THE RESOURCES AGENCY OF CALIFORNIA

Department of Water Resources

BULLETIN No. 66-60

QUALITY OF GROUND WATERS IN CALIFORNIA 1960

PART I
NORTHERN AND CENTRAL CALIFORNIA

MARCH 1964

HUGO FISHER	EDMUND G. BROWN	WILLIAM E. WARNE
Administrator	*Governor*	*Director*
The Resources Agency of California	State of California	Department of Water Resources

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THE RESOURCES AGENCY OF CALIFORNIA

DEPARTMENT OF WATER RESOURCES

1120 N. STREET, SACRAMENTO

DECEMBER 3, 1963

Honorable Edmund G. Brown, Governor,
and Members of the Legislature of
the State of California

State Water Quality Control Board

Gentlemen:

I have the honor to transmit herewith Bulletin No. 66-60 entitled "Quality of Ground Waters in California, 1960, Part I, Northern and Central California." The Southern California portion of this report will be published at a later date as Part II. This report considers the period January through December 1960.

This is the sixth in a continuing chronological series of reports on the quality of the State's ground waters. As authorized by Section 229 of the Water Code, the Department of Water Resources has conducted a ground water quality monitoring program since 1953. Under this program, water samples from representative wells in ground water basins throughout the State are collected and analyzed, and an evaluation of ground water quality conditions is made. In 1960, mineral and radiological analyses were made of ground waters taken from more than 1,200 wells in 57 monitored areas in Northern and Central California.

In general, there were no significant ground water quality changes in Northern and Central California during 1960. Sea water, intruding inland into various coastal ground water basins, remained the primary source of degradation.

Sincerely yours,

William E. Warne

Director

ACKNOWLEDGMENTS

The extensive coverage of the ground water quality monitoring program, reported herein, is made possible through the cooperation of federal, state, and local agencies. The department wishes to express appreciation for the valuable assistance and cooperation received from the following agencies:

Federal Agencies

Department of the Interior
Geological Survey

State Agencies

California Disaster Office, Radiological Service

County Agencies

Alameda County Flood Control and Water Conservation District
Butte County Farm Advisor
Colusa County Farm Advisor
Del Norte County Farm Advisor
Glenn County Farm Advisor
Humboldt County Farm Advisor
Kern County Farm Advisor
Kings County Farm Advisor
Madera County Farm Advisor
Mendocino County Farm Advisor
Monterey County Flood Control and Water Conservation District
Placer County Health Department
Sacramento County Farm Advisor
San Joaquin County Farm Advisor
Santa Clara Valley Water Conservation District
Shasta County Department of Water Resources
Siskiyou County Farm Advisor
Sonoma County Farm Advisor
Sonoma County Flood Control and Water Conservation District
Stanislaus County Farm Advisor
Sutter County Farm Advisor
Tehama County Farm Advisor
Tulare County Farm Advisor
Yolo County Farm Advisor
Yuba County Farm Advisor

Organized Public Agencies

Alameda County Water District
Buena Vista Water Storage District
Central California Irrigation District
Merced Irrigation District
Turlock Irrigation District

Many of the analyses presented herein were made by the United States ological Survey, Quality of Water Branch, at its Sacramento laboratory, under ovisions of a continuing cooperative agreement with the Department of Water sources.

INTRODUCTION

Ground water quality in Northern and Central California during 1960 remained essentially unchanged from that in 1959. The primary source of degradation continued to be sea-water intrusion into coastal aquifers as a consequence of ground water basin overdrafts. Slight inland advances of sea water were evidenced in Eel River, Petaluma, Napa-Sonoma, Santa Clara, and Pajaro Valleys. In the Central Valley, significant changes in specific mineral constituents occurred only in a few individual wells or groups of wells in limited areas.

This bulletin is the sixth in a chronological series of reports on ground water quality conditions in California. Part I of this bulletin presents water quality data and an evaluation of ground water quality conditions in Northern and Central California. The area considered by Part I comprises Water Pollution Control Region 3 north of the San Antonio-Salinas River drainage boundary, Region 6 north of the Mono Lake drainage boundary, and all of Regions 1, 2, and 5. Part II, to be published at a later date, will present data and an evaluation of ground water quality conditions in Southern California. This area comprises Water Pollution Control Region 3 south of the San Antonio-Salinas River drainage boundary, Region 6 south of the northern Mono Lake drainage boundary, and all of Regions 4, 7, 8, and 9. The areas reported on in this volume are shown on Plate 1, "Monitored Areas 1960."

Prior Reports

Data for previous periods are included in the following reports:

California Department of Public Works, Division of Water Resources, Water Quality Investigations. "Ground Water Quality Monitoring Program in California, Progress Report 1953-1954." Report No. 14.

California Department of Water Resources, Division of Resources Planning. "Quality of Ground Waters in California, 1955-1956." Bulletin No. 66.

California Department of Water Resources, Division of Resources Planning. "Quality of Ground Waters in California, 1957." Bulletin No. 66.

----. "Quality of Ground Waters in California, 1958." Bulletin No. 66-58.

----. "Quality of Ground Waters in California, 1959, Part I, Northern and Central California." Bulletin No. 66-59.

----. "Quality of Ground Waters in California, 1959, Part II, Southern California." Bulletin No. 66-59.

Authorization

The ground water quality monitoring program is authorized in Section 229 of the California Water Code, which directs that:

> "The department ... shall investigate conditions of the quality of all waters within the State, including saline waters, coastal and inland, as related to all sources of pollution of whatever nature and shall report thereon to the Legislature and to the appropriate regional water pollution control board annually, and may recommend any steps which might be taken to improve or protect the quality of such waters."

Objectives

The objectives of the program are:

(1) to secure continuous and reliable information on the quality of ground waters throughout the State.

(2) to provide information on the prevailing mineral quality of ground waters in California.

(3) to detect significant changes and trends in the quality of ground waters, to evaluate the causes for these changes, and to identify and delineate the areas affected by such changes.

Scope of the Report

During 1960, the program in Northern and Central California led to the collection and analysis of samples taken from 1,246 wells in 57 ground water basins or portions of basins.

Discussion is presented in successive order by water pollution control regions, the boundaries of which, in most cases, coincide with those of the major drainage basins of the State. The information presented for each monitored area includes a brief description of the area and the monitoring program, the occurrence and development of ground water, a discussion of major waste discharges, and an evaluation of the quality of ground water and of significant changes in ground water quality.

Tests made of ground water quality include mineral and radiological determinations. The frequency of sampling, type of analysis, and density of the sampling network for mineral tests depends largely on the conditions in the area being monitored. In areas where water quality problems are known to exist and where extensive use is made of ground water supplies, samples are taken one or more times each year. In areas where limited use is made of ground waters, samples are taken periodically until sufficient data are collected to determine the water quality of the basin and thereafter as frequently as the land development and water use warrants. Radioassays of well waters are made at three year intervals; one-third of the monitoring network is tested each year. In general, only the minimum number of wells necessary to show the areal extent of problems, if any, or evaluate ground water conditions are included in the monitoring network.

The selection of individual wells is governed, to a large extent, by the availability of well logs. Sufficient information is desirable for each well such as depth, aquifers encountered, and depths of perforations to assure that data obtained are useful. Wells are added to or deleted from the network according to changing ground water conditions in an area. For example, a well showing prominent effects of sea-water intrusion is generally removed from productive use and, in many instances, sampling becomes impracticable. Accordingly, another well is substituted, if possible.

Reference may be made to the appendixes for more detailed information than is given in the main text. Appendix A presents discussions of types of mineral analyses employed in the monitoring program, of laboratory methods and procedures used, and criteria used in evaluating the quality of water. Appendix B contains tabulations of all chemical and radiological analyses of samples collected in this program during 1960.

Location Designation

The region and basin numbers in this report are based on a decimal system in the form 0-00.00. The number to the left of the dash refers to the water pollution control region. To the right of the dash, the first digit or digits refer to the basin, valley, or area. Digits to the right of the decimal, if any, refer to the subbasin number as shown below.

```
0-00.00
│ │  └──── subbasin
│ └─────── basin, valley, or area
└───────── water pollution control region
```

These numbers are used to identify the monitored areas in the text, in the data tables, and on Plate I. A "monitored area" is defined as that portion of a ground water basin which lies generally within the limits of an established network of monitored wells. It does not necessarily include the entire ground water basin.

Wells selected for inclusion in the ground water quality monitoring network are assigned numbers by township, range, and section, based upon their location. The numbering system is the same as that utilized by the United States Geological Survey. Under this system each section is divided into 40-acre plots, which are lettered as follows:

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are numbered within each of these 40-acre plots according to the order in which they are selected for monitoring. For example, a well having a number 3N/6E-24A2 is located in Township 3 North, Range 6 East, and in Section 24. It is further identified as the second well selected in the 40-acre plot lettered A.

Monitored Areas

As an aid to the reader, following is an alphabetical listing of the monitored areas presented in this report together with the page number on which discussion begins.

MONITORED AREAS

Page No.

NORTH COASTAL REGION (NO. 1)

The North Coastal Region, shown on Plate 1, comprises all of the basins draining into the Pacific Ocean from the California-Oregon state line to the northern boundary of Lagunitas Creek drainage area in Marin County. It extends approximately 270 miles from north to south, ranges in width from 180 miles at the Oregon boundary to about 30 miles in the southern portion, and encompasses an area of about 19,000 square miles.

The development and use of ground water in the North Coastal Region varies considerably. Ground water development ranges from very slight in some areas, primarily to supply domestic needs, to extensive in other areas where as much as 90 percent of water requirements are met from ground water supplies.

Of the 19 ground water basins which have been identified in the North Coastal Region, 13 have thus far been included in the ground water quality monitoring program. These areas, as well as the number of monitored wells in each and the sampling times, are listed in the following tabulation.

Monitored Area	Number of Wells Sampled	Sampling Time
Smith River Plain (1-1)	14	September-November
Butte Valley (1-3)	13	July-August
Shasta Valley (1-4)	8	July-August
Scott River Valley (1-5)	5	July
Hayfork Valley (1-6)	5	July-August
Mad River Valley (1-8)	11	July-August
Eureka Plain (1-9)	6	August-September
Eel River Valley (1-10)	13	July-September
Round Valley (1-11)	10	August
Ukiah Valley (1-15)	11	August-September

Monitored Area	Number of Wells Sampled	Sampling Time
Sanel Valley (1-16)	6	August-September
Alexander Valley (1-17)	3	September
Santa Rosa Valley (1-18)	20	September

Although ground water quality in the North Coastal Region remained generally good to excellent during 1960, significant changes were noted in individual wells in a few of the monitored areas.

A discussion of ground water quality conditions in each of the aforementioned basins is included in the following paragraphs.

SMITH RIVER PLAIN (1-1)

Smith River Plain is located adjacent to the Pacific Ocean in northwestern Del Norte County. The plain extends approximately 18 miles from north to south, varies in width from about 4 to 7 miles, and encompasses about 70 square miles. It is the largest alluvial area in the county. Crescent City is situated on the Smith River Plain.

Monitoring Program

The monitoring program in Smith River Plain was established in 1953 to maintain surveillance on ground water quality and to detect degradation which might result from sea-water intrusion or from local domestic waste discharges. In 1960, samples were collected from 14 wells in this area during the period of September-November.

Ground Water Occurrence

The principal source of ground water in the area is the marine terrace deposits of the Battery formation. River terrace and flood plain deposits along the Smith River are locally important ground water sources. Aquifers of the area are believed to be interconnected and unconfined.

Ground Water Development

Ground water is moderately to extensively developed. It supplies approximately one-half of the water requirements in the area and is used for irrigation, municipal, domestic, and stock watering purposes. Well yields range from about 20 gallons per minute (gpm) in the marine formation to 340 gpm in the stream channel and flood plain deposits.

Major Waste Discharges

There are no major waste discharges in the area which threaten ground water mineral quality. Although Crescent City proper is sewered and treated sewage from the city is discharged into the ocean, there is the possibility of local contamination from individual septic tanks in the outlying unsewered areas surrounding Crescent City.

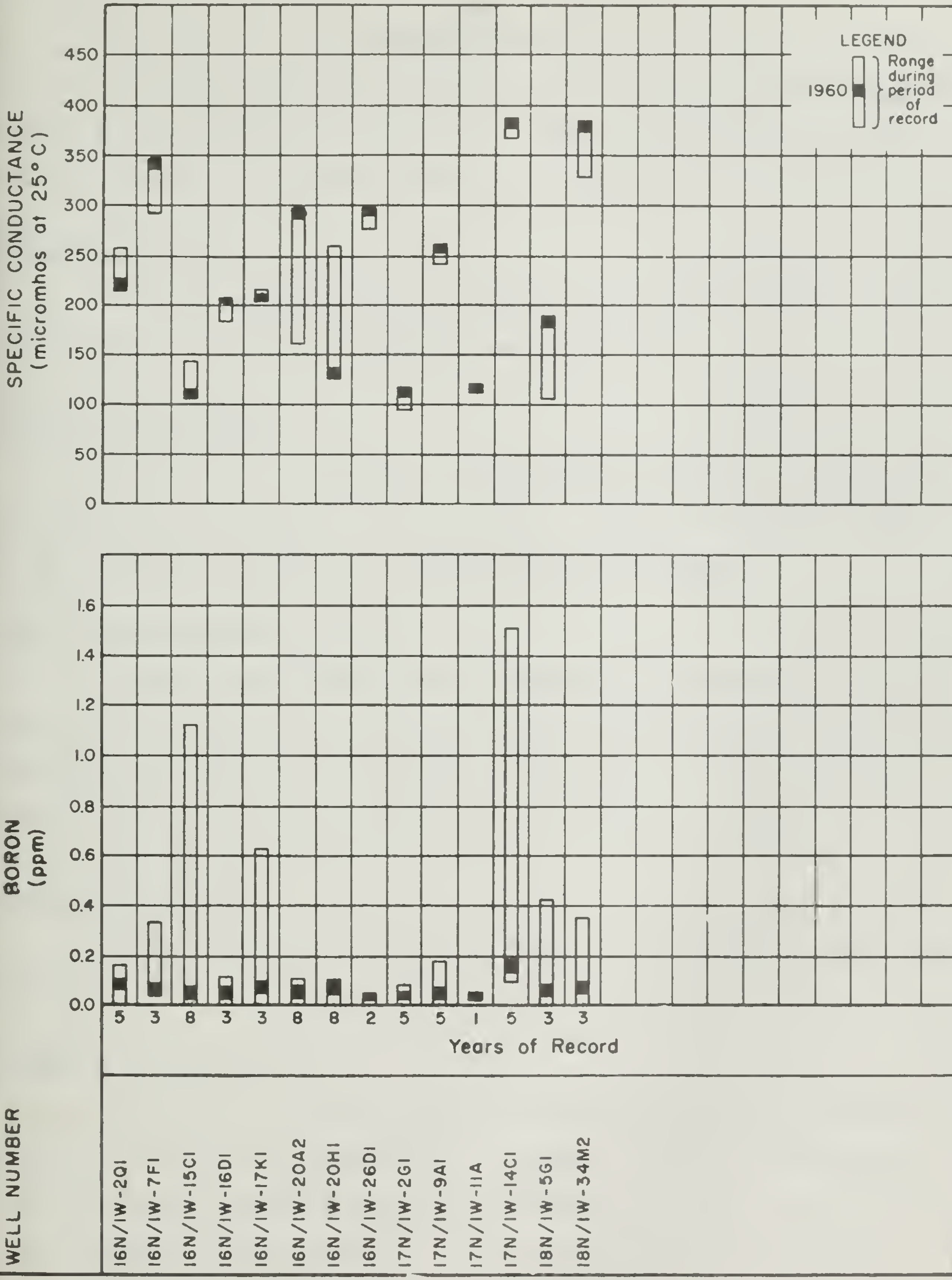
Evaluation of Water Quality

Ground waters of Smith River Plain are predominantly magnesium bicarbonate in type and of excellent mineral quality. Although no serious problems exist, high iron concentrations are found generally throughout the area. Total iron concentrations exceeded 0.3 parts per million (ppm) in six of the wells sampled in 1960. The highest concentration was 10 ppm in well 16N/1W-2Q1, located approximately 4 miles northeast of Crescent City.

Significant Water Quality Changes

Comparison of the 1960 analyses with those of 1959 showed increases in nitrate content in two domestic wells. Well 16N/1W-20A2, located approximately 1 mile north of Crescent City, and well 16N/1W-26D1, located approximately 2 miles east of Crescent City, showed increases in nitrate from 25 to 49 ppm and from 34 to 49 ppm, respectively. The cause of the increased nitrate concentration in these two wells between 1959 and 1960 has not been ascertained. Water from these two wells now have nitrate concentrations that exceed U. S. Public Health Service recommended limits for domestic use.

Variations in the quality of waters in wells sampled in the Smith River Plain area are shown graphically on the next page.



WATER QUALITY RANGES

SMITH RIVER PLAIN

BUTTE VALLEY (1-3)

Butte Valley lies in northeastern Siskiyou County about 30 miles south of the Oregon border and east of the Cascade Range. The valley floor is an irregularly shaped area comprising about 130 square miles.

Monitoring Program

A monitoring program was established in Butte Valley in 1957. Samples were collected from 13 wells during July and August 1960.

Ground Water Occurrence

Ground water is contained in various lava flows and to a lesser extent in alluvial, fluvio-glacial, and lake deposits. With a few exceptions, aquifers of this area are considered to be interconnected and unconfined.

Ground Water Development

Ground water in Butte Valley is moderately to extensively developed and is used for irrigation, domestic, and stock watering purposes. Along the eastern border of the valley, irrigation wells yield 900 to 3,000 gpm. The higher yields are believed to come principally from the lava deposits.

Major Waste Discharges

There are no waste discharges in Butte Valley which affect ground water quality.

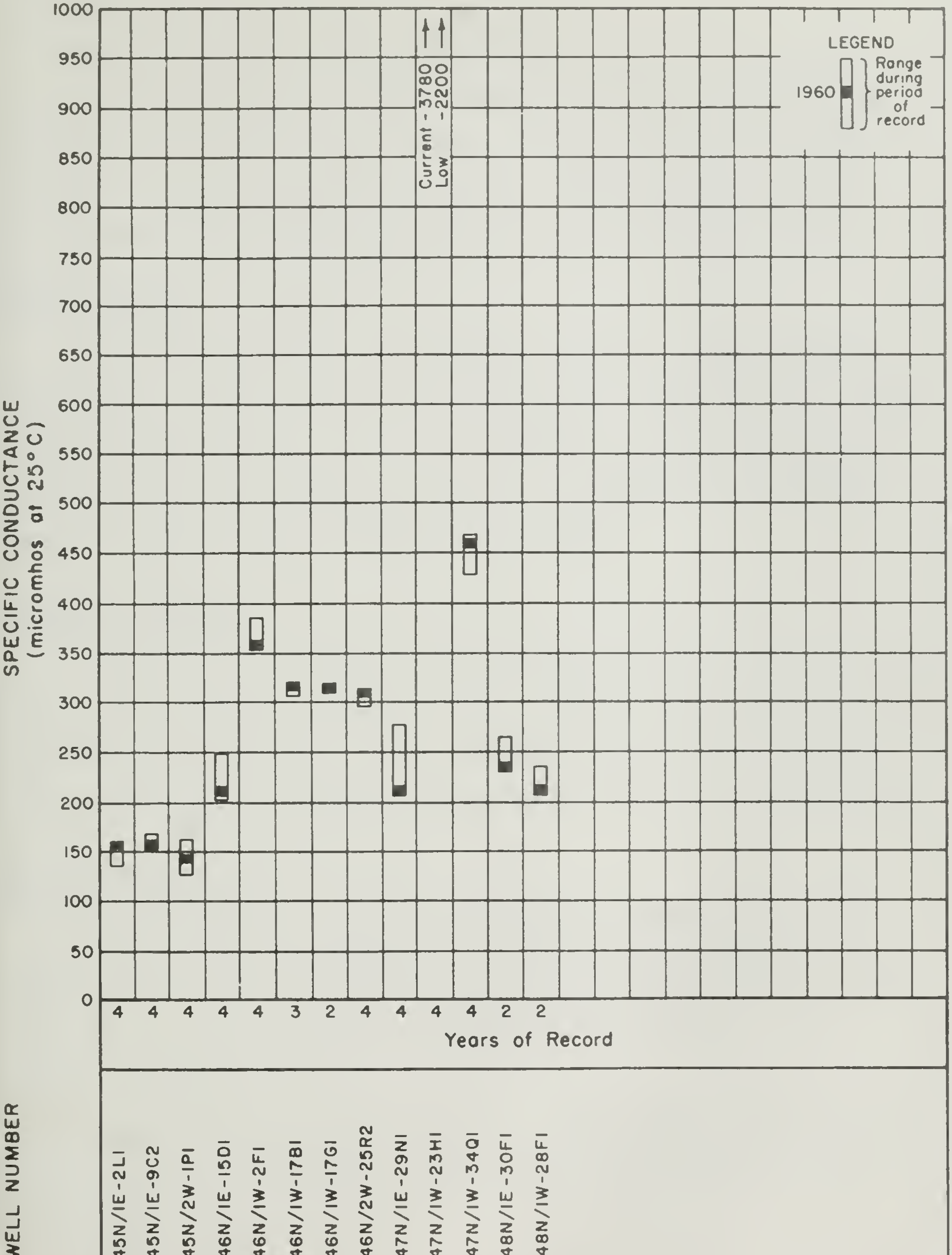
Evaluation of Water Quality

Ground waters of Butte Valley are generally bicarbonate in type with low to moderate mineral concentrations. A few wells, however, produce highly mineralized water, probably originating from buried lake deposits in the east side of the valley. Past analyses of waters from well 47N/1W-23H1, located approximately 4 miles south of Dorris, indicate that this well contains total dissolved solid concentrations considerably in excess of those measured in other monitored wells in the area.

Significant Water Quality Changes

Well 47N/1W-23H1, mentioned in the foregoing paragraph, has shown a progressive increase in mineral content since its inclusion in the monitoring program in March 1957, at which time the total dissolved solids content was 1,550 ppm. This increased to 2,670 ppm in August 1957, to 2,800 ppm in July 1959, then decreased to 2,730 ppm in 1960. The cause of the fluctuating mineral content of water from well 47N/1W-23H1 is not known but may be due to casing failure which could permit a greater portion of the water yield to come from the buried lake deposits which contain highly mineralized water. Wells 46N/1E-15D1 and 47N/1W-23H1 showed increases in boron concentration from 0.1 to 0.68 ppm and from 1.1 to 1.9 ppm, respectively.

Variations in specific conductance of waters in wells in Butte Valley is shown on the following graph.



WATER QUALITY RANGES

BUTTE VALLEY

SHASTA VALLEY (1-4)

Shasta Valley lies in central Siskiyou County between the Klamath Mountains on the west and the Cascade Range on the east. The valley is nearly oval shaped, has a north-south length of about 30 miles, a maximum width of about 15 miles, and encompasses an area of approximately 250 square miles.

Monitoring Program

The presence of highly mineralized ground waters, known to occur in certain geologic formations in the area, prompted the establishment of a monitoring program in Shasta Valley in 1957. The monitoring program includes all but a small area in the eastern portion of the valley. During July and August 1960, samples were collected from eight wells in the valley.

Ground Water Occurrence

The most prolific aquifer in Shasta Valley is the Pluto's Cave basalt which is a highly permeable, black lava flow. Lenses of gravel and sand in the Recent alluvium and lavas of the Western Cascade series are locally important sources of ground water. In general, ground water is believed to be unconfined.

Ground Water Development

There is moderate to extensive development for domestic and stock watering needs and limited development for irrigation and municipal uses. Well yields range from 120 to 4,000 gpm and average about 1,300 gpm.

Major Waste Discharges

There are no large waste discharges in Shasta Valley. Municipal sewage originating from the communities of Yreka and Weed could be a source of local water quality impairment.

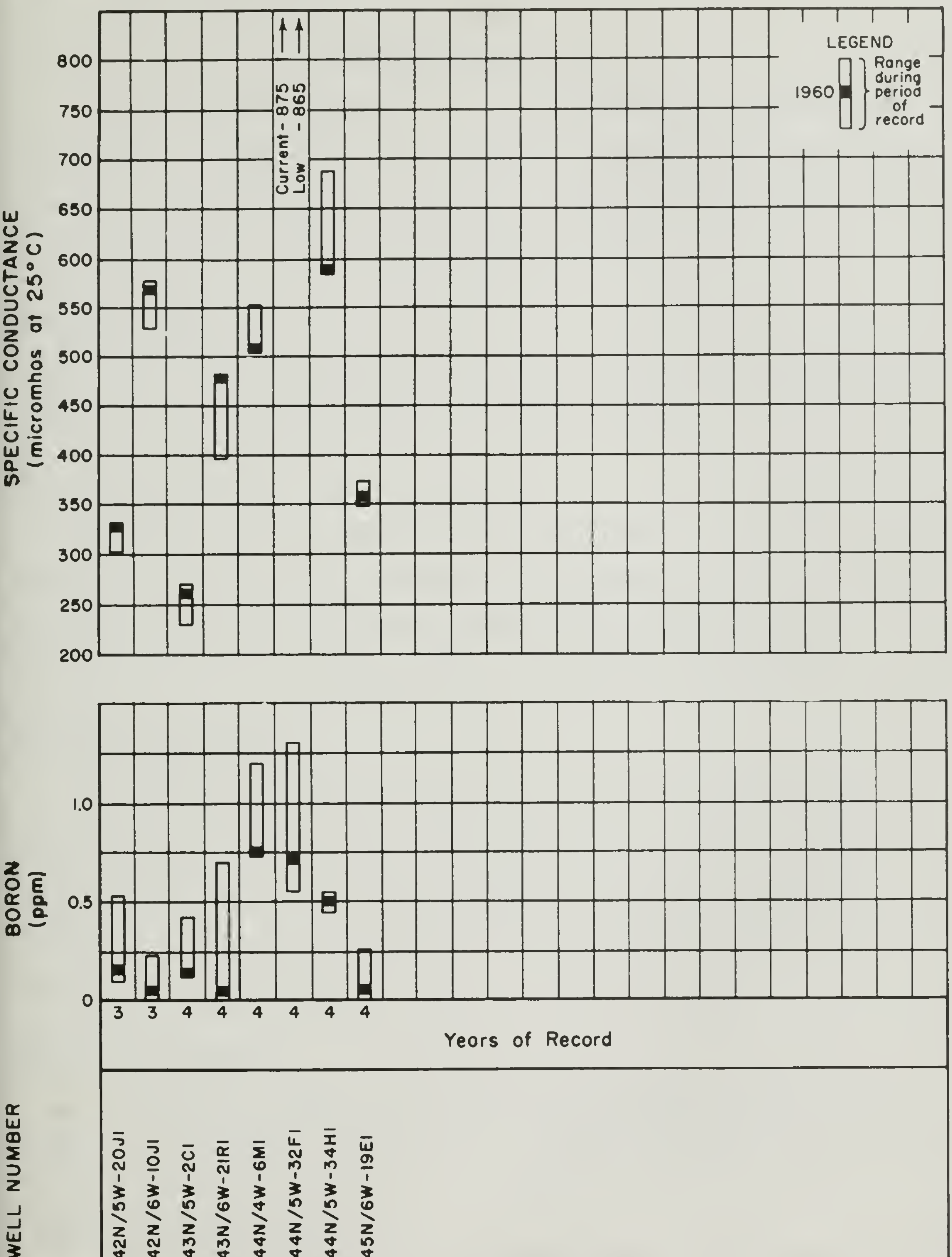
Evaluation of Water Quality

Chemical analyses of ground water samples collected in 1960 indicate that they are generally moderate to very hard, magnesium or calcium bicarbonate type waters, and are of good quality suitable for most beneficial uses. Mineral analyses of water from wells 44N/4W-6M1 and 44N/5W-32F1 show a boron concentration in excess of recommended limits for class 1 irrigation water. There are no extensive ground water quality problems in the valley, however, a previous investigation conducted by the Department of Water Resources and the United States Geological Survey indicated that there are small areas in the northern and central portion of Shasta Valley where wells yield water with high concentrations of boron, chloride, sodium, and potassium.

Significant Water Quality Changes

Boron in well 44N/4W-6M1, located 1.5 miles north of Big Springs, decreased from 1.2 ppm in 1959 to 0.75 ppm in 1960.

Variations in specific conductance and boron concentrations in wells in Shasta Valley are depicted graphically on the following page.



WATER QUALITY RANGES

SHASTA VALLEY

SCOTT RIVER VALLEY (1-5)

Scott River Valley is located in western Siskiyou County about 28 miles south of the California-Oregon boundary. The monitored portion of the valley has a north-south length of 22 miles, a maximum width of about 10 miles, and comprises an area of approximately 80 square miles.

Monitoring Program

A monitoring program was established in Scott River Valley in 1957. During July 1960, samples were collected from five wells.

Ground Water Occurrence

The only water-bearing formation of importance is the younger alluvium comprised of stream channel, flood plain, and alluvial fan deposits. The most permeable deposits are located between Fort Jones and Etna. Indications of ground water confinement are found only in the west side alluvial fans.

Ground Water Development

Ground water comprises only a small portion of the total amount of water used in Scott River Valley. There is moderate to extensive development for domestic and livestock supplies and limited development for irrigation. Yields of irrigation wells located in the stream channel and flood plain deposits range from 1,250 to 2,500 gpm.

Major Waste Discharges

There are no large waste discharges in Scott River Valley. Sewage discharges from the towns of Etna, Fort Jones, and other communities are minor.

Evaluation of Water Quality

Ground waters of Scott River Valley are generally of excellent mineral quality and, although moderate to very hard, are suitable for most beneficial uses.

Significant Water Quality Changes

None.

HAYFORK VALLEY (1-6)

Hayfork Valley is located in central Trinity County. It is an irregularly shaped intermountain valley in the western portion of the Klamath Range. From east to west, the valley measures approximately 6 miles and has a north-south width of about 3.5 miles. The monitored area extends eastward an additional 2.5 miles to include the narrow valley of Carr Creek.

Monitoring Program

A monitoring program was established in Hayfork Valley in 1959. Five wells were sampled in July and August 1960. The location of these wells are shown on Plate 2.

Ground Water Occurrence

Ground water occurs principally in recent alluvial deposits and minor amounts are found in tertiary sedimentary rocks of the Weaverville formation. The recent alluvium occurs in the central portion of the valley along the flood plains of Hayfork Creek and its tributaries and ranges in thickness up to about 35 feet. The Weaverville formation occurs in the remainder of the area and underlies the alluvial deposits. Ground water is recharged primarily by infiltration of rainfall on the valley floor and by influent seepage from streams.

Ground Water Development

Because of shallow depths and small pumping facilities, well yields in the Hayfork Valley are small. It is doubtful that any large capacity wells can be developed in this area because of the limited thickness of the alluvium and the relative impermeability of the Weaverville formation. Until recently, ground water furnished the only water source for the town of Hayfork. The town now derives its municipal supply from a nearby surface water reservoir. Outlying homes, and some within the town, still utilize wells for their domestic supplies.

Major Waste Discharges

At present, there are no major discharges in Hayfork Valley.

Evaluation of Water Quality

Ground waters of Hayfork Valley are generally of excellent mineral quality suitable for most beneficial uses. They are slightly to moderately hard, bicarbonate type waters with calcium or magnesium being the predominant cations.

Significant Water Quality Changes

None.

MAD RIVER VALLEY (1-8)

Mad River Valley is located in the coastal portion of Humboldt County immediately north of Humboldt Bay. It is bounded on the north and east by the Coast Range. The monitored area is approximately rectangular in shape, is about 10 miles in length, north to south, and extends inland an average of about 3 miles.

Monitoring Program

The monitoring program in Mad River Valley was established in 1957 to detect sea-water intrusion and to observe the general quality of ground waters in the basin. Samples were collected from 11 wells in this area during July and August 1960.

Ground Water Occurrence

Alluvium constitutes the major source of ground water and includes stream terrace, flood plain, and estuarine deposits; other water-bearing formations include the semiconsolidated Hookton formation and dune sand. Confined ground water occurs in the Hookton formation which consists of continental and marine deposits.

Ground Water Development

Ground water is slightly to moderately developed, principally for domestic and irrigation supplies. Wells yield up to 100 gpm.

Major Waste Discharges

Effluent from the City of Arcata sewage treatment plant, which is discharged into Humboldt Bay, is the only major waste discharge in this basin.

Evaluation of Water Quality

Ground waters in Mad River Valley are generally bicarbonate in type with calcium or magnesium being the predominant cation. They are moderate to very hard but suitable for most beneficial uses. There is evidence of sea-water intrusion in the coastal segment of the valley where a few wells are known to yield waters excessively high in chlorides. Waters high in total iron concentrations occur throughout the valley.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1960 with those of previous years showed no basinwide changes in ground water quality.

EUREKA PLAIN (1-9)

Eureka Plain is located in Humboldt County adjacent to Humboldt Bay. It varies up to approximately 6 miles in width, is about 12 miles in length, and includes an area of about 70 square miles. Elk River is the principal stream in the basin.

Monitoring Program

The monitoring program in Eureka Plain was established in 1958 to detect evidence of sea-water intrusion and to observe general ground water quality. In August and September 1960, samples were collected from six wells.

Ground Water Occurrence

The principal aquifer is the Hookton formation, of continental and marine origin, in which ground water is confined. Unconfined ground water occurs in alluvium and dune sand of limited area and thickness.

Ground Water Development

Ground water is slightly developed in this basin and is used for domestic, irrigation, and livestock watering purposes. Wells in the Hookton formation yield from 10 to 30 gpm.

Major Waste Discharges

There are three major waste discharges in this area, all of which consist of effluent from sewage treatment plants serving the City of Eureka. Disposal is directly into Humboldt Bay.

Evaluation of Water Quality

With the exception of water from two wells which contain high concentrations of boron or iron, the chemical quality of ground water in Eureka Plain is good. Waters from the alluvium are mostly calcium-magnesium bicarbonate in character and moderately hard, while waters from the dune sand near the bay are sodium chloride in character.

Significant Water Quality Changes

In well 5N/1E-18Q1, boron and iron increased from 1.7 to 2.1 ppm and 0.4 to 2.6 ppm, respectively, between September 1959 and August 1960. Well 3N/1W-5K1 increased in iron from 1.4 to 2.7 ppm between September 1959 and August 1960. In well 4N/1W-16H1, iron decreased from 1.3 to 0.02 ppm between September 1959 and August 1960. The cause of the aforementioned mineral fluctuations have not been ascertained.

EEL RIVER VALLEY (1-10)

Eel River Valley is located in the west central portion of Humboldt County. The monitored portion of the valley is about 8 miles wide at the coast, extends inland about 18 miles, and contains about 75 square miles.

Monitoring Program

The possibility of sea-water intrusion prompted the establishment of a monitoring program in the area in 1956. During 1960, samples were collected from 13 wells during the period July to September. The locations of these wells are shown on Plate 3.

Ground Water Occurrence

The major source of ground water is alluvium. Secondary sources include dune sand and older, semiconsolidated sediments. Unconfined aquifers occur in the alluvium, while ground water in the older sediments is confined.

Ground Water Development

Ground water is moderately to extensively developed for domestic and irrigation uses. Wells in the alluvium yield more than 600 gpm, while those in the older, semiconsolidated sediments have been known to yield as high as 1,200 gallons per minute.

Major Waste Discharges

There are no major waste discharges in the area. Minor waste discharges consist mainly of sewage effluent from the various small towns in the area. Septic tanks are employed by individual householders in the remaining communities.

Evaluation of Water Quality

Ground waters of this area are generally a magnesium-sodium bicarbonate type water of good mineral quality suitable for most uses, except near the estuary of the Eel River where sodium chloride water occurs in six of the monitored wells. The degraded water in these wells probably is due to the mixing of saline waters from the Eel River estuary with adjacent ground waters.

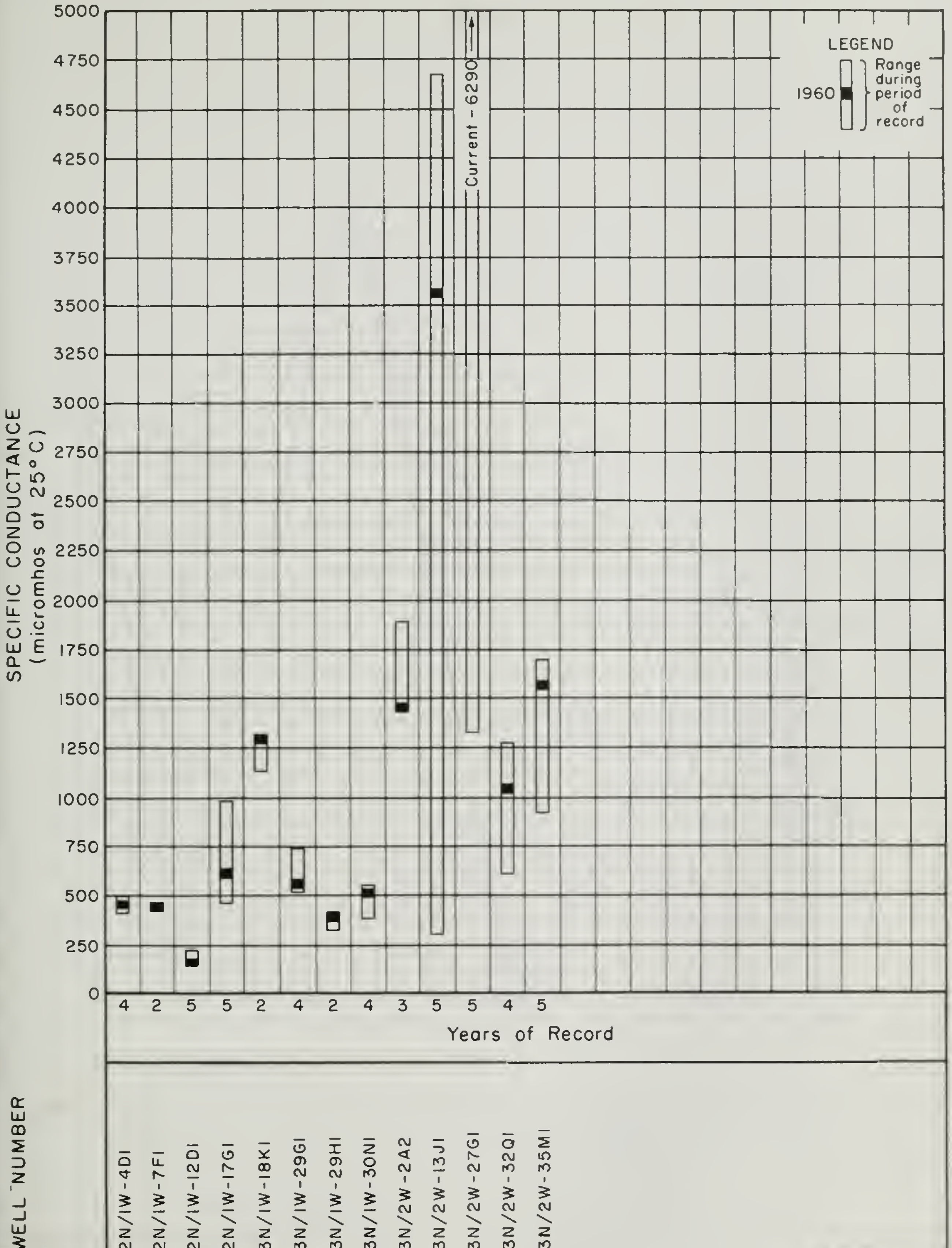
The 1960 chemical analyses indicate that iron in undesirable concentrations occurs in 10 of the 13 monitored wells.

Significant Water Quality Changes

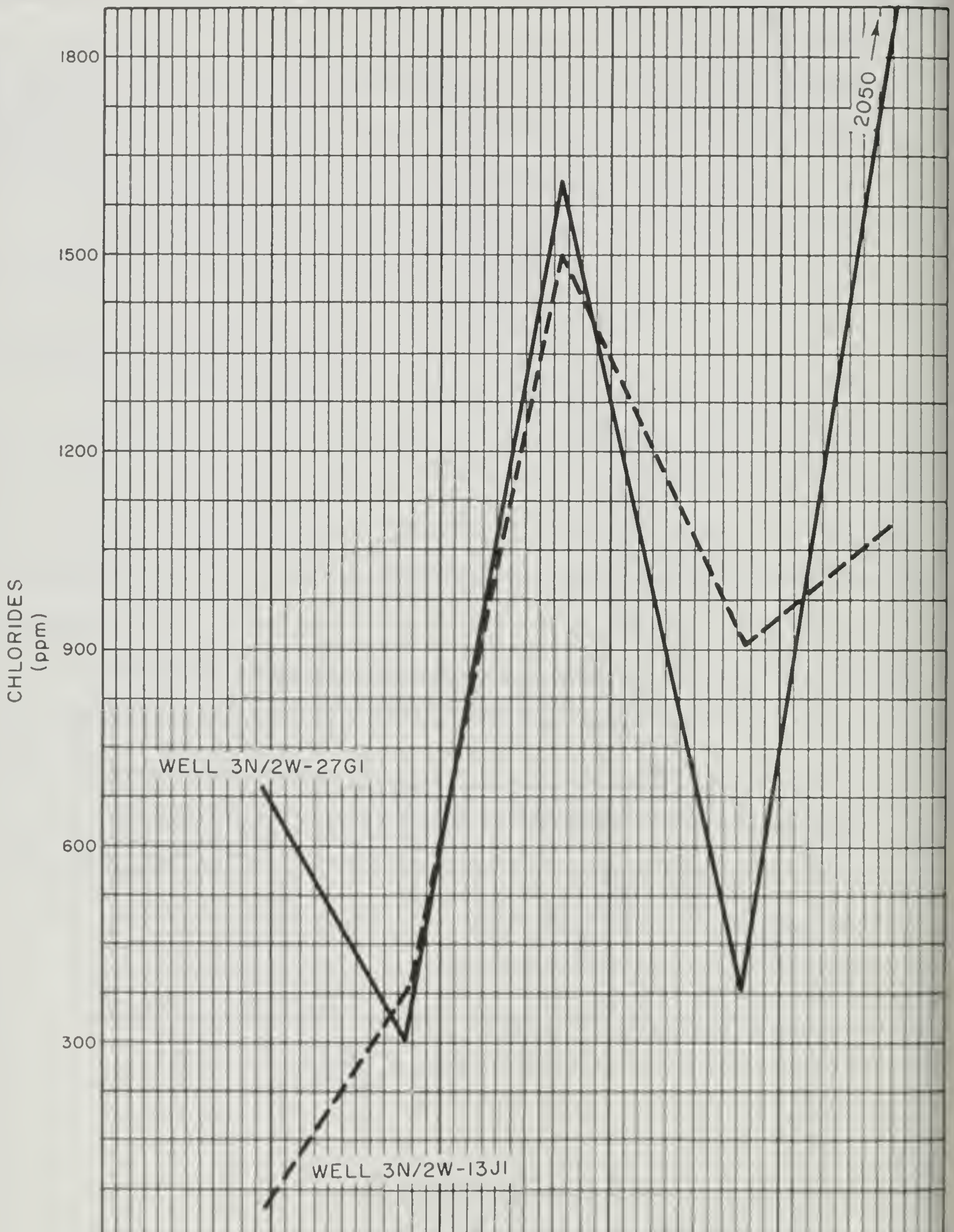
Comparison of analyses of samples collected in 1960 with those of previous years showed wide fluctuations in chloride concentrations in several wells located near the tidal portion of the Eel River. Since December 1956, chlorides in wells 3N/2W-13J1 and 27G1 have varied from 53 to 1,502 ppm and from 300 to 2,050 ppm, respectively. These wells are situated in an area of known sea-water intrusion.

Variations in specific conductance in wells in the Eel River Valley and in chloride concentration of wells 3N/2W-13J1 and 27G1 are depicted graphically on the following pages.

The probable inland extent of sea-water intrusion in the area at the time of sampling in 1960 is shown on Plate 3.



WATER QUALITY RANGES
EEL RIVER VALLEY



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
EEL RIVER VALLEY

ROUND VALLEY (1-11)

Round Valley is located in the northern portion of Mendocino County approximately 30 miles north of Willets. The valley is an oval shaped basin approximately 6 miles long and 4 miles wide and contains an area of about 23 square miles. Elevation of the valley floor ranges from 1,300 feet at the south end to 1,440 feet at the north end. The town of Covelo is located at about the center of the valley.

Monitoring Program

In 1960, a ground water monitoring program was established to provide information on ground water quality. Samples were collected from ten wells during August 1960. Location of these wells and of the monitored area are shown on Plate 4.

Ground Water Occurrence

Ground water occurs in alluvial fan, flood plain, and lake deposits. These deposits are generally coarser and more permeable along the upper edge of the valley and grade into finer and less pervious material in the central and southern parts of the valley. Indications of both confined and unconfined ground waters are found in the valley. Ground water is recharged in the alluvial fan areas, primarily along the northern and western edges of the valley, and moves downslope to the central and southern parts of the valley.

Ground Water Development

Ground water is the source of a large portion of the total amount of water used in Round Valley and supplies all the requirements for domestic use and a major portion of the irrigation and industrial needs.

Major Waste Discharges

There are no large waste discharges in Round Valley. Only a minor amount of sewage is discharged from the town of Covelo.

Evaluation of Water Quality

Ground water throughout the valley is of excellent mineral quality for irrigation purposes, but high iron concentrations, 0.84 to 3.6 ppm, render the water objectionable for domestic use without treatment for removal of iron. These waters are generally calcium or magnesium bicarbonate in character.

UKIAH VALLEY (1-15)

Ukiah Valley lies along the Russian River in southeastern Mendocino County. It is approximately 22 miles in length, has a maximum width of 5 miles, and encompasses about 65 square miles.

Monitoring Program

A monitoring program was established in Ukiah Valley in 1953 to detect quality changes that might result from mineralized springs which exist along the edges of the valley. Eleven wells were sampled in this area during August and September 1960.

Ground Water Occurrence

The major source of ground water is alluvium which is comprised of flood plain, stream terrace, and channel deposits. Semiconsolidated older sediments, exposed on the edges of the valley, constitute a secondary source. Aquifers in this area are unconfined.

Ground Water Development

There is slight to moderate ground water development. Principal uses of ground water are for domestic, industrial, and irrigation supplies. Wells in the terrace deposits yield up to 15 gpm, and those in the alluvium yield from 50 to 200 gpm.

Major Waste Discharges

Major waste discharges in this area are: (1) 1.2 million gallons per day (mgd) effluent from the City of Ukiah sewage treatment plant, (2) 1.3 mgd industrial waste from the Masonite Corporation in Ukiah, and (3) 0.6 mgd effluent from the Mendocino State Hospital at Talmage. The latter waste is discharged, after treatment, into percolation ponds; the others are discharged directly into the Russian River.

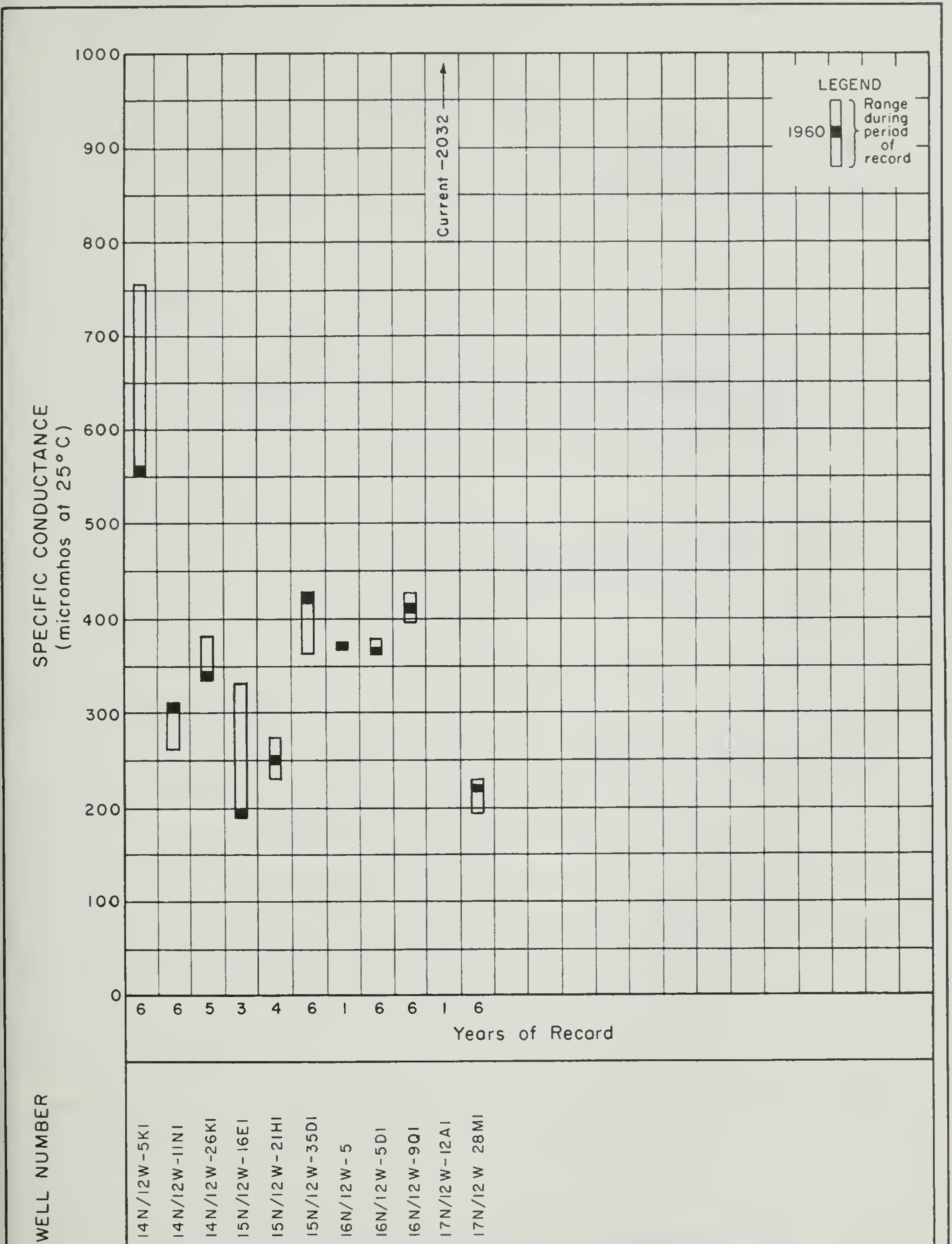
Evaluation of Water Quality

Ground waters in the central portion of Ukiah Valley are generally bicarbonate in type and are of good to excellent mineral quality. Calcium or magnesium are the predominant cations. Highly mineralized ground waters are found along the edges of the valley, probably from deep-seated juvenile waters rising along faults or flowing from the many springs in the area. Individual wells have produced waters with boron concentrations greater than 80 ppm, and chlorides in excess of 525 ppm. Radiological assays made during 1960 indicated that maximum gross radioactivity was 8.1 micromicrocuries per liter.

Significant Water Quality Changes

None.

Variations in specific conductance of water in wells in Ukiah Valley are shown graphically on the following page.



WATER QUALITY RANGES
UKIAH VALLEY

SANEL VALLEY (1-16)

Sanel Valley lies along the Russian River in southeastern Mendocino County about 12 miles south of Ukiah. It is an irregularly shaped area of about 11.5 square miles.

Monitoring Program

A monitoring program was established in Sanel Valley in 1956 because of the presence of ground waters containing excessive concentrations of boron. Samples were collected from six wells during August and September 1960.

Ground Water Occurrence

The principal aquifer is unconsolidated alluvium deposited by the Russian River. Ground water is generally unconfined with the exception of local pressure effects.

Ground Water Development

Ground water is slightly to moderately developed. Most domestic and municipal requirements are supplied by ground water. Irrigation requirements adjacent to the Russian River are met by direct diversion from the river. The remainder of the irrigated areas are served almost exclusively by ground water. Wells located in terrace deposits yield from 5 to 50 gpm; those in coarse alluvium, from 750 to 1,250 gpm.

Major Waste Discharges

There are no large waste discharges in this area. Individual sewage disposal systems are commonly used for domestic wastes.

Evaluation of Water Quality

Ground waters in Sanel Valley are generally magnesium-calcium bicarbonate in type and, although moderately hard, are suitable for most beneficial uses. Ground waters high in boron are known to occur in underlying geologic formations. Radiological assays during 1960 indicated that maximum gross radioactivity was 5.4 micromicrocuries per liter.

Significant Water Quality Changes

Comparison of 1960 analyses with those of 1959 show an increase in boron concentration in well 13N/11W-18B1, located approximately 1.5 miles north-northeast of Hopland. Boron in this well decreased from 2.4 ppm in December 1956 to 0.84 ppm in September 1959 and increased to 1.87 ppm by September 1960. Boron in well 13N/11W-18D1, located approximately 1.5 miles north of Hopland, decreased from 1.4 ppm in September 1959 to 0.44 ppm by September 1960.

ALEXANDER VALLEY (1-17)

Alexander Valley lies along the Russian River in northern Sonoma County. The monitored portion is approximately 14 miles long, about 1.5 miles wide, and comprises an area of about 20 square miles.

Monitoring Program

To detect quality changes, a monitoring program was established in Alexander Valley in 1957. Samples were collected from three wells in September 1960.

Ground Water Occurrence

Principal aquifers are the younger alluvium and the Glen Ellen formation. Older consolidated and volcanic rocks produce only meager yields.

Ground Water Development

There is moderate development for domestic purposes but only limited development for irrigation. The alluvium yields from 200 to 500 gpm and the Glen Ellen formation yields up to 400 gpm.

Major Waste Discharges

Disposal of winery wastes into unlined ponds is a potential source of degradation of ground water in the northern portion of Alexander Valley. Domestic sewage is generally disposed of by individual septic tanks.

Evaluation of Water Quality

Ground waters in Alexander Valley are generally of low mineral content and suitable for most beneficial uses; however, some of the ground waters are moderate to very hard and boron concentrations in excess of 0.5 ppm have been recorded. It is believed that these boron waters come from connate or juvenile waters rising along fault slip planes.

Significant Water Quality Changes

None.

SANTA ROSA VALLEY (1-18)

Santa Rosa Valley lies in central Sonoma County. The monitored area includes Santa Rosa Valley, a portion of the Russian River flood plain bordering the Santa Rosa Valley on the northwest, and Bennett, Rincon, and Kenwood Valleys which lie to the east of Santa Rosa Valley. The area is about 25 miles long, 4 to 12 miles wide, and comprises approximately 150 square miles.

Monitoring Program

To maintain a record of existing ground water quality conditions and to detect changes in quality due to high concentrations of boron and sodium which occur locally, a monitoring program was established in Santa Rosa Valley in 1957. Twenty wells were sampled during August and September 1960.

Ground Water Occurrence

The principal aquifers are the Sonoma volcanics, the Glenn Ellen formation, and the Merced formation. Confinement occurs locally.

Ground Water Development

Ground water is extensively developed for domestic, municipal, industrial, irrigation, and stock watering purposes. Ground water constitutes about 90 percent of the water used in the valley. Wells in the area yield up to 1,500 gpm.

Major Waste Discharges

Principal waste discharges in the area are effluent from sewage treatment plants serving the Cities of Santa Rosa, Sebastopol, and Healdsburg. The City of Santa Rosa is the largest discharger averaging 5.1 mgd. There are also several industrial waste discharges in the vicinity of Santa Rosa. After treatment, sewage and industrial wastes are discharged into Santa Rosa Creek or Mark West Creek which drain into the Russian River.

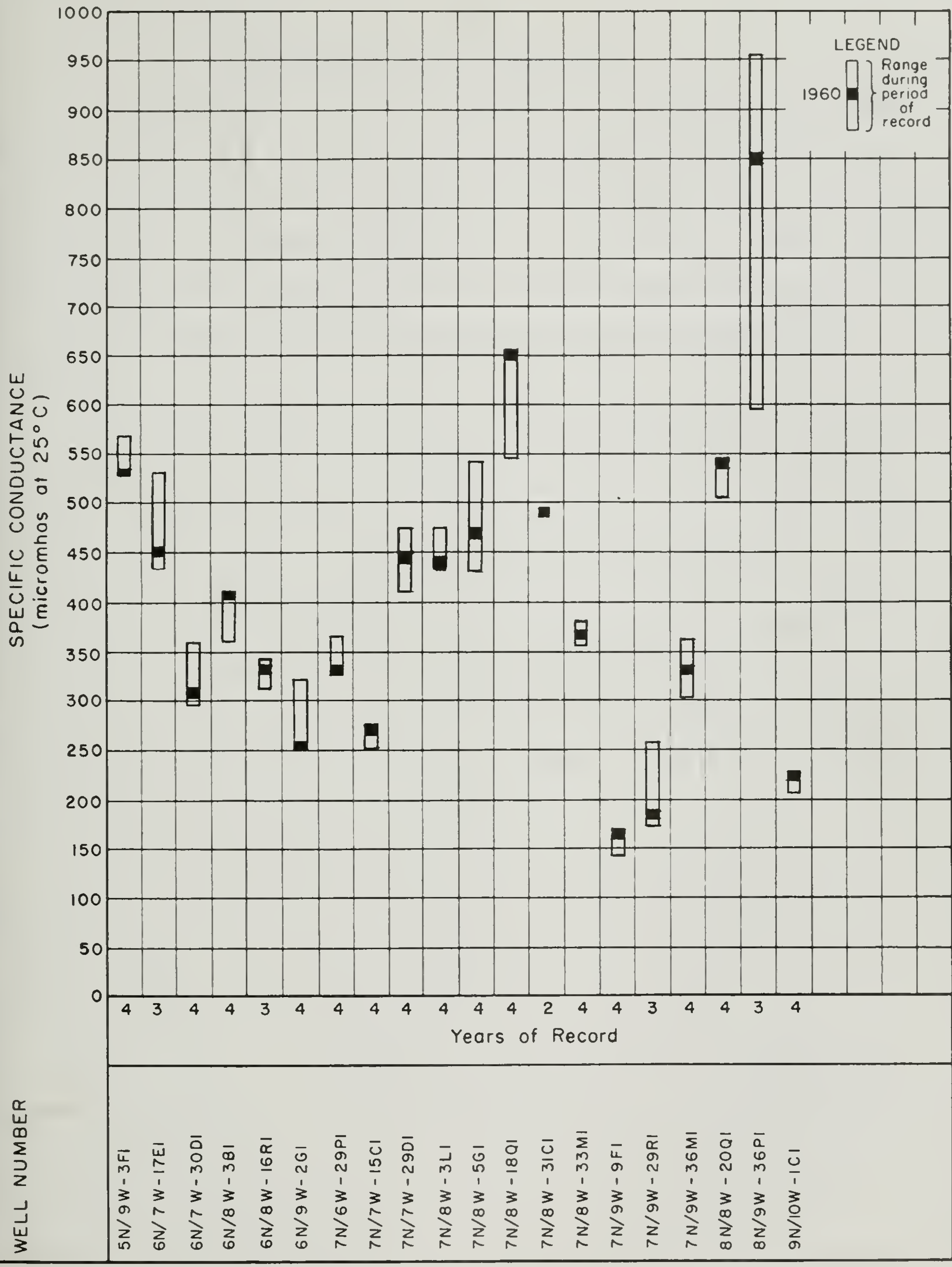
Evaluation of Water Quality

Ground waters in Santa Rosa Valley are generally bicarbonate in type with sodium the predominant cation. The waters, although moderately hard to hard, are generally excellent in quality and suitable for most beneficial uses. However, high concentrations of boron occur locally, and sodium percentages in certain wells are in excess of those recommended for class 2 (good to injurious) irrigation water. Radiological assays during 1960 indicated that maximum gross radioactivity was 6.8 micromicrocuries per liter.

Significant Water Quality Changes

Analyses of samples collected during 1960 showed significant changes in boron concentrations in three of the monitored wells. In well 6N/7W-17E1, located approximately 3 miles northeast of Cotati, boron increased from 0.4 to 1.63 ppm between September 1959 and August 1960. Water from well 7N/9W-36M1, located approximately 0.5 mile northeast of Sebastopol, indicated an increase in boron concentration from 0.0 to 0.55 ppm between September 1959 and September 1960. A significant decrease in boron concentration, from 4.0 to 2.86 ppm, was observed in well 8N/9W-36P1 located approximately 1 mile south of the Sonoma County Airport. Chlorides in this well decreased from 110 to 82 ppm during the same period. This well is 1,048 feet deep and may at times withdraw waters which have intermingled with connate waters which occur at greater depths.

Variations in the quality of ground water in Santa Rosa Valley are shown graphically on the following page.



WATER QUALITY RANGES
SANTA ROSA VALLEY

SAN FRANCISCO BAY REGION (NO. 2)

The San Francisco Bay Region includes all of the basins which drain into San Francisco Bay, San Pablo Bay, and that portion of Suisun Bay below Antioch. It includes portions of Alameda, Contra Costa, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma Counties, and all of San Francisco County. This region extends about 125 miles from north to south, averages about 45 miles in an east-west direction, and comprises an area of about 4,400 square miles (Plate 1).

Ground water development in the San Francisco Bay Region, while not as extensive as that in other areas of the State, has been an important factor in the economy of the area. In those portions of the region where surface supplies were not readily available, early development was accomplished by resorting to ground water pumping. As development of the region continued and demands for water exceeded the available supply, the major metropolitan areas undertook vast projects to import water supplies from great distances. However, a substantial portion of the agricultural, industrial, and domestic requirements in outlying areas are still met by ground water pumping.

Within the boundaries of this region, 11 major ground water basins have been identified. As of 1960, eight of these basins were included in the monitoring program. These areas, the number of wells in each, and the sampling times are listed in the following tabulation.

Monitored Area	Number of Wells Sampled	Sampling Time
Petaluma Valley (2-1)	26	April-September
Napa-Sonoma Valley (2-2)	34	April-September
Suisun-Fairfield Valley (2-3)	14	May-September
Pittsburg Plain (2-4)	3	July-September

Monitored Area	Number of Wells Sampled	Sampling Time
Clayton Valley (2-5)	8	July-September
Ygnacio Valley (2-6)	8	July-September
Santa Clara Valley (2-9)		
East Bay Area	67	May-September
South Bay Area	24	August-September
Livermore Valley (2-10)	20	June

There were no general changes observed in ground water quality in the San Francisco Bay Region during 1960. Chloride concentrations increased at individual wells in the East Bay area of Santa Clara Valley (2-9.01), especially in wells pumping from the upper aquifer. These increases are attributed to continued intrusion of sea water into the area.

PETALUMA VALLEY (2-1)

Petaluma Valley is located at the north end of San Pablo Bay in Sonoma and Marin Counties. The valley extends northwestward from the bay for about 16 miles, and occupies an area of approximately 45 square miles. The segment fronting the bay is reclaimed tidal marshlands.

Monitoring Program

The monitoring program in Petaluma Valley was established in 1958 to maintain a record of sea-water intrusion. The monitoring program for 1960 included sampling of 26 wells, the locations of which are shown on Plate 5. Eighteen of the wells in the area affected by sea-water intrusion were sampled in both the spring and fall of 1960. Of the remaining eight wells, six were sampled during the spring and two during the fall.

Ground Water Occurrence

Petaluma Valley is a structural depression underlain with a thick series of water-bearing materials. Ground water occurs principally in younger alluvium, older alluvium, and the Merced formation. Meager to moderate yields are also obtained from the Sonoma volcanics and the Petaluma formation.

Ground Water Development

Most of the ground water development in Petaluma Valley is in the northern or upper portion where wells generally yield from 150 to 300 gpm. One well, however, has a reported yield of about 650 gpm. Ground water in this portion supplies agricultural and municipal needs for water.

The greater part of southern Petaluma and Novato Valleys is at or below sea level with much of the land reclaimed. Yields from wells in this portion of the valley are generally less than 30 gpm.

Major Waste Discharges

The major waste discharge in the valley consists of domestic and industrial wastes from the City of Petaluma which are discharged to Petaluma Creek after secondary treatment. Domestic wastes from Hamilton Air Force Base are discharged directly to San Pablo Bay after primary treatment.

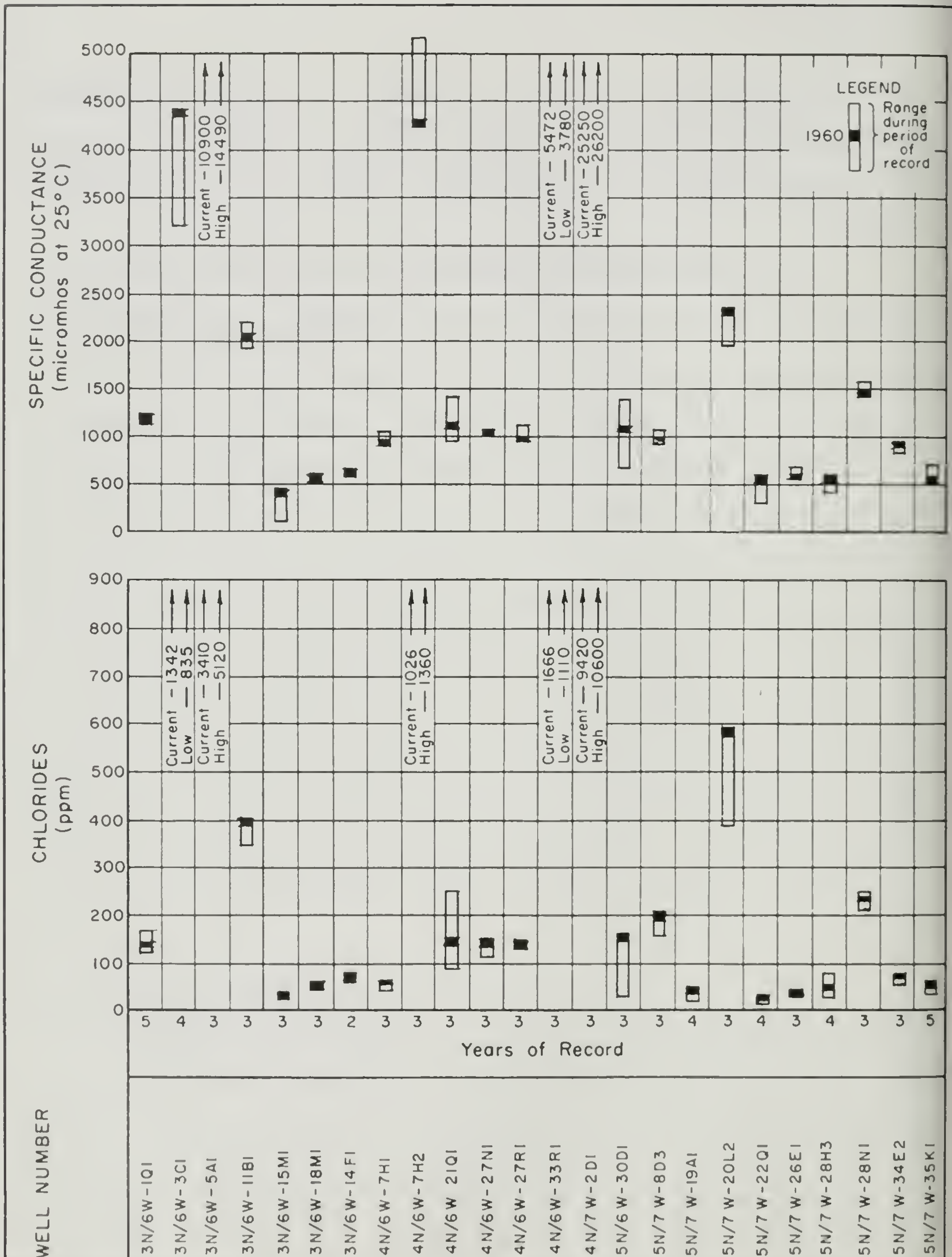
Evaluation of Water Quality

Water from the younger and the older alluvium and the Merced formation is generally of good quality. Water from the shallower wells is a calcium bicarbonate type with deeper wells producing sodium bicarbonate type water. Salt water has intruded aquifers beneath the tidal marshlands and produced a highly mineralized sodium chloride type water. Some wells in the southern and central portion of the area, adjacent to Petaluma Creek, produce water high in boron which renders them unsuitable for irrigation of some crops. A few wells in the valley show iron concentrations in excess of those recommended for domestic use. It appears that sea-water intrusion in Petaluma Valley is not occurring directly from the bay by subsurface inflow but through the downward and lateral movement of surface and near-surface brackish and saline waters. Radiological assays in 1960 indicate that maximum gross radioactivity was 5.19 micromicrocuries per liter.

Significant Water Quality Changes

A comparison of analyses of 1960 with those of 1959 showed only minor changes in mineral concentrations. Generally, the seasonal fluctuations in wells sampled in the spring and fall of 1960 were not great. One well, 3N/6W-3C1, had an increase in chloride concentration from 1,030 ppm in the spring of 1960 to 1,342 ppm in the fall of 1960. However, chlorides decreased in well 4N/6W-7H2 from 1,180 to 1,026 ppm during the same period. These two wells are located about 5 miles apart on the east side of Petaluma Creek. The area of degraded ground water in the vicinity of Petaluma has apparently increased and has moved northwestward during the period 1954 to 1960 as shown by the 100 ppm isochlors on Plate 5.

Variations in specific conductance and in chloride concentrations in water from wells in Petaluma Valley are shown graphically on the following page.



WATER QUALITY RANGES

PETALUMA VALLEY

NAPA-SONOMA VALLEY (2-2)

Napa-Sonoma Valley is a north-northwest trending, bifurcated, alluviated valley located at the southern end of the northern Coast Range Mountains in Napa and Sonoma Counties. It occupies structural depressions and drains southerly into San Pablo Bay. The two arms of the valley merge about five miles from the northern margin of San Pablo Bay and become marshland. The tidal marshlands along San Pablo Bay are at or near sea level. Some of the land has been reclaimed and is as much as five feet below sea level. The Napa arm of the valley encompasses 85 square miles while the Sonoma arm of the valley contains about 35 square miles.

Monitoring Program

A ground water monitoring program was established in Napa-Sonoma Valley in 1958 to detect any evidence of sea-water intrusion. During 1960, 34 wells were sampled in the spring and fall. Locations of these wells are shown on Plate 6.

Ground Water Occurrence

The principal body of ground water in Napa-Sonoma Valley occurs in the younger and older alluvium. Appreciable quantities are also pumped locally from the Sonoma volcanics. Ground water, generally unconfined, moves from the margins of the valley toward the center and then southward to the bay. Some confinement is indicated by the presence of a few flowing artesian wells; the most productive of these is reported to flow about 97 gpm.

Ground Water Development

Ground water in Napa-Sonoma Valley is moderately to extensively developed. The ground water supply is not abundant and, in some parts of the valley, it is inadequate. Although the alluvium yields water freely to wells, large yields are uncommon because of limited thicknesses of the aquifers. The yields are generally in the order of 20 to 50 gpm, although a few large irrigation wells produce up to 400 gpm. Most of the water used in the two arms of the valley is for domestic and irrigation requirements. Nonirrigated agriculture such as dairy and stock watering requires smaller amounts. There are some industrial uses in Napa Valley.

Major Waste Discharges

The major waste discharge in Napa Valley consists of effluent from Napa County Sanitation District No. 1. The sewage and industrial wastes amount to 3.2 mgd and are disposed of, after secondary treatment, into Napa River below the City of Napa. Smaller discharges are made by Napa State Hospital, the Veterans Home, and the communities of Yountville, Oakville, Rutherford, St. Helena, and Calistoga. In Sonoma Valley, Sonoma Valley Sanitary District discharges 1.5 mgd of domestic wastes after secondary treatment to Schell Slough which is interconnected to San Pablo Bay by tidal waterways. Smaller discharges are made by Sonoma State Home and several wineries.

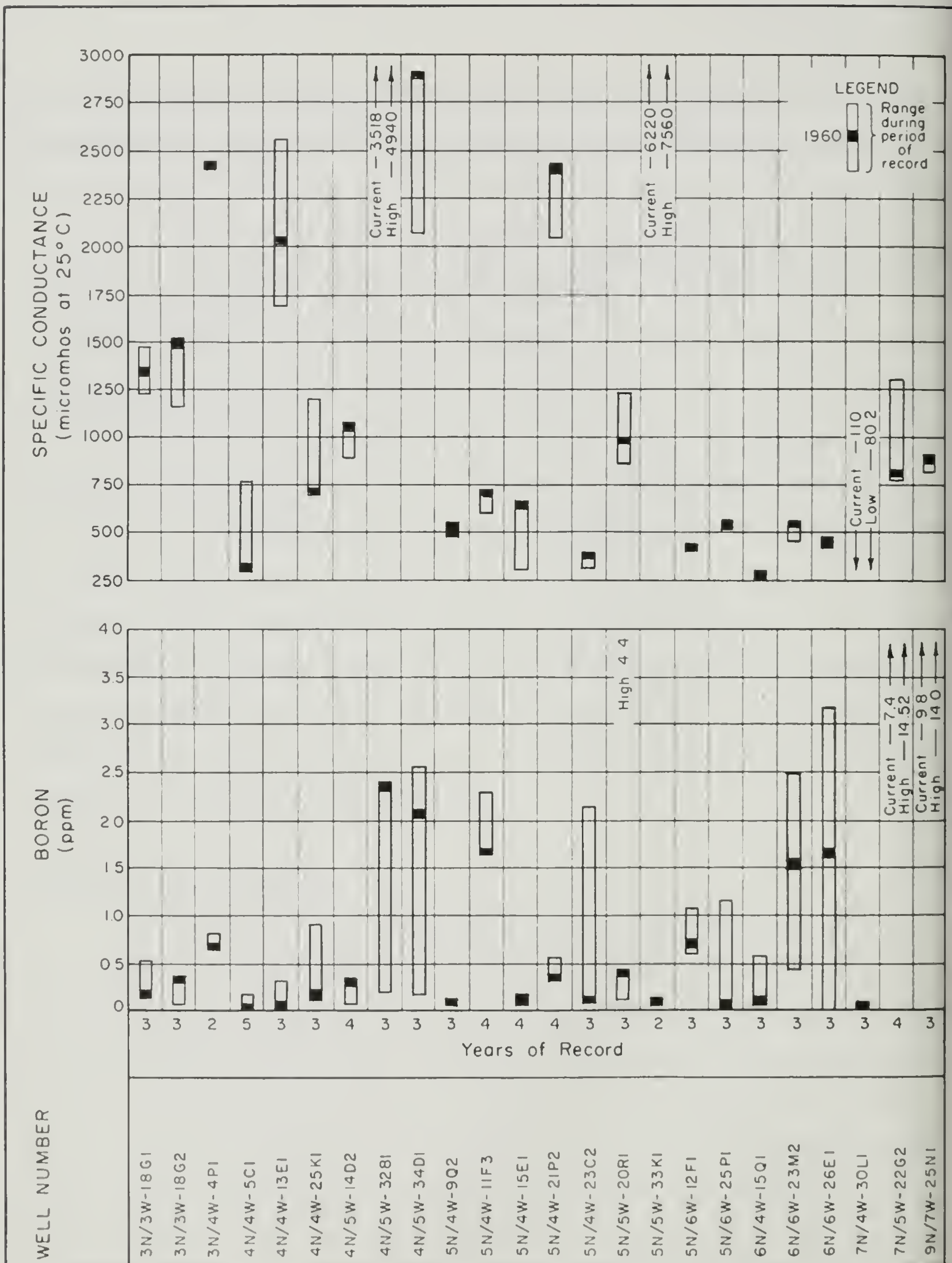
Evaluation of Water Quality

Ground water in most of Napa-Sonoma Valley is satisfactory for most uses. Sodium bicarbonate and sodium chloride are the most frequently occurring types of water in these basins. Better quality water is generally extracted from the alluvium than from the older formations. Ground water from the Sonoma volcanics is generally not as desirable in quality as that contained in the alluvium. Acid water, highly mineralized connate water, and water having undesirable taste, odor, or excessive boron and iron concentrations are encountered in many of the wells drilled into the Sonoma volcanics on the east side of Napa Valley. A potential intrusion of brackish waters from San Pablo Bay exists in the lower nd of the valley at times of heavy ground water withdrawals. Radiological ssays during 1960 indicate that maximum gross radioactivity was 7.48 micromicro-uries per liter.

ignificant Water Quality Changes

Analyses of samples collected in 1960 compared with those of 1959 howed no significant changes in concentration of mineral constituents. Areas here chloride concentrations in Napa-Sonoma Valley exceeded 100 ppm during 1960 re shown on Plate 6.

Variations in specific conductance and boron concentration in wells in apa-Sonoma Valley are shown graphically on the following page.



WATER QUALITY RANGES

NAPA-SONOMA VALLEY

SUISUN-FAIRFIELD VALLEY (2-3)

The monitored area is located in the southwestern portion of Solano ounty and includes Suisun Valley, Green Valley, and the Birds Landing-ollinsville area. The small valleys widen and merge with the tidal marshes long Suisun Bay. The monitored area is approximately 16 miles long, about 12 iles wide, and covers about 125 square miles.

onitoring Program

A network of 14 monitoring wells was established in Suisun-Fairfield alley in the fall of 1958 to observe sea-water intrusion and to detect signif-cant changes in ground water quality. During 1960, water samples were collected rom 13 of the 14 wells in the spring and again in the fall. The remaining well as sampled during the spring only.

round Water Occurrence

The water-bearing formations comprise younger alluvium, older alluvium, nd Sonoma volcanics. Thickness of the younger alluvium averages about 20 feet t the northern end of the valley and gradually increases to more than 60 feet t the southern end, the greatest thickness being along Suisun Creek. The val-ey floor north and northeast of Fairfield is underlain by consolidated rocks at hallow depths and is considered as essentially nonwater bearing. Most of the ater pumped from wells in Suisun-Fairfield Valley is probably obtained from the lder alluvium. Thickness of this formation varies from feather edges along the argin of the basin to about 200 feet near Fairfield.

round Water Development

Ground water is extensively developed in the area west of Fairfield. umping depressions occurred in 1950 and 1957, and were centered about 2½ miles outhwest of Fairfield. Because of poor quality water, low permeability of sediments, and small yields, ground water in the area east of Fairfield is only moderately developed. There are only domestic and stock wells in this area. Silt, clay, and sand make up the younger recent alluvium which has a low permeability and generally yields small amounts of water. Well yields range from 20 to 565 gpm and average about 200 gpm for the entire area. Ground waters are used for municipal, irrigation, industrial, domestic, and stock watering purposes.

Major Waste Discharges

The two major waste discharges located in this area are domestic wastes of about 1.8 mgd from Fairfield-Suisun Sewer District discharged to Suisun Slough after primary treatment, and domestic and industrial wastes of 1.1 mgd from Travis Air Force Base discharged to Union Creek after primary treatment. These discharges are made to the lower end of the basin and to tidal waters.

Evaluation of Water Quality

Under natural conditions, ground water moves southward from the margins of the valley toward the tidal marches. However, in the vicinity of Fairfield, a pumping depression has reversed the gradient of the ground water table. This depression poses a problem of potential encroachment of sea water from the bay. In addition to the potential sea water intrusion problem, high concentrations of boron and sodium are found in wells in the southeastern portion (Collinsville area) of the monitored area. High boron concentrations are also found in wells in the vicinity of Fairfield. Usable ground water is calcium or sodium bicarbonate in type and is generally hard and slightly alkaline. Radiological assays during 1960 indicate that maximum gross radioactivity was 7.82 micromicrocuries per liter.

Significant Water Quality Changes

The quality of ground waters has not changed significantly in the three-year period of record. Chloride concentration in well 3N/1E-22F2 near Birds Landing decreased from 240 ppm in September 1959 to 111 ppm in September 1960. Chloride concentration in well 5N/2W-34P3, located approximately 2 miles southwest of Fairfield, increased from 231 ppm in May 1960 to 404 ppm in September 1960. Boron concentration in well 5N/2W-34B near Fairfield remained fairly constant from August 1958 to May 1959 when 3.2 ppm and 3.3 ppm, respectively, were recorded. The boron concentration in this well decreased to 2.5 ppm in September 1959 and increased to 3.2 ppm in May 1960.

PITTSBURG PLAIN (2-4)

The Pittsburg Plain occupies a narrow terrace fronting on Sacramento River, New York Slough, and San Joaquin River, and lies between Clayton Valley on the west and the Sacramento-San Joaquin Delta on the east in northeastern Contra Costa County. The monitored area is approximately 5 miles long, 2 miles wide, and covers about 10 square miles.

Monitoring Program

A monitoring program was established in the Pittsburg Plain in 1957 to provide information on ground water quality and to detect significant changes. Three wells were sampled during July-September 1960.

Ground Water Occurrence

The available ground water occurs in a thin section of alluvium and in the older Pittsburg formation.

Ground Water Development

There is only limited development of ground water in Pittsburg Plain due, in part, to the poor quality water underlying the area and to the availability of surface water imported via the Contra Costa Canal. In the 1930's, many industries in the Pittsburg area pumped ground water. This heavy pumpage created an overdraft and permitted saline waters to encroach into the ground water reservoirs near the bays. Pumping has since decreased and most of the water now used is from surface sources. Well yields range from 100 to 150 gpm. Ground water is presently used to a limited extent for industrial, irrigation, and domestic purposes.

Major Waste Discharges

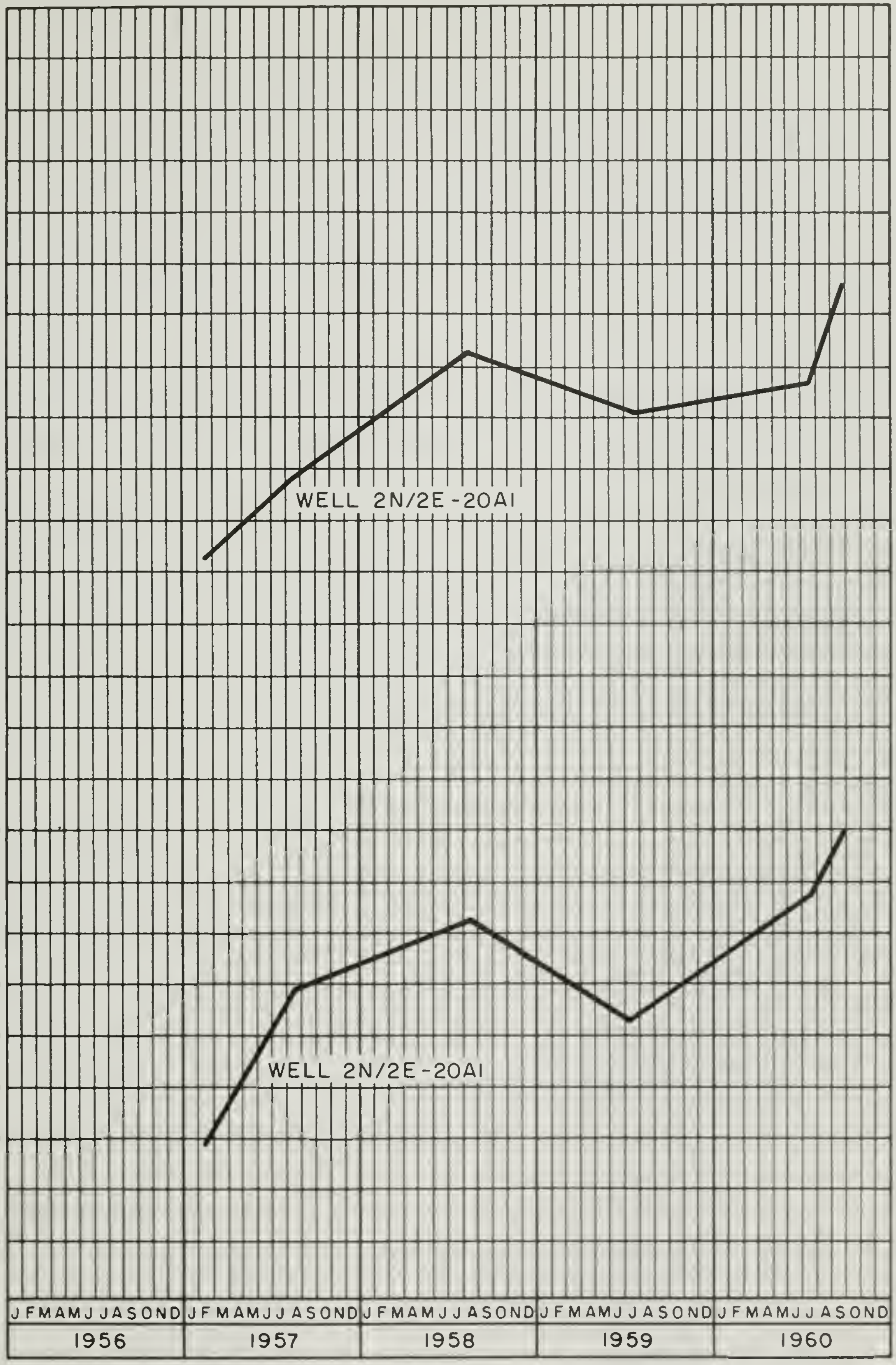
The municipalities and a large number of industries including chemicals, steel, power development, rubber goods, paper products, food processing, gypsum products, asbestos products, and roofing materials are located along the waterfront and discharge their wastes into the tidal waters. Disposal of these wastes to tidal waters is not considered detrimental to the underlying ground waters at present.

