuring point, top of casing, 1.20 feet above land-surface datum. Equipped with windmill.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 5	8.37	June 10	4.50	Sept.10	4.56	Nov. 14	3.77
Apr. 5	5.75	July 14	2.99	Oct. 16	2.68	Dec. 9	4.53
May 14	3.88	Aug. 12	a 12.79				

14.26.15.333. E. D. Menoud. (Water-Supply Paper 886, p. 405.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	c 22.53	May 13	19.12	Aug. 12	17.45	Nov. 14	14.73
Mar. 5	22.18	June 10	14.53	Sept.10	c 17.38	Dec. 9	15.53
Apr. 5	19.10	July 14	c 15.05	Oct. 16	13.61		

14.26.32.332. B. E. Spencer. (Water-Supply Paper 845, p. 295.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	39.50	May 13	40.17	Aug. 11	36.00	Nov. 12	32.14
Mar. 5	39.88	June 9	37.52	Sept. 9	35.46	Dec. 10	32.60
Apr. 5	40.04	July 14	36.42	Oct. 15	33.22		

15.25.35.111. Moss Spence. (Water-Supply Paper 845, p. 295.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	24.62	May 13	a 23.38	Aug. 11	17.79	Nov. 12	a 13.80
Mar. 5	a 22.30	June 9	a 19.48	Sept. 9	17.40	Dec. 10	15.15
Apr. 4	a 23.04	July 14	20.93	Oct. 15	a 12.48		

15.26.9.222. Harry Cowan. (Water-Supply Paper 886, p. 417.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	38.22	May 14	38.03	Aug. 11	35.35	Nov. 12	32.71
Mar. 5	38.44	June 9	35.93	Sept. 9	35.34	Dec. 10	32.86
Apr. 5	38.38	July 14	35.43	Oct. 15	33.04		

a Windmill pumping.
b Windmill shut down 10 minutes prior to measurement.
c Water flowing in irrigation ditch 50 feet south of well

Chaves County--Continued.

15.26.19.211. Lake Arthur Cemetery. Drilled irrigation well, diameter 6 inches. Measuring point, top of casing, 0.40 foot above land-surface datum. Equipped with pressure pump. Nearest pumped well 1¼ miles south.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 5	30.39	June 9	27.15	Sept. 9	28.24	Nov. 12	23.90
Apr. 5	31.84	July 14	27.15	Oct. 15	24.72	Dec. 10	23.96
May 14	31.32	Aug. 11	27.80				

In the following table are given the 1941 water-level measurements in observation wells that were measured in Chaves County in January and February. All of these wells are described in either Water-Supply Paper 886 or 911 except for a few new ones, which are described at the end of the table.

Supplemental list of observation wells in which water-level measurements were made in late winter.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
10.24.8.111		Feb. 4	43.65
10.24.15.342	Mr. Tow	4	12.99
10.24.16.133	George D. Perrine	4	28.70
10.24.18.424		4	44.50
10.24.20.344		4	46.65
10.24.22.322	H. Crile	4	19.70
10.24.27.111		4	23.09
10.24.29.333		3	41.41
10.24.30.344			a/
10.24.31.333	Mr. Williams	3	38.87
10.24.31.423		3	24.85
10.25.32.431	Henry Russell Estate		b/
10.25.32.444	Henry Russell Estate	3	c/ + .62
11.23.12.221			b/
11.24.2.322		3	9.93
11.24.3.114			b/
11.24.3.312		3	16.01
11.24.3.333		3	26.30
11.24.6.224		3	27.82
11.24.6.311		3	51.87
11.24.6.433		3	41.29
11.24.6.444	Morrie Huff	3	42.06
11.24.7.333	Mrs. Pearl Baker	3	71.52
11.24.7.444			a/
11.24.8.122		3	b/
11.24.9.133	P. Caman		a/
11.24.9.211		3	34.83
11.24.10.114	Claude Hobbs	3	26.60
11.24.10.321		3	27.87
11.24.11.214	H. D. Jeffcoat		b/
11.24.13.144	Frank Peters	3	14.43
11.24.14.313a	Mr. Fairbanks		a/
11.24.15.421	Mrs. M. L. Barnett	3	41.49
11.24.15.431	M. L. and S. Barnett	3	42.80
11.24.16.111			a/
11.24.17.121	D. H. Johnson	Jan. 31	60.25
11.24.18.333	G. V. Coker	31	90.84
11.24.19.222			a/
11.24.19.343		31	99.38
11.24.22.333	John Tweedy	31	52.26
11.24.23.411a	Cornell University Ranch	Feb. 1	17.34

a Measurements discontinued.
b Not measured.
c Above land-surface datum.

Chaves County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter--Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
11.24.23.433	Tweedy Gin	Feb. 1	19.15
11.24.24.144			b/
11.24.27.231	Mr. Copeland	Jan. 31	48.67
11.24.29.411	Mrs. J. S. Singleton	31	85.65
11.24.31.221		31	98.62
11.24.34.411b		31	51.63
11.24.36.211	Russell Smith	Feb. 1	24.18
11.24.36.133	Wiley Grizzle	Jan. 31	35.68
11.25.6.123	Henry Russell Estate	Feb. 3	17.12
11.25.6.421			a/
11.25.6.421a		Feb. 1	7.13
11.25.22.333	Mrs. Whitney	1	7.59
11.25.28.234	E. Whitney	1	8.10
11.25.28.244	R. Whitney	1	7.62
11.25.29.111	Oasis Gin	1	7.88
11.25.29.343	Albert Hobson	1	8.33
11.25.30.333	J. P. White Co.	1	15.98
11.25.31.223		1	14.58
11.25.31.433a	Albert Watson	1	29.99
11.25.31.433b	Albert Watson	1	30.33
11.25.32.333	George Bogart		b/
12.24.12.411	Mr. Little	Jan. 31	60.87
12.24.23.441a	Monte Goodin		b/
12.24.23.441b	Monte Goodin	28	84.94
12.25.2. Lot 3	B. F. Heine	Feb. 1	15.83
12.25.2. Lot 4	E. R. Duval	1	13.73
12.25.4. Lot 4	Cross Roads Station	1	35.46
12.25.3.334	J. W. Young	1	29.43
12.25.7.144a		Jan. 31	44.87
12.25.7.144b		31	45.90
12.25.13.111		31	15.20
12.25.15.112		31	46.01
12.25.15.333	G. M. Sterrett		b/
12.25.16.111	Ernest Nelson	31	35.98
12.25.16.222		31	49.80
12.25.20.422			a/
12.25.22.231	W. T. Clardy	30	61.68
12.25.26.311	C. E. Smith	30	51.05
12.25.27.211	W. T. Clardy	30	58.35
12.25.30.222		28	81.50
12.25.32.222			a/
12.25.33.112	W. A. McLeod		b/
12.25.33.211		30	62.40
12.25.34.311a	W. T. Clardy	9	56.18
12.25.34.311b	W. T. Clardy		b/
12.25.34.411		30	50.22
12.25.35.111		30	42.52
12.25.35.311b	A. C. Stone	30	46.88
12.25.35.411	A. C. Stone		b/
12.25.36.121	O. B. Berry		b/
12.25.36.133	H. Kuykendall	30	31.75
12.25.36.142	O. B. Berry	31	21.43
12.25.36.313	M. H. Kuykendall	30	27.69
12.26.7.421	Cecil Johnson		c/
12.26.29.333		Feb. 1	15.45
12.26.30.213	S. O. Wilburn	1	18.25
13.25.1.111	M. L. Kuykendall	Jan. 30	20.48
13.25.1.331	Will Schaaphok	28	17.61
15.25.3.111	Mr. Stanley	30	55.11

a Measurements discontinued.
b Not measured.
c Flowing.

Chaves County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter --Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
13.25.5.111		Jan. 28	65.30
13.25.6.333		28	80.47
13.25.8.133		28	70.33
13.25.10.344	Mr. Reinecke		b/
13.25.11.111	Mrs. Belle Hurst	27	47.33
13.25.11.343	J. E. Brockman	27	55.50
13.25.12.133	M. E. Colclazier	28	28.90
13.25.12.311	M. E. Colclazier	28	27.99
13.25.13.113	W. F. Kerr	27	43.14
13.25.13.131		27	43.45
13.25.13.233a	W. F. Kerr	27	34.25
13.25.13.233b	W. F. Kerr	27	35.04
13.25.13.311	Learue Martin		b/
13.25.13.433	Mrs. J. W. Wier	27	37.32
13.25.14.131	Durand and McNiel	27	61.57
13.25.14.231	William Zappe	27	54.61
13.25.15.311	Roswell Insurance and Surety Company	28	76.17
13.25.15.422			b/
13.25.17.411		28	68.72
13.25.23.111	I. F. Wortman	24	65.17
13.25.24.333	Hal Bogle	25	53.52
13.25.26.222		25	53.72
13.25.27.111	Hal Bogle	25	78.75
13.25.27.211b	Hal Bogle		a/
13.25.32.411		25	77.82
13.25.34.433a	O. B. Berry		b/
13.25.35.311	W. F. Kerr	23	70.17
13.25.36.421a	R. M. Ware		b/
13.25.36.421b	R. M. Ware		b/
13.25.36.421c	R. M. Ware	23	52.01
13.26.5.111	Robert H. Aston	Feb. 1	14.17
13.26.5.231a	Mr. Sterrett	1	17.79
13.26.5.231b	Mr. Sterrett	1	13.53
13.26.5.331	W. W. Harris	1	15.97
13.26.7.433		Jan. 28	11.80
13.26.8.332		Feb. 1	6.08
13.26.14.331	Zuber Hollow Corporation	1	2.62
13.26.16.114a	Fish Hatchery	Jan. 31	10.92
13.26.16.114b	Fish Hatchery	31	7.27
13.26.16.114c	Fish Hatchery	31	7.83
13.26.17.443	H. Vandenbout	30	12.35
13.26.17.444	H. Vandenbout	27	12.75
13.26.18.211		28	11.50
13.26.18.311	W. F. Kerr	27	21.95
13.26.19.222	A. T. Stone	28	20.70
13.26.19.333	Hal Bogle	27	30.35
13.26.19.343		27	24.88
13.26.19.432	George Weaver	27	12.60
13.26.20.113		28	20.06
13.26.20.333	Mrs. Lockhead	25	12.76
13.26.23.111	Zuber Hollow Corporation	Feb. 1	5.25
13.26.28.111		Jan. 27	12.84
13.26.28.221	Hal Bogle	27	10.84
13.26.28.233		27	11.22
13.26.28.311	Mrs. C. L. Appleby	27	15.97
13.26.29.111	J. H. Reid	25	11.57
13.26.29.113	J. H. Reid	25	16.61

a Measurements discontinued.
b Not measured.
c Above land-surface datum.

Chaves County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter --Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
13.26.29.211			b/
13.26.29.333	M. Y. Monicle	Jan. 25	15.79
13.26.29.424	M. Y. Monicle	27	12.73
13.26.31.241		25	14.68
13.26.31.311	E. O. Moore	23	46.36
13.26.33.421	E. P. Malone	25	17.47
13.26.34.313	Mrs. West	25	9.95
13.26.34.431		25	25.33
14.25.1.111	Mr. Gentry		b/
14.25.1.343	Wm. Langnegger	23	56.18
14.25.2.233a	L. T. Lewis	23	64.06
14.25.2.444	J. V. Thomas		b/
14.25.8.411		23	94.82
14.25.12.133b	C. Whitman	19	70.40
14.25.12.234		23	54.75
14.25.12.313	L. T. Lewis	23	b/
14.25.13.311	E. O. Moore	21	75.16
14.25.14.131	O. B. Berry	23	91.74
14.25.15.431	H. E. Blackwelder		b/
14.25.20.443		21	74.67
14.25.24.133	E. O. Moore	21	67.01
14.25.25.111	John M. Norris	21	65.67
14.25.25.313	S. C. Bybee	21	61.77
14.26.3.213		25	7.63
14.26.3.413		25	10.54
14.26.3.433			a/
14.26.3.442		24	18.17
14.26.4.113		25	20.70
14.26.4.133a		25	19.99
14.26.4.133b		25	19.77
14.26.4.141	Roy Lockhead	25	20.45
14.26.4.231	George Wade	25	17.79
14.26.5.111	H. L. McKinistry	25	28.52
14.26.5.131	Mrs. L. Harter	25	26.69
14.26.5.211	Mr. McKinistry	25	24.30
14.26.5.243	J. D. S. McKinistry	25	21.38
14.26.5.443			b/
14.26.6.111	Wiley Grizzle	23	27.75
14.26.6.142	W. L. Heitmann	23	27.30
14.26.6.211	Wiley Grizzle	23	28.00
14.26.6.232	Tom Andrews	25	33.57
14.26.6.241		25	30.50
14.26.6.422			b/
14.26.7.344	W. W. Adams		b/
14.26.8.112	G. L. Truitt	24	29.36
14.26.8.344	William Hobson	24	43.40
14.26.8.243		24	27.29
14.26.9.143			b/
14.26.9.234		24	11.91
14.26.9.434	Cave Brothers	24	14.15
14.26.9.442		24	c/ 19.82
14.26.10.121		25	13.75
14.26.10.244		24	13.78
14.26.10.433	Mark Boyce	24	7.43
14.26.11.111	J. Langnegger	24	16.87
14.26.11.121		25	16.85
14.26.11.322			b/
14.26.12.433b	W. N. Olive	24	16.88

a Measurements discontinued.
b Not measured.
c Windmill pumping.

Chaves County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter.--Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
14.26.13.121	L. M. Lang	Jan. 24	17.50
14.26.14.133	Wiley Grizzle	24	7.57
14.26.14.212	George Harris	24	13.40
14.26.14.343	F. H. Evans		b/
14.26.14.441	M. C. Brown	24	13.70
14.26.15.113		24	18.15
14.26.15.343		24	19.02
14.26.16.111	Marie O'Dell	24	30.54
14.26.16.422	O'Dell	20	19.65
14.26.17.211	Wm. Saloman	24	50.70
14.26.17.334	Clarence Pearson		b/
14.26.17.444	Pearson Brothers	24	46.57
14.26.18.113	O. C. Yarbrough	23	59.04
14.26.18.433	Albert Hobson		b/
14.26.19.211	Joseph Hooten	21	50.89
14.26.19.242	Oscar A. Pearson	21	59.10
14.26.19.311	W. C. West	23	47.15
14.26.19.444	E. E. Lane	20	59.89
14.26.20.143	Pearson Brothers	21	58.54
14.26.20.334	E. Langnegger	21	72.46
14.26.20.343	E. Langnegger		b/
14.26.21.333	G. E. Wade	20	40.77
14.26.21.422		20	17.81
14.26.22.141		24	27.20
14.26.22.213	J. L. King		b/
14.26.22.411		24	18.27
14.26.23.131	E. A. White	24	10.50
14.26.27.111		20	16.40
14.26.28.114	Phillip Stoes		b/
14.26.28.211	L. T. Lewis		b/
14.26.29.112	Phillip Stoes		b/
14.26.29.213	Phillip Stoes	20	59.90
14.26.29.441a	J. W. Wiggins	20	41.00
14.26.29.441b			b/
14.26.30.441		20	c/
15.24.23.344		17	67.00
15.24.27.344		17	61.02
15.24.28.244		17	92.30
15.24.32.211		17	50.72
15.24.34.341	S. Lanning		b/
15.24.35.143	E. P. Malone	18	24.22
15.24.36.243		17	41.08
15.24.36.321		17	25.22
15.25.11.411			a/
15.25.12.111a	F. U. Gooding	20	41.03
15.25.12.111b			b/
15.25.12.231	Ben Truman		b/
15.25.24.111		18	12.45
15.25.24.211			b/
15.25.27.321	Chas. W. Nelson	18	31.67
15.25.33.112	Carroll Jackson	18	20.22
15.25.35.311	R. E. Coleman		37.97
15.25.36.333	John M. Norris		b/
15.26.5.121	B. E. Spencer	20	43.10
15.26.5.142	H. S. Russell	20	30.63
15.26.6.311	Calvin Graham	20	36.15
15.26.9.133	E. M. George	20	22.42
15.26.19.224	Mrs. Ivy H. Beasley		a/

a Measurements discontinued.
b Not measured.
c Well dry.

Chaves County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter--Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
15.26.19.442		Jan. 20	6.66
15.26.20.144		20	25.50
15.26.20.431		20	15.40
15.26.29.111	E. E. Jackson	20	8.01
15.26.29.222		20	15.03
15.26.29.231		20	10.16
15.26.30.131	Paul Robinson	18	3.95
15.26.30.224		20	10.70
15.26.31.111	E. J. Gromo	18	13.73
15.26.32.231		20	9.32

11.25.6.421a. Mrs. Annie Lee Stewart. Used drilled irrigation well, diameter 8 inches, depth 85 feet. Measuring point, top of casing, 0.30 foot above land-surface datum. Equipped with 3-inch centrifugal pump.

13.26.14.331. Zuber Hollow Corporation. Unused stock well. Measuring point, top of casing at land-surface datum. Equipped with windmill.

13.26.34.431. Used domestic and stock well. Measuring point, top of casing, 1.35 feet above land-surface datum. Equipped with windmill.

14.26.8.344. William Hobson. Used drilled irrigation well, diameter 10 inches, depth 125 feet. Measuring point, lower edge of mouth of discharge pipe, 4.10-foot correction to land-surface datum.

Eddy County

The following are records of shallow wells in the part of the Roswell Basin in Eddy County. For a general description of the changes in water level, both in artesian and shallow wells, see under Chaves County. For records of artesian wells and wells in the intake area of the artesian aquifer see also under Chaves County.

16.25.6.Lot 4. Fred Nellson. (Water-Supply Paper 845, p. 296.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	14.37	May 13	13.87	Aug. 11	12.90	Nov. 12	a 11.09
Mar. 5	a 15.01	June 9	11.32	Sept. 9	12.90	Dec. 10	10.69
Apr. 4	a 15.56	July 14	a 12.57	Oct. 15	10.10		

16.25.6.313. Childress. (Water-Supply Paper 845, p. 296.)

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	30.12	29.98	29.75	29.65	29.02	28.68	28.60	28.50	28.14	27.74	27.63
2	.....	30.12	29.94	29.77	29.60	29.07	28.70	28.61	28.43	28.05	27.73	27.67
3	30.22	30.20	29.99	29.80	29.56	.....	28.71	28.63	28.43	28.13	27.83	27.50
4	30.07	30.18	30.11	29.87	29.61	.....	28.68	28.65	28.52	28.08	27.72	27.50
5	30.06	30.00	29.97	29.75	29.64	.....	28.60	28.63	28.55	28.08	27.84	27.64
6	30.06	29.98	29.97	29.75	29.68	28.88	28.63	28.60	28.50	28.12	27.72	27.67
7	30.17	30.05	30.15	29.87	29.68	28.78	28.67	28.60	28.38	28.18	27.95	27.62
8	30.20	30.10	30.10	29.93	29.70	28.74	28.65	28.64	28.43	28.08	27.73	27.60

a Windmill pumping.

Eddy County--Continued.

16.25.6.313. Childress--Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
9	30.30	30.11	29.91	29.87	29.72	28.78	28.60	28.65	28.57	28.13	27.73	27.46
10	30.25	30.08	29.95	29.81	29.77	28.84	28.54	28.65	28.68	28.23	27.80	27.46
11	30.10	29.93	29.92	29.80	29.78	28.90	28.62	28.36	28.57	28.11	27.85	27.48
12	29.99	29.86	29.92	29.75	29.68	28.85	28.64	28.63	28.40	28.02	27.70	27.45
13	29.99	29.95	30.22	29.77	29.58	28.77	28.69	28.62	28.37	28.00	27.67	27.65
14	29.90	30.15	29.98	29.90	29.59	28.73	28.70	28.62	28.43	27.99	27.78	27.59
15	29.84	30.15	29.94	29.37	29.62	28.77	28.67	28.68	28.48	28.15	27.67	27.60
16	29.90	30.15	29.97	29.85	29.66	28.80	28.68	28.64	28.52	27.98	27.58	27.60
17	30.03	30.15	30.07	29.77	29.70	28.78	28.63	28.55	28.63	27.88	27.59	27.53
18	30.26	30.08	30.07	29.67	29.52	28.73	28.60	28.58	28.57	27.93	27.58	27.58
19	30.15	30.08	29.93	29.78	29.50	28.71	28.62	28.65	28.45	27.88	27.65	27.70
20	30.02	30.14	29.90	29.93	29.55	28.71	28.65	28.56	28.40	27.90	27.83	27.58
21	30.02	30.18	29.90	30.01	29.55	28.75	28.61	28.55	28.39	27.90	27.61	27.51
22	30.04	30.13	29.98	29.94	29.52	28.80	28.62	28.57	28.39	27.92	27.59	27.50
23	30.05	30.08	29.98	29.95	29.60	28.74	28.57	28.49	.....	28.00	27.78	27.37
24	30.07	30.07	29.95	30.02	.....	28.65	28.54	28.47	28.35	27.98	27.87	27.28
25	30.07	30.04	29.90	29.98	.....	28.65	28.56	28.50	28.47	27.77	27.71	27.32
26	30.12	30.04	29.95	29.86	29.37	28.66	28.59	28.53	28.38	27.78	27.70	27.66
27	30.15	30.30	30.00	29.80	29.33	28.60	28.65	28.59	28.33	27.90	27.70	27.67
28	30.27	30.17	30.07	29.80	29.30	28.60	28.66	28.60	28.37	27.83	27.71	27.65
29	30.15	.....	29.85	29.75	29.27	28.63	28.61	28.60	28.30	27.81	27.68	27.52
30	30.12	.....	29.85	29.75	29.17	28.65	28.60	28.57	28.29	27.87	27.63	27.50
31	30.12	.....	29.83	.....	29.05	.....	28.62	28.60	.....	27.81	.....	.....

16.26.19.411. F. M. Privett. (Water-Supply Paper 886, p. 409.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	35.32	May 13	38.42	Aug. 11	40.42	Nov. 12	28.76
Mar. 5	35.01	June 9	32.08	Sept. 9	40.09	Dec. 10	28.17
Apr. 4	39.53	July 14	33.48	Oct. 15	30.27		

16.26.28.333. Ina C. Harral. (Water-Supply Paper 886, p. 410.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	15.55	May 13	15.45	Aug. 11	16.73	Nov. 12	10.02
Mar. 5	14.69	June 9	11.95	Sept. 9	15.84	Dec. 10	9.63
Apr. 4	15.05	July 14	13.45	Oct. 15	10.59		

17.26.7.344. Everest Scoggins. (Water-Supply Paper 886, p. 411.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	40.50	May 13	40.99	Aug. 11	44.94	Nov. 12	32.31
Mar. 5	40.25	June 9	38.88	Sept. 9	41.42	Dec. 10	31.67
Apr. 4	41.31	July 14	39.97	Oct. 15	34.99		

17.26.10.333. V. L. Gates (Water-Supply Paper 886, p. 412.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	10.61	June 9	6.32	Sept. 9	7.78	Nov. 12	4.80
Mar. 5	9.67	July 14	5.97	Oct. 15	4.70	Dec. 10	4.86
May 13	8.30						

17.26.16.333. Artesia Cemetery. (Water-Supply Paper 911, p. 171.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	14.68	May 13	14.70	Aug. 11	28.40	Nov. 12	6.63
Mar. 5	a 26.02	June 9	11.40	Sept. 9	14.39	Dec. 10	6.38
Apr. 4	26.03	July 14	15.29	Oct. 15	7.81		

a Windmill pumping.

Eddy County--Continued.

18.26.4.111b. Frank Watkins. (Water-Supply Paper 845, p. 298.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	26.95	May 13	a 27.83	Aug. 11	b 26.14	Nov. 12	a 21.16
Mar. 5	a 28.68	June 9	a 25.02	Sept. 9	b 25.34	Dec. 10	20.27
Apr. 4	27.24	July 14	24.29	Oct. 15	22.20		

18.26.7.234a. C. H. Hutsonpillar. (Water-Supply Paper 845, p. 299.)

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	53.68	53.35	53.25	53.27	54.20	51.04	49.53	50.40	51.76	51.00	48.57	46.88
2	53.67	53.35	53.24	53.26	54.20	50.93	49.55	50.45	51.74	50.91	48.50	46.85
3	53.66	53.36	53.25	53.28	54.20	50.80	49.60	50.50	51.75	50.83	48.46	46.72
4	53.62	53.35	53.25	53.30	54.19	50.65	49.61	50.53	51.76	50.76	48.37	46.65
5	53.60	53.32	53.23	53.27	54.17	50.53	49.60	50.60	51.76	50.69	48.33	46.73
6	53.60	53.30	53.24	53.27	54.13	50.43	49.61	50.65	51.75	50.62	48.25	46.66
7	53.60	53.31	53.26	53.30	54.10	50.32	49.64	50.70	51.73	50.55	48.25	46.64
8	53.59	53.31	53.25	53.32	54.07	50.22	49.66	50.77	51.72	50.47	48.13	46.57
9	53.59	53.31	53.22	53.35	54.05	50.11	49.70	50.83	51.74	50.42	48.09	46.47
10	53.58	53.30	53.25	53.39	54.03	50.04	49.70	50.90	51.77	50.33	48.06	46.45
11	53.56	53.29	53.23	53.44	53.99	49.99	49.72	50.96	51.78	50.24	48.00	46.35
12	53.54	53.27	53.25	53.50	53.95	49.90	49.77	51.02	51.79	50.14	47.88	46.33
13	53.53	53.30	53.30	53.55	53.90	49.83	49.79	51.08	51.75	50.05	47.84	46.32
14	53.50	53.30	53.29	53.60	53.86	49.78	49.82	51.12	51.75	49.98	47.80	46.25
15	53.48	53.30	53.28	53.63	53.84	49.74	49.83	51.17	51.74	49.92	47.72	46.23
16	53.49	53.30	53.30	53.70	53.83	49.70	49.85	51.24	51.73	49.80	47.63	46.17
17	53.50	53.30	53.33	53.73	53.79	49.65	49.88	51.27	51.72	49.70	47.57	46.11
18	53.52	53.28	53.33	53.77	53.75	49.60	49.89	51.29	51.69	49.61	47.50	46.10
19	53.49	53.28	53.30	53.83	53.71	49.55	49.90	51.30	51.65	49.53	47.50	46.08
20	53.47	53.30	53.30	53.87	53.71	49.55	49.95	51.36	51.61	49.45	47.48	46.01
21	53.45	53.29	53.30	53.91	53.69	49.54	49.97	51.40	51.57	49.37	47.36	45.99
22	53.46	53.29	53.32	53.95	53.66	49.52	50.02	51.43	51.53	49.32	47.32	45.85
23	53.45	53.29	53.32	53.98	53.53	49.48	50.05	51.49	51.47	49.27	47.37	45.83
24	53.45	53.29	53.32	54.04	52.87	49.47	50.08	51.54	51.42	49.18	47.31	45.73
25	53.44	53.29	53.31	54.10	52.48	49.44	50.11	51.56	51.40	49.07	47.22	45.73
26	53.43	53.28	53.33	54.18	52.20	49.45	50.15	51.57	51.32	49.01	47.15	45.78
27	53.45	53.30	53.32	54.20	51.96	49.45	50.22	51.61	51.26	48.98	47.10	45.77
28	53.45	53.29	53.34	54.22	51.72	49.47	50.26	51.67	51.22	48.87	47.05	45.74
29	53.42	.....	53.31	54.22	51.52	49.49	50.27	51.70	51.15	48.76	47.00	45.65
30	53.39	.....	53.30	54.22	51.33	49.50	50.30	51.73	51.08	48.75	46.92	45.58
31	53.37	.....	53.28	.....	51.19	.....	50.36	51.75	.....	48.65	.....	.....

18.26.21.344. Town of Dayton. (Water-Supply Paper 886, p. 415.)

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.83	.....	43.75	43.91	44.27	43.55	42.95	42.95	43.21	42.16	40.32	38.43
2	43.82	.....	43.77	43.90	44.26	43.53	42.96	42.97	43.19	42.11	40.26	38.37
3	43.81	.....	43.79	43.90	44.27	43.48	42.98	43.00	43.18	42.07	40.21	38.27
4	43.80	.....	43.82	43.90	44.26	43.45	42.99	43.01	43.17	42.00	40.11	38.23
5	43.79	43.66	43.82	43.88	44.26	43.42	42.98	43.03	43.13	41.95	40.08	38.26
6	43.79	.....	43.84	43.90	44.24	43.40	42.98	43.05	43.10	41.90	40.00	38.14
7	43.78	.....	43.88	43.91	44.21	43.35	42.99	43.07	43.07	41.84	39.98	38.12
8	43.77	.....	43.88	43.93	44.20	43.33	43.00	43.08	43.05	41.78	39.87	38.04
9	43.77	.....	43.87	43.95	44.19	43.31	42.98	43.11	43.06	41.75	39.82	37.94
10	43.75	.....	43.90	43.97	44.18	43.28	42.98	43.13	43.04	41.69	39.78	37.92
11	43.74	43.68	43.89	44.00	44.15	43.26	42.96	43.13	43.02	41.63	39.70	37.82
12	43.72	43.70	43.93	44.04	44.13	43.24	42.95	43.15	42.99	41.55	39.61	37.80
13	43.70	43.75	43.96	44.07	44.12	43.20	42.94	43.17	42.94	41.50	39.56	37.77
14	43.67	43.74	43.94	44.08	44.10	43.17	42.94	43.19	42.88	41.44	39.51	37.68
15	43.65	43.74	43.96	44.09	44.10	43.15	42.93	43.19	42.83	41.41	39.43	37.65

a Windmill pumping.
b Windmill pumping intermittently.

Eddy County--Continued.

18.26.21.344. Town of Dayton --Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
16	43.67	43.75	43.99	44.11	44.09	43.15	42.92	43.20	42.82	41.33	39.35	37.51
17	43.68	43.75	44.01	44.11	44.06	43.13	42.90	43.22	42.80	41.27	39.29	37.45
18	43.67	43.75	43.99	44.14	44.03	43.11	42.90	43.23	42.77	41.21	39.23	37.43
19	43.65	43.75	43.98	44.19	44.02	43.09	42.90	43.26	42.75	41.16	39.20	37.39
20	43.64	43.75	43.98	44.21	44.03	43.07	42.90	43.25	42.72	41.10	39.13	37.29
21	43.63	43.75	43.98	44.23	44.01	43.05	42.90	43.26	42.68	41.03	39.03	37.19
22	43.60	43.75	43.99	44.24	43.98	43.03	42.89	43.28	42.62	40.98	39.00	37.13
23	43.59	43.75	43.98	44.25	43.90	43.00	42.89	43.28	42.58	40.93	38.98	37.08
24	43.58	43.75	43.98	44.29	43.87	42.98	42.88	43.27	42.54	40.87	38.90	36.99
25	43.58	43.74	43.96	44.30	43.82	42.98	42.88	43.26	42.52	40.78	38.82	37.00
26	43.58	43.75	43.97	44.30	43.78	42.97	42.89	43.25	42.46	40.73	38.65	37.00
27	43.60	43.75	43.97	44.30	43.74	42.94	42.91	43.25	42.41	40.70	38.70	36.94
28	43.60	43.75	43.97	44.30	43.70	42.96	42.92	43.24	42.38	40.60	38.63	36.90
29	43.60	.....	43.94	44.30	43.66	42.96	42.93	43.24	42.30	40.52	38.56	36.81
30	.....	.....	43.93	44.30	43.62	42.96	42.93	43.24	42.24	40.48	38.49	36.72
31	.....	.....	43.93	.....	43.58	.....	42.94	43.23	.....	40.40	.....	36.67

19.26.27.233. Lakewood School. (Water-Supply Paper 845, p. 300.)

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	51.47	May 13	a 54.44	Aug. 11	a 48.74	Nov. 12	a 41.63
Mar. 5	a 56.67	June 9	a 45.56	Sept. 9	a 49.64	Dec. 10	a 40.94
Apr. 4	a 53.72	July 14	42.52	Oct. 15	a 48.02		

20.26.7.122. Coats Filling Station. (Water-Supply Paper 845, p. 300.)

Water level, in feet below land-surface datum, 1941

Jan. 8	46.30	May 13	45.85	July 14	37.40	Oct. 15	35.82
Mar. 5	46.09	June 9	a 39.93	Aug. 11	39.68	Nov. 12	35.48
Apr. 4	48.42	June 30	37.37	Sept. 9	40.37	Dec. 10	36.20

In the following table are given the 1941 water-level measurements in observation wells that were measured in Eddy County in January and February. All of these wells are described in either Water-Supply Paper 836 or 911.