Evaluation of Water Quality

Ground waters underlying Pittsburg Plain are generally of poor quality. They are sodium chloride and sodium sulfate type waters, high in mineral content, and extremely hard. Unless softened, the waters are unsuitable for most domestic and industrial uses.

Significant Water Quality Changes

Analysis of water from well 2N/2E-20A1 indicated an increase in chlorides and specific conductance. A fluctuation graph for this well shows a gradual increase in chlorides and specific conductance during the four years of record. (See following page.)



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
PITTSBURG PLAIN

CLAYTON VALLEY (2-5)

Clayton Valley is located in north central Contra Costa County and extends from the foot of Mt. Diablo to Suisun Bay. It has a northwest-southeast trending axial length of about 10 miles, a maximum width of about 3 miles, and includes an area of approximately 20 square miles.

Monitoring Program

A monitoring program was established in Clayton Valley in 1957. Eight wells were sampled in July and September of 1960.

Ground Water Occurrence

The primary aquifer in this area is the recent alluvium composed of clay, gravel, and sand. The Pleistocene Pittsburg formation, composed of continental clay, gravel, and sand, is an aquifer of secondary importance. Terrace deposits along the south shore of Suisun Bay are considered a part of the secondary aquifer.

Ground Water Development

There is only limited development of ground water in Clayton Valley. Importation of surface water to this area via the Contra Costa Canal has brought about a decrease in ground water pumpage. Well yields range from about 100 to 150 gpm. The present ground water pumping is limited to industrial use, a small amount of irrigation use, and a municipal supply pumped by California Water Service to augment imported surface water supplies.

Major Waste Discharges

An oil refinery located in the northern end of Clayton Valley which discharges its wastes into Suisun Bay is the only significant source of waste water in the area. These wastes are not considered to be detrimental to ground water quality.

Evaluation of Water Quality

With the exception of the boron content in some of the wells, ground waters in Clayton Valley are generally suitable for irrigation purposes. The waters are primarily bicarbonate in type with sodium or magnesium the predominant cations. Excessive hardness makes the water undesirable for domestic and some industrial uses, unless softened.

Significant Water Quality Changes

Analyses of eight samples collected in 1960 showed only a few changes in mineral quality compared with previous analyses. The boron concentration in well 2N/1W-30J1 increased from 0.48 ppm in November 1959 to 0.92 ppm in September 1960, and decreased from 1.8 ppm to 0.26 ppm in well 2N/2W-26B1 during the same period.

YGNACIO VALLEY (2-6)

Ygnacio Valley is located in northern Contra Costa County and is contiguous with Clayton Valley. These two ground water basins are separated by the Concord fault which acts as a hydrologic barrier between the basins. The monitored area is about 10 miles long, from 1 to 6 miles wide, and encompasses an area of approximately 20 square miles.

Monitoring Program

The monitoring program in Ygnacio Valley was established in 1957. Eight wells were sampled during July and September 1960.

Ground Water Occurrence

Chief sources of ground water are the Recent alluvium and the Pittsburg formation underlying Clayton Valley. Several pressure zones probably existed, but deepening of wells and increased pumping draft apparently has resulted in pressure relief, causing the ground water reservoir to function as an unconfined aquifer.

Ground Water Development

There is only moderate development of ground water in Ygnacio Valley. This area is also served with surface water from the Contra Costa Canal. The many industries located in the Pittsburg area in the 1930's pumped ground water extensively, creating an overdraft which permitted saline water from the bay to intrude into the nearby ground water reservoirs. Ground water pumping has since decreased and most of the water now used is from surface sources. The present ground water pumping is limited to minor industrial uses, small irrigation requirements, and domestic supplies. The larger wells yield up to 500 gpm, with the average withdrawal capacity being about 200 gpm.

Major Waste Discharges

Two major waste discharges are located in Ygnacio Valley. Central Contra Costa Sanitary District discharges 7.1 mgd of domestic and seasonal cannery wastes to Grayson Creek after primary clarification and oxidation pond treatment. The City of Concord discharges approximately 2.5 mgd to Walnut Creek after primary clarification and oxidation pond treatment. Because it is possible for water in these creeks to percolate, these wastes are considered a potential source of degradation to the quality of ground water in this basin.

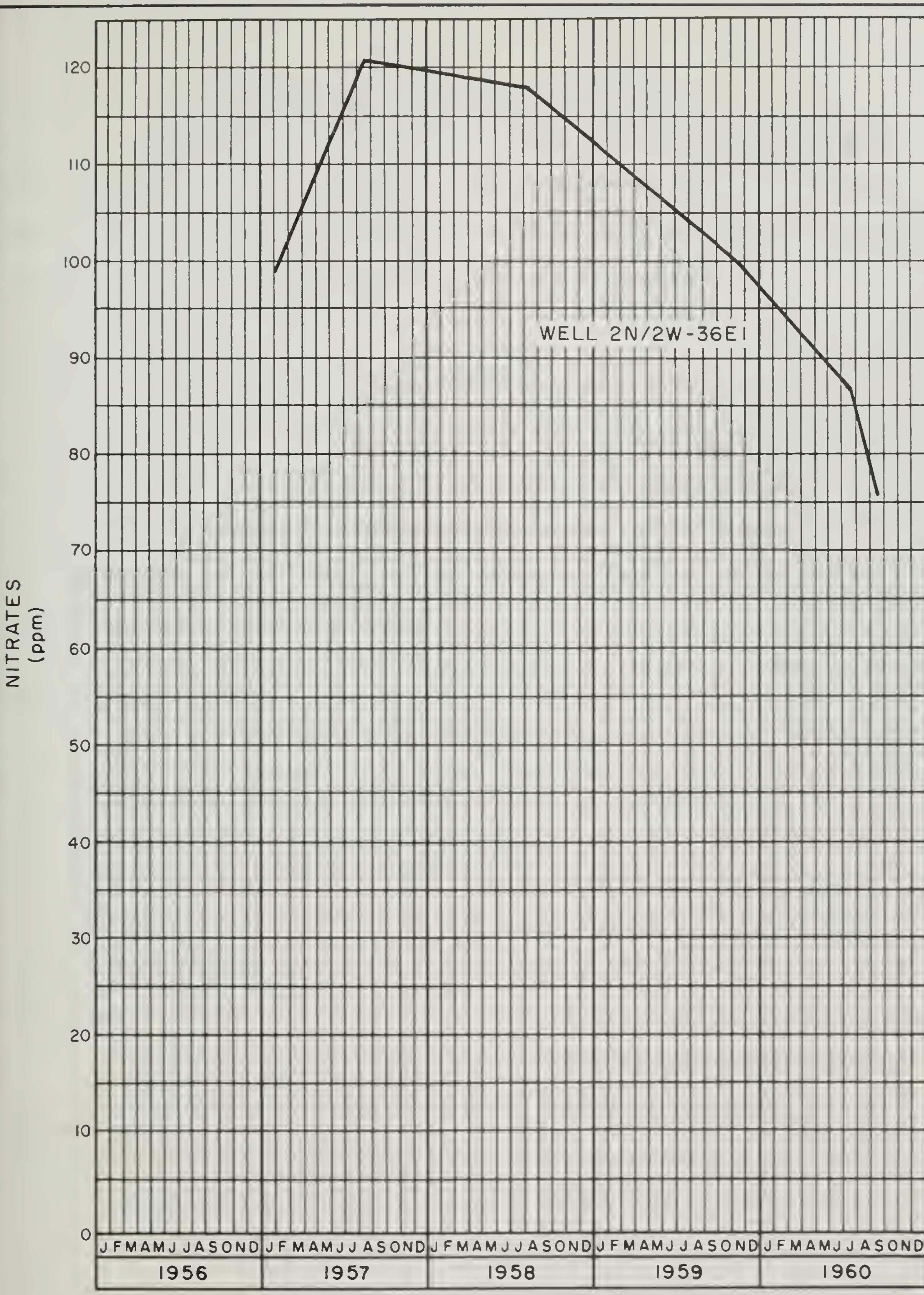
Evaluation of Water Quality

In the vicinity of Pacheco, sodium chloride water which may be due to sea-water intrusion has been found. Boron in excess of 0.5 ppm is present throughout the valley. Some wells have had concentrations of sulfates and nitrates which are far above the limits recommended in drinking water standards. Ground waters in this basin are also extremely hard.

Significant Water Quality Changes

Analyses of samples collected in Ygnacio Valley during 1960 show few significant changes in concentrations of mineral constituents. The chloride concentration in well 1N/2W-35D1, located near Walnut Creek, gradually decreased from 265 ppm in February 1957 to 138 ppm in September 1960. No significant increases in chloride concentrations in Ygnacio Valley were noted during 1960.

The highest nitrate concentration found in Ygnacio Valley during 1960 was 87 ppm in well 2N/2W-36E1, located in Concord. As shown on the fluctuation graph on the following page, nitrate concentration in this well has decreased gradually from a high of 121 ppm in August 1957.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
YGNACIO VALLEY

SANTA CLARA VALLEY, EAST BAY AREA (2-9)

The East Bay area of Santa Clara Valley is located in Alameda County between the base of the western slope of the Diablo Range and the San Francisco Bay. It extends from the City of Albany on the north to the Alameda-Santa Clara county line on the south, and comprises about 140 square miles.

Monitoring Program

A ground water quality monitoring program was established in the East Bay area in 1953 primarily to maintain surveillance on the quality of ground water in the areas subject to sea-water intrusion. Sixty-seven wells were sampled in 1960. Sixty-four of these wells were sampled both in the spring and in the fall of 1960, one was sampled in the spring only, and two in the fall only. Location of these wells is shown on Plate 7.

Ground Water Occurrence

Water-bearing formations include unconsolidated alluvial deposits of late Quaternary age and older, semiconsolidated sediments of Tertiary-Quaternary age. These formations consist of layers and lenses of sand and gravel separated by thick layers of silt and clay. This interlayering of the extensive, relatively impermeable clays and the permeable alluvial sands and gravels has resulted in the formation of confined aquifers beneath the greater part of the bay plain area.

The confined ground water portion of the Niles cone contains three fairly well defined aquifers. They are thick, relatively continuous, and separated from one another by blue clay layers. The "upper aquifer," capped by a clay later approximately 40 feet in thickness, extends to a maximum depth of approximately 175 feet; the "Centerville aquifer" occurs between 190 and 200 feet below the surface; and the "Fremont aquifer" between approximately 250 and 400 feet. All of these aquifers and their confining clay layers extend westward beneath San Francisco Bay. The "upper aquifer" is essentially open to infiltration of salt water from the bay. Aquifers that are probably equivalent to, but discontinuous with, those in the Niles cone occur beneath the surface of the San Leandro and San Lorenzo cones. However, these aquifers are much thinner and less extensive.

Ground Water Development

The greater portion of the water requirement in the southern part of the area is met by pumping from alluvial deposits of the Niles cone. Draft on ground water resources within this cone has increased to such an extent that ground water levels remain perenially below sea level throughout a large portion of the area. Yields of wells drawing from the various aquifers are highly variable. Limited data indicate that yields from the "upper aquifer" range from 100 to more than 1,000 gpm, while yields from the deeper aquifers range from 250 to 1,800 gpm.

In the northern portion of the East Bay area, ground water is used only in small amounts by private individuals and industries. In the central and southern portion, however, ground water is used extensively for irrigated agriculture and, to a lesser extent, for urban and industrial requirements.

Major Waste Discharges

The major waste discharges are sewage or industrial effluent from the Cities of Hayward and San Leandro, Oro Loma Sanitary District, Union Sanitary District, Holly Sugar Company, and West Vaco Chemical Division. The largest of these discharges consists of 9.7 mgd of primary treated wastes from the Oro Loma Sanitary District; the smallest consists of 1.6 mgd of waste from Holly Sugar Company. All of these wastes are discharged to tidal waters of San Francisco Bay.

Evaluation of Water Quality

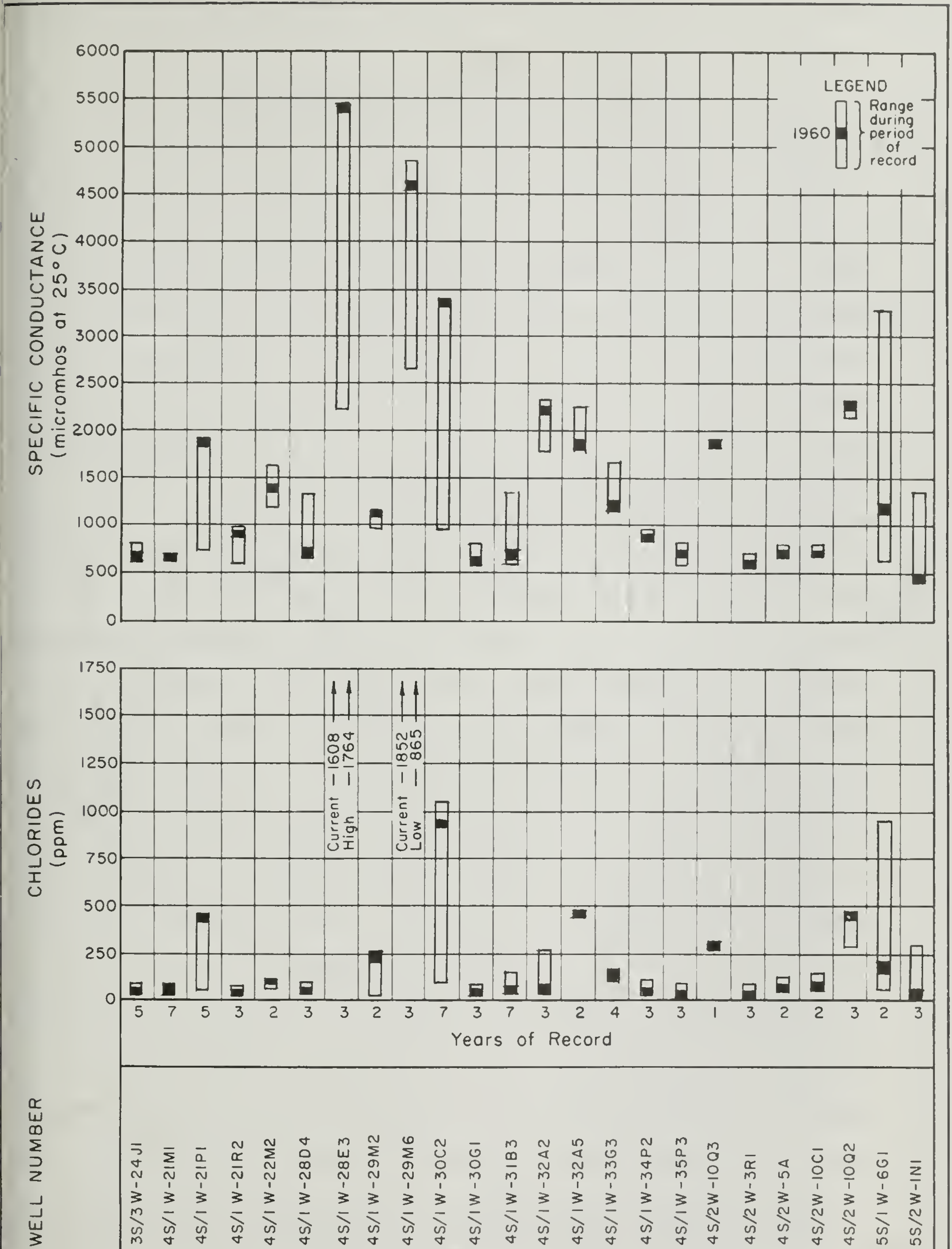
Native ground waters of this area are calcium-magnesium bicarbonate in type, generally of good mineral quality, and suitable for most uses. Waters from the forebay area generally contain low to moderate amounts of total dissolved solids, chlorides, and boron. High boron concentrations are present in water from wells in the vicinity of Newark and in the proximity of the Hayward and Mission faults. The Hayward fault extends along the base of the hills from north of San Leandro to Niles, and then across alluvial deposits to Irvington. The Mission fault is located east of Niles. These faults probably allow poor quality water that originates at depth to move upward and degrade ground water. Sea-water intrusion in this area was first detected by the presence of high chloride concentrations in the "upper aquifer" of the Niles cone near the bay. The "Centerville aquifer" in the vicinity of Centerville also shows high chloride concentrations. Radiological assays during 1960 indicate that maximum gross radioactivity was 8.0 micromicrocuries per liter.

Significant Water Quality Changes

Significant quality changes in the East Bay area of Santa Clara Valley occurred only in the confined ground water area of the Niles cone. Chloride concentration in well 4S/1W-29M6, near Centerville, decreased from 1,430 ppm in November 1959 to 865 ppm in May 1960 and increased to 1,852 ppm in September 1960 (see fluctuation graph following the next two pages). Chloride concentration in well 4S/1W-28E3, also located near Centerville, increased from 157 ppm in May 1958 to 1,764 ppm in May 1960 and decreased to 1,608 ppm in September 1960. These wells pump from the "upper aquifer" and illustrate the degree of degradation. Salt-water degradation of the "upper aquifer" in 1960 extended 1.5 miles east of Centerville, which is 0.5 mile farther inland than it was in 1959. The lines of 350 ppm chlorides (isochlors) for these periods are shown on Plate 7.

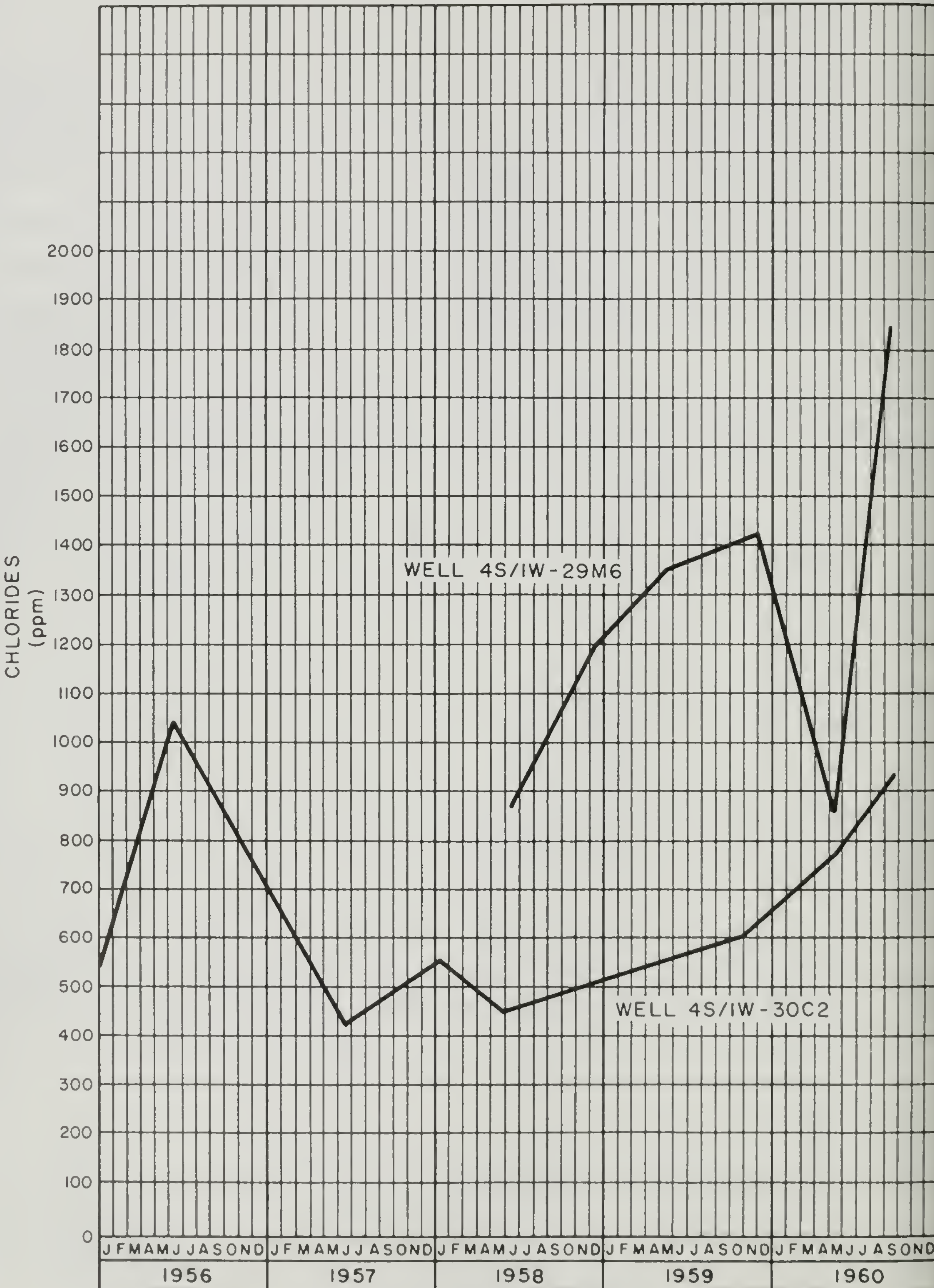
Degradation in the "Fremont aquifer" is shown by high chlorides in well 4S/1W-30C2, located about one-half mile west of Centerville (see fluctuation graph following the next two pages). Because water in the "Fremont aquifer" is confined, the source of such localized degradation is believed to be a result of leakage of poor quality water from the "upper aquifer" through improperly constructed or abandoned wells or through localized discontinuities or variations in permeability of the confining clay layer.

Variations in the quality of ground waters in the East Bay area of Santa Clara Valley are depicted graphically on the following pages.



WATER QUALITY RANGES

SANTA CLARA VALLEY, EAST BAY AREA



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
SANTA CLARA VALLEY, EAST BAY AREA

SANTA CLARA VALLEY, SOUTH BAY AREA (2-9)

The South Bay area of Santa Clara Valley consists of that portion of northern Santa Clara Valley lying within Santa Clara County and extending from San Francisco Bay southerly to San Jose. The area is bounded on the east by the Diablo Range and on the west by the Santa Cruz Mountains. The monitored area extends about 15 miles east to west, about 16 miles north to south, and comprises about 150 square miles.

Monitoring Program

To detect sea-water intrusion in the South Bay area of Santa Clara Valley and to observe significant changes, a monitoring program was established in 1953. During August-September 1960, 24 wells were sampled in this area.

Ground Water Occurrence

The main sources of ground water in Santa Clara Valley are alluvial fan and tideland deposits. The water-bearing sediments occupy the valley proper and some adjacent areas. Ground water occurs in both confined and unconfined conditions; however, the principal aquifers in the monitored area exhibit pressure characteristics and are separated from the free ground water zone by relatively impervious strata which prevent hydraulic continuity with overlying water bearing deposits.

Ground Water Development

Ground water is extensively developed and supplies about 95 percent of the water requirements of this area. Artificial recharge is practiced by the Santa Clara Valley Water Conservation District. Stored surface water is released to permeable stream channels and to percolation ponds on the valley floor to infiltrate and replenish ground water. Well yields range from a few gallons per minute to over 1,700 gpm. Most wells produce over 500 gpm.

Ground water is used principally for irrigation, public supply, and industry. Approximately 75 percent of water developed is for irrigated agriculture.

Major Waste Discharges

There are five major waste discharges in this area consisting of municipal waste from the Cities of San Jose, Sunnyvale, Mountain View, Palo Alto, and the Milpitas Sanitary District. The City of San Jose is the largest discharger averaging 40.4 mgd. Milpitas Sanitary District is the smallest discharger averaging 1.0 mgd. The wastes are discharged to water courses adjacent to San Francisco Bay and pose no immediate threat to ground water quality.

Evaluation of Water Quality

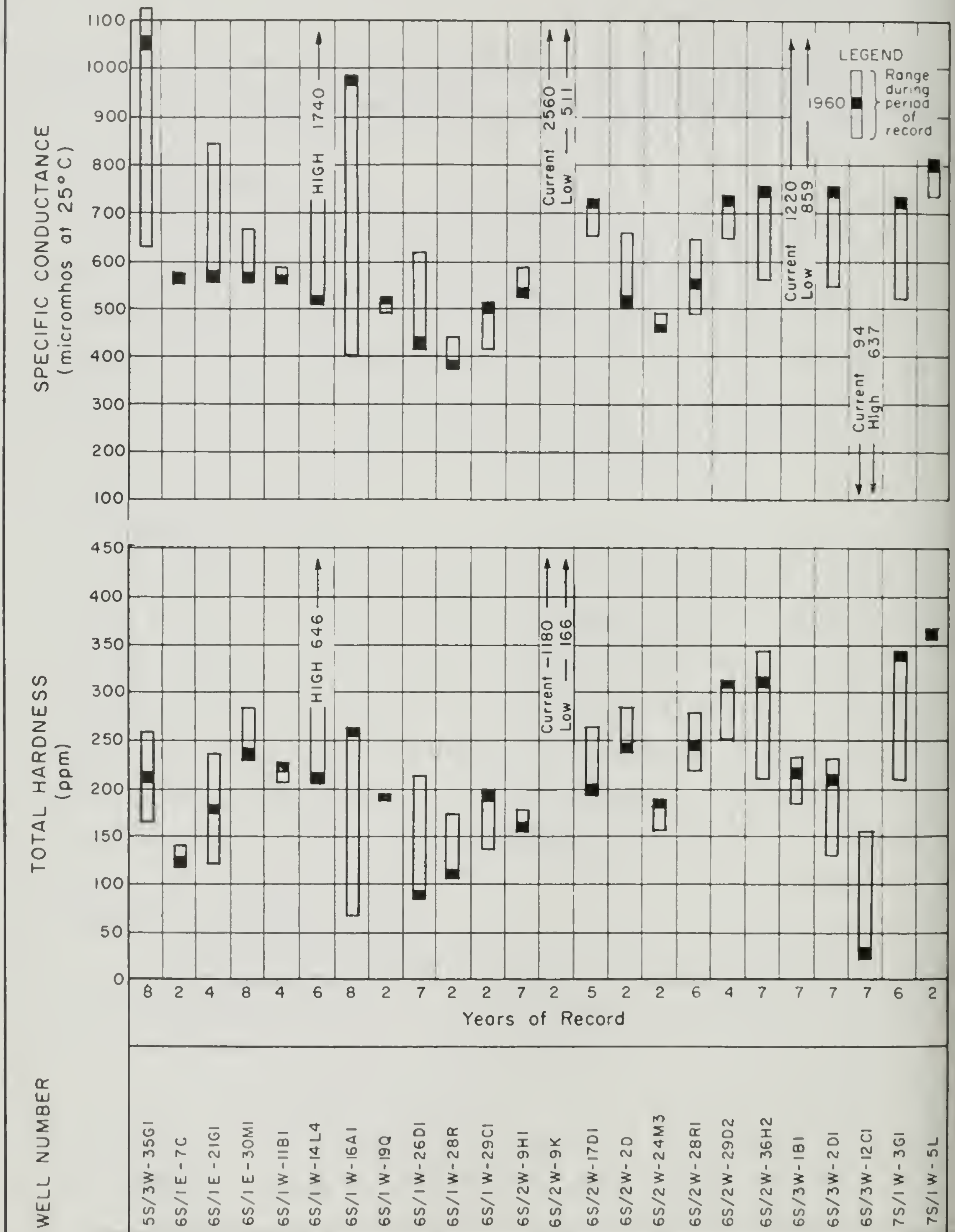
Ground waters in this area are generally of bicarbonate type with sodium and calcium the predominant cations. Although moderate to very hard, the waters are otherwise of good to excellent quality and suitable for most uses. In local areas, in the eastern portion of this basin, ground water is of questionable quality for irrigation due to high concentrations of boron, particularly in the Penitencia Creek cone area. Prolonged overdraft of the ground water basin poses a threat of sea-water intrusion adjacent to the bay.

Significant Water Quality Changes

Wells 5S/3W-35G1 and 6S/3W-1B1, both located in the Palo Alto area, contained the highest chloride concentrations found in this area during 1960. Chloride concentrations in these wells were 169 and 204 ppm, respectively.

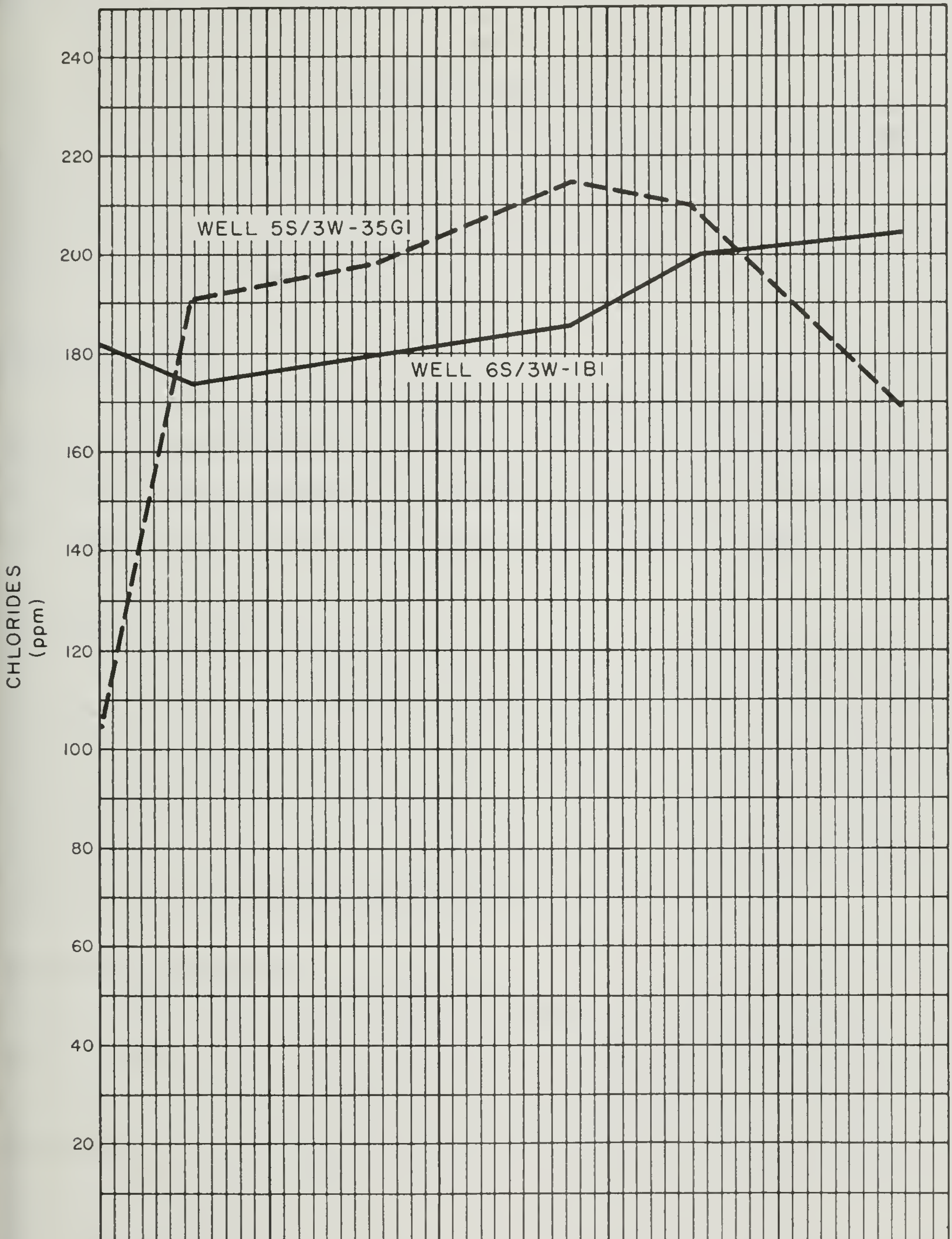
Sea-water intrusion near Palo Alto appears to be of a less serious nature than that which has occurred in the vicinity of Centerville. The chloride concentration has remained fairly constant in recent years. Intrusion into the upper aquifer has progressed inland at a rate varying with the ground water draft and recharge from surface streams.

Variations in the quality of water in wells of the Santa Clara Valley, South Bay area, are shown graphically on the following pages.



WATER QUALITY RANGES

SANTA CLARA VALLEY, SOUTH BAY AREA



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
SANTA CLARA VALLEY, SOUTH BAY AREA

LIVERMORE VALLEY (2-10)

Livermore Valley is located in the eastern portion of Alameda County with a minor portion extending into Contra Costa County. The valley has an east-west length of about 14 miles, a north-south width from 3 to 6 miles, and an area of about 50 square miles.

Monitoring Program

Due to the dependence of the area on ground water supplies and the presence of excessive quantities of boron and nitrates in the ground water, a monitoring program was established in Livermore Valley in 1953. Twenty wells were sampled during June 1960 at the height of the irrigation season.

Ground Water Occurrence

Sources of ground water include stream, flood-plain, and shallow lake deposits of Recent age, as well as the Livermore formation which is composed of older, semiconsolidated, alluvial deposits. Recent alluvial deposits comprise the chief aquifer and contain unconfined ground water, except in the vicinity of Pleasanton where lake bed clays confine permeable beds. The Livermore formation exhibits both confined and unconfined ground water characteristics.

Ground Water Development

Ground water is moderately to extensively developed in Livermore Valley and in 1960 supplied almost all of the water requirements. Well yields are low near the perimeter of the valley, increase toward the center, and range from less than 10 to about 2,000 gpm. Ground water is used primarily for irrigation and domestic purposes.

Major Waste Discharges

The largest waste discharge in this area consists of 1.8 mgd of effluent from the City of Livermore sewage treatment plant. This effluent is mainly disposed of by percolation and evaporation from ponds, although some overflow reaches Las Positas Creek during periods of heavy rainfall. Smaller waste discharges emanate from the City of Pleasanton, and from various military and industrial installations. These wastes are disposed of by ponding and by discharge into streams, which in some cases percolate to ground water.

Evaluation of Water Quality

Although ground waters of Livermore Valley are generally of good mineral quality and are suitable for irrigation purposes, they are excessively hard for domestic use. Waters high in boron are found in the northern and eastern portion of the valley and waters high in nitrates occur in localized areas. These problems appear to be related to waters derived from underlying and adjacent marine formations, the presence of geologic faults allowing the upward migration of poor quality water, and the limited amounts of recharge afforded by a small catchment area with meager rainfall. The high nitrate content may result from infiltrating waters which have been deteriorated by waste discharges or fertilizers. Radiological assays during 1960 indicate that maximum gross radioactivity was 3.65 micromicrocuries per liter.

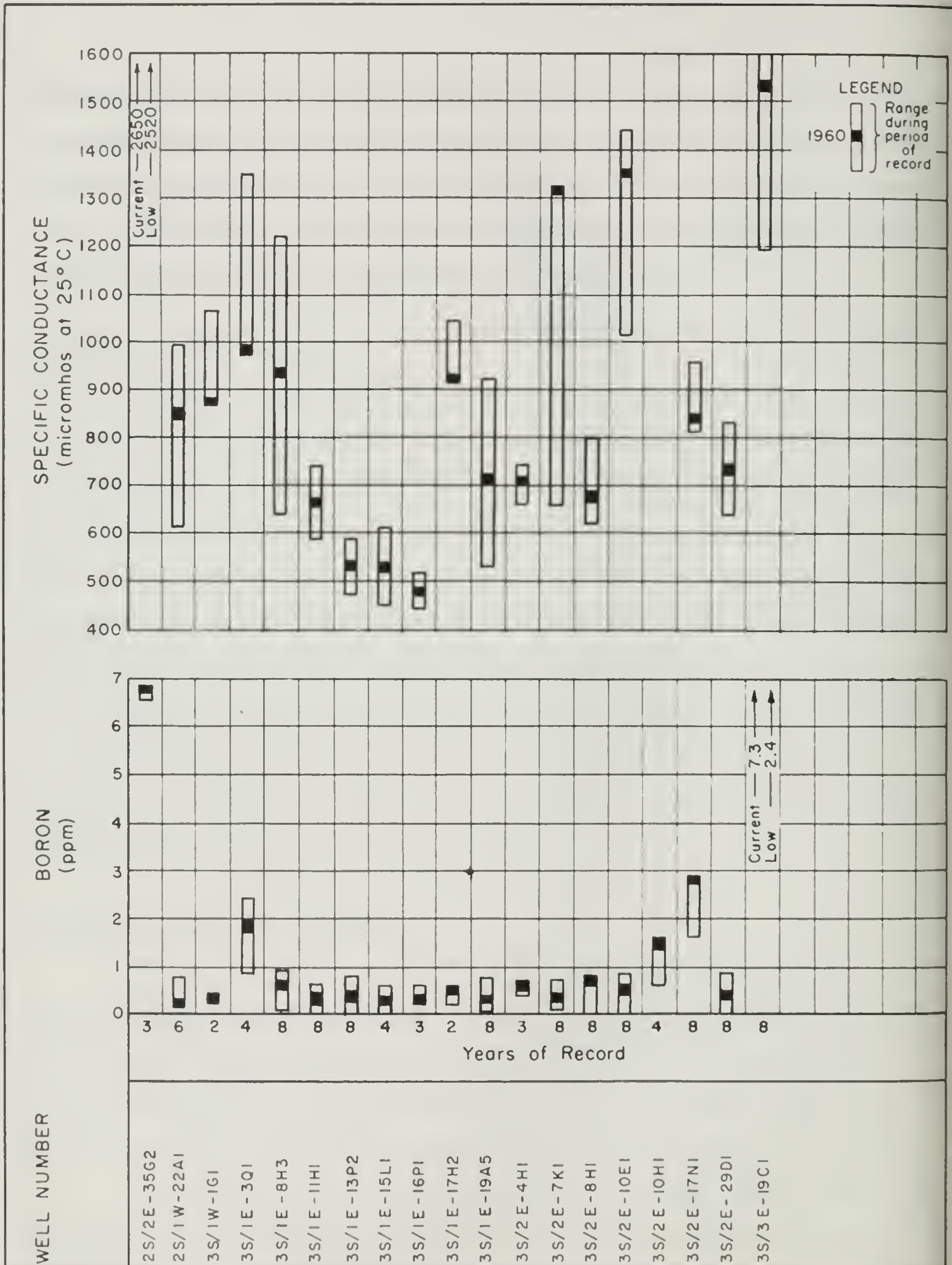
Significant Water Quality Changes

Analyses of samples collected in Livermore Valley during 1960 show few significant changes in concentrations of mineral constituents. Well 2S/2E-35G2, located about 3 miles northeast of Livermore, contained the highest chloride concentration found in this area during 1960. The concentration in this well was 644 ppm which is a decrease from the high of 685 ppm recorded in July 1959.

The highest nitrate concentration found in Livermore Valley during 1960 occurred in well 3S/2E-10E1, located about one-half mile east of the City of Livermore, where nitrates increased from 52 ppm in July 1959 to 70 ppm in June 1960.

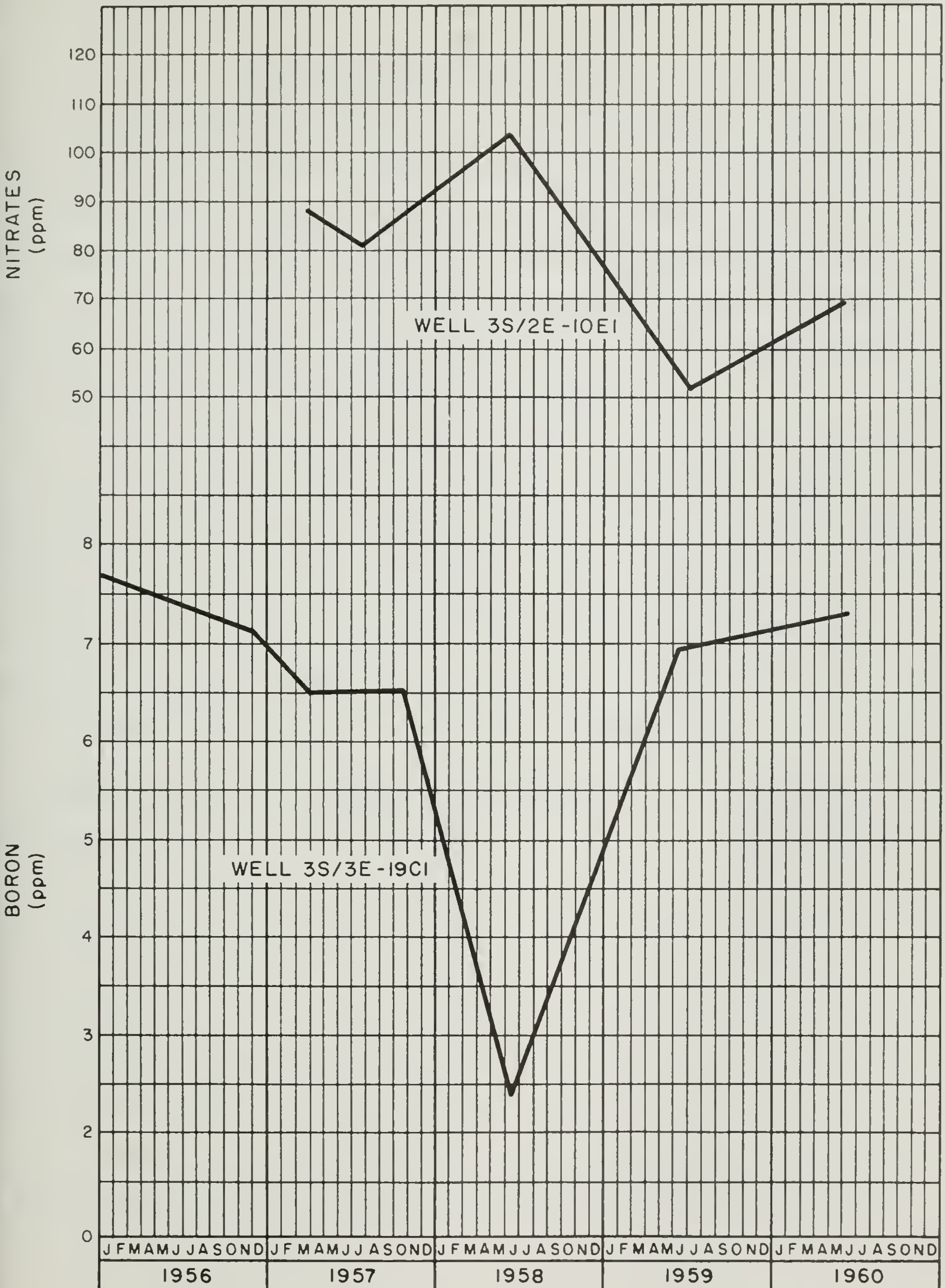
The highest boron concentration was found in well 3S/3E-19C1, located about 3 miles east of Livermore. Boron concentration in this well increased from 7.0 ppm in July 1959 to 7.3 ppm in June 1960. Areas where boron concentrations in ground water generally exceed 0.5 ppm are shown on Plate 8.

Variations in the quality of water in wells of Livermore Valley are depicted graphically on the following pages.



WATER QUALITY RANGES

LIVERMORE VALLEY



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
LIVERMORE VALLEY

CENTRAL COASTAL REGION (NO. 3)

The Central Coastal Region includes all of the coastal drainage areas from the southern boundary of Pescadero Creek Basin in San Mateo County to the northeastern boundary of Rincon Creek Basin in Ventura County. The region is characterized by narrow coastal strips and coastal valleys with moderate slopes toward the ocean, backed by mountain ranges paralleling the coast. It extends inland an average of about 50 miles to the crest of the coastal mountain ranges, and encompasses an area of approximately 11,000 square miles.

Valley areas in the region depend largely on ground water as a source of supply and approximately 90 percent of the water requirements are met by ground water pumping. Nineteen ground water basins have been identified in this region, of which 18 are utilized intensively to supply irrigation water. Six ground water basins in this region have been included in the statewide ground water monitoring program. These areas, the number of monitored wells in each, and the sampling times are listed in the following tabulation.

Monitored Area	Number of Wells Sampled	Sampling Time
Pajaro Valley (3-2)	18 11	May-September July
Gilroy-Hollister Basin (3-3)	25	April-June
Salinas Valley (3-4)	45	June-July
Carmel Valley (3-7)	7	July
Santa Maria River Valley (3-12)*	--	--
Cuyama Valley (3-13)*	--	--

* Ground water basins are located in Southern California and will be discussed in Part II of this bulletin.

Except for the Salinas Valley, ground water quality in the northern California portion of the Central Coastal Region did not change significantly during 1960. Between June 1959 and June 1960, sea-water intrusion advanced inland in the Elkhorn Slough and the Castroville areas of Salinas Valley.

PAJARO VALLEY (3-2)

Pajaro Valley comprises an irregularly shaped area of about 50 square miles in the Pajaro River drainage area below Pajaro Gap. It extends from Elkhorn Slough on the south to the Santa Cruz Mountains on the north and east, and is bounded by Monterey Bay on the west. The area occupies the northern extremity of Monterey County, a small part of the northwestern corner of San Benito County, and the southern portion of Santa Cruz County.

Monitoring Program

Sea-water intrusion into ground water adjacent to Monterey Bay prompted the inclusion of Pajaro Valley in the monitoring program in 1953. During May and September 1960, samples were collected from 18 wells. Eleven additional wells were sampled during July 1960. Location of these wells is shown on Plate 9.

Ground Water Occurrence

In the valley floor area, ground water occurs in three distinct zones designated as the shallow, intermediate, and deep zones. The shallow zone is unconfined and extends from land surface to a depth of about 100 feet. The intermediate zone, which is largely confined, lies below the shallow zone extending to a depth of about 200 to 300 feet. The deep zone underlies this intermediate zone and extends to a depth of about 800 feet below land surface. The three aquifers merge into a forebay in the vicinity of the City of Watsonville. The forebay area is underlain by permeable deposits and is the principal source of ground water replenishment to the intermediate and deep zones. Under natural conditions, the general direction of ground water movement in the deeper zones was from the uplands to Monterey Bay.

Ground Water Development

There is extensive development of ground water in the valley for domestic and irrigation needs and moderate development for stock watering and industrial uses. Nearly all water (about 95 percent) for irrigation and a portion of the municipal supply for the City of Watsonville is pumped from the confined ground water bodies. The yield of wells in Pajaro Valley ranges from small capacity domestic wells to large irrigation wells yielding more than 500 gpm.

Major Waste Discharges

Principal waste discharge in Pajaro Valley comprises sewage and industrial waste effluent from the City of Watsonville. This discharge also includes sewage from Freedom Sewer Maintenance District and from Pajaro Sanitation District. The wastes are discharged to Monterey Bay by a submarine outfall after primary treatment and chlorination.

Evaluation of Water Quality

Ground water in the shallow zone is often of poor mineral quality and is used only in isolated cases. In the intermediate zone, ground water is generally of good to excellent mineral quality and suitable for most purposes. Intermediate zone ground water is predominantly of calcium-magnesium bicarbonate type with low to moderate concentrations of total dissolved solids, chlorides, and boron. The water is moderately hard to very hard, which limits its use for domestic and industrial purposes. Only limited data are available on the quality of ground water in the deep zone; these data indicate the water to be of excellent mineral quality.

Sea-water intrusion has occurred along Monterey Bay where the aquifers are open to the ocean. This is due to reversal of the normal seaward hydraulic gradient by overdraft on the ground water supply. Wells pumping from the intermediate zone near Monterey Bay also produce high chloride waters due to sea-water intrusion. In a few wells located near the bay, nitrate concentrations exceed recommended limits for domestic use.

Significant Water Quality Changes

Analyses of samples collected in Pajaro Valley in 1960 show few significant changes in mineral concentrations. Well 12S/2E-30E1, located in the sea-water intrusion area near the bay and pumping water from the intermediate zone, had an increase in chlorides from 1,540 ppm in May 1960 to 2,360 ppm in September 1960. Well 13S/2E-7B2, located about 2.5 miles south-southeast of well 12S/2E-20E1 which yields water from the intermediate zone, had a decrease in chloride concentration of from 774 ppm in July 1958 to 507 ppm in May 1960. The area in which sea-water intrusion has caused chloride concentrations to exceed 100 ppm in 1960 is shown on Plate 9.

The highest nitrate concentration found in Pajaro Valley during 1960 occurred in well 12S/2E-30N1 which is located near the bay and pumping from the intermediate zone. Nitrates increased from 45 ppm in July 1959 to 65 ppm in July 1960.

GILROY-HOLLISTER BASIN (3-3)

Seven small valleys make up the Gilroy-Hollister Basin which includes South Santa Clara Valley, Hollister Valley, San Benito Valley, and four other small, contiguous valleys. The monitored area extends a distance of about 25 miles from the ground water divide near Morgan Hill in Santa Clara County, and southeasterly to Tres Pinos at the head of Hollister Valley in San Benito County. The area varies from 3 to 10 miles in width and comprises about 150 square miles. Drainage from the area is to the Pajaro Valley.

Monitoring Program

An annual monitoring program was established in this basin in 1958 to maintain a record of any adverse changes in water quality due to ground water overdraft. Twenty-five wells in the basin were sampled during April-June 1960.

Ground Water Occurrence

The water-bearing units are the alluvial sediments of Quaternary age, the San Benito gravels of Pliocene-Pleistocene age, and the Purisima formation of Pliocene age. The alluvial sediments include stream channel, stream terrace, flood plain, swamp, and alluvial deposits. Alluvium in the Hollister area attains a maximum thickness of approximately 250 feet. In South Santa Clara Valley, the thickness of the alluvium ranges from 50 to 1,000 feet. Confined ground water conditions exist throughout much of the area but free or partially confined ground water occurs in limited areas in upper portions of the valley.

Ground Water Development

There is extensive development of ground water for irrigation and domestic needs, and moderate development for industrial and stock watering uses. Pumping for irrigation constitutes about 75 percent of the total ground water withdrawal. The yield of wells is about 350 gpm in South Santa Clara Valley and averages about 500 gpm in the Hollister area. Some wells in the Hollister area are reported to yield up to 1,700 gpm.

Major Waste Discharges

Waste discharges in the area include domestic sewage and food processing plant wastes. The largest discharge comprises 2.7 mgd of domestic and industrial sewage from the City of Gilroy, which is discharged to Llagas Creek after primary treatment. Smaller amounts are discharged by the Cities of Hollister and San Juan Bautista, and by food processing plants in the vicinity. The majority of liquid wastes can percolate and reach underlying ground waters. No evidence is available to indicate whether or not these wastes are degrading the ground water supply.

Evaluation of Water Quality

Ground waters of South Santa Clara Valley, while moderately hard to very hard, are generally of good mineral quality and suitable for most beneficial uses. The waters are typically calcium-magnesium or magnesium-calcium bicarbonate in type and contain 250 to 500 ppm of total dissolved solids. Chlorides range from 13 to 48 ppm, sulfates range from 12 to 90 ppm, nitrates range from 10 to 70 ppm, and boron concentrations range from 0.08 to 0.36 ppm.

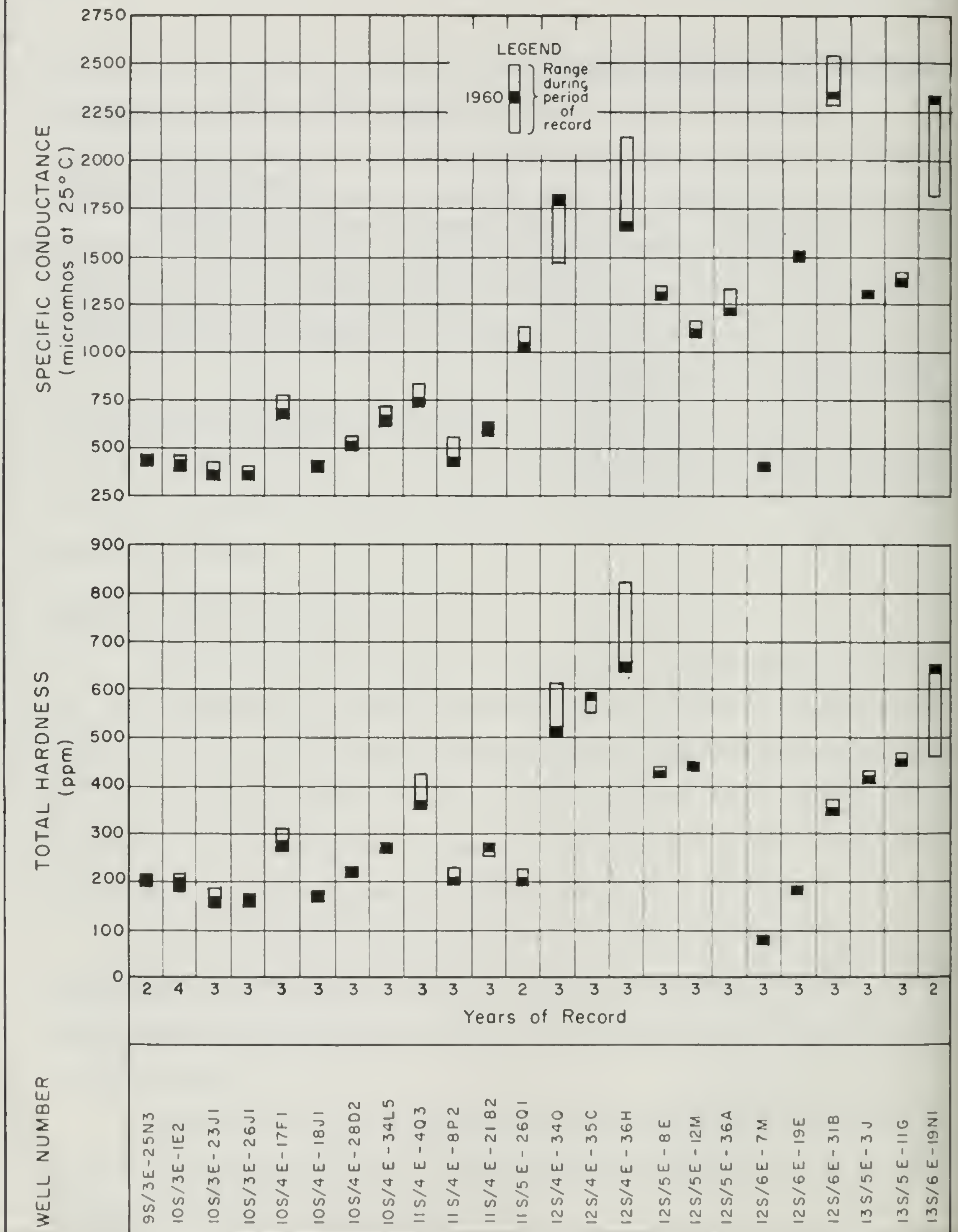
Ground waters in the Hollister area are generally of poor quality and contain high concentrations of chlorides, sulfates, nitrates, and boron. Radiological assays indicate that maximum gross radioactivity was 9.1 micromicrocuries per liter in 1960.

At least six faults which restrict ground water movement are reported to occur in this monitored area. In addition, these faults may act as conduits for upward migration of poor quality water.

Significant Water Quality Changes

Analyses of samples collected in 1960 compared with those of 1959 showed few significant changes in concentration of mineral constituents. Well 12S/6E-19E, located about 5.5 miles northeast of Hollister in the Fairview district, contained the largest boron concentration found in Gilroy-Hollister Basin during 1960. However, the concentration decreased from 19 ppm in June 1959 to 17 ppm in June 1960. The source of the boron is probably poor quality water migrating upward along the Hayward Fault.

Variations in the quality of ground waters in the Gilroy-Hollister Basin are shown on the following page.



WATER QUALITY RANGES
GILROY-HOLLISTER BASIN

SALINAS VALLEY (3-4)

Salinas Valley is a narrow, elongated, northwest-southeast trending valley located mostly in Monterey County. The monitored portion of the valley varies from 2 to 10 miles in width, is approximately 40 miles in length, and comprises about 300 square miles of highly productive irrigated and dry farmed land. The valley is bordered on the northeast by the Gabilan Range, on the northwest by Monterey Bay, on the southwest by the Santa Lucia Range and the Sierra de Salinas, and on the southeast by the drainage divide between Salinas and Santa Maria Valleys.

Monitoring Program

A monitoring program was established in this valley in 1953 primarily to observe and report upon the status of sea-water intrusion. During the period June-July 1960, 45 wells were sampled in Salinas Valley. The locations of these wells are shown on Plate 10.

Ground Water Occurrence

Ground waters in Salinas Valley occur principally in three aquifers. These consist of an upper, unconfined aquifer, and two lower, confined aquifers. Water from the upper zone is not used in any significant amounts due to its poor mineral quality. In lower Salinas Valley, the principal aquifers in the pressure area are designated as the 180-foot and 400-foot aquifers due to the average depth of the water-bearing materials below ground surface. The pressure aquifers are recharged by subsurface inflow from a forebay area south of Salinas. Recharge to the forebay area is supplemented by controlled releases of stored surface waters from Nacimiento Dam.

Ground Water Development

Lower Salinas Valley is devoted to the production of irrigated crops. Ground water is the major source of irrigation water supply. It is extensively developed for this purpose and for rural domestic uses. Yield of wells ranges from low capacity domestic wells to irrigation wells yielding from 200 gpm to more than 3,000 gpm.

Major Waste Discharges

There are three major waste discharges in lower Salinas Valley. They comprise treated sewage and industrial wastes from the City of Salinas averaging 4.8 mgd, and Alisal Sanitary District averaging 1.0 mgd. These wastes are discharged to Salinas River near Spreckels. A third discharge consists of untreated industrial wastes from Spreckels Sugar Company, which are disposed to percolation ponds located on lands adjacent to the Salinas River.

Evaluation of Water Quality

Ground waters of Salinas Valley are quite variable in mineral quality.

In the coastal segment, between the bay and a line approximately 2 miles inland, water in the upper perched zone is not used in any significant amounts due to its poor quality. Ground water in the 180-foot aquifer in the coastal segment is degraded by sea water and is sodium chloride or sodium bicarbonate in type. In this same area, ground water in the 400-foot aquifer is sosium bicarbonate in type, and is degraded by sea water to a limited extent.

About 1 mile west of Salinas, poor quality ground water occurs in the 180-foot aquifer. This poor quality water is sodium chloride in type. Water in the 400-foot aquifer in this area is generally of good mineral quality.

Analyses of ground waters from the area near Greenfield show them to be sulfate in type with the major cations being approximately equal.

Significant Water Quality Changes

Analyses of samples collected in Salinas Valley in 1960 showed some significant changes in mineral concentrations in ground water. In well 14S/2E-8M2, located about 2.5 miles southwest of Castroville and which yields from the 180-foot aquifer, chlorides increased from 275 ppm in 1959 to 495 ppm in 1960. Ground water in the 400-foot aquifer near the bay was of better quality, being affected by sea-water intrusion in only a small area adjacent to Monterey Bay.

In well 14S/3E-30F1, located about one mile west of Salinas, the chloride concentrations ranged from 188 ppm in 1953 to 232 ppm in 1960. Better quality water has been found in wells to the east and west of well 14S/3E-30F1, indicating that degradation in this well may stem from a local source in the northern part of Salinas.

From June 1959 to June 1960, sea-water intrusion in the 180-foot aquifer and in the 400-foot aquifer advanced significantly inland in the area adjacent to Elkhorn Slough and north of Castroville. Sea-water intrusion in the 180-foot aquifer appeared to advance about 0.5 mile inland and in the 400-foot aquifer approximately 1 mile inland (see Plate 10).

CARMEL VALLEY (3-7)

Carmel Valley, located in northern Monterey County, is a long, alluvium-filled valley extending easterly from the coast a distance of 23 miles. However, only the coastal portion, which is susceptible to sea-water intrusion, is included in the monitoring program. The area monitored is about 1 mile in width and extends from the coast about 3 miles inland. The valley is drained by the Carmel River which flows to the ocean.

Monitoring Program

An annual monitoring program was established in this area in 1953 to detect evidence of sea-water intrusion. Seven wells located near the coast were sampled in July 1960.

Ground Water Occurrence

Ground water occurs in unconsolidated recent alluvium underlying the valley. The alluvium is comprised mainly of sand and gravel with small amounts of silt and clay; it is about 135 feet thick near the coast and feathers out along the valley margin. The seaward extension of the aquifer is open to the ocean. Ground water in the valley is unconfined.

Ground Water Development

Practically all of the valley is utilized for truck crops and pastures. Local domestic and irrigation requirements are supplied by numerous wells in the valley. Home construction is increasing and in the near future it is expected that the monitored area will become completely residential, and agriculture use of ground water will decrease accordingly. Well yields range from small amounts for domestic use up to 600 gpm for irrigation needs.

Major Waste Discharges

The major waste discharge consists of sewage effluent from Carmel Sanitary District amounting to 1.5 mgd which is disposed to Carmel Bay in a submarine outfall after primary treatment. Some of this effluent is used as irrigation water in an artichoke field adjacent to the sewage treatment plant between the months of June and October.

Evaluation of Water Quality

Ground waters in the monitored portion of Carmel Valley are generally of excellent mineral quality and contain moderate concentrations of total dissolved solids. Although the waters are usually very hard, they are calcium-sodium bicarbonate in type.

Significant Water Quality Changes

In general, the analyses of samples collected from six of the seven monitored wells in Carmel Valley during 1960 showed only minor variations in mineral quality. At well 16S/1W-13L2, located about one mile inland from the bay and along the Carmel River, chloride concentrations decreased from 529 ppm in July 1959 to 273 ppm in July 1960.

Samples from all of the wells in this area which were taken during July 1960 had iron concentrations which exceed the recommended values for drinking water. Well 16S/1W-13L2 contained 4.3 ppm which was the highest concentration found in this area during 1960.

CENTRAL VALLEY REGION (NO. 5)

The Central Valley Region extends from the California-Oregon state line southward to the Tehachapi Mountains, and from the Coast Range on the west to the Sierra Nevada on the east as shown on Plate 1. It averages about 120 miles in width and is more than 500 miles long. The region comprises a drainage area of approximately 59,000 square miles, and includes nearly 44 percent of the valley and mesa lands of the State.

Ground water has been an important source of water supply in the development of the Central Valley Region. Ground water is used principally for irrigation purposes but also supplies many communities and is used for domestic and industrial purposes. Some of the most extensive irrigated areas in the region derive their water supplies entirely from ground water sources.

Twenty-nine ground water basins have been identified in the Central Valley Region, 11 of which have thus far been included in the monitoring program. These areas, as well as the number of monitored wells in each and the sampling times, are listed in the following tabulation. Discussions and data are presented for each of the basins in the regions presently included in the monitoring program. The Sacramento and San Joaquin Valleys have been further subdivided into counties for discussion and data presentation purposes.

Monitoring Area	Number of Wells Sampled	Sampling Time
Goose Lake Valley (5-1)	11	July
Alturas Basin (5-2)	13	July
Big Valley (5-4)	16	August
Fall River Valley	15	July
Redding Basin (5-6)	30	July-August
Sierra Valley (5-12)	18	July
Upper Lake Valley (5-13)	14	July

Monitoring Area	Number of Wells Sampled	Sampling Time
Kelseyville Valley (5-15)	11	July
Sacramento Valley (5-21)		
Tehama County	26	July
Glenn County	23	June
Colusa County	28	June-July
Butte County	25	July-September
Sutter County	32	June-July
Yuba County	12	June-August
Placer County	18	July
Yolo County	43	July
Sacramento County	26	May-December
Solano County	7	September
San Joaquin Valley (5-22)		
San Joaquin County	32	August
Stanislaus County	56	August-September
Merced County	51	July-August
Madera County	31	July
Fresno County	91	July-August
Tulare County	18	July-August
Kings County	26	July-August
Kern County	59	July-September
Panoche Valley (5-23)	6	August-September

There were no extensive changes in quality of ground waters in the Central Valley Region during 1960. There were, however, significant changes in specific constituents in individual wells and in groups of wells in certain areas.

In the Sacramento Valley, boron increased substantially in one well in Tehama County, while most of the monitoring wells in Glenn County showed slight decreases in boron. There were also notable decreases in boron concentration in wells in Colusa and Yolo Counties.

Ground water quality in the San Joaquin Valley remained essentially the same as that of the previous year.

GOOSE LAKE VALLEY (5-1)

Goose Lake Valley is located in northeastern California and southeastern Oregon. That portion of the valley considered in this report is 27 miles long, approximately 8 miles wide, and is located entirely in Modoc County, California. This portion of the valley encompasses an area of approximately 200 square miles, about 120 square miles in the area periodically inundated by Goose Lake.

Monitoring Program

To maintain a check on existing ground water quality and to detect possible changes in quality, a monitoring program was established in Goose Lake Valley in 1959. During July 1960, samples were collected from 11 wells in this area. Location of these wells is shown on Plate 11.

Ground Water Occurrence

The water-bearing formations in the California portion of Goose Lake Valley are comprised of alluvial and lake deposits, and fractured volcanic formations. Unconfined water is found throughout the valley with some confined water occurring in the northern end.

Ground Water Development

Ground water is used as the primary domestic source throughout the entire valley. Except for several ranches near the community of Davis Creek, ground water is used only as a supplemental irrigation source.

Major Waste Discharges

There are no major waste discharges in the area. Minor waste discharges consist of industrial effluent from a sporadically operated lumber mill located at Willow Creek and domestic sewage from individual septic tanks.

Evaluation of Water Quality

Ground waters of this area are soft to very hard bicarbonate type waters with calcium or sodium being the predominant cation, and are suitable for most beneficial uses. Well 47N/14E-2H1, located 3.5 miles south of New Pine Creek, has a fluoride concentration in excess of the mandatory limit for domestic water recommended by the U. S. Public Health Service.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1960 with those collected in 1959 show no basinwide changes in ground water quality. The only significant quality changes found occurred in well 47N/14E-2H1 and consisted of an increase in fluoride concentration from 3.0 to 4.6 ppm and a decrease in boron concentration from 2.9 to 0.3 ppm.

ALTURAS BASIN (5-2)

Alturas Basin is located in the south-central portion of Modoc County, has a north-south length of 25 miles, is approximately 21 miles wide, encompasses an area of about 135 square miles, and lies at an elevation of about 4,400 feet above sea level.

Monitoring Program

An annual ground water quality monitoring program was established in the Alturas Basin in 1959. In July 1960, 13 samples were collected from wells in this area. Location of these wells is shown on Plate 12.

Ground Water Occurrence

Aquifers in Alturas Basin are mainly alluvial deposits consisting of gravels, sands, silts, and clays laid down as stream deposits or lake sediments. These alluvial deposits are underlain by fractured volcanics.

Ground Water Development

Ground water in Alturas Basin is used primarily for domestic and municipal purposes and, to a lesser extent, for irrigation.

Major Waste Discharges

The major waste discharge in the basin is effluent from a secondary sewage treatment plant located about one mile southwest of Alturas. Effluent from this plant is discharged into the Pit River. Waste discharges from the other smaller communities and outlying residences in the basin are by individual sewage disposal systems.

Evaluation of Water Quality

Chemical analyses of ground water samples collected under this program indicated that the ground waters are predominantly sodium bicarbonate type and ranged from soft to very hard. Seven of the 13 monitored wells yielded water with sodium percentages of 60 or greater which places them in class 2 or 3 for irrigation purposes. However, only two of these wells are presently being used for irrigation. Most of the high percent sodium wells are located in the western portion of Alturas Basin.

Prior to the inclusion of the Alturas Basin in the monitoring program, the Department of Water Resources conducted an investigation of the quality of waters in the area. As a part of this investigation, 84 samples were collected from 69 ground water sources (wells and springs) between 1957 and 1959. With only three being used for irrigation purposes, 26 of the 69 ground water sources produced water that did not meet class 1 irrigation criteria. Of the 26 sources, 25 yielded waters with high percent sodium and 1 yielded water with an excessive concentration of boron. Of the remaining 43 sources, 6 yielded water with concentrations of either iron, sulfate, nitrate, or fluoride which exceeded recommended U. S. Public Health Service limits for domestic use. The one hot spring sampled yielded water which exceeded recommended criteria for both domestic and irrigation use.

Significant Water Quality Changes

No significant water quality changes were noted between 1959 and 1960.

BIG VALLEY (5-4)

Big Valley is located in northeastern California and encompasses an area of approximately 180 square miles in northwestern Lassen and southwestern Modoc Counties. The valley has a north-south length of approximately 13 miles and is about 15 miles wide.

Monitoring Program

An annual ground water monitoring program was established in Big Valley in 1960. Samples were collected from 16 wells in August 1960; their locations are shown on Plate 13.

Ground Water Occurrence

The water-bearing formations in Big Valley are comprised of old lake sediments, stream deposits, and fractured volcanic formations. Unconfined water is found in these deposits throughout the valley with some confined water occurring locally.

Ground Water Development

Ground water in Big Valley is only slightly developed and is used primarily for domestic purposes. At the present time, there is no appreciable utilization of ground water for irrigation purposes.

Major Waste Discharges

There are no major waste discharges in the area. Disposal of domestic wastes is handled by individual septic tanks and cesspools and presents no water quality problem at this time.

Evaluation of Water Quality

Ground water in Big Valley is generally of excellent quality and suitable for most beneficial uses. Throughout the valley, bicarbonate is generally the predominant anion and calcium or sodium are the predominant cations. Wells that yield a calcium-magnesium type water are found at random locations throughout the valley.

One domestic well located approximately 6 miles east of Bieber, that derives its supply from a hot spring, produces a sodium-sulfate type water containing excessive concentrations of boron, fluoride, and arsenic. Boron, fluoride, and arsenic were present in amounts of 3.3, 2.8, and 0.14 ppm, respectively. The fluoride and arsenic concentrations exceed mandatory limits of the U. S. Public Health Service drinking water standards.

Another domestic well, located approximately 4 miles north of the aforementioned well, yielded water with arsenic and nitrate concentrations higher than recommended limits.

Two other domestic wells, at widely separated points in the valley, yielded waters with nitrate concentrations in excess of limits recommended by the U. S. Public Health Service.

Six wells yielded waters with iron concentrations in excess of the limit recommended by the U. S. Public Health Service.

Significant Water Quality Changes

Because 1960 was the first year of the monitoring program in Big Valley, no water quality changes can be determined.

FALL RIVER VALLEY (5-5)

Fall River Valley is one of the smaller valley fill areas in the northeastern counties of California. Located in northeastern Shasta and northwestern Lassen Counties, Fall River Valley has an east-west length of 13 miles, encompasses an area of approximately 100 square miles, and lies at an elevation of about 3,300 feet above sea level.

Monitoring Program

The monitoring program in Fall River Valley was established in 1959. During July 1960, samples were collected from 15 wells in this area. Location of these wells is shown on Plate 14.

Ground Water Occurrence

The ground water reservoir in Fall River Valley is comprised of lake and alluvial deposits, underlain by and interbedded with fractured water-bearing volcanics. The sedimentary lake and alluvial deposits range in thickness from several feet to depths in excess of 700 feet. Unconfined water is found throughout the valley with some confined water occurring locally in the underlying volcanics.

Ground Water Development

Ground water in Fall River Valley has, so far, undergone only limited development. It is used primarily for domestic purposes and in some instances as a supplemental irrigation source. Yields of wells drilled into the lake sediments are low, generally less than 300 gallons per minute (gpm). However, wells drilled through the lake sediments into the underlying volcanic rocks produce from 200 to 1,000 gpm.

Major Waste Discharges

There are no waste discharges that constitute a threat to the present quality of ground waters in the valley.

Evaluation of Water Quality

Ground waters in Fall River Valley are generally bicarbonate in type with either sodium or calcium the predominant cation. Quality of these waters are generally excellent throughout the valley with only a few scattered wells yielding poor quality water. Water from one domestic well shows a nitrate concentration in excess of the 45 ppm recommended limit for domestic use.

Significant Water Quality Changes

A comparison of analyses of 1959 with those of 1960 indicate that there are no significant water quality changes. Well 37N/4E-1K1 showed a decrease in nitrate concentration from 80 ppm in August 1959 to 52 ppm in July 1960.

REDDING BASIN (5-6)

Redding Basin is located in the south-central portion of Shasta County. The monitored area includes primarily Cow Creek, Stillwater, Anderson, and Cottonwood Valleys. The area is approximately 21 miles north to south and has a maximum east-west dimension of about 22 miles. It comprises an area of about 280 square miles.

Monitoring Program

An annual monitoring program was established in Redding Basin in 1957. During July and August 1960, samples were collected from 30 wells.

Ground Water Occurrence

Ground water occurs chiefly in formations of alluvial or volcanic origin, ranging from Pliocene to Recent in age. The water-bearing formations, in order of decreasing age, are the Tuscan and Tehama formations, the Red Bluff Gravels, and the Quaternary alluvium. Unconfined ground water occurs in the Quaternary alluvium. Confined or partially confined conditions occur in the Tuscan and Tehama formations.

Ground Water Development

Ground water is moderately developed and is used primarily for domestic, municipal, and industrial requirements. Irrigation water is supplied mainly from surface sources. Wells west of Cottonwood yield 500 to 800 gpm; those in the southeastern portion of the basin yield 1,000 to 2,000 gpm.

Major Waste Discharges

The only large waste discharge in Redding Basin consists of sewage effluent from the City of Redding which is discharged into the Sacramento River.

Evaluation of Water Quality

Ground waters of Redding Basin are generally magnesium-calcium or magnesium-sodium bicarbonate in type and are, in most cases, of excellent mineral quality suitable for most beneficial uses. Total dissolved solids seldom exceed 200 ppm and sodium is generally below 60 percent. However, several wells in the area have iron concentrations in excess of U. S. Public Health Service recommended limits for domestic purposes.

Significant Water Quality Changes

Analyses of samples collected from monitored wells in 1960 showed only a few changes in mineral concentrations from those of previous years. In well 32N/3W-32J2, located in the northeastern portion of the monitored area, chlorides decreased from 136 to 32 ppm between July 1959 and July 1960. Chlorides in well 32N/3W-17E2, located near Bella Vista, decreased from 1,420 to 1,260 ppm during the same period. From October 1955 to July 1960, analyses of water from well 32N/3W-17E2 have shown a very noticeable fluctuation in boron content. The following is a yearly record of boron content in the aforementioned well: October 1955, 13 ppm; September 1957, 10.2 ppm; August 1958, 5.3 ppm; March 1959, 1.5 ppm; July 1959, 1.1 ppm; and July 1960, 18 ppm. The fact that this well penetrates the Chico formation, which is known to produce highly mineralized waters, is probably the reason for the high mineral content of water in this well.

SIERRA VALLEY (5-12)

Sierra Valley is located in southeastern Plumas and northeastern Sierra Counties. This irregularly shaped valley has a north-south length of about 18 miles and is approximately 12 miles in width. The alluviated area contains an estimated 165 square miles.

Monitoring Program

The monitoring program in Sierra Valley was begun in 1960 to observe the ground water quality and to detect changes in quality which might result from the migration of poor quality waters known to be present in the area. A number of samples of ground waters were collected in prior years for a special study. Samples were collected from 18 wells during July 1960. The location of these wells is shown on Plate 15.

Ground Water Occurrence

Sierra Valley is a structural depression formed by faulting, although volcanic activity also appears to have contributed to the formation. All of the water-bearing sediments that now fill the basin are lacustrine in origin except for a thin veneer of stream deposited material on the surface of the valley floor. In some portions of the valley, these sediments are 2,500 feet in depth. Ground water is confined under thick sediments and flows under artesian pressure from many deep wells located in various areas of the valley. Ground water also appears in the form of mineralized or thermal springs which apparently originate along the many fault zones.

Ground Water Development

Ground water is moderately developed; however, yields are small. It is used extensively for domestic and stock purposes. In some sections of the valley where soil conditions permit and adequate water supplies are available, ground water is also used for irrigation.

Major Waste Discharges

Disposal of domestic wastes occurs on an individual basis except for small municipal systems which are few in number. Industrial waste discharges at present are confined to overflows from mill ponds but appear to offer no serious problems to the ground waters at this time.

Evaluation of Water Quality

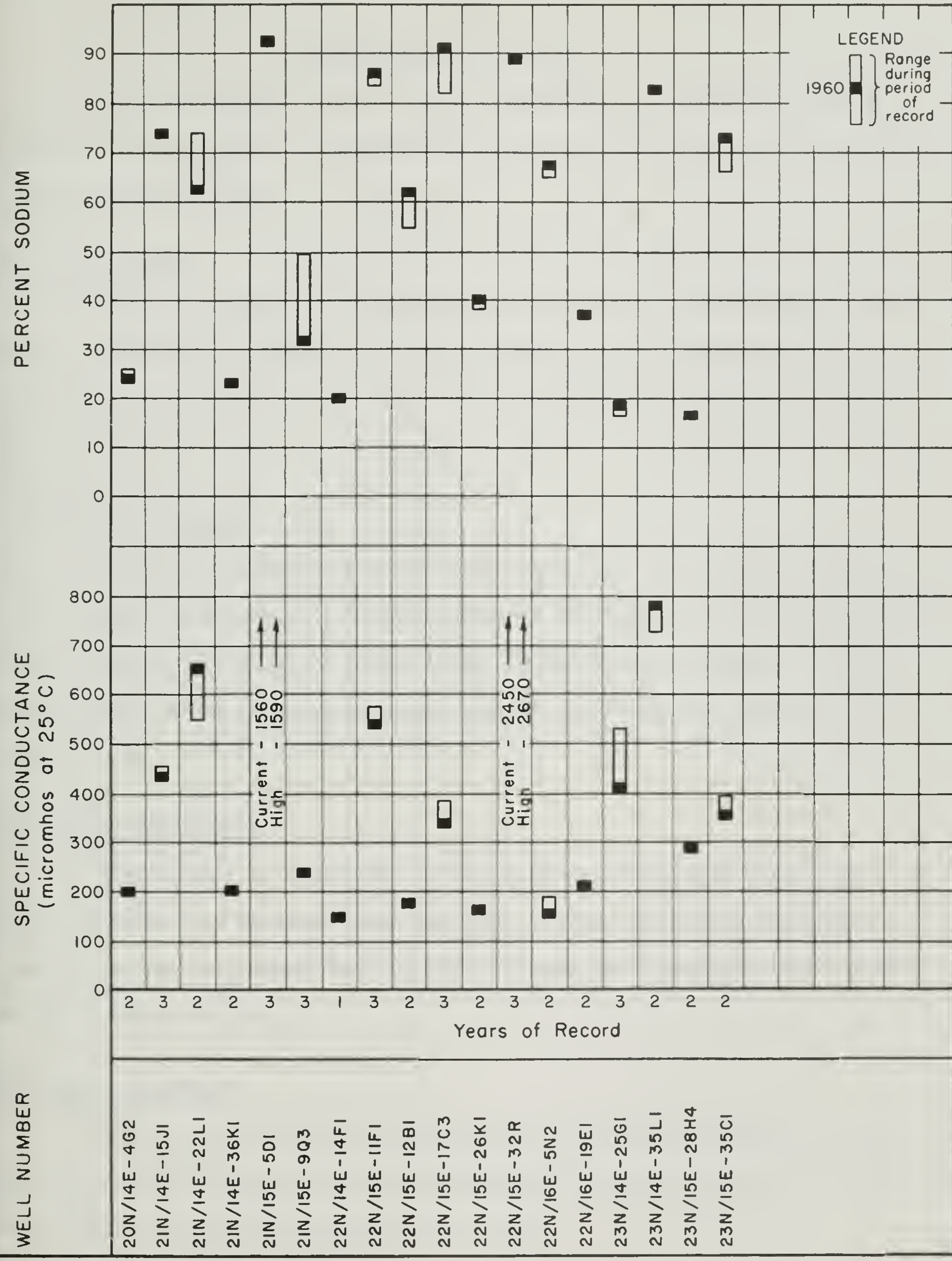
Ground waters in Sierra Valley display a wide variation in chemical quality. Waters from the periphery of the valley are usually of excellent mineral quality being calcium-magnesium bicarbonate in type and suitable for most beneficial uses. Two types of degraded waters occur in the west-central portion of the valley, sodium bicarbonate and sodium chloride. The majority of these highly mineralized waters appear in an area adjacent to thermal springs. The composition of these waters indicate they are magmatic in origin and are rising along the fault zones known to exist in the valley. Various degrees of mixing between waters of good quality and degraded waters are in evidence around areas of thermal activity. Several wells yield water containing concentrations of iron, fluoride, and nitrate which exceed limits recommended for domestic use.

The major water quality problem is the mingling of good quality waters with highly mineralized waters. This appears to be a local problem at present, but the situation could be aggravated with an overdraft on the good quality ground waters.

Significant Water Quality Changes

The analysis of water from well 23N/14E-25G1 indicated a reduction in the concentration of nitrate from 82 ppm in 1955 to 52 ppm in 1960.

Variation of the quality of ground water in Sierra Valley is depicted graphically on the following page.



WATER QUALITY RANGES
SIERRA VALLEY

UPPER LAKE VALLEY (5-13)

Upper Lake Valley borders on the north shore of Clear Lake in Lake County. It extends about 7 miles north from the shore line and includes an area of about 16 square miles.

Monitoring Program

Excessive quantities of boron known to occur in ground waters in the western and southern portions of the valley prompted the establishment of a monitoring program in the area in 1953. Samples were collected from 14 wells during July 1960.

Ground Water Occurrence

The principal aquifers in the area consist of alluvium and unconsolidated to poorly consolidated sediments deposited in the lake as it existed during Quaternary time. Ground water occurs in strata and lenticular beds of sand and gravel. Fine-grained lake sediments confine the aquifers in the lower portion of the valley.

Ground Water Development

Ground water is moderately developed and is used primarily for irrigation, domestic, and stock watering purposes. Wells in areas of unconfined ground water have an average yield of about 350 gpm while those in the confined area yield about 230 gpm.

Major Waste Discharges

There are no large waste discharges in the area. Several small domestic and industrial wastes near the town of Upper Lake are discharged into Scotts Creek or Middle Creek which flow into Clear Lake.

Evaluation of Water Quality

Ground waters in Upper Lake Valley are generally calcium or magnesium bicarbonate in type and, with the exception of some moderately to very hard waters and the local occurrence of high boron concentrations, are of good to excellent mineral quality. Radiological analyses made in 1960 showed a maximum radioactivity of 15.4 ± 2.8 uuc/l.

Significant Water Quality Changes

A comparison of analyses between June 1959 and July 1960 showed a significant decrease in the boron concentrations in two of the monitored wells. Water from well 15N/10W-10E1 showed a decrease in boron from 68 ppm to 29 ppm, both exceedingly high values. Although this well produces water which is not representative of that now being found in the alluvium, it is included in the monitoring program because these poor quality waters constitute a threat to ground water quality in this area. Water from well 15N/10W-13A1 decreased in boron from 0.73 ppm to 0.09 ppm. Boron in the remaining monitored wells showed slight decreases.

KELSEYVILLE VALLEY (5-15)

Kelseyville Valley is a gently rolling plain in Lake County. It is bordered by Clear Lake on the north, extends about 7 miles south from the shore line, and encompasses an area of approximately 30 square miles.

Monitoring Program

In order to detect any degradation of ground water by migration of waters containing excessive boron concentrations which are known to occur in the area, a monitoring program was established in Kelseyville Valley in 1953. Samples were collected from 11 wells during the month of July 1960.

Ground Water Occurrence

The principal aquifers are alluvium and unconsolidated to poorly consolidated lake sediments which were deposited during Quaternary time. Volcanic detritus also comprises a notable portion of the water-bearing sediments. Confinement, which occurs in aquifers beneath Clear Lake, extends about 1 mile beneath Kelseyville Valley.

Ground Water Development

Ground water is extensively developed in the area and is used for irrigation, domestic, and stock watering purposes. Well yields average approximately 450 gpm. Yields in the confined area are slightly higher than those in the unconfined area.

Major Waste Discharges

There are no large waste discharges in Kelseyville Valley. Communities are small and individual sewage disposal systems are used.

Evaluation of Water Quality

Ground waters in Kelseyville Valley are magnesium bicarbonate in type and, with the exception of high boron concentrations at some locations, are of good to excellent mineral quality. Waters from most of the monitoring wells range from moderately hard to very hard. Radiological analyses made in 1960 showed a maximum radioactivity of 5.07 ± 2.49 uuc/l.

Significant Water Quality Changes

None.

SACRAMENTO VALLEY (5-21)

The Sacramento Valley area comprises about 5,000 square miles of valley floor land which extends generally northward from the Cosumnes River to the vicinity of the City of Red Bluff. It is bordered on the east by the Sierra Nevada and on tne west by the Coast Range. Its ground water storage capacity, between the depths of 20 and 200 feet, has been estimated as approximately 30,000,000 acre-feet.

Almost all of the Sacramento Valley is included in the ground water quality monitoring program. During 1960, samples were collected from wells in the area, primarily during the summer irrigation season. Ground waters are generally mineral quality and suitable for most beneficial uses. Quality problems are primarily local. High concentrations of boron are found in Tehama, Colusa, Placer, and Yolo Counties. Excessive concentrations of chlorides occur in southern Sutter County and in a few individual wells in Yuba and Placer Counties. The following is a discussion of the Sacramento Valley by counties.

TEHAMA COUNTY

The monitored area in Tehama County extends from the Glenn and Butte county lines on the south to the vicinity of Red Bluff on the north. It is approximately 30 miles long, north to south, and varies in width from about 6 to 18 miles.

Monitoring Program

Tehama County was included in the monitoring program in 1957 to provide essential ground water quality data and to detect any migration of waters containing high boron which are known to be present in the area. Samples were collected from 26 wells in the area during July 1960.

Ground Water Occurrence

Ground water occurs chiefly in formations of alluvial or volcanic origin, ranging from Pliocene to Recent age. The water-bearing formations, in order of decreasing age, are the Tuscan and Tehama formations, the Red Bluff gravels, and the Quaternary alluvium. Ground water is unconfined in the Quaternary alluvium, and confined to partially confined in the Tehama and Tuscan formations.

Ground Water Development

Ground water is moderately to extensively developed and is used primarily for irrigation and domestic purposes. Irrigation wells produce an average of about 450 gpm.

Major Waste Discharges

The only large waste discharges in Tehama County consist of effluent from the City of Red Bluff sewage treatment plant and industrial waste from Diamond National Company, both discharging into the Sacramento River.

Evaluation of Water Quality

Ground waters in Tehama County are generally of excellent mineral quality. They are bicarbonate in type and generally have either calcium or magnesium as the predominant cation, although each is seldom present in concentrations greater than 50 percent of the total cations. Irrigation well 25N/2W-21Q1, located 1 mile south of Los Molinos, has percent sodium in excess of recommended limits for class 1 irrigation water. Chemical analyses also indicate nine of the monitored sources yeild water containing iron concentrations in excess of U. S. Public Health Service recommended limits for domestic purposes. There is evidence of high boron concentrations in ground waters to the north and east of the monitored area. Possible migration of these waters into areas of good water quality poses the most important threat to ground water quality in this area.

Significant Water Quality Changes

Analyses of samples collected in 1960 compared with those of 1959 showed a significant change in boron concentration in one well. Boron decreased from 1.4 to 0.12 ppm in well 27N/4W-1H2, located approximately 2.5 miles north of Red Bluff.

GLENN COUNTY

The monitored portion of Glenn County includes the valley floor area which lies generally between the Sacramento River on the east and the nonwater-bearing rocks of the Coast Range on the west. It is bounded on the north by Tehama County and on the south by Colusa County. It extends about 15 miles east to west and 25 miles north to south.

Monitoring Program

Because of the importance of ground water to the economy of Glenn County together with the lack of water quality data, a monitoring program was established in this area in 1957. Samples were collected from 23 wells during July 1960.

Ground Water Occurrence

The chief aquifers in this area are the Quaternary alluvium and, in the northern portion, the Tehama formation. Recent alluvium overlies older alluvium to a depth of 40 to 125 feet; older alluvium, in turn, overlies the Tehama formation. The Stony Creek-Willow Creek alluvial plain and fan produces the largest quantities of ground water in the area. For the most part, ground water is unconfined although some confinement occurs in the Willows area.

Ground Water Development

Approximately 60 percent of the irrigation and virtually all of the municipal, industrial, and domestic water needs are met by ground water. Well yields range from only a few gpm in shallow domestic wells to 750 gpm in deep irrigation wells.

Major Waste Discharges

The largest waste discharges in Glenn County consist of effluent from sewage treatment plants serving the Cities of Orland and Willows. Other waste discharges emanate from various industrial establishments in the county. Final disposal is accomplished by discharge into streams, percolation ponds or, in some instances, by reuse for irrigation purposes. Ord Bend Gas Field discharges about 2 gpm of highly saline water (13,700 to 15,400 ppm total dissolved solids) directly to land surface.

Evaluation of Water Quality

Monitored ground waters of Glenn County are generally of excellent mineral quality. They are slightly hard to very hard, bicarbonate type waters with calcium or magnesium the predominant cation, although seldom is either in excess of 50 percent of the total cations. Iron concentrations are present in almost all monitored waters, with five wells containing concentrations in excess of U. S. Public Health Service recommended limits for domestic purposes. These waters also contain small, fluctuating concentrations of boron.

Significant Water Quality Changes

Comparison of 1960 analyses with those of 1959 showed a slight decrease in boron concentration in all but six of the monitored wells, and an increase in total mineral concentration at one well. The greatest boron decrease, from 0.58 to 0.38 ppm, was found at well 18N/3W-10K1, located about 5 miles east of Biggs. Irrigation well 18N/2W-7F1, located approximately 7 miles southeast of Willows, showed an increase in specific conductance from 597 to 1070 micromhos.

COLUSA COUNTY

The monitored portion of Colusa County includes most of the valley floor area. It is bounded on the east by Butte Creek and the Sacramento River and on the west by the Coast Range. The area extends from Glenn County on the north to Yolo County on the South, a distance of about 32 miles, and varies in width from 15 to 20 miles.

Monitoring Program

Due to the increasing utilization of ground water in Colusa County, a monitoring program was established in 1957. During 1960, samples were collected from 28 wells during the period June-July.

Ground Water Occurrence

The principal water-bearing formations in Colusa County are the Quaternary alluvium and the underlying Plio-Pleistocene Tehama formation. The Quaternary alluvium consists of Recent alluvium to a depth of 100 feet and is underlain by Pleistocene alluvium to a depth of 200 feet. Ground water in this area is generally unconfined or partially confined.

Ground Water Development

Ground water is extensively developed, supplying nearly all water requirements. Large irrigation wells produce over 500 gpm.

Major Waste Discharges

The primary waste discharges in Colusa County are effluent from sewage treatment plants serving the cities or communities of Colusa, Maxwell, Williams, and Arbuckle. Minor waste discharges emanate from small industries such as dairies and slaughter houses. Final disposal of these wastes is accomplished by discharge into canals or creeks and thence into the Sacramento River.

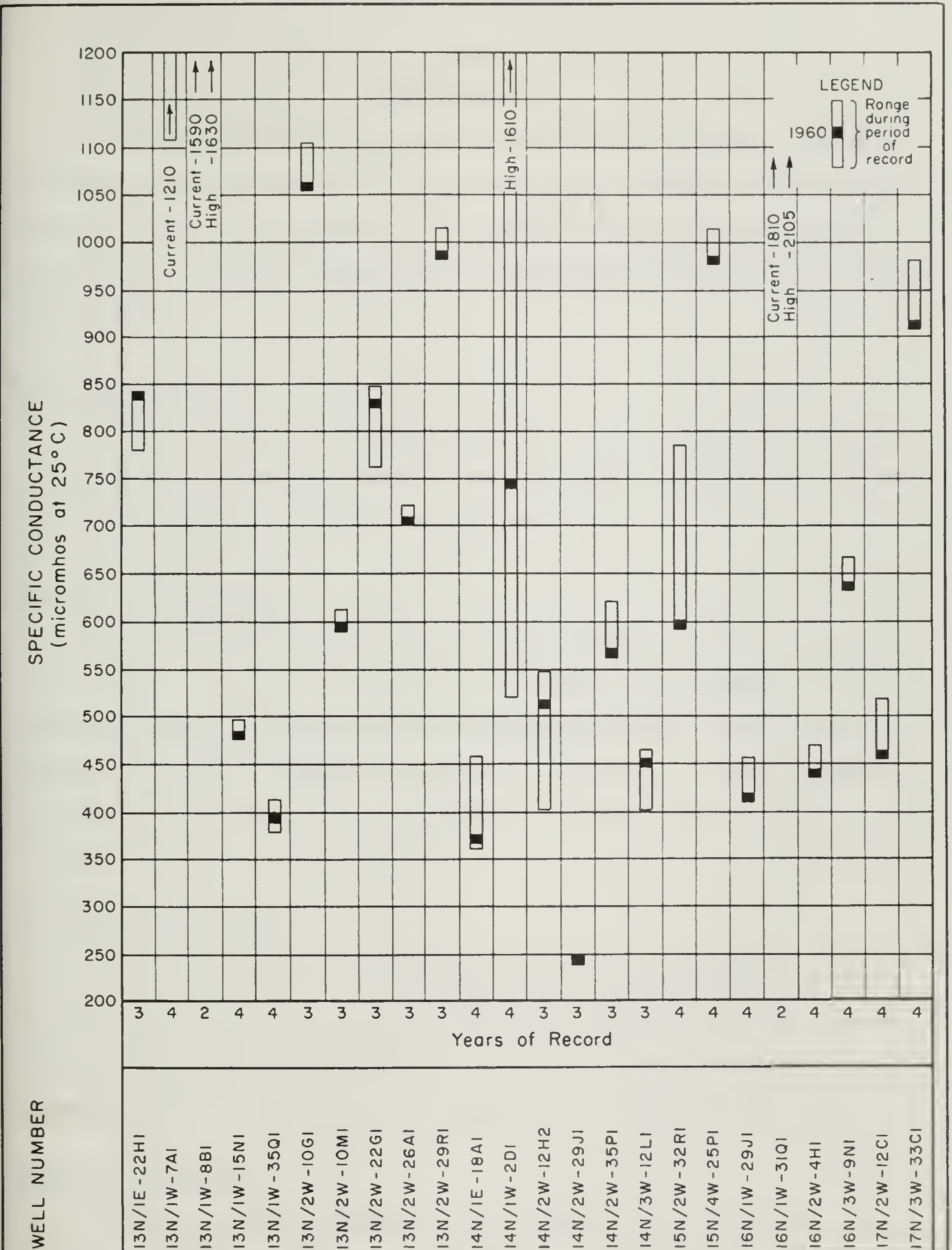
Evaluation of Water Quality

Ground waters in Colusa County range from soft to very hard and vary in mineral quality from excellent to poor. Waters with high percent sodium are found generally in the vicinity of the Sacramento River near the City of Colusa. Moderate boron concentrations are found in waters near the City of Arbuckle and in the vicinity of College City. One well, located approximately 1.5 miles south of Colusa, yielded water with moderate concentrations of total dissolved solids, sulfate, and percent sodium. Waters with high iron concentrations are found in both the northern and southern portions of the monitored area.

Significant Water Quality Changes

From June 1959 to June 1960, chemical analyses of samples showed significant boron changes in three wells. In two of these wells, 13N/2W-10M1 and 22G1 located south of Arbuckle, boron concentrations decreased from 1.4 to 0.90 ppm and from 1.4 to 0.80 ppm, respectively. Well 13N/2W-29R1, also located south of Arbuckle, showed an increase in boron concentration from 0.22 to 2.7 ppm. During the same period, water from well 14N/1W-2D1, located approximately 3.5 miles northwest of Grimes, and from well 16N/1W-31Q1, located 1.5 miles south of Colusa, showed decreases in all mineral constituents.

Variations in the quality of ground water in the Colusa County area are shown graphically on the following page.



WATER QUALITY RANGES

COLUSA COUNTY

BUTTE COUNTY

The monitored portion of Butte County extends from Tehama County on the north to Sutter County on the south, and from the Sacramento River and Butte Creek on the west to the foothills of the Sierra Nevada on the east. The area is approximately 40 miles in length north to south and varies in width from about 10 to 20 miles.

Monitoring Program

Due to the importance of ground water to the economy of Butte County, a monitoring program was established in the area in 1957. Samples were collected from 25 wells during July, August, and September 1960.

Ground Water Occurrence

Ground water occurs chiefly in the Quaternary alluvium and in the Tuscan formation. The alluvium is composed of Recent and Pleistocene gravels, sands, and clays in variable mixtures. The Tuscan formation is of volcanic origin and dips westerly beneath the alluvium at a low angle. Although generally considered to be unconfined, there is evidence of partial confinement locally in the area.

Ground Water Development

Ground water is moderately developed in Butte County and is used for most beneficial purposes, of which irrigation is the largest. Large irrigation wells located in the central portion of the monitored area produce up to 1,000 gpm. Wells located along the Sacramento River produce about 400 gpm.

Major Waste Discharges

The major waste discharges in Butte County consist of effluent from sewage treatment plants located near the Cities of Oroville, Chico, and Gridley.

The plants located in the Oroville and Gridley areas discharge treated waste waters to the Feather River, the latter intermittently. Waste water from the plant in Chico is reused for irrigation or discharged to percolation ponds.

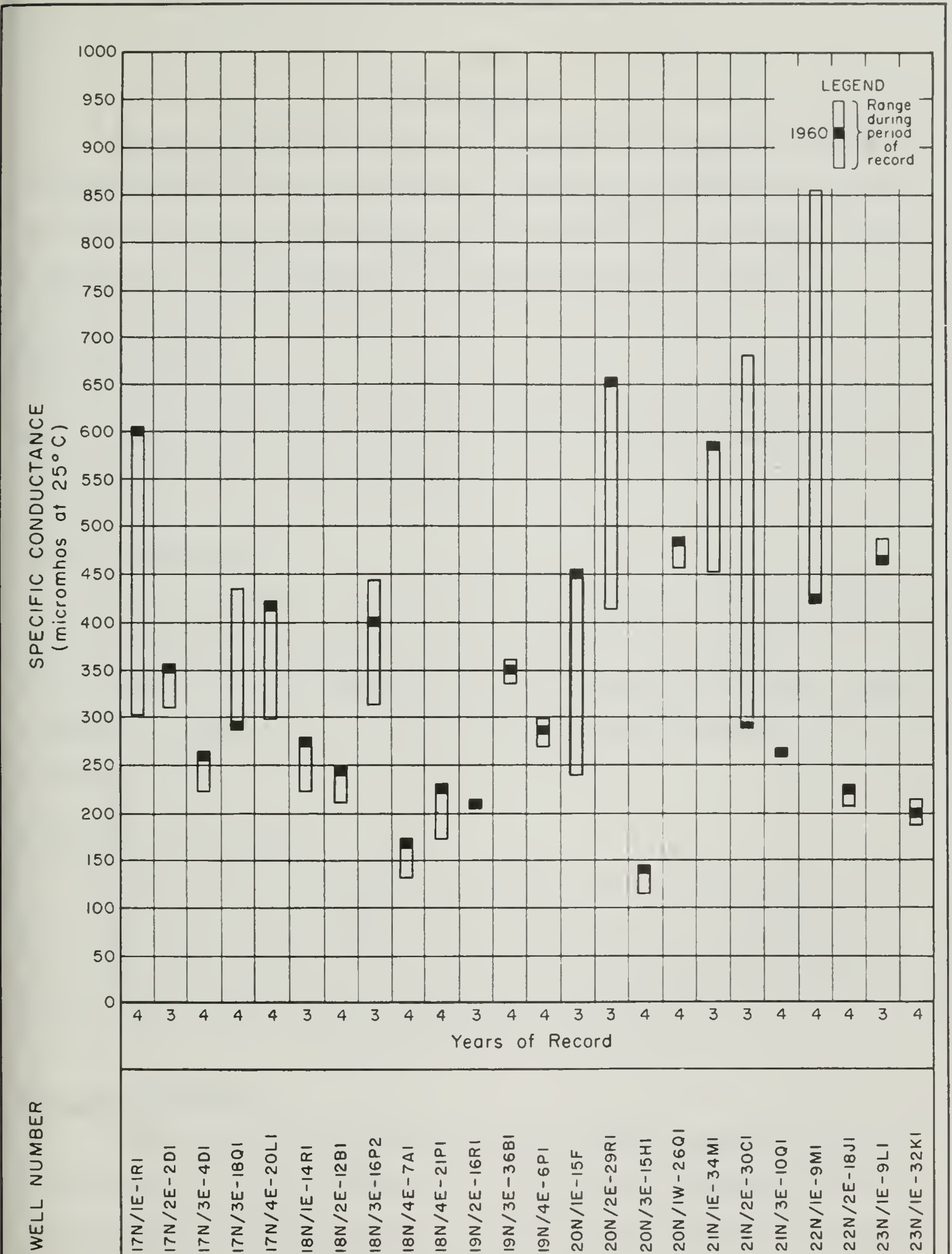
Evaluation of Water Quality

Ground waters of Butte County are generally a slightly to moderately hard bicarbonate type with the predominant cation being magnesium or a combination of magnesium and calcium in nearly equal proportions. The sodium percentage is uniformly low, generally less than 30 percent, and total dissolved solids content is usually below 400 ppm. In general, mineral quality is excellent throughout the monitored area, with the exception of well 18N/4E-28M. Water from this well is a sodium sulfate type with concentrations of total dissolved solids, 1,370 ppm; boron, 5.8 ppm; sulfates, 565 ppm; and a sodium percentage of 90.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1960 with those collected in previous years showed considerable change in total dissolved solids in five wells. Between 1959 and 1960, increases in total dissolved solids were noted in well 17N/1E-1R1 from 246 ppm to 370 ppm, and in well 20N/1E-15F from 190 ppm to 293 ppm. Decreases in total dissolved solids were noted in well 17N/3E-18Q1 from 312 ppm to 203 ppm, in well 21N/2E-30C1 from 334 ppm to 208 ppm, and in well 22N/1E-9M1 from 566 ppm to 296 ppm.

Variations in the quality of ground waters of Butte County are depicted graphically on the following page.



WATER QUALITY RANGES
BUTTE COUNTY

SUTTER COUNTY

Almost all of Sutter County is included in the ground water quality monitoring program. The county, bounded generally by the Feather River on the east and the Sacramento River on the west, is situated in the Sacramento Valley proper and is, for the most part, underlain by water-bearing deposits.

Monitoring Program

High chloride concentrations in local areas prompted the inclusion of Sutter County in the monitoring program in 1953. During 1960, samples were collected from 32 wells in June and July.

Ground Water Occurrence

The principal source of ground water is alluvium which was deposited during Pleistocene to Recent times. In the eastern portion of the area, Pliocene volcanic sands and gravels comprise the main producing aquifer for deep wells. In general, the aquifers are unconfined although partial confinement occurs in some areas.

Ground Water Development

Ground water is extensively developed, which has resulted in an overdraft of the ground water supply. It is used primarily for irrigation and domestic purposes. Wells west of the Feather River yield an average of about 800 gpm. Wells south of the Bear River yield about 950 gpm.

Major Waste Discharges

The principal waste discharge in Sutter County consists of effluent from the Yuba City sewage treatment plant. This waste is discharged into the Feather River during the winter when the river is at high stage and into percolation-evaporation ponds during the summer.

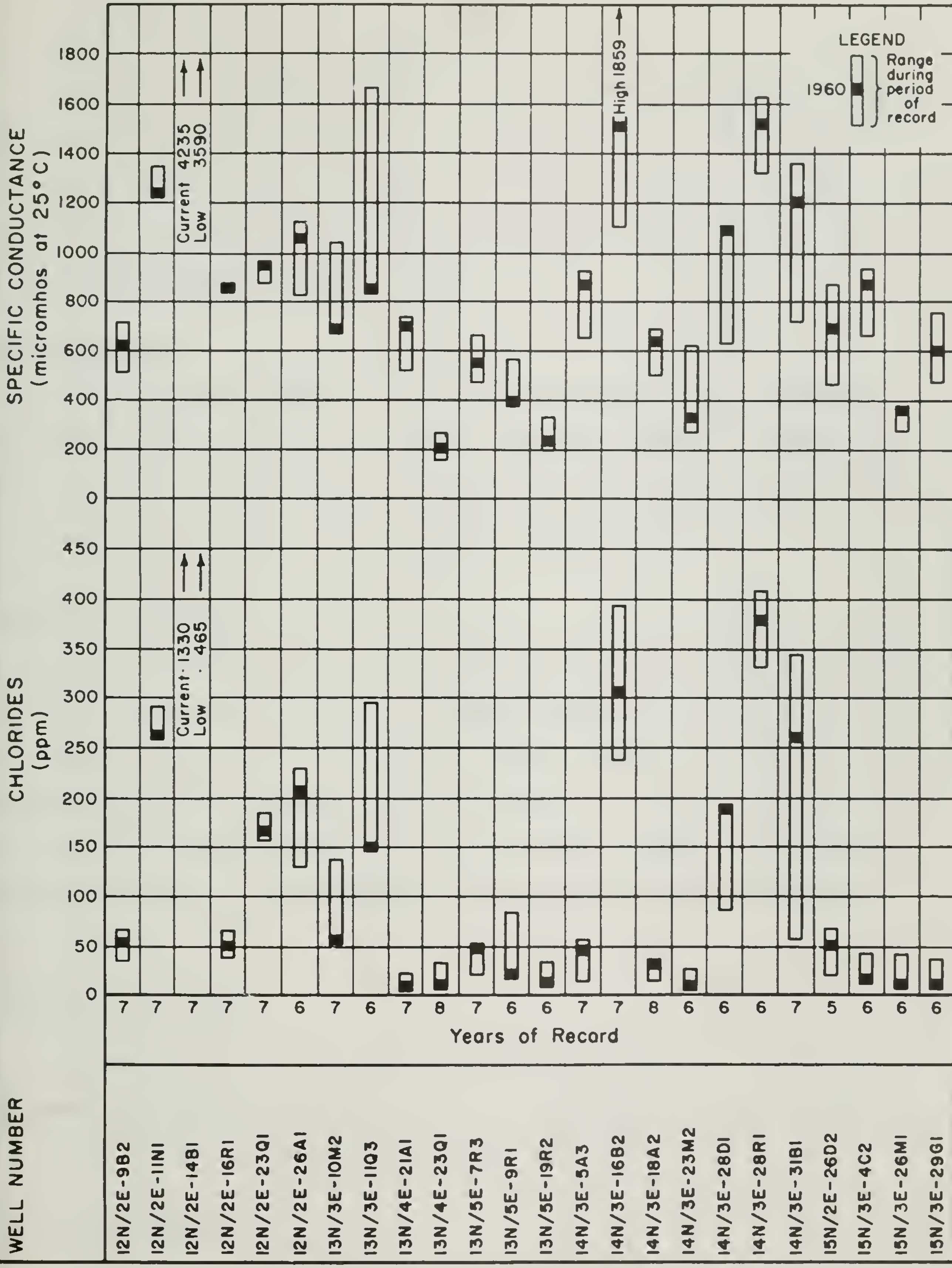
Evaluation of Water Quality

Ground waters of Sutter County are generally bicarbonate in type with magnesium the predominant cation. High concentrations of sodium and chloride are found in an area south of Yuba City and also in the vicinity of Robbins. In these same areas, boron concentrations in excess of 0.5 ppm were found in six of the monitored wells during 1960. The source of this mineralization is probably entrapped evaporatives or rising connate brines. Ground waters in the remainder of the monitored area are of good to excellent mineral quality, although waters from 18 of the monitored wells were in the very hard range and the remaining 14 wells were in the slightly hard to moderately hard range.

Significant Water Quality Changes

None.

Variations in specific conductance and chloride concentration at wells in Sutter County are shown on the following page.



WATER QUALITY RANGES
SUTTER COUNTY

YUBA COUNTY

The portion of Yuba County included in the monitoring program is located in the east central portion of the Sacramento Valley. It is bounded by Sutter County on the west and by foothills of the Sierra Nevada on the east. This valley floor portion of the county varies between 8 and 12 miles in width and has a maximum length of about 25 miles.

Monitoring Program

The monitoring program in Yuba County was begun in 1953 to maintain a check on ground water quality and to detect significant changes in quality which might result from migration of saline waters known to underlie the area at depth. Samples were collected from 12 wells during June-August 1960.

Ground Water Occurrence

The principal sources of ground water include unconsolidated Quaternary alluvium underlain by a late Tertiary formation composed of volcanic ash and water-laid volcanics. Pleistocene alluvium, exposed toward the foothills, is an important local source of ground water. The larger and deeper wells of the area derive water from both the alluvium and the volcanics. Saline waters occur beneath the fresh waters. Ground water is confined only in the deeper zones and in local areas.

Ground Water Development

Ground water in Yuba County is extensively developed and is used for irrigation, domestic, and municipal supplies. Average yield of wells is about 850 gpm, with a few wells producing up to 2,000 gpm.

Major Waste Discharges

Principal waste discharges in Yuba County consist of effluent from sewage treatment plants serving Marysville and Linda. The waste from the

Marysville plant is discharged into evaporation-percolation ponds; effluent from the Linda plant is discharged into the Feather River.

Evaluation of Water Quality

Ground waters of Yuba County are generally bicarbonate in type, with low mineral concentrations. Analyses of the water from well 13N/5E-4B at the City of Wheatland shows the chloride concentration to be considerably higher than that found in other wells of the area. A possible source of the chlorides is the saline water body which underlies the fresh water at depth. In addition, waters from this well are hard. Ground waters in the remainder of the monitored area are of good to excellent mineral quality, although moderately hard to hard.

Significant Water Quality Changes

Mineral concentrations in water from well 13N/5E-4B increased between August 1959 and June 1960. The concentration of chlorides at this well exceeded 250 ppm, the recommended limit for chloride in domestic water supplies. The 1960 value was 278 ppm.

PLACER COUNTY

The monitoring program in Placer County comprises most of the valley floor portion of the county. The area is about 13 miles in width and extends approximately 20 miles north to south.

Monitoring Program

A monitoring program was initiated in Placer County in 1957. Samples were collected from 18 wells in July 1960.

Ground Water Occurrence

The main water-bearing formation in Placer County is the old alluvium composed mostly of silt, clay, sand, sandstone, and smaller amounts of gravel. Alluvium of slightly younger age, but of similar composition, overlies the old alluvium to a maximum thickness of about 50 feet. Volcanic detritus as well as breccias and tuffs underlie the alluvium. A few wells southwest of Lincoln obtain water from the Ione formation, a marine deposit of Eocene age.

Ground Water Development

Ground water is extensively developed in Placer County and is used primarily for irrigation. Wells located near the western boundary of the county, which are drilled in the old alluvium, yield as high as 1,800 gpm. Wells penetrating the volcanic rock yield up to 1,200 gpm, and those in the Ione formation produce about 100 gpm.

Major Waste Discharges

The principal waste discharges consist of effluent from sewage treatment plants serving the Cities of Roseville and Auburn. Minor quantities of waste emanate from various mining operations. All major sources of waste are discharged into streams and do not presently threaten ground water quality.

Evaluation of Water Quality

Ground waters in Placer County are generally bicarbonate in type with sodium the predominant cation. With the exception of local areas in the vicinity of Lincoln and Sheridan, the water is of excellent mineral quality, slightly hard, with generally less than 300 ppm total dissolved solids. Local waters in the Lincoln and Sheridan areas are derived from connate waters of the Ione formation and consequently contain higher concentrations of minerals, particularly chlorides. One well, 12N/6E-27D1, located south of Lincoln, had a chloride concentration of 444 ppm in 1960.

Significant Water Quality Changes

None.

YOLO COUNTY

The monitored area in Yolo County includes, in addition to that portion of the Sacramento Valley floor area in Yolo County, the Capay Valley which extends along Cache Creek from the town of Capay northwesterly to Rumsey in the western portion of the county. The area covers mainly the eastern half of Yolo County and is situated in the southwestern portion of the Sacramento Valley. The total monitored area comprises about 650 square miles.

Monitoring Program

Due to the presence of excessive boron in the area, a monitoring program was established in Capay Valley in 1953. In 1957, the program was expanded to include the present monitored area which is a highly developed agricultural area. During July 1960, samples were collected from 43 wells.

Ground Water Occurrence

Principal sources of ground water are the stream channel and terrace deposits composed of unconsolidated silt, sand, and gravel of Recent age. The Tehama formation, of Plio-Pleistocene age and continental origin, is a secondary aquifer. Ground water in the alluvial deposits is unconfined and the Tehama formation is locally confined. In Capay Valley, only the Recent stream channel and terrace deposits are important as ground water sources.

Ground Water Development

Ground water in Yolo County is moderately developed. Wells in the Sacramento Valley portion of the area yield up to 3,000 gpm. In Capay Valley, wells are primarily shallow, domestic wells producing up to 60 gpm. Ground water is used for irrigation, domestic, and stock watering purposes.

Major Waste Discharges

The principal waste discharges in Yolo County consist of effluent from sewage treatment plants at Woodland, Davis, and West Sacramento. These waste waters are disposed of by discharge to surface water and to percolation on ponds; however, a portion of the treated waste water from the Woodland plant is used for irrigation.

Evaluation of Water Quality

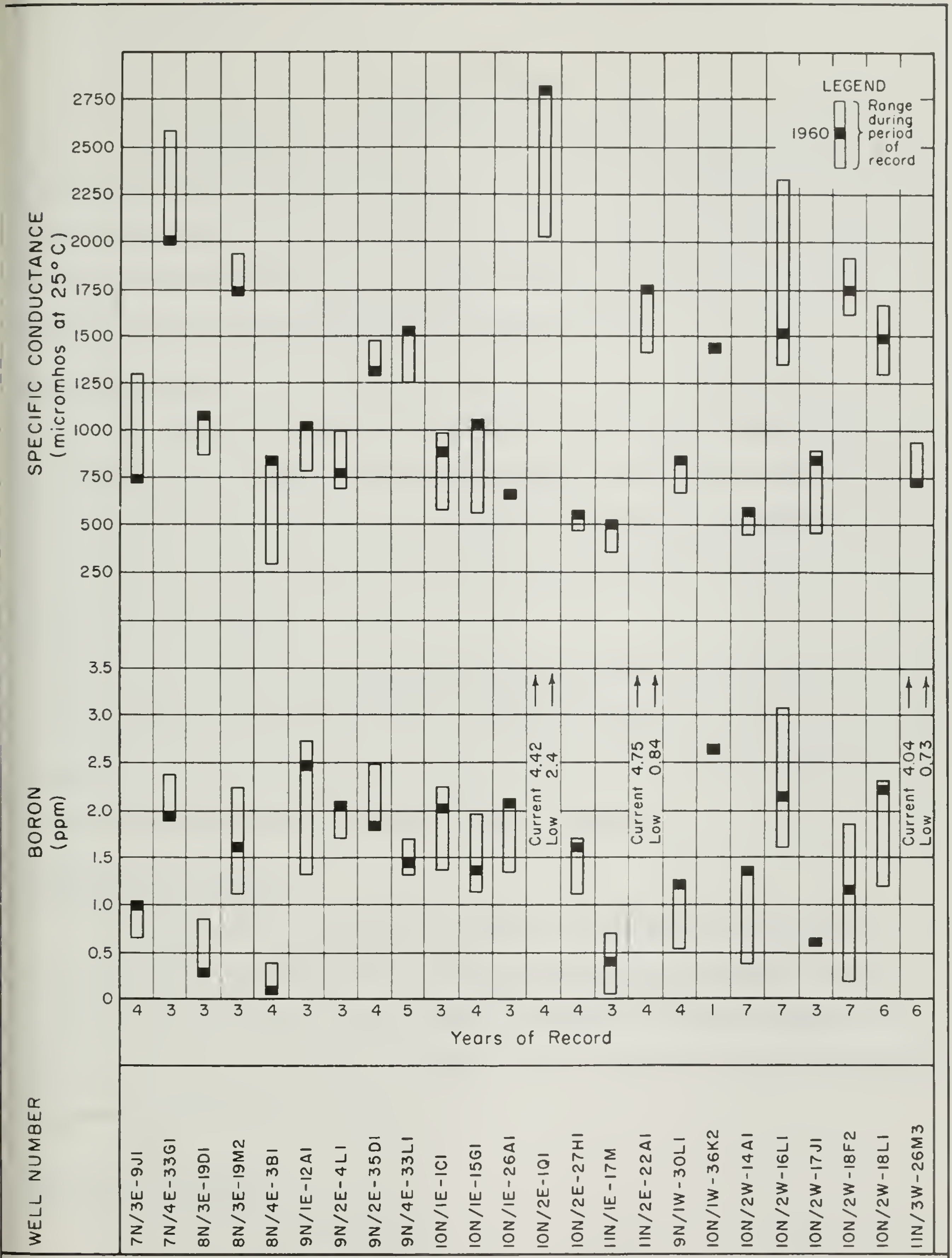
Ground waters of Yolo County are predominantly bicarbonate in type, with magnesium or sodium the principal cations. The ground waters are generally very hard, with total hardness ranging up to 1,125 ppm.

The most serious quality problem throughout the county is the presence of boron in concentrations generally considered injurious to crops. The waters are generally class 2 or 3 for irrigation, mainly due to boron content. These boron concentrations are believed to be derived from Cache Creek which is known to contain boron. High concentrations of chloride, ranging up to 700 ppm, occurred adjacent to the Sacramento River and in other local areas.

Significant Water Quality Changes

Boron concentrations increased in about one-fourth of the wells sampled and decreased at a like number of wells between 1959 and 1960.

Variations in specific conductance and boron concentration at 24 selected wells in Yolo County are shown graphically on the following page.



WATER QUALITY RANGES
YOLO COUNTY

SACRAMENTO COUNTY

Most of Sacramento County is included in the monitoring program. A small area in the Sacramento-San Joaquin Delta where little ground water is used, and an area along the eastern boundary which is underlain by geologic formations that yield negligible quantities of ground water are not included. The total monitored area includes approximately 450 square miles.

Monitoring Program

A monitoring program was established in Sacramento County in 1955 to record ground water quality and to detect changes in quality that might result from ground water overdraft or from industrial discharges in the eastern portion of the county. Samples were taken from 26 wells during May-December 1960.

Ground Water Occurrence

Recent alluvium and semiconsolidated Plio-Pleistocene continental sediments comprise the principal aquifers. Tertiary volcanics are of local importance in the eastern portion of the county. The aquifers generally are unconfined, although perched water formations occur locally.

Ground Water Development

Ground waters in Sacramento County are moderately developed except in areas adjacent to the Sacramento River where ground water development is minimized by the availability of surface water. They are used for irrigation, domestic, municipal, and industrial purposes. The average well yield in Sacramento County is approximately 400 gpm.

Major Waste Discharges

Principal waste discharges consist of effluent from the City of Sacramento, Mather and McClellan Air Force Bases, Aerojet-General Corporation, and

Libby, McNeill & Libby plants. The wastes from the City of Sacramento and the Air Force bases are discharged to surface waters while the wastes from Aerojet-General and Libby plants are discharged to dredger tailings in the eastern portions of the county. Wastes from Aerojet-General plant contain potassium perchlorate ($KClO_4$) and ammonium perchlorate (NH_4ClO_4) in solution. These constituents are reported to be toxic to plant life to approximately the same extent as boron. Accordingly, analyses of ground water samples near this waste discharge include tests for perchlorate and ammonium in addition to the usual mineral analyses.

Evaluation of Water Quality

Ground waters in Sacramento County are primarily calcium-magnesium bicarbonate in type and, although slightly to moderately hard, are of excellent mineral quality. Total dissolved solids are relatively low, seldom exceeding 350 ppm. Boron, chlorides, and nitrates are uniformly low and well within recommended limits.

Significant Water Quality Changes

None.

SOLANO COUNTY

The monitored area of Solano County comprises all of the northern and eastern portions of Solano County which lie in the Sacramento Valley. It extends from Putah Creek on the north to the Sacramento River on the south, and includes an area of approximately 400 square miles. The remainder of Solano County lies in Region 2 and the quality of ground water in this portion of the county was discussed previously in this report under the heading of Suisun-Fairfield Valley.

Monitoring Program

The monitoring program in Solano County was begun in 1958 to observe the ground water quality and to detect changes in quality which might result from migration of poor quality waters known to be present in the area. Samples were collected from seven wells during September 1960.

Ground Water Occurrence

Water-bearing formations in this area include younger alluvium consisting of stream channel and flood plain deposits, older alluvium comprised of fine-grained sediments enclosing lenses and bodies of coarse materials, the Tehama formation, and Tertiary volcanic sedimentary rocks. The Tehama formation extends to a depth of 1,500 to 2,500 feet. The volcanics, comprised of sequence of shale, sandstone, and conglomerate, underlie the Tehama formation. Ground water is partially confined, the degree of confinement increasing with depth.

Ground Water Development

Ground waters in Solano County are moderately to extensively developed and are used for irrigation, domestic, and other purposes. Well yields range from less than 100 to approximately 1,000 gpm.

Major Waste Discharges

The principal waste discharges in this area are sewage effluents from Vacaville which is discharged into Alamo Creek, and from Rio Vista which is discharged into the Sacramento River.

Evaluation of Water Quality

Ground waters in the monitored area are generally a very hard bicarbonate type with magnesium the predominant cation. Sodium and calcium are also prevalent in the southern portion. The waters range from class 1 to class 2 for irrigation. Moderate concentrations of total dissolved solids and boron are found in the southern portion of the monitored area.

Significant Water Quality Changes

Well 5N/2E-25K, located 6 miles north of Rio Vista, decreased in percent sodium from 58 to 33 percent between October 1959 to September 1960. Percent sodium in this well has fluctuated between 33 and 62 percent since 1958.

SAN JOAQUIN VALLEY (5-22)

The San Joaquin Valley floor comprises about 10,000 square miles of irrigable lands and extends from the Tehachapi Mountains northward to the vicinity of the Cosumnes River. The valley is bounded on the west by mountains of the Coast Range and on the east by foothills of the Sierra Nevada. Underlying this valley is the largest ground water reservoir in the State. The storage capacity of this great reservoir, to a depth of 200 feet below land surface, has been estimated to be 100,000,000 acre-feet. A bed of diatomaceous clay, generally known as the Corcoran clay, continuous throughout most of the San Joaquin Valley, separates this reservoir into upper and lower ground water zones. This clay bed is about 40 to 50 feet thick and lies generally between 300 to 350 feet below the land surface. Wells on the western side of the valley draw water principally from the lower zone, bypassing the poor quality of most upper zone waters in that area. Wells in the remainder of the valley produce good quality waters from both zones. Most of the San Joaquin Valley has been included in the monitoring program and is reported herein by counties.

SAN JOAQUIN COUNTY

The area of San Joaquin County included in the monitoring program comprises most of the valley floor portion of the county. The monitored area extends from the Sacramento county line on the north to the Stanislaus county line on the south, and varies in width from about 14 to 30 miles.

Monitoring Program

In 1953, a monitoring program was established in San Joaquin County to detect degradation of ground waters by migration of poor quality waters, which are located primarily in the western part of the county. During August 1960, water samples were collected from 32 wells.

Ground Water Occurrence

The principal sources of ground water are unconsolidated Recent alluvium and semiconsolidated Tertiary and Quaternary continental sediments. In the eastern portion of the county, the Mehrten formation is also an important aquifer. Ground water is generally unconfined, except in the vicinity of Tracy where a deep zone is confined by the Corcoran clay. The general movement of ground water is from east to west, except across the Delta where it is impeded by fine-grained deposits.

Ground Water Development

Ground water is moderately to extensively developed. Wells in the Mehrten formation are reported to produce up to 1,300 gpm, while those in the alluvial sediments produce about 3,000 gpm. Approximately 70 percent of the water pumped is used for irrigation. The remaining portion is used mainly for industrial and domestic purposes.

Major Waste Discharges

The principal waste discharges in San Joaquin County consist of effluen from sewage treatment plants at or near the Cities of Escalon, Stockton, Lodi, Manteca, Tracy, and Lincoln Village. All of the sewage treatment plants dispose of their waste waters to nearby surface waters except for the plant at Escalon which uses percolation ponds for disposal.

Evaluation of Water Quality

Ground water in San Joaquin County varies in type and mineral quality depending upon location and depth from which the water is extracted. Wells less than 1,000 feet deep, located east of Stockton, generally yield water suitable for both domestic and agricultural purposes. The water is bicarbonate in type with calcium the predominant cation. Chloride and boron are usually well within the limits for class 1 irrigation waters.

Saline water apparently underlies most of the county at varying depths. The saline water body is very deep along the eastern edge of the area, about 2,000 feet beneath the ground surface in the vicinity of Linden, becoming shallower toward the west, reaching a depth of about 1,000 feet in the Stockton area. Poor quality water underlies the central Delta portion of the county at a depth of less than 100 feet. The impediment to ground water movement resulting from the fine-grained Delta deposits appears to have effectively prevented significant movement of the poor water into the fresh water underlying the eastern portion of the county.

Results of radiological analyses of the monitored wells showed a maximum of 9.4 ± 3.1 uuc/l in 1960.

Significant Water Quality Changes

None.

STANISLAUS COUNTY

The monitored portion of Stanislaus County includes most of the valley floor land in the county, and comprises an area of about 1,000 square miles. It extends approximately 50 miles from north to south and approximately 40 milés from east to west and covers the eastern three-fourths of the county.

Monitoring Program

Stanislaus County was included in the monitoring program in 1957 due to the presence of ground waters containing high concentrations of total dissolved solids and boron. During August and September 1960, samples were collected from 56 wells.

Ground Water Occurrence

Principal water-bearing units in Stanislaus County consist of alluvial deposits laid down by the Stanislaus, Tuolumne, and San Joaquin Rivers. These deposits are predominantly unconsolidated silt, sand, and gravel. Older formations, of continental origin, are locally important aquifers in and near the eastern foothills. The western portion of the monitored area is underlain by the Corcoran clay which separates the ground water reservoir into two water-bearing zones. Movement of ground water in the county is in a westerly direction toward the San Joaquin River.

Ground Water Development

Ground water supplies in Stanislaus County are developed to the extent that the water table has been falling in areas that do not have an adequate supply of surface water. They are used to supply industrial, municipal, irrigation, and domestic needs. Large irrigation wells on the valley floor yield more than 1,000 gpm.

Major Waste Discharges

Major waste discharges in Stanislaus County consist of effluent from sewage treatment plants in Modesto, Oakdale, Patterson, and Turlock, along with wastes from Beard Land and Investment Company (Modesto) and Turlock Co-operative Growers Cannery. At Modesto and Beard Land Company, wastes are discharged to percolation ponds with overflow to the Tuolumne River. Oakdale also discharges waste to percolation ponds with partial discharges to the Stanislaus River during the canning season. Patterson and the Turlock Co-operative Cannery use percolation ponds for disposal while effluent from Turlock flows into the San Joaquin River.

Evaluation of Water Quality

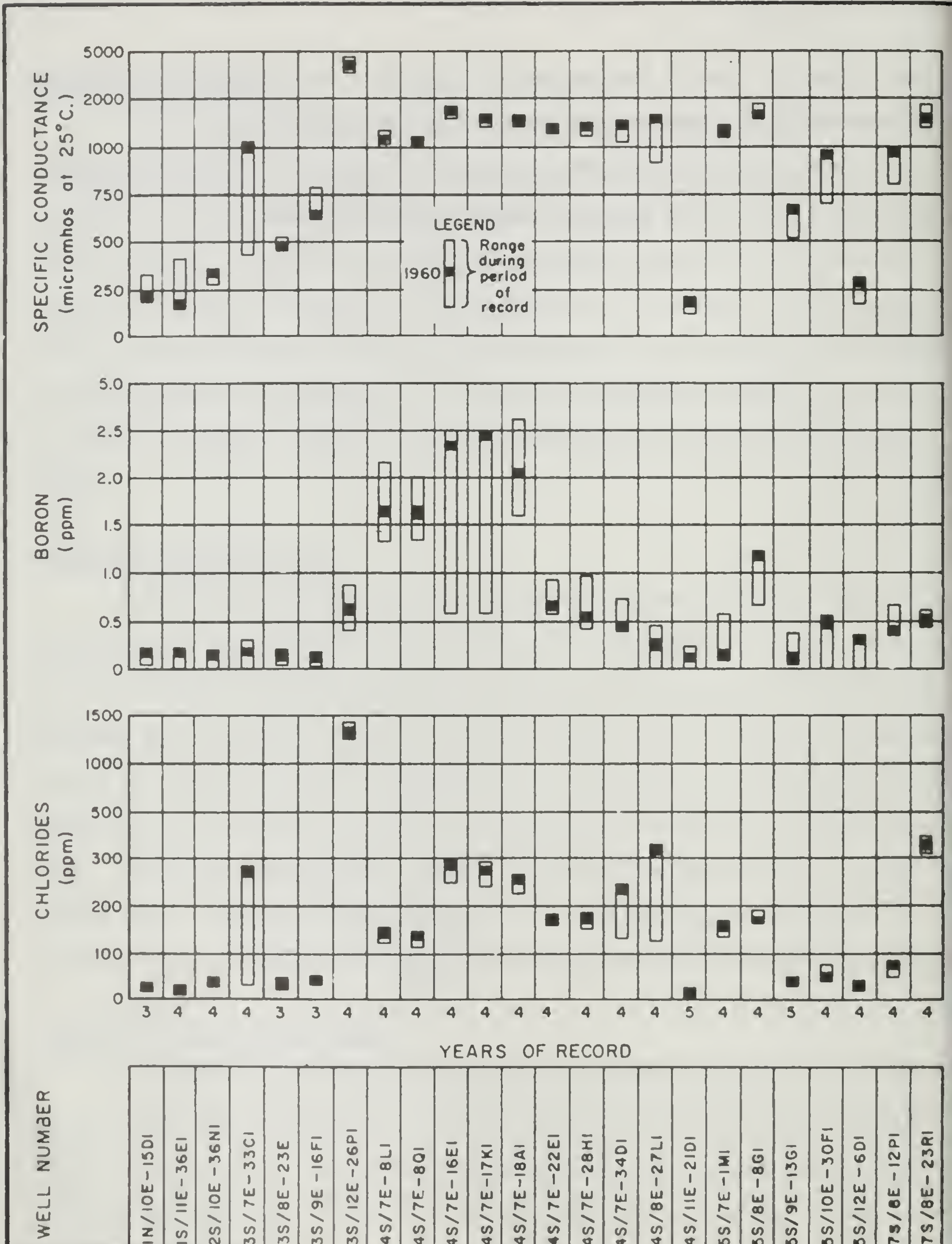
From the San Joaquin River to the eastern boundary of the county, ground water is principally calcium bicarbonate in type and of excellent mineral quality. However, in the far eastern portion of the monitored area, a few of the monitored wells produce a sodium chloride type water of poor quality. In the area west of the San Joaquin River, ground water quality ranges from good to poor with sodium chloride type water in the north and sodium bicarbonate type water in the south. Moderate concentrations of boron and sulfate are also present. Poorly drained lands in the flood plain adjacent to the San Joaquin River probably account for the poor quality water found in certain portions of the western area.

Significant Water Quality Changes

In 1960, well 3S/7E-33C1, near the San Joaquin River east of Vernalis, showed an increase in chloride from 33 to 279 ppm and in total dissolved solids from 264 to 570 ppm. Wells 4S/7E-16E1 and 4S/7E-17K1, in the same general area, had boron increases from 0.58 to 2.38 ppm and from 0.58 to 2.50 ppm, respectively. From 1957 to 1959, there was a steady decrease in boron in both of these wells.

Well 5S/9E-13G1, west of Turlock, had an increase in total hardness from 174 to 368 ppm with only minor fluctuations in the other constituents.

Variations in specific conductance, chlorides, and boron at 24 monitored wells are depicted graphically on the following page.



WATER QUALITY RANGES

STANISLAUS COUNTY

MERCED COUNTY

The monitored area of Merced County includes that portion of the county lying on the valley floor between the foothills of the Sierra Nevada and the base of the Diablo Range. It extends approximately 50 miles from north to south and approximately 60 miles from east to west and encompasses a total area of about 1,250 square miles.

Monitoring Program

The ground water quality monitoring program was established in Merced County in 1957 to maintain surveillance on water quality conditions and to detect migration of highly mineralized ground waters which occur near the trough of the valley. Samples were collected from 51 wells during the period July-August 1960.

Ground Water Occurrence

The principal source of ground water in Merced County is alluvium consisting of unconsolidated silt, sand, and gravel, underlain by formations of continental origin. The Corcoran clay underlies the central portion of the county and divides the ground water reservoir into upper and lower water-bearing zones. Movement of ground water generally follows the slope of the land surface toward the San Joaquin River.

Ground Water Development

Ground water in Merced County is only moderately developed with approximately 20 percent of the irrigation water drawn from the ground water reservoir. In general, the portion of the area lying east of the San Joaquin River obtains a larger proportion of its needs from ground water than the area lying west of the river. Ground water is used extensively for municipal and industrial purposes, and to a lesser extent for irrigation and domestic needs.

Major Waste Discharges

Principal waste discharges in Merced County consist of effluent from sewage treatment plants at Merced, Atwater, Gustine, Los Banos, and Castle Air Force Base. Effluent from the Merced plant discharges into Miles Creek. The plants at Atwater, Gustine, and Los Banos dispose of their wastes to percolation ponds. The Castle Air Force Base plant discharges to Canal Creek.

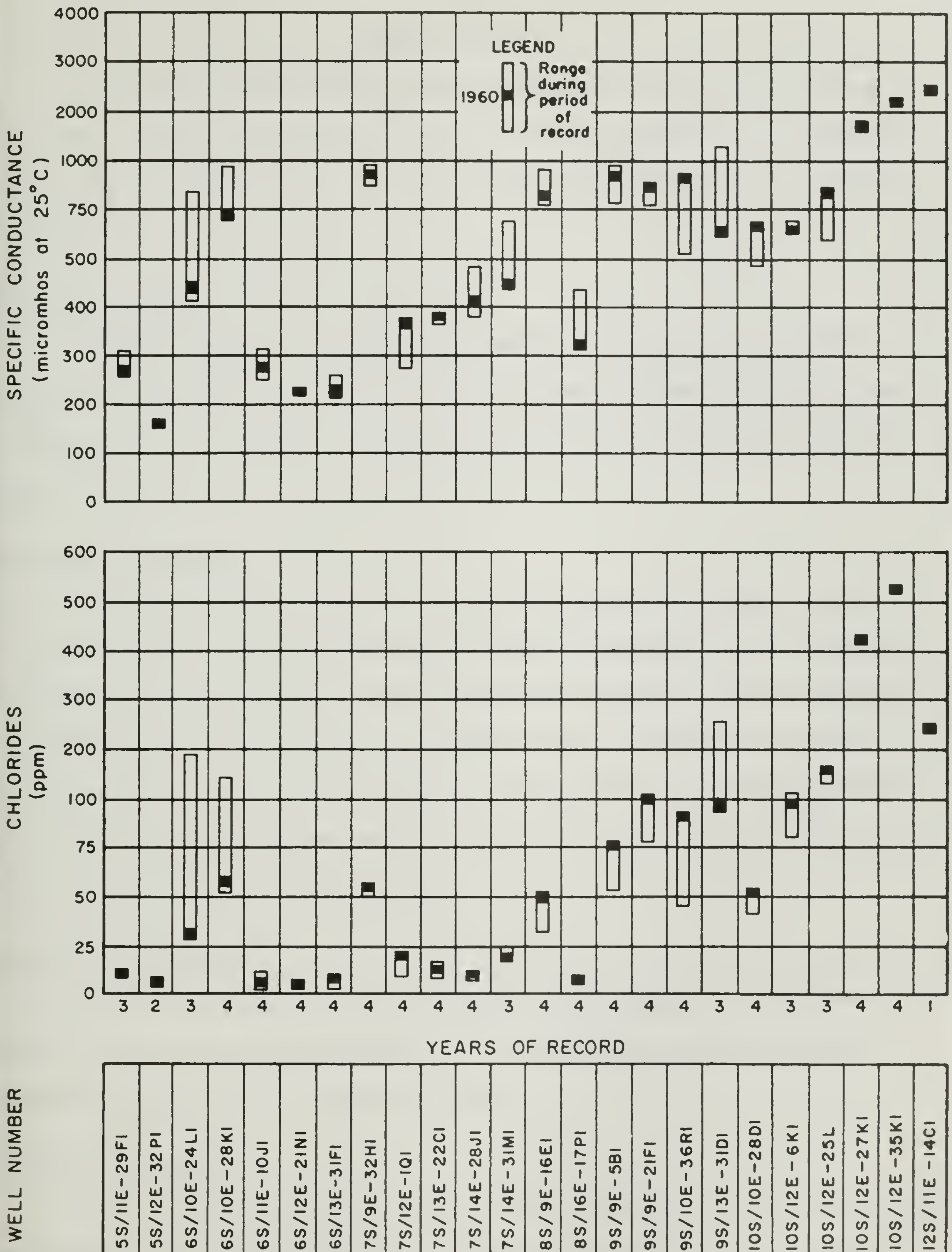
Evaluation of Water Quality

Ground water in Merced County is of good to excellent mineral quality with the exception of the extreme southern portion on the west side of the San Joaquin River. In this area, ground water is principally sodium chloride in type and of poor quality. High sulfate and nitrate concentrations, that are above the maximum recommended limit for drinking water, are found locally in some of the monitored wells. Radiological samples taken from 51 wells in 1960 showed a maximum gross radioactivity of 53.4 uuc/l.

Significant Water Quality Changes

A comparison of 1960 analyses with those of 1959 discloses significant water quality changes in only one well. Well 7S/14E-31M1, south of Merced, showed a decrease in total dissolved solids from 440 to 296 ppm and a decrease in total hardness from 256 to 144 ppm.

Variations in chlorides and specific conductance in 24 monitored wells are depicted on the water quality ranges graph on the following page.



WATER QUALITY RANGES

MERCED COUNTY

MADERA COUNTY

The western third of Madera County, which includes all of the valley floor area, comprises the monitored area. It extends approximately 25 miles from north to south and approximately 40 miles from east to west and covers about 950 square miles.

Monitoring Program

Madera County was included in the monitoring program in 1957 due to excessive concentrations of chloride and high sodium percentages in the extreme western portion of the county. During July 1960, 31 wells were sampled in Madera County.

Ground Water Occurrence

Principal water-bearing units in Madera County are alluvial deposits laid down by the San Joaquin and Chowchilla Rivers. Generally, soils throughout the county are highly permeable. The Corcoran clay underlies approximately the western two-thirds of the monitored area separating the ground water reservoir into an upper and a lower zone, with most of the monitored wells drawing from the upper zone. Movement of ground water in the county is generally in a southwesterly direction toward the valley trough.

Ground Water Development

Ground water is extensively developed for irrigation in areas where surface water is not readily available. It is used beneficially for domestic, municipal, industrial, and irrigation supplies.

Major Waste Discharges

Major waste discharges in Madera County consist of effluent from sewage treatment plants located at the Cities of Chowchilla and Madera. The sewage treatment plant at Chowchilla disposes of waste water by means of percolation ponds and irrigation. Waste water from the treatment plant at Madera is reused for irrigation.

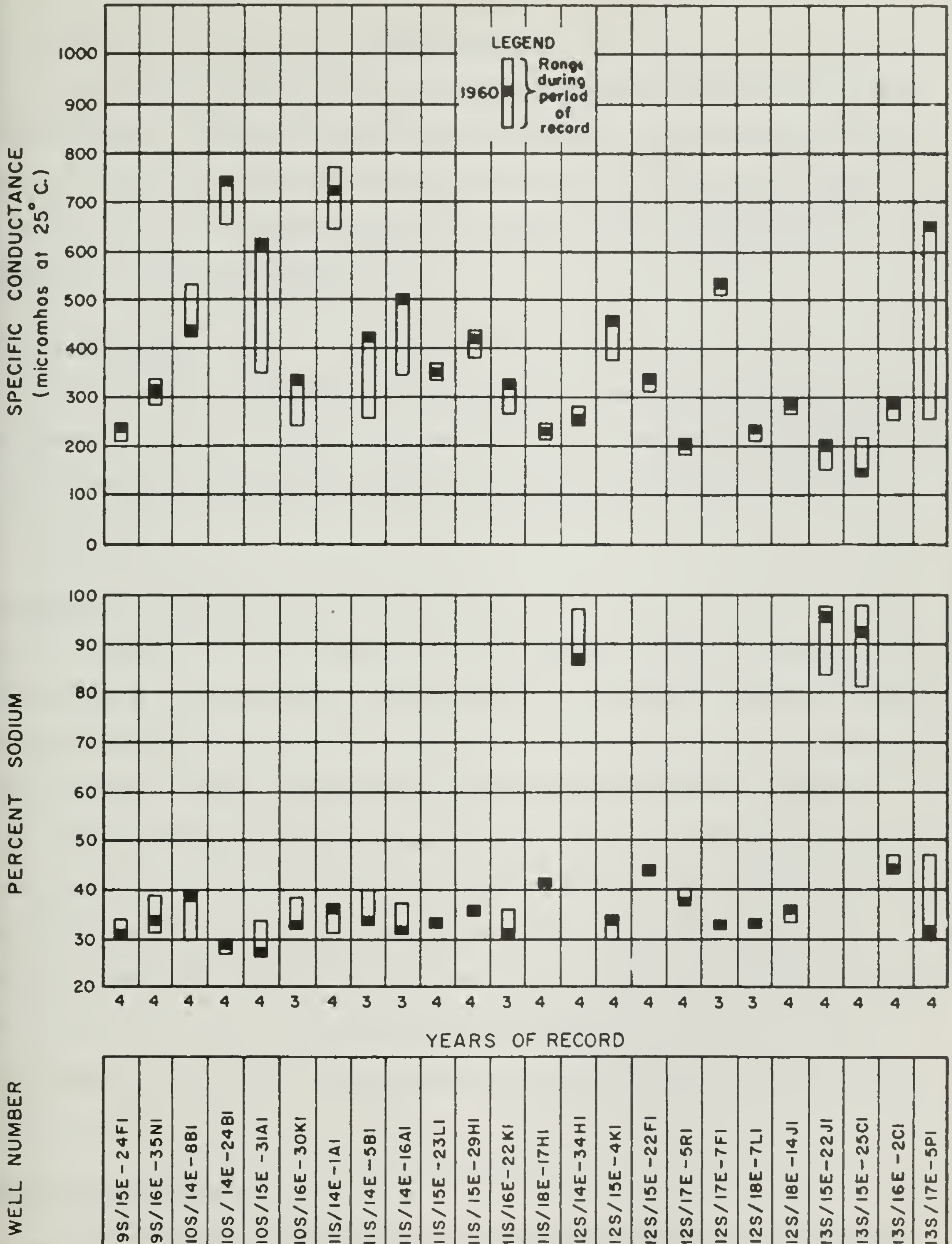
Evaluation of Water Quality

Ground water in Madera County is predominantly calcium bicarbonate in type and is of excellent mineral quality with the exception of the extreme western end of the county lying between the San Joaquin River and Lone Willow Slough. In this area, ground water is generally harder than ground water in the rest of the county and the three monitored wells in this area all have a very high percent sodium. Radiological samples taken from 31 wells in 1960 showed a maximum gross radioactivity of 61.9 uuc/l.

Significant Water Quality Changes

From 1959 to 1960, well 10S/15E-31A1, about 10 miles southwest of Chowchilla, showed an increase in total dissolved solids from 330 to 362 ppm with most other constituents increasing proportionally. Water from this well has shown a steady rise in mineral concentrations from 1957 to 1960. Well 13S/17E-5P1, about 8 miles west of Biola, showed an increase in all mineral constituents, but not to a level which would render it harmful.

Variations in percent sodium and specific conductance in 24 monitored wells are depicted on the water quality ranges graph on the following page.



WATER QUALITY RANGES

MADERA COUNTY

FRESNO COUNTY

Most of the valley floor area in Fresno County is included in the monitoring program. This area extends from the foothills of the Sierra Nevada on the east to the base of the Diablo Range on the west, and from the San Joaquin River on the north to the Kings county line on the south. The total area is approximately 2,500 square miles.

Monitoring Program

The monitoring program was established in Fresno County in 1953 due to the presence of highly mineralized ground water in the western portion of the county. Samples were collected from 91 wells in the county during the period July-August 1960.

Ground Water Occurrence

Ground water on the east side of Fresno County occurs in coalescing alluvial fan and plain deposits derived from the Sierra Nevada. These fan deposits are coarse-grained where the streams enter the valley and grade to finer sediments downslope. Wells tapping these deposits generally yield good quality water. The Corcoran clay underlies the western side of the county and separates the ground water reservoir into an upper and a lower zone. The upper zone consists of alluvial fan and plain deposits that interfinger with lake deposits while the lower zone consists of lenticular beds of clay, silt, and sand. Most of the monitored wells in this area are drawing from the lower zone. Saline waters underlie the west side area at depths ranging from about 1,000 to 3,000 feet.

Ground Water Development

Ground water in Fresno County is extensively developed, resulting in lowering of the water table in the ground water reservoir in areas of inadequate surface water supply. It is used beneficially for irrigation, industrial, domestic, and stock watering purposes. Wells in both the upper and lower zones yield about 1,300 gpm.

Major Waste Discharges

Major waste discharges consist of effluent from sewage treatment plants in Fresno, Reedley, Clovis, Kingsburg, Sanger, and Selma, and from the Valley Nitrogen Products Company near Helm. Discharges from the plants at Fresno and Reedley are partially used for irrigation with the remainder going to percolation ponds. Effluent from the plants in Clovis, Kingsburg, and Sanger is discharged into percolation ponds; Selma's waste discharge is used for irrigation. Waste discharge from the Valley Nitrogen Products Company is disposed of by means of ponds with the cooling water discharge going into Wheaton Slough. Oil field wastes at Raisin City are disposed of by injection into the underlying saline water body at a depth of more than 1,500 feet.

Evaluation of Water Quality

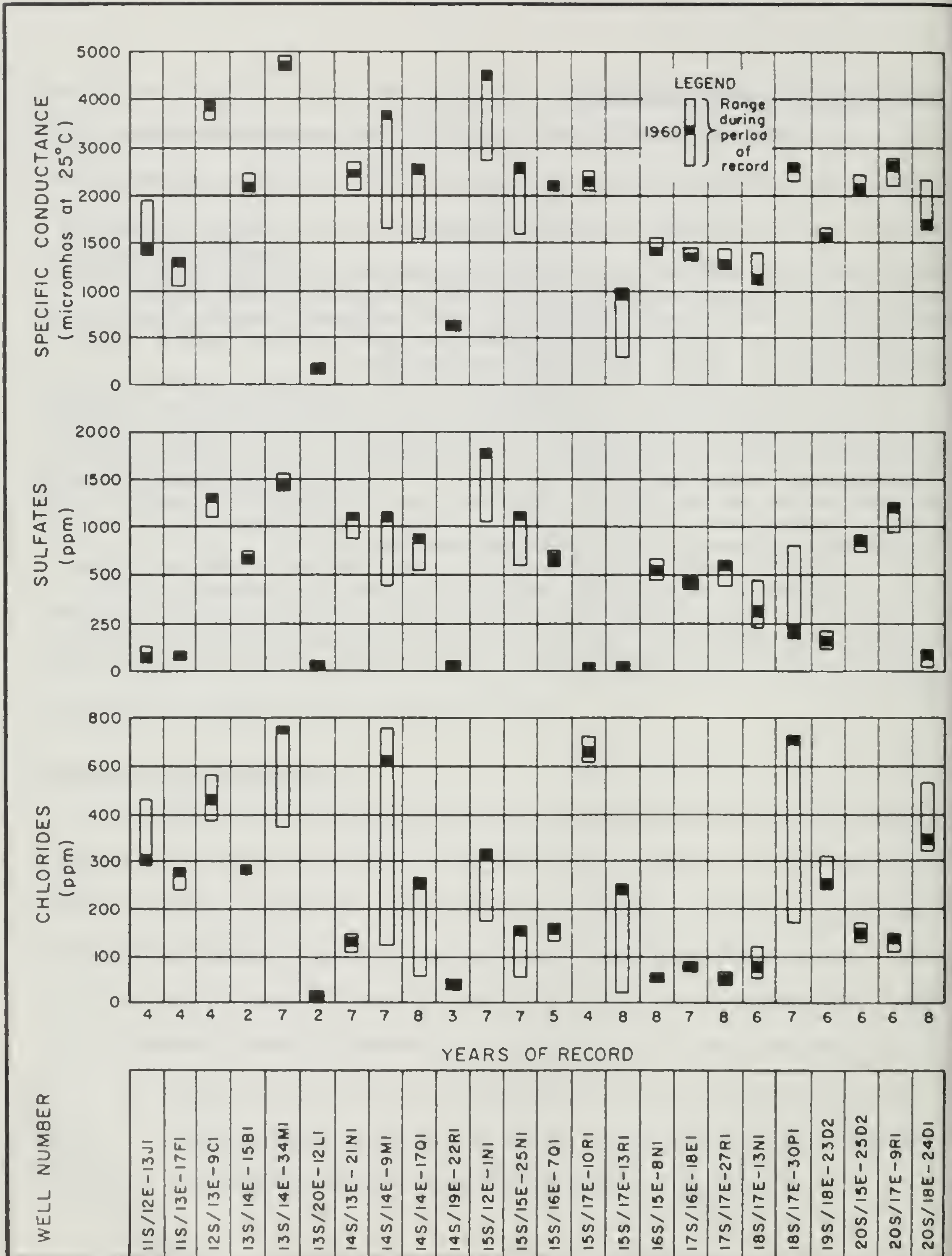
Ground water in the eastern portion of the monitored area is principally calcium bicarbonate in type and of excellent mineral quality. In the central and western portions, ground water in the upper zone generally contains high concentrations of calcium and magnesium sulfate and is unsuitable for most uses. Lower zone water in this area is primarily sodium sulfate in type and generally of good quality; however, there is apparently some degradation of lower zone water due to upper zone water being admitted through improperly constructed wells or discontinuities in the separating Corcoran clay layer. Radiological samples taken from 89 wells in 1960 showed a maximum gross radioactivity of 26.0 uuc/l.

Significant Water Quality Changes

In 1960, well 14S/13E-21N1, about 12 miles southwest of Mendota, showed increases in sulfate from 818 to 1,120 ppm and in total hardness from 478 to 907 ppm. Well 14S/14E-9M1, in the same general area, also showed increases in sulfate and total hardness from 487 to 1,150 ppm and from 290 to 1,300 ppm, respectively. Water from well 15S/12E-1N1, also southwest of Mendota, has shown a steady increase in mineral concentration since 1953.

Well 15S/17E-13R1, near the Raisin City oil field, has shown increase in mineral concentration since 1958. Well 20S/18E-24D1, east of Huron, showed decreases during the same period. Nitrates in well 16S/16E-20N1, located 9 miles west of Helm, increased from 33 to 62 ppm from 1959 to 1960.

Variations in chlorides, sulfates, and specific conductance in 24 monitored wells are depicted on the water quality ranges graph on the following page.



WATER QUALITY RANGES

FRESNO COUNTY

TULARE COUNTY

The monitored portion of Tulare County includes the valley floor area lying between the foothills of the Sierra Nevada and the Kings county line, and comprises an area of about 1,400 square miles. It extends approximately 60 miles from north to south and approximately 30 miles from east to west and covers the western one-third of the county.

Monitoring Program

Tulare County was included in the monitoring program in 1957 to maintain surveillance on ground water quality and to detect significant changes. During the period July-August 1960, samples were collected from 18 wells.

Ground Water Occurrence

Most of the monitored area in Tulare County consists of low alluvial plains and fans with the exception of the southwest corner which is part of the overflow lands surrounding the Tulare Lake bed. Soils covering these overflow lands contain a high percentage of clay and silt and are slightly permeable and highly alkaline. Ground water in the remaining area occurs in a series of poorly connected beds and lenses of sand and gravel, and is locally confined by silt and clay with the notable exception of the Corcoran clay. This clay underlies the eastern sector of the monitored area and separates the ground water reservoir into two water-bearing zones. Ground waters below the Corcoran clay are considered to be confined while those above the clay layer are unconfined or only locally confined.

Ground Water Development

Ground water is extensively developed for irrigation in Tulare County, however, there is a plentiful supply of surface water and in some areas the two are used conjunctively. It is also used for industrial, municipal, and domestic purposes.

Major Waste Discharges

Major waste discharges in Tulare County consist of effluent from sewage treatment plants in Visalia, Tulare, Porterville, Dinuba, Lindsay, and Exeter. These plants dispose of waste water by percolation and irrigation.

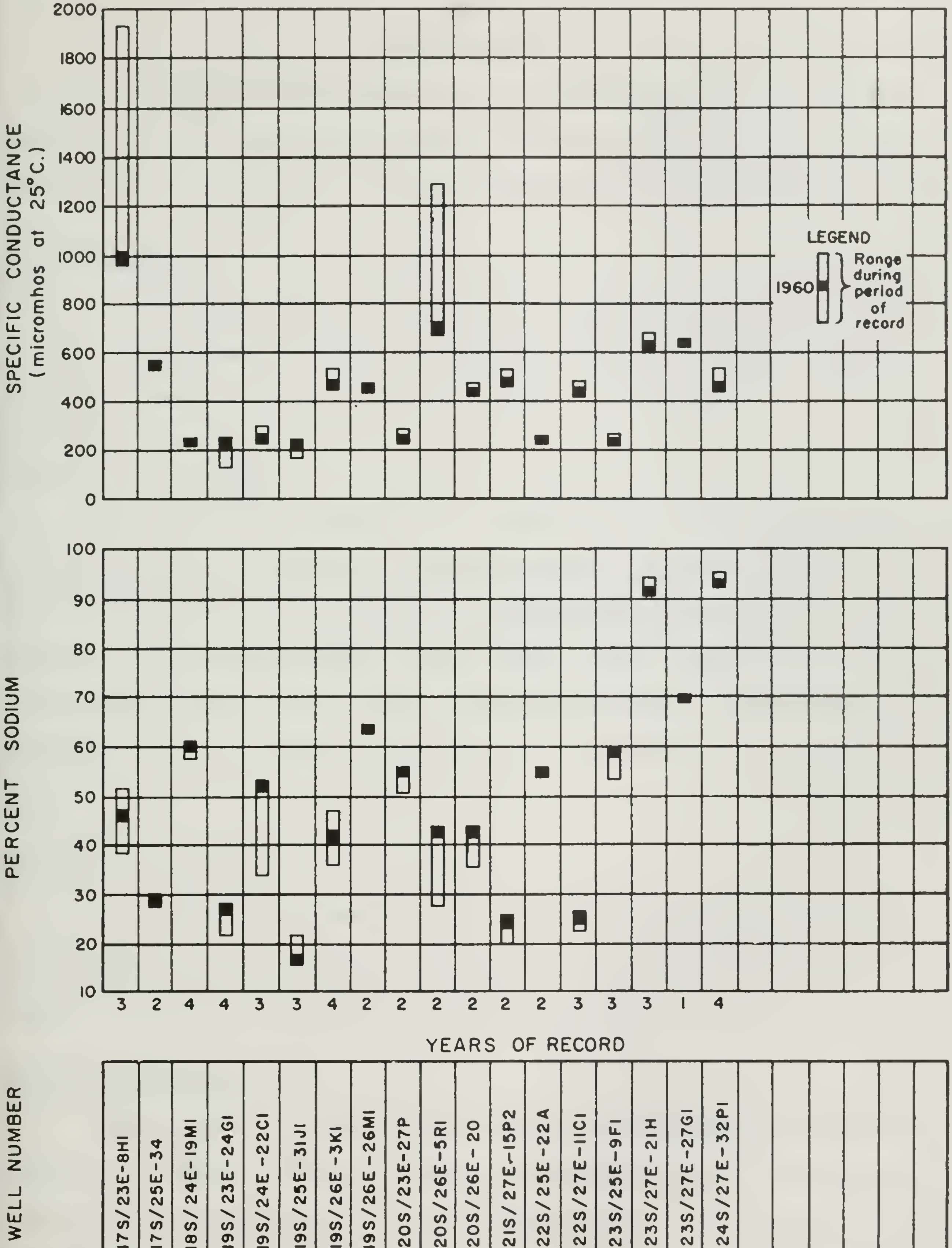
Evaluation of Water Quality

In the area north of the City of Tulare, ground water is predominantly calcium-sodium bicarbonate in type and of excellent mineral quality. Ground water south of Tulare is generally high in percent sodium and of poor quality, particularly in the southwestern portion of the county. Throughout the county, total dissolved solids generally increase with depth. Maximum gross radioactivity observed in the monitoring wells during 1960 was 14.0 uuc/l.

Significant Water Quality Changes

Ground water in well 17S/23E-8H1, about 1 mile north of Traver, has shown a steady decrease in mineral concentration in each of the three years of record from 1958 to 1960. In well 20S/26E-5R1, about 6 miles west of Lindsay, there was a significant decrease in specific conductance, chlorides, and total dissolved solids from 1959 to 1960.

Variations in percent sodium and specific conductance in all of the monitored wells in Tulare County are depicted on the water quality ranges graph on the following page.



WATER QUALITY RANGES

TULARE COUNTY

KINGS COUNTY

Most of the valley floor portion of Kings County is included in the monitored area. This area covers about 1,000 square miles and extends approximately 50 miles from north to south and approximately 40 miles from east to west.

Monitoring Program

Kings County was included in the monitoring program in 1958 due to excessive concentrations of mineral constituents in the ground water. During the period July-August 1960, samples were collected from 26 wells.

Ground Water Occurrence

Principal water-bearing units in Kings County consist of alluvial deposits washed into the valley from the Coast Range and from the Sierra Nevada. In the Tulare Lake area, such deposits are predominantly heavy and impervious; whereas, in the remaining portion of the county, they are generally quite permeable and well drained. The Corcoran clay underlies most of the monitored area and separates the ground water reservoir into an upper and a lower water-bearing zone.

Ground Water Development

Ground water in Kings County is extensively developed in areas where there are no appreciable surface water supplies. It is used beneficially for irrigation, industrial, municipal, and domestic purposes.

Major Waste Discharges

Major waste discharges in Kings County are effluents from sewage treatment plants in Hanford, Corcoran, Lemoore, and Lemoore Naval Air Station. Waste discharges from the Hanford, Corcoran, and Lemoore plants are reclaimed for irrigation or disposed of by percolation ponds. Lemoore Naval Air Station discharges its waste, after treatment, into the north fork of the Kings River.

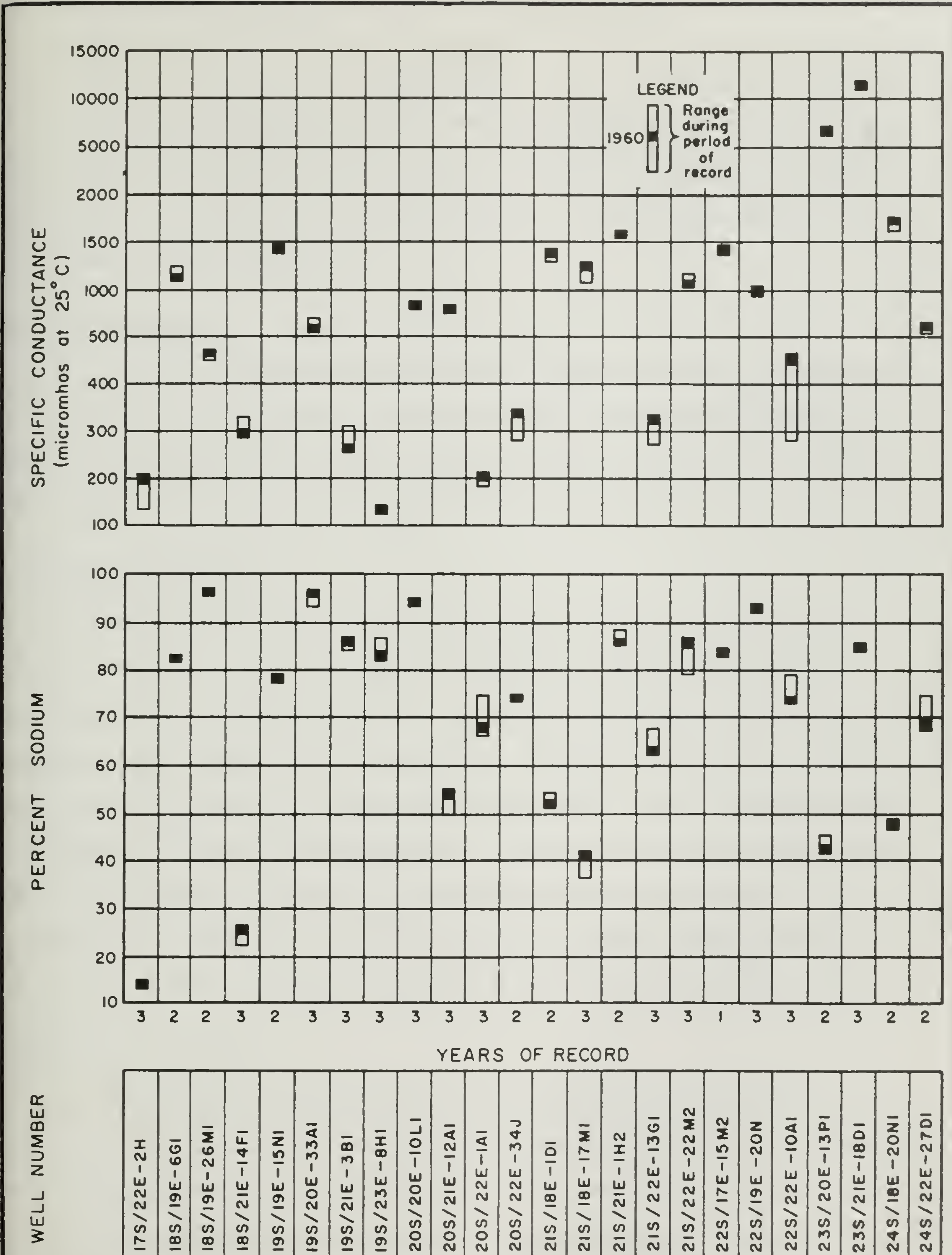
Evaluation of Water Quality

Ground water in Kings County is generally of poor mineral quality with the exception of the northwest corner of the area where it is principally calcium bicarbonate in type and of good quality. On the west side of the county, it is predominantly sodium sulfate in type with high concentrations of boron and sulfate. Throughout the central and east portions of the area, it is sodium bicarbonate in type and high in percent sodium. Ground water varies from soft to slightly hard in the northern portion to very hard in the southern portion of the county.

Significant Water Quality Changes

None.

Variations in percent sodium and specific conductance in 24 monitored wells are depicted graphically on the following page.



WATER QUALITY RANGES

KINGS COUNTY

KERN COUNTY

The monitored portion of Kern County includes most of the valley floor area in the western quarter of the county. It extends approximately 60 miles from north to south and approximately 35 miles from east to west and covers an area of about 2,200 square miles.

Monitoring Program

A monitoring program was established in 1953 to maintain surveillance on the effects of waste water from Edison and Devils Den oil fields, with the remaining area added to the program in 1957. During the period July-September 1960, samples were taken from 59 wells.

Ground Water Occurrence

Principal water-bearing formations in Kern County are poorly-sorted alluvial deposits, and fine-grained lake sediments in the overflow lands of Goose, Buena Vista, and Kern Lake beds. Soils throughout the monitored area are generally highly permeable with the exception of these overflow lands. The Corcoran clay, which separates the ground water reservoir into an upper and a lower zone, pinches out and becomes discontinuous south of a line between Buttonwillow and Delano. Movement of ground water north of Bakersfield is generally in a northwesterly direction, while ground water in the southern portion moves principally in a southwesterly direction toward Buena Vista and Kern Lake beds.

Ground Water Development

Kern County has the second largest irrigated area in the State, and a large portion of this supply is drawn from the ground water reservoir. In areas where surface water is not readily available, ground water is being used to such an extent that the ground water table has fallen considerably. Ground water in Kern County is also used for industrial, municipal, and domestic purposes.

Major Waste Discharges

Principal waste discharges consist of effluent from sewage treatment plants at Bakersfield, Wasco, McFarland, Delano, and Taft. These discharges are almost entirely reclaimed and used for irrigation.

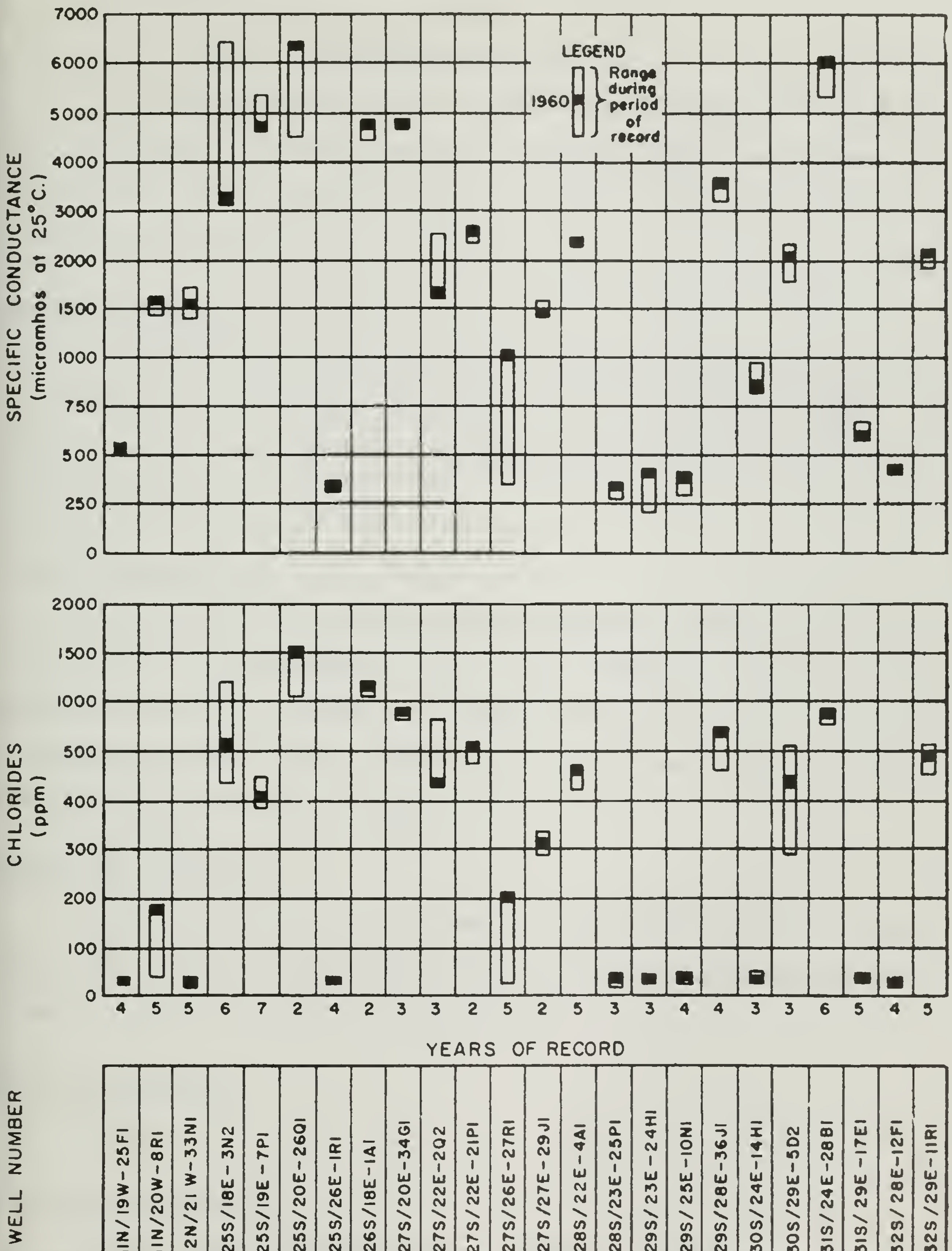
Evaluation of Water Quality

Ground water in the monitored area of Kern County varies in type, but is generally of poor quality and very hard. Very high sulfate and chloride concentrations have been recorded in most of the monitored wells in the northwest section. In the northeastern portion, ground water is principally calcium or sodium bicarbonate in type and its quality ranges from fair to very poor. Near Bakersfield, ground water is predominantly calcium or sodium bicarbonate in type and is of good mineral quality. Radiological samples taken from three wells in 1960 showed a maximum gross radioactivity of 4.7 uuc/l.

Significant Water Quality Changes

In 1960, well 11N/20W-8R1, (SBB&M), near Wheeler Ridge, showed a decrease in sulfate concentration from 640 to 247 ppm and an increase in chloride concentration from 55 to 196 ppm. Well 25S/19E-6D2, near Devils Den, showed a decrease in most constituents as did well 27S/26E-27R1, southeast of Famoso. Well 26S/18E-1A1, near Devils Den, showed an increase in most constituents. In well 30S/29E-5D2, near Edison, there was an increase in chloride concentration from 293 to 436 ppm.