Supplemental list of observation wells in which water level measurements were made in late winter.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
16.25.1.Lot 3		Jan. 18	13.33
16.25.1.344		18	11.08
16.25.1.423	O'Bannon and Meyer	18	11.90
16.25.2.Lot 9		18	17.18
16.25.2.Lot 15	Ralph Pearson	18	18.34
16.25.4.Lot 12		18	13.34
16.25.5.Lot 4		17	10.40
16.25.5.Lot 13		17	11.46
16.25.5.443	Winton Ault	17	12.96
16.25.6.Lot 8	E. P. Malone	17	14.53
16.25.8.111		17	30.69
16.25.10.311		17	39.90
16.25.10.344		17	55.51
16.25.11.233	Noah Buck	17	32.37
16.25.12.124	Buck Brothers	18	18.20

a Windmill pumping.

Eddy County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter--Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
16.25.12.412	Terry Reser	Jan. 17	14.17
16.25.13.211	T. J. Terry	17	25.22
16.25.14.213	Chas Buck	17	35.03
16.25.24.212	H. C. Powell	17	35.42
16.26.5.Lot 3	Mr. Taylor	18	27.83
16.26.5.331	Mrs. Nancy Eippers	18	18.08
16.26.6.Lot 2	H. V. Parker		a/
16.26.6.Lot 4			a/
16.26.6.333	O'Bannon and Meyer	18	13.66
16.26.7.121	L. Keith	18	12.54
16.26.7.321	C. Buck	17	8.10
16.26.7.332		17	14.77
16.26.8.111	Reser and Johnson	18	15.83
16.26.16.313	V. L. Gates	16	7.10
16.26.17.311	J. L. Muncy	16	25.77
16.26.17.331	Mr. Green	16	14.78
16.26.18.331	Monroe Howard	17	20.83
16.26.18.411	G. G. Golder		a/
16.26.19.113	Henry E. Hall	16	22.04
16.26.19.133	F. M. Privett	16	23.25
16.26.19.211	H. V. Parker	16	17.50
16.26.21.333	J. H. Everest	16	8.11
16.26.28.431	R. E. Coleman	16	14.94
16.26.31.413	T. F. Wilson	16	41.08
16.26.32.411	O. V. Moore		a/
16.26.32.421	W. W. Parker	22	17.89
17.25.13.131	L. G. Mousehke		a/
17.25.14.132	Artesia Country Club		a/
17.25.22.223		14	147.00
17.25.24.433		13	91.82
17.25.26.222		13	101.77
17.25.35.411		13	b/ 116.96
17.26.2.133	A. L. Jackson	14	9.68
17.26.3.231	H. R. Rogers	14	9.83
17.26.3.433	Mr. Box	14	9.52
17.26.4.121		14	16.90
17.26.4.331a	Howard Stroup	14	8.32
17.26.4.331b	Howard Stroup	14	7.37
17.26.5.422		14	16.10
17.26.5.433			c/
17.26.6.413	Fred Savoie	14	40.37
17.26.7.131	J. W. Collins	14	49.00
17.26.7.433	Everest Scoggins		a/
17.26.7.421	J. W. Jackson		a/
17.26.7.423		14	26.49
17.26.7.444	Albert Blake	14	29.76
17.26.9.111		14	10.05
17.26.9.333			a/
17.26.10.433	D. D. Sullivan	14	18.81
17.26.15.113	G. L. Allison		a/
17.26.15.121			a/
17.26.15.211	J. M. Vogel	14	16.28
17.26.15.411	Mrs. A. J. Herdendorf	13	16.55
17.26.16.411		14	19.21
17.26.17.423	H. A. Denton	14	18.97
17.26.18.224			a/
17.26.18.433	Lowery and Baca	16	47.49
17.26.18.442			a/
17.26.20.133	W. E. Ragsdale	13	36.09
17.26.21.112	Roger Durand	13	15.85

a Not measured.
b Windmill pumping.
c Measurements discontinued.

Eddy County--Continued.

Supplemental list of observation wells in which water-level measurements were made in late winter --Continued.

Water level, in feet below land-surface datum, 1941

Location number	Owner or tenant	Date	Water level
17.26.21.341	W. T. Amstutz	Jan. 13	6.83
17.26.22.233	R. L. Paris	13	20.65
17.26.27.423	Leslie Martin	13	15.90
17.26.28.331	Carl Martin	13	19.10
17.26.29.131a	Carl Martin	13	36.52
17.26.29.131b	Carl Martin		a/
17.26.31.133	W. Clendenen	11	66.57
18.26.2.333	S. O. Higgins		a/
18.26.4.111a	Frank Watkins		c/
18.26.4.433	W. M. Schneider	11	23.00
18.26.7.234c	C. H. Hutsonpillar	13	56.45
18.26.9.311	B. E. Spencer	11	35.76
18.26.10.233	Juncie		a/
18.26.15.133	J. D. Terry		a/
18.26.15.311	J. H. Everest	13	21.84
18.26.15.444		11	19.88
18.26.17.112	Mr. Yates	11	43.47
18.26.18.241	L. McCrory	13	53.35
18.26.18.323	W. D. McCrory	13	54.91
18.26.22.314			a/
18.26.23.213	Smith and Horner	11	27.80
18.26.24.223		11	5.38
18.26.28.132	Dayton School	11	59.30
18.26.28.142		11	44.50
18.26.33.111	Harvey Yates	11	67.57
19.26.12.323	E. W. Dimock	10	22.29
19.26.13.211	R. L. House	10	14.83
19.26.14.431	Albert Lee	10	15.54
19.26.28.334		11	59.96
19.26.28.441	D. D. Sullivan	10	61.72
19.26.33.412	E. G. Kimmel (?)	10	51.90
20.26.6.431	J. G. Moutry	10	45.93
20.26.7.421	E. Mantei	10	39.47
20.26.8.112	J. G. Moutry	10	34.39
20.26.17.411	Cecil E. Holeman and Roy D. Angell	22	48.42
20.26.21.111		10	c/

HIDALGO COUNTY

VIRDEN VALLEY

By H. M. Babcock

The Virden Valley lies along the upper Gila River. It is the eastern portion of the area commonly known as the "Duncan-Virden Valley". The wells listed here lie in the upper end of the valley in New Mexico. A detailed investigation of the water resources of the Duncan-Virden Valley was conducted by the Federal Geological Survey in cooperation with the United

a Not measured.
b Windmill pumping.
c Measurements discontinued.

States Engineer Office, War Department, from October 1, 1939, to May 31, 1941. A preliminary report on this work has been released by the Geological Survey, United States Department of the Interior. Water-level measurements (made twice each year, once in the spring and once in the fall) and a pumpage inventory are being continued. Water levels are expressed in feet below measuring point. Hydrographs of a few of the observation wells, monthly precipitation, and pumpage are shown in figure 3 in the Arizona section of the report, under Greenlee County.

Well numbers correspond to those in Water-Supply Paper 911.

181. P. Lunt. SW¼NW¼ sec. 32, T. 18 S., R. 21 W.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	46.74	Feb. 28	48.48	May 6	41.12	July 11	37.58
30	47.45	Apr. 8	42.95	June 3	41.86	Oct. 22	41.72

185. J. Pierce. SE¼SE¼ sec. 32, T. 18 S., R. 21 W.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	30.82	Feb. 28	30.52	May 6	(a)
30	31.27	Apr. 8	29.31		

201. Payne. NW¼SE¼ sec. 2, T. 19 S., R. 21 W.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	42.27	Apr. 8	42.47	June 3	40.26	Aug. 11	42.22
30	42.24	May 6	41.93	July 11	40.85	Oct. 22	41.66
Feb. 28	41.95						

204. State of New Mexico. SE¼NW¼ sec. 2, T. 19 S., R. 21 W.

Water level, in feet below measuring point, 1941

Jan. 7	52.70	Apr. 8	51.82	June 3	50.84	Aug. 12	52.95
30	52.73	May 6	51.12	July 11	51.45	Oct. 27	52.21
Feb. 28	53.20						

211. SW¼NW¼ sec. 5, T. 19 S., R. 21 W. Measurements discontinued.

215. John B. Jones. SE¼NW¼ sec. 12, T. 19 S., R. 21 W.

Water level, in feet below measuring point, 1941

Jan. 7	15.40	Feb. 28	14.90	May 6	13.22	July 11	14.35
30	15.20	Apr. 8	12.98	June 3	13.73	Oct. 22	14.91

217. Skaggs. NE¼SE¼ sec. 12, T. 19 S., R. 21 W.

Water level, in feet below measuring point, 1941

Jan. 7	23.33	Feb. 28	23.50	May 6	18.65	July 11	19.50
30	23.20	Apr. 8	18.84	June 3	18.22	Oct. 22	24.65

219. Ruth Skaggs. NE¼NE¼ sec. 13, T. 19 S., R. 21 W.

Water level, in feet below measuring point, 1941

Jan. 7	15.69	Feb. 28	15.30	May 6	14.72	July 11	(a)
30	15.55	Apr. 8	14.85	June 3	15.55		

a Dry.

Hidalgo County--Continued.

232. Floyd Johns. NE¼NW¼ sec. 18, T. 19 S., R. 20 W.

Water level, in feet below measuring point, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	27.03	Apr. 8	25.64	June 3	26.18	Aug. 12	28.19
30	26.80	May 6	25.80	July 7	27.10	Oct. 22	26.70
Feb. 28	26.35						

LEA COUNTY

By P. Donald Akin

The program of inventorying water-levels and of gathering other data pertinent to the ground-water investigation of Lea County was continued during 1941 by the United States Geological Survey in cooperation with the State engineer of New Mexico.

Investigation of the ground-water resources in Lea County was first begun in 1929 by S. S. Nye, of the United States Geological Survey, who continued work in the area until August 1932. Since August 1932, the work has been under the immediate supervision of C. V. Theis, of the United States Geological Survey. Detailed results of the investigation and fundamental hydrologic and geologic information, including water-level measurements, have been published in the 9th to 13th Biennial Reports of the State engineer of New Mexico. A brief statement of the ground-water conditions in Lea County was published in Water-Supply Paper 817.

Water-level measurements made in Lea County from 1929 through 1940 were published by the United States Geological Survey in Water-Supply Paper 911, together with a brief summary of the ground-water conditions in the county, location of observation wells, and descriptions of measuring points and reference points. The data on water-level measurements presented in the present report are a continuation of the data given in Water-Supply Paper 911. Except for newly established observation wells, the present report gives only the well number, the owner's name, and the water-level measurements for each well. For descriptions of measuring points, reference points, and other pertinent information concerning the observation wells, Water-Supply Paper 911 should be consulted.

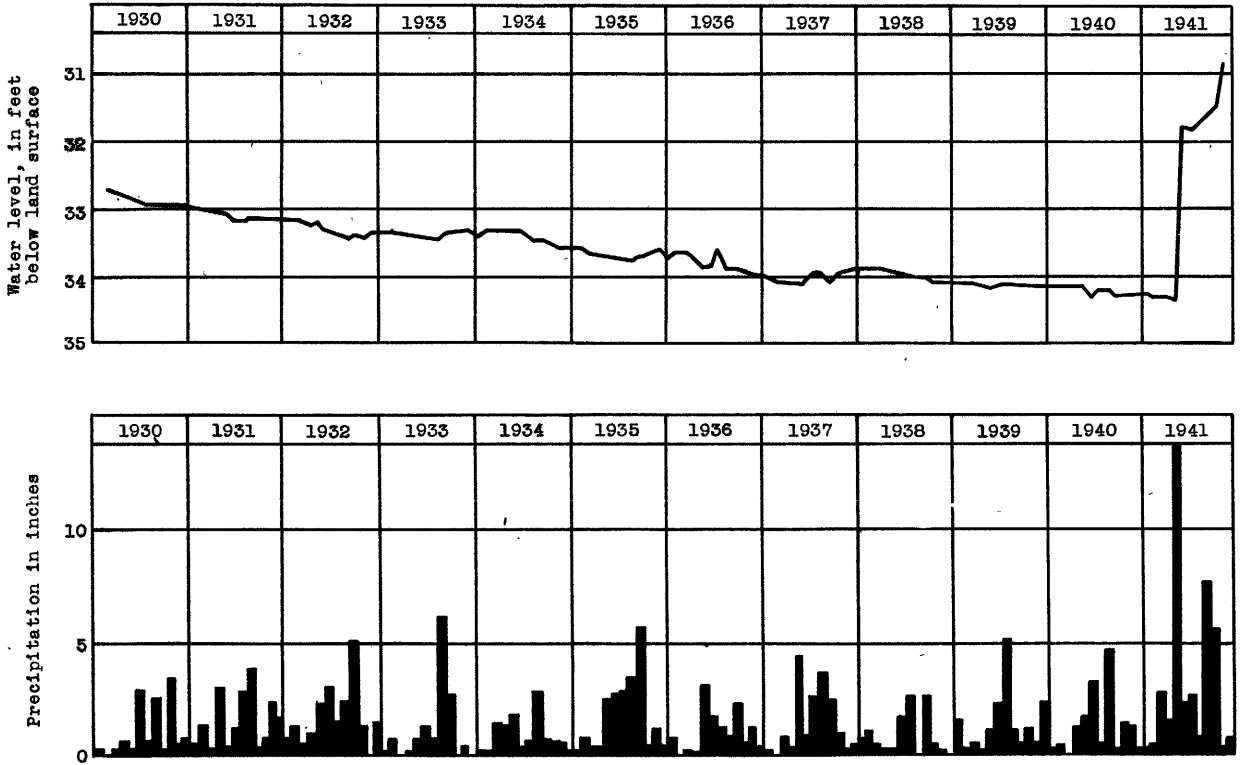

Figure 16.--Hydrograph of well 12.36.29.110 and monthly precipitation at Tatum, N. Mex., from February 1930 to December 1941.

During 1941, bimonthly water-level measurements were made in 28 observation wells, and water-level measurements were made in 54 other wells in January. Three water-stage recorders were in operation in the county in 1941.

The use of ground water for irrigation decreased considerably in 1941, due to the abnormal rainfall over the area. It is estimated that about 3,200 acre-feet of ground water was pumped during 1940 to irrigate approximately 2,950 acres. In contrast, about 1,550 acre-feet of ground water was used in 1941 on about 2,600 acres. The total ground-water pumpage in the county for agricultural, stock, and industrial use is estimated to have been about 9,650 acre-feet in 1940 and about 7,580 acre-feet in 1941.

The precipitation on the High Plains in Lea County was extremely high in 1941. As reported by the United States Weather Bureau, the precipitation at Tatum, N. Mex., was 36.49 inches, approximately 20 inches greater than normal. The precipitation at Lovington was 34.81 inches, 19.64 inches above the normal of 15.17 inches. At Hobbs, the precipitation amounted to 32.11 inches for the year, 17.18 inches above the normal precipitation of 15.01 inches.

Ground-water levels rose generally over the entire High Plains area in the county in response to the heavy rains which occurred in May, September, and October. A rise of 8.65 feet from January 1941 to February 1942 was observed in well 12.36.19.223, located 1 mile west and about three-quarters of a mile north of Tatum, N. Mex. This was the greatest water level rise observed in the area, although 4 other observation wells in the area showed water-level rises of more than 4 feet. Only one observation well in the area indicated a decline of the ground-water level. The water level in well 18.38.26.343, at Hobbs, N. Mex., dropped 0.99 foot from January 1941 to February 1942.

Although the rises in ground-water levels generally have not been as spectacular in Lea County as in other parts of the State, the water levels in the area were higher at the end of 1941 than at any time since water levels have been measured there, except in well 18.38.26.343.

Figure 16 is a monthly hydrograph of well 12.36.29.110 prepared from water-level measurements during the 12-year period from February 1930 to November 1941. The monthly precipitation at Tatum, N. Mex., for the corresponding period of time is also shown. Well 12.36.29.110, an uncased well

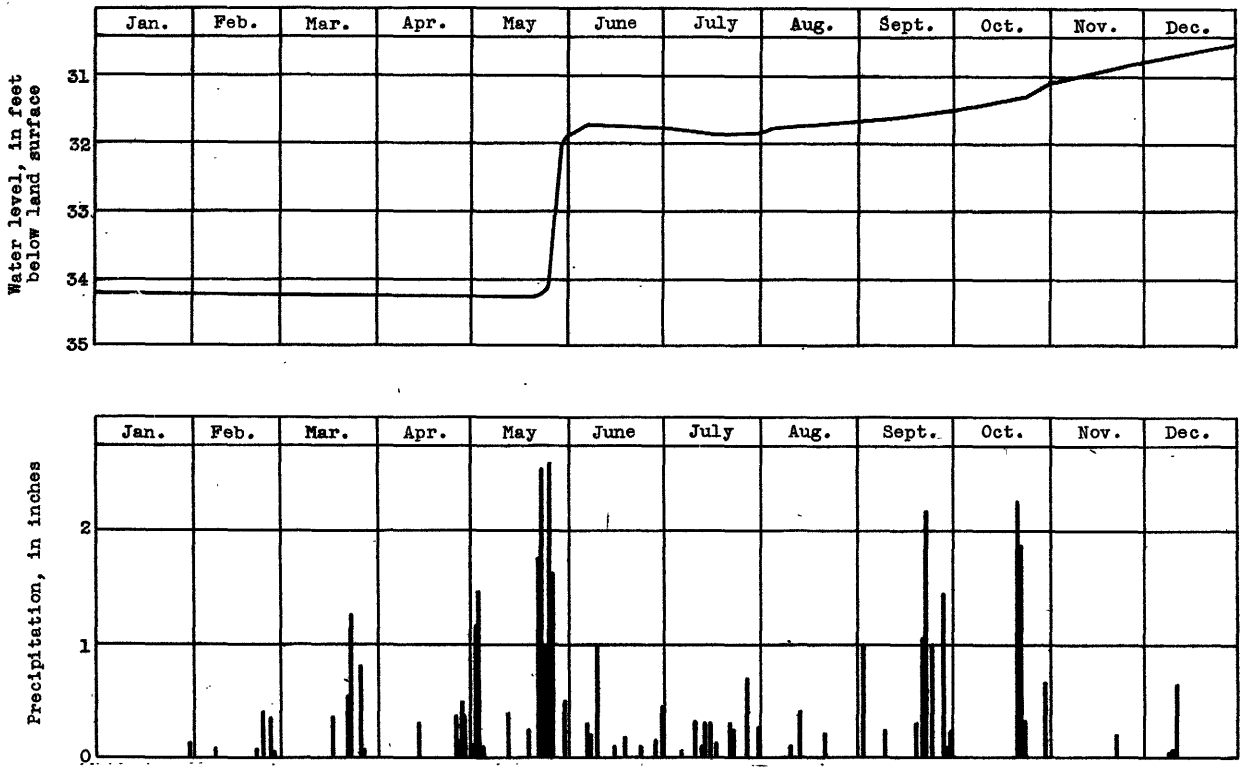

Figure 17.—Hydrograph of well 12.36.29.110, and daily precipitation at Tatum, N. Mex., 1941.

approximately 8 miles from any large pumping plant, is located 1 mile west of Tatum. The water-level fluctuations in well 12.36.29.110 are generally very small, being affected only slightly by barometric pressures and pumping in the area. As indicated by the accompanying figure, the water level in the well has lowered slowly and at almost a constant rate from 1930 to May 1941, with only small rises from time to time, which generally can be correlated with the rainfall at Tatum. In May 1941, however, the water level in the well rose more than two feet in response to the heavy rainfall during the month. The water level fell slightly during July but began to rise again in August and continued to rise throughout the year. The total rise in the water level from January 1941 to February 1942 was 4.02 feet. Such a rise becomes quite significant when it is realized that the total fall of the water level in the well amounted to less than 1.5 feet during the 11-year period preceding 1941.

Figure 17 is a daily hydrograph of well 12.36.29.110 prepared from the highest daily water levels obtained from the records of a water-stage recorder in operation at the well. It also shows the daily precipitation at Tatum.

12.36.19.223. O. V. Fisher. Water level, in feet below land-surface datum, 1941: Jan. 22, 32.05. Windmill pumping.

12.36.24.434. Jerry Clay. Located in yard to northeast of house. Drilled artesian well, equipped with windmill and used as stock well, diameter 6 inches, depth 210 feet. Measuring point, top edge of coupling on 4-inch casing, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 22, 5.54.

12.36.25.222. State land.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 22	24.60	Mar. 29	24.69	July 22	23.15	Oct. 8	22.59
Feb. 19	24.60	Apr. 17	24.69	Aug. 12	23.00	Nov. 27	22.14
Mar. 14	24.64	June 12	23.83				

12.36.27.212. State land.

Water level, in feet below land-surface datum, 1941

Jan. 22	37.21	Mar. 29	37.31	July 22	33.27	Oct. 8	33.33
Feb. 19	37.29	Apr. 17	37.53	Aug. 12	33.23	Nov. 27	32.34
Mar. 14	37.33	June 12	36.43				

12.36.29.110. E. D. Holt. Equipped with water-stage recorder. Highest and lowest water levels, in feet below land-surface datum, 1941: Dec. 31, 30.48; Apr. 30, 34.30.

Lea County--Continued.

12.36.29.110. E. D. Holt--Continued.

Highest daily water levels, in feet below land surface datum, 1941
(from recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 19	34.22	Sept. 22	34.23	Oct. 26	34.24	Nov. 29	34.24
20	34.22	23	34.23	27	34.24	30	34.24
21	34.21	24	34.23	28	34.24	Dec. 1	34.24
22	34.21	25	34.23	29	34.24	2	34.24
23	34.21	26	34.24	30	34.24	3	34.24
24	34.21	27	34.24	31	34.24	4	34.24
25	34.21	28	34.24	Nov. 1	34.25	5	34.24
26	34.21	29	34.24	2	34.25	6	34.23
27	34.21	30	34.24	3	34.25	7	34.23
28	34.21	Oct. 1	34.24	4	34.25	8	34.23
29	34.21	2	34.24	5	34.25	9	34.23
30	34.21	3	34.24	6	34.25	10	34.23
31	34.21	4	34.24	7	34.25	11	34.23
Sept. 1	34.21	5	34.24	8	34.25	12	34.23
2	34.21	6	34.24	9	34.25	13	34.24
3	34.21	7	34.24	10	34.24	14	34.24
4	34.21	8	34.24	11	34.25	15	34.24
5	34.22	9	34.24	12	34.25	16	34.24
6	34.22	10	34.24	13	34.25	17	34.24
7	34.22	11	34.25	14	34.25	18	34.24
8	34.22	12	34.25	15	34.25	19	34.24
9	34.22	13	34.25	16	34.25	20	34.24
10	34.22	14	34.25	17	34.25	21	34.24
11	34.22	15	34.25	18	34.24	22	34.24
12	34.22	16	34.25	19	34.24	23	34.23
13	34.22	17	34.25	20	34.24	24	34.23
14	34.22	18	34.25	21	34.24	25	34.22
15	34.22	19	34.25	22	34.24	26	34.23
16	34.23	20	34.25	23	34.26	27	34.23
17	34.23	21	34.24	24	34.25	28	34.23
18	34.23	22	34.24	25	34.24	29	34.23
19	34.23	23	34.24	26	34.24	30	34.23
20	34.23	24	34.24	27	34.24	31	34.23
21	34.23	25	34.24	28	34.24		

Highest daily water levels, in feet below land-surface datum, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	34.24	34.25	34.25	34.26	34.28	31.81	31.77	31.77	31.63	31.50	31.08	30.76
2	34.24	34.25	34.25	34.27	34.28	31.77	31.77	31.76	31.62	31.50	31.06	30.75
3	34.24	34.25	34.26	34.27	34.28	31.74	31.77	31.76	31.61	31.47	31.04	30.72
4	34.24	34.25	34.26	34.28	34.30	31.71	31.77	31.75	31.62	31.47	31.03	30.71
5	34.24	34.24	34.26	34.26	34.30	31.69	31.78	31.75	31.61	31.47	31.02	30.73
6	34.24	34.24	34.26	34.26	34.29	31.69	31.78	31.74	31.61	31.46	31.00	30.72
7	34.24	34.25	34.26	34.27	34.29	31.69	31.78	31.74	31.60	31.46	31.00	30.71
8	34.24	34.25	34.26	34.27	34.29	31.67	31.78	31.74	31.58	31.45	30.98	30.70
9	34.24	34.25	34.25	34.27	34.28	31.69	31.78	31.74	31.61	31.44	30.97	30.68
10	34.24	34.25	34.26	34.27	34.28	31.71	31.78	31.73	31.61	31.44	30.96	30.68
11	34.24	34.24	34.26	34.27	34.27	31.71	31.78	31.73	31.59	31.43	30.95	30.66
12	34.23	34.23	34.26	34.27	34.27	31.73	31.78	31.72	31.58	31.42	30.93	30.66
13	34.23	34.25	34.27	34.27	34.27	31.73	31.78	31.72	31.57	31.42	30.92	30.66
14	34.23	34.25	34.25	34.28	34.27	31.73	31.78	31.72	31.57	31.41	30.91	30.65
15	34.22	34.25	34.26	34.28	34.27	31.74	31.78	31.72	31.57	31.41	30.90	30.64
16	34.23	34.25	34.27	34.28	34.27	31.74	31.78	31.70	31.57	31.40	30.88	30.63
17	34.23	34.25	34.27	34.28	34.27	31.74	31.77	31.69	31.57	31.39	30.87	30.62
18	34.24	34.25	34.27	34.27	34.26	31.74	31.77	31.69	31.56	31.38	30.86	30.61
19	34.24	34.25	34.27	34.28	34.27	31.74	31.77	31.69	31.55	31.37	30.86	30.61
20	34.23	34.26	34.27	34.29	34.26	31.74	31.77	31.68	31.54	31.37	30.85	30.59
21	34.23	34.26	34.27	34.29	34.25	31.74	31.77	31.68	31.54	31.34	30.83	30.58
22	34.24	34.26	34.27	34.29	34.25	31.74	31.77	31.68	31.53	31.34	30.83	30.56

Lea County--Continued.

12.36.29.110. E. D. Holt.--Continued.

Highest daily water levels, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
23	34.24	34.25	34.28	34.29	34.26	31.74	31.77	31.67	31.53	31.35	30.84	30.55
24	34.24	34.25	34.28	34.29	34.19	31.74	31.77	31.67	31.53	31.33	30.33	30.54
25	34.24	34.25	34.26	34.29	34.00	31.74	31.77	31.67	31.53	31.30	30.82	30.54
26	34.25	34.26	34.28	34.29	33.43	31.74	31.77	31.66	31.53	31.25	30.81	30.55
27	34.25	34.26	34.28	34.29	32.82	31.74	31.77	31.66	31.52	31.23	30.79	30.55
28	34.25	34.26	34.28	34.29	32.39	31.74	31.77	31.66	31.52	31.18	30.78	30.54
29	34.25	.....	34.27	34.30	32.14	31.74	31.77	31.65	31.52	31.14	30.77	30.52
30	34.25	.....	34.27	34.30	31.98	31.74	31.77	31.64	31.51	31.13	30.76	30.50
31	34.25	.....	34.27	.....	31.87	.....	31.77	31.64	.....	31.10	.....	30.48

12.37.20.331 W. O. Dunlap, Jr. Artesian well used for stock and domestic purposes, diameter 6 inches, depth 186 feet. Located in pasture approximately 300 feet west of house. Measuring point, top edge of 6-inch casing, 15.06 feet above top edge of coupling below "T" which runs to house, and 15.50 feet above land-surface datum. Water levels, in feet above land-surface datum, 1941: Jan. 22, 13.39; Mar. 29, 14.11.

12.38.4.312. G. C. Copeland. Used, drilled irrigation well, diameter 14 inches, depth 270 feet. Measuring point, top edge of rectangular slot in north side of Layne and Bowler pump base, inside of pump case, 0.58 foot above concrete base, 1.08 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 22, 43.35.

13.35.11.222. Ashley G. Green. Water level, in feet below land-surface datum, 1941: Jan. 22, 32.94.

13.35.19.211. Seth Alston. Water level, in feet below land-surface datum, 1941: Jan. 22, 49.07.

13.36.6.221. R. W. Duncan. Water level, in feet below land-surface datum, 1941: Jan. 22, 36.27.

13.36.33.341. Lewis Beaman. Water level, in feet below land-surface datum, 1941: Jan. 23, 43.28.

13.36.35.323. J. C. McClish. Water level, in feet below land-surface datum, 1941: Jan. 23, 38.83.

13.37.3.131. Jim H. Simpson. New measuring point, top edge of ½-inch hole in east side of small turbine pump base, 0.03 foot above 1940 measuring point and 0.53 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 24, 39.86.

13.37.3.133. Jim H. Simpson. Water level, in feet below land-surface datum, 1941: Jan. 24, 35.67.

13.37.7.121. Tom Parsley.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 24	33.67	Apr. 17	33.77	July 22	33.46	Oct. 8	33.06
Feb. 19	33.64	June 12	33.72	Aug. 12	33.45	Nov. 27	32.80
Mar. 14	33.65						

13.37.13.132. A. M. Brownfield.

Water level, in feet below land-surface datum, 1941

Jan. 24	30.09	Mar. 14	30.10	June 12	(a)	Oct. 8	26.26
Feb. 19	30.10	Apr. 17	30.11	Aug. 12	25.46	Nov. 27	26.29

a Roads bad, unable to get to well.

Lea County--Continued.

13.37.28.411. Marvin E. Powell. Drilled irrigation well, diameter 14 inches, depth 110 feet. Measuring point, top edge of concrete well curb, west side of well, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 24, 33.73.

13.38.6.341. Opal Fulton. Water level, in feet below land-surface datum, 1941: Jan. 24, 45.62.

14.35.30.141. Well 14.35.30.3 in Water-Supply Paper 911. W. A. Anderson. Water level, in feet below land-surface datum, 1941: Jan. 23, 48.93.

14.35.33.433. W. A. Anderson.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 23	41.98	Mar. 14	41.98	June 12	41.89	Oct. 9	41.72
Feb. 19	41.96	Apr. 17	42.01	Aug. 12	42.04	Nov. 27	41.11

14.36.2.410. Clarence M. King. Water level, in feet below land-surface datum, 1941: Jan. 23, 40.88.

14.36.6.420. S. A. and W. B. Richardson. Water level, in feet below land-surface datum, 1941: Jan. 24, 40.96.

14.36.9.111. L. C. Bivins. Water level, in feet below land-surface datum, 1941: Jan. 23, 40.77.

14.36.9.210. Buford Rankins. Water level, in feet below land-surface datum, 1941: Jan. 23, 42.45.

14.36.13.211. Noble L. Hibbits.

Water level, in feet below land-surface datum, 1941

Jan. 24	37.18	Apr. 17	37.25	July 22	36.68	Oct. 9	36.56
Feb. 18	37.20	June 12	36.81	Aug. 12	36.66	Nov. 27	36.49
Mar. 14	37.17						

14.36.14.121. V. M. Chamber. Water level, in feet below land-surface datum, 1941: Jan. 24, 42.09.

14.37.3.113. Lois C. Hobbs. Water level, in feet below land-surface datum, 1941: Jan. 24, 34.69.

14.37.14.112. R. W. Smith.

Water level, in feet below land-surface datum, 1941

Jan. 24	36.69	Apr. 17	36.72	July 22	35.09	Oct. 8	35.75
Feb. 19	36.70	June 12	36.43	Aug. 12	35.98	Nov. 27	35.61
Mar. 14	36.70						

14.37.16.421. School land. Water level, in feet below land-surface datum, 1941: Jan. 24, 31.41.

14.37.19.211. A. B. Hennington. Jan. 24, 1941, well filled.

14.37.20.410. Doyle Hudgens. Water level, in feet below land-surface datum, 1941: Jan. 24, 35.36.

14.37.27.130. J. R. Fort.

Water level, in feet below land-surface datum, 1941

Jan. 24	37.89	Apr. 17	37.81	July 22	37.31	Oct. 9	36.11
Feb. 19	37.93	June 12	37.49	Aug. 12	37.42	Nov. 27	36.88
Mar. 14	37.91						

Lea County--Continued.

14.38.27.240. Mal Morrison Gaines. Water level, in feet below land-surface datum, 1941: Jan. 25, 40.14.

14.38.28.120. Ila M. Cox.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	26.94	Mar. 14	27.39	June 12	24.35	Nov. 27	24.27
Feb. 19	27.37	Apr. 17	27.36	Oct. 8	24.49		

15.35.13.110. Coalsen Bros. Measurements discontinued.

15.35.35.112. Will Gorrell. Used irrigation well located in east end of pump shed south of corrals and stock lots. Measuring point, lower edge of pump base flange 0.25 foot above concrete curb and 0.75 foot above land-surface datum. Pump sits on two 3 by 8-inch beams. Water levels, in feet below land-surface datum: Feb. 1, 1940, 40.71; Jan. 23, 1941, 41.51.