Ranges in chlorides and specific conductance at 24 monitored wells are depicted on the water quality range graph on the following page.



WATER QUALITY RANGES

KERN COUNTY

PANOCHE VALLEY (5-23)

Panoche Valley lies in the eastern portion of San Benito County in the Mt. Diablo Range. It extends approximately 8 miles from north to south and a approximately 10 miles from east to west, and covers a total area of about 30 square miles (Plate 16).

Monitoring Program

Panoche Valley was included in the monitoring program in 1959 to maintain surveillance on ground water quality and to detect significant changes. During the period August-September 1960, samples were collected from six wells. Their locations are shown on Plate 16.

Ground Water Occurrence

Panoche Valley is a synclinal basin geologically similar to the other small valleys in the Diablo Range. Ground water is obtained from alluvial deposits apparently as free ground water; however, deeper wells in the valley may be drawing from confined zones. Recharge of the ground water reservoir is from Panoche Creek and other minor streams.

Ground Water Development

Water requirements in the valley are met entirely by ground water since surface water supplies are undeveloped. Ground water is used beneficially for irrigation, domestic, and stock watering purposes.

Major Waste Discharges

None.

Evaluation of Water Quality

Ground water in Panoche Valley is principally sodium sulfate in type with sulfate concentrations in all but one of the monitored wells above the recommended limit for drinking water. Boron concentrations range between 1 and 2 ppm throughout the valley, while total hardness varies from moderately hard to hard. Radiological samples taken in 1960 showed a maximum gross radioactivity of 6.6 uuc/l.

Significant Water Quality Changes

Sulfate concentration increased considerably from 131 to 321 ppm in well 15S/10E-15G1, located in the center of the valley, between 1959 and 1960, while the other mineral constituents in this well increased only slightly.

LAHONTAN REGION (NO. 6)

The Lahontan Region includes inland basins along the easterly boundary of California. The area is on the lee side of the major mountain systems of the State and is characterized by an arid climate and desert type cultural development. The portion of the region covered by this report and shown on Plate 1 lies along the eastern flank of the Sierra Nevada and Cascade Ranges and extends northerly from the Mono divide to the Oregon border. There are ten major drainage basins with a gross area of 5,550 square miles within this area.

Water supply is dependent on winter rains and drainage from the eastern slopes of adjacent mountain ranges. Generally, there is limited development of ground water. Known problems are of a localized nature, however, mineralized spring waters throughout most of the area indicate potential hazards.

Eight ground water basins in this area have been included in the statewide ground water monitoring program. The names of the monitored areas, the number of monitored wells in each basin sampled in 1960, and the time of sampling are listed in the following tabulation.

Monitored Area	Number of Wells Sampled	Sampling Time
Surprise Valley (6-1)	21	July
Madeline Plains (6-2)	13	August
Honey Lake Valley (6-4)	27	August
Tahoe Valley (6-5)	5	September
Carson Valley (6-6)	6	September
Topaz Valley (6-7)	7	September
Bridgeport Valley (6-8)	5	September
Lower Mojave River Valley (6-40) Barstow to Yermo*	--	--

* Ground water basin is located in Southern California and will be discussed in Part II of this bulletin.

SURPRISE VALLEY (6-1)

Surprise Valley is located in northeastern Modoc County and is bounded by the Warner Mountains on the west and the Nevada border on the east. The valley extends about 50 miles in a north-south direction, ranges up to 12 miles in width, and lies at an elevation of nearly 5,000 feet.

Monitoring Program

A network of 28 monitoring wells was established in 1959 to provide information on ground water quality in the area. During July of 1960, 21 samples were collected in Surprise Valley. Locations of monitoring wells are shown on Plate 17.

Ground Water Occurrence

Ground water is contained principally in alluvial fan, stream channel, and lake deposits. The most prolific aquifers are found in the alluvial fan deposits. Both confined and unconfined ground water exists in the area. The upper portions of alluvial fans, lava flows, deltaic, and beach deposits act as forebays for ground water recharge along the edge of the valley.

Ground Water Development

There is no large scale development of ground water. Ground waters are used principally for domestic and stock watering purposes. Almost all irrigation requirements are met from surface water sources. Ground waters are used for very minor supplemental irrigation purposes.

Major Waste Discharges

There are no major waste discharges in the valley. Individual disposal systems are used for domestic wastes.

Evaluation of Water Quality

Chemical analyses of ground waters collected for the monitoring program in Surprise Valley indicate a soft to moderately hard sodium bicarbonate to calcium bicarbonate type water. All of the sodium bicarbonate type waters indicate a percent sodium in excess of that recommended for irrigation purposes. Aside from excessive percent sodium, water from several of the aforementioned wells also contain concentrations of fluoride or boron that render them undesirable or unsuitable for domestic or irrigation uses. The calcium bicarbonate type waters, in almost all instances, are of excellent mineral quality suitable for most beneficial uses.

From 1956 to 1959, 89 ground water samples from 87 sources were collected by Department of Water Resources personnel as a part of a water quality investigation of Surprise Valley. The 87 sources consisted of 74 wells (43 artesian, 31 nonartesian) and 13 springs. Of the 31 nonartesian sources, 24 yielded class 1 irrigation water; only 22 of the 43 artesian sources yielded class 1 irrigation water; and none of the 13 springs yielded class 1 irrigation water. A high concentration of one or combinations of the following mineral constituents - boron, total dissolved solids, or excess percent sodium - is the reason for the aforementioned sources not yielding class 1 irrigation water. All 13 springs and 11 wells yielded water containing concentrations of fluoride, arsenic, or iron that exceed the U. S. Public Health Service mandatory or recommended limits for domestic use.

Significant Water Quality Changes

No significant water quality changes were noted for 1960.

MADELINE PLAINS (6-2)

Madeline Plains basin is one of the larger valley fill areas in the northeastern counties. Located in northeastern Lassen County, Madeline Plains extends 18 miles in a north-south direction and 30 miles east to west, and encompasses an area of approximately 215 square miles.

Monitoring Program

To detect possible quality changes, a monitoring program was established in Madeline Plains in 1960. Samples were collected from 13 wells in August 1960. Locations of monitoring network wells are shown on Plate 18.

Ground Water Occurrence

The main sources of ground water are lake deposits and interbedded lava flows. Minor amounts of water occur in thin stream channel and alluvial fan deposits. Both confined and unconfined water occur in the area. The major forebays for ground water recharge are coarse lake deposits and lava flows along the edge of the valley.

Ground Water Development

Because there is no perennial surface water supply to the Madeline Plains area, ground water is relied on as the major water supply required by residences of the area. There is very little agricultural development in the area. Ground water sources are principally used for domestic and stock watering purposes.

Major Waste Discharges

There are no major waste discharges in the area. Minor waste discharges consist mainly of sewage effluent from several small communities and isolated ranches located in the area.

Evaluation of Water Quality

Ground waters in the Madeline Plains area are generally either a magnesium-calcium bicarbonate or sodium bicarbonate type water. They are soft to very hard and, in most cases, suitable for their present uses.

Significant Water Quality Changes

Because of the recent establishment of the monitoring program, no evaluation of significant water quality changes has been made.

HONEY LAKE VALLEY (6-4)

Honey Lake Valley is located in northeastern California and northwestern Nevada. The California portion of Honey Lake Valley is located in southeastern Lassen County, has a length of 45 miles in a northwesterly direction, is about 15 miles wide, encompasses an area of approximately 400 square miles, and lies at an elevation of about 4,100 feet above sea level.

Monitoring Program

The monitoring program in Honey Lake Valley was established in 1959 to maintain a check on existing ground water quality and to detect any quality changes. During August 1960, samples were collected from 27 wells in this area. Locations of monitoring network wells are shown on Plate 19.

Ground water Occurrence

Ground water is contained principally in Lahontan Lake deposits which underlie most of the valley. Locally, alluvial fans and lava flows interbedded with the lake deposits contribute significant quantities of ground water. All the deposits contain both confined and unconfined water. Extensive underlying per-Lahontan Lake deposits are a source of highly mineralized water to deep wells. Ground water recharge occurs by infiltration of surface water into: (1) extensive lava flows north of the valley, (2) coarse lake deposits, (3) apexes of alluvial fans, and (4) minor stream channel deposits along the edge of the valley floor.

Ground Water Development

Numerous wells have been drilled throughout Honey Lake Valley, but to date there has been only a minor utilization of ground waters. Ground water is used primarily as a domestic source, and to a lesser extent for irrigation and industrial purposes.

Major Waste Discharges

Effluent from the City of Susanville sewage treatment plant, discharged into the Susan River, is the only major waste discharge in the valley. The other smaller communities have individual septic tanks or cesspools. There are no waste discharges constituting a threat to the mineral quality of ground water in this area.

Evaluation of Water Quality

The quality of ground waters in Honey Lake Valley is generally fair to good but variable in mineral composition. Ground waters are predominantly sodium bicarbonate type in the northern part of the valley, but are calcium bicarbonate in character in the western portion south of the Susan River. Along the southwestern edge of the valley, ground waters generally have bicarbonate as the predominant anion, with calcium and sodium combinations constituting the most abundant cations. Several sampled sources, scattered throughout the valley, yield a sodium bicarbonate-sulfate type water. Dispersed throughout the valley are ground water sources yielding excessive concentrations of one or a combination of the following constituents: boron, fluoride, chloride, nitrate, and sulfate. However, except for a few instances, none of these mineral concentrations exceed mandatory or recommended criteria for their particular usage. The only valley-wide problem that occurs due to mineral characteristics is excessive percent sodium found in waters from 15 of the 27 sampled sources.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1960 with those collected in 1959 showed no basinwide changes in ground water quality.

TAHOE VALLEY (6-5)

Tahoe Valley borders the south shore of Lake Tahoe and extends southward along the Upper Truckee River for an estimated 10 miles. The valley encompasses approximately 40 square miles.

Monitoring Program

The monitoring program was established in 1958 to provide information on ground water quality in the area and to detect significant changes. Five wells were sampled in 1960. Locations of monitoring wells are shown on Plate 20.

Ground Water Occurrence

Ground water in the valley is drawn from interbedded layers of clay and sand which occasionally contain lenses of gravel. These formations are the result of lake deposits and alluvial activity, however, because of their wide continuity, it would appear the majority of the valley fill is lacustrine in origin. Most of the deeper wells in the area have penetrated three separate aquifers.

Ground Water Development

Ground water in Tahoe Valley has been moderately developed. The majority of the wells are for individual dwellings and while the yields are small the quantities are adequate for the seasonal demands. Municipal water supplies, primarily originating from surface sources, are augmented by ground water during periods of low surface flow. Ground water is used primarily for domestic purposes.

Major Waste Discharges

Only one major disposal system exists in Tahoe Valley. This installation, operated by the South Tahoe Public Utility District, sprinkles treated effluent on a forested percolation area.

Evaluation of Water Quality

Ground waters in Tahoe Valley are predominantly calcium bicarbonate in type, low in total dissolved solids, and of excellent mineral quality.

Significant Water Quality Changes

None.

CARSON VALLEY (6-6)

Carson Valley is located in northern Alpine County and is bordered on the north by the California-Nevada state line. The monitored portion has a north-south length of approximately 9 miles, and includes an area of about 25 square miles.

Monitoring Program

A monitoring program was established in Carson Valley in 1958 to observe ground water quality and to detect significant changes. During September 1960, samples were collected from six wells. Locations of monitoring wells are shown on Plate 21.

Ground Water Occurrence

Ground water in the Carson Valley occurs mainly in flood plain and alluvial fan material. Because of the apparent coarse-grained nature of the alluvium, it seems possible that large capacity wells could be developed in the valley floor.

Ground Water Development

There is limited development of ground water in the valley for domestic and stock watering purposes.

Major Waste Discharges

There are no major waste discharges in Carson Valley. Individual disposal systems apparently pose no threat to ground water quality in this sparsely populated area.

Evaluation of Water Quality

Ground waters of Carson Valley are a soft to slightly hard bicarbonate type, of excellent mineral qualities, and suitable for all uses. There are no apparent ground water quality problems in the monitored area.

Significant Water Quality Changes

None.

TOPAZ VALLEY (6-7)

The California portion of Topaz Valley is in Mono County. Topaz Valley is bordered on the north by the State of Nevada, extends about 11 miles south from the state line, and includes an area of about 36 square miles.

Monitoring Program

A monitoring program was established in Topaz Valley in 1958 to provide information on ground water quality in the area and to detect significant changes. Seven wells were sampled during September 1960. Locations of monitoring wells are shown on Plate 22.

Ground Water Occurrence

Topaz Valley is bounded on the east and west by faults along which movement of great magnitude have occurred. The valley has been depressed along these faults and is a typical basin-range graben or down-dropped block. The valley fill consists of alluvial fan, flood plain, and river channel deposits. Ground water occurs in two separate zones, the unconfined or free ground water zone, and the deeper confined or artesian zone.

Ground Water Development

Ground water comprises only a small portion of the total amount of water used. There is only limited development of ground water for domestic and stock watering purposes.

Major Waste Discharges

There are no large waste discharges in this area. Individual disposal systems are commonly used throughout the area.

Evaluation of Water Quality

Ground waters in Topaz Valley are a soft to moderately hard bicarbonate type with calcium and sodium the predominant cations. Three wells dispersed through the area yield excessive concentrations of fluoride and high percentages of sodium. The fluoride content is in excess of the mandatory limiting concentrations for drinking water, although it is presently being used for domestic and stock watering purposes. This poor qaulity water possibly originates from a series of faults which traverse the valley. The remaining monitored wells are of excellent mineral quality and suitable for most beneficial uses.

Significant Water Quality Changes

None.

BRIDGEPORT VALLEY (6-8)

Bridgeport Valley is located in the northern portion of Mono County. This irregularly shaped valley extends from the northern end of Bridgeport Reservoir southward for approximately 20 miles, and encompasses an area of about 45 square miles.

Monitoring Program

Excessive quantities of boron known to occur in ground water in certain portions of the valley prompted the establishment of a monitoring program in the area in 1959. Samples were collected from five wells during September 1960. Locations of monitoring wells are shown on Plate 23.

Ground Water Occurrence

Bridgeport Valley is a structural basin and is sharply defined by normal faults on both the eastern and western margins. The southern end of the valley floor is poorly defined because of the encroachment of glacial moraines and outwash. The glacial deposits also serve as a source of recharge for the valley fill. The valley fill at depth is probably lacustrine in origin and is overlain by a series of flood plain and river channel deposits. The alluvial fill which overlies the lake sediments of Bridgeport Valley is mostly of a fine-grained nature, being composed chiefly of flood plain deposits. A high water table is present over much of the valley floor and is maintained in part by percolation from Bridgeport Reservoir in the northern end of the valley.

Ground Water Development

Ground water is used primarily for domestic purposes. The town of Bridgeport is the only municipal user of ground water in the valley.

Major Waste Discharges

There are no large waste discharges in Bridgeport Valley. Septic tanks, employed by individual householders, could pose an impairment problem to ground water due to the high water table in the valley.

Evaluation of Water Quality

Ground waters in Bridgeport Valley are generally calcium or sodium bicarbonate in type. Although soft to very hard, the waters are generally good to excellent quality and suitable for most uses. Water from well 4N/25E-4F1, located approximately 1.3 miles south of Bridgeport, contains high concentrations of boron, sulfate, fluoride, and sodium, which probably are the result of migration of water from nearby highly mineralized hot springs.

Significant Water Quality Changes

None.

A P P E N D I X   A

PROCEDURES AND CRITERIA

APPENDIX A

PROCEDURES AND CRITERIA

Types of Mineral Analyses

The following tabulation indicates the tests made, and the properties and constituents usually analyzed for, in the various types of mineral analyses performed as a part of the Ground Water Quality Monitoring Program.

Constituents and properties	Analysis		
	Standard mineral	Partial mineral	Heavy metals
Specific conductance	x	x	
pH	x	x	
Total dissolved solids	x		
Percent sodium	x		
Hardness	x	x	
Temperature	x	x	
Calcium	x		
Magnesium	x		
Sodium	x	x	
Potassium	x		
Carbonate	x		
Bicarbonate	x		
Sulfate	x		
Chloride	x	x	
Nitrate	x		
Fluoride	x		
Boron	x	x	
Silica	x		
Aluminum			x
Iron			x
Manganese			x
Chromium			x
Copper			x
Lead			x
Zinc			x
Arsenic			x

Laboratory Methods and Procedures

Analytical methods used in determination of the various constituents reported conform, in general, to those presented in "Standard Methods for the Examination of Water and Sewage," a joint publication of the American Public Health Association, the American Water Works Association, and the Federation of Sewage and Industrial Wastes Association, 11th edition, 1960. For certain specific analyses, methods described in "Methods of Water Analyses," United States Geological Survey Water Supply Paper 1454, 1960, have been used.

Mineral analyses of the water samples were performed at the laboratories of the United States Geological Survey, Quality of Water Branch, and the Department of Water Resources, both located in Sacramento, or by the Terminal Testing Laboratories located in Los Angeles. Radioassays of samples were performed at the Radiological Laboratory of the California Disaster Office in Sacramento.

The methods and procedures for sample preparation and determination of radioactivity in ground waters are as follows:

1. Sample Preparation
    a. Samples are collected in one-half gallon jugs by the Department of Water Resources and delivered to the Radiological Laboratory of the California Disaster Office for radioassay.
    b. Each sample is mixed by agitating the jug, and 250 ml are removed.
    c. The sample is placed in a 250 ml volumetric flask and one drop of aerosol solution added. The flask is then inverted and the mouth placed in a 2 x 1/4" aluminum culture dish that has been treated with Desicote. The flask is supported by a ring stand and the water level adjusted to the lip of the dish in a "chicken-feeder-type" arrangement. The dish rests on a hot-plate, regulated so that the specimen is taken to dryness at a temperature well below the boiling point to prevent spattering.
    d. The specimen is now ready to be measured for radioactivity.
2. Counting Techniques
    a. A gross beta-gamma determination is made for each specimen.

b. Beta-gamma activity is determined with an internal gas flow counter operating in the proportional region, using argon-methane mixture as a flow gas. Background determinations are made before the first specimen count each day, and subsequently after each four specimen counts throughout the day. Determinations of counter efficiency are made with a reference standard (Thallium 204). Each determination of specimen and background count rate is made for a total of 1,024 counts. Average time required for each specimen count is from 30 to 40 minutes.

3. Calculations

a. Results are expressed as micromicrocuries per liter (uuc/l). One micromicrocurie is equivalent to 2.22 disintegrations per minute.

b. Sample counts are corrected for background and geometric efficiency.

c. Standard statistical procedures are utilized to compute the 0.9 error. The final result is expressed (symbolically) as $x \pm y$ uuc/l. This means that in a series of determinations on the same sample, the value of x should fall between $x - y$ and $x + y$, 90 percent of the time.

Water Quality Criteria

Criteria presented in the following sections can be utilized in evaluating the quality of water relative to existing or anticipated beneficial uses. It should be noted that these criteria are merely guides to the appraisal of water quality. Except for those constituents which are considered toxic to human beings, these criteria should be considered as suggested limiting values. A water which exceeds one or more of these limiting values need not be eliminated from consideration as a source of supply, but other sources of better quality water should be investigated.

Domestic and Municipal Water Supply

In general, water that is used for drinking or culinary purposes should be clear, colorless, odorless, pleasant to the taste, and free from toxic compounds, should not contain excessive quantities of dissolved minerals, and must be free from pathogenic organisms.

Chapter 7 of the California Health and Safety Code contains provisions which relate to water supplies used for domestic purposes throughout the State. One of these provisions covers standards for quality of domestic water supplies. In essence, this section (No. 4010.5) refers to the drinking water standards promulgated by the United States Public Health Service for water used on interstate carriers as of March 1946.

Recently the United States Public Health Service revised its drinking water standards. Portions of these new standards are presented herein. The complete standards, which cover definition of terms, bacteriological quality, physical characteristics, chemical characteristics, radioactivity, and recommended analytical methods, are contained in the March 6, 1962 issue of the Federal Register under Rules and Regulations.

Mineral Concentrations. The following tabulation gives the limiting concentrations of chemical constituents for drinking water, as prescribed by the United States Public Health Service.

UNITED STATES PUBLIC HEALTH SERVICE
DRINKING WATER STANDARDS
1962

Constituent	Mandatory limit in ppm
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	0.01
Hexavalent chromium (Cr^{+6})	0.05
Cyanide (CN)	0.2
Lead (Pb)	0.05
Selenium (Se)	0.01
Silver (Ag)	0.05

Constituent	Nonmandatory, but recommended limit in ppm
Alkyl benzene sulphonate (detergent)	0.5
Arsenic (As)	0.01
Carbon chloroform extract (exotic organic chemicals)	0.2
Chloride (Cl)	250
Copper (Cu)	1.0
Cyanide (CN)	0.01
Fluoride (F)	See following page
Iron (Fe)	0.3
Manganese (Mn)	0.05
Nitrate (NO_3)	45
Phenols	0.001
Sulfate (SO_4)	250
Total dissolved solids	500
Zinc (Zn)	5

Interim standards for the upper limits of certain mineral constituents were adopted by the California State Board of Public Health in December 1959. Based on these standards, temporary permits may be issued for drinking water failing to meet the United States Public Health Service Drinking Water Standards, provided the mineral constituents in the following tabulation are not exceeded.

UPPER LIMITS OF TOTAL SOLIDS AND SELECTED MINERALS IN DRINKING WATER AS DELIVERED TO THE CONSUMER (parts per million)

	Permit	Temporary Permit
Total Solids	500 (1000)*	1500
Sulfates (SO_4)	250 (500)*	600
Chlorides (Cl)	250 (500)*	600
Magnesium (Mg)	125 (125)*	150

Fluoride Concentration. The California State Board of Public Health has defined the maximum safe amounts of fluoride ion in drinking water in relatic to mean annual temperature.

Mean annual temperature	Mean monthly fluoride ion concentration (ppm)
50° F	1.5
60° F	1.0
70° F - above	0.7

Hardness. Even though hardness of water is not included in the drinking water standards, it is of importance in domestic and industrial uses. Excessive hardness in water used for domestic purposes causes increased consumptior of soap and formation of scale in pipes and fixtures. The following tabulation for degrees of hardness is suggested.

Range of hardness expressed as $CaCO_3$, in ppm	Relative classification
0 - 100	Soft
101 - 200	Moderately hard
Greater than 200	Very hard

Radioactivity. As part of its new drinking water standards, the Unitec States Public Health Service recently announced limits on concentrations of radioactivity in drinking waters. These limits are as follows:

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* Numbers in parentheses are maximum permissible to be used only where no other more suitable waters are available in sufficient quantity for use in the systen

Radionuclide	Recommended maximum limits micromicrocuries per liter
Radium 226	3
Strontium 90	10
Gross beta activity	1,000*

According to the International Commission on Radiological Protection1/, tentatively concurred in by the National Committee on Radiation Protection2/, if the Radium-226 and Radium-228 activity in water is substantially less than 10 uuc/l, the maximum permissible concentration of otherwise unidentified radionuclides in water for individuals in the population at large may be considered to be 100 uuc/l.

Industrial Water Supply

Water quality criteria for industrial waters are as varied and diversified as industry itself. Food processing, beverage production, pulp and paper manufacturing, and textile industries have exacting requirements. However, many cooling or metallurgical operations permit the use of poor quality waters. In general, where a water supply meets drinking water standards, it is satisfactory for industrial use, either directly or following a limited amount of polishing treatment by the industry.

Irrigation Water

Criteria for mineral quality of irrigation water have been developed by the Regional Salinity Laboratories of the United States Department of Agriculture

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* In the known absence of strontium-90 and alpha emitters.

1/ "Report on Decisions of the 1959 Meeting of the International Committee on Radiological Protection (ICRP)." Radiology, Vol. 74, No. 1, January 1960, pp. 116-119.

2/ "Somatic Radiation Dose for the General Population, Ad Hoc Committee of the National Committee on Radiation Protection and Measurements." Science, Vol. 131, No. 3399, February 19, 1960, pp. 482-486.

in cooperation with the University of California. Because of diverse climatological conditions and the variation in crops and soils in California, only general limits of quality for irrigation waters can be suggested.

QUALITATIVE CLASSIFICATION OF IRRIGATION WATERS

Chemical Properties	Class 1 Excellent to good	Class 2 Good to injurious	Class 3 Injurious to unsatisfactory
Total dissolved solids, in ppm	Less than 700	700 - 2000	More than 2000
Conductance, in micromhos at 25°C	Less than 1000	1000 - 3000	More than 3000
Chlorides in ppm	Less than 175	175 - 350	More than 350
Sodium in percent of base constituents	Less than 60	60 - 75	More than 75
Boron in ppm	Less than 0.5	0.5 - 2.0	More than 2.0

These criteria have limitations in actual practice. In many instances a water may be wholly unsuitable for irrigation under certain conditions of use, and yet be completely satisfactory under other circumstances. Consideration also should be given to soil permeability, drainage, temperature, humidity, rainfall, and other conditions that can alter the response of a crop to a particular quality of water.

Chemical Classification of Waters

Waters are classified, with respect to mineral compostion, in terms of the predominant ions. Specifically, the name of an ion is used where it constitutes at least half of its ionic group, expressed in equivalents per million (epm). Where no one ion fulfills the requirement, a hyphenated combination of the two most abundant constituents is used. Thus a calcium bicarbonate water denotes that calcium constitutes at least half of the cations and bicarbonate represents at least half of the anions. Where calcium, though predominant, is less than half of the total cations with sodium next in abundance, and where bicarbonates are more than half of the total anions, the name is modified to calcium-sodium bicarbonate.

A P P E N D I X   B

BASIC DATA FOR 1960

APPENDIX B

TABLE OF CONTENTS

APPENDIX B

TABLE OF CONTENTS (continued)

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	HB&M									NORTH COASTAL REGION (NO. 1) SMITH RIVER PLAIN (1-1)													
A. Short domestic	16N/1W-2Q1	9- -60	-	214	7.9	13 0.65	10 0.87	15 0.65	0.4 0.01	0 0.00	103 1.69	6.7 0.14	10 0.28	1.3 0.02	0.2 0.01	0.07	38	Fe 10 (total) ABS 0.0 Br 0.0	146	30	76	0	DWR
L. Cadra domestic	-7F1	9- -60	55	347	8.2	32 1.60	14 1.16	17 0.74	1.0 0.02	0 0.00	159 2.61	1.0 0.02	29 0.82	0.9 0.01	0.1 0.00	0.05	19	Fe 2.7 (total) ABS 0.0 Br 0.0	192	21	138	8	DWR
L. L. Earley domestic	-15C1	9- -60	-	104	7.4	2.9 0.14	5.1 0.42	7.2 0.31	0.6 0.02	0 0.00	26 0.43	2.1 0.04	12 0.34	5.2 0.08	0.0 0.00	0.04	16	Fe 4.8 (total) ABS 0.0 Br 0.2	54	35	28	7	DWR
Pine Grove School domestic	-16D1	9- -60	54	201	8.0	8.2 0.41	13 1.11	10 0.44	0.6 0.02	0 0.00	88 1.44	3.3 0.07	16 0.45	1.6 0.02	0.0 0.00	0.02	26	Fe 3.7 (total) ABS 0.0 Br 0.0	122	22	76	4	DWR
S. R. Mattson domestic	-17K	11-29-60	57	205	7.8	5.5 0.27	14 1.15	12 0.52	0.5 0.01	0 0.00	69 1.13	4.6 0.10	19 0.54	8.3 0.13	0.1 0.00	0.05	30	Fe 0.12 (total) ABS 0.0 Br 0.0	128	27	71	15	DWR
A. Pullen domestic	-20A2	9- -60	-	298	7.4	5.6 0.28	15 1.26	22 0.96	0.8 0.02	0 0.00	45 0.74	8.6 0.18	26 0.73	49 0.79	0.0 0.00	0.04	22	Fe 0.14 (total) ABS 0.0 Br 0.0	171	38	77	40	DWR
W. Storey domestic	-20H1	11-29-60	57	126	7.0	2.2 0.11	5.2 0.43	11 0.48	0.9 0.02	0 0.00	20 0.33	6.7 0.14	14 0.39	9.5 0.15	0.0 0.00	0.06	10	Fe 0.78 (total) ABS 0.0 Br 0.2	70	46	27	11	DWR
H. C. Kirkland domestic	-26D1	9- -60	-	275	6.5	6.8 0.34	10 0.82	24 1.04	0.4 0.01	0 0.00	32 0.52	0.6 0.01	30 0.85	49 0.79	0.0 0.00	0.04	13	Fe 0.22 (total) ABS 0.2 Br 0.0	150	47	58	32	DWR
E. Mello irrigation	17N/1W-2G1	9- -60	-	115	7.5	3.8 0.19	7.4 0.61	6.5 0.28	0.3 0.01	0 0.00	46 0.75	2.1 0.04	7.5 0.21	3.5 0.06	0.0 0.00	0.04	20	Fe 0.16 (total) ABS 0.0 Br 0.4	74	26	40	2	DWR
R. H. Emmerson irrigation	-9A1	9-14-60	-	260	8.2	4.6 0.23	28 2.35	4.8 0.21	0.4 0.01	0 0.00	150 2.46	2.3 0.05	7.1 0.20	1.9 0.03	0.0 0.00	0.03	33	Fe 1.0 (total) ABS 0.0 Br 0.8	156	8	129	6	DWR
R. Oliver	-11A	9- -60	-	117	7.4	1.7 0.08	10 0.82	4.1 0.18	0.1 0.00	0 0.00	40 0.66	0.5 0.01	5.0 0.14	16 0.26	0.0 0.00	0.03	21	ABS 0.0 Br 0.5	78	17	45	12	DWR
Redwood School domestic	-14C1	9-15-60	-	384	8.3	19 0.95	14 1.15	41 1.78	2.6 0.07	0 0.00	196 3.21	14 0.29	15 0.42	0.6 0.01	0.1 0.00	0.23	20	Fe 0.09 (total) ABS 0.0 Br 0.5	222	45	105	0	DWR
R. W. Struebing domestic	18N/1W-5G1	9- -60	-	183	6.8	7.1 0.35	5.7 0.47	15 0.65	0.7 0.02	0 0.00	12 0.20	4.0 0.08	31 0.87	19 0.31	0.0 0.00	0.03	10	Fe 0.24 (total) ABS 0.0 Br 1.1	98	44	41	31	DWR
Jepson domestic and stock	-34M2	9- -60	-	381	8.4	13 0.65	42 3.45	3.8 0.16	0.7 0.02	2 0.07	232 3.80	4.6 0.10	5.0 0.14	4.7 0.08	0.0 0.00	0.05	39	Fe 0.03 (total) ABS 0.0 Br 0.5	229	4	205	11	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M								BUTTE VALLEY (1-3)														
Wheeler Nursey irrigation	45N/1E-2L1	8-16-60	56	158	7.9	8.4 / 0.42	7.0 / 0.58	13 / 0.56	2.1 / 0.05	0 / 0.00	92 / 1.51	0.6 / 0.01	2.0 / 0.06	0.4 / 0.01	0.1 / 0.00	0.05	42	Al 0.02 Zn 0.01 Br 0.8 ABS 0.0	121	35	50	0	DWR
A. Beck irrigation	-9Q2	8-16-60	56	159	7.8	8.7 / 0.43	7.4 / 0.61	10 / 0.44	2.1 / 0.05	0 / 0.00	90 / 1.48	0.0 / 0.00	2.1 / 0.06	0.5 / 0.01	0.0 / 0.00	0.04	40	Fe 0.02 (total) Br 0.0 ABS 0.0	115	29	52	0	DWR
D. Miles irrigation	45N/2W-1P1	7-23-60	48	142	7.7	12 / 0.60	6.3 / 0.52	5.7 / 0.25	1.7 / 0.04	0 / 0.00	76 / 1.24	0.3 / 0.01	1.0 / 0.03	2.2 / 0.04	0.0 / 0.00	0.02	40	Cu 0.01 Br 0.0 ABS 0.0	106	18	56	0	DWR
K. Holbrook irrigation	46N/1E-15D1	8-8-60	68	208	7.9	6.5 / 0.32	4.1 / 0.34	27 / 1.17	7.0 / 0.18	0 / 0.00	115 / 1.88	0.0 / 0.00	5.3 / 0.15	0.9 / 0.01	0.2 / 0.01	0.68	47	Cu 0.01 Fe 0.01 (dis.) Fe 0.12 (total) Mn 0.01 Pb 0.02 Br 0.0 ABS 0.0	154	58	33	0	DWR
R. Cheyne irrigation	46N/1W-2F1	8-8-60	56	358	8.2	17 / 0.85	13 / 1.11	42 / 1.83	6.8 / 0.17	0 / 0.00	218 / 3.57	2.3 / 0.05	4.8 / 0.14	6.3 / 0.10	0.2 / 0.01	0.12	46	Br 0.0 ABS 0.0	246	46	98	0	DWR
W. G. Osborne & Sons irrigation	-17B1	7-23-60	54	322	8.4	18 / 0.90	15 / 1.22	30 / 1.30	3.6 / 0.09	1 / 0.03	201 / 3.29	0.0 / 0.00	2.9 / 0.08	0.7 / 0.01	0.1 / 0.00	0.05	36	Mn 0.01 Br 0.2 ABS 0.0	206	37	106	0	DWR
W. G. Osborne & Sons irrigation	-17G1	7-23-60	52	318	8.3	20 / 1.00	16 / 1.34	24 / 1.04	3.8 / 0.10	0 / 0.00	195 / 3.20	3.1 / 0.06	3.1 / 0.09	0.7 / 0.01	0.0 / 0.00	0.04	37	Cu 0.01 Br 0.4 ABS 0.0	204	30	117	0	DWR
Butte Valley Irrigation District irrigation	46N/2W-25R2	7-19-60	54	311	8.2	22 / 1.10	19 / 1.56	13 / 0.56	4.6 / 0.12	0 / 0.00	167 / 2.74	18 / 0.37	1.1 / 0.03	3.4 / 0.05	0.1 / 0.00	0.04	49	Mn 0.31 Br 0.5 ABS 0.0 Cu 0.02	212	17	133	0	DWR
F. E. Johnson irrigation	47N/1E-29N1	8-8-60	64	216	8.0	9.3 / 0.46	3.6 / 0.30	30 / 1.30	6.4 / 0.16	0 / 0.00	120 / 1.97	0.0 / 0.00	5.3 / 0.15	1.1 / 0.02	0.2 / 0.01	0.07	52	Fe 0.05 (total) Mn 0.01 Br 0.0 ABS 0.0	167	59	39	0	DWR
E. Harrison irrigation	47N/1W-23H1	8-8-60	52	3780	8.6	56 / 2.79	157 / 12.91	600 / 26.10	82 / 2.10	39 / 1.30	697 / 11.42	1060 / 22.07	335 / 9.45	16 / 0.26	0.2 / 0.01	1.9	42	Cu 0.02 Mn 0.01 Br 2.5 ABS 0.0	2730	57	786	149	DWR
Butte Valley Irrigation District irrigation	-34Q1	8-8-60	54	460	8.9	22 / 1.10	18 / 1.44	50 / 2.18	10 / 0.26	10 / 0.33	261 / 4.28	0.2 / 0.00	6.7 / 0.19	7.0 / 0.11	0.1 / 0.00	0.18	49	Br 0.5 ABS 0.0	302	44	127	0	DWR
J. Liskey irrigation	48N/1E-30F1	8-8-60	56	334	8.3	25 / 1.25	16 / 1.29	20 / 0.87	66 / 0.17	0 / 0.00	199 / 3.26	9.2 / 0.19	2.4 / 0.07	0.4 / 0.01	0.4 / 0.02	0.07	57	Fe 0.02 (Total) Br 0.0 ABS 0.0	235	21	127	0	DWR
J. Liskey irrigation	-28F1	7-23-60	78	211	7.5	3.7 / 0.18	1.7 / 0.14	42 / 1.83	1.8 / 0.05	0 / 0.00	120 / 1.97	1.2 / 0.02	4.2 / 0.12	3.6 / 0.06	0.2 / 0.01	0.27	22	Br 0.5 ABS 0.0	140	83	160	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr⁶⁺), Bromide (Br), and Detergent Surfactent (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M							SHASTA VALLEY (1-4)															
E. Spada domestic	42N/5W-20J1	7-28-60	70	330	8.3	13 0.65	23 1.89	22 0.96	2.3 0.06	0 0.00	204 3.34	2.8 0.06	5.0 0.14	0.6 0.01	0.4 0.02	0.14	56	Al 0.01 As 0.01 Fe 0.01 (dis.) Zn 0.07 Br 0.4 ABS 0.0	225	27	127	0	DWR
G. G. Maxwell domestic	42N/6W-10J1	7-20-60	60	571	7.4	11 0.55	70 5.80	4.8 0.21	0.4 0.01	0 0.00	374 6.13	3.4 0.07	5.5 0.16	9.9 0.16	0.0 0.00	0.04	50	Al 0.02 Cu 0.01 Cr +6 0.01 Fe 0.04 (total) Pb 0.01 Zn 0.18 Br 0.1 ABS 0.0	339	3	318	11	DWR
Big Springs Irrigation District irrigation	43N/5W-2C1	7-29-60	52	262	8.1	15 0.75	14 1.13	17 0.74	2.0 0.05	0 0.00	138 2.26	4.4 0.09	11 0.31	1.6 0.02	0.2 0.01	0.18	53	Al 0.01 Cu 0.01 Pb 0.01 Zn 0.01 Br 0.2 ABS 0.0	186	28	94	0	DWR
Dougherty & Son irrigation	43N/6W-21R1	7-20-60	58	472	7.5	62 3.09	21 1.71	8.0 0.35	1.0 0.02	0 0.00	295 4.84	7.2 0.15	2.7 0.08	5.1 0.08	0.1 0.00	0.03	29	Al 0.01 Fe 0.31 (total) Zn 0.01 Br 0.2 ABS 0.0	281	7	240	0	DWR
J. C. Martin irrigation	44N/4W-6M1	8-10-60	58	511	8.2	33 1.65	21 1.73	44 1.91	2.0 0.05	0 0.00	270 4.42	12 0.25	21 0.59	7.4 0.12	0.1 0.00	0.75	51	Br 0.2 ABS 0.0	325	36	169	0	DWR
S. D. Nelson domestic and irrigation	44N/5W-32F1	7-29-60	68	875	8.6	36 1.80	66 5.41	70 3.04	2.8 0.07	29 0.97	482 7.90	20 0.42	40 1.13	1.6 0.02	0.2 0.01	0.73	54	Al 0.01 As 0.01 Cu 0.01 Mn 0.05 Zn 0.08 Br 0.2 ABS 0.0 Pb 0.01	567	29	361	0	DWR
H. Silva irrigation	-34H1	7-29-60	-	588	8.5	41 2.04	30 2.48	44 1.91	5.5 0.14	20 0.67	301 4.93	5.8 0.12	22 0.62	8.8 0.14	0.3 0.02	0.50	67	Al 0.02 Pb 0.01 Br 0.3 ABS 0.0	393	29	226	0	DWR
G. Weldon domestic	45N/6W-19E1	7-29-60	72	359	8.1	25 1.25	12 0.95	34 1.48	1.1 0.03	0 0.00	179 2.93	35 0.73	2.4 0.07	1.0 0.02	0.5 0.03	0.13	23	Al 0.01 Fe 0.09 (total) Zn 0.10 Br 0.4 ABS 0.0	222	40	110	0	DWR
								SCOTT RIVER VALLEY (1-5)															
C. W. Black irrigation	42N/9W-2O1	7-22-60	55	390	8.1	34 1.70	27 2.24	6.2 0.27	0.6 0.02	0 0.00	235 3.85	6.4 0.13	2.9 0.08	9.2 0.15	0.0 0.00	0.04	27	Al 0.01 Fe 0.16 (total) Br 0.3 ABS 0.0	229	6	197	4	DWR
C. R. McConnell irrigation	-10Q1	7-22-60	54	212	8.1	19 0.95	12 1.01	5.4 0.23	0.6 0.02	0 0.00	125 2.05	1.5 0.03	2.2 0.06	2.6 0.04	0.0 0.00	0.02	31	Al 0.02 Br 0.0 ABS 0.0	135	10	98	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

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1960

Mineral constituents in parts per million / equivalents per million

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
	MDB&M					SCOTT RIVER VALLEY (1-5) (Cont.)																	
L. L. Lukes irrigation	43N/9W-24F1	7-27-60	54	434	8.2	41 / 2.04	31 / 2.54	4.8 / 0.21	0.5 / 0.01	0 / 0.00	273 / 4.47	4.6 / 0.10	2.6 / 0.07	12 / 0.19	0.0 / 0.00	0.07	31	Al 0.02 Cr +6 0.01 Cu 0.01 Fe 0.04 (total) Br 0.5 ABS 0.0	262	4	229	5	DWR
L. L. Lukes irrigation	-24F2	7-27-60	54	404	8.0	36 / 1.80	28 / 2.34	5.2 / 0.23	0.5 / 0.01	0 / 0.00	247 / 4.05	5.6 / 0.12	2.4 / 0.07	9.9 / 0.16	0.0 / 0.00	0.09	31	Al 0.02 Cr +6 0.01 ABS 0.0	240	5	207	5	DWR
[illegible] Heinke domestic and stock	43N/9W-34R1	7-27-60	62	290	8.2	36 / 1.80	12 / 0.96	5.7 / 0.25	0.6 / 0.02	0 / 0.00	158 / 2.59	7.2 / 0.15	2.4 / 0.07	11 / 0.18	0.0 / 0.00	0.03	24	Al 0.02 ABS 0.0	177	8	138	8	DWR
	MDB&M					HAYFORK VALLEY (1-6)																	
H. A. Reynolds domestic	31N/11W-8M1	7-26-60	-	139	7.9	14 / 0.70	5.6 / 0.46	4.7 / 0.20	1.4 / 0.04	0 / 0.00	78 / 1.28	0.0 / 0.00	3.0 / 0.08	0.9 / 0.01	0.0 / 0.00	0.11	23		91	14	58	0	DWR
R. Hood domestic and irrigation	31N/12W-11Q1	7-26-60	-	274	8.1	35 / 1.75	9.4 / 0.77	8.5 / 0.37	0.3 / 0.01	0 / 0.00	154 / 2.52	6.9 / 0.14	4.7 / 0.13	0.0 / 0.00	0.1 / 0.00	0.02	23	Zn 0.53	164	13	126	0	DWR
J. Langberg domestic	-12L1	7-26-60	-	225	8.0	21 / 1.05	10 / 0.87	8.0 / 0.35	0.9 / 0.02	0 / 0.00	114 / 1.87	4.9 / 0.10	4.8 / 0.14	6.8 / 0.11	0.1 / 0.00	0.06	24		136	15	96	3	DWR
Jesse domestic	-18K1	8-20-60	-	239	8.1	22 / 1.10	13 / 1.04	9.2 / 0.40	0.2 / 0.00	0 / 0.00	145 / 2.38	0.0 / 0.00	2.9 / 0.08	0.4 / 0.01	0.0 / 0.00	0.13	33	Al 0.02 Cu 0.02 Fe 0.02 (dis.) Zn 0.06	152	16	107	0	DWR
J. R. Morris domestic	32N/11W-3[illegible]G1	7-26-60	-	443	8.3	52 / 2.59	13 / 1.09	18 / 0.78	2.8 / 0.07	0 / 0.00	195 / 3.20	12 / 0.25	33 / 0.93	2.4 / 0.04	0.1 / 0.00	0.04	19	Zn 0.38	248	17	184	24	DWR
	HB&M					MAD RIVER VALLEY (1-8)																	
Jacoby Creek School domestic	5N/1E-[illegible]H2	8-11-60	-	410	8.3	23 / 1.15	21 / 1.71	30 / 1.30	3.3 / 0.08	0 / 0.00	211 / 3.46	1.3 / 0.03	28 / 0.79	1.6 / 0.02	0.2 / 0.01	0.12	19	Fe 0.26 (total) Br 0.5	232	31	143	0	DWR
Lane Portland Lumber Company industrial	-8J1	8-25-60	-	308	8.1	17 / 0.85	12 / 1.03	27 / 1.17	1.5 / 0.04	0 / 0.00	158 / 2.59	0.0 / 0.00	19 / 0.54	0.9 / 0.01	0.1 / 0.00	0.00	39	Fe 4.2 (total) Br 0.4	194	38	94	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

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						Mineral constituents in parts per million / equivalents per million																	
	HB&M					MAD RIVER VALLEY (1-8) (Cont.)																	
F. Coleman irrigation and domestic	6N/1E-7M1	8-25-60	-	473	8.4	41 / 2.04	30 / 2.44	14 / 0.61	2.2 / 0.06	5 / 0.17	254 / 4.16	2.8 / 0.06	27 / 0.76	0.3 / 0.00	0.1 / 0.00	0.12	19	Fe 12 Br 0.0 ABS 0.0	266	12	224	8	DWR
C. Barber domestic	-8H1	7-21-60	-	178	7.0	7.8 / 0.39	2.8 / 0.23	19 / 0.83	1.4 / 0.04	0 / 0.00	17 / 0.28	0.8 / 0.02	16 / 0.45	44 / 0.71	0.0 / 0.00	0.04	19	Fe 0.32 Br 0.0 ABS 0.0	119	56	31	17	DWR
Mrs. Iverson irrigation	-17D1	8-25-60	-	419	8.1	44 / 2.20	23 / 1.92	8.7 / 0.38	1.1 / 0.03	0 / 0.00	249 / 4.08	0.3 / 0.01	12 / 0.34	1.4 / 0.02	0.2 / 0.01	0.13	36	Fe 7.6 Br 0.0 ABS 0.0	249	8	206	2	DWR
N. Holgerson domestic and industrial	-19Q1	8-25-60	-	370	8.3	53 / 2.64	12 / 1.02	9.8 / 0.43	1.1 / 0.03	0 / 0.00	227 / 3.72	0.0 / 0.00	12 / 0.34	0.9 / 0.01	0.1 / 0.00	0.06	23	Fe 1.0 Br 0.0 ABS 0.0	224	10	183	0	DWR
Mrs. E. North irrigation and domestic	-30N1	8-25-60	-	364	8.4	49 / 2.44	13 / 1.04	8.4 / 0.36	1.2 / 0.03	2 / 0.07	210 / 3.44	0.0 / 0.00	12 / 0.34	0.3 / 0.00	0.2 / 0.01	0.06	31	Fe 1.2 Br 0.0 ABS 0.0	221	9	174	0	DWR
Arcata Plywood Corp. industrial	-32F1	8-25-60	-	780	8.4	13 / 0.65	12 / 0.95	130 / 5.66	7.2 / 0.18	5 / 0.17	261 / 11.28	2.1 / 0.04	101 / 2.85	2.4 / 0.04	0.2 / 0.01	0.59	27	Fe 0.40 (total) Br 0.4 ABS 0.0	428	76	80	0	DWR
Ace Bulb Farm domestic and irrigation	6N/1W-1H1	7-21-60	-	178	7.0	5.4 / 0.27	6.0 / 0.49	17 / 0.74	0.4 / 0.01	0 / 0.00	30 / 0.49	3.1 / 0.06	18 / 0.51	29 / 0.47	0.0 / 0.00	0.03	14	Fe 0.38 (total) Br 0.0 ABS 0.0	108	49	38	13	DWR
G. A. Curtis domestic	7N/1E-18Q1	7-21-60	-	266	8.0	14 / 0.70	14 / 1.14	19 / 0.83	1.0 / 0.02	0 / 0.00	133 / 2.18	1.8 / 0.04	12 / 0.34	7.0 / 0.11	0.0 / 0.00	0.05	24	Fe 0.23 (total) Br 0.6 ABS 0.0	158	31	92	0	DWR
T. Galaty	-30B1	7-21-60	-	113	6.9	4.3 / 0.21	5.0 / 0.41	8.4 / 0.36	0.4 / 0.01	0 / 0.00	39 / 0.64	3.6 / 0.07	6.6 / 0.19	5.0 / 0.08	0.0 / 0.00	0.04	23	Fe 0.22 Br 0.0 ABS 0.0	75	36	31	0	DWR
						EUREKA PLAIN (1-9)																	
S. Christiansen irrigation	3N/1W-5K1	8-29-60	-	158	7.6	6.2 / 0.31	6.0 / 0.49	14 / 0.61	0.9 / 0.02	0 / 0.00	56 / 0.92	3.0 / 0.06	16 / 0.45	0.5 / 0.01	0.2 / 0.01	0.04	33	Fe 2.7 (total) Br 0.0 ABS 0.0	108	43	40	0	DWR
Pacific Gas & Electric industrial	4N/1W-8P1	8-29-60	-	163	7.7	5.9 / 0.29	8.9 / 0.73	11 / 0.48	1.5 / 0.04	0 / 0.00	66 / 1.08	3.0 / 0.06	14 / 0.39	0.5 / 0.01	0.1 / 0.00	0.04	21	Fe 0.26 (total) Br 0.1 ABS 0.0	98	31	51	0	DWR
P. Lorenzen irrigation	-16H1	9-15-60	-	527	8.3	39 / 1.95	28 / 2.27	30 / 1.30	5.4 / 0.14	0 / 0.00	277 / 4.54	10 / 0.21	29 / 0.82	6.5 / 0.10	0.1 / 0.00	0.21	48	Fe 0.02 (total) Br 0.0 ABS 0.0	332	23	211	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	HB&M							EUREKA PLAIN (1-9) (Cont.)															
Pacific Gas & Electric industrial	4N/1W-17P1	8-29-60	-	168	7.8	7.9 / 0.39	8.1 / 0.67	12 / 0.52	1.6 / 0.04	0 / 0.00	68 / 1.11	3.1 / 0.06	14 / 0.39	0.5 / 0.01	0.1 / 0.00	0.02	23	Fe 0.13 (total) Br 0.1 ABS 0.0	103	32	53	0	DWR
Arcata Redwood Co. industrial and domestic	5N/1E-18C1	8-11-60	-	869	8.4	16 / 0.80	15 / 1.22	157 / 6.83	4.4 / 0.11	4 / 0.13	337 / 5.52	0.0 / 0.00	114 / 3.21	2.2 / 0.04	0.1 / 0.00	2.1	18	Fe 2.6 (total) Br 0.6 ABS 0.0	529	76	101	0	DWR
L. L. Spinney domestic	-29C1	8-25-60	-	284	7.9	14 / 0.70	12 / 0.96	24 / 1.04	1.7 / 0.04	0 / 0.00	109 / 1.79	1.5 / 0.03	30 / 0.85	0.7 / 0.01	0.1 / 0.00	0.01	12	Fe 0.15 (total) Br 0.1 ABS 0.0	180	38	83	0	DWR
								EEL RIVER VALLEY (1-10)															
A. Capaul irrigation	2N/1W-4D1	7-20-60	-	425	7.8	51 / 2.54	18 / 1.46	9.2 / 0.40	2.2 / 0.06	0 / 0.00	207 / 3.39	31 / 0.64	7.8 / 0.22	8.7 / 0.14	0.1 / 0.00	0.15	15	Fe 0.88 (total) Br 0.0 ABS 0.0	245	9	200	30	DWR
E. Calanchini irrigation	-7F1	7-20-60	-	435	8.3	31 / 1.55	28 / 2.29	16 / 0.70	1.7 / 0.04	0 / 0.00	177 / 2.90	46 / 0.96	23 / 0.65	1.1 / 0.02	0.3 / 0.02	0.04	24	Fe 1.0 (total) Br 0.0 ABS 0.0	258	15	192	47	DWR
A. Johnson irrigation	-12D1	8-5-60	-	185	7.9	9.6 / 0.48	8.3 / 0.68	14 / 0.61	0.9 / 0.02	0 / 0.00	80 / 1.31	5.8 / 0.12	11 / 0.31	1.6 / 0.02	0.2 / 0.01	0.04	23	Fe 0.35 (total) Br 0.0 ABS 0.0	113	34	58	0	DWR
C. Anderson irrigation	-17G1	7-20-60	-	632	8.3	36 / 1.80	35 / 2.86	43 / 1.87	2.9 / 0.07	0 / 0.00	228 / 3.74	77 / 1.60	41 / 1.16	1.5 / 0.02	0.2 / 0.01	0.11	21	Fe 1.6 (total) Br 0.2 ABS 0.0	370	28	233	46	DWR
Golden State Co. industrial	3N/1W-18K1	9-17-60	-	1280	8.0	62 / 3.09	74 / 6.08	77 / 3.35	3.9 / 0.10	0 / 0.00	264 / 4.33	24 / 0.50	270 / 7.61	2.0 / 0.03	0.3 / 0.02	0.08	27	Fe 5.7 (total) Br 1.0 ABS 0.0	670	26	459	243	DWR
C. Goble irrigation	-29G1	8-19-60	-	544	8.4	31 / 1.55	39 / 3.23	27 / 1.17	2.8 / 0.07	5 / 0.17	275 / 4.51	25 / 0.52	26 / 0.73	3.6 / 0.06	0.4 / 0.02	0.16	25	Fe 0.64 (total) Br 0.0 ABS 0.0	320	19	239	5	DWR
Humboldt Creamery Association	-29H1	8-19-60	-	390	8.2	22 / 1.10	27 / 2.22	19 / 0.83	1.9 / 0.05	0 / 0.00	214 / 3.51	17 / 0.35	9.5 / 0.27	2.5 / 0.04	0.4 / 0.02	0.10	27	Fe 0.50 (total) Br 0.0 ABS 0.0	231	20	166	0	DWR
R. Tedson irrigation	-30N1	9-6-60	-	505	8.3	59 / 2.94	26 / 2.17	9.8 / 0.43	1.6 / 0.04	0 / 0.00	271 / 4.44	26 / 0.54	11 / 0.31	11 / 0.18	0.1 / 0.00	0.10	17	Fe 2.7 (total) Br 0.0 ABS 0.0	295	8	256	34	DWR
J. V. Tosta irrigation	3N/2W-2A2	8-29-60	-	1420	7.8	48 / 2.40	60 / 4.91	121 / 5.26	1.5 / 0.04	0 / 0.00	56 / 0.92	13 / 0.27	396 / 11.17	5.3 / 0.08	0.0 / 0.00	0.09	20	Fe 0.27 (total) Br 0.3 ABS 0.0	693	42	366	320	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	HB&M							EEL RIVER VALLEY (1-10) (Cont.)															
E. E. Tanfrani irrigation	3N/2W-13J1	8-12-60	-	3610	8.0	163 / 8.13	217 / 17.84	242 / 10.53	5.5 / 0.14	0 / 0.00	251 / 4.11	75 / 1.56	1080 / 30.46	2.6 / 0.04	0.3 / 0.02	0.11	38	Fe 6.5 (total) Br 1.4 ABS 0.0	1950	29	1300	1090	DWR
P. M. Christiansen irrigation	-27G1	9-6-60	-	6290	8.2	140 / 6.99	267 / 21.98	786 / 34.19	22 / 0.56	0 / 0.00	225 / 3.69	145 / 3.02	2050 / 57.81	6.0 / 0.10	0.3 / 0.02	0.26	26	Fe 2.6 (total) Br 1.2 ABS 0.0	3550	54	1450	1270	DWR
R. Cannick Co. irrigation	-32Q1	7-20-60	-	1020	8.4	24 / 1.20	28 / 2.30	142 / 6.18	3.3 / 0.08	4 / 0.13	225 / 3.69	23 / 0.48	194 / 5.47	0.9 / 0.01	0.4 / 0.02	0.13	23	Fe 0.20 (total) Br 0.5 ABS 0.0	553	63	175	0	DWR
P. C. Lorenzen irrigation	-35M1	9-6-60	-	1560	8.4	58 / 2.89	87 / 7.18	108 / 4.70	18 / 0.46	4 / 0.13	228 / 3.74	30 / 0.62	370 / 10.43	4.9 / 0.08	0.1 / 0.00	0.14	26	Fe 1.4 (total) Br 0.4 ABS 0.0	818	31	504	310	DWR
	MDB&M								ROUND VALLEY (1-11)														
W. B. Mooy domestic and irrigation	22N/12W-6L2	8-31-60	-	411	8.5	46 / 2.30	20 / 1.64	15 / 0.65	0.8 / 0.02	12 / 0.40	245 / 4.02	0.0 / 0.00	3.7 / 0.10	2.5 / 0.04	0.2 / 0.01	0.11	27	Fe 2.6 (total)	250	15	197	0	DWR
J. MacKenzie irrigation	-8F1	8-31-60	69	237	8.2	15 / 0.75	16 / 1.35	12 / 0.52	0.5 / 0.01	0 / 0.00	138 / 2.26	8.1 / 0.17	6.5 / 0.18	0.4 / 0.01	0.2 / 0.01	0.12	20	Fe 2.2 (total)	149	20	105	0	DWR
C. B. Rohn irrigation	-19F	8-31-60	-	541	8.5	33 / 1.65	39 / 3.23	10 / 0.44	0.5 / 0.01	9 / 0.30	263 / 4.31	22 / 0.46	5.2 / 0.15	3.7 / 0.06	0.1 / 0.00	0.07	25	Fe 0.13 (total)	278	8	244	13	DWR
B. Hurt domestic	22N/13W-1J	8-31-60	-	228	8.2	23 / 1.15	8.9 / 0.73	10 / 0.44	0.7 / 0.02	0 / 0.00	116 / 1.90	13 / 0.27	5.1 / 0.14	0.3 / 0.00	0.2 / 0.01	0.10	17	Fe 0.49 (total)	136	19	94	0	DWR
R. T. Hurt irrigation	-12K1	8-31-60	-	356	8.4	30 / 1.50	19 / 1.58	20 / 0.87	0.7 / 0.02	3 / 0.10	212 / 3.47	4.8 / 0.10	7.0 / 0.20	1.2 / 0.02	0.2 / 0.01	0.11	23	Fe 0.53 (total)	213	23	154	0	DWR
F. F. Rohrbough domestic	-13A1	8-31-60	50	266	8.0	28 / 1.40	8.8 / 0.72	12 / 0.52	0.6 / 0.02	0 / 0.00	124 / 2.03	12 / 0.25	9.3 / 0.26	3.2 / 0.05	0.1 / 0.00	0.18	14	Fe 0.23	149	20	106	4	DWR
Crawford Lumber Co. industrial and domestic	23N/12W-28N1	8-31-60	-	250	8.3	24 / 1.20	11 / 0.92	9.7 / 0.42	0.8 / 0.02	0 / 0.00	136 / 2.23	7.4 / 0.15	3.0 / 0.08	3.3 / 0.05	0.0 / 0.00	0.08	17	Fe 0.63 (total)	143	16	106	0	DWR
G. Gravier irrigation	-31N1	8-31-60	60	257	8.2	27 / 1.35	11 / 0.91	8.8 / 0.38	0.7 / 0.02	0 / 0.00	140 / 2.29	10 / 0.21	3.5 / 0.10	0.7 / 0.01	0.1 / 0.00	0.07	18	Fe 0.84 (total)	149	14	113	0	DWR
E. Bauer domestic, irrigation and stock	-33L1	8-31-60	-	616	8.3	63 / 3.14	37 / 3.01	28 / 1.22	0.5 / 0.01	0 / 0.00	425 / 6.96	0.0 / 0.00	5.2 / 0.15	4.0 / 0.06	0.5 / 0.03	0.21	32	Fe 1.8 (total)	379	16	308	0	DWR
W. V. Clark domestic, irrigation and stock	23N/13W-25P1	8-31-60	-	248	8.2	31 / 1.55	8.4 / 0.69	5.8 / 0.25	0.9 / 0.02	0 / 0.00	130 / 2.13	11 / 0.23	4.0 / 0.11	2.1 / 0.03	0.1 / 0.00	0.07	13	Fe 3.6 (total)	140	10	113	5	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
									UKIAH VALLEY 1-15														
	M.D.B.& M.																						
Gilley domestic	14N/12W-5K1	9-60		566	7.9	47 2.34	23 1.94	48 2.10	2 0.06	0 0.00	297 4.86	54 1.12	11 0.30	2 0.03	0.32 0.02	1.14	17		354	33	214	0	TTL
Louis Johnson domestic	14N/12W-11N1	9-60		308	8.1	18 0.90	21 1.73	10 0.45	1 0.03	0 0.00	111 1.81	18 0.39	13 0.37	27 0.43	0 0.00	0.11	17		180	14	132	41	TTL
Marcus Mehtonen domestic	14N/12W-26K1	9-60		342	8.5	24 1.21	19 1.56	20 0.88	0 0.01	32 1.06	117 1.91	6 0.13	20 0.56	1 0.01	0.20 0.01	2.75	25		208	24	139	0	TTL
City of Ukiah municipal	15N/12W-16E1	9-60		198	8.1	16 0.79	21 0.80	9 0.39	1 0.03	0 0.00	103 1.69	7 0.14	8 0.22	0 0.00	0 0.00	0.35	11		124	19	80	0	TTL
Regina Water Co. municipal	15N/12W-21H1	9-21-60		253	8.5	23 1.14	12 0.97	13 0.53	1 0.02	15 0.50	107 1.75	11 0.22	10 0.26	1 0.01	0 0.00	0.70	12		152	20	106	0	TTL
D. Broggi domestic and irrigation	15N/12W-35D1	9-60		427	8.3	37 1.87	14 1.17	33 1.44	0 0.01	15 0.50	193 3.17	5 0.10	23 0.65	0 0.00	0.20 0.01	0.35	18		242	32	152	0	TTL
Frank Brown domestic	16N/12W-5D1	9-60		371	8.0	22 1.09	20 1.68	23 1.01	0 0.01	0 0.00	178 2.91	1 0.03	29 0.82	2 0.03	0.32 0.02	0.11	21		207	27	139	0	TTL
Pacific Gas and Electric Co. industrial and domestic	16N/12W-9Q1	8-60		416	8.3	23 1.14	19 1.61	41 1.82	1 0.02	0 0.00	242 3.96	9 0.18	11 0.31	0 0.00	0.42 0.02	0.15	22		247	40	138	0	TTL
Harry Mathews domestic	17N/12W-28M1	8-60		223	8.0	20 1.00	8 0.67	13 0.56	0 0.01	0 0.00	87 1.43	14 0.28	12 0.32	8 0.14	0.16 0.01	0.0	29		147	25	84	12	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								SANEL VALLEY 1-16															
	M.D.B.& M.																						
A. De Mercantonio domestic	12N/11W-2F1	9-60		405	8.2	44 / 2.19	20 / 1.65	15 / 0.65	2 / 0.04	0 / 0.00	230 / 3.77	21 / 0.44	10 / 0.28	1 / 0.02	0.20 / 0.01	0.37	15		243	14	192	3	TTL
E. F. Haun irrigation	13N/11W-7D1	9-60		349	8.2	22 / 1.09	27 / 2.23	11 / 0.49	0 / 0.01	0 / 0.00	197 / 3.42	15 / 0.32	9 / 0.24	1 / 0.01	0 / 0.00	0.11	32		216	13	166	4	TTL
A. Damiano irrigation	13N/11W-18B1	9-60		351	8.1	23 / 1.17	22 / 1.76	19 / 0.85	1 / 0.02	0 / 0.00	190 / 3.12	10 / 0.20	11 / 0.31	8 / 0.14	0.18 / 0.01	1.87	17		217	22	147	0	TTL
J. H. Pomroy & Co. irrigation	13N/11W-18D1	9-60		232	8.3	20 / 1.00	11 / 0.92	12 / 0.50	1 / 0.03	13 / 0.42	102 / 1.66	4 / 0.09	9 / 0.24	1 / 0.01	0 / 0.00	0.44	21		143	20	96	0	TTL
Hopland Public Utility District municipal	13N/11W-19N1	9-60		329	8.2	33 / 1.65	18 / 1.47	9 / 0.40	1 / 0.02	0 / 0.00	169 / 2.76	16 / 0.35	10 / 0.27	2 / 0.03	0 / 0.00	0.20	18		191	11	156	18	TTL
Grace Ranch domestic and irrigation	13N/11W-30H1	8-60		326	8.2	21 / 1.07	22 / 1.82	13 / 0.54	1 / 0.02	0 / 0.00	170 / 2.79	16 / 0.34	12 / 0.34	6 / 0.10	0 / 0.00	0.22	15		191	16	145	5	TTL
								ALEXANDER VALLEY 1-17															
	M.D.B.& M.																						
Redwood Hereford Ranch	9N/8W-7Q1	9-60		611	8.5	4 / 0.18	1 / 0.12	138 / 6.00	4 / 0.10	35 / 1.16	243 / 3.99	1 / 0.02	42 / 1.17	0 / 0.00	0.72 / 0.04	0.42	55		401	94	15	0	TTL
Henry Dick irrigation	9N/9W-1P1	9-60		334	8.2	21 / 1.06	23 / 1.89	13 / 0.54	1 / 0.02	0 / 0.00	170 / 2.79	13 / 0.21	14 / 0.38	1 / 0.01	0.11 / 0.01	0	19		190	15	148	8	TTL
Springfield Mill Co. industrial	10N/9W-32R1	9-60		457	8.3	20 / 1.02	10 / 0.77	71 / 3.12	1 / 0.02	0 / 0.00	234 / 3.84	25 / 0.52	13 / 0.37	0 / 0.00	0.90 / 0.05	0	34		292	63	89	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per-cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N C ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						SANTA ROSA VALLEY 1-18																	
	M.D.B.& M.																						
Roland [illegible]. Mattri	5N/9W-3F1	8-60		534	8.6	10 0.52	6 0.53	102 4.45	1 0.01	23 0.76	191 3.14	30 0.62	34 0.94	0 0.00	0.24 0.01	0.70	21		323	81	53	0	TTL
George L. Crane irrigation	6N/7W-17E1	8-60		454	8.6	4 2.27	1 3.09	102 2.49	1 0.03	17 0.56	172 5.40	11 0.17	37 1.63	0 0.00	1.12 0.01	1.63	32		294	93	15	0	TTL
Tex Carley irrigation	6N/7W-30D1	8-60		318	8.4	25 1.27	16 1.32	17 0.75	1 0.02	21 0.70	133 2.12	4 0.08	13 0.35	4 0.06	0 0.00	0	45		212	22	129	0	TTL
G. Mallory domestic	6N/8W-3B1	8-60		413	7.6	26 1.29	23 1.86	20 0.88	2 0.04	0 0.00	137 2.25	13 0.27	44 1.22	16 0.27	0.11 0.01	0	35		248	22	158	45	TTL
J. Padranzini irrigation	6N/8W-16K1	8-60		335	8.5	10 0.51	8 0.67	50 2.19	2 0.06	16 0.52	134 2.20	4 0.08	22 0.62	0 0.00	0 0.00	0.15	47		226	64	59	0	TTL
City of Sebastopol municipal	6N/[illegible]W-2G1	8-60		257	8.2	30 1.48	2 0.18	17 0.75	1 0.03	0 0.00	105 1.72	7 0.15	19 0.52	5 0.08	0 0.00	0.18	34		167	31	83	0	TTL
Kenwood Fire Dept. domestic	7N/6W-29P1	8-6[illegible]		332	8.5	19 0.95	13 1.07	44 1.90	3 0.07	23 0.76	175 2.87	0 0.00	11 0.31	0 0.00	0 0.00	0.33	34		234	48	101	0	TTL
Mrs. Mead Clark irrigation and domestic	7N/7W-15C1	8-60		273	8.3	14 0.71	12 1.01	24 1.05	1 0.01	18 0.60	114 1.86	3 0.07	9 0.25	0 0.00	0.11 0.01	0	50		168	38	86	0	TTL
Earl F. Betharde irrigation and domestic	7N/7W-29D1	8-60		449	8.4	18 0.88	19 1.63	49 2.16	5 0.14	28 0.92	196 3.21	1 0.03	22 0.62	0 0.00	0 0.00	0.44	56		296	45	126	0	TTL
W. E. Samuelson domestic	7N/8W-3L1	8-60		444	8.4	24 1.22	17 1.43	44 1.90	3 0.07	28 0.92	150 2.46	31 0.64	20 0.55	0 0.00	0.24 0.01	0.09	48		290	41	133	0	TTL
C. Bordessa domestic	7N/8W-5G1	8-60		473	8.2	21 1.07	27 2.16	28 1.22	4 0.10	0 0.00	154 2.54	5 0.11	52 1.46	20 0.31	0 0.00	0.31	54		288	27	262	135	TTL
Harry Rasmussen irrigation	7N/8W-18[illegible]1	8-60		656	8.6	20 1.01	15 1.21	114 4.95	2 0.05	47 1.56	286 4.68	1 0.03	33 0.92	0 0.00	0 0.00	0.37	43		418	69	111	0	TTL
C. Dotti irrigation	7N/8W-31C1	8-60		490	8.5	26 1.30	6 0.48	78 3.39	3 0.07	27 0.90	208 3.41	2 0.04	31 0.86	0 0.00	0 0.00	0	45		322	65	89	0	TTL
A. Marks domestic and irrigation	7N/8W-33M1	8-60		369	8.5	21 1.06	17 1.41	35 1.50	1 0.03	17 0.56	173 2.84	6 0.12	17 0.46	0 0.00	0.18 0.01	0	41		241	38	123	0	TTL
C. W. Gilbert domestic	7N/9W-9F1	8-60		170	8.1	12 [illegible]	4 0.[illegible]1	17 0.75	1 0.03	0 0.00	63 1.03	7 0.27	15 0.42	0 0.00	0 0.00	0.31	48		135	45	45	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						SANTA ROSA VALLEY 1-18 (Continued)																	
	M.D.B.& M.																						
Al Helwig irrigation and domestic	7N/9W-29H1	8-60		187	8.1	9 / 0.43	7 / 0.55	18 / 0.79	2 / 0.05	0 / 0.00	49 / 0.80	25 / 0.53	18 / 0.49	0 / 0.00	0.24 / 0.01	0	48		151	43	49	9	TTL
Sabastopol Meat Co. industrial	7N/9W-36M1	9-60		336	8.4	23 / 1.17	10 / 0.77	24 / 1.03	1 / 0.02	11 / 0.38	113 / 1.85	6 / 0.12	24 / 0.67	0 / 0.00	0.16 / 0.01	0.55	36		191	35	97	0	TTL
H. A. Faught irrigation and domestic	8N/8W-20Q1	8-60		545	8.4	24 / 1.20	23 / 1.92	55 / 2.42	7 / 0.17	39 / 0.98	204 / 3.35	20 / 0.42	35 / 0.97	0 / 0.00	0.11 / 0.01	0	58		353	42	156	0	TTL
E. B. Bussman irrigation	8N/9W-36P1	8-60		856	8.7	14 / 0.69	6 / 0.53	185 / 8.03	4 / 0.10	56 / 1.88	294 / 4.82	4 / 0.08	82 / 2.30	1 / 0.01	0.24 / 0.01	2.86	53		515	86	61	0	TTL
Frei Bros. Winery domestic and irrigation	9N/10W-1C1	8-60		225	8.4	14 / 0.68	11 / 0.85	20 / 0.88	1 / 0.01	12 / 0.40	101 / 1.63	4 / 0.09	10 / 0.27	0 / 0.00	0.29 / 0.02	0.11	38		160	36	77	0	TTL

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
								SAN FRANCISCO BAY REGION (No. 2)															
	M.D.B.& M.							PETALUMA VALLEY 2-1															
H. Cloakie domestic and stock	3N/6W-1Q1	4-19-60		1270				220 9.57					133 3.75			0.30		Fe 0.98, (Dis.) Br 0.0			198		DWR
		10-17-60		1284	8.3	28 1.40	32 2.62	232 10.10	4 0.09	51 1.70	484 7.94	0 0.01	149 4.20	6 0.10	0 0.00	0.18	30		774	71	201	0	TTL
O. White domestic and irrigation	3N/6W-3C1	4-19-60		3920				332 14.44					1030 29.05					Fe 1.8, (Dis.) Br 1.2			1,110		DWR
		9-26-60		4420	8.3	54 2.68	220 18.08	492 21.40	16 0.40	72 2.40	115 1.88	1 0.02	1342 37.79	7 0.11	0 0.00	0.11	27		2,288	50	1,038	824	TTL
William Wright stock	3N/6W-5A1	4-19-60		10900				1650 71.78					3410 96.16			0.34		Fe 11.0, (Dis.) Br 14.0			2,260		DWR
S. K. Herzog Co. domestic and dairy	3N/6W-11B1	4-19-60		1970				308 13.40					349 9.84			0.28		Fe 1.6, (Dis.) Br 1.3			294		DWR
		10-17-60		2077	8.4	30 1.86	52 4.30	340 14.80	5 0.14	83 2.76	397 6.52	1 0.02	404 11.38	10 0.16	0 0.00	0.42	32		1,553	70	308	0	TTL
Strozzi stock	3N/6W-15M1	4-19-60		394				22 0.96					39 1.10					Fe 0.5, (Dis.) Br 0.0			133		DWR
Rupprecht domestic, stock, and irrigation-	3N/6W-18M1	4-19-60		620				27 1.17					45 1.27			0.08		Fe 0.4, (Dis.) Br 0.0			251		DWR
Karl Johnson domestic	3N/7W-14F1	4-19-60		694				62 2.70					74 2.09			0.68		Fe 1.0, (Dis.) Br 0.0			202		DWR
Lopes domestic	4N/6W-7H1	4-19-60		1110				88 3.83					53 1.49			2.3		Fe 0.33, (Dis.) Br 0.0			428		DWR
		9-26-60		966	8.5	7 0.33	66 5.40	106 4.60	1 0.03	56 1.88	325 5.32	29 0.60	66 1.86	25 0.39	0.18 0.01	2.02	20		540	44	287	0	TTL
	4N/6W-7H2	4-19-60		4870				862 37.50					1180 33.28			2.8		Fe 0.31, (Dis.) Br 3.8			570		DWR
		9-26-60		4264	8.4	20 1.00	63 5.24	828 36.00	6 0.15	59 1.96	284 4.65	281 5.84	1026 28.88	11 0.18	0.26 0.01	2.95	17		2,456	85	312	0	TTL
L. A. Bourke domestic and stock	4N/6W-21Q1	4-19-60		925				192 8.35					94 2.65			0.98		Fe 1.2, (Dis.) Br 0.6			62		DWR
		9-26-60		1187	8.6	14 0.72	13 1.12	212 9.20	2 0.04	47 1.56	289 4.74	20 0.43	155 4.36	0 0.00	0 0.00	1.01	34		642	83	92	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						PETALUMA VALLEY 2-1 (Continued)																	
	M.D.B.& M.																						
L. A. Bourke stock	4N/6W-27N1	4-20-60		1130				154 / 6.70					128 / 3.61			0.38		Fe 5.6, (Dis.) Br 0.6			250		DWR
		9-26-60		1119	8.1	27 / 1.37	33 / 2.73	161 / 7.00	3 / 0.07	0 / 0.00	431 / 7.06	3 / 0.07	152 / 4.27	1 / 0.01	0 / 0.00	0.62	24		620	63	205	0	TTL
S. K. Herzog Co. stock and dairy	4N/6W-27R1	9-26-60		980	8.0	26 / 1.28	36 / 2.97	122 / 5.30	2 / 0.06	0 / 0.00	352 / 5.76	10 / 0.21	132 / 3.72	3 / 0.05	0 / 0.00	0.90	26		534	55	213	0	TTL
[illegible] White irrigation and stock	4N/6W-33R1	4-19-60		5400				385 / 16.75					1630 / 45.97			0.20		Fe 6.0, (Dis.) Br 4.9			1,700		DWR
		9-26-60		5472	7.7	178 / 8.88	319 / 26.21	396 / 17.20	17 / 0.44	0 / 0.00	321 / 5.27	0 / 0.00	1666 / 46.91	10 / 0.16	0 / 0.00	0.46	28		2,774	33	1,755	1,491	TTL
Union Oil Co. industrial	4N/7W-2D1	4-19-60		22300				2500 / 108.75					9370 / 264.23			0.66		Fe 6.5, (Dis.) Br 18.0			9,140		DWR
		9-24-60		25250	7.4	263 / 13.08	1990 / 154.16	2480 / 108.00	31 / 0.80	0 / 0.00	122 / 2.00	1006 / 20.94	9420 / 265.27	1 / 0.01	0 / 0.00	1.01	19		15,272	38	8,862	8,762	TTL
Riebli domestic and stock	5N/6W-30D1	4-18-60		1210				120 / 5.22					151 / 4.26			0.30		Fe 0.21, (Dis.) Br 0.0			394		DWR
		9-26-60		1172	8.0	59 / 2.97	47 / 3.85	118 / 5.15	2 / 0.05	0 / 0.00	331 / 5.45	107 / 2.23	160 / 4.49	0 / 0.00	0.18 / 0.01	0.07	24		682	43	341	18	TTL
N. J. Matzen domestic	5N/7W-8D3	4-18-60		956				88 / 3.83					152 / 4.29			0.35		Fe 0.46, (Dis.) Br 0.2			265		DWR
		9-24-60		960	8.3	53 / 2.57	34 / 2.80	79 / 3.45	4 / 0.09	24 / 0.80	130 / 2.13	41 / 0.86	193 / 5.44	0 / 0.00	0 / 0.00	0.07	21		514	38	274	127	TTL
Oberg Lumber Co. domestic	5N/7W-19A1	4-18-60		544				68 / 2.96					41 / 1.16			0.02		Fe 1.1, (Dis.) Br 0.0			121		DWR
		9-24-60		517	8.4	24 / 1.22	9 / 0.72	74 / 3.20	2 / 0.05	23 / 0.76	149 / 2.45	33 / 0.69	46 / 1.30	0 / 0.00	0 / 0.00	0.73	21		307	62	97	0	TTL
E. Scott irrigation and stock	5N/7W-20C1	4-18-60		834				79 / 3.44					145 / 4.09			0.14		Fe 0.22, (Dis.) Br 0.2			214		DWR
		9-26-60		840	8.5	51 / 2.57	17 / 1.43	88 / 3.85	2 / 0.06	24 / 0.80	129 / 2.11	38 / 0.80	148 / 4.17	6 / 0.09	0 / 0.00	0.20	32		470	49	200	54	TTL
Al's Barber Shop domestic	5N/7W-20L3	4-18-60		2370				108 / 4.70					590 / 16.64			0.00		Fe 0.01, (Dis.) Br 0.0			748		DWR

a Determined by addition of constituents
b. Gravimetric determination
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d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

ANALYSES OF GROUND WATER

1960

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						Mineral constituents in parts per million / equivalents per million																	
								PETALUMA VALLEY 2-1 (Continued)															
	M.O.B.& M.																						
Al's Barber Shop domestic	5N/7W-20L3	9-24-60		2191	8.0	211 / 10.56	33 / 2.72	129 / 5.60	3 / 0.07	0 / 0.00	85 / 1.40	26 / 0.55	556 / 15.66	68 / 1.09	0 / 0.00	0	32		1,100	30	664	594	TTL
City of Petaluma municipal	5N/7W-22Q1	4-18-60		245				13 / 0.56					7.9 / 0.22			0.04		Fe 0.16 (Dis.) Br 0.1			94		DWR
		9-26-60		531	8.3	43 / 2.15	22 / 1.75	35 / 1.50	2 / 0.04	40 / 1.34	181 / 2.97	18 / 0.39	32 / 0.90	0 / 0.00	0.10 / 0.01	0	27		309	28	195	0	TTL
Atkinson Co. irrigation and stock	5N/7W-26E1	4-18-60		654				53 / 2.30					39 / 1.10			0.16		Fe 0.0, (Dis.) Br 0.2			226		DWR
City of Petaluma municipal	5N/7W-28H3	4-18-60		530				59 / 2.57					48 / 1.35			0.12		Fe 0.61 (Dis.) Br 0.1			138		DWR
		9-26-60		548	8.7	35 / 1.76	22 / 1.75	46 / 1.98	2 / 0.04	45 / 1.50	138 / 2.26	24 / 0.50	49 / 1.37	2 / 0.04	0 / 0.00	0	27		321	36	176	0	TTL
G. E. Park domestic	5N/7W-28N1	4-19-60		1460				125 / 5.44					218 / 6.15			0.01		Fe 0.20 (Dis.) Br 0.4			461		DWR
		9-24-60		1461	8.7	96 / 4.82	45 / 3.71	134 / 5.85	1 / 0.03	63 / 2.10	163 / 2.66	125 / 2.60	237 / 6.67	36 / 0.58	0.20 / 0.01	0	35		853	41	427	189	TTL
Dr. H. E. Clark domestic, irrigation, and stock	5N/7W-34E2	4-19-60		846				192 / 8.35					65 / 1.83			0.22		Fe 0.52 (Dis.) Br 0.0			38		DWR
		9-24-60		854	8.7	5 / 0.23	2 / 0.24	205 / 8.90	2 / 0.04	40 / 1.32	320 / 5.25	19 / 0.40	76 / 2.13	1 / 0.01	0.32 / 0.02	0	19		529	95	24	0	TTL
R. H. Sartori irrigation	5N/7W-35K1	4-19-60		685				40 / 1.74					48 / 1.35			0.10		Fe 0.44 (Dis.) Br 0.0			264		DWR
		9-26-60		545	8.3	29 / 1.45	28 / 2.28	41 / 1.78	3 / 0.08	0 / 0.00	212 / 3.49	25 / 0.53	57 / 1.61	8 / 0.14	0.10 / 0.01	0	47		344	32	187	12	TTL

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL) or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								NAPA-SONOMA VALLEY 2-2															
	M.D.B.& M.																						
E. P. Nunn domestic	3N/3W-18G1	4-19-60		1340				116 / 5.05					151 / 4.26			0.17		Br 0.3			474		DWR
J. L. [illegible]ckens domestic	3N/3W-18G2	4-19-60		1420				118 / 5.13					144 / 4.06			0.09		Br 0.2			494		DWR
		9-26-60		1500	7.8	74 / 3.70	74 / 6.06	118 / 5.15	8 / 0.20	0 / 0.00	308 / 5.05	118 / 1.93	186 / 5.24	154 / 2.48	0.35 / 0.02	0.31	14		901	34	488	235	TTL
	3N/4W-4P1	4-18-60		2380				431 / 18.75					342 / 9.64			0.82		Br 2.4			319		DWR
		9-26-60		2407	8.4	33 / 1.64	58 / 4.76	442 / 19.20	9 / 0.24	103 / 3.42	733 / 12.02	4 / 0.08	349 / 9.83	19 / 0.30	0 / 0.00	0.66	37		1421	74	320	0	TTL
Napa County Airport domestic	4N/4W-2L1	4-19-60	62	739				50 / 2.18					90 / 2.54			0.19		Br 0.4			229		DWR
		9-26-60	64	780	8.2	67 / 3.36	17 / 1.43	60 / 2.61	1 / 0.01	0 / 0.00	151 / 2.48	97 / 2.02	96 / 2.70	7 / 0.11	0.18 / 0.01	0.29	33		453	35	239	115	TTL
Norman Rhodes domestic	4N/4W-5C1	4-19-60		292				42 / 1.83					28 / 0.79			0.08		Br 0.3			44		DWR
		9-26-60	71	303	8.2	7 / 0.33	6 / 0.49	46 / 1.98	1 / 0.03	0 / 0.00	85 / 1.40	11 / 0.22	36 / 1.00	14 / 0.23	0.26 / 0.01	0	37		173	70	41	0	TTL
Press Wireless	4N/4W-7A1	4-19-60		475				66 / 2.87					80 / 2.26			0.12		Br 0.5			74		DWR
		9-26-60	71	487	8.3	14 / 0.71	11 / 0.92	70 / 3.06	2 / 0.04	0 / 0.00	133 / 2.18	6 / 0.12	84 / 2.37	0 / 0.00	0.22 / 0.01	0.11	33		286	65	82	0	TTL
G. Lawrence stock	4N/4W-13E1	4-19-60		1530				148 / 6.44					233 / 6.57			0.30		Br 0.9			458		DWR
		9-26-60	70	2060	8.3	158 / 7.88	44 / 3.58	216 / 9.40	3 / 0.07	0 / 0.00	248 / 4.06	308 / 6.43	345 / 9.72	29 / 0.47	0.50 / 0.03	0.09	29		1257	45	573	370	TTL
H. Mini domestic	4N/4W-25K1	4-19-60		1160				87 / 3.78					78 / 2.20			0.94		Br 0.0			462		DWR
		9-26-60	69	714	8.5	22 / 1.09	49 / 4.01	48 / 2.08	2 / 0.06	42 / 1.40	191 / 3.13	33 / 0.69	53 / 1.49	25 / 0.40	0.11 / 0.01	0.20	24		393	29	255	28	TTL
U. S. Navy municipal	4N/5W-14D2	10-17-60		1071	8.1	13 / 0.63	10 / 0.81	207 / 9.00	6 / 0.15	0 / 0.00	309 / 5.07	45 / 0.94	148 / 4.17	1 / 0.01	0.22 / 0.01	0.35	56		641	85	72	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
								NAPA-SONOMA VALLEY 2-2 (Continued)															
	M.D.B.& M.																						
Sonoma Ranch stock	4N/5W-32B1	4-19-60		3250				480 / 20.88					714 / 20.13			1.9		Fe 2.6, (Dia.) Br 0.9			517		DWR
		10-17-60		3518	8.4	23 / 1.15	90 / 7.39	570 / 24.80	12 / 0.32	58 / 1.92	306 / 5.01	0 / 0.00	909 / 25.60	9 / 0.15	0 / 0.00	2.38	43		1869	74	427	80	TTL
	4N/5W-34D1	10-17-60		2897	8.4	44 / 2.22	80 / 6.64	428 / 18.60	16 / 0.40	78 / 2.60	369 / 6.05	0 / 0.00	656 / 18.47	20 / 0.32	0 / 0.00	2.11	49		1557	67	443	10	TTL
M. L. George domestic	5N/4W-9Q2	4-19-60	64	481				62 / 2.70					38 / 1.07			0.13		Br 0.3			113		DWR
		9-26-60	65	512	8.5	23 / 1.14	13 / 1.13	63 / 2.73	1 / 0.03	33 / 1.10	152 / 2.50	10 / 0.21	40 / 1.11	0 / 0.00	0.53 / 0.28	0.02	30		290	54	114	0	TTL
Gellenger domestic	5N/4W-11F3	4-19-60		694				121 / 5.26					95 / 2.68			1.6		Br 0.3			70		DWR
		9-27-60	67	714	8.4	15 / 0.75	7 / 0.59	127 / 5.50	6 / 0.16	28 / 0.92	206 / 3.38	0 / 0.01	85 / 2.68	0 / 0.00	0.19 / 0.01	1.67	42		415	79	67	0	TTL
Gasser domestic and stock	5N/4W-14C1	4-19-60	64	236				17 / 0.74					18 / 0.51			0.07		Br 0.0			72		DWR
		9-27-60	64	277	8.2	13 / 0.66	13 / 1.05	20 / 0.88	2 / 0.05	0 / 0.00	115 / 1.88	4 / 0.09	25 / 0.70	0 / 0.00	0.10 / 0.01	0	40		174	33	86	0	TTL
John Healy domestic	5N/4W-15E1	4-19-60		434				48 / 2.09					39 / 1.10			0.12		Br 0.1			107		DWR
		9-27-60	63	657	8.2	33 / 1.66	21 / 1.71	64 / 2.79	3 / 0.08	0 / 0.00	190 / 3.11	1 / 0.03	111 / 3.13	0 / 0.00	0.26 / 0.01	0.15	33		361	45	169	13	TTL
A. L. Poe domestic	5N/4W-21P2	4-19-60		2290				441 / 19.18					471 / 13.28			0.58		Br 1.5			147		DWR
		9-26-60	67	2379	8.3	16 / 0.80	19 / 1.57	465 / 20.20	8 / 0.20	76 / 2.52	266 / 4.36	143 / 2.99	463 / 13.04	1 / 0.01	0 / 0.00	0.37	28		1352	89	119	0	TTL
Napa State Hospital irrigation	5N/4W-23C2	9-27-60	75	328	8.3	14 / 0.72	10 / 0.81	39 / 1.68	4 / 0.10	20 / 0.66	123 / 2.02	0 / 0.01	21 / 0.58	0 / 0.00	0.34 / 0.02	0.09	52		221	51	77	0	TTL
Adams and Forbes	5N/4W-26B1	4-19-60	86	365				38 / 1.65					18 / 0.51			0.33		Br 0.3			92		DWR
		9-27-60	89	391	8.4	16 / 0.82	12 / 1.02	44 / 1.92	2 / 0.16	9 / 0.30	183 / 2.96	0 / 0.00	22 / 0.62	0 / 0.00	0.11 / 0.01	0.09	68		264	49	92	0	TTL

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL) or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								NAPA-SONOMA VALLEY 2-2 (Continued)															
	M.D.B.& M.																						
.. Firmingnar domestic	5N/5W-18D2	4-20-60		512				41 1.78					32 0.90			0.17		Fe 0.0, (Dis.) Br 0.1			157		DWR
		9-27-60		533	8.0	27 1.34	24 1.98	44 1.90	2 0.06	0 0.00	174 2.85	24 0.50	38 1.06	49 0.79	0.22 0.01	0.29	55		351	36	166	23	TTL
L. Miglioretti domestic and irrigation	5N/5W-20R1	4-20-60		823				192 8.35					50 1.41			4.4		Fe 3.4, (Dis.) Br 0.8			24		DWR
		9-27-60		985	8.5	10 0.52	6 0.53	214 9.30	3 0.07	70 2.32	316 5.18	16 0.35	78 2.20	1 0.01	0 0.00	0.43	19		575	89	53	0	TTL
H. V. Masnada irrigation	5N/5W-33K1	4-20-60		6220				284 12.35					2170 61.19			0.07		Fe 38.0, (Dis.) Br 9.2			2540		DWR
	5N/5W-33K3	9-27-60		20571	7.8	674 33.04	850 69.96	3010 131.00	46 1.20	0 0.00	159 2.60	915 19.04	7582 213.51	0 0.00	0.10 0.01	0.26	11		13167	56	5180	5050	TTL
Walter Bearden domestic and stock	5N/6W-12F1	4-20-60		396				47 2.04					21 0.59			0.63		Fe 7.8, (Dis.) Br 0.0			90		DWR
		9-27-60		411	8.6	13 0.65	11 0.93	62 2.70	3 0.07	39 1.30	139 2.28	1 0.02	28 0.77	0 0.00	0.22 0.01	0.73	42		269	62	79	0	TTL
M. Kiser irrigation	5N/6W-24K1	4-20-60		500				26 1.13					18 0.51			0.06		Fe 98.0, (Dis.) Br 1.6			222		DWR
		9-27-60		315	8.5	21 1.04	12 1.01	23 0.99	2 0.04	20 0.68	116 1.90	3 0.06	16 0.45	2 0.04	0 0.00	0	50		207	32	103	0	TTL
Fisher domestic	5N/6W-25P1	4-20-60		510				44 1.91					73 2.06			0.10		Fe 1.2, (Dis.) Br 0.6			145		DWR
		9-27-60		504	8.5	30 1.48	16 1.33	48 2.10	2 0.05	36 1.20	88 1.45	7 0.15	77 2.17	3 0.05	0 0.00	0.04	51		314	42	141	8	TTL
A. R. Johnson domestic and stock	6N/4W-15[illegible]1	4-19-60		260				32 1.39					8.6 0.24			0.14		Br 0.0			53		DWR
N. Tarvid domestic	6N/6W-23M2	4-20-60		521				68 2.96					80 2.26			1.2		Fe 0.72, (Dis.) Br 0.0			72		DWR
		9-27-60		531	8.4	14 0.70	9 0.71	86 3.76	12 0.31	20 0.66	112 1.84	6 0.12	99 2.77	0 0.00	0.98 0.05	1.50	56		360	69	71	0	TTL
D. Stamos domestic	6N/6W-26E1	4-20-60		442				83 3.61					54 1.52			1.8		Fe 0.53, (Dis.) Br 0.0			10		DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
								NAPA-SONOMA VALLEY 2-2 (Continued)															
	M.D.B.& M.																						
D. Stamos domestic	6N/6W-26E1	9-27-60		458	8.5	3 / 0.17	1 / 0.07	97 / 4.20	4 / 0.09	30 / 1.00	98 / 1.60	7 / 0.15	65 / 1.83	0 / 0.00	1.20 / 0.06	1.67	52		311	93	12	0	TTL
A. Fagiani domestic	7N/4W-30L1	4-19-60		110				8.7 / 0.38					4.5 / 0.13			0.03		Br 0.0			35		DWR
Wheeler	7N/5W-5A1	4-18-60	63	468				16 / 0.70					15 / 0.42			0.45		Br 0.2			201		DWR
Van Vlack domestic	7N/5W-22G2	4-18-60		815				62 / 2.70					109 / 3.07			7.4		Br 0.5			271		DWR
J. Alcouffe domestic and stock	9N/6W-31Q1	4-18-60	61	118				7.7 / 0.33					4.8 / 0.14			0.05		Br 0.0			35		DWR
R. H. Archerd domestic	9N/7W-25N1	4-18-60		886				163 / 7.09					170 / 4.79			9.8		Br 0.0			52		DWR

Mineral constituents in parts per million / equivalents per million

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

32505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								SUISUN-FAIRFIELD VALLEY 2-3															
	M.D.B.& M.																						
Mrs. Taylor domestic	3N/1E-4B	5-9-60	62	1070				235 / 10.22					70 / 1.97			2.9		Fe 0.93, (Dis.) Br 2.3			43		DWR
		9-15-60	72	1094	8.45	7 / 0.34	6 / 0.54	232 / 10.10	2 / 0.05	60 / 2.00	396 / 6.50	42 / 0.88	69 / 1.94	4 / 0.06	0.32 / 0.02	0.29	23		645	92	44	0	TTL
McDougal Livestock Co. domestic	3N/1E-21D1	5-9-60	66	1770				400 / 17.40					178 / 5.02			7.7		Br 1.2			31		DWR
		9-15-60	66	1829	8.5	8 / 0.38	3 / 0.28	423 / 18.40	2 / 0.04	97 / 3.22	525 / 8.60	106 / 2.21	178 / 5.01	0 / 0.00	0.27 / 0.01	7.94	21		1108	96	33	0	TTL
	3N/1E-22F2	5-9-60		1440				296 / 12.88					168 / 4.74			5.0		Br 2.7			102		DWR
		9-15-60		1238	8.2	9 / 0.45	7 / 0.62	254 / 11.05	10 / 0.25	41 / 1.36	315 / 5.17	130 / 2.70	111 / 3.11	4 / 0.07	0.46 / 0.02	3.45	38		765	89	53	0	TTL
Irrigation	3N/1E-22F3	5-9-60		1420				312 / 13.57					162 / 4.57			4.9		Br 2.9			89		DWR
		9-15-60		1256	8.3	10 / 0.52	6 / 0.48	225 / 11.10	10 / 0.26	50 / 1.68	297 / 4.87	127 / 2.64	113 / 3.17	4 / 0.07	0.43 / 0.02	3.39	37		735	90	50	0	TTL
Guy Stewart domestic	4N/1E-8F1	5-9-60		997				129 / 5.61					160 / 4.51			0.91		Br 1.4			206		DWR
		9-15-60	67	1032	8.0	45 / 2.34	25 / 2.07	120 / 5.20	3 / 0.08	0 / 0.00	244 / 4.00	60 / 1.24	155 / 4.36	2 / 0.04	0.53 / 0.03	0.90	41		574	54	216	16	TTL
Fish and Game Commission domestic	4N/1W-33A1	5-9-60		3610				652 / 28.36					887 / 25.01			17.0		Br 4.7			334		DWR
		9-15-60	68	3696	7.75	32 / 1.60	63 / 5.20	658 / 28.60	4 / 0.10	0 / 0.00	483 / 7.92	138 / 2.88	882 / 24.84	0 / 0.00	0.30 / 0.02	14.23	21		2054	81	340	0	TTL
Heally domestic	4N/2W-4D1	5-12-60	67	1180				318 / 13.83					47 / 1.23			0.46		Br 0.2					DWR
		9-15-60	64	1266	7.7	40 / 2.00	64 / 5.33	151 / 6.55	8 / 0.21	0 / 0.00	572 / 9.39	161 / 3.36	52 / 1.45	0 / 0.00	0.80 / 0.04	1.21	15		779	46	367	0	TTL
Southern Pacific R.R. industrial	4N/2W-5.	5-9-60		392				47 / 2.04					45 / 1.27			0.48		Br 0.4			42		DWR
		9-15-60	66	401	7.9	19 / 0.95	11 / 0.93	48 / 2.12	1 / 0.01	0 / 0.00	160 / 2.61	3 / 0.06	46 / 1.30	0 / 0.00	0 / 0.00	0.90	48		257	53	94	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br.)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								SUISUN-FAIRFIELD VALLEY 2-3 (Continued)															
	M.D.B.& M.																						
F. P. Smith domestic and stock	4N/2W-18M1	5-9-60	63	1040				85 / 3.70					106 / 2.99			9.3		Br 0.2					DWR
		9-25-60	64	915	7.7	41 / 2.07	35 / 2.90	92 / 4.00	1 / 0.03	0 / 0.00	200 / 3.29	124 / 2.59	104 / 2.91	8 / 0.13	0.30 / 0.02	0.70	19		525	44	249	84	TTL
D. R. Mangels irrigation	4N/3W-13G1	5-9-60	67	473				36 / 1.57					24 / 0.68			0.56		Br 0.0					DWR
		9-15-60		970	7.65	60 / 3.00	35 / 2.93	95 / 4.15	7 / 0.18	0 / 0.00	327 / 5.35	135 / 2.83	75 / 2.10	1 / 0.01	0.24 / 0.01	0.99	60		590	40	297	29	TTL
H. J. Beck domestic	5N/2W-27J4	5-9-60	63	810				72 / 3.13					43 / 1.21			0.48		Br 0.1					DWR
		9-15-60	63	841	7.8	66 / 3.32	33 / 2.68	69 / 3.00	1 / 0.01	0 / 0.00	411 / 6.74	32 / 0.66	45 / 1.25	21 / 0.34	0.40 / 0.02	1.32	19		489	33	300	0	TTL
W. and L. Pierce irrigation	5N/2W-29L3	5-9-60	62	429				26 / 1.13					21 / 0.59			0.43		Br 0.1					DWR
		9-15-60	62	450	8.0	35 / 1.73	20 / 1.65	27 / 1.19	2 / 0.04	0 / 0.00	209 / 3.43	27 / 0.56	21 / 0.59	2 / 0.03	0.14 / 0.01	0.62	28		267	26	169	0	TTL
City of Fairfield muncipal	5N/2W-34B	5-9-60	67	909				118 / 5.13					74 / 2.09			3.2		Br 0.2					DWR
Low Sing domestic and irrigation	5N/2W-34P3	5-9-60	65	1620	8.0	47 / 2.34	82 / 6.73	192 / 8.35	1.7 / 0.04	0 / 0.00	529 / 8.67	112 / 2.33	231 / 6.51	2.4 / 0.04	0.76 / 0.04	1.8	26	Br 0.5	957	48		20	DWR
		9-15-60	64	2176	7.55	67 / 3.36	103 / 8.54	228 / 9.90	3 / 0.07	0 / 0.00	476 / 7.80	127 / 2.64	404 / 11.38	2 / 0.04	0.42 / 0.02	2.09	20		1195	45	595	205	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr). Bromide (Br.)

32505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C ppm	Analyzed by c
										PITTSBURG PLAIN (2-4)													
Continental Can Co. domestic	2N/1E-7R1	7-14-60	-	2,820	8.0	188 / 9.38	88 / 7.24	316 / 13.75	12 / 0.31	0 / 0.00	375 / 6.15	637 / 13.26	412 / 11.62	1.8 / 0.03	0.2 / 0.01	0.56	54		1,890	45	832	-	DWR
Dow Chemical Company irrigation	-22C1	7-14-60	-	1,400	8.0	83 / 4.14	45 / 3.69	166 / 7.22	6.1 / 0.16	0 / 0.00	324 / 5.31	358 / 7.45	86 / 2.42	0.7 / 0.01	0.6 / 0.03	0.56	44		949	47	392	126	DWR
		9-14-60	-	1,372	7.9	72 / 3.60	41 / 3.40	153 / 6.65	6 / 0.15	0 / 0.00	263 / 4.31	343 / 7.23	89 / 2.49	0 / 0.00	0.22 / 0.01	0.55	29		869	48	350	134	TTL
Fibreboard Products Incorporated domestic	2N/2E-2CA1	7-14-60	-	1,590	8.1	80 / 3.99	59 / 4.88	172 / 7.48	4.1 / 0.10	0 / 0.00	338 / 5.54	148 / 3.08	267 / 7.53	23 / 0.37	0.4 / 0.02	0.63	54		974	45	444	167	DWR
		9-14-60	-	1,680	8.0	85 / 4.24	58 / 4.76	178 / 7.75	4 / 0.10	0 / 0.00	324 / 5.32	141 / 2.94	279 / 7.84	17 / 0.28	0 / 0.00	0.59	35		960	46	450	184	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
								CLAYTON VALLEY 2-5															
	[illegible] M.																						
G. Curletto domestic and irrigation	1N/1W-4A1	7-19-60	66	638	8.3	41 / 2.04	41 / 3.37	33 / 1.44	0.5 / 0.01	2 / 0.07	217 / 3.56	93 / 1.94	31 / 0.87	18 / 0.29	0.1 / 0.00	0.47	25	Fe 0.2, (Dis.) Al 0.04	392	21	271	90	DWR
		9-14-60		693	8.2	62 / 3.09	37 / 3.02	32 / 1.39	0.8 / 0.02	0 / 0.00	[illegible] / 4.88	79 / 1.64	28 / 0.79	18 / 0.29	0.2 / 0.01	0.47	26		429	18	306	62	TTL
[illegible] Cowell Foundation industrial and domestic	1N/1W-4[illegible]1	9-14-60		963	7.9	69 / 3.47	49 / 4.03	42 / 1.86	1 / 0.01	0 / 0.00	278 / 4.56	44 / 0.92	115 / 3.24	28 / 0.45	0 / 0.00	0.44	2[illegible]		[illegible]	20	375	147	TTL
Fred Baker domestic and irrigation	2N/1W-30J1	7-14-60		897	[illegible].3	44 / 2.20	63 / 5.15	60 / 2.61	0.6 / 0.02	4 / 0.13	321 / 5.26	126 / 2.62	59 / 1.66	14 / 0.22	0.1 / 0.00	0.52	34	Fe 0.01, (Dis.) Al 0.01 Zn 0.01	563	26	360	97	DWR
		9-14-60		[illegible]56	7.7	52 / 2.58	48 / 3.98	49 / 2.14	2 / 0.04	0 / 0.00	300 / 4.91	103 / 2.14	50 / 1.41	17 / 0.2	0 / 0.00	0.92	21		493	24	328	82	TTL
Jack [illegible]sorow domestic	2N/1W-30K1	7-14-60		1200	[illegible].2	59 / 2.94	72 / 5.97	106 / 4.61	0.4 / 0.01	0 / 0.00	287 / 4.70	277 / 5.77	107 / 3.02	6.0 / 0.10	0.2 / 0.01	1.2	34	Fe 0.12 (Dis.) Al 0.02	804	34	446	211	DWR
		9-14-60		692	7.[illegible]	32 / 1.61	1[illegible] / 1.24	81 / 3.50	2 / 0.04	0 / 0.00	98 / 1.60	62 / 1.30	124 / 3.49	0 / 0.00	0 / 0.00	0.33	10		375	55	143	63	TTL
Frank Dorville domestic	2N/1W-31D1	7-1[illegible]-60		90[illegible]	[illegible].5	77 / 3.84	53 / 4.33	37 / 1.61	0.3 / 0.01	12 / 0.40	276 / 4.52	74 / 1.54	93 / 2.62	41 / 0.66	0.1 / 0.00	0.29	32	Fe 0.87 (Dis.) Al 0.02 Zn 0.11	556	16	409	163	DWR
R. F. [illegible]ilvie domestic	2N/2W-13P1	7-13-60	62	854	8.4	37 / 1.85	28 / 2.33	97 / 4.22	0.9 / 0.02	6 / 0.20	226 / 3.70	55 / 1.14	112 / 3.16	13 / 0.21	0.5 / 0.03	0.35	34	Fe 0.33 (Dis.) Pb 0.01 Zn 0.11	495	50	209	14	DWR
		9-14-60		794	7.3	32 / 1.60	23 / 1.93	89 / 3.88	1 / 0.02	0 / 0.00	22[illegible] / 3.7[illegible]	35 / 0.73	100 / 2.82	8 / 0.14	0.37 / 0.02	0.26	25		426	52	177	0	TTL
Bertinoia domestic	2N/2W-26B1	7-13-60		957	8.3	44 / 2.20	39 / 3.21	103 / 4.48	1.3 / 0.03	4 / 0.13	325 / 5.33	25 / 0.52	141 / 3.98	1.4 / 0.02	0.2 / 0.01	1.2	31	Fe 0.[illegible]4 (Dis.)	[illegible]1	45	271	0	DWR
		9-14-60		756	7.9	3[illegible] / 1.90	22 / 1.81	75 / 3.24	3 / 0.07	0 / 0.00	168 / 2.75	55 / 1.15	1[illegible]9 / 3.[illegible]7	2 / 0.04	0.11 / 0.01	0.26	15		403	46	166	0	TTL
J. D. [illegible]eilen domestic	2N/2W-36J1	7-13-60		1020	[illegible]	62 / 3.09	39 / 3.1	109 / 4.74	0.5 / [illegible].01	15 / 0.50	290 / 4.75	89 / 1.[illegible]	120 / 3.38	33 / 0.53	[illegible].2 / 0.01	0.40	32	Fe 0.15 (Dis.) Zn 0.06	642	43	314	52	DWR
		9-14-60		1087	[illegible].1	62 / 3.11	39 / 3.18	108 / 4.70	1 / 0.01	0 / 0.00	317 / 5.20	76 / 1.58	122 / 3.42	35 / 0.56	0.14 / 0.01	0.37	24		626	43	315	55	TTL

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-F-G 6-61 500 SR

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									YGNACIO VALLEY 2-6														
	M.D.B.& M.																						
A. Sebastiani domestic	1N/1W-7K1	7-13-60		2070	8.3	65 / 3.24	74 / 6.09	295 / 12.83	1.4 / 0.04	0 / 0.00	256 / 4.20	546 / 11.37	224 / 6.32	20 / 0.32	0.4 / 0.02	0.99	25	Fe 0.12, (Dis.) Cu 0.01	1380	58	467	[illegible]	DWR
		9-14-60		2273	7.8	89 / 4.46	62 / 5.06	299 / 13.00	2 / 0.04	0 / 0.00	297 / 4.86	551 / 11.47	226 / 6.35	16 / 0.27	0.43 / 0.02	0.99	20		1414	58	476	[illegible]	TTL
M. E. Davis domestic	1N/1W-29G1	7-13-60		1810	8.1	105 / 5.24	49 / 4.05	235 / 10.22	0.8 / 0.02	0 / 0.00	476 / 7.80	240 / 5.00	240 / 6.77	23 / 0.37	1.0 / 0.05	0.98	20	Fe 0.04 (Dis.)	1150	52	465	75	DWR
		9-14-60		1810	8.0	107 / 4.36	64 / 5.32	214 / 9.30	1 / 0.02	0 / 0.00	438 / 7.18	243 / 5.07	234 / 6.59	18 / 0.29	0.86 / 0.05	0.88	16		1118	49	484	125	TTL
Crester Hock irrigation	1N/2W-11N1	7-13-60		1120	8.3	79 / 3.94	22 / 1.83	135 / 5.87	2.4 / 0.06	0 / 0.00	486 / 7.96	25 / 0.52	124 / 3.50	0.7 / 0.01	0.4 / 0.02	1.2	41	Fe 0.16 (Dis.)	670	50	289	0	DWR
		9-14-60		951	8.0	29 / 1.43	29 / 2.38	133 / 5.80	2 / 0.06	0 / 0.00	324 / 5.32	18 / 0.39	132 / 3.72	0 / 0.00	0.14 / 0.01	1.28	29		535	60	191	0	TTL
John Wells domestic and irrigation	1N/2W-13P1	7-13-60		1570	8.0	110 / 5.49	64 / 5.30	143 / 6.22	0.4 / 0.01	0 / 0.00	622 / 10.19	122 / 2.54	137 / 3.86	51 / 0.82	0.5 / 0.03	1.9	30	Fe 0.05 (Dis.) Zn 0.07	[illegible]	36	540	30	DWR
		9-14-60		1383	7.7	57 / 2.83	70 / 5.71	132 / 5.75	1 / 0.01	0 / 0.00	437 / 7.17	110 / 2.30	144 / 4.04	40 / 0.65	0.34 / 0.02	1.6	25		799	40	427	68	TTL
C. H. Johnson irrigation	1N/2W-35D1	9-14-60		1688	7.6	166 / 8.32	74 / 6.14	101 / 4.40	4 / 0.11	0 / 0.00	500 / 8.02	330 / 6.86	138 / 3.89	0 / 0.00	0.21 / 0.01	1.06	13		1077	43	723	322	TTL
F. H. Dunham domestic	2N/2W-27A1	7-13-60		1660	8.3	54 / 2.69	39 / 3.18	266 / 11.57	4.0 / 0.10	10 / 0.33	519 / 8.51	64 / 1.33	271 / 7.64	1.8 / 0.03	0.3 / 0.02	5.8	43	Fe 1.8 (Dis.)	1010	66	[illegible]	0	DWR
		9-14-60		1667		25 / 1.26	37 / 3.09	276 / 12.00	4 / 0.09	0 / 0.00	443 / 7.27	62 / 1.29	278 / 7.83	1 / 0.01	0 / 0.00	5.57	33		943	73	218	0	TTL
irrigation	2N/2W-36E1	7-13-60		3110	8.2	224 / 11.18	151 / 12.40	286 / 12.44	0.7 / 0.02	0 / 0.00	556 / 9.11	426 / 8.87	586 / 16.52	87 / 1.40	0.5 / 0.03	1.8	36	Fe 0.08, (Dis.) Al 0.00 Zn 0.08	2970	[illegible]	1180	724	DWR
		9-14-60		2987	7.4	177 / 8.84	137 / 11.26	246 / 10.70	3 / 0.08	0 / 0.00	446 / 7.32	398 / 8.29	497 / 14.00	76 / 1.24	0.30 / 0.02	1.36	24		1783	35	1095	[illegible]	TTL
domestic	2N/2W-36E2	7-13-60		1480	7.8	79 / 3.94	90 / 7.39	103 / 4.48	1.4 / 0.04	0 / 0.00	478 / 7.83	35 / 0.73	254 / 7.16	3.5 / 0.06	0.2 / 0.01	0.58	26	Fe 0.36 (Dis.) Al 0.03	[illegible]	28	567	175	DWR
		9-14-60		1480	8.1	74 / 3.69	86 / 7.12	100 / 4.35	1.5 / 0.04	0 / 0.00	454 / 7.44	37 / 0.77	250 / 7.05	4.1 / 0.07	0.2 / 0.01	0.56	27		803	[illegible]	[illegible]	167	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (each cell: ppm / epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
EAST BAY AREA OF SANTA CLARA VALLEY 2-9																							
	M.D.B.& M.																						
Manassa Block Tanning Co. industrial	1S/1W-4A1	6-28-60	64	1520	8.1	109 / 5.44	75 / 6.17	99 / 4.31	1.0 / 0.02	0 / 0.00	361 / 5.92	113 / 2.35	264 / 7.44	25 / 0.40	0.4 / 0.02	0.20	32		897	27	581	285	DWR
		9-27-60	64	1410	7.9	109 / 5.44	76 / 6.23	94 / 4.09	1.2 / 0.03	0 / 0.00	372 / 6.10	110 / 2.29	239 / 6.74	24 / 0.39	0.2 / 0.01	0.14	34	Br 0.9	870	26	584	279	DWR
Red Star Yeast Co. industrial	1S/4W-34F2	6-28-60	65	960	8.5	33 / 1.65	30 / 2.49	133 / 5.78	1.7 / 0.04	8 / 0.27	255 / 4.18	29 / 0.60	166 / 4.68	5.9 / 0.10	0.01 / 0.00	0.21	40		572	58	207	0	DWR
		9-27-60	65	993	7.9	32 / 1.60	32 / 2.64	131 / 5.70	1.9 / 0.05	0 / 0.00	271 / 4.44	27 / 0.56	162 / 4.57	8.1 / 0.13	0.2 / 0.01	0.20	39	Br 1.1	566	57	212	0	DWR
National Lead Co. industrial	2S/3W-8Q1	6-28-60		2530	8.1	177 / 8.83	102 / 8.37	172 / 7.48	2.3 / 0.06	0 / 0.00	232 / 3.80	54 / 1.12	700 / 19.74	21 / 0.34	0.0 / 0.00	0.34	35		1380	30	861	671	DWR
		9-27-60		1860	7.7	135 / 6.74	52 / 4.27	163 / 7.09	2.1 / 0.05	0 / 0.00	227 / 3.72	35 / 0.73	464 / 13.08	29 / 0.47	0.1 / 0.00	0.38	35	Br 1.6	1030	39	551	365	DWR
General Metals industrial	2S/3W-21J1	6-28-60		4960	7.8	458 / 22.85	191 / 15.71	250 / 10.88	5.7 / 0.14	0 / 0.00	199 / 3.26	124 / 2.58	1570 / 44.27	14 / 0.22	0.2 / 0.01	0.40	33		2740	22	1930	1767	DWR
		9-27-60		6210	7.9	584 / 29.14	241 / 19.81	290 / 12.62	6.3 / 0.16	0 / 0.00	235 / 3.85	149 / 3.10	1940 / 54.71	12 / 0.19	0.1 / 0.00	0.35	32	Br 5.7	3370	20	2450	2260	DWR
Ratto Bros. irrigation	2S/3W-28H1	6-28-60	64	654	8.2	31 / 1.55	24 / 2.01	78 / 3.39	2.0 / 0.05	0 / 0.00	284 / 4.65	48 / 1.00	44 / 1.24	0.1 / 0.00	0.3 / 0.02	0.34	35		403	48	178	0	DWR
		9-27-60		675	7.9	47 / 2.34	16 / 1.34	82 / 3.57	2.1 / 0.05	0 / 0.00	283 / 4.64	48 / 1.00	51 / 1.44	0.1 / 0.00	0.2 / 0.01	0.39	35	Br 0.3	421	49	184	0	DWR
Alameda Municipal Golf Course irrigation	2S/3W-30A1	6-30-60		1850	8.1	157 / 7.83	55 / 4.50	118 / 5.13	3.5 / 0.09	0 / 0.00	234 / 3.84	40 / 0.83	459 / 12.94	0.1 / 0.00	0.2 / 0.01	0.36	35		983	29	617	425	DWR
		9-27-60	68	1090	7.9	74 / 3.69	28 / 2.28	112 / 4.87	2.4 / 0.06	0 / 0.00	275 / 4.51	40 / 0.83	188 / 5.30	0.8 / 0.01	0.1 / 0.00	0.38	37	Br 0.9	618	45	299	73	DWR
Soares irrigation	2S/3W-30D2	6-28-60		834	8.5	42 / 2.10	15 / 1.26	122 / 5.31	2.3 / 0.06	9 / 0.30	280 / 4.59	45 / 0.94	97 / 2.74	0.1 / 0.00	0.2 / 0.01	0.41	38		508	61	168	0	DWR
		2-27-60		844	7.7	46 / 2.30	13 / 1.08	116 / 5.05	2.2 / 0.06	0 / 0.00	296 / 4.85	44 / 0.92	94 / 2.65	0.2 / 0.00	0.2 / 0.01	0.42	37	Br 0.8	499	59	169	0	DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
						EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)																	
	W.D.P. & M.																						
Hohener Packing Co. domestic and industrial	2S/3W-3H3	6-28-60	64	599	8.5	36 / 1.80	17 / 1.40	77 / 3.35	2.9 / 0.07	10 / 0.33	297 / 4.87	31 / 0.64	26 / 0.73	0.8 / 0.01	0.3 / 0.02	0.49	34		381	51	160	0	DWR
		9-27-60		583	7.9	33 / 1.65	18 / 1.45	77 / 3.35	3.3 / 0.08	0 / 0.00	315 / 5.16	32 / 0.67	24 / 0.68	0.8 / 0.01	0.3 / 0.02	0.50	31	Br 0.9	375	51	155	0	DWR
R. A. Zobal irrigation	2S/3W-34A2	6-30-60		873	7.9	79 / 3.94	41 / 3.37	42 / 1.83	0.5 / 0.01	0 / 0.00	328 / 5.38	80 / 1.66	44 / 1.24	56 / 0.09	0.4 / 0.02	0.27	29		533	20	366	97	DWR
		9-28-60		850	7.1	74 / 3.69	38 / 3.16	48 / 2.09	0.4 / 0.01	0 / 0.00	318 / 5.21	70 / 1.46	42 / 1.18	58 / 0.94	0.4 / 0.02	0.38	27	Br 0.9	514	23	343	82	DWR
U. S. Navy	2S/4W-3E1	6-29-60		867	8.2	40 / 2.00	16 / 1.32	120 / 5.22	2.0 / 0.05	0 / 0.00	300 / 4.92	42 / 0.87	106 / 2.99	0 / 0.00	0.3 / 0.02	0.44	36		511	61	166	0	DWR
		9-27-60		735	7.8	34 / 1.70	18 / 1.48	103 / 4.48	1.7 / 0.04	0 / 0.00	285 / 4.67	32 / 0.67	84 / 2.37	0.4 / 0.01	0.2 / 0.01	0.34	38	Br 1.2	452	58	159	0	DWR
Todd Ship Yards	2S/4W-3F1	6-29-60	64	72[illegible]	8.3	34 / 1.70	17 / 1.40	94 / 4.09	1.7 / 0.04	0 / 0.00	256 / 4.20	26 / 0.54	90 / 2.54	0.2 / 0.00	0.2 / 0.01	0.29	40		429	56	155	0	DWR
		9-27-60	66	736	7.6	33 / 1.65	19 / 1.55	96 / 4.18	1.7 / 0.04	0 / 0.00	254 / 4.16	25 / 0.52	94 / 2.65	0.1 / 0.00	0.1 / 0.00	0.27	38	Br 1.4	432	56	160	0	DWR
Alameda High School domestic and irrigation	2S/4W-12R1	6-29-60		498	8.0	32 / 1.60	13 / 1.10	52 / 2.26	2.4 / 0.06	0 / 0.00	171 / 2.80	6.9 / 0.14	72 / 2.03	0.2 / 0.00	0.3 / 0.02	0.16	18		281	45	135	0	DWR
		9-27-60	65	372	7.8	22 / 1.10	12 / 0.98	40 / 1.74	1.8 / 0.05	0 / 0.00	159 / 2.61	2.6 / 0.05	38 / 1.07	0 / 0.00	0.3 / 0.02	0.13	27	Br 0.3	222	45	104	0	DWR
Matto	2S/4W-25A1	6-28-60		799	8.3	31 / 1.55	22 / 1.85	120 / 5.22	1.9 / 0.05	4 / 0.13	291 / 4.77	44 / 0.92	95 / 2.68	0 / 0.00	0.2 / 0.01	0.40	37		498	60	170	0	DWR
		9-27-60		825	8.5	46 / 2.30	14 / 1.12	116 / 5.05	2.1 / 0.05	5 / 0.17	290 / 4.75	43 / 0.90	91 / 2.57	0.4 / 0.01	0.1 / 0.00	0.40	39	Br 0.5	500	59	171	0	DWR
Bayside Nursery irrigation	3S/2W-7J1	6-29-60	64	1130	7.9	113 / 5.64	37 / 3.01	79 / 3.44	2.5 / 0.06	0 / 0.00	428 / 7.01	99 / 2.06	81 / 2.28	50 / 0.81	0.2 / 0.01	0.49	35		707	28	433	82	DWR
		9-28-60	63	1100	7.7	118 / 5.89	34 / 2.80	75 / 3.26	2.2 / 0.06	0 / 0.00	444 / 7.28	99 / 2.06	81 / 2.28	47 / 0.76	0.1 / 0.00	0.51	35	Br 1.2	710	27	435	71	DWR
Kruger and Sons industrial	3S/2W-19[illegible]	6-29-60	62	1055	8.0	114 / 5.69	26 / 2.14	77 / 3.35	1.0 / 0.02	0 / 0.00	363 / 5.95	80 / 1.66	113 / 3.19	31 / 0.50	0.4 / 0.02	0.32	30		651	30	392	94	DWR
		9-28-60	63	1180	8.1	127 / 6.34	20 / 1.63	83 / 3.61	1.0 / 0.02	0 / 0.00	361 / 5.92	95 / 1.98	120 / 3.38	41 / 0.66	0.2 / 0.01	0.28	30	Br 0.6	695	31	399	103	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)																							
	M.D.B.& M.																						
Al Mateas irrigation	3S/2W-30R14	6-29-60		1200	7.9	107 / 5.34	50 / 4.13	92 / 4.00	0.3 / 0.01	0 / 0.00	474 / 3.10	72 / 1.50	110 / 3.10	42 / 0.68	0.5 / 0.03	0.50	29		746	30	474	69	DWR
		9-28-60	62	1320	8.1	131 / 6.54	28 / 2.35	98 / 4.26	0.8 / 0.02	0 / 0.00	464 / 7.60	69 / 1.44	128 / 3.61	41 / 0.66	0.4 / 0.02	0.42	31	Br 0.2	756	32	445	65	DWR
Gerald Stroh irrigation	3S/2W-31H1	7-5-60	69	608	8.3	43 / 2.14	10 / 0.84	82 / 3.57	1.8 / 0.05	0 / 0.00	279 / 4.57	40 / 0.83	38 / 1.07	0.1 / 0.00	0.2 / 0.01	0.31	26		378	54	149	0	DWR
		9-29-60	67	590	8.2	34 / 1.70	8 / 0.66	86 / 3.74	2.1 / 0.05	0 / 0.00	277 / 4.54	32 / 0.67	36 / 1.02	0 / 0.00	0.2 / 0.01	0.41	11	Br 0.8	346	61	118	0	DWR
Lurman Estate irrigation	3S/2W-31K1	6-29-60	67	734	8.3	34 / 1.70	19 / 1.58	94 / 4.09	1.9 / 0.05	4 / 0.13	263 / 4.31	42 / 0.87	76 / 2.14	0 / 0.00	0.3 / 0.02	0.36	28		428	55	164	0	DWR
		9-29-60	67	672	8.2	41 / 2.04	12 / 1.00	93 / 4.04	2.7 / 0.07	0 / 0.00	277 / 4.54	44 / 0.92	66 / 1.86	0.2 / 0.00	0.3 / 0.02	0.39	25	Br 0.8	420	56	152	0	DWR
Mount Eden Nursery Co. domestic and irrigation	3S/2W-32B3	6-29-60	72	990	8.1	36 / 1.80	15 / 1.26	154 / 6.70	1.7 / 0.04	0 / 0.00	279 / 4.57	63 / 1.31	144 / 4.06	0.2 / 0.00	0.2 / 0.01	0.49	25		577	68	153	0	DWR
		9-28-60	72	800	8.3	34 / 1.70	9.5 / 0.78	124 / 5.39	1.9 / 0.05	0 / 0.00	275 / 4.51	52 / 1.08	81 / 2.28	0 / 0.00	0.2 / 0.01	0.53	26	Br 1.1	464	68	124	0	DWR
Avansino Mortensen Co. irrigation	3S/3W-1G3	6-30-60	74	935	8.2	41 / 2.04	11 / 0.94	150 / 6.52	1.3 / 0.03	0 / 0.00	310 / 5.08	54 / 1.12	118 / 3.33	0.1 / 0.00	0.3 / 0.02	0.58	31		559	68	149	0	DWR
		9-28-60	64	733	7.9	40 / 2.00	16 / 1.34	105 / 4.57	1.6 / 0.04	0 / 0.00	344 / 5.64	38 / 0.79	48 / 1.35	0 / 0.00	0.3 / 0.02	0.53	26	Br 0.9	444	57	167	0	DWR
A. H. Breed	3S/3W-3J2	7-5-60		740	8.3	80 / 3.99	28 / 2.28	41 / 1.78	1.8 / 0.05	6 / 0.20	310 / 5.08	36 / 0.75	49 / 1.38	37 / 0.60	0.1 / 0.00	0.29	32		463	22	314	50	DWR
		9-28-60	65	714	7.7	49 / 2.44	16 / 1.28	96 / 4.18	1.7 / 0.04	0 / 0.00	350 / 5.74	35 / 0.73	41 / 1.16	7.4 / 0.12	0.3 / 0.02	0.49	31	Br 0.9	450	53	186	0	DWR
Trojan Powder industrial	3S/3W-11G1	6-30-60	68	1440	8.0	87 / 4.34	22 / 1.85	172 / 7.48	3.1 / 0.08	0 / 0.00	256 / 4.20	66 / 1.37	295 / 8.32	0.2 / 0.00	0.2 / 0.01	0.45	26		798	54	310	100	DWR
		9-28-60	68	1380	7.8	88 / 4.39	21 / 1.76	186 / 8.09	3.0 / 0.08	0 / 0.00	262 / 4.29	64 / 1.33	301 / 8.49	0.5 / 0.01	0.3 / 0.02	0.55	25	Br 1.9	818	56	308	93	DWR
Cianelli irrigation	3S/3W-13B2	6-30-60		2060	7.7	137 / 6.84	78 / 6.39	220 / 9.57	1.0 / 0.02	0 / 0.00	658 / 10.78	230 / 4.79	205 / 5.78	72 / 1.16	0.7 / 0.04	1.7	26		1300	42	662	122	DWR
		9-28-60	63	2010	7.7	136 / 6.79	65 / 5.34	212 / 9.22	0.9 / 0.02	0 / 0.00	641 / 10.50	211 / 4.39	215 / 6.06	65 / 1.05	0.6 / 0.03	1.7	26	Br 2.6	1250	43	607	81	DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

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QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
EAST BAY AND SANTA CLARA VALLEY 2-9 (Continued)																							
	M.D.B.&M.																						
Greenw[illegible] Corp. [illegible] and irrigation	[illegible]-2[illegible]1	6-30-60		695	[illegible].3	45 / 2.2[illegible]	20 / 1.62	86 / 3.74	[illegible].1 / [illegible]	2 / [illegible]	291 / [illegible]	[illegible] / 1.[illegible]	5[illegible] / 1.74	[illegible]	[illegible]	[illegible].2	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	DWR
		[illegible]-2-60		679	[illegible].3	49 / 2.44	19 / 1.54	82 / 3.57	2.1 / [illegible]	0 / .00	309 / 5.[illegible]	48 / 1.00	55 / 1.55	0 / 0.00	.3 / [illegible]	0.4[illegible]	[illegible]	Br [illegible]	444	[illegible]	[illegible]	[illegible]	DWR
[illegible]. Harat domestic and stock	3S/[illegible]-2[illegible]2	[illegible]-60		1720	[illegible]	101 / [illegible]	71 / 5.81	172 / 7.48	0.4 / 0.01	0 / 0.00	448 / 7.34	84 / 1.75	303 / [illegible]	60 / [illegible]	0.4 / .02	0.50	32		10[illegible]	[illegible]	543	176	DWR
		[illegible]-2-60		1[illegible]	[illegible].1	1[illegible] / 5.24	67 / 5.55	168 / 7.31	0.4 / 0.01	0 / .00	39[illegible] / 6.52	[illegible] / 1.[illegible]7	293 / 8.26	73 / 1.16	[illegible] / [illegible]	0.52	33	Br 1.2	1010	40	[illegible]	[illegible]	DWR
Citizens Utilities Co. of California municipal	4S/1W-21F2	12-7-60	63	7[illegible]	[illegible].0	66 / 3.29	30 / 2.4[illegible]	47 / 2.04	2.4 / 0.06	0 / 0.00	264 / 4.33	98 / 2.04	49 / 1.38	3.6 / 0.06	0.3 / 0.02	0.64	15	Fe 0.01, (Dis.) Cu 0.01 Mn 0.01 Cr 0.05 (total)	442	26	2[illegible]9	73	DWR
J. C. Shinn industrial well	4S/1W-21M1	[illegible]-60	63	654	7.4	57 / 2.[illegible]	28 / 2.29	38 / 1.65	1.8 / 0.05	0 / 0.00	255 / 4.18	75 / 1.56	39 / 1.10	1.5 / .02	0.2 / 0.01	0.53	17	Zn 0.01 Phenol 0.0015	3[illegible]	2[illegible]	2[illegible]	4	DWR
		9-21-60	68	646	7.[illegible]	60 / 2.99	26 / 2.16	39 / 1.70	1.6 / 0.04	0 / 0.00	254 / 4.16	72 / 1.50	39 / 1.10	19 / .31	0.2 / [illegible]	[illegible].56	17	Fe 0.06, (Dis.) Pb 0.01 Zn 0.02	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alameda County Water District municipal	4S/1W-21P1	7-11-60	[illegible]3	1090	7.7	10[illegible] / 5.[illegible]	48 / 3.97	53 / 2.30	2.0 / 0.05	0 / .00	293 / [illegible]	64 / 1.33	185 / 5.22	4.1 / .07	[illegible].2 / .01	[illegible].56	16	Pb [illegible] Zn [illegible] Se [illegible] Phenol [illegible]	[illegible]	2[illegible]	[illegible]	[illegible]11	DWR
		[illegible]-21-60	62	1[illegible]	7.6	172 / [illegible]	76 / 6.22	65 / 2.[illegible]3	2.7 / 0.07	0 / .00	27[illegible] / 4.56	63 / 1.31	424 / 11.96	7.7 / 0.12	0.2 / 0.01	0.62	17	Fe 0.08, (Dis.) Al 0.05 Pb 0.01 Zn 0.32	[illegible]	[illegible]	[illegible]	1[illegible]	[illegible]
[illegible]. LeSallee irrigation and domestic	4S/1W-21N2	[illegible]-13-60		73[illegible]				102 / 4.44					39 / 1.1			1.4		Br [illegible]					DWR
		[illegible]-11-60		[illegible]	[illegible]	50 / 2.50	26 / 2.14	98 / 4.26	2.3 / 0.06	0 / 0.00	3[illegible]4 / 6.29	69 / 1.44	37 / 1.04	[illegible] / .12	.2 / 0.01	1.2	1[illegible]		[illegible]	[illegible]	232	[illegible]	"
A. J. Rezendes irrigation	4S/1W-22M2	[illegible]-16-60		1300				213 / [illegible].26					65 / 1.[illegible]3			4.[illegible]		Br [illegible]					[illegible]
		9-11-60		1417	[illegible].6	11 / .55	28 / 2.2[illegible]	2[illegible] / 12.60	8 / .20	[illegible] / 2.66	574 / [illegible]	72 / 1.51	[illegible] / 2.35	3 / [illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	1[illegible]	0	[illegible]
J. and M. [illegible] domestic and irrigation	4S/1W-2[illegible]	5-16-60		656				39 / 1.70					40 / 1.13			[illegible]		Br [illegible]					DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)																							
	M.D.B.& M.																						
J. and M. Braga	4S/1W-28D4	9-13-60		668	8.0	58 / 2.89	29 / 2.40	38 / 1.65	1.8 / 0.05	0 / 0.00	258 / 4.23	62 / 1.29	43 / 1.21	4.2 / 0.07	0.2 / 0.01	0.58	1		3[illegible]2	24	2[illegible]5	53	DWR
Manuel Desalles domestic and irrigation	4S/1W-28E3	5-12-60		5450				142 / 6.18					1764 / 49.74			0.57		Br 7.0					DWR
		9-13-60		5420	7.7	550 / 27.44	247 / 20.29	158 / 6.87	7.2 / 0.18	0 / 0.00	388 / 6.36	84 / 1.75	1608 / 45.34	3.1 / 0.05	0.3 / 0.02	0.64	18		2867	12	23[illegible]9	2071	DWR
A. C. Bettencourt domestic	4S/1W-29B2	5-16-60		922				42 / 1.83					182 / 5.13			0.75		Br 0.7					DWR
		9-14-60		2731	7.7	241 / 12.04	134 / 11.04	86 / 3.75	4 / 0.09	0 / 0.00	226 / 3.70	60 / 1.25	771 / 21.71	10 / 0.16	0 / 0.00	0.42	14		1433	14	1154	969	TTL
Fred Lewis domestic and irrigation	4S/1W-29M2	5-11-60		964				74 / 3.22					36 / 1.02			0.43		Br 0.3					DWR
		9-12-60		1167	7.9	82 / 4.10	52 / 4.27	51 / 2.20	2 / 0.06	0 / 0.00	139 / 2.28	56 / 1.16	252 / 7.10	4 / 0.06	0 / 0.00	.33	13		[illegible]	21	41[illegible]	[illegible]	TTL
Rodriquez irrigation	4S/1W-29M6	5-12-60		4550				148 / 6.44					865 / 24.39			0.84		Br [illegible]					DWR
		9-12-60		4679	7.6	378 / 18.84	234 / 19.24	168 / 7.30	5 / 0.12	0 / 0.00	112 / 1.84	155 / 3.23	1452 / 40.89	3 / 0.05	0 / 0.00	0.37	14		[illegible]	16	[illegible]	[illegible]	TTL
Silva irrigation and domestic	4S/1W-30C2	5-12-60		2890				71 / 3.09					776 / 21.88			0.47		Br 2.4					DWR
		9-13-60		3438	7.7	348 / 17.36	156 / 12.80	93 / 4.05	5 / .12	0 / 0.00	243 / 3.98	149 / 3.11	934 / 26.30	8 / 0.13	0 / 0.00	0.26	16		[illegible]	12	[illegible]	[illegible]	TTL
Cloverdale Creamery industrial	4S/1W-30G1	5-12-60		662				32 / 1.39					74 / 2.09			0.37		Br 0.2					DWR
		9-13-60		546	8.0	35 / 1.75	21 / 1.73	35 / 1.50	2 / 0.04	0 / 0.00	135 / 2.21	51 / 1.07	57 / 1.61	4 / 0.07	0 / 0.00	0.20	17		[illegible]	30	174	63	TTL
Alameda County Water District municipal	4S/1W-31B3	5-12-60		674				62 / 2.70					67 / 1.89			0.38		Br 0.1					DWR
		9-13-60		643	[illegible].1	48 / 2.40	21 / 1.70	58 / 2.52	1.8 / 0.05	0 / 0.00	220 / 3.50	48 / 1.00	69 / 1.94	4 / 0.06	0.1 / 0.00	0.39	21		379	3[illegible]	205	25	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)																							
	M.D.B.& M.																						
Frank [illegible] domestic and irrigation	4S/1W-32A[illegible]	[illegible]-11-[illegible]		22[illegible]				152 / [illegible].61					40[illegible] / 11.5[illegible]			1.1		Br .6					DWR
		9-12-60		1[illegible]11	[illegible].1	[illegible] / 2.2[illegible]	[illegible] / [illegible].22	1[illegible]2 / [illegible]	4 / [illegible].09	0 / [illegible].00	156 / 2.56	98 / 2.05	425 / 11.97	2[illegible] / 0.39	0 / [illegible]	.4[illegible]	14		[illegible]60	45	475	319	TTL
Jo[illegible] domestic and irrigation	[illegible]S/1W-33[illegible]	5-12-60		14[illegible]0				135 / [illegible].87					120 / 3.38			1.1		Br 0.3					DWR
		[illegible]-12-60		11[illegible]	[illegible].1	1[illegible] / [illegible]	[illegible]6 / 4.62	130 / 5.65	5 / 0.12	0 / 0.00	307 / [illegible].04	103 / 2.14	123 / 3.46	32 / 0.51	0 / 0.00	.73	17		639	50	278	26	TTL
Grace Mewhinney irrigation	4S/1W-34F2	5-11-60		[illegible]70				[illegible]3 / [illegible]					63 / 1.78			0.31		Br 0.[illegible]					DWR
		9-12-[illegible]		7[illegible]	[illegible].2	[illegible]4 / 2.[illegible]	20 / 1.67	107 / 4.6[illegible]	3 / 0.08	0 / 0.00	3[illegible]6 / 5.83	70 / 1.46	60 / 1.69	0 / 0.00	0.34 / 0.02	0.31	16		509	51	218	0	TTL
Alameda County Water District municipal	4S 1W-35P3	[illegible]-11-[illegible]		6[illegible]1				98 / 4.26					42 / 1.1[illegible]			0.34		Br 0.0					DWR
		9-12-60		[illegible]	8.2	2[illegible] / 1.40	16 / 1.34	96 / 4.1[illegible]	1.9 / 0.05	0 / 0.00	333 / 5.46	19 / 0.43	41 / 1.16	0.6 / [illegible]	0.3 / [illegible].02	0.32	25		392	60	137	0	DWR
Andrada domestic and irrigation	4S/2W-3N1	[illegible]-11-[illegible]0		544				70 / 3.04					19 / 0.54			0.40		Br 0.0					DWR
		[illegible]-[illegible]-60		559	[illegible]	35 / 1.73	12 / 1.00	77 / 3.33	2 / 0.05	26 / 0.[illegible]	21[illegible] / 3.57	43 / [illegible].91	25 / 0.69	0 / 0.00	.1 / 0.01	0	18		347	55	137	0	TTL
City of Hayward municipal	4S/2W-[illegible]A14	7-[illegible]-60	7[illegible]	[illegible]	[illegible]	40 / 2.[illegible]0	9.5 / [illegible].7[illegible]	1[illegible]6 / [illegible].61	2.2 / .06	8 / 0.27	270 / 4.42	43 / 0.90	61 / 1.72	0.7 / [illegible].01	[illegible].2 / 0.[illegible]1	0.44	27		431	62	139	0	DWR
		9-24-[illegible]	7[illegible]	69[illegible]	7.[illegible]	3[illegible] / 1.9[illegible]	11 / [illegible].93	1[illegible]1 / [illegible].39	2.1 / .05	0 / [illegible].00	280 / 4.5[illegible]	43 / 0.90	62 / 1.75	[illegible].9 / [illegible]	[illegible].3 / [illegible].02	0.40	25	Br 1.[illegible]	423	60	144	0	DWR
[illegible] Bettencourt irrigation	4S/2W-[illegible]2	[illegible]	69	37[illegible]	7.5	32[illegible] / 16.22	99 / [illegible].16	284 / 12.35	4.8 / .12	0 / .00	134 / 2.[illegible]	111 / [illegible].31	1140 / 32.15	[illegible] / [illegible].01	0.2 / [illegible]	0.30	2[illegible]		2060	34	1220	1110	DWR
		9-[illegible]-60	64	[illegible]200	7.[illegible]	[illegible] / 20.[illegible]	1[illegible]3 / [illegible].51	472 / 20.53	[illegible] / [illegible].15	0 / .00	216 / 3.54	139 / 2.89	15[illegible] / 44.56	1.[illegible] / [illegible]	0.[illegible] / [illegible]	0.34	22	Br 1.5	20[illegible]0	41	1150	1270	DWR
[illegible] Sugar Refinery industrial	4S/2W-1[illegible]	[illegible]-11-60		[illegible]73				74 / 3.22					60 / 1.[illegible]			[illegible]		Br [illegible]					DWR

a Determined by addition of constituents

b Gravimetric determination.

c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated

d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
[illegible]																							
	[illegible]																						
Holly Sugar Refinery industrial	4S/2W-10C1	9-1-60		[illegible]91	[illegible]	[illegible]	[illegible]	77 / 3.3[illegible]	[illegible]	[illegible]	[illegible] / 4.[illegible]	[illegible]	[illegible] / 1.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	177	0	DWR
Scutto Bros. irrigation and domestic	4S/2W-10C2	5-11-60		2280				[illegible] / [illegible].7					376 / 1[illegible]			[illegible].59		Br [illegible]					DWR
		[illegible]-13-60		2297	7.[illegible]	141 / 7.0[illegible]	[illegible]	1[illegible] / 1.7[illegible]	[illegible] / .1[illegible]	[illegible] / .00	[illegible] / 1.[illegible]	345 / 7.1	[illegible]	1[illegible] / 0.16	0 / [illegible]	[illegible]	17		1296	21	702	22	TTL
H. Andrade domestic and irrigation	4S/2W-10G3	5-16-60		1850				[illegible] / [illegible].77					301 / [illegible].49			.70		Br 1.3					DWR
		9-1-60		1[illegible]9	7.8	122 / [illegible]	126 / [illegible].36	[illegible] / 4.[illegible]	3 / [illegible]	0 / [illegible]	2[illegible] / [illegible]	[illegible] / [illegible].1	[illegible] / [illegible].45	[illegible]	0 / [illegible]	[illegible]	[illegible]		1211	20	322	129	TTL
Henry Dutra domestic and irrigation	4S/2W-11Q5	5-11-60		1440				105 / 4.57					126 / [illegible]			.41		Br [illegible].7					DWR
		9-15-60		1310	7.9	89 / 4.44	55 / 4.53	97 / 4.22	2.2 / 0.05	0 / 0.00	291 / 4.77	126 / 2.62	17[illegible] / [illegible].?2	125 / 2.[illegible]	[illegible] / .1	.[illegible]	23		7[illegible]6	32	[illegible]	[illegible]	DWR
S. Kay irrigation	4S/2W-13C2	5-16-60		1570				73 / 3.1[illegible]					253 / 7.13			[illegible].63		Br 1.2					DWR
		9-13-60		1600	7.[illegible]	137 / 6.84	76 / 6.29	75 / 3.21	3.1 / 0.0[illegible]	0 / 0.00	382 / 6.26	130 / 2.71	249 / 7.02	27 / 0.4[illegible]	.1 / 0.0[illegible]	[illegible]	21		907	2[illegible]	657	344	DWR
1 .r. Harvey irrigation	4S/2W-14[illegible]1	5-12-60		2540				131 / 5.70					523 / 14.75			0.[illegible]		Br [illegible].3					DWR
A. Caeton irrigation and domestic	4S/2W-14J1	6-1[illegible]-60		598				38 / 1.65					45 / 1.27			0.43		Br [illegible].2					DWR
		9-1[illegible]-60		[illegible]	.[illegible]	34 / 1.[illegible]	[illegible] / 1.95	[illegible] / 1.[illegible]	2 / [illegible]	0 / [illegible]	152 / 2.50	[illegible] / 1.[illegible]	[illegible] / 1.[illegible]	11 / .1[illegible]	0 / .00	0.[illegible]2	20		260	3[illegible]	1[illegible]	[illegible]7	TTL
1. P. Harvey domestic and irrigation	4S/2W-15C1	5-11-60		62[illegible]				42 / 1.83					31 / 0.[illegible]7			[illegible]		Br 0.[illegible]					DWR
		9-15-60		502	.15	3[illegible] / 1.[illegible]	19 / [illegible]	44 / 1.90	2 / 0.[illegible]	0 / 0.00	207 / 3.40	41 / 0.87	34 / 0.96	11 / 0.1[illegible]	0 / 0.00	0.22	20		312	3[illegible]	17[illegible]	3	TTL
King	4S/2W-15L4	5-12-60		626				37 / 1.[illegible]					35 / 0.[illegible]			[illegible].3[illegible]		Br 0.1					DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

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QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a][b]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
						EAST BAY AREA [illegible] SANTA CLARA VALLEY 2-9 (Continued)																	
	[illegible]																						
[illegible]	4S/2W-15L4	9-13-60		[illegible]16	7.[illegible]	[illegible]6 / 2.[illegible]0	22 / 1.82	37 / 1.[illegible]	2 / 0.06	0 / .00	233 / 3.82	49 / 1.02	41 / 1.14	9 / 0.1[illegible]	0 / 0.00	0.15	1[illegible]		3[illegible]0	25	2[illegible]1	40	TTL
Patterson Ranch irrigation	4S/2W-23F2	5-[illegible]1-60		4[illegible]2				30 / 1.30					36 / 1.02			0.36		Br 0.0					DWR
		9-13-60		455	7.9	27 / 1.36	19 / .59	35 / 1.52	1 / 0.02	0 / 0.00	133 / 2.19	46 / .97	40 / 1.11	7 / 0.12	0.10 / [illegible].01	0.44	16		25[illegible]	34	14[illegible]	38	TTL
L. Croce	4S/2W-2[illegible]	[illegible]-12-60		539				36 / 1.57					2[illegible] / 0.79			0.35		Br 0.0					DWR
		9-13-60		444	8.3	2[illegible] / 1.40	19 / 1.57	36 / 1.54	2 / 0.04	0 / .00	149 / 2.45	44 / 0.92	30 / 0.84	10 / 0.17	0 / 0.00	0	18		261	34	149	36	TTL
L.S. and M. Amaral irrigation	4S/2W-24F6	5-12-60		1[illegible]10				225 / 9.79					223 / 6.29			0.70		Br 0.6					DWR
		9-14-60		1552	[illegible].1	91 / 4.56	76 / 6.27	88 / 3.85	3 / 0.07	0 / 0.00	137 / 2.25	75 / 1.56	370 / 10.42	25 / 0.39	0 / 0.0[illegible]	0.22	18		814	2[illegible]	[illegible]42	429	TTL
J.A., J.R., and L.A. [illegible]acado irrigation	4S/2W-24J1	5-16-[illegible]		[illegible]93				27 / 1.17					41 / 1.16			0.6[illegible]		Br 0.2					DWR
		9-15-[illegible]		[illegible]	[illegible].2	34 / 1.[illegible]	22 / 1.[illegible]	33 / 1.44	2 / 0.04	0 / 0.00	153 / 2.51	58 / 1.20	42 / 1.1[illegible]	7 / 0.11	0 / 0.00	0.46	1[illegible]		2[illegible]	27	176	50	TTL
M. Kitani domestic and irrigation	4S/2W-2[illegible]	5-12-60		5[illegible]				32 / 1.3[illegible]					31 / 0.37			0.3[illegible]		Br 0.0					DW[illegible]
		9-13-60		[illegible]03	[illegible].3	62 / 3.11	22 / 1.76	32 / 1.39	2 / 0.[illegible]5	2[illegible] / 0.[illegible]6	209 / 3.43	42 / 0.[illegible]9	33 / [illegible].92	7 / 0.12	0 / 0.00	[illegible].22	16		340	22	[illegible]44	29	TTL
[illegible]. H. and [illegible]. [illegible]. Patterson irrigation	4S/2W-26A1	5-1[illegible]-60		[illegible]71				48 / 2.09					72 / 2.03			0.[illegible]7		Br 0.3					DWR
		9-13-60		758	7.[illegible]	61 / 3.07	2[illegible] / 1.[illegible]2	60 / 2.5[illegible]	1 / 0.02	0 / 0.00	219 / 3.58	47 / 0.98	19[illegible] / 2.75	6 / 0.09	0 / 0.0[illegible]	0.44	17		521	34	2[illegible]	60	TTL
J.L. and E.A. Abban irrigation and stock	4S/2W-26J1	5-12-60		876				104 / 4.52					132 / 3.72			0.33		Br [illegible].3					DWR
		9-13-60		1[illegible]45	[illegible].05	[illegible]1 / 2.[illegible]	21 / 1.71	123 / [illegible].35	3 / 0.[illegible]7	0 / 0.00	171 / 2.[illegible]	41 / [illegible].[illegible]6	2[illegible] / [illegible]	2 / 0.03	0 / 0.0[illegible]	0.31	18		5[illegible]2	[illegible]	213	73	TTL

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (DWR), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						EAST BAY OF SANTA CLARA VALLEY 2-9 (Continued)																	
	M.D.B.&M.																						
H.H. and W.D. Patterson domestic and irrigation	4S/2W-27L1	5-11-60		510				79 / 3.44					33 / 0.93			0.34		Br 0.0					DWR
		9-13-60		624	8.45	22 / 1.09	5 / 0.44	114 / 4.95	1 / 0.03	23 / 0.78	257 / 4.22	24 / 0.50	33 / 0.92	0 / 0.00	0 / 0.00	0.18	19		369	76	77	0	TTL
L. Mallani irrigation and domestic	5S/1W-6G1	5-16-60		3300				148 / 6.44					972 / 27.41			0.43		Br 3.6					DWR
		9-14-60		1170	8.3	95 / 4.74	24 / 1.97	95 / 4.13	3 / 0.08	0 / 0.00	255 / 4.18	29 / 0.60	226 / 6.37	2.1 / 0.03	0.1 / 0.00	0.29	22		621	38	330	127	DWR
W. B. Brinker irrigation	5S/1W-9N1	5-11-60		1010				94 / 4.09					180 / 5.08			0.39		Br 0.7					DWR
		9-12-60		1016	8.15	53 / 2.65	29 / 2.41	106 / 4.60	4 / 0.11	0 / 0.00	190 / 3.11	27 / 0.56	204 / 5.73	2 / 0.04	0 / 0.00	0.04	17		552	47	253	97	TTL
A. F. Brosine irrigation and domestic	5S/1W-9K1	5-11-60		712				34 / 1.48					37 / 1.04			0.55		Br 0.0					DWR
		9-12-60		696	8.3	33 / 1.63	24 / 1.95	73 / 3.18	3 / 0.08	24 / 0.80	232 / 3.80	31 / 0.64	53 / 1.49	2 / 0.03	0 / 0.00	0.40	21		380	46	179	0	TTL
Phillip Encisco domestic and stock	5S/2W-1B1	9-15-60		552	8.3	18 / 0.90	3.2 / 0.26	108 / 4.70	1.3 / 0.03	0 / 0.00	288 / 4.72	31 / 0.64	19 / 0.54	0.5 / 0.01	0.3 / 0.02	0.38	25		349	80	58	0	DWR
West Vaco Chemical Co. industrial	5S/2W-1N1	5-11-60		544				110 / 4.78					18 / 0.51			0.58		Br 0.1					DWR
		9-13-60		450	8.3	7 / 0.35	1 / 0.07	97 / 4.20	1 / 0.02	20 / 0.66	173 / 2.83	24 / 0.50	20 / 0.55	0 / 0.00	0.14 / 0.01	0.11	20		275	91	21	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Bromide (Br).

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ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						SOUTH BAY AREA [illegible] SANTA CLARA VALLEY 2-9																	
	M.D.B.& M.																						
City of Palo Alto Municipal	[illegible]S/3W-35G1	9-29-60	[illegible]7	1050	[illegible].3	60/2.99	1[illegible]/1.45	129/[illegible].61	1.7/0.[illegible]4	0/[illegible].00	252/4.13	44/0.92	169/4.76	0.7/0.[illegible]1	0.3/0.02	0.29	26		573	56	222	15	DWR
W[illegible]s[illegible] Bros.	6S/1E-7C	[illegible]-2-60	67	[illegible]61	[illegible]	35/1.75	14/1.13	74/3.22	[illegible]/.02	6/0.2[illegible]	263/4.31	45/[illegible].94	22/[illegible].62	0.2/0.00	0.1/0.00	[illegible].32	19		340	53	144	0	DWR
[illegible]rigley irrigation	6S/1E-21G1	8-2-60	68	571	[illegible].1	29/1.45	22/1.85	57/2.[illegible]	1.9/0.05	0/.00	228/3.74	35/0.73	36/1.02	20/[illegible].32	0.2/.01	0.53	27		341	42	165	0	DWR
[illegible]. Machado irrigation and domestic	6S/1E-30M1	8-2-60	66	561	[illegible].2	60/2.99	20/1.69	29/1.26	1.4/0.04	0/0.00	273/4.47	40/0.83	22/0.62	6.5/[illegible].10	[illegible].1/[illegible].00	0.20	28		341	21	234	10	D[illegible]
J. S. Garcia irrigation and domestic	6S/1W-11B1	8-2-60	69	563	8.6	59/2.94	20/1.62	41/1.7[illegible]	1.4/0.04	18/.60	2[illegible]7/4.7[illegible]	28/0.58	18/0.51	0.9/0.01	[illegible].1/0.[illegible]	[illegible].25	22		332	[illegible]0	22[illegible]	0	DWR
[illegible]. Burrell	6S/1W-14L4	[illegible]-30-60	65	513	[illegible].3	57/2.[illegible]4	16/1.32	3[illegible]/1.52	1.2/[illegible].03	0/[illegible].00	274/[illegible].49	31/[illegible].64	1[illegible]/0.51	[illegible]/0.[illegible]	.00/0.00	0.20	2[illegible]		320	27	208	0	DW[illegible]
[illegible]. J. Collier Corp. industrial	[illegible]S/1W-16A1	[illegible]-2-60	67	[illegible]84	[illegible]	[illegible]	33/[illegible]	1[illegible]3/[illegible]	1.1/[illegible].03	0/0.[illegible]0	23[illegible]/3.90	73/1.[illegible]2	156/4.40	1.6/[illegible]	[illegible]	0.26	24		558	[illegible]0	[illegible]60	[illegible]	DWR
A. French	6S/1W-1[illegible]	[illegible]-3[illegible]-60	62	45[illegible]	[illegible].3	[illegible]4/2.20	12/1.0[illegible]	[illegible]/1.74	1.5/[illegible]	0/0.00	236/[illegible]7	[illegible]0/[illegible]3	1[illegible]/[illegible]	0/[illegible]	0.1/[illegible]	0.1[illegible]	26		29[illegible]	[illegible]	1[illegible]	[illegible]	DW[illegible]
[illegible]. Ikegami	6S/1W-19C	[illegible]	[illegible]7	1[illegible]	[illegible]	[illegible]/2.[illegible]	17/[illegible]	3[illegible]/1.[illegible]	1.[illegible]/[illegible]	[illegible]	[illegible]	29/.60	23/[illegible]	[illegible]	.1/[illegible]	[illegible]	2[illegible]		[illegible]12	[illegible]	1[illegible]	[illegible]	DW[illegible]
T. A. [illegible]ilcox Bros. irrigation	6[illegible]/1W-[illegible]1	[illegible]-2-[illegible]	[illegible]	417	[illegible].2	2[illegible]/[illegible]	[illegible]	[illegible]7/[illegible]	[illegible]	[illegible]	[illegible]	26/[illegible]	22/[illegible]	[illegible].2/[illegible]	.1/[illegible]	[illegible].22	23		[illegible]	[illegible]	[illegible]	[illegible]	DWR
[illegible]	[illegible]1W-[illegible]	[illegible]-2-[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2[illegible]	[illegible]	[illegible]	[illegible]	[illegible].49	[illegible]	[illegible]	[illegible]	[illegible]		221	[illegible]	[illegible]	[illegible]	TTL
[illegible]to	6S/1W-2[illegible]1	[illegible]-2-[illegible]	[illegible]7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]	[illegible]	[illegible]		3[illegible]	[illegible]	1[illegible]	0	DWR
[illegible] domestic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	160	[illegible]	[illegible]
City of Palo Alto municipal	6S/2W-17D4	[illegible]	[illegible]	71[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	DW[illegible]
California Water Service Co.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1[illegible]	11/.1[illegible]	[illegible]	.1[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (each cell: ppm / epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N C ppm	Analyzed by[c]
							SOUTH BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)																
	M.D.B.&M.																						
Homm Bros.	6S/2W-24M3	8-30-60	70	469	8.2	41 / 2.04	17 / 1.40	42 / 1.83	1.1 / 0.03	0 / 0.00	249 / 4.08	30 / 0.62	21 / 0.59	0.2 / 0.00	0.2 / 0.01	0.27	33		308	34	172	0	DWR
H. Mantelli irrigation	6S/2W-28R1	8-29-60	69	543	8.1	55 / 2.74	26 / 2.18	22 / 0.96	1.1 / 0.03	0 / 0.00	254 / 4.16	21 / 0.44	29 / 0.82	20 / 0.32	0.1 / 0.00	0.18	28		327	16	246	38	DWR
Slonaker irrigation and domestic	6S/2W-29D2	9-30-60	67	742	8.3	78 / 3.89	29 / 2.38	45 / 1.96	1.4 / 0.04	0 / 0.00	374 / 6.13	19 / 0.40	39 / 1.10	36 / 0.58	0.2 / 0.01	0.15	31		463	24	314	7	DWR
H. Mantelli irrigation and domestic	6S/2W-34M1	8-29-60	64	526	7.7	56 / 2.79	24 / 1.99	21 / 0.91	1.1 / 0.03	0 / 0.00	264 / 4.33	15 / 0.31	22 / 0.62	17 / 0.27	0.2 / 0.01	0.15	28		314	16	239	23	DWR
O. P. Gluhaich irrigation	6S/2W-36H2	8-30-60	66	743	8.5	71 / 3.54	34 / 2.79	35 / 1.52	1.5 / 0.04	9 / 0.30	302 / 4.95	47 / 0.98	52 / 1.47	18 / 0.29	0.2 / 0.01	0.26	26		433	19	317	69	DWR
City of Palo Alto Municipal	6S/3W-1B1	9-29-60	70	1220	8.3	62 / 3.09	16 / 1.31	157 / 6.83	1.9 / 0.05	0 / 0.00	263 / 4.31	43 / 0.90	204 / 5.75	2.6 / 0.04	0.3 / 0.02	0.36	30		646	60	220	4	DWR
City of Palo Alto Municipal	6S/3W-2D1	9-29-60	63	749	8.2	63 / 3.14	17 / 1.42	71 / 3.09	1.6 / 0.04	0 / 0.00	277 / 4.54	54 / 1.12	61 / 1.72	6.3 / 0.10	1.6 / 0.08	0.24	24		436	40	228	1	DWR
L. E. Inman irrigation	7S/1W-3G1	8-30-60	69	722	8.2	95 / 4.74	27 / 2.23	25 / 1.09	1.5 / 0.04	0 / 0.00	303 / 4.97	99 / 2.06	28 / 0.79	12 / 0.19	0.2 / 0.01	0.30	28		465	13	349	101	DWR
W. S. Bennet	7S/1W-5L	8-23-60	63	800	8.4	97 / 4.84	29 / 2.41	33 / 1.44	1.6 / 0.04	8 / 0.27	368 / 6.03	55 / 1.14	36 / 1.02	24 / 0.39	0.1 / 0.00	0.45	27		484	16	363	61	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-C 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									LIVERMORE VALLEY 2-10														
	M.D.B.& M.																						
F. Gustanich domestic	2S/2E-3[illegible]2	6-[illegible]-60		2[illegible]0	[illegible]	59 2.94	50 4.09	44[illegible] 19.19	1.2 0.03	8 0.27	365 5.98	76 1.58	644 18.16	12 0.19	1.2 0.06	0.8	22		1510	73	352	40	DWR
T. P. Bishop Company irrigation	2S/1W-22A1	6-9-60		45[illegible]	[illegible].1	35 1.90	18 1.48	104 4.52	2.0 .05	0 0.00	178 2.92	12 .25	174 4.91	0.2 0.00	0.1 0.00	0.27	27		464	57	168	22	DWR
domestic	3S/1E-3[illegible]1	6-1[illegible]-60		[illegible]94	[illegible]	50 2.50	4[illegible] 3.[illegible]1	96 4.18	1.5 0.04	0 0.00	366 6.00	58 1.21	105 2.96	23 0.37	0.3 0.02	1.9	28		592	39	321	21	DWR
U.S. Air Force domestic and irrigation	3S/1[illegible]-[illegible]3	6-10-60		934	[illegible]	56 2.79	52 4.28	72 3.13	1.4 0.04	10 .33	334 5.47	64 1.33	99 2.79	7.5 0.12	0.2 0.[illegible]1	0.7[illegible]	28		555	30	364	[illegible]	DWR
E. Hagemann domestic and irrigation	3S/1[illegible]-11H1	6-1[illegible]		664	[illegible]	42 2.10	52 4.25	22 0.96	1.3 0.03	5 0.17	301 4.93	34 0.71	41 1.16	18 0.29	0.1 0.00	0.34	26		390	13	318	63	DWR
California Rock and Gravel Co. domestic	3S/1E-13P2	6-1[illegible]-60		521	[illegible]	4[illegible] 2.24	26 2.14	28 1.22	1.2 0.03	4 0.13	222 3.64	44 0.92	34 0.96	0.6 0.01	0.2 0.01	0.3	18		310	22	219	30	DWR
Kaiser Industries Corp. domestic and industrial	3S/1[illegible]-1[illegible]L1	6-9-60		519	[illegible]	48 2.40	25 2.06	22 0.96	1.1 0.03	0 0.00	220 3.60	34 0.71	32 0.90	10 0.16	0.2 0.01	0.22	21		302	1[illegible]	223	43	DWR
Pleasanton Township Water District irrigation	3S/1E-16P1	6-1[illegible]-60		475	8.3	21 1.05	[illegible].6 .71	73 3.17	1.2 .03	0 0.00	198 3.24	22 0.46	39 1.10	3.7 .06	.2 0.01	0.36	27		293	[illegible]	[illegible]	0	DWR
M. Kruse irrigation	3S/1[illegible]-17H2	6-9-60		[illegible]03	[illegible]	7[illegible] 3.[illegible]9	57 4.68	34 1.48	1.8 0.05	7 0.23	356 5.83	59 1.23	81 2.28	10 0.16	0.2 0.01	0.41	22		521	15	41[illegible]	115	DWR
Pleasanton Township Water District irrigation	3S/1[illegible]-1[illegible]	6-1[illegible]-[illegible]0		5[illegible]	8.1	57 2.[illegible]4	28 2.31	30 1.30	1.5 0.04	0 0.00	270 4.42	45 0.94	30 0.85	14 0.22	0.2 0.01	0.21	23		362	[illegible]	258	[illegible]	DWR
San Francisco Water Department municipal and irrigation	3S/1E-1[illegible]A5	6-2[illegible]-60		70[illegible]	[illegible].0	65 3.24	37 3.03	27 1.17	1.6 0.04	0 0.00	311 5.10	62 1.29	35 0.99	1.9 0.03	0.2 0.01	0.37	20		403	1[illegible]	[illegible]	[illegible]	DWR
E. C. & J. Nevin Stock	3S/1W-1G1	6-[illegible]-60		[illegible]	8.1	70 3.[illegible]	34 2.[illegible]	70 3.04	[illegible]	0 0.00	331 5.42	86 1.7[illegible]	77 2.17	0.2 0.00	0.7 0.04	0.2[illegible]	20		[illegible]	33	314	43	DWR
California Water Service municipal	3S/2E-[illegible]1	6-10-[illegible]		7[illegible]	[illegible]	37 1.[illegible]5	46 3.73	42 1.83	1.5 0.04	13 .43	278 4.56	33 0.69	54 1.52	13 0.21	0.2 0.01	[illegible]	23		404	[illegible]	[illegible]	33	DWR

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						LIVERMORE VALLEY 2-10 (Continued)																	
	M.D.B.& M.																						
H. L. Hageman irrigation	3S/2E-7K1	6-9-60		732	8.3	46 2.30	59 4.85	25 1.09	1.6 0.04	5 0.17	334 5.47	42 0.87	43 1.21	26 0.42	0.2 0.01	0.33	27		439	13	350	76	DWR
California Water Service municipal	3S/2 -8H1	6-[illegible]-60		658	8.5	30 1.50	34 2.80	58 2.52	1.5 0.04	8 0.27	237 3.88	22 0.46	64 1.80	28 0.45	0.2 0.01	0.34	27		390	37	215	0	DWR
J. H. Barber domestic and irrigation	3S/2E-10M1	6-10-60		1350	8.4	81 4.04	94 7.73	66 2.87	2.0 0.05	10 0.33	428 7.01	35 0.73	186 5.24	70 1.13	0.2 0.01	0.63	32		787	20	589	222	DWR
Amling DeVore Nursery irrigation	3S/2E-10H1	6-10-60		781	8.4	41 2.04	33 2.74	74 3.22	1.5 0.04	8 0.27	256 4.20	58 1.21	78 2.20	13 0.21	0.3 0.02	1.5	30		464	40	239	16	DWR
W. Wagoner irrigation	3S/2E-17N1	6-9-60		817	8.5	19 0.95	9.1 0.75	157 6.83	0.9 0.02	12 0.40	314 5.15	29 0.60	92 2.59	0.8 0.01	0.3 0.02	2.8	19		496	80	85	0	DWR
B. G. Wood irrigation	3S/2E-29D1	6-[illegible]-60		726	8.4	51 2.54	23 1.90	70 3.04	1.6 0.04	5 0.17	280 4.59	40 0.83	67 1.89	7.8 0.12	0.3 0.02	0.45	22		425	40	222	0	DWR
J. Amaral irrigation	3S/3E-19C1	6-10-60		1530	8.6	28 1.40	46 3.77	259 11.26	2.4 0.06	26 0.87	482 7.90	72 1.50	234 6.60	0.4 0.01	0.5 0.03	7.3	28		940	63	259	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-3 6-61 500 SPO

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
								CENTRAL COASTAL REGION (No. 3)															
								PAJARO VALLEY 3-2															
	M.D.B.& M.																						
F. T. Blake irrigation and domestic	12S/1E-11L1	5-16-60	66	422				24 1.09					17 0.48			0.07		Br 0.0					DWR
		9-20-60	64	416	8.3	32 1.60	22 1.78	21 0.91	2.3 0.06	0 0.00	194 3.18	23 0.48	19 0.54	5.3 0.08	0.2 0.01	0.06	48	Br 0.0	268	21	169	10	DWR
State of California domestic	12S/1E-11N1	5-12-60	65	399				20 0.87					16 0.45			0.07		Br 0.0					DWR
		9-20-60	64	419	8.3	27 1.35	24 2.01	21 0.91	1.5 0.04	0 0.00	178 2.92	28 0.58	21 0.59	9.2 0.15	0.3 0.02	0.07	44	Br 0.0 ABS 0.0	264	21	168	22	DWR
J. Roacha irrigation	12S/1E-14J1	5-16-60	64	417				26 1.13					27 0.76			0.06		Br 0.0					DWR
		9-21-60		430	8.0	23 1.15	21 1.71	24 1.04	1.4 0.04	0 0.00	110 1.80	15 0.31	46 1.30	27 0.44	0.1 0.00	0.05	34	Br 0.0	246	26	143	53	DWR
E. L. Padden domestic	12S/1E-23R1	5-16-60		558				41 1.78					44 1.24			0.07		Br 0.0					DWR
		9-20-60		576	8.5	25 1.25	31 2.53	47 2.04	12 0.31	6 0.20	258 4.23	43 0.90	28 0.79	1.4 0.02	0.2 0.01	0.08	32	Br 0.1	353	33	189	0	DWR
H. Trafton irrigation	12S/1E-24G1	5-16-60		541				26 1.13					19 0.54			0.10		Br 0.0					DWR
		9-20-60		539	8.4	39 1.95	32 2.63	28 1.22	3.3 0.08	4 0.13	275 4.51	29 0.60	23 0.65	0.5 0.01	0.2 0.01	0.10	36	Br 0.1	330	21	229	0	DWR
T. C. Morley irrigation	12S/1E-25J2	5-17-60	64	482				42 1.83					21 0.59			0.07		Br 0.0					DWR
		9-21-60	68	494	8.4	24 1.20	23 1.[illegible]6	47 2.04	2.9 0.07	0 0.00	222 3.64	49 1.02	20 0.56	1.0 0.02	0.01 0.00	0.07	30	Br 0.0	306	39	153	0	DWR
Recchi and Giovanietti irrigation	12S/1E-25C1	5-17-60	64	891				94 4.09					169 4.76			0.09		Br 0.6					DWR
		9-21-60	66	942	8.3	30 1.50	31 2.54	106 4.61	12 0.31	0 0.00	179 2.93	56 1.16	175 4.94	1.9 0.03	0.2 0.01	0.08	32	Br 0.3	5[illegible]2	51	202	55	DWR
Rodesta irrigation	12S/1E-36A1	5-16-60	66	414				32 1.39					36 1.02			0.09		Br 0.0					DWR
		9-21-60		452	[illegible].1	24 1.20	18 1.48	36 1.57	2.1 0.05	0 0.00	132 2.16	36 0.75	36 1.02	21 0.34	0.2 0.01	0.08	41	Br 0.0	279	36	134	26	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr). Bromide (Br.), Detergent (ABS).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
						PAJA[illegible] [illegible]LLEY 3-2 (Continued)																	
	[illegible]																						
	12S/1E-[illegible]1	7-1[illegible]-60	62	1[illegible]	[illegible].1	42 / 2.10	26 / 2.1[illegible]	74 / 3.22	3.9 / 0.10	0 / 0.00	16[illegible] / 2.75	[illegible]8 / 2.04	69 / 1.94	63 / 1.02	0.3 / 0.02	0.11	41	Fe 0.05 (total)	500	42	214	76	DWR
A. [illegible] irrigation	[illegible]	9-21-60		[illegible]	[illegible]	[illegible] / 2.40	23 / 1.92	22 / 0.96	2.5 / 0.06	5 / 0.[illegible]7	23[illegible] / 3.[illegible]5	34 / 0.71	17 / 0.48	1.6 / 0.03	0.2 / 0.01	[illegible].07	3[illegible]	Br 0.4	306	1[illegible]	216	15	DWR
[illegible]ne irrigation	12S/2E-1[illegible]	[illegible]-21-60	64	454	8.3	41 / 2.04	20 / 1.6[illegible]	2[illegible] / 1.09	2.2 / 0.06	0 / 0.00	22[illegible] / 3.69	33 / 0.69	1[illegible] / 0.42	0.6 / 0.01	0.2 / 0.01	0.10	40	Br 0.0	2[illegible]	22	186	1	DWR
E. [illegible] irrigation	12S/2E-1[illegible]1	[illegible]-21-60	66	43[illegible]	[illegible].3	32 / 1.60	23 / 1.90	2[illegible] / 1.09	2.2 / 0.06	0 / 0.00	211 / 3.46	36 / 0.75	14 / 0.39	0.5 / [illegible].01	0.2 / 0.[illegible]1	[illegible].12	46	Br 0.0 ABS 0.0	283	23	175	2	DWR
P. Williamson domestic and irrigation	12S/2E-19[illegible]1	9-21-6[illegible]	65	476	[illegible].3	22 / 1.10	29 / 2.3[illegible]	32 / 1.39	2.5 / 0.06	0 / 0.00	192 / 3.15	53 / 1.10	23 / 0.65	0.6 / 0.01	0.2 / 0.01	0.14	39	Br 0.4	295	28	173	16	DWR
[illegible]. C. [illegible]ler irrigation	12S/2E-29E1	7-13-60	70	580	8.3	39 / 1.95	30 / 2.51	38 / 1.65	2.8 / 0.07	0 / 0.00	227 / 3.72	62 / 1.29	39 / 1.10	0.4 / 0.[illegible]1	0.3 / 0.02	0.12	41	Fe 0.5 (total)	365	27	223	37	DWR
S. [illegible]. Cowe[illegible] irrigation	1[illegible]/2E-29[illegible]1	7-13-60	[illegible]	572	7.3	44 / 2.20	27 / 2.22	41 / 1.78	2.6 / 0.[illegible]7	0 / 0.00	26[illegible] / 4.39	2[illegible] / 0.58	35 / 0.99	7.2 / 0.12	0.3 / 0.02	0.19	37	Fe 0.17 (total)	354	28	221	1	DWR
[illegible]ayes irrigation	12[illegible]/2E-[illegible]E[illegible]	5-[illegible]-6[illegible]		5070				122 / [illegible].31					1540 / 43.43					Br 4.3					DWR
		[illegible]-21-6[illegible]		6[illegible]5[illegible]	7.7	536 / 26.75	506 / 41.5[illegible]	100 / 4.35	7.3 / [illegible].19	0 / 0.00	142 / 2.33	165 / 3.44	2360 / 66.55	1.5 / [illegible].02	[illegible].2 / 0.01	0.09	30	Br 7.8	3700	6	3420	3300	DWR
[illegible] domestic and irrigation	12[illegible]2E-3[illegible]1	7-1[illegible]-[illegible]	65	7[illegible]	[illegible].2	44 / 2.20	39 / [illegible].23	48 / 2.09	2.3 / 0.0[illegible]	0 / [illegible].00	174 / 2.[illegible]5	6 / 1.5[illegible]	71 / 2.00	65 / 1.05	0.2 / 0.01	0.04	38	Fe 0.04 (total)	470	26	272	129	DWR
[illegible] irrigation	1[illegible] 2E-[illegible]1A1	[illegible]		[illegible]				36 / 1.[illegible]7					41 / 1.16			0.16		Br 0.0					DWR
		[illegible]-2[illegible]-[illegible]		742	7.[illegible]	4[illegible] / 2.[illegible]	[illegible] / [illegible].1[illegible]	[illegible] / 1.[illegible]7	2.7 / [illegible]	0 / [illegible].00	72 / 1.[illegible]	[illegible]3 / 1.7[illegible]	3[illegible] / [illegible].9[illegible]	1.[illegible]3 / 2.95	[illegible].2 / [illegible].01	0.14	3[illegible]	Br 0.1	495	22	268	209	DWR
[illegible] irrigation	1[illegible]2[illegible]-[illegible]1C1	[illegible]	6[illegible]	[illegible]6[illegible]	[illegible]	21 / 1.[illegible]	1[illegible] / 1.[illegible]9	[illegible]0 / 1.74	1.7 / [illegible].04	[illegible] / 0.[illegible]	74 / 1.21	16 / 0.33	66 / 1.[illegible]	42 / 0.[illegible]	0.3 / [illegible].02	0.06	42	Fe [illegible].03 (total)	2[illegible]2	41	122	61	DWR
[illegible] irrigation	12[illegible]-[illegible]1	[illegible]-1[illegible]	62	1[illegible]	[illegible].3	6[illegible] / 3.19	[illegible] / [illegible].1[illegible]	[illegible]9 / 2.[illegible]7	3.7 / [illegible]	0 / 0.00	22[illegible] / 3.6[illegible]	6[illegible] / 1.35	1[illegible]9 / 4.4[illegible]	9.[illegible] / [illegible].16	[illegible].2 / 0.[illegible]1	0.24	39	Fe 0.17 (total)	560	2[illegible]	3[illegible]8	184	DWR
[illegible] irrigation	12[illegible]	[illegible]	7[illegible]	[illegible]2	7.[illegible]	5[illegible] / 2.[illegible]	20 / 1.[illegible]	3[illegible] / 1.[illegible]	2.[illegible] / 0.0[illegible]	0 / 0.[illegible]	17[illegible] / 2.79	94 / 1.96	4[illegible] / 1.30	3.1 / 0.05	0.2 / 0.01	0.15	37	Fe 0.08 (total)	381	2[illegible]	222	[illegible]3	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr) Bromide (Br.), Detergent (ABS)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
								PAJARO VALLEY 3-2 (Continued)															
	M.D.P.& M.																						
Johnson irrigation	12S/2E-32K1	5-17-60		456				39 / 1.70					61 / 1.72			0.10		Br 0.0					DWR
		9-21-60		429	7.8	18 / 0.90	11 / 0.88	44 / 1.91	1.5 / 0.04	0 / 0.00	74 / 1.21	11 / 0.23	61 / 1.72	33 / 0.53	0.2 / 0.01	0.05	39	Br 0.4	255	51	89	28	DWR
G. Hurley irrigation	12S/2E-32N1	7-18-60	72	667	7.9	39 / 1.95	38 / 3.12	45 / 1.96	2.6 / 0.07	0 / 0.00	294 / 4.82	47 / 0.98	44 / 1.24	2 / 0.03	1.0 / 0.05	0.30	38	Fe 0.02 (total)	401	20	254	13	DWR
L. Banovac irrigation	12S/3E-7B1	9-21-60	62	1020	8.3	33 / 1.65	65 / 5.38	81 / 3.52	2.3 / 0.06	0 / 0.00	230 / 3.77	212 / 4.41	89 / 2.51	2.7 / 0.04	0.2 / 0.01	0.60	31	Br 0.9	630	33	352	163	DWR
irrigation	13S/2E-5M1	7-13-60	66	1100	8.3	61 / 3.04	54 / 4.43	88 / 3.83	3.8 / 0.10	0 / 0.00	240 / 3.93	170 / 3.54	106 / 2.99	51 / 0.82	0.1 / 0.00	0.29	43	Fe 0.04 (total)	695	34	374	177	DWR
G. H. Hurley	13S/2E-6G2	7-18-60	68	1360	8.2	68 / 3.39	55 / 4.50	132 / 5.74	4.0 / 0.10	0 / 0.00	217 / 3.56	99 / 2.06	264 / 7.44	19 / 0.31	0.2 / 0.01	0.25	47	Fe 0.02 (total)	795	42	395	217	DWR
J. Stucki irrigation	13S/2E-6E3	7-18-60	76	1020	7.6	56 / 2.79	40 / 3.32	88 / 3.83	3.6 / 0.09	0 / 0.00	206 / 3.38	71 / 1.48	153 / 4.31	33 / 0.53	0.2 / 0.01	0.23	44	Fe 1.0 (total)	591	38	306	137	DWR
F. Cappurio	13S/2E-7B	9-21-60	69	813	8.2	8.9 / 0.44	1.9 / 0.16	160 / 6.96	2.5 / 0.06	0 / 0.00	191 / 3.13	93 / 1.94	91 / 2.57	0.5 / 0.01	0.4 / 0.02	0.20	33	Br [illegible].1	485	91	30	0	DWR
F. Cappurio	13S/2E-7B2	5-17-60		2740				162 / 7.05					507 / 14.30			0.12		Br 1.1					DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr). Bromide (Br.)