15.36.8.131. Orren Beatty.

Water level, in feet below land-surface datum, 1941

Jan. 24	41.65	Mar. 14	41.66	June 12	41.06	Oct. 10	40.44
Feb. 18	41.65	Apr. 17	41.65	Aug. 12	40.79	Nov. 27	40.36

15.36.14.311. Mr. Graham. Drilled irrigation well, diameter 22 inches, depth 90 feet. Measuring point, top of concrete well curb, west side of well, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 23, 43.52.

15.26.29.41. D. A. Hudgens. Water level, in feet below land-surface datum, 1941: Jan. 23, 43.84.

15.36.29.441. H. R. Fleming. Drilled irrigation well, temporarily equipped with windmill located in yard to north of house, diameter 14 inches, depth 90 feet. Measuring point, top edge of concrete well curb, north side of well, 0.50 foot above land-surface datum. Water level, in feet below land surface datum, 1941: Jan. 23, 43.95, windmill pumping approximately 3 gallons per minute.

15.37.10.113. W. Arthur Simpson. Measurements discontinued.

15.37.21.330. Robert W. Dean.

Water level, in feet below land-surface datum, 1941

Jan. 25	a 39.46	Mar. 14	a 33.68	June 12	30.85	Oct. 10	30.54
Feb. 19	31.79	Apr. 17	a 32.80	Aug. 12	32.66	Nov. 27	29.98

15.37.27.110. C. L. Naul. Used drilled irrigation well, diameter 14 inches, depth 126 feet. Measuring point, south side lip of east three-quarter-inch hole on south side of Layne and Bowler pump base, 0.50 foot above general land surface. Water level, in feet below land-surface datum, 1941: Oct. 10, 30.43.

15.38.22.200. Etta Arnett. Water level, in feet below land-surface datum, 1941: Jan. 25, 32.50.

16.36.1.400. Lorene Easley. Water level, in feet below land-surface datum, 1941: Jan. 25, 43.84.

16.36.4.433. City of Lovington. Water level, in feet below land-surface datum, 1941: Jan. 23, 53.04.

16.36.4. Lot 12. E. H. Byers. Lowest and highest water levels, in feet below land surface datum, 1941: Jan. 1, 45.06; Dec. 31, 43.59.

a Windmill pumping.

Lea County--Continued.

16.36.4. Lot 12. E. H. Byers.--Continued.

Highest daily water levels, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	45.05	44.79	.....	44.72	.....	44.53	44.15	44.01	44.84	44.09	43.84	43.71
2	45.03	44.88	.....	44.70	.....	44.53	44.15	44.01	44.87	44.08	43.83	43.71
3	45.02	44.92	.....	44.69	44.73	44.51	44.14	44.00	44.89	44.06	43.83	43.71
4	45.01	44.91	.....	44.69	44.72	44.49	44.12	43.99	44.92	44.05	43.81	43.70
5	44.99	44.91	.....	44.68	44.71	44.45	44.09	43.98	44.90	44.03	43.81	43.71
6	44.98	44.89	.....	44.69	44.70	44.46	44.09	43.96	44.82	44.03	43.80	43.70
7	44.97	44.89	.....	44.69	44.70	44.45	44.09	43.97	44.77	44.01	43.81	43.70
8	44.95	44.89	.....	44.68	44.69	44.43	44.09	43.97	44.75	44.00	43.79	43.69
9	44.93	.....	.....	44.67	44.69	44.41	44.07	43.97	44.72	44.00	43.80	43.68
10	44.91	.....	.....	44.67	44.68	44.40	44.07	43.97	44.67	43.99	43.80	43.68
11	44.90	.....	.....	44.67	44.67	44.38	44.06	43.97	44.61	43.98	43.80	43.67
12	44.90	.....	.....	44.67	44.67	44.37	44.06	44.02	44.57	43.97	43.80	43.67
13	44.89	.....	.....	44.69	44.67	44.35	44.05	44.10	44.53	43.97	43.79	43.67
14	44.88	.....	.....	44.72	44.66	44.33	44.05	44.22	44.51	43.97	43.78	43.67
15	44.87	.....	44.67	44.72	44.66	44.33	44.05	44.28	44.47	43.97	43.78	43.66
16	44.87	.....	44.67	44.72	44.66	44.31	44.05	44.28	44.44	.....	43.78	43.66
17	44.87	.....	44.68	44.71	44.66	44.29	44.04	44.26	44.40	.....	43.77	43.66
18	44.86	.....	44.69	44.70	44.66	44.27	44.02	44.23	44.37	.....	43.77	43.66
19	44.86	.....	44.72	44.71	44.66	44.27	44.01	44.30	44.34	43.92	43.77	43.66
20	44.85	.....	44.74	44.79	44.66	44.25	43.99	44.36	44.31	43.91	43.77	43.65
21	44.85	.....	44.75	44.82	44.66	44.25	43.98	44.34	44.29	43.90	43.77	43.63
22	44.83	.....	44.76	44.83	44.65	44.23	43.96	44.31	44.27	43.91	43.77	43.62
23	44.83	.....	44.78	44.82	44.65	44.23	43.95	44.27	44.25	43.90	43.77	43.63
24	44.82	.....	44.78	44.81	44.62	44.23	43.94	44.25	44.23	43.87	43.77	43.62
25	44.81	.....	44.78	44.79	44.59	44.23	43.93	44.25	44.21	43.87	43.76	43.63
26	44.82	.....	44.76	44.79	44.61	44.23	43.93	44.31	44.18	43.87	43.76	43.63
27	44.83	.....	44.76	.....	44.60	44.23	43.92	44.44	44.17	43.87	43.75	43.62
28	44.81	.....	44.76	.....	44.59	44.17	43.92	44.55	44.15	43.86	43.75	43.61
29	44.81	.....	44.73	.....	44.57	44.16	43.92	44.65	44.13	43.85	43.72	43.60
30	44.80	.....	44.73	.....	44.55	44.15	43.98	44.74	44.11	43.84	43.71	43.60
31	44.79	.....	44.73	.....	44.53	.....	44.01	44.84	.....	43.85	.....	43.59

16.36.5. Lot 10. Mrs. Mary A. Coxey. Water level, in feet below land-surface datum, 1941: Jan. 23, 45.91

16.36.5. Lot 14. Aubry Bush. Pump removed. New measuring point, top edge of concrete, northwest side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 23, 46.58.

16.36.5.321. J. T. Phillips. Water level, in feet below land-surface datum, 1941: Jan. 23, 46.04.

16.36.5.411. Mrs. Emma J. Robinson. Water level, in feet below land-surface datum, 1941: Jan. 23, 47.18.

16.36.8.424. Seth Alston and J. S. Eaves. Water level, in feet below land-surface datum, 1941: Jan. 23, 52.48.

16.36.10.233. J. E. Simmons. Water level, in feet below land-surface datum, 1941: Jan. 25, 52.61.

16.36.15.24. J. C. Griffin. Pump removed. New measuring point, top edge of concrete well curb, level with land-surface datum and 1940 measuring point. Water level, in feet below land-surface datum, 1941: Jan. 23, 48.70.

16.36.27.133. State land.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	50.85	May 22	48.18	July 17	49.45	Oct. 11	49.64
Feb. 18	50.86	June 10	49.69	Aug. 13	49.86	Nov. 28	49.68
Mar. 15	50.89						

Lea County--Continued.

16.37.19.200. H. Taylor Montieth. Measuring point as described in Water-Supply Paper 911. Reference point, top edge of washer nailed on southeast side of corner fence post, 150 feet northwest of well, 2.12 feet above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 25, 30.91.

16.37.33.110. Elbert Shipp. Water level, in feet below land-surface datum, 1941: Jan. 25, 30.63.

16.38.25.144. Raymond Eaves. Used drilled irrigation well, located approximately 200 feet northeast of house, diameter 14 inches, depth 85 feet. Pump sits directly on concrete base. Measuring point, lower west edge of horizontal discharge pipe. Subtract 4.80 feet to reduce tape measurements to land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 25, 34.61.

16.38.28.444. J. L. Williams.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	33.00	Apr. 16	33.04	July 17	32.54	Oct. 11	32.25
Feb. 19	32.99	June 10	32.39	Aug. 13	32.45	Nov. 28	32.01
Mar. 15	33.01						

16.38.35.110. F. B. Spencer. Used drilled irrigation well, located in field approximately 150 feet east of house. Pump sits directly on concrete base. Measuring point, lower east edge of horizontal discharge pipe. Subtract 8.00 feet to reduce tape measurements to land-surface datum. Water levels, in feet below land-surface datum: Feb. 4, 1940, 36.38; Jan. 25, 1941, 36.57.

17.34.35.130. Unused drilled well, located just south of tank battery number 1 and north of oil well number 1 on Mabel lease of Phillips Petroleum Company. Measuring point, top edge of casing east side of well, marked with orange paint, level with land-surface datum.

Water level, in feet below land-surface datum

Date	Water level	Date	Water level	Date	Water level
Sept.26, 1940	91.95	Mar. 30, 1941	91.96	Oct. 12, 1941	90.50
Nov. 24	91.91	May 22	91.93	Nov. 28	90.55
Jan. 26, 1941	91.98	July 23	90.83		

17.35.35.120. Unused drilled well, located 0.05 mile south of intersection of north-south fence with east-west fence and about 75 feet east of north-south fence line. Measuring point, top edge of casing, south side of well, level with land-surface datum.

Water level, in feet below land-surface datum

Sept.26, 1940	41.39	Jan. 26, 1941	41.45	May 22, 1941	41.43
Nov. 24	(a)	Mar. 30	41.43	Nov. 28	39.53

17.36.3.333. State land. Unused shot-point hole, diameter approximately 2 inches, depth approximately 85 feet. Located 60 feet north and 20 feet east of corner fence post which is painted orange. Measuring point, top north edge of 2-inch casing in top of well, 0.40 foot below land-surface datum.

Water level, in feet below land-surface datum, 1939-41

Feb. 8, 1939	43.70	Sept.18, 1939	44.40	Apr. 14	44.28
Mar. 19	43.97	Oct. 16	44.14	May 12	44.26
Apr. 20	44.01	Nov. 11	44.41	June 15	44.22
May 20	44.14	Dec. 17	44.15	July 13	44.24
June 18	45.01	Jan. 16, 1940	44.12	Aug. 25	44.23
July 23	44.48	Feb. 4	43.79	Oct. 18	44.38
Aug. 17	44.25	Mar. 10	44.17	Nov. 17	44.33

a Pump over well.

Lea County--Continued.

17.36.3.333. State land.--Continued.

Water level, in feet below land-surface datum, 1939-41

Date	Water level	Date	Water level	Date	Water level
Dec. 18, 1940	44.26	Apr. 16, 1941	44.46	Aug. 13	43.51
Feb. 18, 1941	44.29	June 10	44.26	Oct. 11	43.56
Mar. 15	44.40	July 17	43.78	Nov. 28	42.75

17.37.13.310. John Catchings. Water level, in feet below land-surface datum, 1941: Jan. 27, 28.84.

17.37.26.330. Mrs. Dave B. Wilhoit. Water level, in feet below land-surface datum, 1941: Jan. 25, 41.50, well pumping between 400 and 500 gallons per minute.

17.37.34.441. J. D. Merrell. Used drilled irrigation well, located at the northwest corner of a field about 0.25 mile west of house, diameter 14 inches, depth 117½ feet. Measuring point, top edge of 3/4-inch hole in west side of Layne and Bowler pump base flange, 0.08 foot above concrete base, 0.38 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 25, 27.22.

17.37.36.141. M. J. Waltman. State school land. Not measured in 1941 as well was pumping.

17.38.30.113. W. H. Martin. Water level, in feet below land-surface datum, 1941: Jan. 25, 27.95.

17.38.30.312. Colan M. Hawkins. Measuring point as described in Water-Supply Paper 911. Reference point, top of concrete weir box, east of well at north corner, marked with orange paint, 2.14 feet above measuring point.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	30.44	Apr. 16	30.86	July 17	26.96	Oct. 11	27.28
Feb. 18	30.35	June 10	30.46	Aug. 13	27.00	Nov. 28	26.75
Mar. 15	30.38						

18.36.27.111. State land.

Water level, in feet below land-surface datum, 1941

Jan. 26	41.66	Apr. 16	41.70	July 17	39.99	Oct. 12	38.91
Feb. 18	41.66	May 22	41.70	Aug. 13	39.62	Nov. 28	38.57
Mar. 15	41.75	June 10	40.84				

18.38.2.131. Sam Dalmont. Water level, in feet below land-surface datum, 1941: Jan. 27, 30.52.

18.38.4.232. J. R. Isaacs.

Water level, in feet below land-surface datum, 1941

Jan. 27	25.41	Apr. 16	25.41	July 17	25.33	Oct. 11	23.72
Feb. 18	25.40	June 10	(a)	Aug. 13	24.66	Nov. 28	22.40
Mar. 15	25.42						

18.38.15.400. W. L. Greebon. Water-stage recorder installed Mar. 29, 1941. Lowest and highest water levels, in feet below land-surface datum, 1941: Jan. 27, 29.16; Dec. 31, 27.21.

a Well pumping.

Lea County--Continued.

18.38.15.400. W. L. Greebon.--Continued.

Highest daily water levels, in feet below land-surface datum, 1941 (from recorder charts)

Day	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	29.10	29.07	.....	28.42	28.17	28.64	28.20	27.90	27.44
2	.....	29.10	29.07	.....	28.40	.....	28.57	28.20	27.90	27.45
3	.....	29.11	29.02	.....	28.40	.....	28.52	28.20	27.90	27.41
4	.....	29.12	29.00	.....	28.37	.....	28.47	28.17	27.88	27.40
5	.....	29.12	28.97	.....	28.37	.....	28.42	28.17	27.85	27.43
6	.....	29.12	28.97	.....	.....	.....	28.34	28.17	27.83	27.38
7	.....	29.13	28.97	28.74	.....	.....	28.34	28.17	27.75	27.40
8	.....	29.12	29.00	28.74	.....	.....	28.34	28.17	27.71	27.39
9	.....	29.13	29.00	28.17	.....	29.04	28.34	28.17	27.71	27.38
10	.....	29.13	29.00	28.76	.....	28.97	28.34	28.15	27.71	27.38
11	.....	29.13	.....	28.72	.....	28.87	28.32	28.15	27.70	27.35
12	.....	29.13	.....	28.62	.....	28.77	28.30	28.13	27.69	27.36
13	.....	29.14	.....	28.67	.....	29.07	28.27	28.11	27.69	27.35
14	.....	29.13	.....	28.72	.....	28.92	28.27	28.11	27.69	27.35
15	.....	29.12	.....	28.62	.....	28.74	28.27	28.09	27.58	27.33
16	.....	29.12	.....	28.62	.....	28.60	28.27	28.07	27.57	27.33
17	.....	29.12	29.07	28.60	.....	28.51	28.32	28.05	27.57	27.33
18	.....	29.11	29.07	28.57	.....	28.47	28.30	28.04	27.57	27.33
19	.....	29.14	29.07	28.55	.....	28.42	28.32	28.02	27.54	27.33
20	.....	.....	29.07	28.53	.....	28.42	28.32	28.02	27.54	27.32
21	.....	.....	29.57	28.52	.....	28.60	28.27	28.01	27.54	27.30
22	.....	.....	29.42	28.52	.....	28.50	28.30	28.01	27.52	27.30
23	.....	.....	29.22	28.51	28.22	28.42	28.27	27.99	27.51	27.29
24	.....	.....	29.17	28.47	28.22	28.40	28.27	27.98	27.49	27.25
25	.....	.....	.....	28.47	28.22	28.37	28.27	27.94	27.49	27.28
26	.....	29.14	.....	28.45	28.20	28.34	28.24	27.96	27.49	27.25
27	.....	29.14	.....	28.43	28.20	28.32	28.22	27.96	27.48	27.22
28	.....	29.12	.....	28.42	28.20	28.32	28.20	27.92	27.48	27.21
29	29.10	29.10	.....	28.42	28.17	28.32	28.17	27.91	27.47	27.21
30	29.11	29.10	.....	28.42	28.17	28.32	28.17	27.77	27.47	27.21
31	29.10	.....	.....	.....	28.17	28.32	.....	27.90	.....	27.21

18.38.22.321. Earl C. Scott. New measuring point, bottom edge of pump base, west side, 0.32 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 26, 35.67.

18.38.22.412. R. V. Holman. Water level, in feet below land-surface datum, 1941: Jan. 26, 38.69.

18.38.26.343. Mr. Morrison. Water level, in feet below land-surface datum, 1941: Jan. 26, 41.22.

18.38.30.200. Mrs. Sadie Davis.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	27.13	Apr. 16	27.81	July 17	24.98	Oct. 12	24.53
Feb. 18	27.09	June 10	25.48	Aug. 13	24.66	Nov. 28	24.05
Mar. 15	27.12						

19.35.13.211. Clara Fowler.

Water level, in feet below land-surface datum, 1941

Jan. 26	23.42	Apr. 16	23.37	July 17	16.12	Oct. 12	17.28
Feb. 18	23.44	June 10	16.97	Aug. 13	16.02	Nov. 28	17.83
Mar. 15	23.45						

19.35.24.222. A. R. Brashears. Water level, in feet below land-surface datum, 1941: Jan. 26, 20.38.

Lea County--Continued.

19.36.19.131. Lovis S. Evans Estate. Water level, in feet below land-surface datum, 1941: Jan. 26, 17.93.

19.36.32.111. S. P. Jordan. Water level, in feet below land-surface datum, 1941: Jan. 26, 18.59.

19.37.32.141. Well 19.37.32.131 in Water-Supply Paper 911.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	12.12	Mar. 15	12.14	June 10	10.69	Aug. 13	11.56
Feb. 18	12.14	Apr. 16	12.00	July 17	11.29	Nov. 28	10.12

19.38.2.122. A. C. Cheser. Used drilled irrigation well. Measuring point, south top edge of lower north east-west 8 by 10-inch pump support, 0.50 foot above land-surface datum. Water levels, in feet below land-surface datum: Feb. 3, 1940, 46.36; Jan. 27, 1941, 46.15.

19.38.2.242. Mr. Dunn. Used drilled irrigation well. Measuring point, top edge of hole in north side of Byron Jackson pump base flange, 0.25 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 26, 46.97.

19.38.2.424. A. C. Cheser. Used drilled irrigation well. Measuring point, top edge of 1½-inch hole in northeast side of Pomona pump, 0.43 foot above concrete pump house floor, 1.00 foot above land-surface datum. Pump sits 0.09 foot above concrete floor. Water level, in feet below land-surface datum, 1941: Jan. 27, 46.54.

20.35.1.222. J. L. Wood.

Water level, in feet below land-surface datum, 1941

Jan. 26	25.63	Apr. 16	23.66	July 17	23.06	Oct. 12	23.13
Feb. 18	25.66	June 10	23.13	Aug. 13	23.61	Nov. 28	22.64
Mar. 15	23.62						

20.37.9.110. W. H. Van Laughlin. Measuring point as described in Water-supply Paper 911 until Nov. 28, 1941. Measuring point after Nov. 28, 1941, north top edge of USGS washer in well cover near center of well. Washer is in north side of second board from south side of well cover and about 2 inches west of middle cross brace of well cover. Measuring point is 0.44 foot above old measuring point and land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 26	37.33	Mar. 15	38.20	June 10	37.41	Aug. 13	34.49
Feb. 18	37.27	Apr. 16	37.08	July 17	35.44	Nov. 28	31.89

20.37.9.110a. W. H. Van Laughlin. Unused windmill well at northeast corner of earthern tank, approximately 75 feet northeast of well 20.37.9.110. Measuring point, east edge of USGS washer in east top edge of west 8 by 12-inch wooden well curb, 6 inches south from northwest corner of pit, level with land-surface datum. Not referenced to well 20.37.9.110.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Feb. 18	37.12	June 10	35.81	Aug. 13	34.44
Apr. 16	36.20	July 17	34.52		

LUNA COUNTY

MIMBRES VALLEY

By P. D. Akin

The program of measuring water levels in observation wells, of gathering information on the amount of water pumped and acreage irrigated, and of gathering other pertinent hydrologic data was continued in the Mimbres Valley during 1941 by the United States Geological Survey in cooperation with the State engineer of New Mexico.

Water-level measurements made in the Mimbres Valley since 1927, when measurements were first begun there, have been published in Water-Supply Papers 886 and 911 and in the 10th to 13th Biennial Reports of the State engineer of New Mexico. Basic information on the hydrology of the area has been published in Water-Supply Paper 637 and in the 9th to 13th Biennial Reports of the State engineer of New Mexico.

Data, such as depths and diameters of wells and descriptions of measuring points and reference points, which have been published in Water-Supply Papers 886 and 911 are not repeated in this report, which gives only the well number and the owner's name. Wells in which measurements were begun in 1940 and 1941 and for which measurements have not been published are described in this report as completely as possible. Changes in measuring points, reference points, and other physical conditions of the wells which have occurred during 1941 are reported here in as much detail as seems practical.

The area irrigated by ground water pumped from wells in the Mimbres Valley during 1940 and 1941 is estimated to have been about 11,730 acres and 12,170 acres, respectively. However, due to above-normal rainfall, the amount of ground-water pumpage was decreased considerably in 1941. Preliminary figures indicate that pumpage for agricultural and industrial purposes amounted to about 25,500 acre-feet in 1940 and about 21,000 acre-feet in 1941.

The precipitation at Deming for the year was 14.89 inches, as reported by the United States Weather Bureau. This is 5.89 inches, or 65.5 percent, above the normal rainfall for the area.

In January 1941, 136 observation wells were measured, and 69 of these wells were measured bimonthly during the year. The observation wells consist both of used and unused wells distributed over the whole valley. The readings obtained from the yearly well measurements are used to prepare figures showing the change in ground-water levels in the valley from year to year or during periods of several years. The bimonthly well measurements show the trend and change in ground-water levels throughout the year. During 1941, 5 water-stage recorders were in operation in the valley.

The change in ground-water levels in a part of the Mimbres Valley from January 1941 to January 1942 is shown in an accompanying figure. In an area of about 20 square miles to the west and south of the town of Deming, the water level was higher in 1942 than in 1941. Over approximately 11 square miles of the area west of Deming, the water level rose more than 1 foot during the year, the greatest observed rise being 3.90 feet in well 24.10.3.411b, an irrigation well. A rise of 5.26 feet was observed in well 24.10.3.411, which is a windmill well approximately 94 feet west of well 24.10.3.411b. However, it is believed that the water level in the former well is of more significance in determining the water-level changes and, therefore, the change in the windmill well is not indicated on the figure.

Water levels fell during the year in an area of approximately 85 square miles lying to the south and east of Deming. In the immediate vicinity of Deming water levels fell more than 1 foot over a region of about 1.5 square miles, with a maximum observed drop of 1.35 feet in well 24.9.3.121. Water levels also declined 1 foot or more in a small area of about 1 square mile lying to the north and east of Deming and west of the ground-water dam which extends from the Little Florida Mountains to Cooks Range. In the area of heavy pumping south of Deming, the ground-water level declined more than 1 foot over an area of about 13 square miles. The greatest observed fall of the water level in this area was 2.17 feet in well 24.9.28.221.

The water levels rose over an area of about 44 square miles adjacent to the Florida Mountains and the Little Florida Mountains but not including the mountains themselves. In this area the water levels rose more than 1 foot in the part lying north of the tip of the Little Florida Mountains and to the west of the ground-water dam. The greatest observed rise in the area was 1.10 feet, which occurred in well 23.8.35.211b.

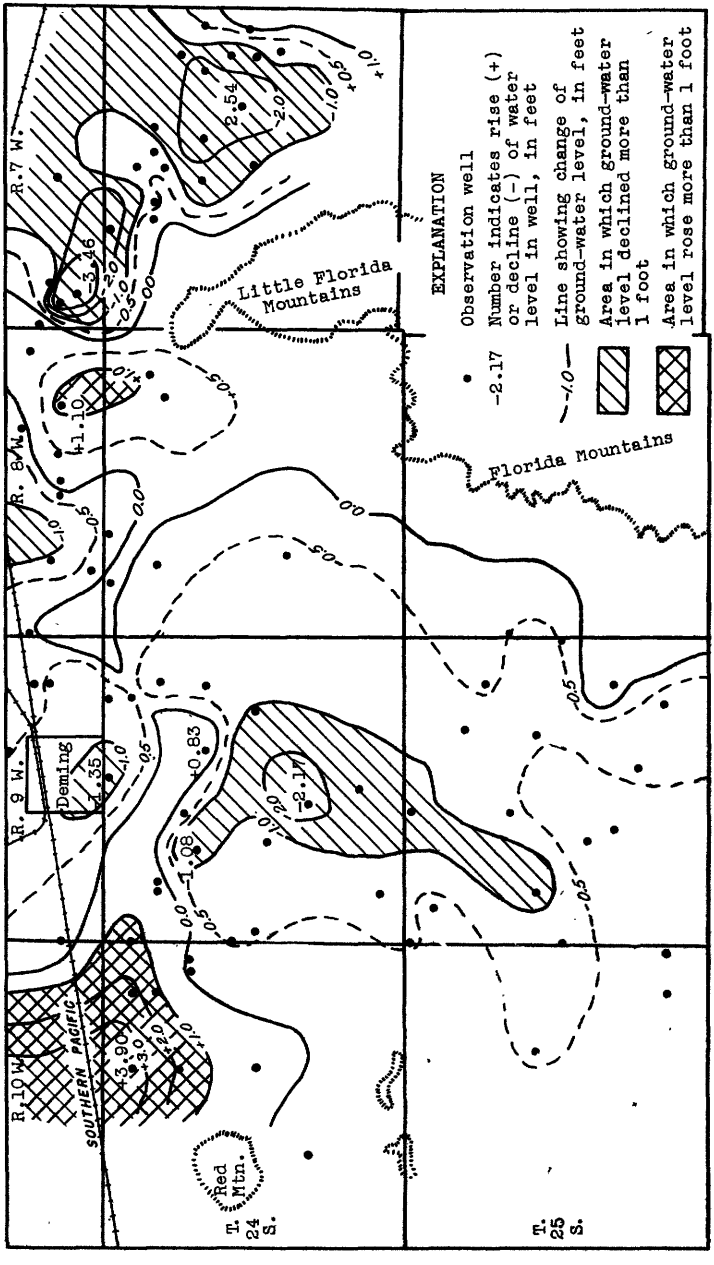

Figure 10.—Map of a part of the Mimbres Valley, N. Mex., showing change in ground-water levels from January 1941 to January 1942.

East of the Little Florida Mountains and the ground-water dam, water levels declined much more than in the other pumping areas in the valley during 1941, falling more than 1 foot over approximately 20 square miles. The greatest observed fall in the area and in the entire Mimbres Valley was 3.40 feet in well 23.7.31.120.

21.10.6. Tom Tigner. Equipped with water-stage recorder. Highest and lowest water levels, in feet below land-surface datum, 1941: Feb. 16, 7.89; Aug. 13, 9.89.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.50	8.10	7.97	8.18	8.03	8.34	9.35	9.74	9.07	8.97	8.05	8.06
2	8.46	8.09	7.97	8.19	7.99	8.37	9.36	9.75	9.05	8.79	8.03	8.07
3	8.41	8.07	7.98	8.20	7.96	8.40	9.36	9.76	9.05	8.66	8.02	8.07
4	8.37	8.06	8.00	8.21	7.93	8.43	9.37	9.78	9.06	8.54	8.01	8.07
5	8.33	8.05	7.99	8.22	7.91	8.46	9.38	9.79	9.08	8.44	8.01	8.09
6	8.30	8.04	8.00	8.23	7.90	8.51	9.40	9.80	9.10	8.38	7.99	8.11
7	8.27	8.03	8.01	8.25	7.89	8.54	9.42	9.82	9.10	8.32	7.99	8.11
8	8.26	8.02	8.03	8.26	7.89	8.58	9.44	9.83	9.11	8.28	7.99	8.12
9	8.25	7.99	8.03	8.28	7.89	8.61	9.46	9.85	9.10	8.26	7.98	8.12
10	8.23	7.97	8.04	8.29	7.91	8.66	9.48	9.86	9.09	8.23	7.98	8.12
11	8.22	7.95	8.06	8.30	7.93	8.70	9.50	9.87	9.08	8.21	7.98	8.12
12	8.21	7.94	8.07	8.31	7.93	8.74	9.52	9.86	9.08	8.19	7.98	8.12
13	8.20	7.92	8.10	8.32	7.93	8.77	9.54	9.89	9.08	8.18	7.98	8.11
14	8.18	7.90	8.12	8.34	7.93	8.82	9.55	9.89	9.09	8.17	7.99	8.11
15	8.16	7.89	8.13	8.34	7.93	8.86	9.56	9.85	9.11	8.17	7.99	8.11
16	8.14	7.89	8.14	8.35	7.95	8.90	9.57	9.74	9.14	8.17	7.99	8.11
17	8.13	7.89	8.14	8.36	7.97	8.94	9.58	9.72	9.18	8.16	7.99	8.11
18	8.12	7.89	8.13	8.36	7.98	8.97	9.60	9.66	9.22	8.16	8.00	8.12
19	8.11	7.90	8.12	8.38	8.00	9.01	9.61	9.61	9.25	8.16	8.00	8.13
20	8.10	7.91	8.12	8.39	8.03	9.05	9.63	9.45	9.28	8.16	8.00	8.13
21	8.11	7.92	8.12	8.40	8.05	9.08	9.64	9.51	9.30	8.16	7.99	8.13
22	8.11	7.93	8.14	8.41	8.07	9.12	9.64	9.45	9.33	8.16	7.99	8.14
23	8.12	7.93	8.15	8.43	8.10	9.15	9.65	9.37	9.35	8.16	8.00	8.15
24	8.13	7.93	8.15	8.44	8.12	9.18	9.66	9.29	9.38	8.16	8.02	8.14
25	8.13	7.93	8.15	8.45	8.14	9.21	9.66	9.21	9.40	8.14	8.02	8.16
26	8.14	7.94	8.16	8.43	8.16	9.23	9.67	9.15	9.42	8.13	8.03	8.17
27	8.14	7.95	8.16	8.28	8.19	9.26	9.67	9.10	9.45	8.13	8.03	8.18
28	8.15	7.96	8.16	8.19	8.21	9.28	9.69	9.08	9.47	8.12	8.04	8.19
29	8.16	....	8.16	8.12	8.25	9.31	9.70	9.07	9.42	8.11	8.04	8.19
30	8.15	....	8.17	8.07	8.28	9.33	9.71	9.07	9.19	8.09	8.05	8.19
31	8.12	....	8.18	....	8.31	....	9.72	9.07	....	8.07	....	8.19

21.11.13. R. A. Gunter, formerly Fred Roth.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	43.28	May 6	38.00	Aug. 29	35.24
Mar. 11	41.49	July 11	34.74	Nov. 11	32.93

21.11.35.310. State land, Tigner lease.

Water level, in feet below land-surface datum, 1941

Jan. 7	24.41	May 6	13.45	Aug. 29	17.85
Mar. 11	16.55	July 8	17.37	Nov. 11	17.11

22.10.6.233. State land, Tigner lease. Windmill stock well of large diameter with concrete curbing. Well is 0.85 mile north of railroad, southeast of an abandoned house and northwest of a stock tank. Measuring point, top edge of concrete well curb, center of north side of well, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 7, 62.74.

Luna County--Continued.

22.10.18,121. State land.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	74.43	May 6	72.88	Aug. 29	71.46
Mar. 11	73.86	July 8	71.84	Nov. 11	70.91

22.10.20.210. State land. Water level, in feet below land-surface datum, 1941: Jan. 7, 93.18.

22.11.2.210. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	29.53	May 6	22.85	Aug. 29	21.40
Mar. 11	26.09	July 8	21.10	Nov. 11	20.38

22.11.13.122. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	66.42	May 6	63.65	Aug. 29	63.56
Mar. 11	65.40	July 8	62.51	Nov. 11	61.39

22.11.13.221. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	73.37	May 6	71.06	Aug. 29	69.63
Mar. 11	72.54	July 8	69.91	Nov. 11	68.88

22.11.14.222. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	58.43	May 6	54.03	Aug. 29	52.50
Mar. 11	56.82	July 8	52.82	Nov. 11	,51.66

22.11.23.222. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	53.13	May 6	49.02	Aug. 29	47.69
Mar. 11	51.80	July 8	47.91	Nov. 11	46.97

23.7.17.200. Windmill stock well inside stock pens and corral enclosure. Measuring point, top edge of USGS washer on top east edge of west 8 by 8-inch cross brace, just south of pump column, 1.25 feet above land-surface datum. Reference point, top edge of USGS washer in east side of southwest windmill tower anchor post 0.02 foot above measuring point.