32505-E-3 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
								GILROY-HOLLISTER BASIN 3-3															
	M.D.B.& M.																						
T. Andrade irrigation	9S/3E-25N3	6-11-60		462	8.1	40 / 2.00	28 / 2.32	9.2 / 0.40	1.6 / 0.04	0 / 0.00	207 / 3.39	19 / 0.40	24 / 0.68	22 / 0.35	0.2 / 0.01	0.13	27		273	8	216	46	DWR
F. L. [illegible]dson irrigation	10S/3E-1E2	4-21-60		43[illegible]	8.0	39 / 1.95	26 / 2.11	14 / 0.61	1.0 / 0.02	0 / 0.00	210 / 3.44	21 / 0.44	14 / 0.39	22 / 0.35	0.1 / 0.00	0.29	24	Fe 0.0 (total)	264	13	203	31	DWR
J. [illegible]rland domestic and irrigation	10S/3E-23J1	4-21-60		395	[illegible]	31 / 1.55	22 / 1.79	18 / 0.78	0.9 / 0.02	0 / 0.00	176 / 2.88	12 / 0.25	20 / 0.56	22 / 0.35	0.2 / 0.01	0.17	37	Fe 0.0 (total)	249	19	167	23	DWR
E. H. Henderson domestic and irrigation	10S/3D-26J1	4-21-60		388	8.1	34 / 1.70	21 / 1.72	15 / 0.65	0.5 / 0.01	0 / 0.00	168 / 2.75	15 / 0.31	20 / 0.56	22 / 0.35	0.2 / 0.01	0.16	39	Fe 0.0 (total)	250	16	171	33	DWR
E. E. Davis domestic	10S/4E-17F1	4-21-60		705	8.3	40 / 2.00	45 / 3.69	49 / 2.13	1.4 / 0.04	8 / 0.27	351 / 5.75	20 / 0.42	48 / 1.35	2.9 / 0.05	0.2 / 0.01	0.11	30	Fe 2.4 (total)	419	27	285	0	DWR
W. Henzi domestic and irrigation	10S/4E-19J1	4-21-60		428	[illegible].3	37 / 1.85	21 / 1.77	22 / 0.96	1.4 / 0.04	4 / 0.13	208 / 3.41	17 / 0.35	17 / 0.48	13 / 0.21	0.1 / 0.00	0.09	27	Fe 1.1 (total)	263	21	178	1	DWR
D. Wolfe domestic and irrigation	10S/4E-2[illegible]D2	4-21-[illegible]		531	[illegible].3	29 / 1.45	37 / 3.07	32 / 1.39	1.5 / 0.04	6 / 0.20	249 / 4.08	20 / 0.42	32 / 0.90	14 / 0.22	0.2 / 0.01	0.22	32	Fe 0.0 (total)	326	23	226	12	DWR
A. L. McGlashan domestic and irrigation	10S/4E-34L5	4-21-60		6[illegible]7	[illegible].1	51 / 2.54	37 / 3.03	41 / 1.7[illegible]	1.4 / 0.04	0 / 0.00	313 / 5.13	26 / 0.54	44 / 1.24	33 / 0.53	0.2 / 0.[illegible]1	0.08	31	Fe 0.04 (total)	419	24	279	22	DWR
[illegible]. Nosang irrigation	11S/4E-[illegible]3	4-13-60		751	8.2	56 / 2.79	56 / 4.60	19 / 0.83	0.3 / 0.01	0 / 0.00	282 / 4.62	90 / 1.[illegible]7	25 / 0.70	70 / 1.13	0.1 / 0.00	0.36	24	Fe [illegible].0 (total)	480	10	370	139	DWR
H. [illegible]erman irrigation	11S/4E-[illegible]P2	4-1[illegible]-60		452	[illegible]	43 / 2.14	24 / 1.[illegible]6	18 / 0.78	1.4 / 0.04	0 / 0.00	220 / 3.60	35 / 0.73	13 / 0.37	10 / 0.16	0.2 / 0.01	0.22	27	Fe 0.0 (total)	280	16	205	25	DWR
J. D. Fair domestic	11S/4[illegible]-21B2	[illegible]-21-60		608	[illegible].1	60 / 2.99	32 / 2.66	20 / 0.[illegible]7	1.3 / 0.03	0 / 0.00	276 / 4.52	47 / 0.98	20 / [illegible]6	35 / 0.56	0.2 / 0.01	0.13	28	Fe 0.01 (total)	330	13	283	57	DWR
F. Smith irrigation	11S/5E-26[illegible]1	6-17-60	64	1040	8.5	47 / 2.34	22 / 1.76	154 / 6.70	1.0 / 0.02	16 / 0.53	306 / 5.01	13 / 0.27	167 / 4.71	0.0 / 0.00	[illegible].2 / 0.01	2.1	22		580	60	206	0	DWR
C. R. Landi domestic	11S/5[illegible]-27L	6-17-60		50[illegible]	[illegible]	[illegible] / 2.30	25 / 2.06	26 / 1.13	1.1 / 0.03	0 / 0.00	238 / 3.90	40 / 0.[illegible]	22 / 0.62	2.0 / 0.03	0.2 / 0.01	0.26	18		29[illegible]	20	218	23	DWR
Ferry Morse Seed Co. irrigation	12S/4E-34[illegible]	6-16-60	64	1[illegible]0	7.7	174 / [illegible].68	22 / 1.[illegible]	97 / 4.22	2.0 / 0.05	0 / 0.00	383 / 6.2[illegible]	225 / 4.68	1[illegible] / 4.17	33 / 0.53	0.[illegible] / 0.03	0.20	26		916	2[illegible]	525	211	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
GILROY-HOLLISTER BASIN 3-3 (Continued)																							
	M.D.P.& M.																						
Olympia School domestic	12S/4E-35C	6-16-60		1560	8.1	66 / 3.29	105 / 8.62	152 / 6.61	2.9 / 0.07	0 / 0.00	563 / 9.23	321 / 6.68	100 / 2.82	0.5 / 0.01	0.5 / 0.03	0.52	28		1050	36	596	134	DWR
M. Diaz domestic	12S/4E-36H	5-16-60		1690	8.0	72 / 3.59	115 / 9.46	165 / 7.18	2.9 / 0.07	0 / 0.00	580 / 9.51	374 / 7.79	110 / 3.10	6.5 / 0.10	0.4 / 0.02	0.70	27		1160	35	653	177	DWR
W. Daly irrigation	12S/5E-9N	6-17-60	62	1800	8.3	33 / 1.65	129 / 10.58	186 / 8.09	3.4 / 0.09	6 / 0.00	319 / 5.23	422 / 8.79	189 / 5.33	35 / 0.56	0.3 / 0.02	1.6	26		1190	40	612	341	DWR
C. and J. Lomanto irrigation	12S/5E-12M	6-17-60		1130	8.0	91 / 4.54	53 / 4.39	70 / 3.04	2.2 / 0.06	0 / 0.00	399 / 6.54	94 / 1.96	122 / 3.44	6.3 / 0.10	0.3 / 0.02	2.9	61		699	25	447	120	DWR
P. Rovella domestic and irrigation	12S/5E-36A	6-17-60	74	1240	8.5	16 / 0.80	15 / 1.22	282 / 12.27	2.0 / 0.05	16 / 0.53	457 / 7.49	87 / 1.81	145 / 4.09	0.3 / 0.00	0.3 / 0.02	1.6	27		816	86	101	0	DWR
S. Brandon domestic and stock	12S/6E-7M	6-17-60		401	8.1	18 / 0.90	12 / 0.96	52 / 2.26	3.6 / 0.09	0 / 0.00	217 / 3.56	0 / 0.00	23 / 0.65	0.3 / 0.00	0.61 / 0.03	0.62	65		282	54	93	0	DWR
E. F. Broadfoot domestic	12S/6E-19E	6-17-60		1510	7.9	33 / 1.65	27 / 2.23	261 / 11.35	2.1 / 0.05	0 / 0.00	351 / 5.85	0.2 / 0.00	322 / 9.08	0 / 0.00	0.2 / 0.01	17	38		876	74	194	0	DWR
C. T. Pillsbury domestic and irrigation	12S/6E-31B	6-17-60		2380	8.1	47 / 2.34	58 / 4.81	425 / 18.49	2.6 / 0.07	0 / 0.00	524 / 8.59	124 / 2.58	503 / 14.18	1.7 / 0.03	0.41 / 0.02	3.5	19		1440	72	358	0	DWR
First Presbyterian Church domestic	13S/5E-3J	6-16-60	66	1330	8.4	56 / 2.79	69 / 5.68	122 / 5.31	2.3 / 0.06	6 / 0.20	342 / 5.60	248 / 5.16	106 / 2.99	5.7 / 0.09	0.5 / 0.03	0.85	23		807	36	424	134	DWR
Lompo Brothers irrigation	13S/5E-11G	6-16-60		1400	8.2	62 / 3.09	74 / 6.08	136 / 5.92	2.4 / 0.06	0 / 0.00	406 / 6.65	252 / 5.25	113 / 3.19	20 / 0.32	0.3 / 0.02	1.1	24		885	39	459	126	DWR
P. Matulich irrigation	13S/6E-19N1	6-16-60	61	2350	8.2	54 / 2.69	126 / 10.38	290 / 12.62	4.4 / 0.11	0 / 0.00	452 / 7.41	448 / 9.33	328 / 9.25	4.6 / 0.07	0.51 / 0.03	1.4	17		1500	49	654	283	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									A[illegible]NAS VALLEY 3-4														
	M.D.B.& M.																						
industrial	1?S/2E-7A1	6-2?-60	70	[illegible]	[illegible]	23 / 1.1?	5.7 / .55	157 / 6.?3	3.2 / 0.0?	2 / .?7	2?1 / 4.11	92 / 1.92	?7 / ?.45	0.? / 0.01	0.2 / 0.01	0.22	46	Fe 0.54 (total)	539	79	85	0	DWR
?. [illegible] irrigation	1?S/2E-1?E1	6-21-60	6?	[illegible]	.3	53 / 2.?4	29 / 2.39	95 / 4.13	?.7 / .12	0 / 0.00	217 / 3.56	29 / 0.60	174 / 4.91	4.8 / 0.0?	0.1 / ?.00	0.18	44	Fe 0.06 (total)	542	44	252	74	DWR
Delfino and ?alcano domestic and irrigation	13S/2E-17H1	6-21-60	66	14?6	?.2	7? / 3.4?	41 / 3.3?	151 / 6.57	8.9 / ?.2?	0 / 0.?0	220 / 3.60	38 / 0.79	329 / 9.2?	4.6 / 0.07	0.2 / ?.01	0.25	46	Fe 0.55 (total)	797	48	344	164	DWR
T. Leonardini domestic and irrigation	13S/2E-19?1	6-20-60	7?	?67	8.1	3? / 1.90	28 / 2.2?	96 / 4.18	2.8 / ?.07	0 / 0.00	169 / 2.77	17 / ?.35	189 / ?.33	1.6 / 0.??	?.1 / 0.00	0.07	44	Fe 0.95 (total)	500	50	209	71	DWR
California Artichoke and Vegetable Growers domestic and irrigation	13S/2E-2??1	6-2?-60	70	?75	?.1	67 / 3.34	30 / 2.?1	?6 / ?.7?	2.7 / ?.?7	0 / ?.?0	222 / 3.64	48 / 1.00	181 / 5.1?	1.4 / ?.02	?.? / ?.01	0.06	55	Fe 0.06 (total)	5?0	39	293	11?	DWR
?al?er ind?stri?s ?r. industrial	13S/2E-2?C4	6-21-60	7?	70?	?.1	27 / 1.3?	13 / 1.??	94 / ?.?9	3.0 / [illegible]	0 / ?.00	182 / 2.98	19 / 0.?0	113 / ?.19	1.9 / 0.03	?.2 / ?.01	0.16	41	Fe 0.30 (total)	4?1	62	122	0	DWR
[illegible] irrigation	1?S/2E-3???	[illegible]	7?	?29	?.2	22 / 1.??	12 / 1.?2	?8 / 3.?3	2.? / ?.?7	0 / ?.00	179 / 2.93	17 / ?.35	96 / 2.71	1.? / ?.??	?.? / ?.?1	?.17	47	Fe ?.? (total)	375	?4	1?6	0	DWR
[illegible]	1?S/2E-31??	[illegible]	6?	?62	[illegible]	41 / ?.?4	13 / 1.??	6? / 2.61	2.5 / ?.0?	0 / 0.?0	23? / 3.84	12 / ?.25	5? / 1.64	1.6 / 0.02	?.3 / [illegible]	?.13	4?	Fe ?.00 (total)	?40	4?	155	0	DWR
?. ?ell?ne irrigation	13S/2E-31?2	6-2?-60	70	7?7	?.?	3? / 1.?0	13 / 1.1?	?? / 4.2?	2.4 / 0.00	3 / ?.10	222 / 3.64	22 / 0.46	10? / 2.82	1.5 / ?.02	0.3 / ?.02	?.17	43	Fe 0.2? (total)	?20	59	145	0	DWR
?. ?ell?ne irrigation	13S/2E-31?2	6-2?-6?	??	[illegible]	7.9	53 / 2.?4	2? / 2.3?	92 / 4.00	3.? / [illegible]	? / 0.00	1?6 / 2.23	54 / 1.12	2?3 / ?.72	2.0 / ?.03	?.3 / 0.02	0.16	4?	Fe 0.64 (total)	54?	44	249	137	DWR
irrigation	13S/2E-32A2	6-20-60	7?	?4?	?.?	2? / ?.?0	14 / ?.20	64 / 2.7?	2.? / ?.?7	2 / 0.?7	17? / 2.93	13 / 0.27	74 / 2.0?	2.3 / ?.04	0.2 / ?.01	0.13	46	Fe 0.08 (total)	334	51	130	0	DWR
?. F. [illegible] irrigation	1?S/2E-32C1	6-2?-60	6?	??0	?.?	?7 / 1.??	1? / 1.2?	?6 / 2.?9	2.4 / ?.0?	2 / ?.?7	208 / 3.41	12 / ?.25	53 / 1.49	1.2 / ?.02	?.2 / ?.01	0.08	39	Fe 0.07 (total)	313	40	15?	0	DWR
?lero estate irrigation	13S/2E-32?1	6-2?-6?	??	[illegible]	?.?	21 / ?.??	12 / 1.03	6? / 2.7?	2.3 / ?.??	0 / ?.?0	177 / 2.9?	15 / ?.31	57 / 1.61	2.2 / 0.0?	0.3 / 0.02	0.11	48	Fe 0.04 (total)	3?9	56	1?4	0	DWR
D. ?. ?eratt irrigation	1?S/2E-33E1	6-2?-6?	?2	1???	?.?	?5 / ?.74	?? / ?.?7	87 / 3.78	?.? / 0.1?	0 / ?.?0	118 / 1.93	4? / 0.96	3?4 / ?.26	1.6 / ?.?2	0.? / .02	?.10	42	Fe ?.5? (total)	759	28	406	3?9	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
						SALINAS VALLEY 3-4 (Continued)																	
	M.D.B.& M.																						
C. Rossotti domestic and irrigation	13S/2E-33R1	6-22-60	66	674	7.3	58/2.89	21/1.71	50/2.18	2.6/0.07	0/0.00	216/3.54	60/1.25	67/1.89	4.2/0.07	0.3/0.02	0.08	41	Fe 0.21 (total)	410	32	230	53	DWR
L. Martin domestic and irrigation	14S/2E-6Q1	6-21-60	72	557	8.2	31/1.55	12/0.99	72/3.13	2.1/0.05	0/0.00	211/3.46	28/0.58	58/1.64	1.3/0.02	0.5/0.03	0.14	48	Fe 0.04 (total)	357	55	127	0	DWR
E. Struve irrigation	14S/2E-6R2	6-22-60	72	499	8.3	21/1.05	12/0.97	67/2.91	2.4/0.06	0/0.00	175/2.87	23/0.48	52/1.47	1.7/0.03	0.5/0.03	0.12	54	Fe 0.14 (total)	320	58	101	0	DWR
J. Jefferson irrigation	14S/2E-8M2	6-21-60	66	1890	7.9	168/8.38	64/5.25	100/4.35	4.4/0.11	0/0.00	93/1.52	119/2.48	495/13.96	8.2/0.13	0.2/0.01	0.20	41	Fe 0.27 (total)	1050	24	682	606	DWR
D. V. Orcutt irrigation	14S/2E-9K1	6-22-60	66	590	8.2	38/1.90	20/1.62	55/2.39	3.0/0.08	0/0.00	148/2.42	109/2.27	47/1.32	0.8/0.01	0.3/0.02	0.19	52	Fe 0.05 (total)	396	40	176	55	DWR
J. P. Rogers domestic and irrigation	14S/2E-11D1	6-27-60	66	409	8.2	26/1.30	15/1.24	36/1.57	2.2/0.06	0/0.00	164/2.69	10/0.21	42/1.18	1.4/0.02	0.3/0.02	0.05	43	Fe 0.06 (total)	257	38	127	0	WR
E. C. Eaton irrigation	14S/2E-12Q1	6-23-60	72	401	8.2	29/1.45	13/1.11	35/1.52	1.9/0.05	0/0.00	165/2.70	7.9/0.16	38/1.07	3.6/0.06	0.4/0.02	0.04	36	Fe 0.20 (total)	246	37	128	0	DWR
L. A. Wilder domestic	14S/2E-14N1	6-22-60	66	602	7.8	52/2.59	16/1.33	53/2.30	3.0/0.08	0/0.00	211/3.46	49/1.02	62/1.75	2.6/0.04	0.2/0.01	0.14	42	Fe 0.10 (total)	384	36	196	23	DWR
Monterey County Bank domestic and irrigation	14S/2E-15L1	6-20-60	66	604	8.1	42/2.10	20/1.64	53/2.30	3.3/0.08	0/0.00	160/2.62	102/2.12	48/1.35	0.8/0.01	0.2/0.01	0.19	43	Fe 0.09 (total)	392	38	187	56	DWR
J. W. Orcutt irrigation	14S/2E-16A1	7-6-60	68	633	8.2	43/2.14	25/2.04	53/2.30	2.9/0.07	0/0.00	166/2.72	111/2.31	53/1.49	1.3/0.02	0.6/0.03	0.22	44	Fe 0.07 (total)	416	35	209	73	DWR
J.G. Armstrong Co. irrigation	14S/2E-18[illegible]1	6-21-60	66	1060	8.0	71/3.54	37/3.05	91/3.96	4.0/0.10	0/0.00	126/2.06	170/3.54	171/4.82	[illegible].5/0.14	0.1/0.00	0.20	38	Fe 0.05 (total)	653	37	3[illegible]0	227	DWR
A. H. Bordges irrigation	14S/2E-23J1	6-22-60	70	948	7.7	89/4.44	27/2.23	68/2.96	4.3/0.11	0/0.00	254/4.16	129/2.68	96/2.71	3.5/0.06	0.3/0.02	0.21	22	Fe 0.10 (total)	564	30	334	126	DWR
M. T. DeSerpa irrigation	14S/2E-24E1	6-23-60	68	562	8.3	45/2.24	14/1.18	51/2.22	2.8/0.07	0/0.00	196/3.21	36/0.75	57/1.61	2.3/0.04	0.4/0.02	0.13	43	Fe 0.17 (total)	348	39	171	10	DWR
M. Bordgers domestic and irrigation	14S/2E-26A1	6-22-60	68	1010	[illegible].0	69/3.44	38/3.09	82/3.57	4.0/0.10	0/0.00	127/2.08	174/3.62	162/4.57	2.5/0.04	0.3/0.02	0.22	46	Fe 0.07 (total)	640	35	327	223	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
						SALINAS VALLEY 3-4 (Continued)																	
	M.D.B.& M.																						
D. P. McFadden irrigation	14S/2E-35Q1	6-27-60	70	446	8.0	46 / 2.30	13 / 1.08	26 / 1.13	2.9 / 0.07	0 / 0.00	137 / 2.24	86 / 1.79	19 / 0.54	1.1 / 0.02	0.3 / 0.02	0.06	45	Fe 0.14 (total)	306	25	169	57	DWR
irrigation	14S/3E-30F1	6-23-60	68	1270	8.0	42 / 2.10	52 / 4.27	133 / 5.78	4.4 / 0.11	0 / 0.00	185 / 3.03	113 / 2.35	232 / 6.54	18 / 0.29	0.3 / 0.02	0.23	40	Fe 0.00 (total)	726	47	319	167	DWR
Pacific Gas and Electric Co. municipal	14S/3E-33G1	6-24-60	68	713	8.3	56 / 2.79	24 / 1.95	53 / 2.30	2.7 / 0.07	0 / 0.00	193 / 3.16	49 / 1.02	98 / 2.76	3.3 / 0.05	0.5 / 0.03	0.09	42	Fe 0.12 (total)	424	32	237	79	DWR
domestic and irrigation	15S/2E-1A3	6-24-60	70	429	8.2	48 / 2.40	11 / 0.94	26 / 1.13	2.8 / 0.07	0 / 0.00	156 / 2.56	74 / 1.54	15 / 0.42	1.0 / 0.02	0.3 / 0.02	0.09	44	Fe 0.06 (total)	299	25	167	39	DWR
L. Jacks irrigation	15S/2E-2Q1	6-2[illegible]-60	64	1040	7.8	90 / 4.49	51 / 4.22	60 / 2.61	5.0 / 0.13	0 / 0.00	298 / 4.88	200 / 4.16	86 / 2.42	0.7 / 0.01	0.3 / 0.02	0.18	42	Fe 0.08 (total)	681	23	436	192	DWR
irrigation	15S/3E-4K3	7-6-60	70	591	8.2	42 / 2.10	19 / 1.56	50 / 2.18	3.3 / 0.08	0 / 0.00	134 / 2.20	132 / 2.75	35 / 0.99	0.8 / 0.01	0.4 / 0.02	0.17	53	Fe 0.07 (total)	402	37	183	73	DWR
irrigation	15S/3E-5Q4	6-29-60	68	2020	8.2	88 / 4.39	81 / 6.64	244 / 10.61	6.7 / 0.17	0 / 0.00	198 / 3.24	565 / 11.76	235 / 6.63	1.0 / 0.02	0.4 / 0.02	0.62	38	Fe 0.07 (total)	1357	49	552	390	DWR
E. Giottinini domestic and irrigation	15S/3E-7D1	6-20-60	60	10[illegible]0	8.0	73 / 3.64	52 / 4.27	77 / 3.35	4.2 / 0.11	0 / 0.00	141 / 2.31	276 / 5.75	118 / 3.33	0.2 / 0.00	0.2 / 0.01	0.30	40	Fe 0.09 (total)	710	29	396	280	DWR
L. G. Foster irrigation	15S/3E-8N1	6-2[illegible]-60	64	906	8.1	54 / 2.69	46 / 3.80	74 / 3.22	3.9 / 0.10	0 / 0.00	189 / 3.10	228 / 4.75	64 / 1.80	0.3 / 0.00	0.3 / 0.02	0.23	38	Fe 0.04 (total)	602	33	325	170	DWR
Spreckles Sugar Co. irrigation	15S/3E-16M1	7-7-60	68	870	8.0	64 / 3.19	48 / 3.94	48 / 2.09	3.4 / 0.09	0 / 0.00	189 / 3.10	202 / 4.20	69 / 1.94	1.4 / 0.02	0.2 / 0.01	0.16	39	Fe 0.05 (total)	5[illegible]8	22	357	202	DWR
J. Violini irrigation	15S/3E-17P1	6-2[illegible]-60	66	942	8.0	57 / 2.84	43 / 3.[illegible]7	87 / 3.78	6.0 / 0.15	0 / 0.00	426 / 6.98	35 / 0.73	83 / 2.34	1.8 / 0.03	0.3 / 0.02	0.18	45	Fe 0.06 (total)	567	36	321	0	DWR
K. R. Nutting irrigation	16S/4E-24A1	7-[illegible]-60	68	1400	7.9	87 / 4.34	64 / 5.25	122 / [illegible].31	3.6 / 0.09	0 / 0.00	171 / 2.80	386 / 8.04	120 / 3.3[illegible]	36 / 0.58	0.3 / 0.02	0.56	38	Fe 0.06 (total)	941	35	4[illegible]0	[illegible]40	DWR
J. C. Twisselman	16S/4E-25K1	7-[illegible]-60	66	1110	8.1	50 / 2.50	59 / 4.[illegible]5	98 / 4.26	3.9 / 0.10	0 / 0.00	183 / 3.00	319 / 6.64	75 / 2.12	0.8 / 0.01	0.2 / [illegible]	0.40	40	Fe 0.10 (total)	736	36	[illegible]	218	DWR
irrigation	17S/6E-27K1	7-11-60	64	1370	8.0	74 / 3.6[illegible]	60 / 4.94	110 / [illegible]	3.4 / 0.09	0 / 0.00	157 / 2.57	370 / 7.70	118 / 3.33	5.0 / 0.08	0.2 / [illegible]	[illegible].51	38	Fe [illegible].02 (total)	[illegible]56	35	432	303	DWR
M. Baker irrigation	17S/6E-35F1	7-19-60	70	1250	8.2	62 / 3.0[illegible]	55 / 4.50	119 / 5.18	3.4 / 0.09	0 / 0.00	157 / 2.57	381 / 7.93	85 / 2.40	1.3 / 0.02	0.3 / 0.02	0.7[illegible]	46	Fe 0.03 (total)	[illegible]	40	3[illegible]	251	DWR

a Determined by addition of constituents.
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
						SALINAS VALLEY 3-4 (Continued)																	
	M.D.B.& M.																						
L. M. and V. Jacks irrigation	18S/6E-1E1	7-11-60	62	763	8.0	40/2.00	23/1.92	82/3.57	3.8/0.10	0/0.00	146/2.39	186/3.87	46/1.30	7.7/0.12	0.2/0.01	0.39	36	Fe 0.27 (total)	497	47	196	76	DWR
L. Jacks irrigation	18S/6E-2N1	7-11-60	66	1070	8.1	50/2.50	71/5.84	62/2.70	5.3/0.14	0/0.00	158/2.59	300/6.25	72/2.03	36/0.58	0.2/0.01	0.15	34	Fe 0.02 (total)	709	24	416	286	DWR
						CARMEL VALLEY 3-7																	
	M.D.B.& M.																						
R. Odello irrigation	16S/1W-13L1	7-14-60	63	702	8.3	71/3.54	20/1.67	47/2.04	3.8/0.10	0/0.00	223/3.65	88/1.83	67/1.89	1.4/0.02	0.6/0.03	0.08	35	Fe 2.4 (total)	444	28	261	78	DWR
Carmel Sewage Plant industrial	16S/1W-13L2	7-14-60	63	1340	8.1	81/4.04	35/2.85	139/6.05	4.4/0.11	0/0.00	205/3.36	112/2.33	273/7.70	1.6/0.02	0.4/0.02	0.10	30	Fe 4.3 (total)	778	46	345	177	DWR
B. Odello irrigation	16S/1W-13Q2	7-14-60	62	888	8.2	84/4.19	28/2.34	63/2.74	4.4/0.11	0/0.00	241/3.95	147/3.06	87/2.45	1.3/0.02	0.5/0.03	0.06	29	Fe 3.1 (total)	562	29	327	129	DWR
irrigation	16S/1W-13R1	7-14-60	63	768	7.4	74/3.69	24/1.96	49/2.13	3.9/0.10	0/0.00	203/3.33	121/2.52	68/1.92	1.2/0.02	0.5/0.03	0.07	27	Fe 2.9 (total)	469	27	283	117	DWR
irrigation	16S/1E-17G1	7-14-60	71	1140	8.2	117/5.84	30/2.43	92/4.00	4.0/0.10	0/0.00	341/5.59	148/3.08	124/3.50	1.0/0.02	0.5/0.03	0.13	29	Fe 0.50 (total)	714	32	414	134	DWR
irrigation	16S/1E-18F2	7-14-60	68	826	8.0	63/3.14	17/1.42	87/3.78	1.9/0.05	0/0.00	212/3.47	54/1.12	129/3.64	2.2/0.04	0.6/0.03	0.09	37	Fe 3.4 (total)	496	45	228	54	DWR
irrigation	16S/1E-18P1	7-19-60	61	566	8.3	38/1.90	29/2.38	36/1.57	3.1/0.08	0/0.00	218/3.57	52/1.08	46/1.30	1.2/0.02	0.3/0.02	0.05	26	Fe 0.77 (total)	339	26	214	35	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M					CENTRAL VALLEY REGION (NO. 5) EAST LAKE VALLEY (5-1)																	
Franks Bros. domestic	44N/13E-36A1	7-29-60	-	184	8.0	13 0.65	2.3 0.19	23 1.00	2.0 0.05	0 0.00	100 1.64	6.2 0.13	4.7 0.13	1.4 0.02	0.1 0.00	0.06	30	Fe 0.03 (dis.) Fe 0.09 (total) Zn 0.08	132	53	42	0	DWR
R. Jessup domestic	45N/13E-12L1	7-29-60	-	321	8.2	15 0.75	2.3 0.19	55 2.39	4.2 0.11	0 0.00	171 2.80	18 0.37	6.4 0.18	0.3 0.00	0.2 0.01	0.27	46	Al 0.06 Fe 0.02 (dis. Fe 0.07 (total)	232	69	47	0	DWR
C. Waid domestic	45N/14E-32L1	7-29-60	59	235	8.1	26 1.30	7.8 0.64	13 0.56	1.6 0.04	0 0.00	149 2.44	1.2 0.02	2.4 0.07	1.1 0.02	0.0 0.00	0.04	52	Zn 0.18	178	22	97	0	DWR
L. King domestic	46N/14E-32J1	7-29-60	-	179	7.9	14 0.70	6.6 0.54	11 0.48	5.1 0.13	0 0.00	93 1.52	2.6 0.05	6.8 0.19	2.7 0.04	0.1 0.00	0.07	68	Al 0.05 Fe 0.05 (dis.) Fe 1.3 (total) Zn 0.15	163	26	62	0	DWR
T. M. O'Connor irrigation	47N/13E-7Q1	7-29-60	66	207	8.0	20 1.00	7.3 0.60	13 0.56	3.7 0.09	0 0.00	132 2.16	0.6 0.01	1.8 0.05	0.5 0.01	0.1 0.00	0.05	50	Fe 0.01 (dis.) Fe 0.12 (total)	162	25	80	0	DWR
C. R. Vincent domestic and stock	47N/14E-2H1	7-29-60	-	554	8.4	1.1 0.05	0.1 0.01	121 5.26	0.5 0.01	2 0.07	132 2.16	52 1.08	66 1.86	1.6 0.02	4.6 0.24	0.30	48	Fe 0.06 (dis.) Fe 0.08 (total) Zn 0.01	362	99	3	0	DWR
L. L. Smith domestic	-14B2	7-29-60	59	153	7.8	17 0.85	5.2 0.43	6.3 0.27	1.8 0.05	0 0.00	83 1.36	2.6 0.05	2.4 0.07	7.0 0.11	0.0 0.00	0.03	32	Fe 0.22 (total) Pb 0.01 Zn 0.74	115	17	64	0	DWR
A Greenwood domestic	48N/13E-20G1	7-29-60	-	403	8.3	49 2.44	19 1.56	11 0.48	3.7 0.09	0 0.00	235 3.85	11 0.23	4.0 0.11	15 0.24	0.2 0.01	0.10	42	Fe 0.01 (dis.) Fe 0.12 (total) Zn 0.09	271	10	200	7	DWR
H. C. Wells domestic	48N/14E-23K1	7-29-60	55	215	7.9	22 1.10	5.6 0.46	15 0.65	1.2 0.03	0 0.00	110 1.80	4.6 0.10	1.6 0.04	16 0.26	0.4 0.02	0.16	33	Fe 0.08 (total) Zn 0.06	154	29	73	0	DWR
C. M. Cloud domestic	-35A2	7-29-60	56	175	8.0	21 1.05	5.2 0.43	8.4 0.36	0.5 0.01	0 0.00	104 1.70	1.3 0.03	0.9 0.02	3.1 0.05	0.1 0.00	0.04	34	Fe 0.15 (total) Fe 0.02 (dis.) Zn 0.02	126	19	74	0	DWR
						SOUTH FORK PIT RIVER VALLEY (5-2)																	
D. Flourney domestic	39N/13E-6N1	7-29-60	69	175	7.8	6.6 0.33	1.6 0.13	27 1.17	4.9 0.12	0 0.00	94 1.54	4.6 0.10	3.8 0.11	1.4 0.02	0.2 0.01	0.07	56	Al 0.01 Fe 0.11 (total) Pb 0.01 Zn 0.69	152	67	23	0	DWR
N. Monroe stock	40N/12E-11F	7-29-60	69	162	8.0	8.3 0.41	1.8 0.15	22 0.96	5.9 0.15	0 0.00	83 1.36	6.1 0.13	3.8 0.11	1.8 0.03	0.1 0.00	0.10	71	Fe 0.19 (total)	162	57	28	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M					SOUTH FORK PIT RIVER VALLEY (5-2) (Cont.)																	
Pit River Ranch domestic	40N/12E-25J1	7-29-60	69	457	8.4	20 / 1.00	9.0 / 0.74	69 / 3.00	10 / 0.26	2 / 0.07	275 / 4.51	9.7 / 0.20	4.8 / 0.14	1.7 / 0.03	0.2 / 0.01	0.13	71	Zn 0.08	334	60	87	[illegible]	DWR
P. Meyers domestic and irrigation	41N/11E-[illegible]J1	7-29-60	-	271	8.1	11 / 0.55	0.6 / 0.05	40 / 1.74	13 / 0.33	0 / 0.00	126 / 2.06	18 / 0.37	7.6 / 0.21	1.9 / 0.03	0.2 / 0.01	0.07	73	Fe 0.17 (total) Zn 0.03	227	65	30	0	DWR
Pacific Telephone & Telegraph domestic	41N/12E-15H1	7-29-60	74	220	8.0	12 / 0.60	1.9 / 0.15	29 / 1.26	7.1 / 0.18	0 / 0.00	109 / 1.79	6.7 / 0.14	6.3 / 0.18	3.6 / 0.06	0.2 / 0.01	0.12	82	Zn 0.09	203	57	38	0	DWR
Morgan Brothers domestic	41N/13E-18[illegible]1	7-29-60	67	714	[illegible]	87 / 4.34	28 / 2.33	20 / 0.87	11 / 0.28	2 / 0.07	238 / 3.90	172 / 3.58	10 / 0.28	3.8 / 0.06	0.3 / 0.02	0.05	66	Fe 0.22 (total) Zn 0.07	517	11	334	136	DWR
J. H. Michael domestic	42N/10E-29H1	7-29-60	-	260	8.1	3.3 / 0.16	0.0 / 0.00	58 / 2.52	1.3 / 0.03	0 / 0.00	143 / 2.34	15 / 0.31	1.9 / 0.05	0.4 / 0.01	0.2 / 0.01	0.10	38	As 0.01 Cu 0.02 Fe 0.17 (total) Zn 0.02	138	93	8	0	DWR
M. Fisher domestic and irrigation	42N/11E-9K1	7-29-60	93	219	9.1	1.5 / 0.07	0.0 / 0.00	47 / 2.04	1.5 / 0.04	0 / 0.00	101 / 1.66	5.4 / 0.11	12 / 0.34	0.7 / 0.01	0.3 / 0.02	0.12	42	Fe 0.28 (total)	160	95	3	0	DWR
F. Martin	-19E1	7-29-60	-	450	9.2	2.6 / 0.13	0.0 / 0.00	100 / 4.35	7.8 / 0.20	0 / 0.00	238 / 3.90	28 / 0.58	6.6 / 0.19	0.7 / 0.01	0.2 / 0.01	0.05	66	Fe 0.05 (total) Mn 0.03 Zn 0.01	329	93	6	0	DWR
L. Goings domestic and stock	-[illegible]1	7-29-60	57	207	7.9	19 / [illegible]	[illegible] / 0.43	14 / 0.61	5.8 / 0.15	0 / 0.00	102 / 1.67	[illegible] / 0.06	[illegible] / 0.16	9.4 / 0.15	0.3 / 0.02	0.04	61	Al 0.01 Zn 0.6 Cr+6 0.01 Fe 0.01 (dis.) Fe 0.26 (total)	174	28	[illegible]	0	DWR
City of Alturas municipal	42N/12E-11[illegible]1	7-29-60	-	453	8.3	26 / 1.30	[illegible] / 0.40	[illegible] / 2.61	12 / 0.31	0 / 0.00	170 / 2.79	34 / 0.71	34 / 0.96	2.9 / 0.05	0.3 / 0.02	0.68	79	As 0.01 Fe 0.02 (dis.) Fe 0.12 (total)	338	[illegible]	[illegible]	-	DWR
Younger domestic	42N/13E-31G1	7-29-60	63	587	8.2	[illegible] / [illegible]	7.8 / 0.64	102 / 4.44	11 / 0.28	0 / 0.00	369 / 6.05	6.7 / 0.14	3.7 / 0.10	2.9 / 0.05	0.4 / 0.02	0.27	90	Fe 0.11 (dis.) Fe 0.22 (total) Pb 0.01 Zn 0.18	416	[illegible]	[illegible]	[illegible]	DWR
F. Swanson domestic	-32G1	7-29-60	59	[illegible]	8.2	33 / 1.65	11 / 0.89	29 / 1.26	[illegible] / 0.14	0 / 0.00	224 / 3.67	5.6 / 0.12	3.7 / 0.10	0.4 / 0.01	0.3 / 0.02	0.03	57	Fe 0.01 (dis.) Fe 0.18 (total) Pb 0.01	256	33	[illegible]	[illegible]	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M								BIG VALLEY (5-4)														
T. E. Conelly domestic	37N/7E-13B1	8-10-60	-	193	8.0	12 / 0.60	6.6 / 0.54	18 / 0.78	4.2 / 0.11	0 / 0.00	111 / 1.82	1.6 / 0.03	3.2 / 0.09	2.6 / 0.04	0.1 / 0.00	0.03	61	As 0.01 Fe 0.02 (total) Mn 0.01 Zn 0.20	163	38	57	0	DWR
W. H. Gerig domestic	38N/7E-2P1	8-10-60	-	493	8.4	30 / 1.50	19 / 1.56	42 / 1.83	11 / 0.28	3 / 0.10	232 / 3.80	1.5 / 0.03	38 / 1.07	5.5 / 0.09	0.1 / 0.00	0.06	72	Cr +6 0.01 Cu 0.03 Fe 0.37 (total) Mn 1.2 Zn 0.09	336	35	153	0	DWR
A. O'Toole domestic	-14G5	8-10-60	-	417	8.0	36 / 1.80	16 / 1.32	22 / 0.96	2.5 / 0.06	0 / 0.00	93 / 1.52	79 / 1.64	32 / 0.90	2.0 / 0.03	0.3 / 0.02	0.03	66	As 0.01 Cu 0.01 Fe 0.15 (total) Mn 0.09 Zn 0.19	302	23	156	80	DWR
City of Bieber municipal	-23D1	8-10-60	-	259	8.2	16 / 0.80	10 / 0.82	24 / 1.04	2.7 / 0.07	0 / 0.00	144 / 2.36	6.2 / 0.13	7.5 / 0.21	1.3 / 0.02	0.3 / 0.02	0.04	63	Fe 1.6 (total) Mn 0.25 Pb 0.02 Zn 0.04	202	38	81	0	DWR
E. G. Babcock irrigation	-34J1	8-10-60	58	189	8.0	11 / 0.55	6.4 / 0.53	20 / 0.87	4.1 / 0.10	0 / 0.00	118 / 1.93	1.0 / 0.02	2.3 / 0.06	0.5 / 0.01	0.1 / 0.00	0.02	59	As 0.01 Fe 1.2 (total) Pb 0.01 Zn 0.06	162	42	54	0	DWR
H. Simer domestic	38N/8E-14P1	8-10-60	121	1290	7.6	31 / 1.55	0.1 / 0.01	235 / 10.22	5.0 / 0.13	0 / 0.00	37 / 0.61	395 / 8.22	111 / 3.13	0.4 / 0.01	2.8 / 0.15	3.3	82	As 0.14 Cu 0.01 Fe 0.23 (total) Zn 0.05	884	86	78	48	DWR
M. Walsh domestic	-30R1	8-10-60	-	478	8.1	30 / 1.50	24 / 1.98	21 / 0.91	5.2 / 0.13	0 / 0.00	122 / 2.00	16 / 0.33	35 / 0.99	75 / 1.21	0.3 / 0.02	0.02	60	Fe 0.04 (total) Mn 0.05 Pb 0.01 Zn 0.14	326	20	174	74	DWR
A. L. Knudson domestic	38N/9E-21L1	8-10-60	-	321	8.3	17 / 0.85	4.2 / 0.35	44 / 1.91	7.5 / 0.19	0 / 0.00	197 / 3.23	1.6 / 0.03	4.0 / 0.11	1.0 / 0.02	0.1 / 0.00	0.03	81	Fe 0.04 (total) Mn 0.08	257	58	60	0	DWR
E. C. Robinson domestic	39N/7E-11A1	8-11-60	61	254	8.1	16 / 0.80	7.0 / 0.58	23 / 1.00	4.5 / 0.12	0 / 0.00	118 / 1.93	0.5 / 0.01	6.5 / 0.18	22 / 0.35	0.1 / 0.00	0.03	64	Fe 0.13 (total) Zn 0.01	202	40	67	0	DWR
[illegible]. Yowell domestic	-13Q1	8-10-60	-	217	8.0	9.9 / 0.49	3.0 / 0.25	33 / 1.44	2.0 / 0.05	0 / 0.00	99 / 1.62	16 / 0.33	7.3 / 0.20	1.1 / 0.02	0.2 / 0.01	0.06	63	Fe 0.28 (dis.) Fe 1.2 (total) Mn 0.11 Zn 0.21	184	64	37	0	DWR
L. Roberts domestic	-14R1	8-10-60	59	1100	8.6	82 / 4.09	46 / 3.80	94 / 4.09	1.4 / 0.04	16 / 0.53	382 / 6.26	67 / 1.39	92 / 2.59	62 / 1.00	0.3 / 0.02	0.10	53	Fe 0.11 (total) Mn 0.01 Zn 0.08	702	31	395	55	DWR
R. Holmes domestic	39N/8E-23A2	8-10-60	62	222	7.9	12 / 0.60	9.0 / 0.74	16 / 0.70	4.7 / 0.12	0 / 0.00	96 / 1.57	19 / 0.40	4.7 / 0.13	2.3 / 0.04	0.2 / 0.01	0.02	70	As 0.03 Fe 0.46 (total) Mn 0.71 Zn 0.38	185	32	67	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	[illegible]							[illegible] VALLEY (5-[illegible]) Cont.															
[illegible] domestic	3[illegible]-[illegible]1	[illegible]	[illegible]	[illegible]	[illegible]	48 / [illegible]	19 / 1.[illegible]	45 / 1.[illegible]	[illegible] / [illegible]	0 / [illegible]	133 / 2.1[illegible]	14 / [illegible]	[illegible] / 1.13	112 / 1.81	0.4 / [illegible]	0.[illegible]	6	As [illegible].13 Zn 0.2 Fe [illegible] (total)	244	32	197	38	DWR
[illegible] domestic and stock	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] / 1.3[illegible]	12 / [illegible].26	21 / [illegible].91	[illegible] / [illegible].13	0 / [illegible].00	153 / 2.[illegible]1	[illegible].1 / [illegible].13	14 / [illegible].39	1[illegible] / [illegible].26	0.[illegible] / [illegible].01	[illegible]	7	[illegible] [illegible].3[illegible] (total) Mn [illegible].1[illegible] [illegible] [illegible].02	[illegible]	[illegible]	11	[illegible]	[illegible]
[illegible] Farrow irrigation	-[illegible]1	[illegible]-1[illegible]-60	58	170	8.1	12 / [illegible].60	[illegible] / [illegible].33	15 / [illegible].6[illegible]	[illegible].3 / [illegible].1[illegible]	[illegible] / [illegible].00	101 / 1.66	0.8 / 0.02	[illegible].1 / 0.06	[illegible] / [illegible].01	0.1 / 0.00	0.02	60	Fe 0.08 (total)	150	37	[illegible]9	0	[illegible]WR
[illegible] Swain domestic	-2[illegible]	[illegible]-1[illegible]-60	7[illegible]	202	8.1	14 / [illegible].70	8.3 / [illegible]	14 / [illegible].61	[illegible] / 0.17	0 / [illegible].00	127 / [illegible].08	0.2 / [illegible].00	1.9 / 0.05	1.0 / [illegible].02	[illegible].1 / [illegible].00	0.01	56	Fe 0.02 (total) Zn [illegible].03	164	28	69	0	DWR
								FA[illegible] RIV[illegible] VALLEY (5-5)															
[illegible] Pickel domestic	37[illegible]/[illegible]-[illegible]1	7-27-60	-	359	8.0	50 / 2.50	3[illegible] / 2.[illegible]	26 / 4.13	7.2 / 0.18	0 / 0.00	[illegible]43 / [illegible].90	[illegible] / [illegible].00	0.9 / 0.02	52 / 0.8[illegible]	[illegible].2 / 0.01	0.25	55		564	43	268	0	DWR
[illegible] Lessa irrigation artesian	3[illegible]/5[illegible]-1[illegible]1	7-27-60	[illegible]	199	7.2	16 / 0.80	[illegible] / 0.5[illegible]	16 / 0.70	2.7 / 0.[illegible]7	[illegible] / [illegible].00	11[illegible] / 1.83	[illegible] / 0.1[illegible]	3.7 / 0.10	[illegible] / 0.01	0.1 / 0.00	0.04	38		147	33	67	0	DWR
Inter-Mountain Fair municipal	-9[illegible]1	7-27-60	56	838	8.6	37 / 1.[illegible]5	27 / 2.19	129 / [illegible].61	[illegible].7 / [illegible].17	19 / 0.63	515 / [illegible].44	2.5 / [illegible].05	20 / 0.56	3.9 / 0.06	0.2 / 0.01	0.24	58		556	57	202	0	DWR
[illegible] Moen domestic	-1[illegible]1	7-26-60	68	189	7.9	3.4 / 0.17	[illegible] / [illegible].00	40 / 1.74	1.5 / [illegible]	0 / 0.00	104 / 1.70	[illegible].3 / 0.11	3.7 / 0.10	0.3 / 0.00	0.2 / 0.01	0.17	47		152	89	9	0	DWR
[illegible] Reynolds irrigation	-1[illegible]	7-[illegible]7-60	59	[illegible]19	8.0	21 / 1.[illegible]5	17 / 1.13	49 / 2.13	6.0 / 0.15	[illegible] / 0.00	252 / 4.13	0.6 / [illegible].01	0.5 / [illegible].01	31 / 0.50	0.6 / 0.03	0.02	66		316	45	124	0	DWR
[illegible] Crum irrigation	-[illegible]1	7-26-60	[illegible]	1[illegible]	[illegible]	13 / [illegible]	[illegible].7 / [illegible].39	20 / [illegible].[illegible]7	1.9 / [illegible].05	[illegible] / 0.00	105 / 1.72	1.2 / 0.02	2.3 / [illegible].06	7.9 / 0.13	0.1 / 0.00	0.10	37		140	44	52	0	DWR
[illegible] [illegible] irrigation	37N/[illegible]-[illegible]1	[illegible]-60	[illegible]1	[illegible]	[illegible].3	19 / [illegible]	18 / 1.49	12 / [illegible]	2.4 / [illegible].06	0 / [illegible].00	172 / 2.82	[illegible].5 / 0.[illegible]	[illegible] / [illegible]	0.9 / [illegible].01	0.[illegible] / [illegible].00	[illegible].06	40		179	17	122	[illegible]	DWR
[illegible] Carpenter domestic	-1[illegible]1	7-26-60	[illegible]	193	[illegible].0	20 / 1.00	[illegible].4 / [illegible].44	9.4 / 0.41	2.3 / 0.[illegible]6	[illegible] / 0.00	96 / 1.[illegible]7	[illegible].[illegible] / [illegible].04	[illegible].3 / 0.06	15 / 0.24	[illegible].1 / 0.00	[illegible].07	48		152	21	72	0	[illegible]WR
[illegible] Clark domestic	-[illegible]1	7-26-60	[illegible]3	275	[illegible].1	24 / 1.20	12 / [illegible].98	12 / [illegible].52	3.7 / [illegible].19	0 / [illegible].00	128 / 2.10	3.8 / 0.[illegible]3	5.5 / [illegible].16	27 / [illegible].44	0.2 / 0.01	0.06	53		204	1[illegible]	10[illegible]	4	DWR
[illegible] A. Peters domestic	[illegible]N/3[illegible]-[illegible]4F1	7-2[illegible]-60	-	152	7.7	11 / [illegible].[illegible]7	10 / 0.80	4.0 / 0.1[illegible]	0.7 / 0.[illegible]2	0 / 0.00	85 / 1.40	[illegible].0 / [illegible].00	5.0 / 0.13	4.0 / [illegible].06	0.0 / 0.00	0.00	16		93	11	68	0	TTL
Dr. [illegible] irrigation	38N/4E-27[illegible]	7-27-60	[illegible]5	175	8.[illegible]	12 / [illegible].60	[illegible].6 / 0.46	17 / 0.74	2.9 / 0.07	0 / [illegible].00	99 / 1.6[illegible]	1.0 / [illegible].02	5.7 / 0.16	1.0 / 0.02	0.1 / 0.00	0.09	39		133	4[illegible]	[illegible]	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfacant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M					FALL RIVER VALLEY (5-5) (Cont.)																	
. R. Johnson domestic	38N/4E -30H1	7-27-60	-	213	8.1	12 / 0.62	10 / 0.83	16 / 0.67	3.1 / 0.08	0 / 0.00	117 / 1.91	0.0 / 0.00	9.0 / 0.24	3.0 / 0.05	0.0 / 0.00	0.00	35		146	30	72	0	TTL
H. Horr domestic (artesian)	-35R1	7-27-60	-	217	8.2	3.0 / 0.15	2.0 / 0.22	41 / 1.80	2.4 / 0.06	0 / 0.00	119 / 1.95	0.0 / 0.00	7.0 / 0.18	7.0 / 0.11	0.1 / 0.01	1.60	27		149	81	18	0	TTL
Pacific Gas & Electric Co. stock (artesian)	38N/5E-32H1	7-27-60	60	192	7.9	2.2 / 0.11	0.1 / 0.01	40 / 1.74	1.6 / 0.04	0 / 0.00	97 / 1.59	8.9 / 0.18	5.1 / 0.14	0.7 / 0.01	0.1 / 0.00	0.18	24		131	92	6	0	DWR
Zappetini irrigation	38N/6E-31D1	8-9-60	59	180	8.0	14 / 0.70	6.3 / 0.52	12 / 0.52	2.8 / 0.07	0 / 0.00	108 / 1.77	0.0 / 0.00	2.3 / 0.06	0.5 / 0.01	0.1 / 0.00	0.05	48		139	29	61	0	DWR
						REDDING BASIN (5-6)																	
Cottonwood Water Dept. municipal	29N/4W-2M1	7-20-60	-	169	8.0	12 / 0.60	7.3 / 0.60	13 / 0.56	0.8 / 0.02	0 / 0.00	95 / 1.56	1.0 / 0.02	4.0 / 0.11	2.4 / 0.04	0.2 / 0.01	0.03	52	Cr +6 0.01 Cu 0.01 Fe 0.01 (dis.) Fe 0.07 Zn 0.04	140	31	60	0	DWR
D. F. Park domestic and irrigation	30N/3W-4M1	8-1-60	-	201	8.1	12 / 0.60	12 / 0.98	8.7 / 0.38	1.7 / 0.04	0 / 0.00	110 / 1.80	2.0 / 0.04	3.0 / 0.08	2.8 / 0.04	0.1 / 0.00	0.03	89	Cr +6 0.01 Fe 0.22 (total) Zn 0.04	185	19	79	0	DWR
D. Morton domestic	-34D1	8-5-60	-	226	8.2	18 / 0.90	13 / 1.10	9.0 / .39	1.1 / 0.03	0 / 0.00	129 / 2.11	4.3 / 0.09	3.2 / 0.09	4.4 / 0.07	0.2 / 0.01	0.06	48	Cu 0.01 Fe 0.07 (total)	164	16	100	0	DWR
F. Loftus irrigation	30N/4W-1G1	8-1-60	-	152	7.9	8.8 / 0.44	8.3 / 0.68	10 / 0.44	0.5 / 0.01	0 / 0.00	67 / 1.10	7.2 / 0.15	7.4 / 0.21	4.2 / 0.07	0.1 / 0.00	0.07	38	Fe 0.06 (total)	118	28	56	1	DWR
. . Plywood Corp. industrial	-5K1	8-5-60	-	186	8.1	13 / 0.65	11 / 0.91	2.8 / 0.43	0.6 / 0.02	0 / 0.00	110 / 1.80	4.1 / 0.08	2.8 / 0.08	.7 / 0.01	0.1 / 0.00	0.04	50	As 0.01 Fe 0.01 (dis.) Fe 0.42 (total)	146	21	78	0	DWR
Anderson Fairgrounds irrigation	-16H	7-20-60	-	203	8.0	14 / 0.70	11 / 0.94	11 / 0.48	1.2 / 0.03	0 / 0.00	107 / 1.75	6.2 / 0.13	5.8 / 0.16	1.9 / 0.03	0.2 / 0.01	0.03	52	Fe 0.04 (total) Mn 0.01	156	22	82	0	DWR
Paul Bunyon Lumber Co. industrial	-25N1	8-5-60	-	156	7.7	9.4 / 0.47	7.9 / 0.65	12 / 0.52	0.7 / 0.02	0 / 0.00	91 / 1.49	1.0 / 0.02	3.4 / 0.10	0.8 / 0.01	0.2 / 0.01	0.03	49	Fe 0.21 (total)	129	31	56	0	DWR
J. Perez domestic	30N/5W-2L1	7-20-60	-	70	6.9	4.1 / 0.20	1.4 / 0.12	8.0 / 0.35	0.4 / 0.01	0 / 0.00	26 / 0.43	0.0 / 0.00	3.2 / 0.09	9.0 / 0.14	0.1 / 0.00	0.03	56	Al 0.01 Fe 0.03 (dis.) Fe 0.23 (total) Mn 0.02 Zn 2.9	95	51	16	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SHASTA?							REDDING BASIN (5-6) (Cont.)															
Happy Valley School domestic	30N/5W-15R1	7-20-60	-	163	7.9	9.2 0.46	6.3 0.52	17 0.74	0.8 0.02	0 0.00	97 1.59	1.0 0.02	3.2 0.09	0.5 0.01	0.3 0.02	0.01	46	Fe 0.09 (dis.) Fe 3.1 (total) Mn 0.02 Zn 0.02	132	42	49	0	DWR
T. A. Young domestic	-17R1	7-?-60	-	145	7.9	8.6 0.43	4.5 0.37	16 0.70	0.5 0.01	0 0.00	82 1.34	0.0 0.00	4.6 0.13	1.8 0.03	0.1 0.00	0.02	50	Cu 0.01 Fe 0.05 (dis.) Fe 0.35 (total) Zn 0.22	132	46	40	[illegible]	DWR
R. M. Gilbert irrigation	31N/3W-7K1	7-25-60	-	235	8.1	13 0.65	8.4 0.69	25 1.09	1.5 0.04	0 0.00	128 2.10	0.8 0.02	11 0.31	0.5 0.01	0.1 0.00	0.30	54	Fe 0.01 (dis.) Fe 0.11 (total)	178	44	[illegible]	[illegible]	DWR
Gimblin domestic and irrigation	-12F1	7-25-60	-	1?9	8.1	18 0.90	8.0 0.66	8.2 0.36	2.5 0.06	0 0.00	104 1.70	3.8 0.08	4.3 0.12	2.2 0.04	0.1 0.00	0.04	74	Fe 0.05 (total) Pb 0.02 Zn 0.01	172	19	[illegible]	[illegible]	DWR
T. Murphy irrigation	-22P1	8-1-60	-	2?1	8.2	11 0.55	9.8 0.81	10 0.44	1.7 0.04	0 0.00	99 1.62	1.3 0.03	4.2 0.12	3.4 0.05	0.2 0.01	0.05	77	Fe 0.18 (total)	168	24	68	[illegible]	DWR
Lawn Crest Cemetary irrigation	31N/4W-5F1	8-1-60	-	152	8.1	8.5 0.42	7.? 0.64	13 0.56	0.9 0.02	0 0.00	93 1.52	0.2 0.00	2.4 0.07	0.1 0.00	0.4 0.02	0.03	46	Fe ?.?2 (dis.) Fe 0.16 (total)	125	34	53	[illegible]	[illegible]
Enterprise School District domestic and irrigation	-7A1	?-1-60	-	211	8.2	20 1.00	7.0 0.58	15 0.65	1.0 0.02	0 0.00	128 2.10	1.2 0.02	4.2 0.12	0.7 0.01	0.2 0.01	0.07	30	As 0.01 Fe 0.14 (total)	142	29	79	0	DWR
?. ?. Stauer irrigation	-15??	8-1-60	-	213	?.3	11 [illegible]	[illegible]	1? 0.13	0.6 0.02	0 0.00	120 1.97	0.6 0.01	9.2 0.26	0.2 0.01	?.3 ?.02	?.0?	52	Fe ?.08 (total) Pb 0.01	1??	3?	?2	0	DWR
P. E. Templeton domestic and irrigation	-15L1	8-1-60	-	10?	8.0	7.9 0.39	3.8 0.31	11 0.48	?.6 0.02	0 0.00	91 1.49	1.3 0.03	3.7 0.10	1.9 0.03	?.2 0.01	0.03	32	Fe 0.10 (total) Zn 0.01	113	[illegible]	[illegible]	[illegible]	[illegible]
California Motel domestic and irrigation	31N/5W-13P1	7-21-60	-	?48	7.7	14 0.70	7.5 0.62	67 2.91	1.4 0.04	[illegible] 0.00	154 2.52	2.5 0.05	66 1.86	0.3 0.00	- -	0.6	-		31?	[illegible]	[illegible]	[illegible]	[illegible]
U.S. Dept. of Interior domestic and irrigation	31N/?-25K1	7-20-60	-	113	7.7	10 0.50	4.4 0.36	6.3 0.27	1.3 0.03	[illegible] 0.00	60 0.98	3.0 0.06	2.4 0.07	0.9 0.01	0.? 0.00	0.06	23	Al 0.02 Cr+6 0.01 Fe ?.? (dis.) Fe 0.35 (total) Zn 0.03	91	23	43	0	[illegible]
?. H. Johnson domestic and irrigation	32N/3W-27E2	7-25-60	-	4370	8.3	54 2.69	6.7 0.55	[illegible] [illegible]	2.3 0.06	[illegible] 0.00	149 2.44	195 4.06	1260 35.53	12 0.19	1.0 0.05	19	20	Fe 0.55 (total) Mn 0.15	2530	[illegible]	1??	?0	[illegible]

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per-cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M							REDDING	BASIN	(5-6)	(Cont.)												
B. F. Irvin domestic and stock	32N/3W -20P1	7-25-60	-	203	8.0	14 / 0.70	6.1 / 0.50	18 / 0.78	1.3 / 0.03	0 / 0.00	83 / 1.36	9.4 / 0.20	15 / 0.42	1.2 / 0.02	0.1 / 0.00	0.27	29	Fe 0.01 (dis.) Fe 0.30 (total) Zn 0.03	135	39	60	0	DWR
C. Boyle domestic	-32J2	7-25-60	-	463	8.3	36 / 1.80	16 / 1.36	34 / 1.48	2.1 / 0.05	0 / 0.00	182 / 2.98	13 / 0.27	32 / 0.90	28 / 0.45	0.1 / 0.00	0.16	55	Al 0.02 Fe 0.04 (total) Zn 0.03	305	32	158	9	DWR
V. Phipps irrigation	-32L1	8-5-60	-	580	8.1	9.4 / 0.47	4.7 / 0.39	103 / 4.48	2.1 / 0.05	0 / 0.00	132 / 2.16	4.3 / 0.09	111 / 3.13	0.4 / 0.01	0.6 / 0.03	0.82	47	Fe 0.01 (dis.) Fe 0.18 (total)	348	83	43	0	DWR
Coldiron irrigation	-35C1	7-25-60	-	440	8.2	18 / 0.90	10 / 0.86	55 / 2.39	2.6 / 0.07	0 / 0.00	128 / 2.10	1.5 / 0.03	74 / 2.09	0.7 / 0.01	0.1 / 0.00	0.15	65	Al 0.02 As 0.01 Fe 0.01 (dis.) Fe 0.72 (total) Mn 0.44 Zn 0.02	290	57	88	0	DWR
Hille and Dales Rest Home irrigation	32N/4W-14F2	7-25-60	-	197	8.1	8.5 / 0.42	4.4 / 0.36	25 / 1.09	0.5 / 0.01	0 / 0.00	95 / 1.56	2.0 / 0.04	7.3 / 0.20	2.4 / 0.04	0.1 / 0.00	0.22	32	Fe 0.04 (dis.) Fe 1.1 (total) Zn 0.07	129	58	39	0	DWR
W. Ross domestic	-16B2	7-25-60	-	116	7.1	5.9 / 0.29	4.5 / 0.37	8.0 / 0.35	0.3 / 0.01	0 / 0.00	19 / 0.31	0.0 / 0.00	13 / 0.37	18 / 0.29	0.[illegible] / 0.00	0.53	23	Fe 0.07 (total) Zn 1.3	82	34	33	17	DWR
E. Jones domestic	-20C2	7-25-60	-	236	8.2	16 / 0.80	18 / 1.44	13 / 0.56	0.8 / 0.02	0 / 0.00	160 / 2.62	1.8 / 0.04	3.9 / 0.11	1.9 / 0.03	0.2 / 0.01	0.02	47	Al 0.01 Fe 0.20 (total) Zn 0.02	182	20	112	0	DWR
Columbia School Dist. domestic	-34P1	8-1-60	-	264	8.1	16 / 0.80	7.8 / 0.64	29 / 1.26	1.3 / 0.03	0 / 0.00	133 / 2.18	0.5 / 0.01	19 / 0.54	0.3 / 0.00	0.1 / 0.00	0.24	35	Fe 0.05 (dis.) Fe 0.6[illegible] (total) Pb 0.02 Zn 0.04	174	46	72	0	DWR
H. Snow, Jr. domestic	32N/5W-26M1	7-25-60	-	278	8.1	17 / 0.85	10 / 0.85	26 / 1.13	1.0 / 0.02	0 / 0.00	121 / 1.98	24 / 0.50	10 / 0.28	1.5 / 0.02	0.3 / 0.02	0.54	30	Fe 0.07 (total) Zn 0.02	179	40	85	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfacant (ABS).

ANALYSES OF GROUND WATER

1960

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						Mineral constituents in parts per million / equivalents per million																	
									SIERRA VALLEY (5-12)														
Pita Bradley domestic	2 N 14E-4G2	8-17-60	-	205	8.1	15 / 0.75	8.4 / 0.69	12 / 0.52	4.1 / 0.10	0 / 0.00	121 / 1.98	1.0 / 0.02	0.4 / 0.01	0.7 / 0.01	0.0 / 0.00	0.04	35	Zn 0.01 Mn 0.14; Fe 0.01 (dis) d; Fe 0.26 (total) e	136	25	72	0	DWR
Gordon McMullen domestic	21N 14E-15J1	8-17-60	-	442	8.0	5.5 / 0.27	8.4 / 0.69	70 / 3.04	4.3 / 0.11	0 / 0.00	123 / 2.02	0.0 / 0.00	52 / 1.47	26 / 0.42	0.7 / 0.04	0.12	52	Zn 0.04; Fe 0.05 (dis.) d; Fe 0.41 (total) e	279	74	48	0	DWR
G. Van Vleck domestic	-22L1	8-17-60	-	647	8.2	19 / 0.95	13 / 1.05	89 / 3.87	10 / 0.26	0 / 0.00	157 / 2.57	13 / 0.27	112 / 3.16	4.8 / 0.08	0.2 / 0.01	0.81	47	Fe 0.82 (total) de	386	63	100	0	DWR
P. A. Torri domestic	-36K1	8-17-60	-	207	8.1	16 / 0.80	9.0 / 0.74	12 / 0.52	2.5 / 0.06	0 / 0.00	120 / 1.97	1.6 / 0.03	2.5 / 0.07	1.4 / 0.02	0.1 / 0.00	0.02	43	Zn 0.01 d	147	24	77	0	DWR
E. Filipini domestic	21N/15E-5D1	8-17-60	112	1,560	8.0	11 / 0.55	2.6 / 0.21	308 / 13.40	7.1 / 0.18	0 / 0.00	133 / 2.18	173 / 3.60	300 / 8.46	8.7 / 0.14	1.1 / 0.06	5.2	90	Mn 0.13; Fe 0.31 (dis.) d; Fe 0.84 (total) e	978	93	38	0	DWR
John O'Andrea domestic and stock	-9Q3	8-17-60	60	233	8.2	17 / 0.85	7.9 / 0.65	18 / 0.78	4.9 / 0.12	0 / 0.00	134 / 2.20	9.7 / 0.20	0.8 / 0.02	0.1 / 0.00	0.0 / 0.00	0.04	59	Mn 0.31 Pb 0.01; Fe 0.12 (dis.) d; Fe 0.18 (total) e	183	32	75	0	DWR
Mrs. Havey domestic	22N/14E-14F1	8-16-60	56	152	8.0	12 / 0.60	8.0 / 0.66	7.6 / 0.33	1.3 / 0.03	0 / 0.00	97 / 1.59	1.5 / 0.03	0.0 / 0.00	0.3 / 0.00	0.1 / 0.00	0.02	46	Mn 0.03; Fe 0.04 (dis.) d; Fe 0.69 (total) e	125	20	63	0	DWR
Josephine Roberti domestic and stock	22N/15E-11F1	8-16-60	-	546	8.3	5.5 / 0.27	4.0 / 0.33	106 / 4.61	6.1 / 0.16	0 / 0.00	24 / 3.95	0.0 / 0.00	32 / 0.90	28 / 0.45	0.8 / 0.04	1.1	99	As 0.06 Cu 0.02; Pb 0.010; Fe 0.10 (dis.) d; Fe 0.44 (total) e	400	86	30	0	DWR
Huntley Bros. domestic and stock	22N/15E-12B1	8-16-60	76	183	7.1	2.8 / 0.14	4.4 / 0.36	24 / 1.04	5.8 / 0.15	0 / 0.00	43 / 0.70	0.3 / 0.01	1.9 / 0.05	2.4 / 0.04	1.4 / 0.07	0.15	84	Fe 0.03 (dis.) d; Fe 0.84 (total) e	186	62	25	0	DWR
P. P. Scolari domestic and stock	-17C3	8-16-60	64	345	8.0	3.0 / 0.15	1.3 / 0.11	71 / 3.09	2.1 / 0.05	0 / 0.00	138 / 2.26	1.0 / 0.02	24 / 0.68	23 / 0.37	0.3 / 0.02	1.3	73	Cu 0.02; Fe 0.51 (dis.) d; Fe 0.50 (total) e	268	91	13	0	DWR
Lucky Hereford Ranch domestic and stock	-26K1	8-17-60	66	159	7.8	4.7 / 0.23	6.2 / 0.51	14 / 0.61	7.1 / 0.18	0 / 0.00	89 / 1.46	0.0 / 0.00	1.8 / 0.05	2.1 / 0.03	0.2 / 0.01	0.09	71	Al 0.02 Mn 0.29; Fe 0.99 (dis.) d; Zn 0.08; Fe 1.9 (total) e	157	40	37	0	DWR
Ermina Filipini stock	-32R1	8-17-60	120	2,450	7.6	41 / 2.04	0.2 / 0.02	471 / 20.49	22 / 0.56	0 / 0.00	50 / 0.82	329 / 6.85	546 / 15.40	0.6 / 0.01	2.9 / 0.15	8.1	98	As 0.66 d; Fe 0.09 (total) e	1,540	89	103	62	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe), Total Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4) ...