Water level, in feet below land-surface datum, 1941

Mar. 12	92.57	July 8	a 93.40	Nov. 10	92.74
May 6	92.55	Sept. 4	a 94.59		

23.7.25.331. Frank Veslay. Well dry Jan. 8, 1941.

23.7.30. Lot 16. H. T. Foster.

Water level, in feet below land-surface datum, 1941

Jan. 7	25.74	May 6	25.47	Sept. 4	26.95
Mar. 11	25.41	July 8	27.42	Nov. 10	25.66

23.7.30.400. John Kelly. Water level, in feet below land-surface datum, 1941: Jan. 7, 59.90.

23.7.31.120. William Haas. Water level, in feet below land-surface datum, 1941: Jan. 7, 41.80.

23.7.31.140. William Haas. Water level, in feet below land-surface datum, 1941: Jan. 7, 42.33.

23.7.33.211. Lewis and R. S. Smyer. Water level, in feet below land-surface datum, 1941: Jan. 7, 60.80.

a Windmill pumping.

Luna County--Continued.

23.8.3.300. Unused drilled well at abandoned C.C.C. campsite on north side of Deming-Hatch highway. Measuring point, top edge of 5-inch casing, level with land-surface datum. Water levels, in feet below land-surface datum, 1941: Mar. 14, 131.25; May 8, 131.32; Sept. 8, 131.12; Nov. 11, 131.13.

23.8.13.400. Bart and John H. Childs.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	37.40	May 6	37.80	Sept. 4	37.96
Mar. 12	37.37	July 8	38.17	Nov. 10	37.73

23.8.25.311. Ed. Remondini. Water level, in feet below land-surface datum, 1941: Jan. 7, 21.00.

23.8.26.131. George Snyder.

Water level, in feet below land-surface datum, 1941

Jan. 7	33.17	May 6	33.08	Sept. 6	(a)
Mar. 11	32.76	July 8	(a)	Nov. 10	34.13

23.8.28.222. C. R. Lewis, Jr. Water level, in feet below land-surface datum, 1941: Jan. 7, 41.83.

23.8.29.433. B. N. Ruebush. Water level, in feet below land-surface datum, 1941: Jan. 7, 44.94.

23.8.30.133. Lee Wilkerson. New measuring point, west top edge of 6 by 6-inch pump support, 0.13 foot below base of pump, 0.80 foot above concrete curb and land-surface datum. Let tape down through hole in northeast side of pump base. Water level, in feet below land-surface datum, 1941: Jan. 7, 46.89.

23.8.32.323. Jess T. Gosnell.

Water level, in feet below land-surface datum, 1941

Jan. 8	40.25	May 6	39.69	Sept. 3	41.57
Mar. 12	39.86	July 10	41.15	Nov. 10	41.24

23.8.33.221. A. J. Inderrieden. Water level, in feet below land-surface datum, 1941: Jan. 7, 36.57.

23.8.34.111. A. J. Inderrieden. Water level, in feet below land-surface datum, 1941: Jan. 7, 34.41.

23.8.34.211. H. T. Foster.

Water level, in feet below land-surface datum, 1941

Jan. 7	34.40	May 6	34.04	Sept. 6	38.92
Mar. 11	33.69	July 8	37.02	Nov. 10	34.55

23.8.35.210. Joe Remondini. Measurements discontinued.

23.8.35.211b. Joe Remondini. Unused well approximately 200 feet south of 23.8.35.210. Measuring point, top edge of USGS washer in top of east-west 8 by 8-inch timber, flush with concrete curb and land-surface datum. Water levels, in feet below land-surface datum: Jan. 5, 1940, 29.90; Jan. 7, 1941, 29.70.

23.9.7.240. R. M. Wilson ranch. Water level, in feet below land-surface datum, 1941: Jan. 7, 97.49.

23.9.19.131. Peru Mining Company.

Water level, in feet below land-surface datum, 1941

Jan. 7	72.86	May 6	72.70	Aug. 29	72.17
Mar. 11	72.75	July 8	72.90	Nov. 10	72.96

a Well 10 feet north pumping.

Luna County--Continued.

23.9.22.200. Roy Perkins.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	62.53	May 6	62.64	Sept. 2	62.28
Mar. 11	62.58	July 8	62.16	Nov. 10	62.23

23.9.25.311. Albert Ernst.

Water level, in feet below land-surface datum, 1941

Jan. 7	55.79	May 6	(a)	Sept. 2	56.72
Mar. 11	55.71	July 8	a 67.10	Nov. 10	55.94

23.9.25.330. John C. Thompson. Water level, in feet below land-surface datum, 1941: Jan. 7, 59.59.

23.9.26.410. Hubert Ruebush. Water level, in feet below land-surface datum, 1941: Jan. 7, 54.87.

23.9.27.142. Mr. Gray. Measuring point, top edge of windmill pipe clamp, to west of pipe column. The pipe clamps are subject to frequent vertical displacement and, therefore, the vertical distance between the measuring point and the reference point is determined each time a water-level measurement is made. Reference point, surface of concrete well curb at southeast corner of well, 0.35 foot above land-surface datum. Measuring point, 0.47 foot above reference point in January 1941, 0.90 foot above reference point in March 1941, 0.47 foot above reference point in May 1941, and 0.45 foot above reference point in July, September, and November 1941.

Water level, in feet below land-surface datum, 1941

Jan. 7	59.83	May 6	60.18	Sept. 2	b 60.94
Mar. 11	59.78	July 8	60.36	Nov. 10	b 60.63

23.9.27.221. R. E. Hardaway.

Water level, in feet below land-surface datum, 1941

Jan. 7	57.35	May 6	57.51	Sept. 2	57.83
Mar. 11	57.43	July 8	b 57.65	Nov. 10	b 58.14

23.9.27.411. Thelma Austin.

Water level, in feet below land-surface datum, 1941

Jan. 7	53.84	May 6	54.01	Sept. 2	54.42
Mar. 11	53.84	July 8	54.71	Nov. 10	b 54.86

23.9.31.110. Schauer and Lindauer. Water level, in feet below land-surface datum, 1941: Jan. 9, 76.84.

23.10.15. State land.

Water level, in feet below land-surface datum, 1941

Jan. 7	93.55	May 6	92.75	Sept. 6	92.20
Mar. 11	93.28	July 8	92.25	Nov. 10	92.20

24.6.29.300. Mr. Brownfield. Drilled windmill well, diameter 6 inches, depth 93 feet. Measuring point, top edge of collar on 6-inch well casing, east side of well, 1.5 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Mar. 12, 66.89.

24.6.30.111. Mr. Brownfield. Used windmill well. Measuring point, top north edge of south 8 by 8-inch cross support, south of pipe column, 0.65 foot above east side of concrete well curb, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Mar. 12, 66.16.

24.7.4.424. G. D. Hatfield.

Water level, in feet below land-surface datum, 1941

Jan. 8	83.93	May 6	c 87.89	Sept. 4	c 91.13
Mar. 12	82.30	July 10	86.02	Nov. 10	87.51

a Well pumping.
b Windmill pumping slowly.
c Windmill pumping rapidly.

Luna County--Continued.

24.7.5.200. R. M. Williamson.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	79.00	May 6	79.19	Sept. 4	79.93
Mar. 12	79.08	July 10	79.60	Nov. 10	80.26

24.7.8.221. J. M. McDougall. Water level, in feet below land-surface datum, 1941: Jan. 7, 80.45.

24.7.9.111. Smyer Bros. Reference point No. 1, top edge of USGS washer in west side of large cottonwood tree, 15 feet east of well, 1.85 feet above measuring point. Reference point No. 2, surface of concrete engine base, 50 feet north of well, just to west of east flywheel of engine near south edge of lower surface, 1.57 feet above measuring point.

Water level, in feet below land-surface datum, 1941

Jan. 7	79.94	May 6	79.75	Sept. 4	a 91.83
Mar. 12	79.47	July 10	81.93	Nov. 10	81.09

24.7.9.241. G. D. Hatfield. Used drilled irrigation well. Measuring point, top edge of base flange of pump, through hole in north side under projection on pump, 0.52 foot above concrete curb, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 5, 1940, 84.60; Jan. 8, 1941, 87.00.

24.7.10.111. G. D. Hatfield. Water level, in feet below land-surface datum, 1941: Jan. 8, 87.29.

24.7.10.211. Fred Haasman. Water level, in feet below land-surface datum, 1941: Jan. 8, 84.72.

24.7.11.111. Edith E. Pollard. Measuring point, top edge of USGS washer in top west side of east pump support just to east of pump column, 0.45 foot above reference point of concrete well curb and 0.95 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 8, 83.00.

24.7.12.311. E. W. Odenbaugh.

Water level, in feet below land-surface datum, 1941

Jan. 8	73.25	May 6	73.24	Sept. 4	74.46
Mar. 12	72.92	July 10	73.82	Nov. 10	74.79

24.7.13.212. Percival and Dwyer. Water level, in feet below land-surface datum, 1941: Jan. 8, 68.42.

24.7.13.311. Jennie Weeks. Water level, in feet below land-surface datum, 1941: Jan. 8, 72.69.

24.7.14.221. J. H. Winslow. Equipped with water-stage recorder. New measuring point, top edge of tile casing at northeast side of well, 1.93 feet above land-surface datum. Highest and lowest water levels, in feet below land-surface datum, 1941: Apr. 5, 75.47; Dec. 10, 79.01.

Highest daily water level, in feet below land-surface datum, 1941
(from recorder charts)

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	76.17	75.89	75.65	75.50	76.19	76.83	77.25	77.62	78.03	78.37	78.27	78.89
2	76.16	75.89	75.65	75.50	76.22	76.84	77.27	77.64	78.05	78.38	78.25	78.90
3	76.15	75.87	75.64	75.49	76.25	76.85	77.28	77.65	78.06	78.38	78.25	78.91
4	76.14	75.86	75.62	75.49	76.27	76.87	77.30	77.65	78.08	78.39	78.24	78.92
5	76.13	75.86	75.61	75.47	76.32	76.89	77.31	77.67	78.09	78.38	78.25	78.94
6	76.12	75.85	75.61	75.48	76.37	76.90	77.32	77.68	78.10	78.39	78.26	78.95
7	76.11	75.83	75.61	75.49	76.40	76.92	77.34	77.69	78.10	78.39	78.28	78.96
8	76.11	75.84	75.59	75.51	76.42	76.93	77.35	77.70	78.12	78.39	78.28	78.98
9	76.11	75.82	75.58	75.53	76.44	76.95	77.35	77.71	78.14	78.39	78.31	78.99

a Well pumping.

Luna County--Continued.

24.7.14.221. J. H. Winslow.--Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
10	76.10	75.82	75.58	75.55	76.47	76.97	77.36	77.73	78.15	78.39	78.35	79.00
11	76.08	75.79	75.58	75.59	76.48	76.98	77.37	77.74	78.16	78.38	78.34	79.00
12	76.08	75.80	75.59	75.61	.....	76.99	77.39	77.75	78.17	78.38	78.36	79.00
13	76.06	75.79	75.59	75.67	.....	77.01	77.40	77.75	78.18	78.37	78.39	78.98
14	76.05	75.77	75.57	75.69	.....	77.02	77.41	77.78	78.19	78.37	78.43	78.96
15	76.04	75.77	75.59	75.72	.....	77.03	77.42	77.79	78.21	78.37	78.44	78.95
16	76.03	75.76	75.58	75.75	.....	77.04	77.44	77.79	78.22	78.37	78.47	78.91
17	76.03	75.74	75.59	75.78	.....	77.06	77.45	77.81	78.22	78.36	78.50	78.91
18	76.02	75.74	75.58	75.81	76.58	77.07	77.46	77.83	78.24	78.36	78.52	78.87
19	76.00	75.73	75.57	75.85	76.61	77.09	77.47	77.85	78.24	78.36	78.57	78.87
20	75.99	75.73	75.56	75.87	76.63	77.10	77.49	77.85	78.25	78.35	78.58	78.85
21	75.98	75.72	75.56	75.90	76.65	77.11	77.50	77.87	78.27	78.34	78.62	78.81
22	75.97	75.70	75.57	75.93	75.66	77.13	77.51	77.88	78.29	78.34	78.65	78.79
23	75.96	75.70	75.55	75.96	76.65	77.14	77.52	77.90a	78.30	78.34	78.68	78.75
24	75.95	75.70	75.54	76.00	76.70	77.15	77.54	77.91a	78.32	78.32	78.72	78.75
25	75.94	75.69	75.54	76.02	76.71	77.16	77.54	77.94a	78.33	78.32	78.75	78.75
26	75.93	75.68	75.54	76.06	76.73	77.18	77.55	77.95a	78.34	78.31	78.77	78.71
27	75.93	75.67	75.54	76.09	76.75	77.19	77.56	77.96a	78.35	78.28	78.80	78.69
28	75.91	75.67	75.52	76.12	76.77	77.21	77.58	77.97	78.36	78.28	78.83	78.67
29	75.91	.....	75.52	76.15	76.78	77.22	77.59	77.99	78.36	78.29	78.86	78.64
30	75.91	.....	75.52	76.17	76.79	77.24	77.60	78.00	78.37	78.28	78.87	78.62
31	75.90	.....	75.50	.....	76.81	.....	77.60	78.01	.....	78.27	.....	78.60

24.7.14.331. Catherine Nordhaus. Water level, in feet below land-surface datum, 1941: Jan. 8, 78.32.

24.7.15.122. J. N. McDougall. Water level, in feet below land-surface datum, 1941: Jan. 8, 82.95.

24.7.16.211. George Snyder. Water levels, in feet below land-surface datum, 1941: Jan. 7, 79.36; Mar. 12, 79.64; May 6, 79.83; July 10, 80.08.

24.7.16.211b. George Snyder. Unused drilled well approximately 50 feet east of well 24.7.16.211. Diameter 12 inches. Measuring point, top of steel plate well cover welded to top of casing. Let tape down through ½-inch hole in well cover. Water levels, in feet below land-surface datum, 1941: May 6, 79.83; July 10, 80.08; Sept. 4, 80.36; Nov. 10, 80.77.

24.7.21.222. Hiram Jeter. Reference point, top surface of concrete engine base at southwest corner, southwest of flywheel, about 30 feet east of well, 0.75 foot below measuring point and 0.25 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 8, 71.50.

24.7.24.111, Jasper Wilson.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 8	71.14	May 6	71.40	Sept. 4	71.93
Mar. 12	71.30	July 10	71.66	Nov. 10	72.30

24.7.24.211. J. S. Hack. Water levels, in feet below land-surface datum, 1941: Jan. 8, 69.86; Mar. 12, 69.82.

24.7.24.312. H. E. Emory(?).

Water level, in feet below land-surface datum, 1941

Jan. 8	68.60	May 6	68.90	Sept. 6	69.19
Mar. 12	68.78	July 10	69.02	Nov. 10	69.39

a Interpolated.

Luna County--Continued.

24.7.26.112. Mr. Brownfield. Drilled windmill stock well, diameter 8 inches. Measuring point, top edge of 8-inch collar on top of well casing, south side of well, 1.50 feet above land-surface datum.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Mar. 12	68.62	July 10	68.84	Nov. 10	68.87
May 6	68.48	Sept. 6	70.41		

24.8.1.333. F. K. Kretek.

Water level, in feet below land-surface datum, 1941

Jan. 7	16.54	May 6	16.59	Sept. 3	19.39
Mar. 12	16.00	July 10	18.58	Nov. 10	15.71

24.8.1.333b. F. K. Kretek. Drilled irrigation well, approximately 50 feet west of well 24.8.1.333. Measuring point, top edge of concrete well curb, north side of well, flush with land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 7	17.22	July 10	19.22	Nov. 10	16.40
May 6	17.26	Sept. 3	20.02		

24.8.4.111. Unused drilled well, diameter 24 inches, depth approximately 100 feet. Measuring point, top west edge of concrete slab over east side of well, near center, 1.00 foot above land-surface datum. Arrow painted at measuring point with orange paint.

Water level, in feet below land-surface datum, 1940-41

Nov. 14, 1940	35.90	Mar. 12, 1941	35.23	July 10, 1941	35.99
Jan. 8, 1941	35.59	May 6	35.06	Nov. 10	36.40

24.8.5.110. R. A. Hackebeil. Water levels, in feet below land-surface datum, 1941: Jan. 8, 42.99; Mar. 12, 41.77.

24.8.7.300. Paul Hrna. Drilled irrigation well. Measuring point, bottom edge of Bryon Jackson pump base, east side, just north of discharge pipe. Pump sits on two east-west 8 by 8-inch timbers, 0.55 foot thick, which rest on concrete curb. Measuring point is 0.75 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: May 7, 38.80.

24.8.8.120. J. F. Holiday. Water level, in feet below land-surface datum, 1941: Jan. 8, 41.85.

24.8.11.2. F. K. Kretek.

Water level, in feet below land-surface datum, 1941

Jan. 7	16.90	May 6	16.52	Sept. 3	18.02
Mar. 12	16.43	July 10	18.70	Nov. 10	16.58

24.8.18.331. Chas. Peters. Water level, in feet below land-surface datum, 1941: Jan. 8, 52.05.

24.8.19.433. A. G. Rudd.

Water level, in feet below land-surface datum, 1941

Jan. 8	54.71	May 7	54.61	Sept. 3	55.01
Mar. 12	54.66	July 10	54.86	Nov. 8	a 54.8±

24.8.20.411. J. W. Jones.

Water level, in feet below land-surface datum, 1941

Jan. 8	41.19	May 7	41.30	Sept. 3	42.74
Mar. 12	41.35	July 10	41.54	Nov. 8	41.85

24.9.2.221. R. G. Folk.

Water level, in feet below land-surface datum, 1941

Jan. 8	53.80	May 6	53.80	Sept. 1	54.31
Mar. 12	53.74	July 10	54.06	Nov. 8	54.41

a Measurement probably inaccurate, well almost dry.

Luna County--Continued.

24.9.2.421. J. H. Winslow. Designated as Well 24.9.2.412 in Water-Supply Papers 886 and 911.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 8	52.82	May 6	52.94	Sept. 1	53.24
Mar. 12	52.89	July 10	53.09	Nov. 8	53.47

24.9.3.121. Jim Swartz. Measuring point, top edge of 8 by 8-inch pump support, east of pump base, 0.53 foot above concrete well curb, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Mar. 14, 57.74.

24.9.6.311. J. B. Wells. Measuring point January 1941, lower edge of pump base flange, north side of pump, 0.98 foot above land-surface datum. March 1941, well deepened to 200± feet, pump reset. Measuring point lower edge of pump base flange, north side of pump, 0.96 foot above land-surface datum. May 1941, new measuring point, top edge of 1 by 6-inch board on west side of pump base just south of discharge pipe, 0.73 foot above concrete curb, 1.03 feet above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 8	77.34	May 5	75.45	Aug. 30	(a)
Mar. 13	76.04	July 9	(a)	Nov. 7	78.27

24.9.6.431. State of New Mexico. State engineer test well, unused, drilled, diameter 12 inches to 300 feet, 8 inches to 653 feet, 6 inches to 1,000 feet. Measuring point, top inside edge of 12-inch casing, west side of well at the south side of well cover hasp, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: July 7, b/ 64.85; Aug. 30, b/67.55; Nov. 7, 58.83.

24.9.7.211. Emanuel Vocále. Well deepened to 400± feet June 1941. Water level, in feet below land-surface datum, 1941: Jan. 8, 78.76.

24.9.7.331. Smitty R. Moir.

Water level, in feet below land-surface datum, 1941

Jan. 8	74.33	May 5	c 74.04	Aug. 30	d 81.85
Mar. 12	74.15	July 9	80.10	Nov. 7	75.15

24.9.8.111. Ben F. Jonas.

Water level, in feet below land-surface datum, 1941

Jan. 8	75.02	May 5	73.75	Aug. 31	77.07
Mar. 13	74.29	July 9	75.28	Nov. 7	75.38

24.9.8.112. Ben F. Jonas.

Water level, in feet below land-surface datum, 1941

Jan. 8	74.10	May 5	72.66	Aug. 31	75.91
Mar. 13	73.19	July 9	73.45	Nov. 7	74.80

24.9.8.121. Ben F. Jonas. Not measured in 1941.

24.9.8.440. Frank A. Bredecko. Water level, in feet below land-surface datum, 1941: Jan. 8, 70.04.

24.9.9.411. Joe Clary. Measuring point Jan. 8, 1941, top of concrete well curb, south side of well, level with land-surface datum. Recorder installed Mar. 13, 1941. Measuring point since Mar. 13, 1941, top edge of front 2 by 4-inch sill of recorder shelter, 0.44 foot above concrete curb and land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 8	66.22	May 5	e 79.14	Aug. 31	e 82.45
Mar. 13	65.42	July 9	69.20	Nov. 8	67.69

24.9.12.111. Ed. H. Hatcher. Water level, in feet below land-surface datum, 1941: Jan. 8, 52.80.

a Well pumping,
b Well 113 feet north pumping.
c Windmill shut down two minutes prior to taking measurement.
d Well 60± feet northeast pumping.
e Well 100 feet west pumping.

Luna County--Continued.

24.9.13.111. Mary E. Barrett.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 8	22.03	May 7	21.45	Nov. 8	23.31
Mar. 12	21.58	July 10	22.13		

24.9.15.221. Joe Lutonsky. Dug and drilled irrigation well, depth 170 feet. Measuring point, top edge of concrete curb, southwest side of well, 0.50 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 8, 1940, 61.60; Jan. 8, 1941, 62.62.

24.9.18.311. Chas. Peter. Water level, in feet below land-surface datum, 1941: Jan. 9, 73.65.

24.9.19.121. Francis Ligocky.

Water level, in feet below land-surface datum, 1941

Jan. 9	74.16	May 5	73.93	Aug. 31	79.04
Mar. 12	74.16	July 9	77.34	Nov. 7	75.68

24.9.21.131. L. L. Gaskill. Equipped with water-stage recorder.

Water level, in feet below land-surface datum, 1941

Jan. 9	70.05	May 7	69.76	Aug. 31	a 87.38
Mar. 12	69.78	July 9	a 87.31	Nov. 9	71.02

24.9.23.211. J. H. Winslow.

Water level, in feet below land-surface datum, 1941

Jan. 8	66.73	May 7	b 72.95	Sept. 1	69.74
Mar. 12	66.59	July 10	(c)	Nov. 8	67.92

24.9.28.221. John Hrna. Used drilled irrigation well, diameter 10 inches, depth 140 feet. Measuring point, lower edge of north railroad rail pump support, east of pump, same level as top of concrete well curb, east side of well, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 9, 62.88.

24.9.32.311. H. C. Wheeler. Water level, in feet below land-surface datum, 1941: Jan. 9, 70.40.

24.9.34.111. H. C. Norwood. Used drilled irrigation well. Diameter 12⅝ inches, depth 155 feet. Measuring point, top edge of USGS washer on south top edge of north pump support, level with base of Pomona pump, to east of pump, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 9, 59.13.

24.10.1.311. R. V. Griggs. Used drilled irrigation well, diameter 10 inches, depth 198 feet. Measuring point, top edge of 0.5-inch hole in north side of Fairbanks Morse pump base flange, 0.32 foot above top north edge of well casing, 1.30 feet above land-surface datum. Reference point, top edge of USGS washer on north side of east post supporting meter box, to south of well, level with measuring point. Water level, in feet below land-surface datum, 1941: Jan. 9, 80.90.

24.10.3.411. Josh Bryan. Unused well.

Water level, in feet below land-surface datum, 1941

Jan. 9	87.27	May 5	85.07	Aug. 30	d 83.72
Mar. 13	86.91	July 9	d 84.11	Nov. 7	82.26

24.10.3.411b. Josh Bryan. Used drilled irrigation well, approximately 94 feet northeast of well 24.10.3.411, depth 198 feet. Measuring point, top edge of ½-inch hole in south side of Fairbanks Morse pump base flange, 0.40 foot above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 9	79.24	May 5	76.26	Aug. 30	c 94.92
Mar. 13	77.95	July 9	c 94.35	Nov. 7	75.68

a Well 20 feet southwest of observation well pumping.
b Pump stopped a few minutes previous to measurement.
c Well pumping.
d Well 94 feet northeast pumping.

Luna County--Continued.

24.10.10.311. G. F. Ackerman.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 9	82.42	May 5	(a)	Aug. 30	(a)
Mar. 12	82.18	July 9	83.74	Nov. 7	80.95

24.10.12.111. Morgan Garrett. Water level, in feet below land-surface datum, 1941: Jan. 9, 83.70.

24.10.12.431. Steve Hrna. Equipped with water-stage recorder. Highest and lowest water levels, in feet below land-surface datum, 1941: May 12, 78.92; Aug. 20, 83.75.

Highest daily water level, in feet below land-surface datum, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.93	79.43	79.17	78.98	79.09	79.65	81.44	82.97	83.47	82.29	81.20	80.69
2	79.91	79.42	79.16	78.97	79.08	79.72	81.54	83.05	83.43	82.25	81.17	80.70
3	79.89	79.41	79.15	78.98	79.05	79.80	81.65	83.10	83.40	82.21	81.13	80.68
4	79.87	79.38	79.13	78.97	79.04	79.90	81.74	83.16	83.37	82.17	81.11	80.67
5	79.85	79.36	79.13	78.94	79.02	80.00	81.82	83.21	83.34	82.14	81.09	80.73
6	79.84	79.34	79.14	78.96	79.00	80.11	81.91	83.25	83.31	82.09	81.05	80.78
7	79.83	79.32	79.21	78.96	78.99	80.21	81.95	83.30	83.28	82.05	81.05	80.79
8	79.81	79.34	79.22	78.97	78.97	80.32	81.97	83.35	83.26	82.01	81.01	80.77
9	79.80	79.31	79.19	78.97	78.95	80.39	82.03	83.39	83.24	81.98	80.99	80.74
10	79.77	79.29	79.20	78.97	78.94	80.45	82.05	83.43	83.20	81.94	80.97	80.75
11	79.74	79.25	79.19	78.98	78.93	80.53	82.14	83.47	83.16	81.89	80.95	80.73
12	79.73	79.25	79.20	79.00	78.92	80.61	82.19	83.50	83.12	81.86	80.93	80.74
13	79.70	79.25	79.19	79.01	78.93	80.67	82.27	83.54	83.09	81.82	80.95	80.68
14	79.68	79.22	79.16	79.01	78.95	80.76	82.29	83.58	83.04	81.79	81.05	80.64
15	79.69	79.21	79.15	79.03	78.97	80.84	82.34	83.59	82.99	81.75	81.12	80.58
16	79.68	79.19	79.14	79.06	.....	80.86	82.39	83.63	82.95	81.71	81.16	80.54
17	79.70	79.17	79.15	79.09	.....	80.86	82.46	83.65	82.89	81.67	81.15	80.51
18	79.67	79.16	79.13	79.15	.....	80.83	82.53	83.64	82.84	81.64	81.13	80.47
19	79.64	79.15	79.11	79.26	.....	80.82	82.59	83.66	82.79	81.59	81.14	80.43
20	79.62	79.14	79.09	79.27	.....	80.80	82.64	83.69	82.74	81.56	81.06	80.37
21	79.61	79.14	79.08	79.27	79.14	80.80	82.69	83.71	82.70	81.54	81.01	80.33
22	79.59	79.17	79.10	79.27	79.18	80.78	82.73	83.68	82.66	81.45	80.99	80.30
23	79.58	79.23	79.09	79.28	79.24	80.78	82.72	83.64	82.61	81.47	80.97	80.24
24	79.55	79.26	79.08	79.26	79.26	80.79	82.74	83.60	82.57	81.44	80.92	80.21
25	79.54	79.26	79.07	79.26	79.25	80.84	82.72	83.56	82.53	81.35	80.98	80.21
26	79.52	79.27	79.07	79.22	79.26	80.95	82.74	83.53	82.48	81.37	80.83	80.17
27	79.51	79.25	79.05	79.21	79.28	81.04	82.77	83.52	82.44	81.31	80.80	80.16
28	79.49	79.21	79.03	79.19	79.33	81.14	82.80	83.53	82.40	81.30	80.77	80.12
29	79.47	.....	79.01	79.17	79.42	81.24	82.83	83.51	82.37	81.27	80.74	80.09
30	79.46	.....	79.01	79.12	79.48	81.35	82.88	83.51	82.33	81.26	80.71	80.05
31	79.45	.....	78.98	.....	79.56	.....	82.92	83.49	.....	81.22	.....	80.01

24.10.12.432a. Steve Hrna.

Water level, in feet below land-surface datum, 1941

Jan. 8	78.43	May 5	77.75	Aug. 30	a 91.66
Mar. 12	78.73	July 9	(a)	Nov. 7	79.23

24.10.12.432b. Steve Hrna.

Water level, in feet below land-surface datum, 1941

Jan. 8	79.18	May 5	78.50	Aug. 30	b 83.03
Mar. 12	79.02	July 9	b 82.20	Nov. 7	80.05

a Well pumping.

b Well 24.10.12.432a, 6 feet north, pumping.

Luna County--Continued.

24.10.22.211. Hurt. Unused irrigation well, large diameter, depth 200± feet. Measuring point, top edge of concrete well curb, south side of well, 2.00 feet above land-surface datum.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Mar. 12	69.88	July 9	69.79	Nov. 7	69.86
May 5	69.72	Aug. 30	69.91		

24.10.29.222. State of New Mexico.

Water level, in feet below land-surface datum, 1941

Jan. 9	63.87	May 5	63.89	Aug. 30	64.00
Mar. 12	63.89	July 9	63.93	Nov. 7	64.12

25.8.18.111. George McCann. Water-stage recorder removed January 1941. New measuring point May 7, 1941, top edge of board over hole in well cover, 0.31 foot above concrete curb and land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 11	51.21	May 7	56.93	Sept. 1	54.33
Mar. 13	51.31	July 10	57.09	Nov. 9	52.24

25.9.4.211. Val Miller.

Water level, in feet below land-surface datum, 1941

Jan. 9	63.70	May 7	63.83	Sept. 1	64.43
Mar. 13	63.78	July 10	64.06	Nov. 9	64.86

25.9.6.111. Paul M. Yates. Used dug and drilled irrigation well. Measuring point, top edge of ½-inch hole in southwest side of pump base flange, level with land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 10, 65.14.

25.9.6.421. Roderick and Wheeler.

Water level, in feet below land-surface datum, 1941

Jan. 9	69.27	May 7	(a)	Sept. 3	75.58
Mar. 13	68.28	July 10	70.74	Nov. 9	70.90

25.9.11.114. J. B. Anderson. New measuring point, Nov. 9, 1941, top east edge of 2 by 10-inch board on west side of pump, 0.21 foot above land surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 10	61.92	May 7	62.26	Sept. 2	(a)
Mar. 13	61.73	July 10	(a)	Nov. 9	63.25

25.9.12.311. Jo Willa Cheek. Water level, in feet below land-surface datum, 1941: Jan. 10, 57.81.

25.9.13.311. C. Wilbur Gaines. Water levels, in feet below land-surface datum, 1941: Jan. 10, 53.14; Mar. 13, 52.78; May 7, 52.89±; July 10, measurements discontinued.

25.9.14.311. George W. McCann. Water level, in feet below land-surface datum, 1941: Jan. 9, 58.00.

25.9.15.211. C. H. Paulk. Water level, in feet below land-surface datum, 1941: Jan. 9, 61.67.

25.9.17.311. Tom Tigner. Water level, in feet below land-surface datum, 1941: Jan. 9, 65.73.

25.9.19.111. Tom Marcak. Water level, in feet below land-surface datum, 1941: Jan. 9, 63.01.

a Well pumping.

Luna County--Continued.

25.9.21.311. A. W. Speir.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 9	65.00	May 7	64.57	Sept. 2	(a)
Mar. 13	64.50	July 10	68.43	Nov. 9	66.46

25.9.24.222. George P. Watkins.

Water level, in feet below land-surface datum, 1941

Jan. 10	48.83	May 7	48.76	Sept. 2	(a)
Mar. 13	48.40	July 10	(a)	Nov. 9	49.81

25.9.25.111. Alan Crotchett. New measuring point, lower edge of north steel rail pump support west of pump, 0.57 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 10, 48.50.

25.9.27.422. H. A. Gray. New measuring point, top edge of west $\frac{1}{2}$-inch hole in south side of Peerless pump base, 0.11 foot above 1940 measuring point and land-surface datum. Water level, in feet below land-surface datum, 1941: 54.19.

25.9.28.121. Owner not known. Dug and drilled irrigation well, diameter 3.5 feet, depth 100± feet. Pump installed July 1941. Measuring point, top of concrete well curb at southeast corner of well, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: May 7, 65.95; July 10, well pumping; Sept. 2, 70.02; Nov. 9, 67.48.

25.9.30.111. Frank Chvojka. New measuring point, lower edge of pump support, level with concrete curb and land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 9, 56.50.

25.9.35.210. Sigman Lindauer Estate.

Water level, in feet below land-surface datum, 1941

Jan. 10	48.72	May 7	48.62	Sept. 2	(a)
Mar. 13	48.67	July 10	(a)	Nov. 9	50.38

25.10.15.422. C. H. Graves. Dug and drilled irrigation well. Measuring point, lower edge of USGS washer on lower edge of lowest north-south 8 by 8-inch pump support that is set into concrete curb, west side of pump, 0.81 foot below concrete well curb, 0.75 foot below land-surface datum. Water levels, in feet below land-surface datum: Jan. 14, 1940, 57.18; Jan. 9, 1941, 57.92.

25.10.36.111. State of New Mexico. Water level, in feet below land-surface datum, 1941: Jan. 9, 59.95.

25.10.36.222. State of New Mexico.

Water level, in feet below land-surface datum, 1941

Jan. 9	59.87	May 7	(a)	Sept. 3	67.62
Mar. 13	(a)	July 10	67.22	Nov. 9	60.90

26.9.2.221. Tom R. Taylor. Unused dug well, depth 42 feet. Measuring point, top edge of concrete well curb, north side of well, marked with orange paint, 0.50 foot above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 11	39.69	May 7	39.58	Sept. 2	40.20
Mar. 13	39.62	July 10	39.90	Nov. 9	40.50

26.9.4.331. Unused drilled well, diameter 12 inches, depth 65 feet. Measuring point, top edge of 12-inch casing, east side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 11, 52.28.

a Well pumping.

Luna County--Continued.

26.9.11.211. State of New Mexico.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 11	37.73	May 7	37.73	Sept. 2	37.94
Mar. 13	37.73	July 10	37.82	Nov. 9	38.05

26.10.1.100. W. F. Kerr. Water level, in feet below land-surface datum, 1941: Jan. 9, 58.47.

27.8.8.211. J. S. Pearce. Well sanded in, measurements discontinued.

27.8.8.411. Pearl Verdick.

Water level, in feet below land-surface datum, 1941

Jan. 11	23.50	May 7	23.55	Sept. 2	23.52
Mar. 13	23.47	July 10	23.47	Nov. 9	23.49

27.9.2.211. State of New Mexico.

Water level, in feet below land-surface datum, 1941

Jan. 11	17.17	May 7	18.10	Sept. 2	a 6.88
Mar. 13	17.62	July 10	a 6.77		

29.7.4.111. Francis S. Connatt. Water level, in feet below land-surface datum, 1941: Jan. 11, 4.71.

29.7.18.211. R. M. Marshall. Water level, in feet below land-surface datum, 1941: Jan. 11, 0.50.

29.8.12.244. A. G. Anderson. Water level, in feet below land-surface datum, 1941: Jan. 11, 7.11.

29.8.13.111. L. L. Burkhead. Water level, in feet below land-surface datum, 1941: Jan. 11, 6.49.

QUAY COUNTY

By P. D. Akin

Pumping of ground water for irrigation began in an area near House, N. Mex., in 1936. Four wells were in operation in the area in 1936, and it is estimated that about 380 acre-feet of water was pumped during that year. The use of ground water for irrigation has continued to increase in succeeding years. The maximum pumpage occurred during 1940, when it is estimated that about 785 acres were irrigated and that approximately 1,570 acre-feet of water was pumped. By 1941, 31 irrigation wells had been drilled, 28 of which were in use during the year and 3 of which were abandoned for various reasons. A rough survey made by the writer during the summer of 1941 indicates that about 920 acres were irrigated during 1941 and that about 580 acre-feet of water was pumped.

a Flood water in well.

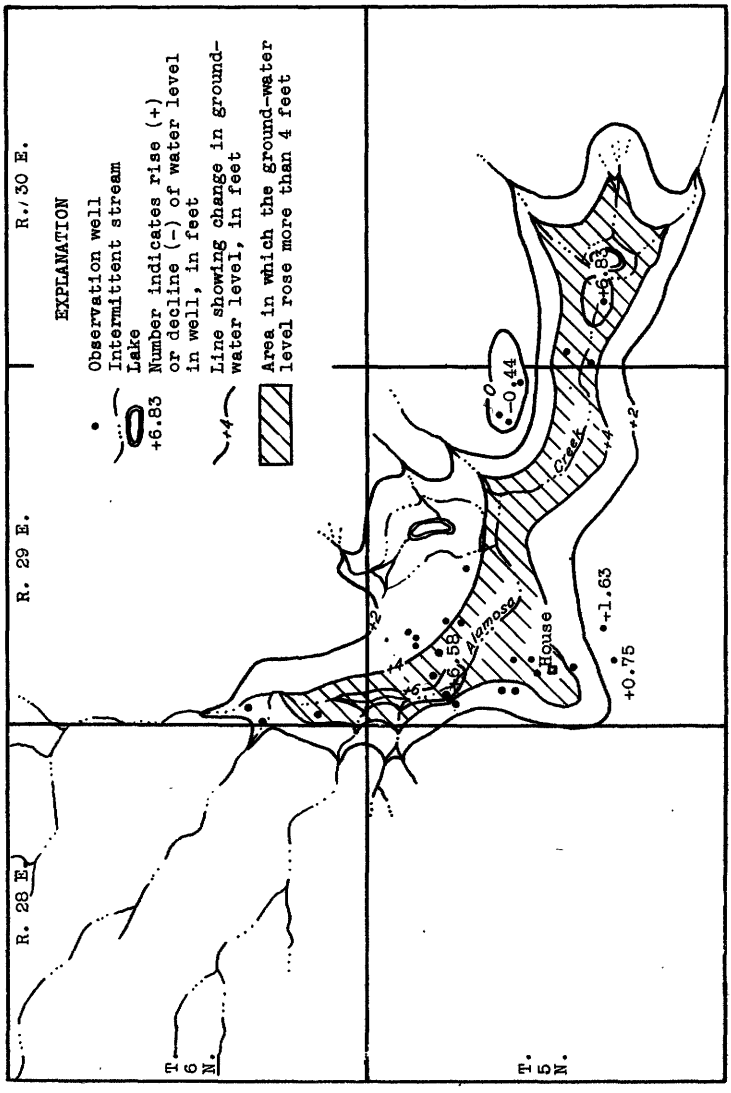

Figure 19.--Map of House area, Quay County, N. Mex., showing change in ground-water levels from April 1941 to January 1942.

The precipitation at Hassell, N. Mex., approximately 7 miles west and 4 miles north of House, was reported by the United States Weather Bureau to have been 42.52 inches in 1941, or 29.23 inches above the normal precipitation of 13.29 inches.

The United States Geological Survey, in cooperation with the State engineer of New Mexico, began making water-level measurements in the area in August 1940. Three water-stage recorders were installed in the area in 1941.

The accompanying figure shows the changes in the ground-water levels in the area from April 1941 to January 1942. During this period, water levels rose in all but three of the observation wells. A rise of more than 2 feet was observed over an area of approximately 30 square miles. A rise of 6.58 feet was observed in well 5N.29.7.142, and the greatest rise observed in the area was 6.83 feet, in well 5N.30.20.333. The water level dropped in three of the wells located within an area of about 0.75 square mile lying north of Alamosa Creek at the east end of the pumping area. The greatest observed drop in the area was 0.44 foot in well 5N.29.13.412.

5N.29.5.341. Joe Hardcastle. Used drilled irrigation well, diameter 16 inches, depth 140 feet. Measuring point until July 1941, surface of concrete well curb, west side of well, 0.75 foot above land-surface datum. New measuring point, top edge of rectangular hole in west side of pump base 0.04 foot above concrete curb and 0.79 foot above land-surface datum. Reach new measuring point through northwest side of pump case. Water levels, in feet below land-surface datum, 1941: Apr. 29, 33.64; July 24, 33.94; Oct. 14, 31.84; Nov. 30, 30.94.

5N.29.5.342. Joe Hardcastle. Used drilled irrigation well, depth 80 feet. Well is a quarter of a mile north from Mr. Hardcastle's house. Measuring point, lower edge of hole in south side Peerless pump case, 0.63 foot above concrete well curb and pump base, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 34.14; July 24, 33.49; Oct. 14, 32.59; Nov. 30, 31.83.

5N.29.5.411. A. R. Wallace. Used drilled irrigation well on south side of road which runs along north side of field. Measuring point, top outside edge of west $\frac{1}{2}$-inch hole in north side of Peerless pump base, 0.12 foot above concrete pump base, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 40.80; July 24, 40.93; Oct. 14, 40.25; Nov. 30, 39.71.

5N.29.5.413. A. R. Wallace. Unused drilled windmill well, diameter 8 inches, depth 44 feet. Measuring point, top east edge of vertical neck of milk can in top of well, 0.25 foot above land-surface datum. Lietz horizontal drum water-stage recorder installed July 1941. Water levels, in feet below land-surface datum, 1941, (from tape measurements): Apr. 30, 34.76; July 24, 34.07; Oct. 14, 33.29; Nov. 30, 32.64.

Quay County--Continued.

5N.29.5.413. A. R. Wallace.--Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	33.95	33.65	33.38	.....	32.64
2	.....	.....	33.62	33.36	.....	32.62
3	.....	.....	33.60	33.35	.....	32.57
4	.....	.....	33.60	33.35	.....	32.56
5	.....	.....	33.60	33.35	.....	32.62
6	.....	.....	33.58	33.35	.....	32.55
7	.....	.....	33.56	33.35	.....	32.54
8	.....	.....	33.56	33.35	.....	32.51
9	.....	.....	33.56	33.35	.....	32.49
10	.....	.....	33.56	33.34	.....	32.49
11	.....	.....	33.55	33.32	32.95	32.45
12	.....	.....	33.52	33.31	32.92	32.44
13	.....	.....	33.51	33.29	32.89	32.45
14	.....	.....	33.51	33.29	32.88	32.43
15	.....	33.74	.....	.....	32.86	32.43
16	.....	33.74	.....	.....	32.84	32.39
17	.....	33.73	.....	.....	32.81	32.37
18	.....	33.73	.....	.....	32.77	32.38
19	.....	33.73	.....	.....	32.79	32.39
20	.....	33.71	.....	.....	32.77	32.35
21	.....	33.70	33.47	.....	32.75	32.31
22	.....	33.70	33.47	.....	32.75	32.29
23	.....	33.70	33.46	.....	32.75	32.28
24	.....	33.70	33.46	.....	32.72	32.25
25	34.05	33.70	33.46	.....	32.71	32.26
26	34.03	33.70	33.44	.....	32.67	32.32
27	34.02	33.68	33.43	.....	32.66	32.30
28	34.01	33.67	33.43	.....	32.65	32.28
29	33.99	33.66	33.43	.....	32.63	32.23
30	33.96	33.65	33.37	.....	32.63	32.21
31	33.96	33.65	.....	.....	.....	32.18

5N.29.7.142. Elmer Phillips. Used dug and drilled well, diameter 12 inches, depth 80 feet. Measuring point, top edge of USGS washer in top east edge of west 6 by 8-inch pump support, south of pump, 0.50 foot above land-surface datum. Reference point, top of 2 by 2-inch wooden stake, with USGS washer in top, driven flush with ground, 6 feet southwest of center of pump, in line with pump and windmill well which is approximately half a mile northeast. Reference point is 0.42 foot below measuring point.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 28	21.00	July 24	14.25	Nov. 30	13.96
Apr. 30	20.89	Oct. 14	14.52		

5N.29.7.143. Elmer Phillips. Unused drilled well, diameter 18 inches, depth 150 feet. Measuring point, top edge of USGS washer in center of west side of 1 by 8-inch board over top of well, level with land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 29	24.38	July 24	21.93	Nov. 30	22.10
Apr. 30	24.25	Oct. 14	22.43		

5N.29.7.221. Mr. McBride. Used drilled irrigation well, diameter 12 inches, depth 113 feet. Well is in shed in field. Measuring point, until July 1941, top of concrete well curb, south side of well, 0.80 foot above land-surface datum. New measuring point, top outside edge of north $\frac{1}{8}$-inch hole in west side of Peerless pump base 0.10 foot above concrete well and pump base, 0.90 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 29, 31.00; July 24, 26.05; Oct. 14, 26.09; Nov. 29, 25.27.

Quay County--Continued.

5N.29.8.114. J. C. Davenport. Used drilled irrigation well, diameter 15 inches, depth 105 feet, located in field about 200 yards east of house. Measuring point, lower edge of rectangular hole in east side of Johnson pump case, 4.00 feet above land-surface datum. Pump sits directly on concrete base.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 28	27.88	July 24	25.21	Nov. 30	23.32
Apr. 30	27.78	Oct. 14	22.98		

5N.29.8.232. Joe Hardcastle. Used drilled irrigation well, diameter 16 inches, depth 139 feet. Measuring point, top east edge of 24-inch steel barrel in top of well 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 29, 38.84; July 24, 38.39; Oct. 14, 37.32; Nov. 30, 36.26.

5N.29.8.412. Byron W. Jones. Used drilled irrigation well, diameter 14 inches, depth 114 feet. Measuring point, lower edge of pump base, north side of well, level with land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 29, 32.82; July 24, 32.05; Oct. 14, 30.54; Nov. 30, 29.40.

5N.29.9.400. Used windmill stock well. Measuring point, top of pipe clamp northwest of pipe column, 0.32 foot above concrete well curb, level with land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 24.92; Oct. 16, 22.61; Nov. 30, 21.51.

5N.29.13.113. Scott and Ferguson. Used drilled irrigation well, diameter 14 inches, depth 105 feet. Measuring point, lower edge of rectangular hole in east side of pump case, 1.50 feet above land-surface datum. Reference point, surface of concrete engine base, 15 feet north of well, at a point 1 foot south of the northeast corner of the engine base, 2.28 feet above the measuring point. Water levels, in feet below land-surface datum, 1941: Jan. 28, 79.13; Apr. 30, 78.52; Oct. 17, 79.90; Nov. 29, 78.98.

5N.29.13.131. Scott and Ferguson. Used drilled irrigation well, diameter 14 inches, depth 105 feet. Measuring point, lower edge of rectangular hole in northwest side of Johnston pump case, 1.50 feet above land-surface datum. Reference point, top of concrete engine base, 15 feet northeast of well, at center of southwest side of engine base, 1.25 feet above measuring point. Water levels, in feet below land-surface datum, 1941: Jan. 28, 59.19; Apr. 30, 58.44; Oct. 17, 60.29; Nov. 29, 59.22.

5N.29.13.142. Scott and Ferguson. Used drilled irrigation well, diameter 16 inches, depth 111 feet. Measuring point, top edge of USGS washer on west top edge of east 3 by 6-inch pump support, north of pump, 0.75 foot above land-surface datum. Reference point, top of 2 by 2-inch wooden hub with USGS washer in top, driven flush with ground, 4.7 feet northeast of center of pump, in line with pump and Scott and Ferguson windmill at house to southwest, 0.36 foot below measuring point. Water levels, in feet below land-surface datum, 1941: Jan. 28, 47.58; Apr. 30, 47.53; Oct. 17, 49.91; Nov. 29, 48.77.

5N.29.15.311. Used windmill well located approximately 50 yards north of a house. Measuring point until October 1941, top of concrete well curb at west side of well, 1.00 foot above land-surface datum. New measuring point, top edge of south pipe clamp west of windmill pump column, 0.48 foot above concrete well curb, 1.48 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 21.00; Oct. 16, 15.99; Nov. 29, 20.89.

Quay County--Continued.

5N.29.17.133. Byron W. Jones. Unused dug and drilled irrigation well, diameter 12 inches, depth 57 feet. Measuring point, top edge of USGS washer in top west edge of east 6 by 6-inch timber previously used as pump support, level with land-surface datum. Reference point, top of northeast corner concrete weir box, west of well, marked with orange paint, 0.27 foot above measuring point. Leitz horizontal drum water-stage recorder installed in April 1941.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	.....	35.07	35.00	34.43	33.60	.....	.....	32.00
2	.....	35.04	35.00	34.40	33.57	32.80	.....	32.00
3	.....	35.05	35.00	34.37	33.53	32.78	.....	32.00
4	.....	35.05	34.97	34.34	33.50	32.77	.....	.....
5	.....	35.05	34.97	34.31	33.50	32.77	.....	.....
6	.....	35.04	34.96	34.27	33.48	32.77	.....	.....
7	.....	35.04	34.97	34.25	33.45	32.77	.....	.....
8	.....	35.04	34.94	34.21	33.42	32.77	.....	.....
9	.....	35.04	34.93	34.19	33.37	32.80	.....	.....
10	.....	35.04	34.93	34.15	33.34	.....	.....	.....
11	.....	35.04	34.92	34.14	33.31	.....	.....	.....
12	.....	35.03	34.92	34.12	33.28	.....	.....	.....
13	.....	35.02	34.89	34.08	33.25	.....	.....	.....
14	.....	35.02	34.88	34.06	33.24	.....	32.29	.....
15	.....	35.01	34.84	34.03	33.23	.....	32.28	.....
16	.....	35.01	34.83	34.03	33.22	.....	32.25	.....
17	.....	35.01	34.81	34.00	33.19	.....	32.23	.....
18	.....	34.98	34.80	33.97	33.17	.....	32.22	.....
19	.....	34.98	34.80	33.95	a33.14	.....	32.21	.....
20	.....	34.98	34.78	33.90	a33.11	.....	32.19	.....
21	.....	35.00	34.76	33.86	a33.08	.....	32.19	.....
22	.....	35.00	34.73	33.84	a33.05	.....	.....	.....
23	.....	35.01	34.69	33.81	a33.02	32.38	.....	.....
24	.....	35.02	34.65	33.79	32.99	32.38	.....	.....
25	.....	35.01	34.63	33.77	32.97	32.38	.....	.....
26	.....	35.02	34.62	33.76	32.97	32.37	.....	.....
27	.....	35.02	34.60	33.74	32.95	32.35	32.07	.....
28	35.08	35.02	34.54	33.72	32.94	32.33	32.04	.....
29	35.08	35.02	34.52	33.68	32.91	32.31	32.03	.....
30	35.08	35.01	34.49	33.66	32.88	32.31	32.02	.....
31	.....	35.01	.....	33.64	32.88	.....	32.02	.....

5N.29.17.331. L. V. Vaughn. Used drilled irrigation well, diameter 14 inches, depth 90 feet. Measuring point, top edge of projection that is made to hold oil and air gage lines, inside of Johnston pump case, east side of pump, 0.58 foot above concrete pump base and well curb, 1.08 feet above land-surface datum.

Water level, in feet below land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
Aug. 13, 1940	41.06	Apr. 30, 1941	37.78	Oct. 14, 1941	34.06
Jan. 28, 1941	38.12	July 24	36.40	Nov. 29	33.40

5N.29.18,213. Mr. Wallace. Used drilled irrigation well, diameter 18 inches, depth 115 feet. Measuring point, top edge of concrete well curb at center of west side of well, 0.50 foot above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 29	39.50	July 24	39.47	Nov. 29	42.95
Apr. 29	39.23	Oct. 14	38.65		

5N.29.18.233. A. R. Wallace. Used drilled irrigation well, diameter 14 inches, depth 108 feet. Measuring point, lower edge of hole in north side of Peerless pump case, 0.73 foot above surface of concrete pump base and well curb, 1.73 feet above land-surface datum.

a Interpolated.

Quay County--Continued.

5N.29.18.233. A. R. Wallace.--Continued.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 28	48.89	July 24	48.30	Nov. 29	48.56
Apr. 29	48.14	Oct. 14	47.25		

5N.29.18.444. L. M. Head. Unused well. Measuring point, top edge of concrete well curb, north side of well, level with land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 28	41.59	July 24	38.02	Nov. 29	36.99
Apr. 30	41.39	Oct. 14	37.48		

5N.29.19.244. William Martin. Used drilled irrigation well in shed on west side of highway. Measuring point, lower edge of hole in west side of pump case, 0.89 foot above concrete pump base and well curb, 2.39 feet above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 28	50.26	July 24	48.19	Nov. 29	46.90
Apr. 30	50.65	Oct. 14	47.50		

5N.29.20.433a. Spence E. Morris. Used drilled irrigation well, diameter 12 inches, depth 72 feet. Measuring point, top edge of USGS washer on top south edge of north pump support, west of pump, 0.50 foot above land-surface datum. Reference point, top of concrete well curb, south side, at well 5N.29.20.433b, 0.20 foot above measuring point.

Water level, in feet below land-surface datum, 1941

Jan. 28	49.30	July 24	49.24	Nov. 29	47.85
Apr. 28	49.42	Oct. 14	48.30		

5N.29.20.433b. Spence E. Morris. Unused drilled well located approximately 60 feet west of well 5N.29.20.433a, diameter 12 inches, depth 82 feet. Measuring point, top edge of concrete well curb at south side of well, 0.75 foot above land-surface datum. Stevens type F water-stage recorder installed April 1941.

Highest daily water level, in feet below land-surface datum, 1941
(from recorder charts)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	49.21	49.26	49.17	49.37	48.65	48.40	47.99	47.72
2	.....	49.22	49.29	49.18	49.46	48.63	48.40	47.98	47.71
3	.....	49.25	49.27	48.39	.....	48.60	48.40	48.00	47.66
4	.....	49.28	49.11	49.15	.....	48.60	48.35	47.96	47.66
5	.....	49.29	48.55	49.15	.....	48.60	48.40	47.98	.....
6	.....	49.27	49.21	49.14	.....	48.57	48.40	47.96	.....
7	.....	49.29	49.25	49.14	.....	48.57	48.38	47.99	47.69
8	.....	49.30	49.26	49.13	.....	48.57	48.38	47.93	47.66
9	.....	49.30	49.25	49.13	.....	48.57	48.38	47.95	47.64
10	.....	49.31	49.27	.....	49.65	48.55	48.35	47.99	47.64
11	.....	49.31	49.28	.....	49.54	48.53	48.38	47.97	47.62
12	.....	.....	49.27	.....	49.35	48.50	48.38	47.94	47.66
13	.....	.....	49.27	.....	49.25	48.50	48.35	47.95	47.63
14	.....	.....	49.24	.....	49.20	48.50	48.17	47.92	47.62
15	.....	.....	49.25	.....	49.15	48.50	48.15	47.91	47.64
16	.....	.....	49.27	.....	49.05	48.50	48.10	47.89	47.60
17	.....	.....	49.26	.....	49.00	48.50	48.10	.....	47.59
18	.....	49.26	49.25	.....	48.95	48.47	48.11	.....	47.60
19	.....	49.27	49.25	.....	48.93	48.45	48.09	.....	47.61
20	.....	49.30	49.25	a49.13	48.87	48.43	48.09	.....	47.57
21	.....	49.28	49.25	.....	48.85	48.40	48.07	.....	47.54
22	.....	49.27	49.25	.....	48.83	48.45	48.07	.....	47.53
23	.....	49.30	49.24	.....	48.80	48.40	48.09	47.83	47.55
24	.....	49.29	49.21	49.13	48.78	48.40	48.06	47.78	47.49
25	.....	49.27	49.21	49.12	48.76	48.37	48.02	47.76	47.53

a Interpolated.

Quay County--Continued.

5N.29.20.433b. Spence E. Morris.--Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	.....	49.27	49.22	49.10	48.75	48.35	48.04	47.77	....
27	.....	49.27	49.20	49.07	48.73	48.37	48.06	47.78	.....
28	.....	49.27	49.20	49.05	48.70	48.40	48.00	.....	47.54
29	49.29	49.26	49.19	49.03	48.67	48.45	48.02	.....	47.51
30	49.27	49.26	49.19	48.99	48.67	48.45	48.00	47.72	47.50
31	.....	49.25	.....	49.00	48.67	.....	48.00	.....	47.45

5N.29.29.111. W. S. Morrow. Used drilled irrigation well. Measuring point, lower edge of oval hole in east side of Peerless pump case, 0.66 foot above concrete well curb and pump base, 1.16 feet above land-surface datum.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 28	67.11	July 24	67.21	Nov. 29	66.80
Apr. 29	67.45	Oct. 14	66.99		

5N.29.36.242. School land, Mitchell lease. Unused windmill well. Measuring point, top edge of ½-inch tie bolt between 4 by 4-inch windmill pipe clamps at southwest side of well, 0.85 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Oct. 17, 96.38; Nov. 29, 96.33.

5N.30.19.132. Mr. Hendrix. Unused irrigation well, depth 80 feet. Measuring point, top edge of USGS washer on top west edge of east cross tie, 0.60 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 29.58; Oct. 17, 26.07; Nov. 29, 24.28.

5N.30.19.313. Mr. Hendrix. Used irrigation well, depth 70 feet. Measuring point, top edge of USGS washer on lower east edge of west 2 by 8-inch cross stringer, 1.00 foot south of northwest corner of pit, 0.50 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Apr. 30, 20.20; Oct. 17, 17.07; Nov. 29, 16.19.

5N.30.20.333. Used windmill stock well, diameter 6 inches, depth 30 feet. Measuring point, south edge of north pipe clamp, east of pump column, 0.30 foot above concrete filling around casing, 1.00 foot above land-surface datum. Water levels, in feet below land-surface, 1941: Apr. 30, 23.65; Oct. 17, a/19.20; Nov. 29, 18.28.

6N.29.30.112. Mr. Dean. Unused well located just south of corral fence to south of house and windmill well. Measuring point, top edge of concrete well curb, south side of well, 0.50 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Jan. 29, 51.12; July 25, 49.36; Oct. 16, 48.60; Nov. 30, 48.52.

6N.29.30.113. Mr. Dean. Used drilled irrigation well, depth 105 feet. Measuring point, top edge of south 3/4-inch hole in east side of Layne and Bowler pump base flange, 0.73 foot above concrete pump base and land-surface datum. Water levels, in feet below land-surface datum, 1941: Jan. 29, 54.34; July 25, 52.89; Oct. 16, 52.00; Nov. 30, 51.98.

6N.29.31.114. Mr. McDaniels. Used drilled irrigation well, diameter 6 inches, depth 80 feet. Measuring point, top edge of east 3/4-inch hole in north side of pump base flange, 0.05 foot above concrete pump base, 0.80 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Jan. 29, 41.40; July 24, 36.86; Oct. 16, 36.25; Nov. 30, 36.24.

a Windmill pumping slowly.

ROOSEVELT COUNTY

PORTALES VALLEY

By P. D. Akin

The program of inventorying water levels in observation wells and of securing other data pertinent to the investigation of the ground-water resources of Portales Valley, Roosevelt County, was continued during 1941 by the United States Geological Survey in cooperation with the State engineer of New Mexico.

Investigation of the ground-water resources of Roosevelt County was begun in 1931 by Chas. V. Theis, of the United States Geological Survey, and the work done in the county since that time has been under his immediate supervision. Detailed results of the investigation, including fundamental hydrologic and geologic data, have been published as preliminary and progress reports in the 10th to 13th Biennial Reports of the State engineer of New Mexico.

Water-level measurements made in Portales Valley since the beginning of the investigation through 1940 have been published by the United States Geological Survey in Water-Supply Papers 845, 886, and 911. The information contained in the present report is a continuation of the information published in the previous reports.

Except for newly established observation wells and wells on which the measuring points have been changed, the present report gives only the well number, the owner's name, and the water-level measurements made during 1941. For descriptions of measuring points, reference points, and other data on observation wells which do not appear for the first time in the present report, the reader is referred to Water-Supply Papers 845, 886, and 911.

During 1941, measurements were made bimonthly in 56 observation wells and water-level measurements were made in 125 other observation wells in January. Five water-stage recorders were in operation in Portales Valley during 1941.

Extremely abnormal rainfall occurred during 1941 in the Portales Valley area. As reported by the United States Weather Bureau, the

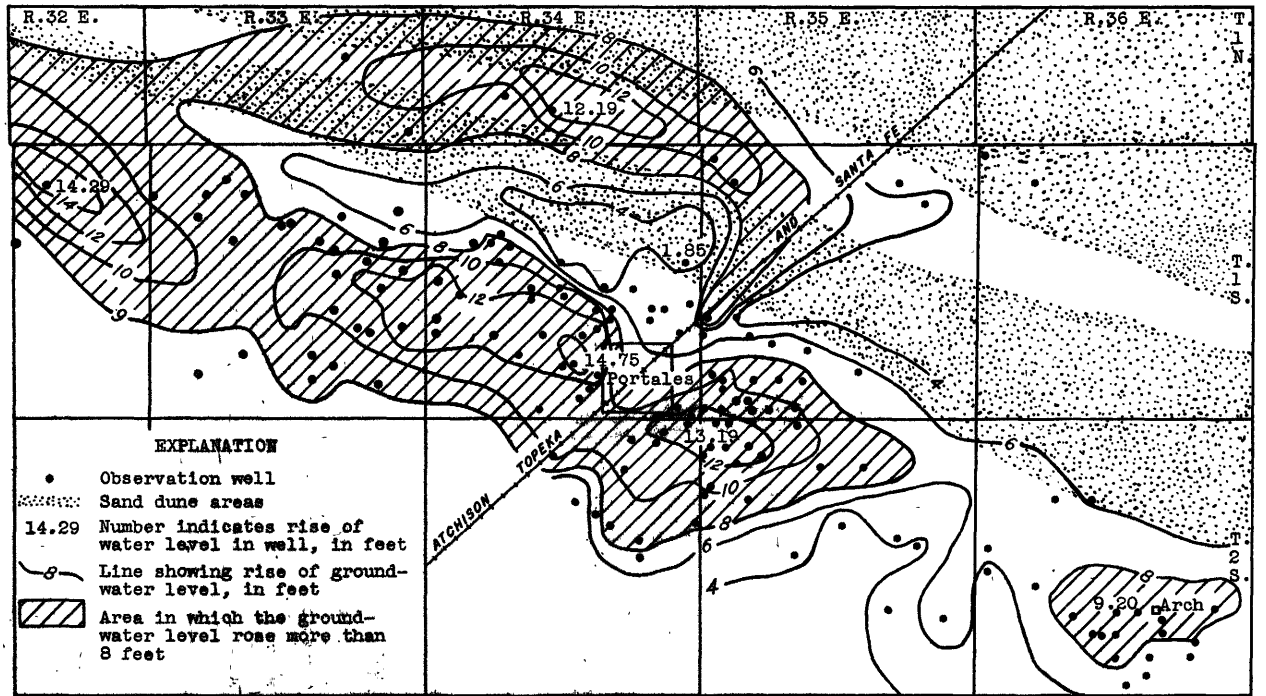

Figure 20.—Map of Portales Valley, N. Mex., showing rise of ground-water levels from January 1941 to January 1942.

rainfall at Portales amounted to 44.10 inches during 1941, or 26.03 inches above the normal precipitation of 18.07 inches. As a result of the abnormal precipitation, the use of ground water for irrigation in 1941 amounted to less than 35 percent of the normal use. It is estimated that about 25,800 acre-feet of ground water was used on 13,700 acres during 1940 and only 9,750 acre-feet of ground water was used on 15,000 acres during 1941.

Ground-water levels in the valley rose to unexpected high levels during 1941 in response to the heavy rains and the decreased pumping. The rises began immediately after the heavy rains, which came in May, and continued throughout the rest of the year. The accompanying figure shows the change in the ground-water levels from January 1941 to January 1942. Water levels rose in all observation wells during this period. The greatest recorded water-level rise was 14.75 feet and occurred in well 1.34.27.341. Water levels rose more than 8 feet in an area of more than 113 square miles lying along the axis of Portales Valley to the south and west of Portales and in Blackwater Draw north of Portales. Water levels also rose more than 8 feet in a small area of about 6 square miles near Arch, N. Mex.

Although the water levels generally were higher in January 1942 than in January 1932, the cone of depression created during the last 10 years has not been entirely wiped out. Out of 25 observation wells with continuous records since 1931, measurements in 4 wells indicated that water levels were lower in January 1942 than in January 1932, the greatest drop during this period being 2.10 feet and occurring in well 1.34.25.211. Measurements in 21 of the 25 observation wells showed net rises of the ground-water level during the 10-year period, the greatest rise being 15.29 feet in well 1.32.3.440.

The proportional effects caused by the decreased pumping and the actual recharge from rainfall in producing the water-level rises have not been estimated.