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
SIERRA VALLEY (5-12) (Cont.)																							
C. D. Franchini stock	22N/16E-5N2	8-16-60	-	166	7.9	2.8/0.14	3.4/0.28	25/1.08	3.0/0.08	0/0.00	69/1.13	0.2/0.00	1.9/0.05	24/0.39	0.8/0.04	0.10	70	Pb 0.01 Fe 0.36 (dis.)[d]	165	68	21	0	DWR
Lucky Hereford Ranch irrigation	22N/16E-19E1	8-17-60	60	206	8.1	12/0.60	7.5/0.62	18/0.78	4.9/0.12	0/0.00	115/1.88	6.4/0.13	4.0/0.11	1.7/0.03	0.1/0.00	0.10	54	As 0.02[d] Fe 0.05 (total)[e]	165	37	61	0	DWR
Mervino Air Service domestic	23N/14E-25G1	8-16-60	-	412	8.2	39/1.95	16/1.33	18/0.78	0.8/0.02	0/0.00	138/2.26	19/0.40	17/0.48	56/0.90	0.2/0.01	0.07	53	Zn 0.09 Fe 0.01 (dis.)[d] Fe 0.08 (total)[e]	287	19	164	51	DWR
Albert Folchi domestic and stock	-35L1	8-17-60	-	785	7.9	22/1.10	1.2/0.10	139/6.05	1.0/0.02	0/0.00	86/1.41	107/2.23	122/3.44	1.7/0.03	0.2/0.01	1.5	20	Fe 0.01 (dis.)[d] Fe 0.14 (total)[e]	458	83	60	0	DWR
Lyle Benner domestic	23N/15E-28H4	8-16-60	-	291	8.2	36/1.80	9.0/0.74	12/0.52	4.1/0.10	0/0.00	174/2.85	0.8/0.02	1.4/0.04	13/0.21	0.1/0.00	0.04	56	Pb 0.01 Zn 0.05[d] Fe 0.14 (total)[e]	218	16	127	0	DWR
stock	-35C1	8-16-60	74	356	7.3	5.8/0.29	5.2/0.43	54/2.35	5.5/0.14	0/0.00	77/1.26	0.2/0.00	43/1.21	41/0.66	1.3/0.07	1.4	78	Cu 0.03 Zn 0.01 Fe 0.03 (dis.)[d] Fe 0.65 (total)[e]	273	73	36	0	DWR
UPPER LAKE VALLEY (5-13)																							
Overington domestic	14N/9W-6F2	7-6-60	70	44.5	6.8	1.6/0.08	2.4/0.20	2.2/0.10	0.6/0.02	0/0.00	14/0.23	0.0/0.00	1.0/0.03	8.1/0.13	0.1/0.00	0.05	18	Zn 1.3 Fe 0.01 (dis.)[d]	41	25	14	3	DWR
B. W. Patten irrigation	14N/10W-14E2	7-6-60	57.5	241	8.0	26/1.30	10/0.82	7.7/0.33	0.7/0.02	0/0.00	128/2.10	9.7/0.20	3.6/0.10	1.6/0.02	0.1/0.00	0.16	14	[d]	136	13	106	1	DWR
L. U. Skegge irrigation	15N/9W-6F1	7-7-60	58	184	7.6	18/0.90	8.3/0.68	6.6/0.29	0.6/0.02	0/0.00	97/1.59	7.6/0.16	2.9/0.08	2.4/0.04	0.0/0.00	0.08	14	Pb 0.01[d] Zn 0.01	108	15	79	0	DWR
Upper Lake Cemetery irrigation	-7B	7-6-60	72	251	7.2	18/0.90	15/1.22	14/0.61	0.6/0.02	0/0.00	156/2.56	3.6/0.07	2.5/0.07	0.1/0.00	0.2/0.01	0.36	37	Mn 0.66[d] Zn 0.06	168	22	106	0	DWR
Guy Bowers domestic	-17P1	7-6-60	114	388	8.5	24/1.20	33/2.72	14/0.61	0.7/0.02	6/0.20	243/3.98	8.4/0.17	3.2/0.09	1.5/0.02	0.2/0.01	0.12	37	Mn 0.06[d] Zn 0.19	247	13	196	0	DWR
Ernie Vehand domestic	31P1	7-6-60	-	210	7.6	10/0.50	14/1.16	14/0.61	1.0/0.02	0/0.00	132/2.16	1.5/0.03	2.7/0.08	0.2/0.00	0.1/0.00	0.04	31	Cu 0.01 Mn 0.14 Zn 0.02 Fe 0.12 (dis.)[d]	140	27	83	0	DWR
Ervin Lewis, Sr. domestic and stock	15N/10W-3C1	7-7-60	74.5	382	8.1	41/2.04	22/1.80	7.7/0.33	0.2/0.00	0/0.00	209/3.42	15/0.31	6.0/0.17	14/0.22	0.1/0.00	0.10	18	Zn 0.33[d]	227	8	192	21	DWR

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b Gravimetric determination
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d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
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QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
UPPER LAKE VALLEY (5-13) Cont.																							
Leo Pecinovsky domestic	1?N/10W-3J1	7-7-60	-	805	8.3	94 / 4.69	41 / 3.38	23 / 1.00	2.4 / 0.06	2 / 0.07	352 / 5.77	95 / 1.98	44 / 1.24	0.8 / 0.01	0.2 / 0.01	0.12	16	Al 0.02 Mn 0.37 Zn 0.22 [d]	492	11	404	112	DWR
Bessie Dunton domestic	-1 E1	7-7-60	62	2,270	8.3	33 / 1.65	7.7 / 0.63	446 / 19.40	2.3 / 0.06	0 / 0.00	296 / 4.85	0.6 / 0.01	600 / 16.92	0.1 / 0.00	3.6 / 0.19	29	6.0	Mn 0.02 Zn 0.11 [d]	1,270	89	114	0	DWR
Lake County Cannery industrial	-12K2	7-7-60	-	21	7.9	21 / 1.05	10 / 0.85	7.7 / 0.33	0.6 / 0.02	0 / 0.00	123 / 2.02	8.2 / 0.17	2.9 / 0.08	0.9 / 0.01	0.0 / 0.00	0.09	11	Zn 0.33 [d]	122	15	95	0	DWR
Claude Davis domestic	-13A1	7-7-60	-	256	8.0	16 / 0.80	16 / 1.34	14 / 0.61	0.6 / 0.02	0 / 0.00	160 / 2.62	0.3 / 0.01	3.3 / 0.09	1.4 / 0.02	0.2 / 0.01	0.09	59	Pb 0.01 Mn 0.20 Fe 0.50 (dis.) [d]	190	22	107	0	DWR
Hurbert Jarvie irrigation	-24H1	7-6-60	-	423	7.6	26 / 1.30	22 / 1.78	33 / 1.44	0.4 / 0.01	0 / 0.00	223 / 3.65	12 / 0.25	19 / 0.54	1.3 / 0.02	0.4 / 0.02	0.30	35	Mn 0.28 Fe 0.01 (dis.) [d]	259	32	154	0	DWR
Antone Santos irrigation	16N/9W-31L2	7-7-60	58	302	7.6	34 / 1.70	13 / 1.10	12 / 0.52	1.0 / 0.02	0 / 0.00	193 / 3.16	0.3 / 0.01	4.6 / 0.13	1.5 / 0.02	0.2 / 0.01	0.08	13	Mn 0.34 Fe 0.01 (dis.) [d]	175	16	140	0	DWR
irrigation	-31L3	7-7-60	-	198	8.0	24 / 1.20	6.6 / 0.54	7.7 / 0.33	1.1 / 0.03	0 / 0.00	110 / 1.80	7.1 / 0.15	3.8 / 0.11	1.4 / 0.02	0.1 / 0.00	0.06	13	[d]	119	16	87	0	DWR
KELSEYVILLE VALLEY (5-15)																							
Ross Fields irrigation	13N/9W-2K2	7-8-60	60	574	8.3	31 / 1.55	56 / 4.64	11 / 0.48	1.0 / 0.02	0 / 0.00	348 / 5.70	16 / 0.33	13 / 0.37	4.7 / 0.08	0.0 / 0.00	0.16	42	Al 0.01 [d]	346	7	310	25	DWR
Eugene Holdenried irrigation	-2K3	7-8-60	61	754	8.2	40 / 2.00	81 / 6.65	11 / 0.48	1.0 / 0.02	0 / 0.00	467 / 7.65	38 / 0.79	14 / 0.39	6.3 / 0.10	0.2 / 0.01	0.13	39	Fe 0.05 (total) [e]	461	5	433	50	DWR
C. Benson irrigation	-3C1	7-8-60	58	341	8.4	18 / 0.90	33 / 2.74	5.9 / 0.26	0.8 / 0.02	2 / 0.07	201 / 3.29	9.5 / 0.20	5.2 / 0.15	7.4 / 0.12	0.1 / 0.00	0.12	33	[d]	214	7	182	13	DWR
Davidson irrigation	-8C1	7-8-60	64	449	8.4	35 / 1.75	37 / 3.05	9.2 / 0.40	0.6 / 0.02	3 / 0.10	258 / 4.23	23 / 0.48	5.8 / 0.16	10 / 0.16	0.1 / 0.00	0.33	24	Zn 0.01 [d]	275	8	240	24	DWR
H. E. Marshall stock and irrigation	-8M1	7-8-6	-	369	7.4	35 / 1.75	19 / 1.57	13 / 0.56	0.7 / 0.02	0 / 0.00	200 / 3.28	3.4 / 0.07	16 / 0.45	4.7 / 0.08	0.1 / 0.00	0.26	29	Zn 0.01 [d]	219	14	166	2	DWR
Lincoln Wright irrigation	-12M1	7-8-60	63.5	474	8.0	20 / 1.00	44 / 3.60	15 / 0.65	5.0 / 0.13	0 / 0.00	300 / 4.92	0.3 / 0.01	18 / 0.51	0.9 / 0.01	0.1 / 0.00	0.55	72	Fe 0.14 (dis.) [d]	324	12	230	0	DWR
W. Fraser irrigation	-16D1	7-8-60	68	[illegible]	7.1	38 / 1.90	103 / 8.51	24 / 1.04	2.8 / 0.07	0 / 0.00	688 / 11.28	0.3 / 0.01	9.9 / 0.28	0.8 / 0.01	0.1 / 0.00	0.72	87	Al 0.01 Mn 0.17 Zn 0.02 [d] Fe 0.13 (dis.) Fe 2.6 (total) [e]	605	9	521	0	DWR

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b Gravimetric determination
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e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									KELSEYVILLE VALLEY (5-15) (Cont.)														
M. Fraser domestic	13N/9W-16D2	7-8-60	-	294	8.0	27 1.35	19 1.53	8.2 0.36	0.9 0.02	0 0.00	176 2.88	7.6 0.16	4.2 0.12	6.7 0.11	0.1 0.00	0.31	20	Zn 0.07 [d]	180	11	144	0	DWR
W. J. Stone irrigation	-22J1	7-8-60	68	408	8.0	18 0.90	41 3.34	8.2 0.36	1.8 0.05	0 0.00	255 4.18	4.0 0.08	7.7 0.22	5.4 0.09	0.1 0.00	0.12	59	Pb 0.01 Zn 0.01 [d]	270	8	212	3	DWR
Irene Morrison domestic and irrigation	14N/9W-32J1	7-8-60	67	673	7.7	53 2.64	57 4.71	12 0.52	0.8 0.02	0 0.00	446 7.31	4.4 0.09	12 0.34	1.1 0.02	0.3 0.02	0.16	58	Mn 0.31 [d] Fe 12. (total) [e]	418	6	368	2	DWR
Irene Morrison irrigation	-32J2	7-8-60	62	560	7.8	37 1.85	44 3.58	24 1.04	1.0 0.02	0 0.00	350 5.74	12 0.25	11 0.31	0.4 0.01	0.5 0.03	0.17	75	Al 0.03 Mn 0.38 Fe 0.54 (dis.) [d] Fe 10. (total) [e]	378	16	272	0	DWR
									SACRAMENTO VALLEY (5-21) TEHAMA COUNTY														
Kelsey irrigation	23N/2W-5A1	7-13-60	-	310	8.2	18 0.90	16 1.28	25 1.09	1.4 0.04	0 0.00	177 2.90	6.2 0.13	6.4 0.18	3.6 0.06	0.2 0.01	0.17	26		190	33	109	0	DWR
W. Angleton irrigation	23N/3W-22Q	7-13-60	70	375	8.3	31 1.55	17 1.39	21 0.91	0.6 0.02	0 0.00	179 2.93	13 0.27	21 0.59	2.3 0.04	0.1 0.00	0.24	28	As 0.01 Cr +6 0.01 Fe 0.05 (total)	222	24	147	0	DWR
D. D. Smith domestic and stock	-35B1	7-13-60	-	230	8.0	16 0.80	9.2 0.76	14 0.61	0.5 0.01	0 0.00	92 1.51	7.4 0.15	14 0.39	5.2 0.08	0.2 0.01	0.14	29	Fe 0.61 (total) Zn 0.03	141	28	78	3	DWR

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b. Gravimetric determination.
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d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown.
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	[illegible]							TEHAMA COUNTY (5-21) (Cont.)															
Shutts Ranch	23N [illegible]W-31	7-12-60	-	178	7.8	[illegible].9 / [illegible].44	8.8 / 0.72	13 / [illegible].56	0.6 / 0.02	0 / 0.00	90 / 1.48	7.9 / 0.16	2.6 / 0.07	1.8 / 0.03	0.5 / 0.03	0.02	26	Fe 2.3 (total)	114	32	58	0	DWR
J. Ayres domestic and irrigation	24N 2W-3[illegible]C1	7-14-60	66	471	8.[illegible]	35 / 1.75	27 / 2.25	27 / 1.17	1.0 / 0.02	5 / 0.17	250 / 4.10	15 / 0.31	14 / 0.39	[illegible].9 / 0.14	0.2 / 0.01	0.07	34	Cr +6 0.01 Fe 0.31 (total) Pb 0.01	290	22	20[illegible]		DWR
[illegible]. Saulsbury domestic and irrigation	24N/3W-3P1	7-12-60	68	323	[illegible].6	33 / 1.65	13 / 1.11	12 / 0.52	0.6 / 0.02	0 / 0.00	147 / 2.41	19 / 0.40	7.0 / 0.20	13 / 0.21	0.1 / 0.00	0.05	29	Al 0.01	1[illegible]	16	[illegible]3	1	DWR
Corning High School domestic	-11M1	7-14-60	-	238	8.2	23 / 1.15	9.6 / 0.79	12 / 0.52	0.6 / 0.02	0 / 0.00	129 / 2.11	3.4 / [illegible].07	4.3 / 0.12	6.7 / 0.11	0.2 / 0.01	0.05	31	Fe 0.34 (total)	154	21	97	0	DWR
W. E. Turner irrigation	-20N1	7-12-60	-	174	8.0	13 / 0.65	[illegible].4 / 0.61	14 / 0.61	0.5 / 0.01	0 / 0.00	94 / 1.54	6.2 / 0.13	4.2 / 0.12	3.7 / 0.06	0.3 / 0.02	0.13	38	Fe 0.29 (total)	1[illegible]3	32	[illegible]	[illegible]	DWR
A. Miller domestic	24N/5W-21L1	7-12-60	-	367	8.3	25 / 1.25	10 / [illegible]	38 / 1.65	1.1 / 0.03	0 / 0.00	173 / 2.[illegible]	8.9 / [illegible].1[illegible]	24 / 0.[illegible]	1.2 / 0.02	0.2 / 0.01	0.07	30	Al 0.01 Pb 0.01	223	44	105	0	DWR
S. R. Pritchett domestic	25N/1W-31M1	7-13-60	-	389	8.5	32 / 1.[illegible]0	25 / 2.04	13 / 0.56	3.2 / 0.08	5 / 0.17	229 / 3.75	1.3 / [illegible].03	[illegible].6 / 0.21	4.2 / [illegible]	0.1 / 0.00	[illegible].10	72	Cu 0.01 Zn 0.1[illegible]	27[illegible]	13	1[illegible]2	0	DWR
Los Molinas Cemetary domestic	25N/2W-[illegible]M1	7-13-60	66	258	8.1	20 / 1.00	12 / 1.00	10 / 0.44	2.9 / [illegible].07	0 / [illegible]	107 / 1.75	15 / 0.31	14 / [illegible].39	2.[illegible] / 0.04	[illegible].1 / [illegible].00	[illegible].43	[illegible]	As [illegible]1 Fe 0.13 (total) Zn 0.02	1[illegible]2	[illegible]	1[illegible]	12	DWR
F. B. Wray domestic	-7K1	7-14-60	56	[illegible]7	[illegible]	43 / 2.14	37 / 3.05	21 / [illegible].91	1.0 / 0.02	[illegible] / [illegible].17	251 / 4.11	21 / [illegible].44	42 / 1.1[illegible]	9.9 / .16	0.1 / [illegible].00	[illegible]	30	Fe 0.24 (total) Zn [illegible]	333	1[illegible]	2[illegible]	[illegible]	DWR
E. Clemens Horst Co. irrigation	-21[illegible]1	7-13-60	[illegible]	364	[illegible]	2.3 / 0.11	0.6 / 0.05	79 / 3.[illegible]	3.0 / [illegible]	0 / 0.00	1[illegible]3 / 2.67	13 / 0.27	24 / [illegible].68	1.8 / 0.03	[illegible].4 / [illegible].02	[illegible].21	[illegible]1	Al [illegible]1 As [illegible]1 Fe [illegible].14 (dis.) Fe [illegible] (total) Mn 0.02 Zn [illegible].01	275	[illegible]3	[illegible]	[illegible]	DWR
El Camino Irr. Dist. irrigation	25N/3W-3N1	7-14-60	69	383	8.5	2[illegible] / 1.35	22 / 1.77	22 / [illegible]	1.3 / 0.03	5 / [illegible].17	191 / 3.13	[illegible] / .13	19 / 0.54	3.[illegible] / [illegible]	[illegible].2 / [illegible]1	[illegible]	[illegible]	Cr +6 0.01 Fe [illegible] (total) Pb 0.01	24[illegible]	2[illegible]	1[illegible]	[illegible]	DWR
L. Clark domestic	-31R1	7-12-60	-	390	[illegible]	[illegible] / 2.[illegible]	20 / 1.[illegible]	[illegible].5 / [illegible].37	1.4 / 0.04	0 / [illegible].00	200 / 3.28	30 / [illegible].62	7.4 / [illegible].21	12 / [illegible].19	0.2 / [illegible]1	[illegible].17	16	Fe 0.01 (dis.) Fe 0.10 (total) Pb [illegible]1 Zn [illegible].16	242	[illegible]	[illegible]	[illegible]	DWR
J. Monsinger irrigation	26N/2W-LC1	7-13-60	[illegible]	2[illegible]7	[illegible].2	[illegible] / 1.[illegible]0	17 / 1.38	12 / 0.52	2.[illegible] / 0.07	0 / 0.00	153 / 2.[illegible]1	[illegible].3 / [illegible].11	[illegible].1 / 0.26	[illegible].9 / 0.0[illegible]	[illegible].1 / 0.0[illegible]	[illegible].09	[illegible]	Cr +6 [illegible].01 Fe [illegible] (total)	[illegible]	1[illegible]	1[illegible]		DWR

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (each entry given as ppm / epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
	MDB&M							TEHAMA COUNTY (5-21) (Cont.)															
Forward Bros. Lumber Sales domestic and industrial	26N/3W-10D1	7-14-60	69	289	8.2	26 / 1.30	13 / 1.10	12 / 0.52	0.6 / 0.02	0 / 0.00	144 / 2.36	10 / 0.21	8.9 / 0.25	7.4 / 0.12	0.2 / 0.01	0.04	36	Fe 0.43 (total) Zn .01	185	18	120	2	DWR
Dr. Merrithew irrigation	26N/3W-22G1	7-18-60	68	243	8.1	18 / 0.90	10 / 0.86	15 / 0.65	0.7 / 0.02	0 / 0.00	128 / 2.10	7.9 / 0.16	4.3 / 0.12	4.8 / 0.08	0.2 / 0.01	0.04	40	Al 0.01 Fe 3.6 (total)	164	27		0	DWR
J. Burch irrigation	-29E1	7-14-60	67	156	7.9	8.5 / 0.42	8.3 / 0.68	11 / 0.48	1.2 / 0.03	0 / 0.00	76 / 1.24	4.9 / 0.10	4.2 / 0.12	6.1 / 0.10	0.3 / 0.02	0.10	40	Fe 0.01 (dis.) Fe 0.20 (total)	122	30	55	0	DWR
H. DeWitt domestic	26N/4W-10D1	7-14-60	71	360	8.5	32 / 1.60	16 / 1.34	23 / 1.00	1.0 / 0.02	4 / 0.13	222 / 3.64	0.0 / 0.00	3.5 / 0.10	4.2 / 0.07	0.2 / 0.01	0.05	31	Cu 0.01 Zn 0.09	224	25	147	0	DWR
B. Kerstiens irrigation	27N/3W-10Q1	7-14-60	73	284	8.2	15 / 0.75	6.7 / 0.55	37 / 1.61	3.0 / 0.08	0 / 0.00	152 / 2.49	7.9 / 0.16	12 / 0.34	0.6 / 0.01	0.2 / 0.01	0.13	64	Fe 0.03 (dis.) Fe 0.28 (total) Mn 0.06 Zn 0.05	222	54	65	0	DWR
B. Kerstiens	-15C1	7-14-60	67	286	8.2	25 / 1.25	14 / 1.15	10 / 0.44	1.6 / 0.04	0 / 0.00	139 / 2.28	7.2 / 0.15	7.9 / 0.22	[illegible].6 / 0.1[illegible]	0.1 / 0.00	0.04	55	Fe 0.59 (total) Zn 0.10	198	15	120	6	DWR
City of Red Bluff domestic	-19A1	7-14-60	68	235	8.3	21 / 1.05	7.9 / 0.65	15 / 0.65	2.3 / 0.06	0 / 0.00	133 / 2.18	1.8 / 0.04	3.4 / 0.10	3.0 / 0.05	0.2 / 0.01	0.03	61	Cr +6 0.01 Fe 0.08 (total)	181	27	85	0	DWR
Red Bluff Golf Course irrigation	27N/4W-1H2	7-14-60	71	250	7.7	22 / 1.10	8.0 / 0.66	20 / 0.87	2.3 / 0.06	0 / 0.00	149 / 2.36	4.3 / 0.09	[illegible].7 / 0.1[illegible]	1.[illegible] / 0.02	0.2 / 0.01	0.12	51	Fe 0.01 (dis.) Fe 0.31 (total)	186	32	88	0	DWR
									GLENN COUNTY														
W. Wellin domestic	18N/2W-1E1	6-20-60	67	399	8.4	28 / 1.40	21 / 1.72	30 / 1.30	1.0 / 0.02	3 / 0.10	227 / 3.72	9.5 / 0.20	11 / 0.31	2.7 / 0.04	0.4 / 0.02	0.14	32	Fe 0.01 (total)	251	29	156	0	DWR
E. Frick irrigation	-7F1	6-20-60	65	1070	8.3	53 / 2.64	63 / 5.17	103 / 4.48	0.4 / 0.01	0 / 0.00	462 / 7.57	198 / 4.12	12 / 0.34	6.6 / 0.11	0.7 / 0.04	0.35	28	Al 0.02 Fe 5.4 (total)	692	36	391	12	DWR
U.S. Fish and Wild Life Service domestic	18N/3W-10K1	6-20-60	74	463	8.5	16 / 0.80	9.0 / 0.74	78 / 3.39	0.5 / 0.01	4 / 0.13	237 / 3.88	18 / 0.37	18 / 0.51	1.8 / 0.03	0.6 / 0.03	0.38	20	Fe 0.02 (total) Zn 0.05	282	69	77	0	DWR
W. Michaels domestic	18N/4W-2F1	6-20-60	73	953	8.5	58 / 2.89	37 / 3.06	90 / 3.92	0.6 / 0.02	12 / 0.40	334 / 5.47	19 / 0.40	98 / 2.76	54 / 0.[illegible]7	0.6 / 0.03	0.16	26	Cu 0.03 Fe 0.34 (total) Zn 0.19	559	40	298	24	DWR
R. I. Smith	19N/2W-6G1	6-20-60	65	318	8.3	33 / 1.65	17 / 1.39	12 / 0.52	0.3 / 0.01	0 / 0.00	190 / 3.11	7.7 / 0.16	5.6 / 0.16	3.6 / 0.06	0.3 / 0.02	0.06	31	Fe 0.01 (total) Zn 0.03	204	14	152	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	[illegible]					GLENN COUNTY (Cont.)																	
[illegible] [illegible]alvert domestic	1[illegible]N/2[illegible]-23[illegible]1	6-20-60	68	755	8.6	59 / [illegible]	48 / 3.93	49 / 2.13	[illegible].6 / 0.02	23 / 0.[illegible]	448 / [illegible].34	26 / [illegible].54	9.8 / 0.28	3.1 / 0.05	0.3 / 0.02	0.21	28	Al 0.02 Fe 0.01 (dis.) Fe 0.29 (total) Zn 0.19	467	24	344	0	DWR
Alta California Dairies [illegible] domestic	[illegible]	6-20-60	67	495	8.5	28 / 1.40	24 / 2.02	47 / 2.04	0.6 / 0.02	6 / 0.20	265 / 4.34	28 / 0.58	8.3 / 0.23	5.1 / 0.08	0.5 / 0.03	0.19	26	Cr +6 0.01 Cu 0.02 Fe 0.02 (total) Zn 0.10	305	37	171	0	DWR
[illegible] Bros. domestic	-1[illegible]1	6-20-60	66	570	8.5	40 / 2.00	24 / 1.94	52 / 2.26	1.8 / 0.05	8 / 0.27	264 / 4.33	47 / 0.98	21 / 0.59	5.7 / 0.09	0.6 / 0.03	0.24	24	Cu 0.03 Fe 0.48 (total) Zn 0.02	354	36	197	0	DWR
A. C. [illegible] domestic	20N/2W-11[illegible]1	[illegible]-20-60	66	354	8.4	35 / 1.75	17 / 1.39	16 / 0.70	0.8 / 0.02	2 / 0.07	195 / 3.20	9.2 / 0.19	9.8 / 0.28	5.5 / 0.09	0.3 / 0.02	0.11	27	Cr +6 0.01 Fe 0.01 (dis.) Fe 0.01 (total) Zn 0.03	219	18	157	0	DWR
H. Perry domestic	-1[illegible]1	[illegible]-20-60	66	435	[illegible].5	[illegible] / 2.[illegible]	28 / 2.34	18 / 0.78	0.2 / [illegible]	10 / 0.33	265 / 4.34	7.6 / 0.16	6.[illegible] / 0.17	1.2 / 0.02	0.2 / 0.01	0.12	29	Cu 0.01 Fe 0.10 (total) Zn 0.03	270	15	217	0	DWR
[illegible]	20N/3W-2[illegible]1	[illegible]-17-[illegible]0	[illegible]	436	[illegible].2	46 / 2.30	21 / 1.70	16 / 0.70	[illegible].7 / 0.02	0 / 0.00	217 / 3.[illegible]6	14 / 0.29	22 / [illegible].62	9.2 / 0.15	[illegible].1 / 0.00	0.10	26	Fe 0.09 (total) Zn 0.03	262	15	200	22	DWR
L. F. Ber[illegible] domestic	20N/[illegible]-2[illegible]1	[illegible]-17-60	72	315	[illegible].1	28 / 1.40	17 / 1.40	14 / 0.61	0.2 / 0.00	0 / 0.00	160 / 2.[illegible]2	9.2 / [illegible].19	5.5 / 0.16	23 / 0.37	0.3 / 0.02	0.05	34	Fe 1.4 (total) Zn 0.17	210	18	140	9	DWR
L. F. Dobbins irrigation	21[illegible]-2[illegible]1	[illegible]	[illegible]	542	[illegible]	63 / 3.14	25 / 2.07	19 / [illegible]	[illegible].9 / 0.02	8 / [illegible].27	283 / [illegible]	1[illegible] / [illegible].37	21 / 0.59	5.9 / 0.10	0.1 / 0.00	0.31	20	Al [illegible].01 Fe 0.02 (total) Zn 0.07	321	14	261	29	DWR
[illegible] Finch	-1[illegible]1	[illegible]0	67	392	8.5	42 / 2.10	15 / 1.26	18 / 0.[illegible]	0.[illegible] / 0.02	3 / 0.10	181 / 2.97	12 / 0.25	22 / 0.62	7.7 / 0.12	[illegible].1 / 0.00	0.23	25	Fe 0.12 (total)	235	19	168	14	DWR
[illegible]amilton domestic	21N/[illegible]1	[illegible]-17-[illegible]0	[illegible]7	521	[illegible]	56 / 2.79	24 / 2.01	21 / 0.[illegible]1	0.8 / 0.02	0 / 0.00	265 / 4.34	20 / 0.42	26 / 0.73	6.4 / 0.10	0.1 / 0.0[illegible]	0.17	26	Al 0.03 Zn 0.12 Fe 0.01 (dis.) Fe 0.0[illegible] (total)	310	16	240	23	DWR
B. R. Purviance	-14[illegible]1	[illegible]-17-[illegible]0	70	371	8.3	21 / 1.[illegible]	14 / 1.17	[illegible] / 1.74	0.6 / 0.02	2 / 0.07	201 / 3.29	[illegible].6 / 0.10	19 / 0.54	0.8 / 0.01	0.2 / 0.01	[illegible].12	25	As [illegible].01 Fe 0.03 (total)	225	44	111	0	DWR
Sletten irrigation	-[illegible]	[illegible]-17-[illegible]	73	340	[illegible].2	23 / 1.1[illegible]	15 / 1.21	28 / 1.22	0.6 / 0.02	0 / [illegible]	158 / 2.[illegible]9	6.7 / [illegible].14	29 / 0.82	[illegible].3 / [illegible].01	0.2 / 0.01	0.24	25	As [illegible].01 Cr +6 [illegible] Fe 0.[illegible] (total)	206	34	118	0	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), [illegible]

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	[illegible]					GLENN COUNTY (Cont.)																	
Baker and McGowan	22N/1W-29C1	6-21-60	65	408	8.5	38 / 1.90	20 / 1.62	22 / 0.96	0.9 / 0.02	3 / 0.10	190 / 3.11	20 / 0.42	23 / 0.65	5.9 / 0.10	0.1 / 0.00	0.25	27	Fe 0.01 (total)	253	21	176	15	DWR
C. A. Nickel domestic	22N/2W-3A1	6-16-60	65	511	8.4	48 / 2.40	28 / 2.30	18 / 0.78	0.7 / 0.02	6 / 0.20	214 / 3.51	22 / 0.46	33 / 0.93	19 / 0.31	0.1 / 0.00	0.15	27	Fe 0.01 (dis.) Fe 0.12 (total) Pb 0.01 Zn 0.49	307	14	235	50	DWR
Mills Orchard irrigation	-26B1	6-16-60	64	406	8.5	41 / 2.04	18 / 1.48	20 / 0.87	0.8 / 0.02	2 / 0.07	189 / 3.10	22 / 0.46	20 / 0.56	6.5 / 0.10	0.1 / 0.00	0.21	21		245	20	176	17	DWR
City of Orland municipal	22N/3W-22Q1	6-21-60	67	406	8.2	49 / 2.44	14 / 1.14	17 / 0.74	0.6 / 0.02	0 / 0.00	200 / 3.28	16 / 0.33	21 / 0.59	4.8 / 0.08	0.1 / 0.00	0.22	21	Fe 0.01 (total) Zn 0.01	242	17	179	15	DWR
J. Freitas irrigation	-25B1	6-16-60	66	382	8.4	38 / 1.90	16 / 1.30	19 / 0.83	0.6 / 0.02	2 / 0.07	179 / 2.93	14 / 0.29	19 / 0.54	6.9 / 0.11	0.1 / 0.00	0.24	22	Fe 0.01 (total)	226	20	160	10	DWR
Graves Cemetary irrigation	22N/4W-1CB1	6-16-60	67	477	8.4	44 / 2.20	27 / 2.26	17 / 0.74	0.4 / 0.01	4 / 0.13	233 / 3.82	21 / 0.44	22 / 0.62	7.1 / 0.11	0.1 / 0.00	0.23	28	Fe 1.0 (total) Pb 0.02 Zn 0.19	285	14	223	25	DWR
						COLUSA COUNTY																	
J. Miller domestic	13N/1E-22H1	6-13-60	76	837	8.2	67 / 3.34	59 / 4.89	32 / 1.39	1.0 / 0.02	0 / 0.00	440 / 7.21	57 / 1.19	34 / 0.96	18 / 0.29	0.3 / 0.02	0.22	45	Al 0.1 Fe 0.03 (dis.) Zn 0.02	530	14	412	51	DWR
J. V. Doherty domestic	13N/1W-7A1	6-15-60	72	1210	8.1	100 / 4.99	42 / 3.48	71 / 3.09	0.5 / 0.01	0 / 0.00	170 / 2.79	12 / 0.25	293 / 8.26	10 / 0.16	0.5 / 0.03	0.51	29	Al 0.10 Zn 0.16 Cr +6 0.03 Fe 0.03 (dis.) Fe 0.11 (total)	642	27	424	285	DWR
L. Traynham irrigation	-8R1	6-15-60	67	1590	8.0	125 / 6.24	70 / 5.73	75 / 3.26	1.2 / 0.03	0 / 0.00	196 / 3.21	7.4 / 0.15	410 / 11.56	5.8 / 0.09	0.4 / 0.02	0.46	37	Al 0.1 Cr +6 0.03 Fe 0.03 (dis.) Fe 4.2 (total) Zn 0.01	828	21	599	438	DWR
W. West irrigation	-15N1	6-15-60	68	482	8.1	29 / 1.45	20 / 1.69	50 / 2.18	1.6 / 0.04	0 / 0.00	262 / 4.29	8.2 / 0.17	28 / 0.79	1.0 / 0.02	0.3 / 0.02	0.52	45	Fe 0.04 (dis.) Fe 3.3 (total) Pb 0.01 Zn 0.01	313	41	157	0	DWR
H. Johnson	-32F	3-13-60	72	410	8.1	23 / 1.15	26 / 2.15	29 / 1.26	1.1 / 0.03	0 / 0.00	253 / 4.15	2.8 / 0.06	10 / 0.28	3.9 / 0.06	0.2 / 0.01	0.25	30		250	27	165	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	NORMAN					COLUSA COUNTY (Cont.)																	
M. J. Doherty domestic	13N/1W-35Q1	6-13-60	75	392	8.0	26 1.30	16 1.20	34 1.48	2.6 0.07	0 0.00	197 3.23	4.9 0.10	24 0.68	2.4 0.05	0.3 0.02	0.31	53	Cr +6 0.02 Fe 0.06 (total) Pb 0.01 Zn 0.05	261	36	129	0	DWR
[illegible]rant irrigation	13N/2W-10C1	6-13-60	70	1060	7.9	50 2.50	31 2.53	116 5.05	1.6 0.04	0 0.00	206 3.38	26 0.54	216 6.09	9.5 0.15	0.2 0.01	2.8	29	Cr +6 0.01 Fe 0.04 (total) Pb 0.01 Zn 0.02	583	50	252	83	DWR
A. Olivetti irrigation	-10M1	6-13-60	67	596	7.9	24 1.20	18 1.46	72 3.13	0.9 0.02	0 0.00	208 3.41	9.2 0.19	73 2.06	14 0.22	0.3 0.02	0.90	28	Fe 0.06 (total) Pb 0.01	342	54	133	0	DWR
[illegible] Trerter irrigation	-22G1	6-13-60	71	836	8.1	40 2.00	39 3.21	71 3.09	1.2 0.03	0 0.00	285 4.67	14 0.29	121 3.41	6.7 0.11	0.2 0.01	0.80	27	Cr +6 0.01 Fe 0.07 (total) Zn 0.04	461	37	261	27	DWR
W. J. Moore irrigation	-26A1	7-11-60	75	702	8.2	44 2.20	36 2.93	48 2.09	1.0 0.02	0 0.00	304 4.98	7.2 0.15	71 2.00	14 0.22	0.2 0.01	0.45	31	Cr +6 0.01 Fe 0.06 (total) Pb 0.01	402	29	257	8	DWR
[illegible] L. Charter & Son irrigation	-29R1	6-15-60	71	990	8.0	40 2.00	40 3.29	108 4.70	2.0 0.05	0 0.00	265 4.34	25 0.52	176 4.96	3.7 0.06	0.2 0.01	2.7	28	Cr +6 0.04 Fe 0.04 (total) Zn 0.02	556	47	265	48	DWR
Grand Island School domestic	11N/1E-18A1	6-15-60	80	370	8.2	12 0.60	6.8 0.56	67 2.91	0.7 0.02	0 0.00	216 3.54	8.7 0.18	11 0.31	0.0 0.00	0.1 0.00	0.24	32	Fe 0.10 (total) Zn 0.02	245	71	58	0	DWR
Stapp and Co. domestic and stock	11N/1W-2D1	6-15-60	67	746	8.1	37 1.85	32 2.67	71 3.09	1.8 0.05	0 0.00	226 3.70	68 1.42	87 2.45	0.1 0.00	0.2 0.01	0.20	43	Fe 0.16 (total) Mn 0.24	451	40	226	41	DWR
C. Hackharth irrigation	11N/2W-12H2	6-15-60	67	519	8.2	29 1.45	27 2.23	42 1.83	1.5 0.04	0 0.00	252 4.13	14 0.29	38 1.07	1.9 0.03	0.4 0.02	0.15	36	Fe 0.10 (total)	314	33	184	0	DWR
H. Charter domestic and irrigation	-29J1	6-14-60	70	247	7.9	14 0.70	11 0.94	19 0.83	1.0 0.02	0 0.00	128 2.10	0.8 0.02	6.8 0.19	10 0.16	0.3 0.02	0.10	30	Fe 0.05 (total) Pb 0.01	156	33	82	0	DWR
J. Stuckmeyer irrigation	-35P1	6-13-60	70	567	8.1	30 1.50	26 2.16	52 2.26	0.6 0.02	0 0.00	217 3.56	9.2 0.19	73 2.06	4.2 0.07	0.4 0.02	0.59	28		331	38	183	5	DWR
E. Araxvell irrigation	11N/3W-12L1	7-5-60	70	450	8.2	45 2.24	15 1.24	27 1.17	1.1 0.03	0 0.00	176 2.[illegible]	40 0.83	30 0.85	6.4 0.10	0.2 0.01	0.09	29	Al 0.02 Cr +6 0.01 Fe 0.03 (dis.) Zn 0.01	280	25	174	30	DWR
[illegible] Mayers domestic and stock	15N/2W-32R1	6-14-60	69	595	7.8	45 2.24	21 1.74	56 2.44	0.6 0.02	0 0.00	281 4.60	39 0.81	28 0.79	10 0.16	0.7 0.04	0.26	24	Cr +6 0.01 Fe 0.02 (dis.) Fe 0.04 (total) Zn 0.01	362	38	199	0	DWR

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br) and Detergent Surfactant (ABS)

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
	MDB&M							COLUSA COUNTY (Cont.)															
P. Murphy domestic	15N/4W-25P1	6-14-60	73	983	8.0	44 / 2.20	28 / 2.30	141 / 6.13	0.8 / 0.02	0 / 0.00	344 / 5.64	96 / 2.00	99 / 2.79	2.9 / 0.05	0.7 / 0.04	0.51	24	Fe 0.23 (total) Zn 0.04	606	58	225	0	DWR
Shell Oil Co. industrial	16N/1W-29J1	6-15-60	68	419	8.0	11 / 0.55	6.4 / 0.53	82 / 3.57	1.1 / 0.03	0 / 0.00	268 / 4.39	0.0 / 0.00	12 / 0.34	0.1 / 0.00	0.4 / 0.02	0.31	35	As 0.01 Fe 0.03 (dis.) Fe 0.06 (total) Mn 0.01 Pb 0.01	280	76	54	0	DWR
J. C. Baird irrigation	-31Q1	7-13-60	65	1810	8.3	37 / 1.85	71 / 5.84	325 / 14.14	2.0 / 0.05	0 / 0.00	690 / 11.31	376 / 7.83	110 / 3.10	1.2 / 0.02	0.1 / 0.00	0.50	40	As 0.01 Fe 0.58 (total) Zn 0.01	1300	65	385	0	DWR
Watts Bros. domestic and stock	16N/2W-4H1	6-14-60	78	439	8.1	26 / 1.30	20 / 1.68	41 / 1.78	1.2 / 0.03	0 / 0.00	218 / 3.57	27 / 0.56	18 / 0.51	2.7 / 0.04	0.4 / 0.02	0.14	36	Fe 0.01 (dis.) Fe 0.06 (total) Pb 0.01 Zn 0.04	279	37	149	0	DWR
J. W. Davis domestic	-35B1	6-14-60	73	716	8.1	19 / 0.95	26 / 2.11	106 / 4.61	1.2 / 0.03	0 / 0.00	276 / 4.52	83 / 1.73	46 / 1.30	0.3 / 0.00	0.4 / 0.02	0.23	44	Fe 0.02 (dis.) Fe 0.16 (total) Mn 0.06	462	60	153	0	DWR
E. J. Ortman domestic	16N/3W-9N1	6-14-60	84	637	8.3	42 / 2.10	22 / 1.84	58 / 2.52	0.6 / 0.02	0 / 0.00	232 / 3.80	20 / 0.42	76 / 2.14	0.8 / 0.01	0.7 / 0.04	0.22	19	Fe 0.03 (total) Zn 0.11	353	39	197	7	DWR
W. L. Jeffreys	17N/1W-6R1	6-14-60	61	319	7.9	25 / 1.25	12 / 0.99	30 / 1.30	1.9 / 0.05	0 / 0.00	199 / 3.26	0.5 / 0.01	8.8 / 0.25	0.4 / 0.01	0.1 / 0.00	0.13	35	As 0.01 Fe 0.08 (total)	212	36	112	0	DWR
C. Tuttle domestic	17N/2W-12C1	6-14-60	72	456	8.1	37 / 1.85	22 / 1.81	33 / 1.44	1.3 / 0.03	0 / 0.00	276 / 4.52	6.6 / 0.14	16 / 0.45	0.1 / 0.00	0.2 / 0.01	0.12	35	Fe 0.06 (total) Mn 0.03 Zn 0.01	287	28	183	0	DWR
R. E. Patton irrigation	-36P2	6-27-60	68	560	8.4	25 / 1.25	34 / 2.83	45 / 1.96	2.1 / 0.05	4 / 0.13	259 / 4.24	43 / 0.90	28 / 0.79	3.7 / 0.06	0.2 / 0.01	0.26	41	Al 0.01 Fe 0.03 (dis.) Fe 0.61 (total) Mn 0.77 Zn 0.03	353	32	204	0	DWR
Maxwell Public Utility District municipal	17N/3W-33R1	6-14-60	72	912	8.3	46 / 2.30	32 / 2.60	113 / 4.92	1.2 / 0.03	0 / 0.00	332 / 5.44	102 / 2.12	78 / 2.20	1.9 / 0.03	0.5	0.35	50	Fe 0.03 (dis.) Fe 0.04 (total) Mn 0.02 Pb 0.01 Zn 0.01	588	50	245	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
										BUTTE COUNTY (5-21)													
D. E. Justeson domesti-	1 N 1E-1R1	7-27-60	-	594	8.4	38 1.90	35 2.86	42 1.83	1.9 0.05	8 0.27	327 5.36	6.9 0.14	24 0.68	7.1 0.11	0.2 0.01	0.07	46	Al 0.04 As 0.02 Cr^{+6} 0.01[d] Zn 0.01 Fe 0.04 (total)[f]	370	28	238	0	DWR
J. C. Davis irrigation	1 N 2E-2D1	7-27-60	-	356	8.3	23 1.15	27 2.21	13 0.56	1.3 0.03	0 0.00	213 3.49	6.2 0.13	6.9 0.19	7.0 0.11	0.2 0.01	0.05	58	As 0.01[d] Fe 0.12 (total)[e]	248	14	168	0	DWR
U.S. Farm Labor Camp domestic	17N 3E-4D1	8-4-60	-	263	8.1	18 0.90	16 1.36	12 0.52	2.9 0.07	0 0.00	162 2.66	4.0 0.08	4.4 0.12	0.2 0.00	0.0 0.00	0.03	50	Al 0.01 Cu 0.01[d] Fe 0.02 (dis.) Fe 0.16 (total)[f]	188	18	113	0	DWR
Earl White domestic	-18Q1	8-4-60	-	287	8.2	20 1.00	20 1.62	12 0.52	1.3 0.03	0 0.00	181 2.97	2.8 0.06	2.4 0.07	2.1 0.03	0.1 0.00	0.03	53	Al 0.01 Cu 0.01[d] Fe 0.87 (total)[e]	203	16	131	0	DWR
L. D. Stresser irrigation	17N 4E-20L1	8-4-60	-	429	6.9	29 1.45	22 1.81	22 0.96	2.3 0.06	0 0.00	195 3.20	17 0.35	28 0.79	0.2 0.00	0.1 0.00	0.14	57	Fe 0.86 (total)[de]	274	22	163	3	DWR
Schohr Ranch irrigation	18N/1E-14R1	8-4-60	-	272	8.2	20 1.00	14 1.20	12 0.52	2.7 0.07	0 0.00	150 2.46	4.1 0.08	7.1 0.20	1.6 0.02	0.0 0.00	0.03	65	Al 0.01 Cu 0.01[d] Fe 0.11 (total)[f]	200	19	110	0	DWR
E. Edwards domestic and stock	18N/2E-12B1	8-4-60	-	240	8.0	20 1.00	14 1.14	8.8 0.38	0.3 0.01	0 0.00	127 2.08	8.2 0.17	6.8 0.19	1.1 0.02	0.0 0.00	0.03	67	Zn 0.02[d] Fe 0.25 (total)[e]	188	15	107	3	DWR
Butte Farms irrigation	18N/3E-16P2	7-26-60	-	398	8.4	30 1.50	30 2.44	10 0.44	2.5 0.06	2 0.07	217 3.56	23 0.48	4.9 0.14	9.2 0.15	0.1 0.00	0.05	39	Al 0.04 Zn 0.01[d] Fe 1.2 (total)[e]	258	10	197	1	DWR
C. R. Jones irrigation	18N/4E-7A1	7-27-60	-	172	7.7	12 0.60	7.0 0.58	9.8 0.43	0.7 0.02	0 0.00	70 1.15	5.6 0.12	5.3 0.15	7.2 0.12	0.1 0.00	0.07	52	Cu 0.01 Zn 0.07[d] Fe 0.08 (total)[e]	141	26	59	2	DWR
Fred Guidici irrigation	-21P1	7-27-60	-	226	7.9	18 0.90	10 0.86	10 0.44	0.8 0.02	0 0.00	106 1.74	4.4 0.09	6.8 0.19	9.2 0.15	0.1 0.00	0.04	40	Cr^{+6} 0.02 Cu 0.01 Zn 0.01 [de] Fe 0.13 (total)	151	20	88	1	DWR
West Coast Orchards irrigation	-28M	8-26-60	-	2,130	8.1	38 1.90	1.2 0.10	425 18.49	2.2 0.06	0 0.00	170 2.79	565 11.76	221 6.23	3.3 0.05	0.6 0.03	5.8	26	Fe (dis) 0.03[d]	1,370	90	100	0	DWR
Phillip Rose irrigation	19N/2E-16R1	8-4-60	-	211	7.8	16 0.80	11 0.94	10 0.44	1.3 0.03	0 0.00	112 1.84	2.6 0.05	8.2 0.23	2.3 0.04	0.1 0.00	0.02	67	Al 0.01 Cu 0.01 Zn 0.01 [d e] Fe 0.04 (total)	174	20	87	0	DWR
H. J. Kaiser Gravel Company industrial	19N/3E-36B1	7-19-60	-	357	8.2	26 1.30	18 1.44	25 1.09	1.5 0.04	0 0.00	200 3.28	12 0.25	9.7 0.27	1.9 0.03	0.11 0.00	0.70	33	Zn 0.05[d] Fe 0.09 (total)[e]	226	28	137	0	DWR

a Determined by addition of constituents
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d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
BUTTE COUNTY (5-21) (Cont.)																							
Butte County Hospital domestic	19N/4E-6P1	7-25-60	-	286	8.0	19 0.95	13 1.11	19 0.83	0.9 0.02	0 0.00	146 2.39	4.4 0.09	8.0 0.22	8.1 0.13	0.1 0.00	0.04	61	Al 0.02 Cu 0.01[d] Zn 0.06 Fe 0.01 (dis.) Fe 0.64 (total)[e]	206	28	103	0	DWR
Ray Norheim irrigation	20N/1E-15F	9-2-60	-	451	8.3	38 1.90	29 2.36	12 0.52	0.8 0.02	0 0.00	232 3.80	14 0.29	17 0.48	8.6 0.14	0.0 0.00	0.04	60	Al 0.02 Cr^{+6} 0.01 Cu 0.01[d] Fe 0.01 (dis.) Fe 0.69 (total)[e]	293	11	213	23	DWR
J. Kirkpatrick domestic	20N/2E-29R1	8-4-60	-	657	8.3	54 2.69	27 2.19	46 2.00	1.4 0.04	0 0.00	255 4.18	22 0.46	73 2.06	1.5 0.02	0.1 0.00	0.02	58	Al 0.01 Zn 0.20[d] Fe 0.03 (total)[e]	408	29	244	35	DWR
Berkeley Olive Assn. domestic	20N/3E-15H1	8-4-60	-	140	7.4	12 0.60	6.3 0.52	4.4 0.19	2.2 0.06	0 0.00	71 1.16	2.3 0.05	2.1 0.06	3.3 0.05	0.1 0.00	0.05	37	Zn 2.3[d] Fe 0.25 (total)[e]	105	14	56	0	DWR
Clyde Sprague domestic	20N/1W-26Q1	8-17-60	-	481	7.5	43 2.14	29 2.42	19 0.83	1.8 0.05	0 0.00	304 4.98	5.1 0.11	5.1 0.14	1.4 0.02	0.0 0.00	0.08	56	Al 0.05 Zn 0.04[d] Fe 0.03 (total)[e]	309	15	228	0	DWR
Frank Lazard irrigation	21N/1E-34M1	8-17-60	-	584	7.2	52 2.59	39 3.24	19 0.83	0.7 0.02	0 0.00	368 6.03	6.1 0.13	6.8 0.19	7.7 0.12	0.1 0.00	0.04	60	Al 0.02 Zn 0.01[d] Fe 0.39 (total)[e]	372	12	292	0	DWR
S. Yakich domestic and irrigation	21N/2E-30C1	8-17-60	-	293	7.6	24 1.20	18 1.52	9.0 0.39	0.5 0.01	0 0.00	158 2.59	8.1 0.17	2.8 0.08	13 0.21	0.1 0.00	0.04	54	Al 0.07 Zn 0.05[d] Fe 0.07 (total)[e]	208	12	136	6	DWR
M. Compton domestic	21N/3E-10Q1	8-4-60	-	268	8.0	25 1.25	15 1.23	8.8 0.38	1.5 0.04	0 0.00	160 2.62	1.2 0.02	3.5 0.10	3.6 0.06	0.1 0.00	0.03	79	Al 0.01 Cu 0.02 Zn 0.01[d]	217	13	124	0	DWR
Sid Hopkins domestic and stock	22N/1E-9M1	9-2-60	-	430	7.6	34 1.70	27 2.24	15 0.65	0.9 0.02	0 0.00	235 3.85	6.1 0.13	12 0.34	19 0.31	0.1 0.00	0.11	66	Cr^{+6} 0.01 d Zn 0.03	296	14	197	4	DWR
State Dept. Fish and Game domestic and stock	22N/2E-18J1	9-2-60	-	231	7.8	20 1.00	9.5 0.78	12 0.52	1.1 0.03	0 0.00	117 1.92	3.0 0.06	8.8 0.25	3.8 0.06	0.0 0.00	0.16	37	Cu 0.02 Zn 0.40[d] Fe 0.03 (total)[e]	153	22	89	0	DWR
M. K. Barnes domestic and irrigation	23N/1E-9L1	9-2-60	-	468	8.2	37 1.85	33 2.69	9.8 0.43	1.4 0.04	0 0.00	251 4.11	9.2 0.19	5.1 0.14	31 0.50	0.0 0.00	0.02	62	Al 0.02 Cr^{+6} 0.01 Cu 0.02 Zn 0.14[d] Fe 0.08 (total)[e]	312	8	227	21	DWR
Clive Callahan stock	-32K1	9-2-60	-	192	7.4	16 0.80	8.0 0.66	9.4 0.41	1.0 0.02	0 0.00	91 1.49	1.0 0.02	3.7 0.10	15 0.24	0.1 0.00	0.08	55	Cr^{+6} 0.01 d Zn 0.09 Fe 0.13 (total)[e]	154	22	73	0	DWR

a. Determined by addition of constituents
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown.
e. Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
										SUTTER COUNTY													
C. A. Fisher domestic	12N/2E-[illegible]	6-1[illegible]-60	66	628	8.[illegible]	14 / 0.70	9.0 / 0.74	114 / 4.96	1.1 / 0.03	9 / 0.30	240 / 3.93	17 / 0.35	61 / 1.72	0.[illegible] / 0.01	0.1 / 0.00	0.47	51		395	71	[illegible]	[illegible]	DWR
Garner domestic	-11[illegible]	6-16-60	6[illegible]	1,2[illegible]	8.[illegible]	28 / 1.40	13 / 1.05	216 / 9.40	4.1 / 0.10	9 / 0.30	254 / 4.16	0 / 0.00	266 / 7.50	0.6 / 0.01	0.2 / 0.01	0.84	27		719	78	12[illegible]	0	DWR
Garner domestic	-14B1	6-7-60	66	4,235	8.0	135 / 6.74	116 / 9.56	565 / 24.58	2.1 / 0.05	0 / 0.00	193 / 3.16	0.2 / 0.00	1,330 / 37.51	0.4 / 0.01	0.2 / 0.01	0.74	25		2,270	60	[illegible]16	6[illegible]8	DWR
L. A. Wright domestic	-16R1	6-7-60	66	842	8.6	23 / 1.1[illegible]	12 / 0.99	160 / 6.96	2.9 / 0.07	14 / 0.47	409 / 6.70	18 / 0.37	52 / 1.47	0.6 / 0.01	0.1 / 0.00	0.52	49		533	76	107	0	DWR
Haun domestic	-23[illegible]1	6-7-60	6[illegible]	943	8.6	16 / 0.80	8.8 / 0.72	176 / 7.66	2.4 / 0.06	8 / 0.27	253 / 4.15	0.0 / 0.00	169 / 4.76	0.8 / 0.01	0.1 / 0.00	0.72	52		5[illegible]8	83	76	0	DWR
D. E. Mullen domestic	-26A1	6-7-60	64	1,080	8.[illegible]	19 / 0.9[illegible]	15 / 1.27	192 / [illegible].35	1.9 / 0.05	6 / 0.20	268 / 4.39	0.0 / 0.00	213 / 6.01	0.6 / 0.01	0.1 / 0.00	0.71	44		624	79	111	0	DWR
T. Fields domestic	13N/3E-10M2	6-10-60	68	702	8.5	53 / 2.64	42 / 3.47	36 / 1.57	1.0 / 0.02	9 / 0.30	317 / 5.20	18 / 0.37	59 / 1.66	0.6 / 0.01	0.1 / 0.00	0.07	27		401	20	306	32	DWR
E. Silva irrigation	-11[illegible]3	6-14-60	60	852	8.4	24 / 1.20	26 / 2.12	114 / 4.96	2.8 / 0.07	4 / 0.13	230 / 3.77	2.3 / 0.05	152 / 4.29	1.1 / 0.02	0.2 / 0.01	0.89	36		476	59	166	0	DWR
Boccardo Ranch irrigation	-13C1	6-10-60	60	382	8.3	18 / 0.90	9.0 / 0.74	55 / 2.39	2.9 / 0.07	0 / 0.00	208 / 3.41	4.0 / 0.08	19 / 0.54	0.4 / 0.01	0.2 / 0.01	0.34	41		2[illegible]2	58	82	0	DWR
D. Rouse irrigation	-24D1	6-6-60	--	3,130	7.8	217 / 10.83	165 / 13.55	148 / 6.44	5.7 / 0.14	0 / 0.00	296 / 4.85	37 / 0.77	886 / 24.98	0.6 / 0.01	0.2 / 0.01	0.09	36		1,640	21	1,220	977	DWR
C. M. Owens irrigation	13N/4E-21A1	6-15-60	62	709	8.3	62 / 3.09	41 / 3.38	32 / 1.39	1.7 / 0.04	3 / 0.10	245 / 4.02	173 / 3.60	6.6 / 0.19	0.9 / 0.01	0.2 / 0.01	0.06	39		479	18	324	116	DWR
J. E. Jopson irrigation	-23[illegible]1	6-2-60	66	204	8.1	17 / 0.85	7.7 / 0.63	12 / 0.52	1.0 / 0.02	0 / 0.00	90 / 1.48	1.6 / 0.03	14 / 0.39	4.7 / 0.08	0.3 / 0.02	0.07	50		1[illegible]2	26	74	0	DWR
C. F. Nelson irrigation	13N/5E-[illegible]R3	6-2-60	6[illegible]	542	8.0	44 / 2.20	17 / 1.[illegible]	41 / 1.78	1.5 / 0.04	0 / 0.00	171 / 2.80	54 / 1.12	45 / 1.27	9.2 / 0.15	0.3 / 0.02	0.16	68		364	33	179	39	DWR
California Packing Corp. irrigation	-9R1	7-1[illegible]-60	--	40	8.3	24 / 1.18	13 / 1.06	41 / 1.78	0.7 / 0.02	6 / 0.[illegible]2	114 / 1.86	46 / 0.96	24 / 0.69	4 / 0.06	0.18 / 0.01	0	48		273	44	113	0	DWR
E. [illegible]. Gallagher irrigation	-19R2	6-2-60	68	24[illegible]	8.0	19 / 0.9[illegible]	10 / 0.85	1[illegible] / 0.0[illegible]	1.2 / 0.03	0 / 0.00	107 / 1.75	1.0 / 0.02	21 / 0.59	2.1 / 0.03	0.3 / 0.02	0.10	72		19[illegible]	26	90	2	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br) and Detergent Surfactant (ABS).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
									SUTTER COUNTY (Cont.)														
Frye Brothers domestic	14N/1E-1A1	6-14-60	69	558	8.4	36 / 1.80	44 / 3.65	22 / 0.96	1.1 / 0.03	8 / 0.27	322 / 5.28	19 / 0.40	14 / 0.39	3.3 / 0.05	0.2 / 0.01	0.14	54		360	15	273	0	DWR
S. A. McKeehan domestic	-2A1	6-14-60	65	592	8.5	53 / 2.64	43 / 3.51	14 / 0.61	1.0 / 0.02	9 / 0.30	329 / 5.39	16 / 0.33	22 / 0.62	0.1 / 0.00	0.2 / 0.01	0.03	54		374	9	308	24	DWR
B. Singh irrigation	14N/3E-3C2	6-14-60	66	1,060	8.1	68 / 3.39	68 / 5.64	58 / 2.52	3.4 / 0.09	0 / 0.00	397 / 6.51	67 / 1.39	126 / 3.55	0.3 / 0.00	0.1 / 0.00	0.21	38		624	22	452	126	DWR
C. S. Srah domestic and irrigation	-5A3	6-3-60	65	878	8.1	57 / 2.84	55 / 4.51	56 / 2.44	1.3 / 0.03	0 / 0.00	438 / 7.18	57 / 1.19	48 / 1.35	4.0 / 0.06	0.2 / 0.01	0.08	30		524	25	368	9	DWR
L. Littlejohn domestic and irrigation	-14E2	6-14-60	62	299	8.4	26 / 1.30	21 / 1.70	9.2 / 0.40	1.5 / 0.04	4 / 0.13	182 / 2.98	7.9 / 0.16	2.9 / 0.08	0.2 / 0.00	0.2 / 0.01	0.00	43		205	12	150	0	DWR
J. A. Bevins domestic	-15H1	6-6-60	64	889	8.3	56 / 2.79	67 / 5.52	36 / 1.57	1.8 / 0.05	0 / 0.00	3.74 / 6.13	61 / 1.27	83 / 2.34	0.5 / 0.01	0.2 / 0.01	0.04	35		524	16	416	109	DWR
S. E. Best domestic and irrigation	-16B2	6-3-60	68	1,520	8.0	92 / 4.59	96 / 7.94	66 / 2.87	2.5 / 0.06	0 / 0.00	272 / 4.46	94 / 1.96	310 / 8.74	0.5 / 0.01	0.1 / 0.00	0.10	29		824	18	627	404	DWR
R. Mahon irrigation	-18A2	6-17-60	65	652	8.2	43 / 2.14	40 / 3.31	42 / 1.83	1.6 / 0.04	0 / 0.00	360 / 5.90	20 / 0.42	31 / 0.87	0.3 / 0.00	0.2 / 0.01	0.07	33		388	25	273	0	DWR
Sullivan irrigation	-23M2	6-13-60	60	344	8.3	27 / 1.35	20 / 1.63	18 / 0.78	1.3 / 0.03	0 / 0.00	198 / 3.24	19 / 0.40	4.6 / 0.13	0.8 / 0.01	0.1 / 0.00	0.10	44		232	20	149	0	DWR
L. Ott irrigation	-28D1	6-14-60	--	1,107	8.2	41 / 2.05	82 / 6.74	61 / 2.65	1.5 / 0.04	0 / 0.00	309 / 5.06	48 / 1.00	189 / 5.33	0.5 / 0.01	0.1 / 0.00	0.06	25		600	23	440	187	DWR
J. Serger irrigation	-28R1	6-3-60	65	1,510	8.2	89 / 4.44	89 / 7.29	71 / 3.09	3.0 / 0.08	0 / 0.00	311 / 5.10	13 / 0.27	328 / 9.25	0.5 / 0.01	0.1 / 0.00	0.12	42		789	21	587	332	DWR
L. Ott irrigation	-31B1	7-6-60	67	1,200	8.5	59 / 2.94	44 / 3.61	121 / 5.26	5.5 / 0.14	8 / 0.27	240 / 3.93	4.8 / 0.10	261 / 7.36	0.4 / 0.01	0.1 / 0.00	0.30	48		670	44	328	118	DWR
C. E. Sullivan irrigation	-34F	6- -60	--	1,220	8.1	67 / 3.34	49 / 4.01	109 / 4.74	3.6 / 0.09	0 / 0.00	289 / 4.74	0.6 / 0.01	256 / 7.22	0.6 / 0.01	0.1 / 0.00	0.28	43		671	39	368	131	DWR
E. L. Carrothers domestic	15N/2E-26D2	6-3-60	65	688	8.4	48 / 2.40	42 / 3.47	34 / 1.48	1.2 / 0.03	6 / 0.20	293 / 4.80	16 / 0.33	51 / 1.44	29 / 0.47	0.2 / 0.01	0.06	51		422	20	294	43	DWR
A. Eager irrigation	15N/3E-4C2	6-8-60	65	879	8.3	70 / 3.49	68 / 5.58	28 / 1.22	1.9 / 0.05	8 / 0.27	455 / 7.46	66 / 1.37	21 / 0.59	36 / 0.58	0.2 / 0.01	0.12	60		578	12	454	76	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfacant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									SUTTER COUNTY (Cont.)														
R. Paillex irrigation	15N/3E-26M1	6-6-60	63	381	7.8	21 / 1.05	16 / 1.29	41 / 1.70	2.3 / 0.06	0 / 0.00	218 / 3.57	2.1 / 0.04	17 / 0.48	0.2 / 0.00	0.2 / 0.01	0.24	43		[illegible]	42	117	0	DWR
W. A. Glentzer irrigation	-29G1	6-3-60	64	598	8.4	32 / 1.60	48 / 3.93	27 / 1.17	1.5 / 0.04	9 / 0.30	326 / 5.34	18 / 0.37	15 / 0.42	22 / 0.35	0.2 / 0.01	0.07	56		389	17	277	0	DWR
									YUBA COUNTY														
P. E. Gallott irrigation	13N/4E-6D1	6- -60	--	246	8.3	20 / 1.00	6.6 / 0.54	19 / 0.83	2.5 / 0.06	0 / 0.00	125 / 2.05	3.8 / 0.08	12 / 0.34	0.3 / 0.00	0.1 / 0.00	0.09	48	Fe 0.61 (total)[e]	174	34	77	0	DWR
City of Wheatland municipal	13N/5E-4B	8-19-60	--	1,110	8.2	62 / 3.09	15 / 1.21	130 / 5.66	2.1 / 0.05	0 / 0.00	109 / 1.79	18 / 0.37	278 / 7.84	2.0 / 0.03	0.2 / 0.01	0.14	64	Fe 0.03 (total)[e]	626	57	215	126	DWR
E. Anthony domestic	14N/4E-7M1	8- -60	--	443	8.3	32 / 1.60	24 / 2.02	24 / 1.04	1.1 / 0.03	0 / 0.00	221 / 3.62	22 / 0.46	20 / 0.56	0.2 / 0.00	0.1 / 0.00	0.04	36	Fe 0.39 (total)[e]	269	23	181	0	DWR
E. Booth irrigation	14N/5E-15C1	8- -60	--	206	8.2	14 / 0.70	8.0 / 0.66	13 / 0.56	0.8 / 0.02	0 / 0.00	84 / 1.38	5.9 / 0.12	12 / 0.34	1.7 / 0.03	0.2 / 0.01	0.04	75	Fe 0.00 (total)[e]	172	28	68	0	DWR
Waltz Ranch irrigation	-21G1	8- -60	--	314	8.0	19 / 0.95	8.6 / 0.71	26 / 1.13	1.2 / 0.03	0 / 0.00	86 / 1.41	7.1 / 0.15	42 / 1.18	1.8 / 0.03	0.3 / 0.02	0.06	75	Fe 0.10 (total)[e]	223	40	83	13	DWR
Lorenzen irrigation	-22M1	8- -60	--	392	7.9	23 / 1.15	8.9 / 0.73	44 / 1.91	1.5 / 0.04	0 / 0.00	102 / 1.67	4.6 / 0.10	69 / 1.94	1.5 / 0.02	0.2 / 0.01	0.14	76		279	50	94	10	DWR
H. Lightfoot irrigation	-32J	8- -60	--	275	8.3	21 / 1.05	15 / 1.23	11 / 0.48	0.6 / 0.02	0 / 0.00	131 / 2.15	6.7 / 0.14	14 / 0.39	2.4 / 0.04	0.2 / 0.01	0.02	62	Fe 0.19 (total)[e]	[illegible]	18	114	[illegible]	DWR
Linda County Water District municipal	15N/4E-21J	8- -60	--	325	8.3	24 / 1.20	20 / 1.66	11 / 0.48	1.1 / 0.03	0 / 0.00	165 / 2.70	23 / 0.48	4.2 / 0.12	1.0 / 0.02	0.1 / 0.00	0.02	43	Fe 0.0[illegible] (total)[e]	[illegible]	15	14[illegible]	6	DWR
Linda County Water District municipal	-31A	8- -60	--	24[illegible]	8.2	20 / 1.00	13 / 1.04	11 / 0.48	1.0 / 0.02	0 / 0.00	139 / 2.28	3.3 / 0.07	7.4 / 0.21	0.8 / 0.01	0.1 / 0.00	0.03	37	Fe 0.1[illegible] (total)[e]	162	19	102	0	DWR
U. S. Air Force domestic	15N/5E-19N1	8-19-60	--	189	7.8	9.5 / 0.47	6.4 / 0.53	16 / 0.70	1.4 / 0.04	0 / 0.00	75 / 1.23	3.0 / 0.06	12 / 0.34	4.6 / 0.07	0.2 / 0.01	0.06	67	Fe 0.08 (total)[e]	[illegible]	40	[illegible]	0	DWR
H. Hannagan irrigation	16N/3E-11R2	8- -60	--	437	8.5	29 / 1.4[illegible]	32 / 2.63	15 / 0.6[illegible]	1.2 / 0.03	6 / 0.20	237 / 3.88	11 / 0.23	8.2 / 0.23	11 / 0.18	0.1 / 0.00	0.06	[illegible]0	Fe 0.0 (total)[e]	250	1[illegible]	204	0	DWR
J. Robel domestic	16N/4E-9D1	8-8-60	--	189	7.9	12 / 0.60	8.0 / 0.66	13 / 0.56	1.7 / 0.04	0 / 0.00	91 / 1.49	5.4 / 0.11	7.7 / 0.22	0.5 / 0.01	0.2 / 0.01	0.08	[illegible]8	Fe 0.33 (total)[e]	1[illegible]2	30	63	0	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									PLACER COUNTY														
K. Terioku irrigation	10N/5E-6D1	7-14-60	--	284	8.1	20 / 1.00	8.3 / 0.68	28 / 1.22	1.1 / 0.03	0 / 0.00	141 / 2.31	1.2 / 0.02	17 / 0.48	2.5 / 0.04	0.3 / 0.02	0.13	44		192	42	84	0	DWR
Arthur Lampen domestic and irrigation	10N/6E-5C	7-16-60	--	175	7.5	10 / 0.50	7.5 / 0.62	13 / 0.56	1.0 / 0.02	0 / 0.00	84 / 1.38	0.0 / 0.00	10 / 0.28	3.4 / 0.05	0.4 / 0.02	0.04	83		169	33	56	0	DWR
R. Vandegrift irrigation	11N/5E-6A1	7-14-60	--	229	8.0	14 / 0.70	8.5 / 0.70	18 / 0.78	1.8 / 0.05	0 / 0.00	111 / 1.82	1.5 / 0.03	12 / 0.34	3.7 / 0.06	0.3 / 0.02	0.15	71		185	35	70	0	DWR
irrigation	-14P2	7-13-60	--	389	7.9	22 / 1.10	12 / 1.00	35 / 1.52	1.7 / 0.04	0 / 0.00	109 / 1.79	4.8 / 0.10	59 / 1.66	2.4 / 0.04	0.2 / 0.01	0.28	80		271	42	105	16	DWR
P. B. Minarick irrigation	-18H1	7-13-60	71	271	8.1	17 / 0.85	7.4 / 0.61	27 / 1.17	2.5 / 0.06	0 / 0.00	121 / 1.98	3.4 / 0.07	20 / 0.56	0.9 / 0.01	0.2 / 0.01	0.33	66		204	43	73	0	DWR
W. F. Fiddymeat irrigation	11N/6E-16M1	7-15-60	--	344	7.9	16 / 0.80	6.1 / 0.50	41 / 1.78	1.8 / 0.05	0 / 0.00	90 / 1.48	8.6 / 0.18	48 / 1.35	8.4 / 0.14	0.4 / 0.02	0.78	84		259	51	65	0	DWR
Sierra View Land Co. irrigation	-34B1	7-15-60	--	258	8.3	22 / 1.10	9.2 / 0.76	22 / 0.96	1.3 / 0.03	1 / 0.03	142 / 2.33	3.3 / 0.07	11 / 0.31	1.3 / 0.02	0.3 / 0.02	0.17	86		228	34	93	0	DWR
Richard Mariner irrigation	12N/5E-2B1	7-14-60	--	189	8.0	19 / 0.95	2.3 / 0.19	15 / 0.65	0.9 / 0.02	0 / 0.00	9 / 1.52	4.9 / 0.10	6.1 / 0.17	1.3 / 0.02	0.3 / 0.02	0.18	74		170	36	57	0	DWR
Floyd Bonnifield irrigation	-3D	7-14-60	--	251	7.7	14 / 0.70	6.1 / 0.50	28 / 1.22	0.9 / 0.02	0 / 0.00	109 / 1.79	0.0 / 0.00	23 / 0.65	0.5 / 0.01	0.2 / 0.01	0.39	69		196	50	60	0	DWR
U. S. Air Force industrial	-23C1	7-14-60	--	189	7.8	12 / 0.60	8.8 / 0.72	11 / 0.48	0.8 / 0.02	0 / 0.00	84 / 1.38	0.0 / 0.00	8.0 / 0.22	12 / 0.19	0.3 / 0.02	0.06	74		170	26	66	0	DWR
Gladding McBean industrial	12N/6E-9C1	7-14-60	--	1,240	8.2	13 / 0.65	5.2 / 0.43	242 / 10.53	1.7 / 0.04	0 / 0.00	244 / 4.00	136 / 2.83	179 / 5.05	1.8 / 0.03	1.3 / 0.07	4.6	28		555	90	54	0	DWR
F. W. Fullerton domestic and irrigation	-16D2	7-14-60	--	693	8.0	10 / 0.50	19 / 1.60	98 / 4.26	0.9 / 0.02	0 / 0.00	149 / 2.44	48 / 1.00	99 / 2.79	12 / 0.19	0.5 / 0.03	0.99	74		434	67	105	0	DWR
Fisher domestic and irrigation	-27D1	7-15-60	--	1,760	7.9	72 / 3.59	11 / 0.91	269 / 11.70	2.2 / 0.06	0 / 0.00	90 / 1.48	90 / 1.87	444 / 12.52	4.2 / 0.07	0.4 / 0.02	3.1	70		1,010	72	226	151	DWR
George Blake domestic	13N/5E-13D	7-14-60	--	526	7.8	23 / 1.15	9.8 / 0.81	62 / 2.70	1.3 / 0.03	0 / 0.00	86 / 1.41	42 / 0.87	84 / 2.37	2.9 / 0.05	0.3 / 0.02	0.38	79		347	58	98	28	DWR

a Determined by addition of constituents
b Gravimetric determination
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown.
e Iron (Fe) Total, Detergent Surfacant (ABS), Ammonium (NH_4), Perchlorate (ClO_4).

32505-E-C 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Per-cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
PLACER COUNTY (Cont.)																							
J. [illegible]. Th[illegible]rton irrigation	13N/5E-22C2	7-14-60	70	621	8.0	37 / 1.85	9.8 / 0.81	64 / 2.78	1.7 / 0.04	0 / 0.00	84 / 1.38	33 / 0.69	123 / 3.47	2.6 / 0.04	0.2 / 0.01	0.49	78		391	51	133	64	DWR
[illegible]lmet Brown irrigation	-24P1	7-13-60	68	217	7.8	10 / 0.50	12 / 0.96	19 / 0.83	0.6 / 0.02	0 / 0.00	102 / 1.67	4.4 / 0.09	17 / 0.48	2.1 / 0.03	0.3 / 0.02	0.18	69		184	36	73	0	DWR
Leo Gunther domestic and irrigation	13N/6E-17A1	7-13-60	--	124	7.6	8.8 / 0.44	3.6 / 0.30	9.8 / 0.43	0.8 / 0.02	0 / 0.00	48 / 0.79	4.9 / 0.10	5.1 / 0.14	7.4 / 0.12	0.3 / 0.02	0.09	49		114	36	37	0	DWR
L. Franceschi irrigation	-33C1	7-15-60	--	702	7.9	28 / 1.40	18 / 1.52	85 / 3.70	0.7 / 0.02	0 / 0.00	182 / 2.98	38 / 0.79	103 / 2.90	2.5 / 0.04	0.4 / 0.02	2.1	48		415	56	140	0	DWR
YOLO COUNTY																							
Tom Sakata domestic	6N/3E-26A2	7-21-60	80	601	8.4	16 / 0.80	17 / 1.44	84 / 3.65	3.1 / 0.08	13 / 0.44	218 / 3.56	18 / 0.38	59 / 1.65	1 / 0.01	0.0 / 0.00	0.88	29		348	61	112	0	TTL
Glide Ranch domestic and stock	7N/3E-9J1	7-1[illegible]-60	78	758	8.6	27 / 1.35	62 / 5.05	49 / 2.15	3.1 / 0.08	36 / 1.20	371 / 6.08	28 / 0.58	27 / 0.75	5 / 0.08	0.2 / 0.01	0.94	25		445	25	320	0	TTL
Mill[illegible] Estate domestic	-31M1	7-1[illegible]-60	80	976	8.6	41 / 2.07	72 / 5.89	73 / 3.18	0.7 / 0.02	49 / 1.62	420 / 6.88	49 / 1.03	46 / 1.31	27 / 0.44	0.2 / 0.01	1.16	28		594	28	398	0	TTL
E. [illegible]. Anderson domestic	7N/4E-33G1	7-21-60	74	2,010	8.2	64 / 3.18	22 / 1.76	304 / 13.20	9.6 / 0.25	0 / 0.00	234 / 3.84	0 / 0	527 / 14.85	0 / 0	0.1 / 0.00	1.96	34		1,078	72	247	55	TTL
Burt Nobel irrigation	8N/1E-9E1	7-27-60	70	660	8.4	36 / 1.80	42 / 3.49	48 / 2.09	2.7 / 0.07	6 / 0.20	316 / 5.18	39 / 0.81	35 / 0.99	8.0 / 0.13	0.2 / 0.01	0.63	40		412	28	265	0	DWR
Verne Friesen irrigation	6N/1W-13G1	7-20-60	70	703	8.3	37 / 1.85	38 / 3.11	56 / 2.45	0.7 / 0.02	1[illegible] / 0.[illegible]0	281 / 4.60	41 / 0.86	[illegible]1 / 1.42	7 / 0.11	0.1 / 0.00	0.40	24		408	33	248	0	TTL
Willowbank Corp. domestic and irrigation	6N/2E-15F2	7-15-60	73	667	8.6	34 / 1.70	47 / 3.87	44 / 1.92	1.0 / 0.03	34 / 1.14	313 / 5.13	33 / 0.67	19 / 0.52	5 / 0.08	0.4 / 0.02	0.70	31		403	26	278	0	TTL
B. [illegible]. Howat irrigation	6N/3E-5P1	7-21-60	72	785	8.4	26 / 1.28	45 / 3.73	75 / 3.26	2.4 / 0.06	21 / 0.68	334 / 5.48	43 / 0.91	46 / 1.27	2 / 0.04	0.4 / 0.02	0.88	34		460	39	250	0	TTL
B. F. Howat irrigation	-[illegible]1	7-20-60	70	761	8.6	23 / 1.17	44 / 3.64	76 / 3.30	2.4 / 0.06	34 / 1.14	284 / 4.65	41 / 0.86	54 / 1.52	2 / 0.04	0.0 / 0.00	1.02	23		440	40	240	0	TTL
[illegible]. C. Hamel irrigation	-19D1	7-1[illegible]-60	70	1,062	8.4	36 / 1.82	86 / 7.06	76 / 3.30	1.0 / 0.03	30 / 1.00	479 / 7.85	86 / 1.79	49 / 1.37	14 / 0.23	0.4 / 0.02	0.63	31		646	27	444	1	TTL

a. Determined by addition of constituents
b. Gravimetric determination
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

YOLO COUNTY (Cont.)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
Wilber domestic	8N/3E-19M2	7-15-60	80	1,773	8.4	49 / 2.44	167 / 13.71	118 / 5.15	1.9 / 0.05	68 / 2.26	792 / 12.98	126 / 2.63	78 / 2.20	89 / 1.43	0.2 / 0.01	1.56	32		1,120	24	808	45	TTL
Rice Growers Assn. industrial	8N/4E-3B1	7-21-60	88	822	8.1	50 / 2.49	25 / 2.08	65 / 2.85	4.9 / 0.13	0 / 0.00	172 / 2.82	0 / 0.0	170 / 4.81	0 / 0.0	0.0 / 0.00	0.10	38		437	38	228	87	TTL
Dumars irrigation	9N/1E-12A1	7-15-60	78	999	8.2	28 / 1.42	63 / 5.20	100 / 4.36	1.5 / 0.04	0 / 0.0	447 / 7.34	51 / 1.06	92 / 2.60	12 / 0.19	0.4 / 0.02	2.46	25		595	40	331	0	TTL
Dumars domestic	9N/1W-16H1	7-20-60	77	855	8.5	51 / 2.54	23 / 1.94	94 / 4.10	1.5 / 0.04	18 / 0.60	265 / 4.35	61 / 1.26	86 / 2.42	1 / 0.02	0.4 / 0.02	0.86	24		491	48	224	0	TTL
Chapman Bros. irrigation	-30L1	7-20-60	72	831	8.1	52 / 2.59	32 / 2.68	79 / 3.44	1.2 / 0.03	0 / 0.00	297 / 4.87	68 / 1.42	76 / 2.14	16 / 0.26	0.3 / 0.02	1.2	31		503	39	264	20	DWR
T. Barrios irrigation	9N/2E-4L1	7-27-60	70	769	8.2	43 / 2.15	44 / 3.59	52 / 2.26	1.9 / 0.05	0 / 0.00	357 / 5.85	26 / 0.55	58 / 1.62	8 / 0.14	0.0 / 0.00	2.02	18		429	28	287	0	TTL
R. Statmueller irrigation	-10D1	7-15-60	70	1,138	8.2	35 / 1.76	79 / 6.47	93 / 4.05	1.0 / 0.03	0 / 0.00	540 / 8.85	44 / 0.93	90 / 2.53	16 / 0.26	0.2 / 0.01	2.72	23		650	33	412	0	TTL
E. Chiles domestic and irrigation	-35D1	7-15-60	80	1,296	8.6	27 / 1.37	89 / 7.25	131 / 5.70	1.0 / 0.03	54 / 1.80	464 / 7.60	94 / 1.96	116 / 3.24	4 / 0.06	0.4 / 0.02	1.86	19		765	40	431	0	TTL
Woodland Farms domestic	9N/3E-7D1	7-15-60	71	598	8.3	38 / 1.92	33 / 2.65	39 / 1.69	0.7 / 0.02	20 / 0.66	254 / 4.17	8 / 0.16	43 / 1.20	2 / 0.04	0.2 / 0.01	1.58	21		331	27	228	0	TTL
Failor domestic	9N/4E-33L1	7-21-60	84	1,571	8.0	67 / 3.37	27 / 2.21	184 / 8.00	6.1 / 0.16	0 / 0.00	220 / 3.60	0 / 0.00	371 / 10.45	0 / 0.00	0 / 0.00	1.44	34		798	58	279	99	TTL
Scarlett & Owens irrigation	10N/1E-1C1	7-13-60	78	900	8.0	40 / 1.98	62 / 5.14	55 / 2.42	1.0 / 0.03	0 / 0.00	403 / 6.60	31 / 0.64	72 / 2.02	19 / 0.30	0.18 / 0.01	2.04	22		502	25	256	26	TTL
N. Corcoran domestic	-15G1	7-20-60	80	1,086	8.6	49 / 2.46	63 / 5.16	102 / 4.44	0.3 / 0.01	50 / 1.66	400 / 6.56	83 / 1.73	70 / 1.97	20 / 0.31	0.20 / 0.01	1.38	23		659	37	381	0	TTL
A. Summ irrigation	-26A	7-15-60	69	654	8.4	46 / 2.30	35 / 2.89	44 / 1.91	2.4 / 0.06	5 / 0.17	303 / 4.97	31 / 0.65	46 / 1.30	5.2 / 0.08	0.2 / 0.01	2.1	17		383	27	260	3	DWR
W. K. Lowe domestic	10N/2E-1Q1	7-13-60	71	2,787	7.7	164 / 8.19	174 / 14.31	153 / 6.65	4.2 / 0.11	0 / 0.00	436 / 7.15	390 / 8.13	510 / 14.38	2 / 0.03	0 / 0.00	4.42	20		1,636	23	1125	767	TTL
Spreckles Sugar Co. industrial	-16B1	7-15-60	--	676	8.3	42 / 2.10	36 / 2.93	50 / 2.18	2.5 / 0.06	4 / 0.13	299 / 4.90	35 / 0.73	51 / 1.44	5.1 / 0.08	0.2 / 0.01	2.2	22		397	30	252	0	DWR
City of Woodland municipal	-27H1	7-15-60	86	571	8.4	40 / 2.02	24 / 1.98	45 / 1.96	2.4 / 0.06	14 / 0.48	236 / 3.87	13 / 0.27	48 / 1.34	0.1 / 0.02	0.2 / 0.01	1.62	22		326	32	200	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D W R) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfacant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
									YOLO COUNTY (Cont.)														
C. Davis irrigation	10N/1W-4B1	7-12-60	--	608	8.4	35/1.73	34/2.77	48/2.10	0.7/0.02	18/0.60	295/4.84	18/0.39	26/0.73	6/0.10	0.42/0.02	0.38	29		360	32	22[illegible]	0	TTL
Ferro & Caneda irrigation	-36P2	7-20-60	74	1,445	8.0	70/3.49	68/5.64	132/5.75	3.1/0.08	0/0.00	428/7.01	127/2.65	195/5.48	4/0.06	0/0.00	2.62	17		829	38	456	105	TTL
J. Monroe irrigation	10N/2W-14A1	7-12-60	70	526	8.2	40/1.99	26/2.14	34/1.48	1.5/0.04	0/0.00	255/4.18	15/0.33	41/1.14	5/0.08	0/0.00	1.32	15		304	26	206	0	TTL
J. Peterson domestic and irrigation	-16L1	7-12-60	72	1,504	8.1	63/3.15	47/3.87	178/7.75	2.4/0.06	0/0.00	502/8.23	31/0.65	202/5.70	6/0.09	0.19/0.01	2.16	15		794	[illegible]2	351	0	TTL
Howard stock	-17J1	7-12-60	77	832	8.0	19/0.94	16/1.34	132/5.75	1.5/0.04	0/0.00	318/5.21	35/0.73	74/2.09	4/0.06	0.26/0.01	0.63	18		456	71	114	0	TTL
Myrtle Bowles domestic	-18F1	7-12-60	--	1,860	8.4	70/3.51	40/3.34	262/11.40	0.7/0.02	21/0.70	451/7.40	40/0.85	328/9.24	11/0.18	1.44/0.08	0.90	34		1,031	62	342	0	TTL
W. W. McClary domestic and irrigation	-18F2	7-12-60	80	1,725	7.9	130/6.49	51/4.17	151/6.55	2.4/0.06	0/0.00	349/5.71	216/4.51	254/7.16	8/0.14	0.22/0.01	1.14	26		1,012	38	[illegible]33	24[illegible]	TTL
V. White domestic	-18L1	7-12-60	73	1,490	8.4	123/6.14	51/4.17	149/6.48	1.0/0.02	12/0.40	447/7.33	196/4.08	171/4.82	9.4/0.15	0.4/0.02	2.2	22		957	38	516	129	DWR
C. A. Kutsuris domestic	-23A1	7-12-60	78	487	8.4	36/1.78	22/1.78	39/1.72	0.7/0.02	13/0.44	257/4.21	14/0.28	12/0.32	7/0.12	0.4/0.02	0.46	24		294	32	178	0	TTL
J. J. Slaver irrigation	11N/1E-17M	7-13-60	71	479	8.3	32/1.58	28/2.34	30/1.30	0.7/0.02	15/0.48	260/4.26	7/0.14	11/0.31	6/0.10	0.08/0.00	0.42	27		284	2[illegible]	190	0	TTL
D. Miller domestic	11N/2E-22A1	7-13-60	70	1,716	8.3	31/1.57	80/6.55	209/9.10	2.8/0.07	34/1.12	430/7.05	144/3.00	213/6.01	12/0.19	0/0.00	4.74	27		968	53	400	0	TTL
E. Durst domestic	11N/2W-35J1	7-12-60	76	547	8.3	47/2.35	27/2.18	35/1.52	0.7/0.02	27/0.90	342/3.96	14/0.28	17/0.47	31/0.49	0.4/0.02	0.26	21		388	2[illegible]	226	0	TTL
R. Bloom domestic and irrigation	11N/3W-9Q1	7-12-60	74	627	8.2	54/2.70	23/1.91	40/1.78	0.3/0.01	0/0.00	238/3.90	95/0.98	56/1.57	3/0.05	0.40/0.02	0.42	22		411	26	230	3[illegible]	TTL
R. D. Evertt irrigation	-10E1	7-12-60	71	604	7.8	52/2.58	16/1.[illegible]2	45/1.94	0.7/0.02	0/0.00	105/3.51	53/1.10	49/1.37	6/0.10	0.20/0.01	0.68	19		290	3[illegible]	20[illegible]	119	TTL
G. Knolley irrigation	-26M3	7-14-60	69	747	8.0	61/3.05	33/2.72	41/1.82	0.7/0.02	0/0.00	317/5.20	40/0.84	55/1.55	8/0.13	0.18/0.01	4.04	29		428	24	288	28	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
									YOLO COUNTY (Cont.)														
Southern Pacific Railroad domestic	12N/1W-15N2	7-13-60	81	514	8.4	56 / 2.79	26 / 2.17	16 / 0.70	0.7 / 0.02	6 / 0.20	259 / 4.24	7.4 / 0.15	21 / 0.59	25 / 0.41	0.1 / 0.00	0.08	31		316	12	248	26	DWR
M. Dobkins domestic	12N/2W-2A1	7-13-60	76	698	8.3	47 / 2.36	33 / 2.72	53 / 2.30	0.7 / 0.02	0 / 0.00	367 / 6.02	3 / 0.07	41 / 1.16	12 / 0.20	0.09 / 0.00	0.66	22		392	31	254	0	TTL
									SACRAMENTO COUNTY														
Wilmars Land Company (spring)	4N/3E-21G	9-2-60	64	167	8.0	12 / 0.60	6.1 / 0.50	10 / 0.44	2.0 / 0.05	0 / 0.00	71 / 1.16	7.6 / 0.16	7.8 / 0.22	0.5 / 0.01	0.1 / 0.00	0.07	28	Fe 1.3 (dis.) d Al 0.01 Mn 0.94	109	28	55	0	DWR
Wilmars Land Company (spring)	-22L1	9-2-60	64	150	7.7	7.8 / 0.39	5.7 / 0.47	11 / 0.48	1.6 / 0.04	0 / 0.00	56 / 0.92	7.1 / 0.15	7.8 / 0.22	2.8 / 0.04	0.1 / 0.00	0.07	32	Fe 1.0 (dis.) d Al 0.03 Mn 0.17	104	35	43	0	DWR
Wilmars Land Company (spring)	-22L2	9-2-60	63	153	7.9	9.1 / 0.45	6.2 / 0.51	9.9 / 0.43	1.8 / 0.05	0 / 0.00	62 / 1.03	7.2 / 0.15	7.0 / 0.20	0.7 / 0.01	0.1 / 0.00	0.07	30	Fe 2.8 (dis.) d Al 0.02 Mn 0.66	103	30	48	0	DWR
State of California domestic	7N/5E-7C1	12-21-60	--	235	8.2	18 / 0.90	8.5 / 0.70	17 / 0.74	2.3 / 0.06	0 / 0.00	120 / 1.97	0 / 0.00	13 / 0.37	0.8 / 0.01	0.1 / 0.00	0.03	38	As 0.01[d] ABS 0.0[e]	157	31	80	0	DWR
W. Mouser domestic and irrigation	7N/6E-22R1	12-21-60	--	236	7.5	16 / 0.80	10 / 0.82	15 / 0.65	1.5 / 0.04	0 / 0.00	121 / 1.98	2.3 / 0.05	7.8 / 0.22	2.1 / 0.03	0.2 / 0.01	0.04	75	Cu 0.01 Zn 0.30[d] ABS 0.0[e]	187	28	81	0	DWR
City of Sacramento municipal	8N/4E-26D1	12-20-60	--	214	8.2	19 / 0.95	9.1 / 0.75	9.4 / 0.41	2.4 / 0.06	0 / 0.00	114 / 1.87	0.0 / 0.00	11 / 0.31	0.5 / 0.01	0.0 / 0.00	0.06	43	Cu 0.09 Mn 0.07[d] Zn 0.01 ABS 0.0[e]	150	19	85	0	DWR
State of California domestic	8N/5E-15H1	12-21-60	68	378	8.2	41 / 2.04	13 / 1.04	15 / 0.65	4.1 / 0.10	0 / 0.00	177 / 2.90	1.3 / 0.03	29 / 0.82	0.8 / 0.01	0.1 / 0.00	0.03	53	Al 0.03 As 0.03[d] Zn 0.03 ABS 0.0[e]	244	17	154	9	DWR
State of California domestic	-15H2	12-21-60	--	388	8.2	40 / 2.00	13 / 1.08	21 / 0.91	4.1 / 0.10	0 / 0.00	180 / 2.95	1.2 / 0.02	32 / 0.90	0.5 / 0.01	1.5 / 0.08	0.04	54	Zn 0.02[d] ABS 0.0[e]	255	22	154	6	DWR
A. Amarel domestic and irrigation	-30N1	12-20-60	--	301	8.3	24 / 1.20	13 / 1.10	14 / 0.61	2.1 / 0.05	0 / 0.00	129 / 2.11	4.8 / 0.10	24 / 0.58	5.4 / 0.09	0.2 / 0.01	0.07	56	Zn 0.16[d] ABS 0.0[e]	205	21	115	9	DWR
J. A. Selinger domestic	8N/6E-3G	5-11-60	68	137	7.8	13 / 0.65	2.8 / 0.23	10 / 0.44	1.6 / 0.04	0 / 0.00	71 / 1.16	0.0 / 0.00	2.4 / 0.06	5.2 / 0.08	0.0 / 0.00	0.08	29	NH_4 0.0 ClO_3 0.0[e]	99	32	44	0	DWR
J. Tracy irrigation	8N/7E-2N1	5-11-60	69	221	7.5	13 / 0.65	5.7 / 0.47	21 / 0.91	1.5 / 0.04	0 / 0.00	92 / 1.51	6.9 / 0.14	14 / 0.39	4.4 / 0.07	0.3 / 0.02	0.21	77	NH_4 0.0 ClO_3 0.0[e]	189	44	56	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown.
e. Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4).