Figure 21 is a hydrograph of well 2.34.2.233 from November 1931 to November 1941, and also shows the monthly precipitation at Portales during the corresponding period. Well 2.34.2.233 is an unused well about half a mile south of Portales. As shown by the hydrograph, the water level in this well lowered slowly from early 1933 until May 1941, except for

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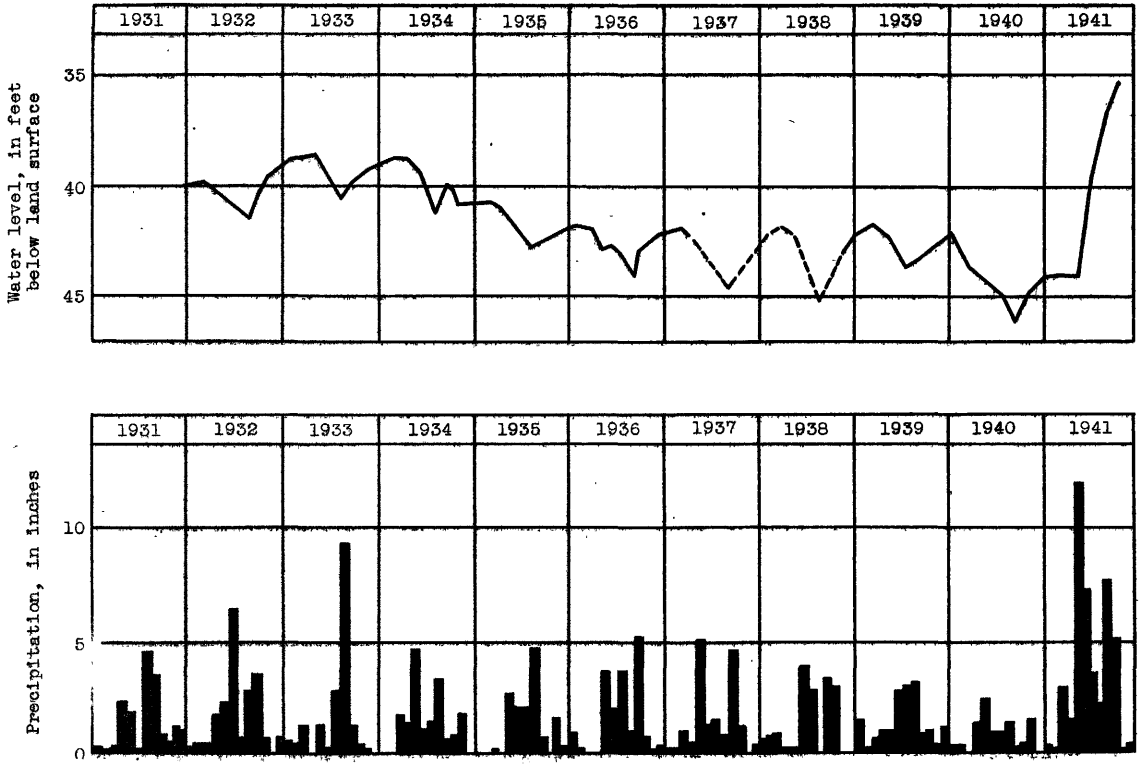

Figure 21.--Hydrograph of well 2.34.2.233 from November 1931 to November 1941 and monthly precipitation at Portales, N. Mex.

recoveries occurring each year after the pumping season. In May 1941 the water level rose sharply in response to the heavy rains and continued to rise during the rest of the year. In January 1942 the water level in the well was 6.71 feet higher than in January 1932.

1N.32.7.300. W. J. Crenshaw.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	a 18.78	May 21	18.10	Sept.23	a 18.08
Mar. 25	a 18.54	July 21	a 17.87	Nov. 24	16.19

1N.33.16.100a. Mr. Hardwick. Used drilled irrigation well, diameter 16 inches, depth 98 feet. Measuring point, top of hole in base flange of pump, 0.23 foot above concrete base and 1.73 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 19, 26.14.

1N.33.16.100b. Mr. Hardwick. Used drilled irrigation well, diameter 16 inches, depth 97 feet. This well is a few hundred feet south of well 1N.33.16.100a. Measuring point, lower edge of rectangular hole in south side of Johnson pump case shell, 0.79 foot above concrete base and 1.29 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 19, 25.57.

1N.33.26.120. Mary E. Miller. Water level, in feet below land-surface datum, 1941: Jan. 19, 12.01.

1N.33.36.400a. A. C. Woodburn. Recorder well. Recorder removed Oct. 6, 1941, because of high water. This well is in a depression blown out by wind. The heavy rains during the year raised the water table above the normal ground surface at the well. Highest and lowest recorded water levels, 1941: Oct. 13, 0.82 foot above land-surface datum; Jan. 2, 8.24 feet below land-surface datum.

Highest daily water level, in feet below land-surface datum, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	July	Aug.	Sept.	Oct.
1	8.21	8.16	8.12	7.82	....	....	....	0.87	b 0.66
2	8.23	8.16	8.12	7.82	....	....	....	.87	b .68
3	8.22	8.16	8.13	7.82	....	....	....	.62	b .68
4	8.22	8.17	8.13	7.82	....	....	....	.62	b .79
5	8.22	8.16	8.13	7.83	....	....	....	.83	b .79
6	8.21	8.16	8.12	7.82	....	....	....	.91	b .79
7	8.21	8.17	8.13	7.80	....	....	....	.98	....
8	8.21	8.17	8.12	....	....	....	....	1.08	....
9	8.21	8.15	8.11	....	....	....	....	.93	....
10	8.21	8.15	8.12	....	....	....	....	1.08	....
11	8.20	8.17	8.10	....	....	....	....	1.14	....
12	8.20	8.17	8.11	....	....	....	....	1.13	....
13	8.20	8.17	8.12	....	....	....	....	1.04	b .82
14	8.18	8.16	8.10	....	....	....	....	.96	....
15	8.19	8.16	8.10	....	....	....	....	.93	....
16	8.20	8.14	8.10	....	....	....	....	.90	....
17	8.19	8.14	8.10	....	....	....	....	.90	....
18	8.16	8.13	8.09	....	....	....	....	.92	....
19	8.15	8.12	8.10	....	....	....	....	c1.02	....
20	8.15	8.11	8.08	7.80	....	b0.34	0.34	c .93	....
21	8.15	8.11	8.10	7.80	4.14	....	.36	b .12	....
22	8.16	8.14	7.97	....	3.16	....	.37	b .34	....
23	8.17	8.16	7.92	....	2.90	....	.44	b .41	....
24	8.16	8.16	7.94	....	2.80	....	.52	b .43	....
25	8.16	8.16	7.73	....	2.80	....	.62	b .43	....
26	8.16	8.15	7.72	....	....	....	.70	b .43	....
27	8.16	8.13	7.72	....	....	....	.76	b .43	....
28	8.17	8.12	7.76	....	....	....	.82	b .60	....
29	8.16	....	7.82	....	....	....	.66	b .64	....
30	8.16	....	7.83	....	....	....	.66	b .66	
31	8.16	....	7.82	....	....	....	.85	....	....

a Windmill pumping slowly.
b Water above land-surface datum.
c Interpolated.

Roosevelt County--Continued.

1N.33.36.400b. A. C. Woodburn.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	13.97	May 21	8.74	Sept.24	2.64
Mar. 26	12.67	July 20	3.28	Nov. 24	1.81

1N.34.29.444. Water level, in feet below land-surface datum, 1941: Jan. 16, 20.62.

1N.34.33.224. Mrs. Lee. Water level, in feet below land-surface datum, 1941: Jan. 16, 23.15.

1N.34.35.432. Earl McCollum. Water level, in feet below land-surface datum, 1941: Jan. 16, 22.56.

1.32.3.440. M. Nall.

Water level, in feet below land-surface datum, 1941

Jan. 13	38.64	May 21	38.51	Sept.23	28.11
Mar. 26	38.74	July 21	30.37	Nov. 24	23.71

1.32.15.111. Mrs. J. P. Nash.

Water level, in feet below land-surface datum, 1941

Jan. 13	48.42	May 21	48.19	Sept.23	44.12
Mar. 25	48.41	July 21	44.84	Nov. 24	42.85

1.33.5.231. Ina L. Hoover. Pump removed. New measuring point, top edge of collar of well casing, south side of well 0.48 foot above land-surface datum. Pump replaced in March 1941. Water level, in feet below land-surface datum, 1941: Jan. 13, 25.02.

1.33.5.432. Clay Jones. Water level, in feet below land-surface datum, 1941: Jan. 13, 22.83.

1.33.5.442. George Thedford. No measurements made in 1941.

1.33.7.111. I. G. Hall.

Water level, in feet below land-surface datum, 1941

Jan. 13	22.02	May 21	22.00	Sept.24	15.46
Mar. 26	22.07	July 21	15.47	Nov. 24	12.52

1.33.8.112. Andrew Q. Smith. New pump installed. New measuring point, top edge of USGS washer in top south edge of north 8 by 8-inch east-west pump support, to east of pump, 2.78 feet below top of concrete well curb at center of east side of well and land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 13, 21.93.

1.33.8.311. W. F. Marcus. Water level, in feet below land-surface datum, 1941: Jan. 13, 23.00.

1.33.9.111. G. C. Kennedy. Water level, in feet below land-surface datum, 1941: Jan. 13, 22.86.

1.33.9.442. B. J. Perkins. Water level, in feet below land-surface datum, 1941: Jan. 13, 21.95.

1.33.10.211. O. B. Sherman. Jan. 13, 1941: pit dry.

1.33.10.313. W. A. Bullock.

Water level, in feet below land-surface datum, 1941

Jan. 13	24.03	May 21	23.98	Sept.24	18.33
Mar. 26	24.07	July 21	18.62	Nov. 24	15.98

1.33.11.312. C. F. Williams. Reference point No. 1, top of old concrete engine base, about 50 feet southeast of well, west of another old engine base, at northwest corner marked with orange paint, 0.07 foot above measuring point. Reference point No. 2, top of discharge sluice, on west well, south of weir box, about 30 feet west of well 1.33.11.312, marked with orange paint, 0.04 foot above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 13, 25.87.

Roosevelt County--Continued.

1.33.12.144. A. C. Woodburn.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	34.42	May 21	34.66	Nov. 24	30.33
Mar. 26	34.60	July 20	32.42		

1.33.13.111. E. Elkins. New measuring point, top edge of casing, level with concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 13, 25.70.

1.33.13.431. Mr. Spires. New measuring point, top edge of washer on top north edge of top cross tie on south side of pit, 0.60 foot above previous measuring point and land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 14, 29.88.

1.33.14.111. R. D. Loy. New pump installed on well Jan. 13, 1941; unable to measure water level.

1.33.14.131. J. V. Miller. Water levsl, in feet below land-surface datum, 1941: Jan. 13, 23.69.

1.33.14.311. J. T. Elder Estate. No measurements made in 1941.

1.33.14.331. J. T. Elder Estate. Water levels, in feet below land-surface datum, 1941: Jan. 13, 23.87; July 20, 14.79; Sept. 24, 14.36; Nov. 24, 11.98.

1.33.14.331b. J. T. Elder Estate. Domestic hand pump well to rear of house about 300 feet west of well 1.33.14.331. Measuring point, top edge of 6-inch galvanized casing, 0.15 foot above concrete well curb and 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: May 21, 23.19; July 20, 14.79; Nov. 24, 11.95.

1.33.14.421. Leon Jones. Water level, in feet below land-surface datum, 1941: Jan. 14, 26.57.

1.33.15.212. Mrs. Ollie Minick. Water level, in feet below land-surface datum, 1941: Jan. 13. 23.20.

1.33.16.222. Unused hand pump well in yard in front of Bethel church. Sounded depth, 35.5 feet. Measuring point, top north edge of USGS washer on south 4 by 4-inch pipe clamp and to west of pump column, 1.50 feet above land-surface datum. Reference point, top edge of USGS washer in top of 2 by 2-inch stake 21 feet north and 5 feet west of center line of pipe column in well, 2 feet south of a fence post and 15 feet south of a corner fence post, 1.15 feet below measuring point. Water levels, in feet below land-surface datum, 1941: Sept. 24, 13.55; Nov. 24, 11.58.

1.33.17.221. R. F. Campbell. New measuring point, July 1941, top north edge of north 8 by 8-inch upright, 2.96 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Jan. 13, 21.16; July 21, 13.85; Sept. 24, 13.82; Nov. 24, 11.81.

1.33.23.111. Tom Terry. Used, drilled irrigation well, diameter 14 inches, depth 96 feet. Measuring point, top edge of rectangular slot inside of pump case on south side of shaft, 0.60 foot above concrete base, 1.50 feet above land surface. Pump sits directly on concrete base. Water level, in feet below land-surface datum, 1941: Jan. 13, 24.06.

1.33.23.311. Dan H. Smith. Water level, in feet below land-surface datum, 1941: Jan. 15, 26.15.

1.33.23.433. Dr. H. A. Miller. Water level, in feet below land-surface datum, 1941: Jan. 15, 27.09.

1.33.24.111. J. E. Dietson. Measuring point, bottom edge of base flange on pump, north side. Pump raised. Measuring point is 0.65 foot above reference point and 2.39 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 14, 32.28.

Roosevelt County--Continued.

1.33.24.433. J. E. Jones. Water level, in feet below land-surface datum, 1941: Jan. 15, 28.82.

1.33.25.213. Drew West. Reference point, top edge of USGS washer in northeast side of R.E.A. powerline pole, 50 feet west of well, 1.66 feet above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 15, 38.31.

1.33.26.221. D. E. Thomas. Water level, in feet below land-surface datum, 1941: Jan. 15, 27.14.

1.33.26.331. Luther Thomas. Water level, in feet below land-surface datum, 1941: Jan. 13, 32.27.

1.33.27.311. Joseph A. Henley. Used, drilled irrigation well, diameter 16 inches, depth 123 feet. Measuring point, top edge of south ¼-inch hole in east side of Peerless pump base, 0.09 foot above concrete base, 0.34 foot above land-surface datum. Pump sits directly on concrete base. Water level, in feet below land-surface datum, 1941: Jan. 13, 45.18.

1.33.27.322. Joseph A. Henley. Jan. 13, 1941, well dry.

1.33.28.311. R. L. Jolly.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	47.30	July 21	43.82	Nov. 24	41.38
Mar. 26	47.01	Sept.23	42.79		

1.33.29.333.

Water level, in feet below land-surface datum, 1941

Jan. 13	37.03	May 21	36.41	Sept.23	32.21
Mar. 25	36.95	July 21	33.07	Nov. 24	30.74

1.33.30. Joe S. Lewis. Water levels, in feet below land-surface datum, 1941: Jan. 13, 1.89; Mar. 25, 1.29; May 21, recorder shelter on well covered with water. Water level evidently about 3.5 feet above measuring point. Lake full of surface runoff, reportedly at highest stage in 35 years.

1.33.34.211. John E. Plummer.

Water level, in feet below land-surface datum, 1941

Jan. 13	28.94	May 21	28.58	Sept.23	23.02
Mar. 26	28.75	July 21	23.17	Nov. 24	20.70

1.33.36.133. Edwin Johnson. Water level, in feet below land-surface datum, 1941: Jan. 13, 41.16.

1.34.8.434. W. H. Marsh. Water level, in feet below land-surface datum, 1941: Jan. 15, 36.64.

1.34.13.412. Ben Donathan.

Water level, in feet below land-surface datum, 1941

Jan. 15	56.54	May 20	56.77	Sept.20	55.94
Mar. 26	56.71	July 20	56.62	Nov. 25	55.45

1.34.14.432. Lucille Blackman. Water level, in feet below land-surface datum, 1941: Jan. 15, 47.54.

1.34.16.422. Ed White.

Water level, in feet below land-surface datum, 1941

Jan. 15	47.96	May 21	48.15	Sept.20	46.72
Mar. 26	48.05	July 20	46.40	Nov. 24	45.03

1.34.17.111. L. E. Eyler. Water level, in feet below land-surface datum, 1941: Jan. 15, 36.27.

Roosevelt County--Continued.

1.34.17.122. George O. Donnell. Water level, in feet below land-surface datum, 1941: Jan. 15, 36.34.

1.34.17.233. D. L. Ray.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 15	35.20	May 21	34.40	Sept.20	29.28
Mar. 26	34.94	July 20	29.80	Nov. 24	26.72

1.34.17.241. B. F. Ray. Measuring point raised 0.06 foot to 0.14 foot above concrete pump base. Water level, in feet below land-surface datum, 1941: Jan. 15, 31.81.

1.34.18.343. J. W. Terry. Water level, in feet below land-surface datum, 1941: Jan. 15, 35.52.

1.34.19.223. Lewis P. Kirby, given in Water-Supply Paper 911 as Lewis P. King. Water level, in feet below land-surface datum, 1941: Jan. 15, 31.06.

1.34.19.341. Tusco Walker. Used drilled irrigation well, diameter 14 inches, depth 110 feet. Measuring point, lower edge of oval hole in south side of pump shell, 0.70 foot above concrete base, 1.25 feet above land-surface datum. Pump sits directly on concrete base. Water level, in feet below land-surface datum, 1941: Jan. 14, 29.44.

1.34.20.331. A. G. Ross. Measurements discontinued.

1.34.21.121. L. H. Lee. Water level, in feet below land-surface datum, 1941: Jan. 15, 38.08.

1.34.21.141. Douglas Owens. Measuring point raised 0.34 foot to 0.42 foot above concrete base. Water level, in feet below land-surface datum, 1941: Jan. 15, 37.94.

1.34.21.222. Elizabeth Tipton. Water level, in feet below land-surface datum, 1941: Jan. 15, 44.13.

1.34.22.131. Mrs. W. E. Jergins. Water level, in feet below land-surface datum, 1941: Jan. 15, 39.25.

1.34.22.211. Mrs. A. J. Goodwin. Measurements discontinued.

1.34.22.222. Mrs. A. J. Goodwin.

Water level, in feet below land-surface datum, 1941

Jan. 14	43.52	May 21	43.73	Sept.20	41.95
Mar. 26	43.68	July 20	42.61	Nov. 25	41.03

1.34.22.413. Joe A. Ray. Dry, January 1941. Measurements discontinued.

1.34.22.421. Bob C. Grunig. Water level, in feet below land-surface datum, 1941: Jan. 15, 39.25.

1.34.22.443. K. M. Cox. Water level, in feet below land-surface datum, 1941: Jan. 15, 36.76.

1.34.23.211. Hazel Hall. Water level, in feet below land-surface datum, 1941: Jan. 15, 41.99.

1.34.23.311. J. R. Mahaffey. Water level, in feet below land-surface datum, 1941: Jan. 15, 37.04.

1.34.23.313a. F. A. Buchanan.

Water level, in feet below land-surface datum, 1941

Jan. 14	36.75	May 21	36.52	Sept.20	33.29
Mar. 26	36.24	July 20	34.17	Nov. 25	29.87

1.34.23.422. R. L. Yandell. Water level, in feet below land-surface datum, 1941: Jan. 15, 34.05.

Roosevelt County--Continued.

1.34.23.442. J. C. Hicks. No measurements made in 1941.

1.34.23.442a. J. C. Hicks. Used drilled irrigation well, 15 feet west of well 1.34.23.442. Measuring point, lower edge of oval hole in south side of pump case shell, 0.90 foot above flat surface of concrete pump base, 0.90 foot above land-surface datum. Pump sits on concrete mound. The measuring point of this well was not referenced to measuring point of well 1.34.23.442. Water level, in feet below land-surface datum, 1941: Jan. 15, 35.12.

1.34.24.112. J. A. Penson.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 15	40.30	May 20	40.24	Sept.20	37.99
Mar. 26	40.21	July 20	39.13	Nov. 25	37.39

1.34.24.243. J. T. Gorrell. Water level, in feet below land-surface datum, 1941: Jan. 15, 48.14.

1.34.24.312. W. A. Cummings. Pump removed to well about 200 feet east. New measuring point, top of casing east side of well, 0.27 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 15, 34.81.

1.34.25.211. J. B. H. Young. Recorder well. Highest and lowest water levels, in feet below land-surface datum, 1941: Dec. 31, 35.05; Jan. 2, 39.20.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39.21	39.18	39.10	39.03	39.16	39.00	37.68	36.98	36.77	36.49	a36.17	35.76
2	39.19	39.19	39.09	39.03	39.15	38.99	37.62	36.97	36.77	.....	a36.16	35.73
3	39.18	39.19	39.10	39.04	39.16	38.97	37.63	36.96	36.76	.....	a36.15	35.68
4	39.17	39.19	39.10	39.05	39.16	38.95	37.60	36.95	36.77	.....	a36.14	35.68
5	39.16	39.19	39.11	39.05	39.16	38.91	37.57	36.94	36.76	.....	a36.13	35.68
6	39.16	39.19	39.11	39.05	39.15	38.87	37.55	36.93	36.76	.....	a36.11	35.64
7	39.16	39.19	39.11	39.05	39.15	38.91	37.52	36.92	36.75	.....	36.09	35.63
8	39.16	39.19	39.10	39.05	39.15	38.87	37.49	36.92	36.74	.....	36.06	35.60
9	39.15	39.18	39.10	39.05	39.15	38.81	37.46	36.92	36.74	.....	a36.03	35.58
10	39.15	39.18	39.10	39.05	39.15	38.75	37.44	36.92	36.74	.....	a36.00	35.56
11	39.15	39.18	39.10	39.05	39.14	38.66	37.42	36.91	36.73	.....	a35.97	35.52
12	39.15	39.17	39.10	39.05	39.13	38.57	37.40	36.90	36.71	.....	a35.94	35.52
13	39.15	39.18	39.10	39.05	39.13	38.51	37.38	36.90	36.70	.....	a35.92	35.50
14	39.14	39.17	39.09	39.05	39.12	38.44	37.35	36.89	36.69	.....	35.90	35.47
15	39.14	39.17	39.10	39.05	39.12	38.38	37.33	36.90	36.69	36.39	35.88	35.46
16	39.14	39.17	39.09	39.05	39.12	38.31	37.31	36.89	36.68	36.37	35.87	35.43
17	39.13	39.17	39.09	39.06	39.10	38.26	37.28	36.88	36.67	36.36	a35.87	35.40
18	39.13	39.16	39.08	39.06	39.10	38.19	37.25	36.88	36.66	36.34	a35.87	35.38
19	39.13	39.15	39.07	39.08	39.10	38.13	37.21	36.87	36.69	36.32	a35.87	35.37
20	39.12	39.16	39.07	39.09	39.09	38.07	37.18	36.86	36.68	36.32	a35.86	35.33
21	39.12	39.15	39.06	39.10	39.08	38.04	37.15	36.84	36.67	36.30	35.86	35.29
22	39.12	39.14	39.06	39.11	39.07	38.00	37.13	36.84	36.66	36.26	35.86	35.27
23	39.13	39.15	39.05	39.12	39.07	37.95	37.11	36.83	36.66	a36.26	35.86	35.25
24	39.14	39.13	39.05	39.13	39.06	37.92	37.09	36.82	36.65	36.26	35.86	35.21
25	39.15	39.14	39.02	39.14	39.05	37.87	37.08	36.81	36.65	36.24	35.87	35.22
26	39.16	39.13	39.04	39.16	39.05	37.83	37.06	36.81	36.62	36.23	35.87	35.20
27	39.17	39.12	39.04	39.16	39.05	37.80	37.05	36.80	36.52	36.23	35.80	35.17
28	39.17	39.11	39.04	39.17	39.04	37.78	37.03	36.79	36.53	36.20	35.80	35.15
29	39.18	.....	39.03	39.18	39.03	37.77	37.01	36.79	36.50	36.20	35.78	35.11
30	39.18	.....	39.03	39.17	39.02	37.71	37.00	36.78	36.47	a36.19	35.76	35.08
31	39.18	.....	39.03	.....	39.01	.....	36.99	36.78	.....	36.18	.....	35.05

a Interpolated.

Roosevelt County--Continued.

1.34.25.200. J. B. H. Young and Smith feed pens. Well 1.34.25 in Water-Supply Papers 845, 886, and 911. Water level, in feet below land-surface datum, 1941: Jan. 16, 36.89.

1.34.26.4. New measuring point, identical with reference point given in Water-Supply Paper 911. Water level, in feet below land-surface datum, 1941: Jan. 14, 34.26.

1.34.27.211. J. F. Bowman. Water level, in feet below land-surface datum, 1941: Jan. 14, 34.64.

1.34.27.331. Lewis Kirby. Water level, in feet below land-surface datum, 1941: Jan. 14, 31.72.

1.34.27.341. B. F. Smith. Water level, in feet below land-surface datum, 1941: Jan. 14, 32.09.

1.34.27.412. J. D. Cyphers. New measuring point, lower edge of oval hole in north side of pump case shell, 0.60 foot above concrete pump base, 1.63 feet above land-surface datum. Reference point, top edge of USGS washer nailed into west side of telephone pole about 30 feet northeast of well, 0.14 foot below measuring point. Water level, in feet below land-surface datum, 1941: Jan. 14, 33.42.

1.34.27.431. T. E. Willman. Pit dry, January 1941.

1.34.28.211. H. M. Livingston. Water level, in feet below land-surface datum, 1941: Jan. 14, 33.25.

1.34.28.311. Mrs. Nora Teague. Measurements discontinued.

1.34.28.311a. Mrs. Nora Teague. New drilled irrigation well about 50 feet northeast of well 1.34.28.311. Measuring point, top edge of concrete curb at center of east side of well, 0.63 foot below land-surface datum. Reference point, top of 2 by 2-inch stake driven flush with ground, 8.50 feet south of vertical discharge pipe which is near center of well, 0.40 foot above measuring point. Land-surface datum for this well is the same as that for well 1.34.28.311. Water level, in feet below land-surface datum, 1941: Jan. 14, 33.23.

1.34.29.211. George and King. Water level, in feet below land-surface datum, 1941: Jan. 14, a/30.75.

1.34.30.121. R. M. Pember. Water level, in feet below land-surface datum, 1941: Jan. 14, 29.17.

1.34.30.221. John Davidson. Measuring point, top edge of flange of pump, just inside of rectangular hole in southwest side of pump, below motor, 0.89 foot above concrete pump base and 1.72 feet above land-surface datum. Reference point, top edge of USGS washer nailed in west side of R.E.A. power line pole, about 40 feet north of well, 0.35 foot above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 14, 29.07.

1.34.33.223. C. P. Yadon. Well dry, January 1941.

1.34.33.431. F. E. DeQuire.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	18.26	May 21	17.50	Sept.19	9.68
Mar. 28	18.20	July 20	7.57	Nov. 24	6.91

1.34.34.143. J. A. Sanders. Water level, in feet below land-surface datum, 1941: Jan. 14, 33.97.

1.34.34.232. J. W. Owens. Water level, in feet below land-surface datum, 1941: Jan. 14, 31.66.

a Well a quarter of a mile west pumping.

Roosevelt County--Continued.

1.34.34.411. W. L. Patton. New measuring point, top edge of USGS washer in top south edge of north 3 by 8-inch cross brace, 6 inches west of north frame post, 0.20 foot below land-surface datum. Reference point, top of concrete weir box, at southeast corner, at west side of pit, 2.06 feet above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 14, 32.12.

1.34.35.300. Eastern New Mexico College. Water level, in feet below land-surface datum, 1941: Jan. 14, 30.03.

1.34.36.212. R. R. Laird. Water level, in feet below land-surface datum, 1941: Jan. 16, 34.89.

1.34.36.233. Mr. Disney. Water level, in feet below land-surface datum, 1941: Jan. 17, 33.94.

1.34.36.332. T. R. Chambers. Well dry, January 17, 1941.

1.34.36.333. Jim Landiss. Used drilled irrigation well, diameter 12 inches, depth 108 feet. Measuring point, top edge of 3/4-inch hole on southeast side of Layne and Bowler pump base flange, 0.10 foot above top of concrete base, 1.00 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 17, 29.76.

1.34.36.421. Earl McCollum. Water level, in feet below land-surface datum, 1941: Jan. 16, 32.81.

1.34.36.443. Foy Williams. Water level, in feet below land-surface datum, 1941: Jan. 16, 32.36.

1.35.2.300. Eastern New Mexico State Park.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 16	47.84	May 20	47.97	Sept.21	45.83
Mar. 26	48.00	July 21	45.50	Nov. 25	45.42

1.35.6.141. Aubrey and Ellis.

Water level, in feet below land-surface datum, 1941

Jan. 16	10.70	May 20	8.67	Sept.21	3.88
Mar. 26	10.63	July 22	2.84	Nov. 25	0.31

1.35.6.400. Dr. W. M. Brown.

Water level, in feet below land-surface datum, 1941

Jan. 16	15.46	May 20	15.18	Sept.21	8.67
Mar. 26	15.27	July 22	8.64	Nov. 25	5.13

1.35.11.241. Unused drilled well, diameter 6 inches, depth 51 feet. Measuring point, top edge of casing, south side, 3.25 feet above land-surface datum.

Water level, in feet below land-surface datum, 1940-41

Sept.22, 1940	20.09	Mar. 26, 1941	19.08	Sept.26, 1941	15.48
Nov. 20	19.01	May 20	19.03	Nov. 25	14.25
Jan. 16, 1941	19.02	July 21	14.74		

1.35.19.332. S. D. Foreman. Water level, in feet below land-surface datum, 1941: Jan. 15, 44.41.

1.35.19.432. D. A. Carroll. New measuring point, top edge of 3/4-inch hole in east side of pump base, 0.02 foot above land-surface datum. Reference point, top of concrete weir box west of pump, at southeast corner, inside of pump shed, marked with orange paint, 0.28 foot above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 15, 47.98.

Roosevelt County--Continued.

1.35.27.340. Unused dug domestic well in back of small frame house, diameter 4 feet, depth 36 feet. Measuring point, top edge of washer on inside edge of 1 by 6-inch board on west side of well cover, 4.5 feet above land-surface datum. Reference point, top of 2 by 2-inch stake flush with ground, 1 foot west of center of tree which is 40 feet southeast of well and 20 feet north of house, 4.15 feet below measuring point.

Water level, in feet below land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
Aug. 9, 1940	35.32	Nov. 21, 1940	35.65	Sept.27, 1941	31.13
Sept.11	35.41	Jan. 16, 1941	35.58	Nov. 26	30.29

1.35.28.143. J. C. Dick. Pump removed in July 1940. New measuring point, top surface of concrete well curb, north side of well, level with land-surface datum. This measuring point is identical with the reference point given in Water-Supply Paper 845.

Water level, in feet below land-surface datum, 1941

Jan. 15	51.49	May 20	51.67	Sept.23	47.60
Mar. 27	51.62	July 19	49.62	Nov. 26	46.65

1.35.29.111. Clara Nullmeyer. New measuring point, top of concrete pump base, south side of well, 0.42 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 15, 41.69.

1.35.29.231. R. E. Lee. Water level, in feet below land-surface datum, 1941: Jan. 15, 40.78.

1.35.30.111. E. F. Foreman. New measuring point, top edge of south pump support, 2.95 feet below land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 15, 39.68.

1.35.30.212. A. G. Kenyon. Used irrigation well. Measuring point, top edge of 1½-inch hole in east side of Pomona pump, 0.33 foot above concrete pump base and land-surface datum. Pump sits directly on concrete base. Water level, in feet below land-surface datum, 1941: Jan. 15, 40.05.

1.35.30.343. B. H. Fickling. Water level, in feet below land-surface datum, 1941: Jan. 16, 32.37.

1.35.31.122. Mary M. Kenyon. New measuring point, top edge of 1¼-inch hole in north side of Pomona electric pump base, 1.90 feet above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 18, 32.73.

1.35.31.231. W. L. Rogers. Water level, in feet below land-surface datum, 1941: Jan. 16, 31.60.

1.35.31.331. R. A. Young. Water level, in feet below land-surface datum, 1941: Jan. 16, 31.33.

1.35.31.342. E. F. Moore. Water level, in feet below land-surface datum, 1941: Jan. 16, 31.15.

1.35.31.421. Henry Beebe. Water level, in feet below land-surface datum, 1941: Jan. 16, 30.60.

1.35.32.112. George and King. New measuring point, top edge of hole in west side of Byron Jackson pump base flange, 0.13 foot above reference point, 1.55 feet above land-surface datum. Pump sits directly on a concrete base. Water level, in feet below land-surface datum, 1941: Jan. 16, 30.52.

1.35.32.212. H. M. Livingston. New measuring point, top edge of 3/4-inch hole in west side of pump base flange, 0.08 foot above land-surface datum. Pump sits directly on concrete base. Water level, in feet below land-surface datum, 1941: Jan. 16, 27.97.

1.35.32.311. Lee and Nelle Carter. Water level, in feet below land-surface datum, 1941: Jan. 16, 27.76.

Roosevelt County--Continued.

1.35.32.332. Lee and Nelle Carter. Water level, in feet below land-surface datum, 1941: Jan. 16, 28.35.

1.35.32.411. Quincy Haynes. Water level, in feet below land-surface datum, 1941: Jan. 16, 25.55.

1.35.33.112. Roy Newberry. Water level, in feet below land-surface datum, 1941: Jan. 16, 31.29.

1.35.33.331. Lowell C. Green. Water level, in feet below land-surface datum, 1941: Jan. 16, 24.03.

1.36.5.300. H. Pieper.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 16	36.01	May 20	b 37.03	Sept.26	b 34.45
Mar. 26	a 35.60	July 21	a 34.16	Nov. 26	33.58

1.36.6.100. Julian L. Bivins. Water level, in feet below land-surface datum, 1941: Jan. 16, 40.73.

1.36.16.100. State of New Mexico.

Water level, in feet below land-surface datum, 1941

Jan. 16	c 23.66	May 20	b 32.46	Sept.26	b 29.39
Mar. 26	c 23.48	July 21	c 22.63	Nov. 25	14.14

2.34.1.114. E. C. Murrill. Water level, in feet below land-surface datum, 1941: Jan. 17, 30.37.

2.34.1.133. Hugh Knox. Water level, in feet below land-surface datum, 1941: Jan. 17, 29.64.

2.34.1.221. Foy Williams. Water level, in feet below land-surface datum, 1941: Jan. 16, 32.00.

2.34.2.233. A. G. Troutt. Recorder well. Highest and lowest water levels, in feet below land-surface datum, 1941: Dec. 31, 33.57; Apr. 25, 45.45.

Highest daily water level, in feet below land-surface datum, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	44.30	44.12	44.08	43.96	44.30	43.84	40.56	38.66	37.57	36.75	35.87	34.78
2	44.29	44.12	44.07	43.95	44.26	43.78	40.47	38.64	37.54	36.72	35.84	34.74
3	44.28	44.13	44.08	43.95	44.26	43.72	40.40	38.58	37.50	36.69	35.84	34.63
4	44.26	44.11	44.08	43.98	44.26	43.69	40.39	38.56	37.50	36.66	35.76	34.59
5	44.25	44.09	44.05	43.93	44.26	43.56	40.34	38.57	37.47	36.65	35.77	34.66
6	44.25	44.10	44.06	43.95	44.23	d43.48	40.27	38.56	37.44	36.62	35.72	34.56
7	44.24	44.11	44.07	43.96	44.22	d43.40	40.23	38.50	37.38	36.60	35.69	34.52
8	44.24	44.11	44.06	43.96	44.20	43.27	40.14	38.45	37.36	36.56	35.66	34.46
9	44.25	44.09	44.08	43.97	44.20	43.12	40.04	38.39	37.37	36.57	35.64	34.40
10	44.24	44.09	44.05	44.02	44.23	42.96	39.97	38.33	37.35	36.54	35.63	34.40
11	44.24	44.07	44.03	44.07	44.22	42.82	39.91	38.27	37.29	36.50	35.58	34.31
12	44.18	44.05	44.06	44.12	44.18	42.65	39.84	38.22	37.23	36.47	35.52	34.29
13	44.18	44.11	44.06	44.13	44.18	42.50	39.76	38.17	37.21	36.43	35.49	34.29
14	44.15	44.09	44.01	44.13	44.18	42.35	39.70	38.17	37.20	36.43	35.47	34.24
15	44.14	44.11	44.02	44.09	44.17	42.23	39.62	38.16	37.20	36.42	35.42	34.23
16	44.16	44.12	44.04	44.10	44.11	42.11	39.54	38.08	37.20	36.36	35.35	34.15
17	44.18	44.10	44.04	44.11	44.12	41.98	39.46	38.07	37.20	36.31	35.31	34.12
18	44.16	44.11	44.02	44.18	44.11	41.83	39.41	38.05	37.15	36.31	35.27	34.12
19	44.14	44.12	44.02	44.27	44.10	41.72	39.36	38.01	37.10	36.26	35.29	34.12
20	44.13	44.15	44.02	44.35	44.09	41.61	39.28	37.94	37.06	36.24	35.26	34.03
21	44.13	44.13	44.02	44.32	44.03	41.53	39.22	37.92	37.03	36.21	35.14	33.93
22	44.11	44.12	44.02	44.33	44.05	41.42	39.16	37.87	37.02	36.18	35.13	33.90
23	44.12	44.12	44.02	44.32	43.98	41.31	39.10	37.84	36.98	36.19	35.17	33.88

a Windmill pumping.
b Windmill had been pumping hard all day.
c Windmill pumping slowly.
d Interpolated.

Roosevelt County--Continued.

2.34.2.233. A. G. Troutt.--Continued.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
24	44.11	44.12	44.01	44.33	44.00	41.23	39.04	37.79	36.97	36.14	35.09	33.79
25	44.11	44.10	44.01	44.37	44.00	41.11	39.02	37.77	36.97	36.07	35.03	33.82
26	44.12	44.10	44.01	44.32	43.98	41.01	38.98	37.75	36.91	36.05	34.99	33.91
27	44.15	44.12	44.01	44.32	43.97	40.91	38.91	37.74	36.88	36.08	34.96	33.86
28	44.14	44.10	44.00	44.29	43.95	40.81	38.86	37.70	36.89	36.00	34.92	33.81
29	44.12	.....	43.97	44.28	43.93	40.71	38.82	37.76	36.83	35.98	34.87	33.72
30	44.12	.....	43.98	44.28	43.88	40.65	38.76	37.64	36.81	35.98	34.81	33.70
31	44.12	.....	43.97	.....	43.86	.....	38.72	37.63	.....	35.92	.....	33.57

2.34.4.441. Maud Wallace.

Water level, in feet above (+) or below (-) land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 13	-6.00	May 21	-4.61	Sept.26	+2.62
Mar. 28	-5.34	July 18	+2.55	Nov. 24	+4.04

2.34.6.321. V. W. Kyte. Pit filled and measurements discontinued Jan. 13, 1941.

2.34.6.421. R. F. McCalip. Pit filled and measurements discontinued Jan. 13, 1941.

2.34.10.343. H. J. Bollen. Water level, in feet below land-surface datum, 1941: Jan. 14, 36.03.

2.34.11.122. D. W. Bedinger. Measuring point, top edge of casing, north side of well, marked with orange paint, 0.55 foot below base of pump, level with land-surface datum. Reference point, top surface of concrete base for switch box, at southwest corner, painted orange, about 8 feet east of well outside of pump house, 0.26 foot above measuring point. Water level, in feet below land-surface datum, 1941: Jan. 14, 30.56.

2.34.12.143. E. J. Pendergraft. Well dry, January 14, 1941.

2.34.13.111. Lon J. Partin. Well dry, Jan. 14, 1941.

2.34.13.224. Unused dug well, 6 feet long, 4 feet wide, 10 feet deep. Measuring point, top edge of USGS washer in north side of well opening under cover, near center of well, 0.50 foot above land-surface datum. Water levels, in feet below land-surface datum: July 12, 1940, 9.08; Jan. 17, 1941, 9.74.

2.34.14.113. E. E. McNew. Water level, in feet below land-surface datum, 1941: Jan. 14, 30.34.

2.34.14.122. Unused domestic well at southeast corner of small frame house, diameter 5 inches, depth 41 feet. Measuring point, top edge of casing, west side, 1.75 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: May 21, 17.45; July 18, 6.53; Sept. 26, 5.92; Nov. 26, 5.03.

2.34.14.412. N. R. Blackard.

Water level, in feet below land-surface datum, 1941

Jan. 14	26.81	May 21	26.97	Sept.26	19.53
Mar. 28	27.09	July 18	20.81	Nov. 26	17.69

2.34.14.443. J. M. Shim. Water level, in feet below land-surface datum, 1941: Jan. 14, 36.74.

2.34.15.212. Mrs. R. B. Rogers.

Water level, in feet below land-surface datum, 1941

Jan. 14	32.10	May 21	32.10	Nov. 26	26.03
Mar. 28	32.01	Sept.26	27.97		

Roosevelt County--Continued.

2.35.4.111. W. W. Hampton.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 16	24.08	May 20	24.38	Sept.26	15.40
Mar. 27	24.47	July 19	15.42	Nov. 26	13.23

2.35.5.311. H. G. Black. Water level, in feet below land-surface datum, 1941: Jan. 19, 25.21.

2.35.5.341. H. R. Sadler. Water level, in feet below land-surface datum, 1941: Jan. 16, 25.45.

2.35.6.121. Wayne Culpepper. Measuring point, hole in east side of pump base, 0.08 foot above concrete base and 0.02 foot above land-surface datum.

Water level, in feet below land surface-datum, 1941

Jan. 16	29.81	May 20	29.31	Sept.26	20.22
Mar. 28	29.11	July 18	20.80	Nov. 26	17.69

2.35.6.213. Mrs. Beulah Ownby. New measuring point, top edge of innermost ½-inch hole in north side of Sterling pump base flange, 0.06 foot above concrete base, 0.46 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 16, 29.50.

2.35.6.312. Ray Snelson. Water level, in feet below land-surface datum, 1941: Jan. 16, 27.64.

2.35.6.331. J. K. Akers. Water level, in feet below land-surface datum, 1941: Jan. 16, 25.11.

2.35.6.411. F. A. Sewell. Water level, in feet below land-surface datum, 1941: Jan. 16, 27.41.

2.35.6.443. B. H. Howard. Recorder well. Highest and lowest water levels, in feet below land-surface datum, 1941: Dec. 31, 13.26; May 16, 29.40; July 25, 17.74.

Highest daily water level, in feet below land surface datum, 1941
(from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	25.52	25.19	25.03	24.79	24.81	24.67	.....	17.87	17.97	17.19	15.75	13.97
2	25.50	25.19	25.01	24.79	24.57	.....	.....	17.88	18.01	17.13	15.67	13.93
3	25.48	25.18	25.03	24.79	24.75	.....	.....	17.79	18.13	17.05	15.62	13.83
4	25.45	25.16	25.01	24.81	24.79	.....	.....	17.71	18.09	17.00	15.51	13.79
5	25.44	25.14	24.99	24.79	24.78	.....	.....	17.67	18.01	16.95	15.44	13.89
6	25.45	25.13	25.00	24.79	24.91	.....	.....	17.85	17.97	16.93	15.35	13.97
7	25.45	25.12	25.01	24.82	24.91	.....	.....	17.89	17.87	16.89	15.32	13.79
8	25.43	25.12	24.99	24.84	24.88	.....	.....	17.90	17.75	16.83	15.17	13.76
9	25.43	25.10	24.97	24.80	24.90	.....	.....	18.25	17.83	16.83	15.11	13.69
10	25.43	25.10	24.97	24.79	24.90	.....	.....	18.19	17.79	16.79	15.09	13.71
11	25.43	25.07	24.94	24.87	24.78	.....	.....	18.19	17.77	16.72	14.99	13.63
12	25.41	25.05	24.98	24.86	24.77	.....	.....	18.73	17.75	16.65	14.87	13.62
13	25.41	25.09	24.95	24.86	24.76	.....	.....	18.89	17.69	16.61	14.83	13.66
14	25.39	25.07	24.91	24.86	24.76	.....	.....	18.53	17.64	16.58	14.75	13.62
15	25.37	25.07	24.91	24.89	24.76	.....	.....	18.45	17.64	16.57	14.79	13.62
16	25.38	25.07	24.92	24.91	25.10	.....	.....	18.41	17.77	16.51	14.57	13.57
17	25.39	25.07	24.92	24.91	24.92	.....	.....	18.24	17.79	16.46	14.52	13.53
18	25.36	25.07	24.90	24.91	24.85	.....	.....	18.19	17.81	16.43	14.47	13.56
19	25.33	25.09	24.89	24.93	24.85	.....	17.99	18.35	17.89	16.38	14.47	13.59
20	25.31	25.09	24.89	24.92	24.87	.....	17.81	18.17	17.85	16.35	14.44	13.51
21	25.29	25.05	24.87	24.92	25.05	.....	17.73	18.07	17.63	16.33	14.31	13.41
22	25.29	25.04	24.87	24.92	24.86	.....	17.71	17.97	17.57	16.28	14.29	13.39
23	25.28	25.02	24.86	24.93	24.76	.....	17.69	17.89	17.49	16.19	14.35	13.39
24	25.27	25.03	24.85	24.95	24.57	.....	17.64	17.68	17.55	16.19	14.27	13.32
25	25.27	25.02a	24.73	24.93	24.75	.....	17.71	17.66	17.51	16.13	14.19	13.35

a Rainwater ran into irrigation well.

Roosevelt County--Continued.

2.35.6.443. B. H. Howard --Continued.

Highest daily water level, in feet below land surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	25.27	25.03	24.86	24.89	24.69	.....	17.82	17.71	17.48	16.09	14.17	13.49
27	25.27	25.04	24.86	24.87	24.64	.....	17.72	17.94	17.43	16.10	14.13	13.50
28	25.23	25.04	24.85	24.85	24.11	.....	17.63	17.95	17.29	16.01	14.09	13.47
29	25.21	.....	24.82	24.83	24.57	.....	17.59	18.00	17.33	15.95	14.04	13.39
30	25.21	.....	24.83	24.83	24.57	.....	17.77	18.11	17.27	15.93	13.99	13.34
31	25.20	.....	24.81	.....	24.61	.....	17.81	18.02	.....	15.84	.....	13.26

2.35.7.134. A. L. Kelly. Water level, in feet below land-surface datum, 1941: Jan. 19, 34.35.

2.35.7.311. W. H. Seefield.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 17	a 17.03	May 20	a 16.74	Sept.26	10.23
Mar. 27	a 16.87	July 18	10.39	Nov. 26	7.09

2.35.8.331. G. C. Cooper. Water level, in feet below land-surface datum, 1941: Jan. 17, 27.86.

2.35.9.211. Fred Smith.

Water level, in feet below land-surface datum, 1941

Jan. 16	19.75	May 20	19.95	Sept.26	12.39
Mar. 27	19.89	July 19	11.05	Nov. 26	9.82

2.35.10.211. C. H. Hare. Water level, in feet below land-surface datum, 1941: Jan. 16, 19.52.

2.35.14.414. First National Bank of Portales.

Water level, in feet below land-surface datum, 1941

Jan. 17	3.44	May 20	2.69	Sept.27	0.15
Mar. 27	2.33	July 20	0.65	Nov. 26	b 0.06

2.35.14.313. First National Bank of Portales.

Water level, in feet below land-surface datum, 1941

Jan. 17	11.21	May 20	10.27	Sept.27	7.89
Mar. 27	10.83	July 20	7.02	Nov. 26	6.27

2.35.15.131. First National Bank of Portales.

Water level, in feet below land-surface datum, 1941

Jan. 17	2.76	May 20	2.37	Sept.27	0.37
Mar. 27	2.09	July 20	0.67	Nov. 26	b 0.03

2.35.16.333. A. J. Cline.

Water level, in feet below land-surface datum, 1941

Jan. 17	8.51	May 20	7.61	Sept.27	5.39
Mar. 27	8.14	July 20	4.76	Nov. 26	3.77

2.35.18.211. Water levels, in feet below land-surface datum, 1941: Jan. 17, 5.43; Mar. 27, 3.51; May 20, 4.58; July 18, large lake over well, water level 2 to 4 feet above land-surface datum.

2.35.19.134. J. S. Martin. Measurements continued after September 1941. New measuring point, top south edge of vertical part of 6-inch discharge pipe, 1.50 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Sept. 27, 25.93; Nov. 26, 25.21.

a Pumping.
b Water above land-surface datum.

Roosevelt County--Continued.

2.35.25.123. Dr. L. C. Buchanan. New Measuring point after March 1941, top north edge of vertical discharge pipe, 1.45 feet above land-surface datum. Reference point No. 1 is the top of a stake, with USGS washer, placed 34.4 feet southwest of well and at the northeast corner of a road intersection. The stake is placed in line with center-line of observation well and a windmill to the northeast. The reference point is 1.31 feet below the new measuring point. Reference point No. 2 is the top of a stake, with USGS washer, placed 20 feet southeast of well by north side of road and in line with centerline of observation well and a stove-pipe on a house which is northwest of well. The reference point is 1.16 feet below the new measuring point.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 17	23.22	May 20	23.33	Sept.27	17.87
Mar. 27	23.26	July 19	19.11	Nov. 26	16.67

2.35.26.111. T. M. McCrary. Used drilled irrigation well, diameter 14 inches, depth 70 feet. Measuring point, top edge of USGS washer in west top edge of east wooden pump column clamp, south side of pump column, 0.50 foot above land-surface datum. Reference point, top of 2 by 2-inch wooden stake driven flush with ground, washer in top, 11.5 feet northeast of well in line with well and windmill that is southwest of a house, 0.66 foot below measuring point. Water level, in feet below land-surface datum, 1941: Jan. 17, 32.98.

2.36.8.432. S. W. Davis. Measuring point raised to 0.37 foot above land-surface datum.

Water level, in feet below land-surface datum, 1941

Jan. 17	20.94	May 20	21.02	Sept.27	16.67
Mar. 27	20.90	July 19	19.40	Nov. 26	13.06

2.36.9.431. J. E. Polly. Water level, in feet below land-surface datum, 1941: Jan. 17, 21.63.

2.36.18.341. Bob Stokes.

Water level, in feet below land-surface datum, 1941

Jan. 17	16.83	May 20	16.76	Sept.27	11.30
Mar. 27	16.92	July 19	10.06	Nov. 26	9.07

2.36.19.113. J. S. Hobbs. Used drilled irrigation well, diameter 14 inches, depth 108 feet. Measuring point, top edge of concrete well curb, west side of well, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 17, 22.96.

2.36.20.321. W. O. Davis.

Water level, in feet below land-surface datum, 1941

Jan. 17	15.84	May 20	16.13	Sept.27	12.35
Mar. 27	15.64	July 19	11.13	Nov. 26	8.35

2.36.21.432. Sam H. McCarson. Water level, in feet below land-surface datum, 1941: Jan. 17, 16.96.

2.36.25.112. W. D. Pate. Water level, in feet below land-surface datum, 1941: Jan. 17, 16.50.

2.36.26.131. L. L. Bugg. Reference point, top edge of USGS washer on north side of 8-inch locust tree, 17 feet southeast of centerline of well, 3.47 feet above measuring point.

Water level, in feet below land-surface datum, 1941

Jan. 17	14.12	May 20	13.73	Sept.27	7.62
Mar. 27	14.08	July 19	7.24	Nov. 26	4.81

2.36.26.311. J. S. Riley. Water level, in feet below land-surface datum, 1941: Jan. 17, 18.46.

Roosevelt County--Continued.

2.36.26.423. W. B. Cox. Water level, in feet below land-surface datum, 1941: Jan. 17, 16.09.

2.36.27.111. B. L. Kennedy. Water level, in feet below land-surface datum, 1941: Jan. 17, 15.47.

2.36.27.131. B. L. Kennedy. Well dry, Jan. 17, 1941.

2.36.27.211. M. O. Pate. Water level, in feet below land-surface datum, 1941: Jan. 17, 14.63.

2.36.27.311. J. M. Riley.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 17	15.86	May 20	15.45	Sept.27	10.11
Mar. 27	15.75	July 19	11.69	Nov. 26	6.79

2.36.28.114b. Morgan Trammel. Recorder well. Highest and lowest water levels, in feet below land-surface datum, 1941: Dec. 4, 7.30; Jan. 4, 16.32; Jan. 10, 16.31; Nov. 11, 7.49.

Highest daily water level, in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.31	16.28	16.26	16.16	16.08	15.00	12.18	10.74	10.91	10.81	8.03	7.35
2	16.32	16.28	16.26	16.16	16.08	14.91	12.13	10.74	10.91	10.77	8.01	7.38
3	16.32	16.27	16.25	16.15	16.08	14.81	12.09	10.80	10.93	10.75	7.88	7.32
4	16.32	16.27	16.25	16.15	16.07	14.70	12.05	10.80	10.97	10.72	7.78	7.30
5	16.32	16.27	16.25	16.15	16.06	14.61	12.01	10.80	10.98	10.63	7.72	7.38
6	16.31	16.27	16.25	16.15	16.05	14.47	11.98	10.80	10.99	10.57	7.65	7.41
7	16.31	16.27	16.25	16.14	16.05	14.28	11.95	10.80	10.98	10.51	7.62	7.39
8	16.31	16.27	16.24	16.14	16.05	14.13	11.91	10.81	10.98	10.46	7.55	7.40
9	16.31	16.27	16.24	16.14	16.04	14.01	11.88	10.82	11.05	10.44	7.52	7.35
10	16.41	16.27	16.23	16.14	16.04	13.93	11.84	10.82	11.06	10.38	7.51	7.36
11	16.31	16.27	16.23	16.14	16.04	13.84	11.80	10.82	11.05	10.32	7.39	7.45
12	16.31	16.26	16.23	16.13	16.02	13.74	11.76	10.84	11.02	10.24	7.45	7.44
13	16.30	16.26	16.23	16.13	16.02	13.67	11.69	10.85	11.03	10.21	7.44	7.40
14	16.30	16.26	16.23	16.12	16.02	13.59	11.57	10.85	11.05	10.20	7.42	7.38
15	16.30	16.26	16.23	16.12	16.01	13.53	11.46	10.88	11.07	10.15	7.41	7.40
16	16.30	16.26	16.23	16.12	16.01	13.38	11.37	10.88	11.09	10.11	7.39	7.39
17	16.30	16.26	16.21	16.12	16.01	13.27	11.28	10.88	11.13	10.07	7.37	7.48
18	16.30	16.26	16.21	16.11	16.01	13.06	11.20	10.89	11.11	10.04	7.36	7.39
19	16.30	16.26	16.21	16.11	16.00	12.94	11.15	10.92	11.07	10.00	7.40	7.42
20	16.29	16.26	16.21	16.11	16.00	12.83	11.08	10.90	11.06	9.99	7.43	7.40
21	16.29	16.26	16.20	16.10	15.99	12.75	11.03	10.90	11.05	9.97	7.34	7.35
22	16.29	16.26	16.20	16.10	15.98	12.68	10.98	10.89	11.06	9.88	7.36	7.32
23	16.29	16.26	16.20	16.10	15.93	12.61	10.92	10.88	11.01	9.82	7.44	7.36
24	16.29	16.26	16.19	16.10	15.89	12.52	10.89	10.88	11.00	9.59	7.43	7.36
25	16.29	16.26	16.19	16.10	15.80	12.46	10.86	10.88	11.00	9.09	7.39	7.38
26	16.29	16.26	16.19	16.10	15.64	12.40	10.85	10.88	10.94	9.02	7.36	7.40
27	16.28	16.26	16.19	16.10	15.53	12.34	10.80	10.90	10.93	8.87	7.36	7.42
28	16.28	16.26	16.19	16.09	15.43	12.29	10.78	10.90	10.93	8.79	7.37	7.41
29	16.28	.....	16.18	16.09	15.33	12.25	10.76	10.90	10.88	8.66	7.36	7.40
30	16.28	.....	16.18	16.09	15.22	12.21	10.75	10.90	10.86	8.59	7.35	7.39
31	16.28	.....	16.17	.....	15.12	.....	10.74	10.92	.....	8.37	....	7.39

2.36.28.411. C. A. Tevis. Water level, in feet below land-surface datum, 1941: Jan. 17, 15.96.

2.36.28.421. C. A. Tevis. Water level, in feet below land-surface datum, 1941: Jan. 17, 17.05.

2.36.28.441. J. W. Robinson. Water level, in feet below land-surface datum, 1941: Jan. 17, 17.74.

Roosevelt County--Continued.

2.36.30.111. Unused bored well, diameter 2 inches, depth 10 feet. Situated 9.0 feet south of R.E.A. power line pole, in line with pole and supporting guy-wires, on southeast corner of road intersection. Measuring point, top edge of 2-inch galvanized iron casing, east side, 0.24 foot above land-surface datum. Reference point, top of USGS washer on south side of R.E.A. power-line pole, 9.0 feet north of well, 0.76 foot above measuring point.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Mar. 17	4.69	July 19	1.92	Nov. 26	0.45
May 20	4.14	Sept.27	2.05		

2.36.34.111. M. F. Riley. Water level, in feet below land-surface datum, 1941: Jan. 17, 16.59.

2.36.34.221. W. H. Davenport. Water level, in feet below land-surface datum, 1941: Jan. 17, 11.01.

2.36.34.341. W. J. Murrill.

Water level, in feet below land-surface datum, 1941

Jan. 17	19.97	May 20	19.35	Sept.27	14.86
Mar. 27	19.76	July 19	14.49	Nov. 26	12.04

2.36.34.421. I. F. Dacus. New measuring point, top north edge of south 8 by 8-inch cross brace, to east of upright, 0.72 foot above previous measuring point and land-surface datum. Water level, in feet below land-surface datum, 1941: Jan. 17, 10.64.

2.36.35.212. A. E. Whitehead.

Water level, in feet below land-surface datum, 1941

Jan. 17	10.40	May 20	9.75	Sept.27	5.90
Mar. 27	10.10	July 19	6.25	Nov. 26	3.27

2.37.19.331. W. H. McDougal.

Water level, in feet below land-surface datum, 1941

Jan. 17	20.19	May 20	20.26	Sept.27	14.89
Mar. 27	20.32	July 19	14.52	Nov. 26	12.07

2.37.19.341. C. R. Anderson. Water level, in feet below land-surface datum, 1941: Jan. 17, 19.84.

SIERRA COUNTY

HOT SPRINGS

By C. R. Murray

The ground-water investigation conducted by the United States Geological Survey in cooperation with the State engineer of New Mexico at Hot Springs, N. Mex., was continued in 1941 by making periodic water-level measurements. A general report covering the investigation of the thermal waters of the Hot Springs artesian basin is in manuscript form awaiting publication.

Automatic water-stage recorders were maintained on 2 wells which derive thermal water from the Magdalena limestone, and one was also installed February 27, 1941, on a shallow well dug into the alluvium, which also is saturated with hot mineral water.

Water-level measurements at intervals of four months were made on 12 other observation wells, of which numbers 2, 3, and 33 were not included in the 1940 report. With the exception of well 6A in the following table, all the observation wells obtain artesian water from the Magdalena limestone.

Daily fluctuations of water level and artesian pressure take place as a result of the withdrawal of water, principally for bathing, and in the shallow-water wells there are additional diurnal fluctuations caused by transpiration and evaporation. The maximum daily variation in artesian pressure is approximately 0.4 foot, and the minimum daily variation, which occurs in the winter when less water is pumped, is about 0.15 foot. The maximum daily variation in water level is approximately 0.06 foot, and the minimum is about 0.02 foot, the latter also occurring in the winter, when pumping, transpiration, and evaporation are all relatively small.

Formerly water levels and artesian pressures varied seasonally with the stage of the Rio Grande at Hot Springs. The river stage was dependent chiefly upon the amount of water released from Elephant Butte Reservoir for irrigation purposes. Thus, artesian pressures were approximately 0.7 foot greater during April, May, and June, when the Rio Grande was at a high stage at Hot Springs, than in October, November, and December, when the Rio Grande was at a low stage. During 1941 the river flow and stage were increased irregularly owing to the initiation of operation of the power plant at Elephant Butte Dam. The artesian pressure began increasing from its low winter position in December 1940, when the plant was first operated. By February the artesian pressure had increased approximately 0.4 foot, and it held rather steady until the end of September. At this time the power output was increased, accordingly the stage of the river at Hot Springs rose, and the artesian pressure increased markedly. By December an additional rise of 1 foot had taken place, and at the end of the year the artesian pressure was about 0.7 foot higher than its usual yearly summer high point.

In the following tables water levels, in feet above or below land-surface datum, are given for the observation wells.

2. H. L. Lockhart. Lot 17, block 1, Hot Springs townsite, sec. 33, T. 13 S., R. 4 W., in vacant lot, 10 feet south of well 3. Unused drilled artesian well, diameter 6-5/8 inches, depth 125 feet. Measuring point, top edge of 2-inch gate valve (in vertical position), 2 feet above land-surface datum, 4,242.60 feet above sea level.

Water level, in feet above land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
June 15, 1940	0.85	Feb. 26, 1941	0.57	Oct. 25, 1941	0.95
Oct. 23	.14	June 21	.52		

3. H. L. Lockhart. Lot 17, block 1, Hot Springs townsite, sec. 33, T. 13 S., R. 4 W., in vacant lot, 10 feet north of well 2. Unused drilled artesian well, diameter 6-5/8 inches, depth 125 feet. Measuring point, top edge of 2-inch gate valve (in vertical position), 2 feet above land-surface datum, 4,242.57 feet above sea level.

Water level, in feet above land-surface datum, 1940-41

June 15, 1940	0.90	Feb. 26, 1941	0.62	Oct. 25, 1941	0.98
Oct. 23	.18	June 21	.57		

4. C. E. James. Lot 21, block 2, Hot Springs townsite. Water levels, in feet above land-surface datum, 1941: Feb. 26, 0.68; June 21, 0.60; Oct. 25, 1.01.

5. J. E. Malone. Lot 12, block 9, Hot Springs townsite. Water levels, in feet below land-surface datum, 1941: Feb. 26, 0.44; June 21, 0.45; Oct. 25, 0.09.

6. C. E. James. Lot 4, block 8, Hot Springs townsite. New measuring point, top of extended casing, 3.72 feet above land-surface datum, 4,243.75 feet above sea level.

Water level at 4:00 a.m., in feet above land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.45	0.54	0.56	0.63	0.66	0.58	0.59	0.66	0.57	0.80	1.00	....
2	.47	.53	.58	.62	.67	.57	.59	.65	.61	.80	1.00	....
3	.48	.52	.54	.62	.68	.56	.58	.65	.59	.78	1.00	....
4	.48	.54	.55	.59	.68	.58	.60	.62	.56	.81	1.05	....
5	.48	.57	.57	.63	.67	.62	.63	.61	.53	.78	1.07	....
6	.47	.57	.58	.63	.65	.58	.65	.64	.54	.79	1.14	....
7	.46	.58	.55	.58	.65	.58	.64	.64	.56	.77	1.14	....
8	.46	.58	.55	.60	.65	.58	.63	.64	.54	.79	1.20	....
9	.44	.58	.59	.61	.65	.56	.63	.66	.51	.68	....	....
10	.46	.58	.54	.63	.63	.55	.64	.66	.50	.77	....	....
11	.48	.58	.58	.60	.62	.53	.64	.65	.51	.80	....	....
12	.52	.64	.57	.61	.64	.52	.66	.62	.54	.80	....	....
13	.48	.58	.56	.58	.63	.52	.65	.75	.55	.85	....	....
14	.49	.59	.60	.57	.63	.53	.66	.63	.56	.84	....	....
15	.49	.59	.58	.58	.62	.52	.68	.59	.56	.83	....	1.58
16	.48	.59	.58	.59	.59	.51	.67	.58	.58	.85	....	1.60
17	.44	.59	.56	.60	.59	.50	.66	.57	.57	.88	....	1.64
18	.44	.60	.56	.61	.60	.51	.67	.56	.58	.89	....	1.61
19	.46	.60	.58	.58	.62	.51	.68	.53	.60	.90	....	1.58
20	.47	.58	.60	.59	.58	.52	.68	.54	.62	.91	....	1.58
21	.48	.59	.60	.61	.56	.51	.68	.51	.62	.91	....	1.59
22	.49	.60	.60	.64	.58	.55	.68	.53	.67	.90	....	1.61
23	.49	.60	.60	.64	.59	.60	.68	.57	.64	.88	....	1.57
24	.48	.58	.60	.62	.58	.62	.65	.56	.64	.90	....	1.66
25	.50	.60	.60	.63	.59	.63	.67	.53	.62	.92	....	1.59
26	.49	.55	.59	.66	.59	.63	.67	.56	.62	.93	....	1.56
27	.48	.53	.58	.66	.58	.63	.66	.55	.65	.92	....	1.57
28	.51	.54	.58	.62	.58	.63	.67	.56	.65	.96	....	1.55
29	.60	....	.61	.61	.58	.58	.63	.60	.98	.98	....	1.57
30	.58	....	.60	.64	.58	.60	.61	.57	.87	.97	....	1.56
31	.56	....	.60	....	.57	....	.62	.53	....	.97	....	1.61

Sierra County--Continued.

6a. C. E. James. Lot 4, block 8, Hot Springs townsite, sec. 4, T. 14 S., R. 4 W. Dug observation well in alluvium, equipped with automatic water-stage recorder, diameter 2 feet, depth 6 feet. Measuring point, base of recorder, 1.6 feet above land-surface datum, 4,241.6 feet above sea level.

Water level at 4:00 a.m., in feet below land-surface datum, 1941 (from recorder charts)

Day	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.71	1.69	1.63	1.73	1.69	1.56	1.65	1.16	1.41	....
2	1.70	1.69	1.63	1.73	1.68	1.57	1.62	1.16	1.41	1.19
3	1.74	1.69	1.64	1.74	1.68	1.58	1.63	1.28	1.42	1.20
4	1.73	1.71	1.63	1.72	1.66	1.60	1.66	1.14	1.38	1.20
5	1.71	1.69	1.63	1.71	1.65	1.62	1.68	1.34	1.33	1.24
6	1.71	1.69	1.63	1.69	1.63	1.59	1.69	1.44	1.26	1.26
7	1.72	1.72	1.65	1.70	1.63	1.60	1.68	1.50	1.24	1.25
8	1.73	1.71	1.66	1.71	1.64	1.58	1.70	1.50	1.14	1.27
9	1.71	1.70	1.66	1.72	1.65	1.55	1.71	1.50	....	1.15
10	1.73	1.69	1.68	1.72	1.62	1.55	1.72	1.51	....	1.14
11	1.72	1.72	1.68	1.73	1.62	1.57	1.71	1.50	....	1.16
12	1.71	1.70	1.67	1.74	1.59	1.60	1.70	1.52	....	1.04
13	1.71	1.71	1.69	1.73	1.58	1.28	1.69	1.50	....	....
14	1.70	1.73	1.68	1.73	1.57	1.48	1.68	1.49	....	....
15	1.70	1.72	1.69	1.74	1.49	1.55	1.69	1.50	....	1.23
16	1.70	1.72	1.71	1.75	1.49	1.58	1.67	1.50	....	1.20
17	1.72	1.71	1.71	1.75	1.54	1.60	1.68	1.48	....	1.20
18	1.72	1.70	1.71	1.74	1.56	1.62	1.68	1.48	....	1.21
19	1.71	1.71	1.71	1.75	1.56	1.63	1.66	1.47	....	1.26
20	1.70	1.70	1.72	1.74	1.55	1.64	1.66	1.46	....	1.27
21	1.69	1.69	1.73	1.75	1.54	1.68	1.66	1.47	....	1.27
22	1.69	1.67	1.72	1.72	1.57	1.66	1.50	1.48	....	1.26
23	1.69	1.66	1.72	1.69	1.53	1.64	1.59	1.47	....	1.28
24	1.70	1.67	1.71	1.66	1.59	1.64	1.61	1.44	....	1.26
25	1.70	1.66	1.71	1.64	1.57	1.66	1.63	1.42	....	1.28
26	1.70	1.61	1.72	1.64	1.58	1.64	1.64	1.42	....	1.30
27	1.71	1.61	1.73	1.64	1.57	1.63	1.62	1.44	....	1.30
28	1.71	1.64	1.73	1.63	1.55	1.63	1.60	1.42	....	1.31
29	1.69	1.66	1.72	1.69	1.61	1.60	1.16	1.41	....	1.30
30	1.69	1.65	1.72	1.68	1.64	1.63	1.16	1.41	....	1.30
31	1.71	....	1.72	....	1.61	1.66	....	1.42	....	1.28

12. Mr. Mathis. Lot 8, block 40, Hot Springs townsite. Water levels, in feet above land-surface datum, 1941: Feb. 26, 3.93; June 21, 3.87; Oct. 25, 4.29.

18. Mrs. J. Schauer. Lot 7, block 105, Hot Springs townsite. Water levels, in feet below land-surface datum, 1941; Feb. 26, 1.65; June 21, 1.68; Oct. 25, 1.34.

19. Bill Green. Lot 12, block 105, Hot Springs townsite. Water levels, in feet below land-surface datum, 1941: Feb. 26, 0.70; June 21, 0.78; Oct. 25, 0.41.

25. Jim Knox. Lot 4, block 93, Hot Springs townsite. Measuring point, top edge of USGS washer on 2 by 8-inch stringer, 7.54 feet below top of concrete well curb, center of west side, 6.04 feet below land-surface datum, 4,242.20 feet above sea level.

Water level at 4:00 a.m., in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.78	7.74	7.62	7.58	7.60	7.65	7.64	7.58	7.67	....	7.32	....
2	7.77	7.74	7.61	7.58	7.60	7.66	7.63	7.59	7.64	7.44	7.34	6.97
3	7.77	7.75	7.64	7.58	7.59	7.66	7.65	7.59	....	7.41	7.33	6.96
4	7.77	7.70	7.63	7.60	7.59	7.66	7.62	7.61	....	7.43	7.32	6.94
5	7.77	7.67	7.61	7.57	7.60	7.62	7.60	7.63	7.68	7.43	7.30	7.02

Sierra County--Continued.

25. Jim Knox--Continued.

Water level at 4:00 a.m., in feet below land-surface datum, 1941 (from recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	7.78	7.67	7.62	7.57	7.60	7.65	7.59	7.60	7.68	7.45	7.24	7.03
7	7.78	7.65	7.64	7.60	....	7.65	7.59	7.60	7.67	7.43	7.24	7.00
8	7.78	7.66	7.64	7.59	....	7.64	7.60	7.60	....	7.44	7.18	7.02
9	7.79	7.66	7.62	7.59	....	7.67	7.60	7.58	....	7.44	7.10	6.95
10	7.78	7.65	7.66	7.57	....	7.68	7.59	7.58	....	7.42	7.09	6.93
11	7.77	7.66	7.62	7.58	....	7.69	7.59	7.59	....	7.42	7.07	6.95
12	7.75	7.60	7.63	7.59	....	7.68	7.58	7.63	....	7.42	7.03	6.88
13	7.77	7.64	7.64	7.62	....	7.68	7.58	7.53	....	7.40	6.98	6.95
14	7.77	7.64	....	7.63	....	7.67	7.58	....	....	7.39	6.99	6.96
15	7.76	7.64	....	7.62	....	7.69	7.56	7.65	7.67	7.40	....	6.96
16	7.77	7.65	....	7.62	....	7.69	7.56	7.65	7.66	7.38	....	6.96
17	7.79	7.64	....	7.60	....	7.70	7.56	7.65	7.66	7.37	....	6.94
18	7.80	7.62	....	7.59	7.63	7.69	7.56	7.66	7.65	7.36	....	6.96
19	7.78	7.62	....	7.62	7.62	7.69	7.56	7.68	7.63	7.35	....	6.98
20	7.77	7.64	....	7.61	7.66	7.68	7.56	7.68	7.61	7.35	....	6.98
21	7.76	7.63	7.61	7.58	7.67	7.70	7.56	7.69	7.61	7.34	....	6.96
22	7.76	7.62	7.61	7.58	7.64	7.68	7.56	....	7.57	7.35	....	6.96
23	7.76	7.62	7.61	7.57	7.66	7.64	7.56	....	....	7.42	....	7.00
24	7.76	7.65	7.60	7.64	7.64	7.62	7.58	....	....	7.40	....	6.93
25	7.74	7.62	7.61	7.62	7.64	7.60	7.57	....	....	7.37	....	6.96
26	7.74	7.63	7.61	7.60	7.63	7.60	7.58	....	....	7.37	....	7.00
27	7.75	7.64	7.61	7.60	7.64	7.60	7.58	....	....	7.38	....	6.99
28	7.73	7.63	7.62	....	7.64	7.59	7.57	....	....	7.36	....	7.01
29	7.69	....	7.60	....	7.63	7.64	....	7.64	....	7.34	....	6.98
30	7.71	....	7.60	7.63	7.63	7.63	7.62	7.66	....	7.34	....	6.99
31	7.72	....	7.60	....	7.65	....	7.62	7.69	....	7.34	....	6.95

27. Ben Graham. Lot 4, block 42, Hot Springs townsite. Water levels in feet above land-surface datum, 1941: Feb. 26, 2.39; June 21, 2.38; Oct. 25, 2.77.

30. Geo. L. Mills. Lot 1, block 102, Hot Springs townsite. Water levels, in feet below land-surface datum, 1941: Feb. 26, 1.26; June 21, 1.31; Oct. 25, 0.90.

31. Mrs. M. J. Scarborough. Lot 3, block 104, Hot Springs townsite. Water levels, in feet above land-surface datum, 1941: Feb. 26, 1.30; June 21, 1.19; Oct. 25, 1.64.

32. Tom Jones. Lot 4, block 103, Hot Springs townsite. Water levels, in feet above land-surface datum, 1941: Feb. 25, 0.21; Oct. 25, 0.28.

33. C. E. James. Lot 2, block 106, Hot Springs townsite, sec. 33, T. 13 S., R. 4 W. Drilled unused artesian well, equipped during part of 1941 with an automatic pressure recorder, diameter 6-3/4 inches, depth 125 feet. Measuring point, top of ½-inch tee pipe fitting at south end of tee, 1.50 feet below sidewalk or land-surface datum, 4,239.29 feet above sea level.

Water level, in feet below land-surface datum, 1940-41

Date	Water level	Date	Water level	Date	Water level
June 15, 1940	0.85	Feb. 26, 1941	0.32	June 21, 1941	0.32
Oct. 23	.68	June 11	.34	Oct. 25	.06

TORRANCE COUNTY

ESTANCIA VALLEY

By C. R. Murray

Attempts have been made over a long period of years to establish irrigation farming, using ground water, in Estancia Valley, N. Mex. In 1909 an investigation to determine the feasibility of irrigating with ground water in this area was made by O. E. Meinzer.[3] In the investigation conducted by Dr. Meinzer, a thorough study was made of geologic and hydrologic conditions in Estancia Valley.

Because of recent renewed interest in ground-water irrigation in this area, it was decided to make periodic water-level measurements in the valley in order to keep a record of ground-water developments and thus be able to furnish current ground-water information to interested parties. The investigation is being carried out by the Division of Ground Water of the United States Geological Survey, in cooperation with the State engineer of New Mexico.

Estancia Valley is a closed drainage basin approximately 65 miles long in a north-south direction and 40 miles wide east to west. The center of the valley is underlain by lake deposits, which were formed in Lake Estancia, an ancient lake covering a much more extensive area than the present salt lakes, which occupy only the lower part of the valley. Alluvium consisting of sands, clays, and gravels forms the surface of most of the valley. This is believed to be largely late Tertiary or early Pleistocene in age.[4] Protruding through the valley fill in numerous places are consolidated rocks of Carboniferous and pre-Cambrian age.

Wells in Estancia Valley derive water from the lake sediments, the alluvium, and the Carboniferous rocks. Most of the wells have low specific capacities, but a few wells yield considerable water per foot of drawdown.

3/ Meinzer, O. E., Geology and water resources of Estancia Valley, New Mexico: U. S. Geol. Survey Water-Supply Paper 275, 1911.

4/ Meinzer, O. E., op. cit., p. 15.

Most of the better wells are in the littoral zone on the west side of ancient Lake Estancia. These wells apparently derive their water from alluvium deposited in valleys entering the lake from the Manzano Mountains to the west. These ancient waterways appear to coincide roughly with present drainage lines.

Water levels were measured in about 50 wells in February, but by the end of the year the number had been increased to about 70. Measurements were made in most of the wells in February, July, September, and November 1941. In February 1941 an automatic water-stage recorder was installed on well 7.8.23.324 in the area of very shallow water. Only a partial record was obtained, however, as difficulty was experienced in getting a permanent well observer.

There was a marked rise of water levels in Estancia Valley during 1941. The amount of rise in individual wells was variable, being noticeably large for wells situated in valleys. Also, a greater rise in water level occurred in the area southwest of Estancia than in the remainder of the valley. This area is traversed by large arroyos with extensive drainage basins. The changes in water levels in Estancia Valley are tabulated below:

Summary of average net changes in water levels, in feet, in observation wells in Estancia Valley, 1941

Period covered	Number of wells	Average net change	Period covered	Number of wells	Average net change
Feb. to July	45	+0.880	Feb. to Sept.	46	+0.888
July to Sept.	56	+ .067	Feb. to Nov.	48	+1.744
Sept. to Nov.	58	+ .693			

The rise in the water table resulted from the abnormally large amount of precipitation during 1941. Transpiration and evaporation effects largely counteracted this rise during the summer months. Recent precipitation figures, in inches, as reported by the United States Weather Bureau, follow:

Record of annual precipitation at Estancia, N. Mex. (Normal, 13.41 inches)

Year	Precipitation (inches)	Departure from normal (inches)
1939	15.14	+ 1.73
1940	11.15	- 2.26
1941	23.63	+10.22

Record of annual precipitation
near McIntosh, N. Mex.
(About 8 miles north of Estancia)
(Normal, 13.49 inches)

Year	Precipitation (inches)	Departure from normal (inches)
1939	11.72	- 1.77
1940	19.68	+ 6.19
1941	22.30	+ 8.81

A total of about 500 acre-feet of water was pumped from wells in Estancia Valley for irrigation purposes during 1941. Two of the three irrigation wells yielded 650 gallons a minute and the third, 100 gallons a minute. Carrots were the principal crop.

The following tables show the depths to water below the land surface for observation wells. The system of numbering wells is described on the first page of the New Mexico portion of this report.

4.8.1.144. J. M. Harper. Filling station. Dug well, depth 58½ feet. Measuring point, top of column-pipe clamp of hand pump, 0.5 foot above cement cover, 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: July 9, 54.84; Sept. 8, 54.63; Nov. 24, 54.58.

4.8.24.222. M. E. Ottoson. Drilled domestic well, diameter 6 inches, depth 157 feet. Measuring point, top of casing, 0.84 foot above top of concrete block at southwest leg of windmill tower, 1.65 feet above land surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Jan. 7, 57.23; July 9, 57.15; Sept. 8, 56.75.

4.9.6.444. Red Ball Camp. Unused drilled well. Measuring point, top of casing, 0.3 foot above land-surface datum. Equipped with hand pump. Water levels, in feet below land-surface datum, 1941: Feb. 20, 36.66; July 9, 36.85; Sept. 8, 36.36; Nov. 24, 35.80.

4.9.7.441. Abandoned, drilled domestic well, diameter 6 inches. Measuring point, top of casing at lap point, 0.3 foot above land-surface datum. Windmill tower over well. Water levels, in feet below land-surface datum, 1941: July 9, 54.13; Sept. 8, 53.80; Nov. 25, 52.94.

4.9.8.144. A.T. and S.F. Railway. West well, used for locomotive water supply, drilled well, diameter 10 inches, depth 235 feet. Measuring point, bottom edge of basal flange of pump, south side, under ½-inch hole, 2 feet above land-surface datum. Equipped with turbine pump. Water levels, in feet below land-surface datum, 1941: Feb. 13, 32.28; Sept. 8, 31.30.

4.9.10.133. Homer Orwn. Drilled stock well, diameter 6 inches. Measuring point, top of casing, 1.5 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 20, 18.22; July 9, 18.02; Sept. 8, 17.94; Nov. 24, 17.60.

5.7.15.212. Ewing School. Drilled school well, diameter 6 inches. Measuring point, south edge of cement clamp blocks, 0.7 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 21, 117.88; July 10, 117.90; Sept. 9, 117.95; Nov. 25, 117.72.

5.8.4.343. Drilled stock well, diameter 7⅝ inches. Measuring point, top surface wooden platform over well, 1.0 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Sept. 9, 31.15; Nov. 25, 30.55.

Torrance County--Continued.

5.8.11.221. J. W. Chamberlin. Unused dug well. Measuring point, top surface of wooden platform over well, 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 13, 11.30; July 9, 9.44; Sept. 8, 9.52; Nov. 24, 8.25.

5.8.12.111. J. W. Chamberlin. Unused drilled well, diameter 6 inches, depth 212 feet. Measuring point, top of casing, 1.9 feet above land-surface datum. Equipped with hand pump. Water levels, in feet below land-surface datum, 1941: Feb. 13, 17.10; July 9, 15.45; Sept. 8, 14.23; Nov. 24, 12.88.

5.8.17.241. Ray Brown. Drilled unused well. Measuring point, land surface at well. Water levels, in feet below land-surface datum, 1941: July 10, 43.09; Sept. 9, 42.60; Nov. 25, 41.23.

5.8.17.311. Ray Brown. Drilled irrigation well, diameter 24 inches, depth 127 feet. Measuring point, bottom edge of basal flange of pump, west side, 0.03 foot below land-surface datum. Equipped with turbine pump.

Water level, in feet below land-surface datum, 1941

Date	Water level	Date	Water level	Date	Water level
Jan. 7	30.55	July 10	a 54.34	Nov. 24	27.01
Feb. 19	30.43	Sept. 9	a 53.89		

5.8.17.323. Ray Brown. Dug and drilled irrigation well, depth 135 feet. Measuring point, top of 36-inch casing, 1.0 foot above land-surface datum. Equipped with turbine pump.

Water level, in feet below land-surface datum, 1941

Jan. 7	29.78	Mar. 10	29.62	Sept. 9	29.13
Feb. 19	29.66	July 10	a 53.45	Nov. 25	26.10

5.8.17.334. Ray Brown. Dug domestic well. Measuring point, bottom at east edge of 2 by 12-inch pump base, 0.45 foot above land-surface datum. Equipped with hand pump. Water levels, in feet below land-surface datum, 1941: Feb. 19, 13.61; July 10, 10.17; Sept. 9, 11.10; Nov. 25, 9.82.

5.8.18.224. S. W. Hodgson. Drilled domestic well, diameter 6 inches, depth 60 feet. Measuring point, top of casing, 1.9 feet below land-surface datum. Equipped with hand pump. Water levels, in feet below land-surface datum, 1941: July 10, 46.68; Sept. 9, 46.63; Nov. 25, 43.65.

5.8.25.212. Mrs. Frances Backer. Abandoned drilled domestic well. Measuring point, bottom surface of pump column pipe clamp, 1.0 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: July 9, 24.60; Sept. 8, 23.67; Nov. 24, 22.78.

5.8.25.222a. Mrs. Frances Backer. Dug and drilled abandoned irrigation well. Measuring point, top of vertical 2 by 4-inch timber in northwest corner of cribbing, 1.65 feet below concrete slab, 10 feet north of well, 1.85 feet below land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 13, 30.02; July 9, 26.73; Sept. 8, 26.15; Nov. 24, 25.38.

5.8.25.222b. Mrs. Frances Backer. Dug domestic well. Measuring point, top surface of pump column-pipe clamp, 0.28 foot above well cover, 1.18 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 13, 27.92; Nov. 24, 23.42.

5.8.30.121. Abandoned dug domestic well. Measuring point, top edge of USGS washer on north side of well collar, 0.2 foot above land-surface datum. Equipped with windmill tower. Water levels, in feet below land-surface datum, 1941: Feb. 19, 29.66; July 9, 21.39; Sept. 8, 22.87; Nov. 25, 22.02.

5.8.32.333. Frank Meder. Drilled domestic well. Measuring point, top surface of 2 by 6-inch timber in center of pump column-pipe clamp, 0.6 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 19, 71.42; July 22, a/70.52; Nov. 25, 63.94.

a Pumping.

Torrance County--Continued.

5.8.36.341. Mrs. Iva Dena Moe. Drilled stock well, diameter 12 inches, depth 300 feet. Measuring point, top of casing, 1.50 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 13, 46.69; July 9, 46.51; Sept. 8, 46.36; Nov. 24, 46.16.

5.9.31.331. G. L. McBeth. Unused drilled irrigation well, diameter 24 inches, depth 210 feet. Measuring point, slot in north side of casing, 0.63 foot above concrete pump base, 1.13 feet above land-surface datum. Equipped with turbine pump. Water levels, in feet below land-surface datum, 1941: Feb. 13, 34.10; July 9, 33.77; Sept. 8, 33.85; Nov. 24, 33.35.

5.10.27.444. Drilled stock well, diameter 6 inches. Measuring point, top of casing, 2.4 feet above concrete platform, 2.9 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 20, 40.78; July 12, 40.80; Sept. 8, 40.77; Nov. 24, 40.70.

5.10.31.133. Abandoned dug stock well. Measuring point, top surface of tie cover, 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 20, 24.24; July 12, 28.97; Sept. 8, 25.50; Nov. 24, 20.15.

6.8.1.244. Dug stock well. Measuring point, top edge of USGS washer on top surface of pump column-pipe clamps, 0.3 foot above plank cover, 0.55 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Sept. 9, 21.23; Nov. 25, 22.17.

6.8.2.333. Abandoned dug well. Measuring point, USGS washer on platform over well, 0.6 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 16, 13.12; July 11, 12.13; Sept. 9, 12.50; Nov. 25, 12.42.

6.8.3.221. Ellison Timmins. Unused drilled irrigation well, depth 151 feet. Measuring point, top edge of oil drum casing, 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 14, 26.78; July 11, 26.35; Sept. 9, 26.32; Nov. 25, 26.27.

6.8.8.424. Abandoned drilled domestic well, diameter 6 inches. Measuring point, USGS washer on pump column pipe clamp, flush with land surface. Water levels, in feet below land-surface datum, 1941: July 23, 75.44; Sept. 9, 75.55; Nov. 25, 75.56.

6.8.11.433. Pablo Lucero. Dug domestic well. Measuring point, USGS washer on west side of well collar, 0.7 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Mar. 10, 6.12; July 10, 5.85; Sept. 9, 6.84; Nov. 11, 5.74.

6.8.12.133. Aurileo Brito. Dug domestic well. Measuring point, USGS washer at southwest corner of well cribbing, 2.8 feet above platform, 3.2 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 21, 18.28; July 11, 17.35; Sept. 9, 17.80; Nov. 25, 17.15.

6.8.15.444. Estancia Cemetery. Drilled cemetery well. Measuring point, top surface of cement platform around well, 0.6 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 13, 31.04; July 10, 31.35; Sept. 9, 30.54; Nov. 25, 30.38.

6.8.16.222. McGee Estate. Drilled domestic well, depth 125 feet. Measuring point, top of dome-shaped cover over well, 0.25 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 21, 59.47; July 10, 59.43; Sept. 9, 59.38; Nov. 25, 59.21.

6.8.24.111. Abandoned dug domestic well. Measuring point, top surface of pump column-pipe clamp, 0.23 foot above land-surface datum. Equipped with windmill tower. Water levels, in feet below land-surface datum, 1941: Feb. 14, 8.56; July 9, 6.47; Sept. 8, 6.84; Nov. 24, 6.78.

Torrance County--Continued.

6.8.27.134. Drilled stock well. Measuring point, top surface of concrete tub around well, 0.85 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: July 10, 20.59; Sept. 9, 20.51; Nov. 25, 20.05.

6.8.30.434. J. W. Langley. Drilled dairy well, depth 60 feet. Measuring point, top surface of concrete platform around well, 0.3 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 21, 40.69; July 10, 26.00; Sept. 9, 25.49; Nov. 25, 24.52.

6.9.9.222. Drilled stock well, diameter 8 inches. Measuring point, top edge of flange on casing, 1.5 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 20, 6.20; July 12, 3.62; Sept. 9, 3.57; Nov. 27, 6.03.

6.10.25.344. C. A. Blackwell. Drilled domestic well, diameter 7 inches, depth 62.5 feet. Measuring point, upper surface of cement platform around well, 0.45 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: July 12, 42.67; Sept. 8, 42.58; Nov. 24, 42.45.

6.10.27.444. Fred Lick. Drilled stock well, diameter 6 inches, depth 40 feet. Measuring point, top of casing, 0.1 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 20, 20.77; July 12, 20.63; Sept. 8, 20.68; Nov. 24, 20.68.

7.7.12.342. De Hart Estate. Drilled well, diameter 6 inches, depth 65 feet. Measuring point, USGS washer on top surface of column-pipe clamps, 0.37 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 15, 45.39; July 11, 45.30; Sept. 10, 44.77; Nov. 26, 43.83.

7.7.12.444. C. B. Rolland. Drilled carbon dioxide test well, diameter 7 inches, depth 1,359 feet. Measuring point, top of casing, 1.28 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 15, 46.45; July 11, 46.47; Sept. 10, 46.47; Nov. 26, 45.70.

7.8.1.231. Myrtle A. Homan Estate. Abandoned domestic well, diameter 8 inches, depth 56 feet. Measuring point, top of casing, 0.1 foot above land-surface datum. Equipped with windmill tower. Water levels, in feet below land-surface datum, 1941: July 11, 27.20; Sept.10, 26.78; Nov. 26, 26.27.

7.8.1.423. Floyd Stump. Drilled irrigation well, diameter 10 inches, depth 103 feet. Measuring point, top of casing, north side, 0.5 foot above land-surface datum. Equipped with turbine pump. Water levels, in feet below land-surface datum, 1941: Feb. 15, 24.77; July 11, 25.64; Sept. 10, 25.70; Nov. 26, 24.92.

7.8.9.444. Abandoned drilled well, diameter 6 inches. Measuring point, top of casing, 1.75 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 15, 62.45; July 11, 62.43; Sept. 10, 62.43; Nov. 26, 62.32.

7.8.10.221. H. W. Rice. Drilled domestic well. Measuring point, bottom of basal flange of hand pump, 0.45 foot above land-surface datum. Equipped with combination windmill and hand pump. Water levels, in feet below land-surface datum, 1941: Mar. 11, 17.68; July 11, 17.49; Sept. 10, 17.67; Nov. 26, 17.52.

7.8.10.244. Dug domestic well. Measuring point, USGS washer on plank cover over well, 0.5 foot above land-surface datum. Equipped with pump jack. Water levels, in feet below land-surface datum, 1941: July 11, 18.61; Nov. 26, 18.64.

7.8.12.433. W. A. Deatherege. Drilled domestic well, depth 30 feet. Measuring point, top of drum casing, 1.1 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 21, 23.53; July 11, 23.37; Sept. 9, 23.15; Nov. 26, 22.73.

Torrance County--Continued.

7.8.16.422. B. F. Strotman. Drilled domestic well, diameter 8 inches, depth 100 feet. Measuring point, top surface of pump column-pipe clamp, 1.2 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 15, 45.61; July 11, 46.50; Sept. 10, 45.65; Nov. 26, 45.53.

7.8.23.311. James P. Morgan. Unused drilled irrigation well, diameter 12 inches, depth 161 feet. Measuring point, mouth of discharge pipe, 6.7 feet correction to land-surface datum. Equipped with turbine pump. Water levels, in feet below land-surface datum, 1941: Feb. 14, 18.33; July 11, 17.90; Sept. 10, 17.97; Nov. 26, 17.95.

7.8.23.324. James P. Morgan. Drilled test irrigation well, diameter 12 inches, depth 161 feet. Measuring point, top of casing, southwest side, 0.1 foot below top of concrete pump base, 1.1 feet above land-surface datum. Equipped with automatic water-stage recorder.

Water level at 4:00 a.m., in feet below land-surface datum, 1941 (from recorder charts)

Day	Feb.	Mar.	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	2.37	....	2.63	2.82	2.74	2.40	2.17
2	....	2.36	....	2.65	2.83	2.73	2.37	2.18
3	....	2.36	....	2.66	2.83	2.73	2.37	2.19
4	....	2.36	....	2.68	2.85	2.65	2.36	2.17
5	....	2.35	....	2.70	2.85	2.62	2.36	2.19
6	....	2.35	....	2.71	2.86	2.60	2.35	2.19
7	....	2.35	....	2.73	2.86	2.60	2.35	2.18
8	....	2.35	....	2.74	2.88	2.60	2.35	2.18
9	....	....	2.38	2.71	2.90	2.59	2.34	2.16
10	....	....	2.38	2.71	2.93	2.59	2.33	2.16
11	....	....	2.39	2.71	2.94	2.58	2.33	2.15
12	....	....	2.39	2.72	2.94	2.58	2.33	2.13
13	....	....	2.39	2.70	2.95	2.57	2.32	2.14
14	2.45	....	2.41	2.71	2.95	2.57	2.33	2.14
15	2.43	....	2.41	2.72	2.96	2.57	2.32	2.12
16	....	....	2.42	2.71	2.97	2.57	2.32	2.11
17	....	....	3.43	2.71	2.98	2.56	....	2.11
18	....	....	2.45	2.70	2.98	2.55	....	2.11
19	2.42	....	2.45	2.72	2.95	2.55	....	2.11
20	2.42	....	....	2.73	2.95	2.55	....	2.11
21	2.42	....	2.50	2.73	2.94	2.54	....	2.10
22	2.41	....	2.50	2.73	2.91	2.55	....	....
23	2.39	....	2.50	2.73	2.88	2.53	2.21	....
24	2.39	....	2.52	2.74	2.88	2.53	2.21	....
25	2.38	....	2.53	2.76	2.87	2.51	2.18	....
26	2.38	....	2.55	2.78	2.87	2.49	2.18	....
27	2.39	....	2.56	2.79	2.87	2.50	2.18	....
28	2.38	....	2.57	2.81	2.87	2.49	2.18	....
29	....	....	2.58	2.82	2.79	2.46	2.18	....
30	....	....	2.60	2.80	2.72	2.45	2.18	....
31	....	....	2.62	2.81	....	2.42	....	....

7.8.23.334. James P. Morgan. Drilled domestic well, diameter 6 inches, depth 30 feet. Measuring point, top of casing, 0.75 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 14, 6.54; July 11, 6.61; Sept. 10, 7.26; Nov. 26, 6.25.

7.8.24.433. R. T. Floyd. Drilled domestic well. Measuring point, top surface of pump column-pipe clamps, flush with land surface. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 14, 25.15; July 11, 25.30; Sept. 9, 24.48; Nov. 26, 24.22.

7.8.25.411. R. T. Floyd. Unused drilled irrigation well, diameter 12 inches, depth 237 feet. Measuring point, land surface at well. Water levels, in feet below land-surface datum, 1941: Feb. 14, 22.13; July 11, 21.60; Sept. 9, 21.40; Nov. 26, 21.36.

Torrance County--Continued.

7.8.27.221. Wagner Estate. Drilled domestic well, diameter 6 inches, Measuring point, top of casing, 0.2 foot above land-surface datum. Equipped with pump-jack. Water levels, in feet below land-surface datum, 1941: Feb. 14, 19.83; July 11, 19.45; Sept. 10, 19.42; Nov. 26, 19.39.

7.8.33.123. B. A. Kincheloe. Unused drilled irrigation well, diameter 11 inches, depth 80 feet. Measuring point, top of 18-inch collar in well, 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 14, 32.35; July 11, 31.28; Sept. 9, 31.40; Nov. 25, 29.62.

7.8.33.424. Dug domestic well. Measuring point, USGS washer on trap door of well, 3.0 feet above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 14, 53.31; July 11, 53.38; Sept. 9, 53.42; Nov. 25, 53.44.

7.8.35.111. Homer Voss. Unused drilled irrigation well, diameter 12 inches, depth 100 feet. Measuring point, top surface of cover over well, 0.2 foot below concrete collar, 0.8 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Feb. 14, 19.22; July 11, 18.45; Sept. 9, 18.39.

7.8.35.332. Homer Voss. Unused dug well. Measuring point, USGS washer on plank cover of well, flush with land surface. Water levels, in feet below land-surface datum, 1941: Feb. 14, 16.08; July 11, 14.78; Sept. 9, 15.24; Nov. 25, 15.03.

7.9.5.211. Unused dug well. Measuring point, USGS washer at southwest corner of well cribbing, 0.3 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Mar. 11, 19.30; July 12, 19.29; Sept. 10, 19.43; Nov. 26, 19.28.

7.9.10.333. Mrs. Minnie Farnsworth. Drilled domestic well, depth 38 feet. Measuring point, top edge of vertical planking, south side of well, 1.15 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Mar. 11, 15.81; July 11, 16.22; Sept. 9, 17.69; Nov. 26, 16.17.

8.8.10.244. Dennis Willie. Drilled domestic well, diameter 5½ inches, depth 112 feet. Measuring point, top of casing, 1.25 feet above concrete slab, 1.35 feet above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: July 12, 67.95; Sept. 10, 67.12; Nov. 26, 66.44.

8.8.26.222. Drilled stock well. Measuring point, top of concrete collar around well, south side, 0.9 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: July 12, 7.62; Sept. 10, 8.21; Nov. 26, 7.56.

8.9.8.111. Unused dug well. Measuring point, USGS washer on north side of well cribbing, 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1941: Mar. 11, 25.59; July 12, 25.52; Sept. 10, 25.55; Nov. 26, 23.61.

8.9.29.111. Mrs. Harry Bigger. Dug and drilled domestic well, depth 100 feet. Measuring point, top of concrete well curb, southwest corner, 0.5 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Mar. 11, 20.88; July 12, 21.00; Sept. 9, 21.17; Nov. 25, 21.00.

9.9.32.131. G. L. Deen. Drilled domestic well, diameter 12 inches, depth 74 feet. Measuring point, top of casing, 0.7 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: Feb. 20, 6.88; July 12, 6.20; Sept. 10, 6.70; Nov. 26, 5.80.

9.8.25.111. Dug stock well. Measuring point, bottom of cribbing built around well, southwest side, flush with land surface. Water levels, in feet below land-surface datum, 1941: July 12, 10.13; Sept. 10, 9.76; Nov. 26, 7.06.

9.8.26.121. Drilled stock well. Measuring point, top surface of concrete platform around well, 0.8 foot above land-surface datum. Equipped with windmill. Water levels, in feet below land-surface datum, 1941: July 24, 21.25; Sept. 10, 23.89; Nov. 26, 21.10.

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