32505-0-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
								SACRAMENTO COUNTY (Cont.)															
[illegible]	[illegible]	[illegible]	8[illegible]	[illegible]84	[illegible]	46 / 2.30	19 / 1.58	84 / 3.65	4.0 / 0.10	2 / 0.07	212 / 3.47	0.0 / 0.00	147 / 4.14	1.2 / 0.02	0.1 / 0.00	0.47	48	As 0.01[d] ABS 0.0[e]	456	48	194	1[illegible]	DWR
[illegible]	[illegible]	12-20-60	--	29[illegible]	[illegible].2	20 / 1.00	14 / 1.12	16 / 0.70	2.0 / 0.05	0 / 0.00	12[illegible] / 2.0[illegible]	4.1 / 0.08	26 / 0.73	2.2 / 0.04	0.1 / 0.00	0.05	78	Fe 0.01 (dis.) Zn 0.04[d] ABS 0.0[e]	223	24	106	4	DWR
[illegible]	[illegible]	12-20-60	--	[illegible]17	[illegible].2	24 / 1.20	13 / 1.10	35 / 1.57	3.8 / 0.10	0 / 0.00	137 / 2.24	4.4 / 0.09	[illegible]9 / 1.66	0.7 / 0.01	0.1 / 0.00	0.36	[illegible]5	As 0.02 Zn 0.03[d] ABS 0.0[e]	283	40	11[illegible]	3	DWR
[illegible]	[illegible]-[illegible]H1	[illegible]-11-60	6[illegible]	170	7.8	15 / 0.75	6.2 / 0.51	9.0 / 0.39	1.2 / 0.03	0 / 0.00	87 / 1.42	2.5 / 0.05	3.9 / 0.11	1.7 / 0.03	0.2 / 0.01	0.07	50	NH_4 0.0[e] ClO_4 0.0	133	23	63	0	DWR
[illegible] Sewage Treatment Plant industrial	-[illegible]F[illegible]	[illegible]-11-60	66	238	8.1	25 / 1.2[illegible]	6.7 / 0.[illegible]5	14 / 0.61	1.8 / 0.05	0 / 0.00	126 / 2.06	3.8 / 0.08	7.8 / 0.22	2.7 / 0.04	0.1 / 0.00	0.08	41	NH_4 0.0[e] ClO_4 0.0	165	25	90	0	DWR
[illegible]	[illegible]F[illegible]	[illegible]-11-60	66	310	[illegible].3	24 / 1.20	19 / 1.56	12 / 0.52	1.0 / 0.02	0 / 0.00	158 / 2.59	6.1 / 0.13	16 / 0.45	2.8 / 0.04	0.1 / 0.00	0.08	[illegible]1	NH_4 0.0[e] ClO_4 0.0	210	16	139	9	DWR
[illegible] industrial	-[illegible]6F1	[illegible]-11-60	69	3[illegible]2	[illegible]	38 / 1.[illegible]0	20 / 1.66	11 / 0.48	2.0 / 0.05	10 / 0.33	190 / 3.11	9.0 / 0.19	12 / 0.34	1.6 / 0.02	0.1 / 0.00	0.05	55	NH_4 0.0[e] ClO_4 0.0	2[illegible]2	12	179	[illegible]	DWR
Air Products, Inc. industrial	-21D1	[illegible]-11-60	--	31[illegible]	[illegible].6	32 / 1.60	13 / 1.06	11 / 0.48	[illegible].1 / 0.13	6 / 0.20	1[illegible]1 / 2.47	12 / 0.25	10 / 0.28	1.1 / 0.02	0.1 / 0.00	0.0[illegible]	61	NH_4 0.0[e] ClO_4 0.0	226	15	133	0	DWR
Capital [illegible] Co. [illegible]	-26H1	[illegible]-11-60	63	116	[illegible].4	9.1 / 0.45	3.8 / 0.31	6.0 / 0.26	0.4 / 0.01	0 / 0.00	38 / 0.62	4.8 / 0.10	[illegible].7 / 0.16	7.3 / 0.12	0.1 / 0.00	0.06	[illegible]8	NH_4 0.0[e] ClO_4 0.0	114	2[illegible]	38	7	DWR
H. [illegible] domestic	-[illegible]	[illegible]-11-60	65	260	8.0	15 / 0.75	12 / 1.01	16 / 0.70	0.3 / 0.01	0 / 0.00	106 / 1.74	16 / 0.33	9.7 / 0.27	3.9 / 0.06	0.1 / 0.00	0.06	58	NH_4 0.0[e] ClO_4 0.0	183	28	88	1	DWR
Aerojet General Corp. industrial	-[illegible]B[illegible]	[illegible]-11-60	70	244	8.1	24 / 1.20	9.1 / 0.75	13 / 0.56	2.4 / 0.06	0 / 0.00	138 / 2.26	1.6 / 0.03	7.8 / 0.22	0.2 / 0.00	0.2 / 0.01	0.02	71	NH_4 0.0[e] ClO_4 0.0	197	21	98	0	DWR
[illegible] General Corp. industrial	-2[illegible]	[illegible]-11-60	69	241	[illegible].6	20 / 1.00	10 / 0.84	13 / 0.56	2.0 / 0.05	0 / 0.00	136 / 2.23	0.0 / 0.00	[illegible].9 / 0.17	0.4 / 0.01	0.2 / 0.01	0.03	73	NH_4 0.2[e] ClO_4 0.0	192	23	92	0	DWR
J. A. [illegible] domestic	-32B1	[illegible]-11-60	68	147	[illegible].8	11 / 0.55	7.4 / 0.61	6.2 / 0.27	0.6 / 0.02	0 / 0.00	68 / 1.11	[illegible].3 / 0.07	[illegible].9 / 0.11	[illegible].4 / 0.09	0.1 / 0.00	0.04	52	NH_4 0.0[e] ClO_4 0.0	123	19	58	2	DWR
B. [illegible] domestic and irrigation	-3[illegible]1	[illegible]-11-60	6[illegible]	450	[illegible].1	26 / 1.30	36 / 2.92	12 / 0.52	1.2 / 0.03	0 / 0.00	232 / 3.80	4.9 / 0.10	32 / 0.90	0.1 / 0.00	0.0 / 0.00	0.02	43	NH_4 0.0[e] ClO_4 0.0	269	11	211	21	DWR
H. A. [illegible]en domestic and irrigation	[illegible]0N/6E-27L	12-20-60	--	319	7.1	26 / 1.30	13 / 1.10	18 / 0.78	1.4 / 0.04	0 / 0.00	147 / 2.41	2.3 / 0.05	26 / 0.73	1.1 / 0.02	0.2 / 0.01	0.02	77	Fe 0.01 (dis.)[d] ABS 0.0[e]	237	24	120	0	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
SOLANO COUNTY																							
City of Rio Vista municipal	4N/3E-31F2	9-28-60	--	830	8.5	16 / 0.80	18 / 1.48	143 / 6.22	1.7 / 0.04	7 / 0.23	333 / 5.46	32 / 0.67	73 / 2.06	6.6 / 0.11	0.4 / 0.02	1.0	32		495	73	114	0	DWR
stock	5N/1E-1N1	9-28-60	65	1,710	8.5	32 / 1.60	64 / 5.23	258 / 11.22	1.2 / 0.03	11 / 0.37	488 / 8.00	137 / 2.85	240 / 6.77	0.9 / 0.01	1.6 / 0.08	1.5	25		1,010	62	342	0	DWR
California Packing Corp. domestic	5N/2E-25K	9-28-60	63	1,360	8.5	41 / 2.04	118 / 9.71	135 / 5.87	2.2 / 0.06	24 / 0.80	963 / 15.78	22 / 0.46	12 / 0.34	2.0 / 0.03	0.4 / 0.02	0.73	52		882	33	588	0	DWR
Elmira Fire District fire	6N/1E-19L2	9-28-60	--	631	8.2	37 / 1.85	25 / 2.09	54 / 2.35	0.7 / 0.02	0 / 0.00	205 / 3.36	77 / 1.60	47 / 1.32	11 / 0.18	0.4 / 0.02	0.38	35		388	37	197	29	DWR
City of Vacaville municipal	6N/1W-23L	9-28-60	65	524	8.2	38 / 1.90	21 / 1.76	45 / 1.96	3.5 / 0.09	0 / 0.00	251 / 4.11	51 / 1.06	14 / 0.39	3.2 / 0.05	0.3 / 0.02	0.20	54		353	34	183	0	DWR
Priddy irrigation	6N/2E-20H2	9-28-60	64	934	8.6	36 / 1.80	74 / 6.09	61 / 2.65	0.9 / 0.02	16 / 0.53	375 / 6.15	54 / 1.12	88 / 2.48	6.8 / 0.11	0.3 / 0.02	0.31	34		556	25	395	61	DWR
T. Rose irrigation	7N/2E-34C2	9-29-60	72	746	8.4	36 / 1.80	60 / 4.95	44 / 1.91	1.4 / 0.04	4 / 0.13	421 / 6.90	36 / 0.75	25 / 0.70	4.7 / 0.08	0.1 / 0.00	0.58	32		450	22	338	0	DWR
SAN JOAQUIN VALLEY (5-22) SAN JOAQUIN COUNTY																							
California Water Service Company municipal	1N/6E-3H3	8-4-60	66	832	8.1	32 / 1.58	15 / 1.22	109 / 4.75	1.5 / 0.04	0 / 0.00	169 / 2.76	0 / 0.00	237 / 4.95	0 / 0.00	0.2 / 0.01	0.30	39		517	62	140	2	TTL
California Water Service Company municipal	-4D1	8-4-60	66	587	8.2	9 / 0.44	9 / 0.72	104 / 4.50	1.5 / 0.04	0 / 0.00	212 / 3.49	0 / 0.00	108 / 2.25	0 / 0.00	0 / 0.00	0.94	43		379	79	58	0	TTL
Fiberboard Products Company industrial	-10P1	8-4-60	78	2,780	8.1	111 / 5.54	52 / 4.29	345 / 15.01	4.1 / 0.10	0 / 0.00	154 / 2.52	0 / 0.00	818 / 23.07	1.1 / 0.02	0.11 / 0.00	0.93	57		1,460	60	492	366	DWR
California Water Service Company municipal	-14H1	8-4-60	71	436	8.2	6 / 0.31	6 / 0.47	80 / 3.48	10 / 0.03	0 / 0.00	194 / 3.18	0 / 0.00	54 / 1.13	0 / 0.00	0 / 0.00	0.58	46		298	81	39	0	TTL
irrigation	1N/7E-11J1	8-4-60	66	260	8.1	19 / 0.97	11 / 0.89	16 / 0.69	3.5 / 0.09	0 / 0.00	132 / 2.17	3 / 0.08	15 / 0.32	2 / 0.03	0 / 0.00	0	44		178	26	93	0	TTL
R. Duarte irrigation	-12C1	8-4-60	66	266	8.3	22 / 1.10	10 / 0.86	16 / 0.70	3.5 / 0.09	0 / 0.00	141 / 2.31	5.1 / 0.11	11 / 0.31	2.7 / 0.04	0.2 / 0.01	0.06	69		208	25	98	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

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QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
						SAN JOAQUIN VALLEY (5-22) SAN JOAQUIN COUNTY (Cont.)																	
California Water Service Company municipal	2N/6E-27L1	8-4-60	67	368	8.4	31 1.55	13 1.07	28 1.22	4.5 0.12	3 0.10	202 3.31	11 0.23	9.2 0.26	0.9 0.01	0.1 0.00	0.07	51		[illegible]	31	[illegible]	0	[illegible]
Linden Water Service municipal	2N/8E-15L1	8-5-60	66	312	8.3	32 1.58	13 1.12	12 0.50	1.9 0.05	0 0.00	163 2.67	8 0.23	14 0.28	6 0.09	0.2 0.01	0.24	42		209	[illegible]	[illegible]	1	TTL
F. D. Benedetti domestic and irrigation	2N/9E-7G1	8-5-60	--	254	8.2	26 1.30	11 0.88	10 0.44	3.3 0.08	0 0.00	132 2.16	10 0.21	7.5 0.21	2.3 0.04	0.1 0.00	0.06	56		191	16	109	1	DWR
G. Barbero domestic and irrigation	3N/6E-27B1	8-5-60	--	463	8.4	30 1.48	12 1.03	53 2.28	2.4 0.06	24 0.80	195 3.20	7 0.20	14 0.28	22 0.35	0 0.00	0.12	40		300	4	126	0	TTL
E. A. Patton irrigation	3N/7E-11G1	8-5-60	72	203	8.1	14 0.71	7 0.59	15 0.63	3.1 0.08	0 0.00	97 1.59	5 0.11	10 0.28	3 0.05	0 0.00	0	44		149	31	[illegible]	0	TTL
E. M. Ruescher irrigation	3N/8E-8E1	8-5-60	70	169	8.0	11 0.53	5 0.41	14 0.60	1.5 0.04	0 0	76 1.25	1 0.02	11 0.31	1 0.01	0 0.0	0	38		120	38	[illegible]	0	TTL
M. T. Coop domestic	4N/4E-14C1	8-5-60	--	1,066	8.3	17 0.84	5 0.36	192 8.35	1.5 0.04	16 0.52	201 3.30	0 0.00	279 5.81	0 0.00	0.22 0.01	1.60	24		634	67	60	0	TTL
O. C. Gallagher irrigation	4N/[illegible]E-8H1	8-5-60	--	5,190	7.3	285 14.20	220 18.08	382 16.60	3.1 0.08	0 0.00	278 4.56	0 0	1610 45.39	0 0.00	0 0.00	0.52	28		2,660	34	1,614	1,300	TTL
Jahant Ranch domestic and stock	4N/6E-11P1	8-5-60	--	218	8.1	16 0.78	10 0.84	13 0.53	3.1 0.08	0 0.00	119 1.95	6 0.13	7 0.18	0 0.00	0 0.00	0	42		[illegible]	24	81	0	TTL
D. Pritchard domestic and irrigation	4N/7E-23B2	8-5-60	--	563	7.1	47 2.36	23 1.85	28 1.22	1.0 0.03	0 0	220 3.60	7 0.15	60 1.67	6 0.09	0 0	0.04	49		329	22	210	30	TTL
California Packing Corp. domestic	1S/4E-14M1	8-4-60	68	1,468	8.3	28 1.41	16 1.27	267 11.60	1.0 0.03	18 0.58	224 3.67	261 5.44	170 4.81	0 0.00	0.24 0.01	1.84	19		892	81	[illegible]	0	TTL
L. Brooks domestic	1S/5E-10H1	8-4-60	78	1,412	8.0	89 4.44	60 4.85	87 3.80	2.8 0.07	0 0.00	145 2.39	108 2.25	309 8.73	1 0.01	0.18 0.01	0	31		[illegible]	29	464	[illegible]	TTL
G. B. Caligaro domestic and irrigation	1S/6E-4A1	8-[illegible]-60	68	1,550	8.3	126 6.29	35 2.88	110 4.78	2.5 0.06	0 0.00	159 2.61	9.5 0.20	405 11.42	0.6 0.01	0.11 0.00	0.1	48		81	[illegible]	[illegible]	[illegible]	[illegible]

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm a	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
SAN JOAQUIN VALLEY (5-22) SAN JOAQUIN COUNTY (Cont.)																							
O. S. Caligaro irrigation	1S/7E-10A1	8-5-60	64	317	8.1	25 / 1.26	11 / 0.88	22 / 0.96	3.1 / 0.08	0 / 0.00	148 / 2.43	9 / 0.19	18 / 0.50	3 / 0.05	0.30 / 0.02	0.08	54		218	30	107	0	TTL
irrigation	1S/9E-8H1	8-5-60	68	224	7.9	15 / 0.73	8 / 0.65	16 / 0.70	2.8 / 0.07	0 / 0.00	89 / 1.47	14 / 0.28	13 / 0.36	4 / 0.06	0 / 0.00	0	53		170	32	69	0	TTL
A. Dusina domestic	2S/4E-1P1	8-4-60	66	---	7.9	29 / 1.43	9 / 0.70	85 / 3.70	1.0 / 0.03	0 / 0.00	103 / 1.68	133 / 2.77	52 / 1.45	2 / 0.03	0.22 / 0.01	0.46	20		383	63	106	22	TTL
H. C. Jepson domestic and irrigation	-36P1	8-4-60	72	1,230	8.0	73 / 3.64	35 / 2.87	141 / 6.13	4.2 / 0.11	0 / 0.00	155 / 2.54	297 / 6.18	131 / 3.69	7.1 / 0.11	0.3 / 0.02	1.4	22		768	48	326	199	DWR
West Side Irrigation District irrigation	2S/5E-22Q1	8-4-60	68	1,379	7.8	76 / 3.78	36 / 2.95	145 / 6.30	3.5 / 0.09	0 / 0.00	182 / 2.98	169 / 3.53	230 / 6.47	6 / 0.10	0 / 0.00	1.30	23		781	48	337	188	TTL
irrigation	-23P1	8-4-60	63	1,623	7.8	68 / 3.39	51 / 4.23	179 / 7.80	2.4 / 0.06	0 / 0.00	145 / 2.38	212 / 4.43	301 / 8.50	15 / 0.25	0.16 / 0.01	1.92	32		933	[illegible]0	381	262	TTL
W. E. Lee --	2S/7E-20R1	8-5-60	68	440	8.3	45 / 2.24	13 / 1.06	27 / 1.17	3.4 / 0.09	0 / 0.00	169 / 2.77	25 / 0.52	14 / 0.39	42 / 0.68	0.1 / 0.00	0.10	57		310	26	165	27	DWR
L. Huck domestic	3S/5E-8L1	8-4-60	--	924	8.0	74 / 3.72	18 / 1.50	75 / 3.25	3.1 / 0.08	0 / 0.00	166 / 2.72	113 / 2.37	102 / 2.87	43 / 0.69	0.16 / 0.01	0.76	36		548	38	261	125	TTL
Gerlach irrigation	-14D1	8-4-60	66	1,292	7.7	86 / 4.32	29 / 2.42	117 / 5.10	2.8 / 0.07	0 / 0.00	138 / 2.25	171 / 3.56	197 / 5.56	32 / 0.52	0 / 0.00	0.90	25		730	43	337	225	TTL
W. Moler irrigation	-26M	8-4-60	74	1,148	7.5	73 / 3.66	35 / 2.87	108 / 4.70	3.1 / 0.08	0 / 0.00	122 / 2.00	343 / 7.17	74 / 2.07	17 / 0.28	0.16 / 0.01	0.92	26		740	42	326	226	TTL
Russell Pard Development Company domestic and irrigation	-35B1	8-4-60	--	1,586	8.0	117 / 6.36	36 / 3.04	168 / 7.30	3.9 / 0.10	0 / 0.00	193 / 3.17	546 / 11.35	76 / 2.14	26 / 0.42	0.32 / 0.02	0.88	24		1,103	43	470	312	TTL
Banta Carbona Irrigation District irrigation	3S/6E-7F1	8-4-60	64	1,584	7.8	55 / 2.75	33 / 2.69	209 / 9.10	2.8 / 0.07	0 / 0.00	135 / 2.21	202 / 4.20	293 / 8.26	1 / 0.02	0 / 0.00	1.72	30		894	62	272	161	TTL
J. Hamilton irrigation	-22Q1	8-4-60	72	659	8.2	49 / 2.44	18 / 1.46	62 / 2.70	1.8 / 0.05	0 / 0.00	189 / 3.10	118 / 2.46	32 / 0.90	9.5 / 0.15	0.3 / 0.02	0.62	27		411	41	19[illegible]	40	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

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ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									STANISLAUS COUNTY													
A. Groves irrigation	1N/10E-15D1	9-60	-	236	8.2	13 / 0.67	10 / 0.80	16 / 0.72	3.0 / 0.08	0 / 0.00	98 / 1.60	11 / 0.22	16 / 0.44	4.0 / 0.06	0.1 / 0.01	0.24	59		181	32	74	0	TTL
J. Dunn irrigation	1S/10E-33R1	9-60	-	307	8.2	24 / 1.20	13 / 1.08	18 / 0.80	5.0 / 0.12	0 / 0.00	144 / 2.37	24 / 0.50	13 / 0.35	2.0 / 0.04	0.0 / 0.00	0.46	62		233	25	114	0	TTL
J. Demartini domestic	1S/11E-36E1	9-60	-	144	9.2	9.0 / 0.43	7.0 / 0.53	9.0 / 0.39	2.0 / 0.06	0 / 0.00	78 / 1.29	2.0 / 0.04	4.0 / 0.10	2.0 / 0.03	0.0 / 0.00	0.29	46		120	27	51	0	TTL
A. Ramirez irrigation	2S/10E-10D1	9-60	-	380	8.4	33 / 1.65	14 / 1.17	25 / 1.10	3.0 / 0.07	21 / 0.70	157 / 2.58	7.0 / 0.15	18 / 0.51	8.0 / 0.13	0.0 / 0.00	0.12	34		241	28	141	0	TTL
Oakdale Land Company irrigation	-27G1	9-60	-	202	7.1	13 / 0.63	8.0 / 0.69	15 / 0.63	2.0 / 0.04	0 / 0.00	93 / 1.51	10 / 0.21	11 / 0.30	0.0 / 0.00	0.0 / 0.00	0.20	18		123	32	66	0	TTL
P. Giamarco industrial & domestic	-36N1	9-60	-	321	8.1	26 / 1.29	12 / 0.96	18 / 0.81	2.0 / 0.06	0 / 0.00	130 / 2.14	2.0 / 0.05	28 / 0.77	7.0 / 0.11	0.0 / 0.00	0.11	35		195	26	113	0	TTL
Modesto Irr. Dist. irrigation	3S/7E-13A1	8-2-60	67	483	8.4	25 / 1.23	21 / 1.70	41 / 1.80	3.1 / 0.08	25 / 0.82	168 / 2.75	10 / 0.20	21 / 0.61	19 / 0.30	0.0 / 0.00	0.16	38		286	37	146	0	DWR
Modesto Irr. Dist. irrigation & drainage	-24J	8-2-60	64	618	8.2	42 / 2.10	20 / 1.62	68 / 2.96	2.8 / 0.07	0 / 0.00	345 / 5.65	18 / 0.37	18 / 0.51	12 / 0.20	0.1 / 0.00	0.19	54		405	44	186	0	DWR
J. E. Gardner domestic	-33C1	9-60	-	1,040	8.1	57 / 2.83	25 / 2.09	114 / 4.95	3.0 / 0.08	0 / 0.00	139 / 2.29	5.0 / 0.11	279 / 7.84	2.0 / 0.03	0.1 / 0.01	0.22	16		570	50	246	131	TTL
Modesto Irr. Dist. irrigation & stock	3S/8E-6M	8-2-60	65	515	8.2	30 / 1.49	21 / 1.70	47 / 2.06	3.5 / 0.09	0 / 0.00	258 / 4.23	12 / 0.25	31 / 0.89	6.0 / 0.10	0.0 / 0.00	0.0	40		318	38	160	0	DWR
Modesto Irr. Dist. irrigation	-9C	8-2-60	66	435	8.3	53 / 2.65	9.0 / 0.70	25 / 1.11	3.5 / 0.09	0 / 0.00	224 / 3.66	10 / 0.20	18 / 0.50	16 / 0.26	0.0 / 0.00	0.22	43		283	24	168	0	DWR
Modesto Irr. Dist. irrigation	-20J	8-2-60	68	547	8.3	54 / 2.72	19 / 1.62	30 / 1.33	1.9 / 0.05	29 / 0.96	207 / 3.40	14 / 0.31	23 / 0.65	31 / 0.49	0.0 / 0.00	0.30	35		339	28	217	0	DWR
Modesto Irr. Dist. irrigation	-23E	8-2-60	65	462	8.2	41 / 2.04	15 / 1.24	35 / 1.52	2.2 / 0.06	0 / 0.00	208 / 3.41	22 / 0.46	19 / 0.54	27 / 0.44	0.1 / 0.00	0.13	51		314	31	164	0	DWR
Modesto Irr. Dist. irrigation	-31R1	8-4-60	66	733	7.9	38 / 1.88	21 / 1.72	86 / 3.75	4.6 / 0.12	0 / 0.00	245 / 4.02	12 / 0.25	111 / 3.12	9.0 / 0.15	0.0 / 0.00	0.28	42		444	50	180	0	DWR
Modesto Irr. Dist. irrigation	3S/9E-6R	8-2-60	67	473	7.5	39 / 1.95	18 / 1.49	30 / 1.30	2.4 / 0.06	0 / 0.00	187 / 3.07	22 / 0.47	20 / 0.56	38 / 0.61	0.2 / 0.01	0.24	[illegible]		364	27	172	17	DWR
Modesto Irr. Dist. irrigation & domestic	-16F1	8-2-60	69	634	8.3	[illegible] / 1.65	21 / 1.70	66 / 2.87	3.4 / 0.09	1 / 0.03	262 / 4.29	33 / 0.69	33 / 0.93	24 / 0.39	0.2 / 0.01	0.16	63		406	46	165	0	DWR
Atlas Olympia Company irrigation	3S/10E-13A1	9-60	-	104	8.0	[illegible] / 0.3[illegible]	2.0 / 0.24	[illegible]	1.0 / 0.03	0 / 0.00	42 / 0.69	2.0 / 0.05	4.0 / 0.10	0.0 / 0.00	0.0 / 0.00	0.24	15		57	24	31	[illegible]	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									STANISLAUS COUNTY (Cont.)													
V. A. Rodden Ranch irrigation & domestic	3S/11E-9D1	9-60	-	315	8.2	19 / 0.94	13 / 1.05	23 / 1.02	4.0 / 0.09	0 / 0.00	124 / 2.03	6.0 / 0.12	28 / 0.77	7 / 0.11	0.3 / 0.02	0.31	52		215	33	100	0	TTL
H. E. Ketcham irrigation	3S/12E-26F1	9-60	-	4,368	7.9	328 / 16.36	47 / 3.88	432 / 18.80	16 / 0.40	0 / 0.00	35 / 1.40	0 / 0.00	1332 / 37.51	0.0 / 0.00	0.0 / 0.00	0.64	48		2,246	48	1012	942	TTL
J. J. Raspo irrigation	4S/6E-15E1	9-60	-	978	8.1	37 / 1.85	20 / 1.66	123 / 5.35	3 / 0.08	0 / 0.00	122 / 2.00	216 / 4.51	68 / 1.91	28 / 0.45	0.0 / 0.00	0.86	22		579	60	176	76	TTL
Jones irrigation	4S/7E-8L1	8-3-60	68	1,089	8.2	52 / 2.60	38 / 3.14	107 / 4.65	1.6 / 0.04	0 / 0.00	152 / 2.50	183 / 3.81	142 / 3.99	13 / 0.21	0.3 / 0.02	1.7	23		636	44	287	162	DWR
W. Stanislaus Irr. Dist. drainage	-8Q1	8-3-60	66	1,063	8.2	58 / 2.92	33 / 2.68	105 / 4.55	1.0 / 0.03	0 / 0.00	191 / 3.14	156 / 3.24	131 / 3.68	16 / 0.27	0.3 / 0.02	1.6	22		618	45	280	123	DWR
W. Stanislaus Irr. Dist. drainage	-16E1	8-3-60	66	1,813	8.1	78 / 3.92	68 / 5.60	189 / 8.20	1.0 / 0.03	0 / 0.00	186 / 3.05	300 / 6.25	294 / 8.29	23 / 0.36	0.3 / 0.02	2.4	23		1,070	46	476	329	DWR
W. Stanislaus Irr. Dist. irrigation	-17K1	8-3-60	66	1,590	8.1	98 / 4.89	51 / 4.22	158 / 6.87	1.6 / 0.04	0 / 0.00	241 / 3.95	185 / 3.85	282 / 7.95	23 / 0.37	0.3 / 0.02	2.5	28		947	43	456	258	DWR
W. Stanislaus Irr. Dist. irrigation	-18A1	8-3-60	64	1,634	8.1	85 / 4.26	48 / 3.98	179 / 7.80	1.5 / 0.04	0 / 0.00	245 / 4.02	180 / 3.75	269 / 7.59	19 / 0.30	0.2 / 0.01	2.1	24		928	48	412	211	DWR
W. W. Crawford irrigation	-22E1	8-3-60	68	1,395	8.3	69 / 3.43	74 / 6.05	107 / 4.65	1.9 / 0.05	0 / 0.00	236 / 3.87	238 / 4.96	177 / 4.99	19 / 0.01	0.1 / 0.30	0.68	22		825	33	474	280	DWR
W. W. Cox irrigation	-26R1	8-3-60	68	-	8.2	32 / 1.60	103 / 8.52	72 / 3.15	1.9 / 0.05	0 / 0.00	306 / 5.01	168 / 3.50	168 / 4.72	14 / 0.24	0.0 / 0.00	0.48	21		730	24	506	200	DWR
Henry Ellory irrigation	-28H1	8-3-60	67	1,413	8.4	59 / 2.97	82 / 6.75	97 / 4.20	1.9 / 0.05	28 / 0.92	169 / 2.70	243 / 5.07	179 / 5.05	29 / 0.46	0.2 / 0.01	0.52	22		825	30	486	301	DWR
F. Azevedo irrigation	-34D1	8-3-60	68	1,422	8.4	42 / 2.08	90 / 7.44	91 / 3.95	1.9 / 0.05	30 / 1.00	218 / 3.56	106 / 2.20	233 / 6.57	14 / 0.24	0.0 / 0.00	0.40	21		736	30	476	247	DWR
J. D. Cox irrigation	-34J1	8-3-60	67	1,280	8.5	37 / 1.85	81 / 6.74	99 / 4.30	1.9 / 0.05	33 / 1.10	266 / 4.37	108 / 2.24	174 / 4.90	20 / 0.31	0.0 / 0.00	0.50	19		704	33	430	157	DWR
Modesto Irr. Dist. irrigation	4S/8E-5L	8-4-60	66	766	8.2	32 / 1.58	17 / 1.38	88 / 3.85	3.5 / 0.09	0 / 0.00	205 / 3.37	8.0 / 0.15	119 / 3.34	5.0 / 0.08	0.0 / 0.00	0.08	37		410	56	148	0	DWR
Modesto Irr. Dist. irrigation	-6L2	8-4-60	65	827	8.0	28 / 1.41	18 / 1.46	117 / 5.10	3.9 / 0.10	0 / 0.00	307 / 5.04	14 / 0.29	90 / 2.53	9.0 / 0.15	0.0 / 0.00	0.28	34		465	63	144	0	DWR
Turlock Irr. Dist. irrigation & drainage	-24A1	8-8-60	67	696	7.2	42 / 2.11	15 / 1.23	70 / 3.06	3.0 / 0.07	0 / 0.00	184 / 3.01	10 / 0.20	108 / 3.03	10 / 0.16	0.0 / 0.00	0.15	36		386	47	167	16	TTL
Turlock Irr. Dist. irrigation	-27L1	8-10-60	66	1,573	7.5	57 / 2.87	17 / 1.43	228 / 9.90	4.0 / 0.11	0 / 0.00	224 / 3.66	76 / 1.59	322 / 9.07	3.0 / 0.05	0.0 / 0.00	0.24	30		849	69	215	32	TTL

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M					STANISLAUS COUNTY (Cont.)																	
Turlock Irr. Dist. irrigation & drainage	4S/9E-20A1	8-8-60	68	557	7.9	42 / 2.10	13 / 1.10	48 / 2.10	3.0 / 0.07	0 / 0.00	201 / 3.30	15 / 0.33	50 / 1.39	18 / 0.29	0.0 / 0.00	0.09	40		329	39	160	0	TTL
Turlock Irr. Dist. drainage	-30R1	8-10-60	68	654	7.3	48 / 2.42	13 / 1.14	72 / 3.15	3.0 / 0.08	0 / 0.00	304 / 4.99	16 / 0.35	38 / 1.07	16 / 0.27	0.1 / 0.01	0.33	35		393	46	178	0	TTL
Johnson Brothers irrigation	4S/10E-1D1	9-60	-	391	7.6	14 / 0.71	6.0 / 0.52	49 / 2.13	8.0 / 0.21	0 / 0.00	111 / 1.81	0.0 / 0.01	59 / 1.66	0.0 / 0.00	0.1 / 0.01	0.75	61		253	60	62	0	TTL
J. W. Short irrigation	4S/11E-5M1	9-60	-	593	8.0	32 / 1.60	11 / 0.90	63 / 2.76	6.0 / 0.16	0 / 0.00	130 / 2.13	6.0 / 0.12	114 / 3.20	1.0 / 0.01	0.2 / 0.01	0.37	36		335	51	125	18	TTL
Turlock Irr. Dist. irrigation & domestic	-21D	8-8-60	68	241	7.9	17 / 0.83	7.0 / 0.62	20 / 0.87	4.0 / 0.10	0 / 0.00	125 / 2.05	2.0 / 0.04	8.0 / 0.21	7.0 / 0.11	0.0 / 0.00	0.11	52		179	36	73	0	TTL
Turlock Irr. Dist. drainage	-31E1	8-11-60	68	348	7.8	25 / 1.27	12 / 0.95	25 / 1.11	2.0 / 0.06	0 / 0.00	152 / 2.50	10 / 0.21	14 / 0.38	15 / 0.25	0.1 / 0.01	0.22	46		225	33	111	0	TTL
H. O. Wood irrigation	5S/7E-1M1	8-3-60	68	1,230	8.3	48 / 2.40	98 / 8.09	68 / 2.96	2.2 / 0.06	7 / 0.23	342 / 5.60	137 / 2.85	153 / 4.31	16 / 0.26	0.1 / 0.00	0.14	26		723	22	525	233	DWR
Bizzarelli domestic	-35G	8-4-60	-	796	8.2	55 / 2.74	31 / 2.55	59 / 2.57	1.5 / 0.04	0 / 0.00	197 / 3.23	43 / 0.90	118 / 3.33	36 / 0.58	0.4 / 0.02	0.36	35		476	32	265	103	DWR
Turlock Irr. Dist. drainage	5S/8E-1R1	8-10-60	68	950	7.5	46 / 2.32	10 / 0.75	130 / 5.65	4.0 / 0.10	0 / 0.00	330 / 5.41	28 / 0.58	163 / 4.58	7.0 / 0.11	0.0 / 0.00	0.37	34		587	64	155	0	TTL
T & T Ranch irrigation	-8G1	9-60	-	1,658	8.1	42 / 2.11	104 / 8.58	154 / 6.70	3.0 / 0.08	0 / 0.00	267 / 4.39	377 / 7.85	176 / 4.96	20 / 0.32	0.1 / 0.01	1.2	23		1,033	38	535	315	TTL
Ysidro Puch irrigation & domestic	-27M1	9-60	-	1,377	8.3	81 / 4.06	57 / 4.72	139 / 6.05	4.0 / 0.09	23 / 0.76	150 / 2.47	498 / 10.36	46 / 1.30	8.0 / 0.14	0.5 / 0.03	0.62	20		952	41	435	277	TTL
Turlock Irr. Dist. drainage	5S/9E-9A1	8-10-60	68	583	7.2	50 / 2.50	13 / 1.07	53 / 2.30	2.0 / 0.04	0 / 0.00	297 / 4.87	11 / 0.23	25 / 0.69	8.0 / 0.13	0.1 / 0.01	0.33	42		352	39	179	0	TTL
Turlock Irr. Dist. irrigation & drainage	-13G1	8-10-60	66	616	7.8	55 / 2.76	17 / 1.43	49 / 2.16	2.0 / 0.05	0 / 0.00	311 / 5.10	12 / 0.24	29 / 0.82	12 / 0.20	0.0 / 0.00	0.11	37		368	34	368	0	TTL
Turlock Irr. Dist. drainage	5S/10E-4F1	8-10-60	68	395	7.6	34 / 1.72	11 / 0.88	30 / 1.27	2.0 / 0.05	0 / 0.00	179 / 2.96	10 / 0.21	16 / 0.44	17 / 0.28	0.1 / 0.01	0.04	32		241	32	130	0	TTL
Turlock Irr. Dist. drainage	-28H1	8-8-60	66	543	7.7	35 / 1.74	14 / 1.15	60 / 2.58	2.0 / 0.06	0 / 0.00	245 / 4.01	15 / 0.33	24 / 0.68	25 / 0.40	0.0 / 0.00	0.22	42		339	47	145	0	TTL
Turlock Irr. Dist. drainage	-30F1	8-10-60	66	965	7.1	68 / 3.42	17 / 1.43	122 / 5.30	2.0 / 0.06	0 / 0.00	420 / 6.88	67 / 1.40	51 / 1.44	29 / 0.46	0.1 / 0.01	0.51	40		607	52	143	0	TTL
Turlock Irr. Dist. irrigation & drainage	5S/11E-7P1	8-10-60	66	507	7.9	43 / 2.16	20 / 1.66	29 / 1.24	2.0 / 0.04	0 / 0.00	232 / 3.80	19 / 0.40	16 / 0.45	26 / 0.42	0.0 / 0.00	0.0	53		324	24	191	1	TTL

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per-cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M					STANISLAUS COUNTY (Cont.)																	
R. Perkins irrigation	5S/12E-6D1	9-60	-	296	8.0	18 0.89	6.0 0.48	26 1.16	2.0 0.06	0 0.00	103 1.68	2.0 0.04	18 0.51	18 0.29	0.1 0.01	0.33	36		177	45	69	0	TTL
J. W. Campbell irrigation	6S/9E-18F	7-21-60	-	602	7.8	23 1.15	36 2.95	48 2.10	2.0 0.04	0 0.00	185 3.03	118 2.46	20 0.56	10 0.16	0.2 0.01	0.29	19		369	34	369	217	TTL
Central Calif. Irr. District irrigation	7S/8E-12P1	8-17-60	-	996	7.4	82 4.10	40 3.32	68 2.94	2.0 0.06	0 0.00	349 5.72	52 2.09	82 2.31	13 0.22	0.0 0.00	0.66	16		530	28	371	85	TTL
Simon Newman Company	-13F	8-17-60	-	889	7.7	44 2.19	36 2.97	94 4.10	2.0 0.06	0 0.00	295 4.83	119 2.49	73 2.04	10 0.16	0.0 0.00	0.40	22		547	44	258	16	TTL
Central Calif. Irr. District irrigation	-23R1	8-17-60	-	1,653	7.4	98 4.88	55 4.54	140 6.10	3.0 0.08	0 0.00	256 4.20	86 1.78	326 9.17	6.0 0.09	0.1 0.01	0.46	23		866	39	471	261	DWR
						MERCED COUNTY																	
Turlock Irr. Dist.150 irrigation	5S/11E-29F1	8-11-60	68	274	7.5	22 1.08	7.0 0.62	18 0.81	1.0 0.03	0 0.00	109 1.79	10 0.20	11 0.31	14 0.24	0.0 0.00	0.0	52		189	32	85	0	TTL
W. S. Batterman irrigation	5S/12E-32P1	8-31-60	72	165	7.8	13 0.65	1.0 0.13	15 0.63	2.0 0.05	0 0.00	68 1.12	0.0 0.00	10 0.28	4.0 0.06	0.0 0.00	0.0	36		115	43	39	0	TTL
Turlock Irr. Dist. 15 irrigation	6S/10E-2H1	8-11-60	66	491	8.1	42 2.12	16 1.28	32 1.37	2.0 0.05	0 0.00	224 3.67	14 0.28	22 0.62	17 0.28	0.1 0.01	0.0	43		300	28	170	0	TTL
Turlock Irr. Dist.107 irrigation & drainage	-9B1	8-11-60	65	673	8.1	42 2.12	16 1.26	76 3.30	3.0 0.07	0 0.00	287 4.70	16 0.35	54 1.52	14 0.23	0.3 0.02	0.11	44		408	49	169	0	TTL
Turlock Irr. Dist.162 irrigation & drainage	-24L1	8-12-60	67	439	8.2	25 1.26	7.0 0.60	56 2.46	2.0 0.05	0 0.00	193 3.16	15 0.33	30 0.84	1.0 0.02	0.2 0.01	0.11	29		261	56	93	0	TTL
Riverside School irrigation & drainage	-28K1	8-12-60	65	742	8.3	36 1.82	10 0.76	108 4.70	2.0 0.06	0 0.00	300 4.91	20 0.43	68 1.91	8.0 0.14	0.3 0.02	0.11	32		434	64	129	0	TTL
Turlock Irr. Dist.228 irrigation	6S/11E-3B1	8-12-60	65	614	8.2	48 2.42	16 1.25	58 2.52	2.0 0.04	0 0.00	234 3.83	44 0.92	29 0.82	39 0.64	0.2 0.01	0.15	50		403	40	184	0	TTL
Turlock Irr. Dist.201 irrigation & drainage	-9C1	8-12-60	67	440	8.1	41 2.06	10 0.78	31 1.34	2.0 0.06	0 0.00	161 2.64	30 0.62	19 0.52	26 0.42	0.0 0.00	0.0	45		284	32	142	10	TTL
Turlock Irr. Dist.210 irrigation	-10J1	8-16-60	68	282	7.9	25 1.25	6.0 0.48	19 0.84	2.0 0.06	0 0.00	94 1.53	15 0.33	10 0.28	30 0.48	0.0 0.00	0.0	40		194	32	87	10	TTL
Merced Irr. Dist. 133 irrigation	-27K1	7-26-60	67	210	8.2	15 0.76	4.0 0.30	23 1.01	4.0 0.10	0 0.00	90 1.48	15 0.33	9.0 0.24	10 0.17	0.3 0.02	0.0	38		163	47	53	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (each cell: ppm / epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
	M.D.B.&M.									MERCED COUNTY (Cont.)													
Merced Irr. Dist. [illegible] irrigation	[illegible] 11E-36P1	7-14-60	66	310	7.7	22 / 1.1[illegible]	7.0 / 0.6[illegible]	31 / 1.34	2.0 / 0.06	0 / 0.00	127 / 2.09	15 / 0.33	15 / 0.42	21 / 0.34	0.0 / 0.00	0.0	46		222	43	87	0	DWR
Turlock Irr. Dist. [illegible]3 irrigation	6S 12E-[illegible]1	9-12-[illegible]	69	337	7.0	28 / 1.42	6.0 / 0.53	24 / 1.[illegible]	2.0 / 0.[illegible]5	[illegible] / 0.00	114 / 1.86	14 / 0.28	15 / 0.42	28 / 0.45	0.1 / 0.01	0.0	38		212	35	98	5	TTL
[illegible] Roberts domestic	-9D1	8-31-[illegible]	72	342	7.7	17 / 0.85	15 / 1.20	25 / 1.07	1.0 / 0.03	0 / 0.00	90 / 1.48	18 / 0.39	26 / 0.73	35 / 0.56	0.1 / 0.01	0.0	25		207	34	107	33	TTL
L. Roberts domestic	-9[illegible]2	8-31-60	74	130	7.1	9.0 / 0.45	1.0 / 0.12	16 / 0.71	1.0 / 0.02	0 / 0.00	61 / 1.00	2.0 / 0.04	6.0 / 0.17	4.0 / 0.07	0.1 / 0.01	0.0	22		89	55	29	0	TTL
[illegible] W. Magneson domestic	-9[illegible]1	8-31-60	68	395	8.2	34 / 1.69	10 / 0.79	36 / 1.56	2.0 / 0.05	0 / 0.00	145 / 3.20	8.0 / 0.16	17 / 0.47	13 / 0.21	0.0 / 0.00	0.0	26		243	38	124	0	TTL
Merced Irr. Dist. 1 irrigation	-21N1	6-26-60	67	227	8.4	17 / 0.85	4.0 / 0.34	22 / 0.93	4.0 / 0.10	10 / 0.32	74 / 1.22	15 / 0.32	6.0 / 0.17	11 / 0.18	0.2 / 0.01	0.09	45		171	42	60	0	TTL
Merced Irr. Dist.558 irrigation	-23H1	6-29-60	65	204	8.2	17 / 0.83	6.0 / 0.53	16 / 0.71	1.0 / 0.03	0 / 0.00	71 / 1.16	21 / 0.46	9.0 / 0.24	16 / 0.26	0.1 / 0.01	0.0	45		166	34	68	10	TTL
Merced Irr. Dist.111 irrigation	6S/13E-6N1	7-28-60	66	184	8.0	16 / 0.78	4.0 / 0.32	14 / 0.58	0.0 / 0.00	0 / 0.00	55 / 0.90	2.0 / 0.04	11 / 0.31	25 / 0.39	0.1 / 0.01	0.0	30		129	34	55	10	TTL
Merced Irr. Dist. 7 irrigation	-31F1	6-28-60	66	239	7.9	17 / 0.85	7.0 / 0.60	23 / 1.02	2.0 / 0.04	0 / 0.00	95 / 1.55	13 / 0.27	12 / 0.32	18 / 0.29	0.1 / 0.01	0.0	49		188	41	73	0	DWR
Justine Drain. Dist. irrigation	7S/9E-32H2	8-17-60	-	926	7.8	57 / [illegible].84	36 / 2.97	81 / 3.52	2.0 / 0.05	0 / 0.00	214 / 3.50	199 / 4.15	58 / 1.62	10 / 0.16	0.1 / 0.01	0.37	21		571	38	291	116	TTL
Merced Irr. Dist. 115 irrigation	7S 11E-4M[illegible]	7-20-60	66	446	8.2	26 / 1.25	7.0 / 0.55	71 / 3.09	2.0 / 0.15	0 / 0.00	216 / 3.54	20 / 0.43	27 / 0.75	9.0 / 0.15	0.3 / 0.02	0.20	29		300	61	90	0	TTL
Merced Irr. Dist. 65 irrigation	-14G1	7-20-6[illegible]	67	461	8.4	28 / 1.40	13 / 1.06	54 / 2.36	2.0 / 0.06	26 / 0.88	175 / 2.87	14 / 0.31	20 / 0.56	25 / 0.40	0.5 / 0.03	0.18	49		319	48	123	0	DWR
Merced Irr. Dist. 135 irrigation	7S 12E-1[illegible]1	8-15-60	68	373	8.4	35 / 1.74	8.0 / 0.69	28 / 1.22	3.0 / 0.08	16 / 0.52	118 / 1.94	17 / 0.37	23 / 0.63	14 / 0.23	0.0 / 0.00	0.09	54		257	33	122	0	TTL
Merced Irr. Dist. 13 irrigation	-3F1	6-28-60	66	244	8.1	21 / 1.07	5.0 / 0.40	18 / 0.78	2.0 / 0.05	0 / 0.00	78 / 1.28	19 / 0.40	9.0 / 0.25	23 / 0.36	0.0 / 0.00	0.04	48		184	34	74	10	TTL
Merced Irr. Dist. 23 irrigation	-8E1	7-28-60	64	464	8.4	45 / 2.25	11 / 0.91	34 / 1.48	3.0 / 0.08	20 / 0.68	148 / 2.44	21 / 0.44	23 / 0.65	33 / 0.53	0.2 / 0.02	0.04	46		310	31	158	2	TTL
Merced Irr. Dist. 49 irrigation	-19A1	7-19-60	66	310	7.7	28 / 1.41	8.0 / 0.66	27 / 1.18	4.0 / 0.09	0 / 0.00	161 / 2.64	10 / 0.20	14 / 0.38	9.0 / 0.15	0.0 / 0.00	0.0	44		224	35	104	0	TTL
Merced Irr. Dist. 57A irrigation	-22H1	6-29-60	65	369	8.4	30 / 1.52	13 / 1.10	25 / [illegible].12	2.0 / 0.0[illegible]	20 / 0.68	145 / 2.39	15 / 0.33	9.0 / 0.25	13 / 0.21	0.0 / 0.00	0.22	57		256	30	131	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									MERCED COUNTY (Cont.)													
Merced Irr. Dist. 9 irrigation	7S/13E-4P1	6-27-60	66	303	8.1	25 / 1.26	10 / 0.75	27 / 1.19	3.0 / 0.08	0 / 0.00	143 / 2.35	14 / 0.31	12 / 0.34	16 / 0.27	0.2 / 0.01	0.0	42		220	36	101	0	TTL
Merced Irr. Dist. 79 irrigation	-19H1	6-28-60	66	306	8.4	29 / 1.44	10 / 0.81	17 / 0.75	2.0 / 0.06	18 / 0.60	103 / 1.69	10 / 0.21	14 / 0.39	16 / 0.26	0.2 / 0.01	0.04	54		221	25	113	0	TTL
Merced Irr. Dist. 35 irrigation	-22C1	6-28-60	65	394	8.5	34 / 1.72	18 / 1.47	22 / 0.94	3.0 / 0.08	21 / 0.70	165 / 2.70	6.0 / 0.12	15 / 0.41	9.0 / 0.15	0.0 / 0.00	0.02	46		256	22	160	0	TTL
Merced Irr. Dist. 105 irrigation	7S/14E-9R1	7-28-60	67	268	8.3	20 / 1.02	9.0 / 0.70	21 / 0.92	2.0 / 0.06	10 / 0.32	107 / 1.75	10 / 0.20	13 / 0.35	10 / 0.16	0.1 / 0.01	0.02	55		203	34	86	0	TTL
Merced Irr. Dist. 86 irrigation	-28J1	7-11-60	66	413	8.3	26 / 1.28	18 / 1.46	36 / 1.56	3.0 / 0.07	0 / 0.00	233 / 3.82	13 / 0.27	12 / 0.32	4.0 / 0.07	0.0 / 0.00	0.15	48		276	36	137	0	TTL
Merced Irr. Dist. 106 irrigation	-31M1	7-26-60	67	446	8.4	15 / 0.77	26 / 2.11	46 / 2.00	3.0 / 0.08	22 / 0.72	176 / 2.89	25 / 0.52	23 / 0.63	6.0 / 0.10	0.1 / 0.01	0.0	42		296	40	144	0	TTL
Merced Irr. Dist. 124 irrigation	7S/15E-13K	8-15-60	70	295	8.4	23 / 1.13	11 / 0.87	20 / 0.89	5.0 / 0.14	12 / 0.40	123 / 2.02	2.0 / 0.05	13 / 0.35	12 / 0.20	0.0 / 0.00	0.0	52		211	29	100	0	TTL
Merced Irr. Dist. 98 irrigation	-30E1	7-27-60	66	756	7.9	66 / 3.32	34 / 2.84	54 / 2.34	2.0 / 0.06	0 / 0.00	338 / 5.54	95 / 1.99	15 / 0.41	35 / 0.56	0.0 / 0.00	0.90	33		503	27	308	31	TTL
Merced Irr. Dist. 95 irrigation	-34R1	7-27-60	67	291	8.1	22 / 1.08	11 / 0.89	23 / 0.99	4.0 / 0.09	0 / 0.00	144 / 2.37	10 / 0.21	11 / 0.31	8.0 / 0.14	0.0 / 0.00	0.0	33		194	32	99	0	TTL
Gustine Drain. Dist.15 irrigation	8S/9E-16E1	8-17-60	-	825	7.9	48 / 2.38	30 / 2.51	77 / 3.36	1.0 / 0.02	0 / 0.00	276 / 4.54	104 / 2.16	50 / 1.41	11 / 0.18	0.3 / 0.02	0.40	19		479	41	245	18	TTL
Merced Irr. Dist. 138 irrigation	8S/14E-2D1	8-16-60	68	304	8.4	20 / 1.02	10 / 0.80	33 / 1.44	3.0 / 0.07	16 / 0.52	130 / 2.13	11 / 0.23	13 / 0.35	4.0 / 0.06	0.1 / 0.01	0.02	28		203	43	91	0	TTL
Merced Irr. Dist. 122 irrigation	-24A1	7-28-60	67	306	8.3	18 / 0.88	13 / 1.05	24 / 1.06	6.0 / 0.16	0 / 0.00	172 / 2.81	8.0 / 0.17	7.0 / 0.19	4.0 / 0.07	0.0 / 0.00	0.09	46		212	34	97	0	TTL
Merced Irr. Dist. 104 irrigation	8S/16E-17P1	7-27-60	68	315	8.4	27 / 1.37	15 / 1.20	18 / 0.81	4.0 / 0.09	14 / 0.46	150 / 2.47	12 / 0.24	8.0 / 0.23	3.0 / 0.05	0.1 / 0.01	0.0	32		208	23	129	0	TTL
Gustine Drain. Dist. 6 irrigation	9S/9E-5B1	8-17-60	-	922	7.8	57 / 2.85	33 / 2.69	92 / 4.00	1.0 / 0.03	0 / 0.00	349 / 5.71	76 / 1.59	78 / 2.18	11 / 0.18	0.1 / 0.01	0.68	25		548	42	277	0	TTL
Central Calif. Irr. District 1 irrigation	-21F1	7-25-60	-	978	7.7	50 / 2.51	28 / 2.28	91 / 3.95	2.0 / 0.04	0 / 0.00	294 / 4.81	55 / 1.14	101 / 2.83	12 / 0.19	0.2 / 0.01	1.1	20		507	45	240	0	TTL
State Game Refuge Los Banos irrigation & domestic	9S/10E-36R1	7-15-60	-	896	8.0	73 / 3.67	36 / 3.00	64 / 2.80	2.0 / 0.06	0 / 0.00	222 / 3.63	156 / 3.25	92 / 2.59	0.0 / 0.00	0.0 / 0.00	0.37	31		565	29	334	152	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

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QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									MERCED COUNTY (Cont.)													
Miller and Lux irrigation	9S/13E-31O1	7-10-60	-	674	8.1	28 / 1.40	12 / 1.00	90 / 3.92	1.0 / 0.02	0 / 0.00	208 / 3.41	17 / 0.75	92 / 2.59	0.6 / 0.01	0.2 / 0.01	0.03	63		406	62	120	0	DWR
Central Calif. Irr. District 8 irrigation	10S/10E-28D1	8-17-60	-	663	7.3	54 / 2.69	27 / 2.17	36 / 1.56	2.0 / 0.05	0 / 0.00	240 / 3.93	41 / 0.87	54 / 1.52	7.0 / 0.11	0.0 / 0.00	0.77	28		377	24	243	46	TTL
Bisignani Brothers irrigation	10S/12E-6K1	7-15-60	-	678	8.2	30 / 1.50	14 / 1.18	88 / 3.83	1.6 / 0.04	0 / 0.00	166 / 2.72	55 / 1.14	47 / 2.74	0.8 / 0.01	0.2 / 0.01	0.25	30		399	58	139	0	DWR
San Luis Canal Co. irrigation	-25L	7-10-60	-	870	7.5	42 / 2.10	13 / 1.10	118 / 5.13	2.1 / 0.05	0 / 0.00	158 / 2.59	57 / 1.19	162 / 4.57	0.7 / 0.01	0.2 / 0.01	0.20	32		505	61	160	30	DWR
Central Calif. Irr. District 5 irrigation	-27K1	7-23-60	-	1,820	7.9	76 / 3.81	39 / 3.15	223 / 9.70	3.0 / 0.08	0 / 0.00	170 / 2.78	106 / 2.21	420 / 11.83	0.0 / 0.00	0.0 / 0.00	0.53	23		976	58	348	209	TTL
Central Calif. Irr. District 6 irrigation	-35K1	7-23-60	-	2,165	7.8	79 / 3.94	40 / 3.34	288 / 12.50	4.0 / 0.10	0 / 0.00	145 / 2.38	124 / 2.59	531 / 14.95	0.0 / 0.00	0.0 / 0.00	0.68	24		1,163	63	364	245	TTL
R. Lindeman irrigation	11S/10E-23K1	8-18-60	-	2,054	7.8	66 / 3.32	56 / 4.64	281 / 12.20	2.0 / 0.05	0 / 0.00	212 / 3.48	427 / 8.88	260 / 7.32	44 / 0.71	0.3 / 0.02	1.7	17		1,261	60	398	224	TTL
irrigation	12S/11E-14C1	9-1-60	78	2,449	8.0	76 / 3.82	52 / 4.26	397 / 17.25	2.0 / 0.06	0 / 0.00	178 / 2.92	751 / 15.64	244 / 6.87	0.0 / 0.00	0.1 / 0.01	-	27		1,642	68	404	258	TTL
											MADERA COUNTY												
R. Jessup irrigation	9S/15E-24F1	7-20-60	73	232	7.5	18 / 0.90	7.0 / 0.55	15 / 0.64	2.0 / 0.05	0 / 0.00	89 / 1.47	1.0 / 0.02	22 / 0.61	2.0 / 0.04	0.0 / 0.00	0.31	48		159	30	73	0	TTL
Chowchilla Water Dept. municipal	9S/16E-30C1	7-20-60	73	216	7.6	16 / 0.31	5.0 / 0.40	19 / 0.83	3.0 / 0.08	0 / 0.00	84 / 1.39	8.0 / 0.16	20 / 0.56	2.0 / 0.04	0.0 / 0.00	0.11	48		163	39	61	0	TTL
W. Baker irrigation	-35N1	7-20-60	82	315	7.7	27 / 1.34	7.0 / 0.62	23 / 1.01	2.0 / 0.06	0 / 0.00	129 / 2.11	4.0 / 0.08	26 / 0.72	6.0 / 0.09	0.1 / 0.01	0.04	24		183	33	98	0	TTL
Red Top Ranch irrigation	10S/14E-8B1	7-26-60	68	426	7.6	30 / 1.50	12 / 0.97	37 / 1.62	4.0 / 0.09	0 / 0.00	174 / 2.85	4.0 / 0.08	37 / 1.03	12 / 0.20	0.0 / 0.00	0.11	50		273	39	124	0	TTL
E. Hughes irrigation	-24B1	7-20-60	72	748	7.5	65 / 3.24	16 / 1.30	46 / 2.01	4.0 / 0.09	0 / 0.00	125 / 2.05	8.0 / 0.17	153 / 4.29	7.0 / 0.12	0.0 / 0.00	0.22	49		410	30	227	124	TTL
R. Probert irrigation	10S/15E-31A1	7-25-60	72	625	7.8	59 / 2.96	16 / 1.25	36 / 1.56	3.0 / 0.08	0 / 0.00	173 / 2.84	6.0 / 0.13	101 / 2.84	4.0 / 0.06	0.0 / 0.00	0.22	51		362	27	211	69	TTL
W. Haynes irrigation	10S/16E-30K1	7-20-60	73	340	8.0	33 / 1.65	7.0 / 0.53	25 / 1.07	2.0 / 0.05	0 / 0.00	144 / 2.36	6.0 / 0.13	27 / 0.76	8.0 / 0.14	0.0 / 0.00	0.31	35		215	32	112	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M										MADERA COUNTY (Cont.)												
Madera County Club irrigation & domestic	10S/17E-25N1	7-26-60	75	243	7.4	19 / 0.97	3.0 / 0.27	21 / 0.87	2.0 / 0.06	0 / 0.00	87 / 1.43	2.0 / 0.04	19 / 0.54	11 / 0.18	0.0 / 0.00	0.11	55		175	40	62	0	TTL
Red Top Ranch irrigation	11S/14E-1A1	7-26-60	70	713	7.5	51 / 2.54	18 / 1.53	55 / 2.40	5.0 / 0.12	0 / 0.00	170 / 2.78	17 / 0.36	123 / 3.45	2.0 / 0.04	0.0 / 0.00	0.0	50		406	36	204	65	TTL
G. O. Turnbrow irrigation	-5B1	7-26-60	68	422	7.8	38 / 1.92	7.0 / 0.59	29 / 1.26	2.0 / 0.06	0 / 0.00	96 / 1.56	4.0 / 0.09	76 / 2.13	2.0 / 0.04	0.0 / 0.00	0.0	53		319	28	162	86	DWR
G. O. Turnbrow irrigation	-16A1	7-26-60	70	507	7.8	46 / 2.32	10 / 0.77	33 / 1.46	4.0 / 0.09	0 / 0.00	126 / 2.06	7.0 / 0.15	80 / 2.25	6.0 / 0.09	0.0 / 0.00	0.11	53		262	31	155	52	TTL
H. B. Shein irrigation	11S/15E-23L1	7-26-60	70	358	7.3	36 / 1.79	10 / 0.81	30 / 1.32	3.0 / 0.08	0 / 0.00	190 / 3.11	6.0 / 0.13	24 / 0.66	4.0 / 0.07	0.0 / 0.00	0.97	48		257	33	130	0	TTL
Red Top Ranch irrigation	-29H1	7-26-60	70	418	7.8	34 / 1.70	11 / 0.86	35 / 1.52	3.0 / 0.07	0 / 0.00	176 / 2.88	7.0 / 0.15	38 / 1.06	2.0 / 0.04	0.0 / 0.00	0.0	53		271	37	128	0	TTL
L. J. Peatman irrigation	11S/16E-22K1	7-26-60	70	335	7.8	37 / 1.83	5.0 / 0.36	23 / 0.98	3.0 / 0.08	0 / 0.00	144 / 2.36	4.0 / 0.09	25 / 0.70	6.0 / 0.09	0.0 / 0.00	0.20	49		224	30	110	0	TTL
City of Madera municipal	11S/17E-25B1	7-26-60	72	210	7.7	15 / 0.75	5.0 / 0.36	19 / 0.86	3.0 / 0.08	0 / 0.00	85 / 1.40	3.0 / 0.06	21 / 0.58	1.0 / 0.02	0.0 / 0.00	0.11	26		135	42	56	0	TTL
Santa Fe Railroad domestic	11S/18E-17H1	7-26-60	76	229	7.7	17 / 0.87	5.0 / 0.43	22 / 0.92	3.0 / 0.09	0 / 0.00	100 / 1.64	5.0 / 0.10	19 / 0.53	1.0 / 0.02	0.0 / 0.00	0.0	42		164	40	65	0	TTL
W. Jay domestic	-20E1	7-25-60	73	194	7.6	12 / 0.60	5.0 / 0.43	18 / 0.82	4.0 / 0.10	0 / 0.00	76 / 1.25	4.0 / 0.09	20 / 0.55	2.0 / 0.04	0.1 / 0.01	0.15	50		153	42	52	0	TTL
East Side Ranch irrigation	12S/14E-34H1	7-13-60	-	255	7.8	3.0 / 0.15	2.0 / 0.18	49 / 2.16	1.0 / 0.02	0 / 0.00	97 / 1.58	12 / 0.24	25 / 0.68	1.0 / 0.01	0.4 / 0.02	0.07	37		179	86	17	0	TTL
Red Top Ranch irrigation	12S/15E-4K1	7-26-60	70	456	7.8	35 / 1.77	12 / 1.02	33 / 1.46	4.0 / 0.09	0 / 0.00	128 / 2.10	9.0 / 0.19	72 / 2.01	1.0 / 0.02	0.0 / 0.00	0.0	48		278	34	140	35	TTL
Red Top Ranch irrigation	-22F1	7-26-60	73	341	7.9	31 / 1.54	5.0 / 0.37	35 / 1.50	2.0 / 0.06	0 / 0.00	154 / 2.53	8.0 / 0.17	27 / 0.75	2.0 / 0.03	0.0 / 0.00	0.0	47		234	43	46	0	TTL
W. Gillis irrigation	-27G1	7-26-60	73	355	7.8	25 / 1.23	8.0 / 0.66	36 / 1.54	3.0 / 0.08	0 / 0.00	152 / 2.50	6.0 / 0.13	32 / 0.89	1.0 / 0.02	0.0 / 0.00	0.88	52		240	44	95	0	TTL
Beard irrigation	12S/17E-5R1	8-23-60	72	209	7.8	17 / 0.83	3.0 / 0.29	16 / 0.71	3.0 / 0.08	0 / 0.00	78 / 1.29	5.0 / 0.10	18 / 0.50	2.0 / 0.03	0.0 / 0.00	0.13	48		151	37	56	0	TTL
S. Thomas irrigation	-7F1	7-25-60	73	528	7.8	47 / 2.36	13 / 1.10	39 / 1.70	5.0 / 0.14	0 / 0.00	183 / 3.00	60 / 1.24	34 / 0.96	2.0 / 0.03	0.0 / 0.00	0.0	49		340	32	173	23	TTL
Libbiee Ranch irrigation	-24A1	7-25-60	70	257	77	22 / 1.09	7.0 / 0.56	16 / 0.69	4.0 / 0.11	0 / 0.00	108 / 1.76	5.0 / 0.10	17 / 0.46	6.0 / 0.09	0.0 / 0.00	0.22	48		179	28	83	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

37505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
											Mineral constituents in parts per million / equivalents per million												
	MDB&M										MADERA COUNTY (Cont.)												
Mordecali irrigation	12S/18E-7L1	7-25-60	72	226	7.1	15 / 0.77	7.0 / 0.57	16 / 0.67	4.0 / 0.10	0 / 0.00	99 / 1.62	1.0 / .02	16 / 0.44	1.0 / 0.01	0.0 / 0.00	0.11	43		152	34	67	[illegible]	TTL
Iverson & Carlton irrigation	-14G1	7-25-60	73	293	7.7	19 / 0.96	9.0 / 0.74	24 / 1.03	3.0 / 0.08	0 / 0.00	84 / 1.38	14 / 0.29	31 / 0.87	16 / 0.26	0.1 / 0.01	0.11	58		216	37	85	16	TTL
E. Jones irrigation	12S/19E-32B1	7-25-60	73	18[illegible]	7.7	12 / 0.60	6.0 / 0.49	15 / 0.65	3.0 / 0.08	0 / 0.00	81 / 1.33	4.0 / 0.08	11 / 0.30	6.0 / 0.09	0.4 / 0.02	0.0	39		136	36	55	0	TTL
Columbia Canal Co. irrigation	13S 15E-2J1	8-1-60	-	212	7.8	0.0 / 0.00	1.0 / 0.06	38 / 1.66	1.0 / 0.02	0 / 0.00	94 / 1.53	2.0 / 0.04	7.0 / 0.18	0.[illegible] / 0.00	0.0 / 0.00	0.11	23		119	95	3	[illegible]	TTL
Columbia Canal Co. irrigation	-25C1	8-1-60	-	132	7.6	0.0 / 0.00	1.0 / 0.09	29 / 1.23	1.0 / 0.02	0 / 0.00	67 / 1.10	4.0 / 0.08	6.0 / 0.17	0.0 / 0.00	0.0 / 0.00	0.22	26		100	94	5	0	TTL
K. Seibert irrigation	13S/16E-2C1	7-25-60	72	298	7.7	16 / 0.80	10 / 0.81	30 / 1.32	2.0 / 0.05	0 / 0.00	143 / 2.35	3.0 / 0.07	19 / 0.52	2.0 / 0.03	0.1 / 0.01	0.09	58		211	44	81	0	TTL
G. Roberts irrigation	13S/17E-5P1	7-25-60	79	661	8.1	71 / 3.53	14 / 1.17	47 / 2.04	2.0 / 0.05	0 / 0.00	274 / 4.50	30 / 0.62	54 / 1.52	8.0 / 0.13	0.0 / 0.00	0.22	53		416	30	235	1[illegible]	TTL
											FRESNO COUNTY												
Dos Palos Drainage drainage	11S/12E-13J1	7-23-60	-	1,395	7.7	77 / 3.85	39 / 3.20	128 / 5.55	14 / 0.35	0 / 0.00	223 / 3.65	54 / 1.12	290 / 8.17	[illegible] / 0.01	0.0 / .00	0.22	21		737	43	353	17[illegible]	USGS
Central Calif. Irr. District irrigation	11S 13E-17F1	7-23-60	-	1,326	8.1	41 / 2.03	23 / 1.91	189 / 8.2[illegible]	3.[illegible] / 0.[illegible]8	[illegible] / 0.00	180 / 2.95	81 / 1.69	275 / 7.75	0.[illegible] / .00	0.[illegible] / 0.00	0.59	2[illegible]		725	67	197	49	TTL
Miller & Lux Inc. irrigation	-34B1	7-23-60	-	1,160	8.[illegible]	37 / 1.85	8.[illegible] / 0.65	186 / 8.10	2.0 / 0.[illegible]5	[illegible]	146 / 2.40	94 / 1.97	222 / 6.25	[illegible] / 0.00	0.0 / 0.00	0.51	37		66[illegible]	76	125	5	TTL
V. C. Britton Co. domestic	12S/12E-25[illegible]	7-2[illegible]-60	7[illegible]	1,280	8.4	26 / 1.30	5.1 / 0.42	266 / 11.57	1.7 / 0.04	4 / 0.13	319 / 5.[illegible]	293 / 6.10	63 / 1.78	1.9 / 0.03	0.2 / 0.01	0.43	51		80[illegible]	87	86	[illegible]	USGS
F. Redern irrigation	12S/13E-9C1	7-19-60	-	3,989	7.9	164 / 8.18	95 / 7.80	6[illegible] / 27.[illegible]	4.[illegible] / [illegible].1	[illegible] / .00	142 / 2.34	1321 / 27.50	464 / 13.07	0.0 / 0.00	0.5 / 0.03	6.3	25		2,77[illegible]	63	799	65[illegible]	TTL
J. G. Indart irrigation	12S/14E-29B1	7-19-60	-	1,235	7.9	45 / 2.27	28 / 2.26	161 / 7.00	4.0 / .1	0 / .00	116 / 1.90	168 / 3.50	218 / 6.12	0.0 / 0.00	0.0 / 0.00	0.62	32		715	60	227	13[illegible]	TTL
Pinedale Water Co. irrigation	12S/20E-32J1	7-20-60	-	276	7.8	19 / 0.95	8.4 / 0.69	14 / 0.61	3.4 / 0.09	0 / 0.00	108 / 1.77	2.3 / 0.05	7.9 / 0.22	15 / 0.24	0.2 / 0.01	0.08	64		187	26	82	[illegible]	USGS
B. Barber irrigation	12S/21E-32F1	7-20-60	-	275	7.6	29 / 1.45	14 / 1.13	12 / 0.52	2.0 / 0.05	0 / 0.00	162 / 2.66	8.4 / 0.17	4.5 / 0.13	8.5 / 0.14	0.2 / 0.01	0.05	46		205	16	129	0	USGS
G. Harlan irrigation	12S/22E-30C2	7-20-60	-	444	8.4	41 / 2.04	22 / 1.82	19 / 0.83	2.8 / 0.07	3 / 0.10	234 / 3.84	7.7 / 0.16	14 / 0.39	13 / 0.21	0.2 / 0.01	0.06	42		280	17	193	[illegible]	USGS

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N C ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M								FRESNO COUNTY (Cont.)														
Las Deltas Mutual Water Company irrigation	13S/14E-15B1	7-17-60	-	2,170	8.3	34 / 1.70	4.1 / 0.34	494 / 21.49	2.6 / 0.07	5 / 0.17	186 / 3.05	584 / 13.16	286 / 8.06	0.7 / 0.01	0.4 / 0.02	1.2	51		1,550	91	102	0	DWR
irrigation	-34M1	7-19-60	-	4,730	8.0	229 / 11.43	174 / 14.34	650 / 28.28	10 / 0.26	0 / 0.00	227 / 3.72	1460 / 30.40	743 / 20.95	10 / 0.16	0.5 / 0.03	2.3	48		3,440	52	1290	1104	DWR
Locke Brothers irrigation	13S/15E-18L1	7-19-60	-	519	8.1	3.0 / 0.15	1.0 / 0.12	102 / 4.45	1.0 / 0.03	0 / 0.00	128 / 2.10	47 / 0.99	58 / 1.63	0.0 / 0.00	0.3 / 0.02	0.40	37		314	94	14	0	TTL
R. Carlson irrigation	13S/17E-14R1	7-20-60	66	389	8.3	19 / 0.95	10 / 0.85	56 / 2.44	1.0 / 0.02	2 / 0.07	216 / 3.54	15 / 0.31	7.8 / 0.22	5.9 / 0.10	0.2 / 0.01	0.11	68		291	57	90	0	DWR
Kenneson irrigation	-29L1	7-20-60	66	532	8.1	30 / 1.50	11 / 0.98	62 / 2.70	5.3 / 0.14	0 / 0.00	152 / 2.49	33 / 0.69	75 / 2.12	0.8 / 0.01	0.2 / 0.01	0.14	61		353	52	119	0	DWR
Freitas irrigation	13S/18E-33L1	7-20-60	68	498	8.2	28 / 1.40	20 / 1.62	40 / 1.74	4.8 / 0.12	0 / 0.00	189 / 3.10	7.6 / 0.16	48 / 1.35	11 / 0.18	0.1 / 0.00	0.10	58		311	36	151	0	DWR
G. Meisner irrigation	13S/19E-30L1	7-20-60	75	231	7.5	15 / 0.75	10 / 0.85	16 / 0.70	3.7 / 0.09	0 / 0.00	125 / 2.05	3.4 / 0.07	8.6 / 0.24	0.5 / 0.01	0.2 / 0.01	0.05	59		177	29	80	0	DWR
Pinedale Water Co. municipal	13S/20E-3D1	7-20-60	-	214	8.0	19 / 0.95	79 / 0.65	11 / 0.48	2.8 / 0.07	0 / 0.00	109 / 1.79	2.3 / 0.05	6.2 / 0.17	6.7 / 0.11	0.2 / 0.01	0.11	63		173	22	80	0	DWR
Fresno State College domestic	-12L1	7-20-60	-	219	7.9	18 / 0.90	10 / 0.82	10 / 0.44	2.4 / 0.06	0 / 0.00	115 / 1.88	4.4 / 0.09	3.7 / 0.10	6.4 / 0.10	0.1 / 0.00	0.06	60		171	20	86	0	DWR
City of Fresno municipal	-27J1	7-21-60	70	219	7.9	16 / 0.80	9.0 / 0.74	13 / 0.56	4.0 / 0.10	0 / 0.00	107 / 1.75	5.8 / 0.12	4.0 / 0.11	10 / 0.16	0.2 / 0.01	0.06	66		181	25	77	[illegible]	DWR
Henderson Nursery irrigation	13S/21E-15N2	7-20-60	-	167	7.8	10 / 0.50	6.8 / 0.56	13 / 0.56	1.8 / 0.05	0 / 0.00	84 / 1.38	5.4 / 0.11	2.8 / 0.08	5.1 / 0.08	0.2 / 0.01	0.08	44		130	34	53	0	DWR
S. Gibbs irrigation	-33K1	7-21-60	68	274	8.0	22 / 1.10	14 / 1.14	11 / 0.48	2.0 / 0.05	0 / 0.00	120 / 1.97	16 / 0.33	3.6 / 0.10	23 / 0.37	0.2 / 0.01	0.08	59		210	17	112	14	DWR
O. Dalerio irrigation	13S/22E-28C2	7-20-60	-	422	8.1	22 / 1.10	30 / 2.48	17 / 0.74	2.4 / 0.06	0 / 0.00	203 / 3.33	9.2 / 0.19	18 / 0.51	24 / 0.39	0.2 / 0.01	0.07	50		273	17	179	13	DWR
Pappas & Company irrigation	14S/13E-12N1	7-19-60	80	1,250	7.8	21 / 1.05	4.1 / 0.33	262 / 11.40	3.0 / 0.08	0 / 0.00	254 / 4.16	287 / 5.98	90 / 2.54	1.7 / 0.03	0.6 / 0.03	[illegible]	63		858	89	69	0	DWR
Employee's Enterprises irrigation	-21N1	7-19-60	85	2,540	8.0	132 / 6.59	140 / 11.51	274 / 11.92	[illegible] / 0.13	[illegible] / 0.00	222 / 3.64	1120 / 23.32	132 / 3.72	4.6 / 0.07	0.2 / 0.01	[illegible]	51		1,970	40	907	725	DWR
Employee's Enterprises irrigation	-22N1	7-19-60	80	1,310	8.3	60 / 2.99	51 / 4.22	282 / 12.27	3.7 / 0.09	7 / 0.23	217 / 3.56	640 / 13.32	97 / 2.74	1.4 / 0.02	0.3 / 0.02	2.1	44		1,300	63	361	172	DWR
Pilibos Brothers irrigation	-25N1	7-19-60	-	2,200	8.2	54 / 2.69	36 / 2.94	377 / 15.40	[illegible] / 0.07	0 / 0.00	[illegible] / [illegible].95	691 / 14.39	178 / 5.02	6.2 / 0.10	[illegible] / 0.04	[illegible]	46		[illegible]	74	282	[illegible]	DWR

a Determined by addition of constituents
b. Gravimetric determination
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC) Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N C ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									FRESNO COUNTY (Cont.)													
Pappas & Company irrigation	14S/14E-9M1	7-19-60	-	3,770	7.3	280 / 13.97	146 / 12.00	414 / 18.01	12 / 0.31	0 / 0.00	220 / 3.60	1150 / 23.94	601 / 16.95	1.1 / 0.02	1.0 / 0.05	1.4	73		2,790	41	1300	1120	DWR
Vista del Llano irrigation	-11N1	7-19-60	-	5,380	7.8	242 / 12.08	205 / 16.89	906 / 39.41	9.0 / 0.23	0 / 0.00	250 / 4.10	1860 / 38.72	950 / 26.79	1.7 / 0.03	0.3 / 0.02	2.1	47		4,350	57	1450	1240	DWR
W. Giacone irrigation	-17Q1	7-19-60	-	2,550	7.8	154 / 7.68	88 / 7.22	300 / 13.05	11 / 0.28	0 / 0.00	223 / 3.65	844 / 17.57	257 / 7.25	5.4 / 0.09	0.2 / 0.01	2.3	67		1,840	46	746	563	DWR
Murietta Farms irrigation	-33N1	7-19-60	-	1,780	8.0	101 / 5.04	92 / 7.61	176 / 7.66	4.2 / 0.11	0 / 0.00	206 / 3.38	727 / 15.14	79 / 2.23	1.0 / 0.02	0.2 / 0.01	2.2	46		1,330	38	633	464	DWR
State Dept. of Fish & Game domestic	14S/15E-28L1	7-21-60	-	1,400	8.0	33 / 1.65	5.0 / 0.41	282 / 12.27	3.7 / 0.09	0 / 0.00	182 / 2.98	443 / 9.22	78 / 2.20	1.4 / 0.02	0.3 / 0.02	1.4	73		1,010	85	103	0	DWR
Gilmore Land Co. irrigation	14S/16E-36A1	7-20-60	70	976	8.2	7.5 / 0.37	0.1 / 0.01	206 / 8.96	2.9 / 0.07	0 / 0.00	176 / 2.88	3.3 / 0.07	234 / 6.60	0.4 / 0.01	0.4 / 0.02	0.83	56		597	95	19	0	DWR
Carless Feer irrigation	14S/17E-13H1	7-20-60	-	375	8.2	35 / 1.75	13 / 1.07	18 / 0.78	4.7 / 0.12	0 / 0.00	132 / 2.16	14 / 0.29	37 / 1.04	8.9 / 0.14	0.2 / 0.01	0.06	76		272	21	141	33	DWR
J. Anderson irrigation	14S/19E-26N1	7-20-60	68	554	7.6	56 / 2.79	23 / 1.91	41 / 1.78	5.4 / 0.14	0 / 0.00	256 / 4.20	17 / 0.35	63 / 1.78	11 / 0.18	0.2 / 0.01	0.07	69		412	27	235	25	DWR
L. T. Haun irrigation	14S/19E-7M	7-20-60	69	431	8.4	38 / 1.90	18 / 1.52	24 / 1.04	6.3 / 0.16	4 / 0.13	230 / 3.77	6.9 / 0.14	16 / 0.45	8.4 / 0.14	0.1 / 0.00	0.07	85		321	22	171	0	DWR
P. Homart irrigation	-22P1	7-20-60	67	600	8.1	34 / 1.70	30 / 2.44	47 / 2.04	6.2 / 0.16	0 / 0.00	258 / 4.23	20 / 0.42	47 / 1.32	20 / 0.32	0.1 / 0.00	0.08	63		394	32	207	0	DWR
City of Fresno municipal	14S/20E-2J1	7-21-60	74	401	8.2	33 / 1.65	17 / 1.41	24 / 1.04	5.6 / 0.14	0 / 0.00	202 / 3.31	8.2 / 0.17	14 / 0.39	18 / 0.29	0.2 / 0.01	0.04	70		289	24	153	0	DWR
C. Pore irrigation	-27C1	7-20-60	-	869	8.2	24 / 1.20	32 / 2.64	128 / 5.57	5.0 / 0.13	0 / 0.00	429 / 7.03	28 / 0.58	61 / 1.72	9.0 / 0.14	0.1 / 0.00	0.13	59		557	58	192	0	DWR
O. W. Leeban irrigation	14S/21E-12P1	7-21-60	-	669	8.1	45 / 2.24	42 / 3.43	35 / 1.52	3.4 / 0.09	0 / 0.00	288 / 4.72	71 / 1.48	27 / 0.76	17 / 0.27	0.2 / 0.01	0.05	57		440	21	284	48	DWR
Philippe Francino irrigation	14S/22E-1B1	7-21-60	68	242	8.0	21 / 1.05	9.1 / 0.75	15 / 0.65	1.4 / 0.04	0 / 0.00	102 / 1.67	22 / 0.46	7.0 / 0.20	11 / 0.18	0.2 / 0.01	0.06	49		186	26	90	6	DWR
Reedley irrigation	14S/24E-15B1	7-21-60	65	239	7.8	20 / 1.00	10 / 0.86	9.4 / 0.41	1.6 / 0.04	0 / 0.00	75 / 1.23	32 / 0.67	4.9 / 0.14	21 / 0.34	0.1 / 0.00	0.05	29		165	18	93	31	DWR
Employee's Enterprises irrigation	15S/12E-1N1	7-19-60	-	4,560	8.3	112 / 5.59	78 / 6.40	897 / 39.02	8.7 / 0.22	6 / 0.20	200 / 3.28	1810 / 36.68	326 / 9.19	23 / 0.37	0.8 / 0.04	5.3	42		3,410	76	600	426	DWR
Employee's Enterprises irrigation	15S/13E-5R1	7-19-60	-	1,460	8.2	51 / 2.54	37 / 3.03	220 / 9.59	3.0 / 0.08	0 / 0.00	172 / 2.82	516 / 10.74	65 / 1.83	4.4 / 0.07	0.4 / 0.02	2.0	43		1,020	63	279	138	DWR

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									FRESNO COUNTY (Cont.)													
Pucheu irrigation	15S/15E-20N2	7-21-60	-	1,720	8.0	136 / 6.79	83 / 6.84	137 / 5.96	4.2 / 0.11	0 / 0.00	194 / 3.18	708 / 14.74	76 / 2.14	0.2 / 0.00	0.1 / 0.00	0.92	44		1,280	30	682	583	DWR
Reece Brothers irrigation	-25N1	7-21-60	-	2,670	7.9	188 / 9.38	141 / 11.60	270 / 11.74	4.7 / 0.12	0 / 0.00	156 / 2.56	1250 / 26.02	157 / 4.43	1.0 / 0.02	0.4 / 0.02	1.5	35		2,120	36	1050	922	DWR
Reece Brothers irrigation	-35N1	7-21-60	75	1,740	8.0	124 / 6.19	109 / 8.95	133 / 5.78	3.3 / 0.08	0 / 0.00	145 / 2.38	811 / 16.88	56 / 1.58	1.2 / 0.02	0.2 / 0.01	0.94	39		1,350	28	758	639	DWR
irrigation	15S/16E-7Q1	7-21-60	70	2,030	8.0	84 / 4.19	17 / 1.38	377 / 16.40	9.2 / 0.24	0 / 0.00	192 / 3.15	687 / 14.30	164 / 4.62	2.8 / 0.04	0.3 / 0.02	0.83	72		1,510	74	279	122	DWR
Edmund Juste irrigation	15S/17E-1H1	7-19-60	-	580	8.1	52 / 2.59	18 / 1.47	32 / 1.39	9.6 / 0.24	0 / 0.00	151 / 2.47	27 / 0.56	84 / 2.37	12 / 0.19	0.1 / 0.00	0.08	77		386	24	203	79	DWR
James Irr. Dist. irrigation	-3R1	7-19-60	70	514	8.3	38 / 1.90	4.9 / 0.40	59 / 2.57	3.8 / 0.10	2 / 0.07	168 / 2.75	18 / 0.37	63 / 1.78	4.2 / 0.07	0.2 / 0.01	0.13	63		338	52	115	0	DWR
James Irr. Dist. irrigation	-10R1	7-19-60	71	2,220	8.1	162 / 8.08	35 / 2.85	228 / 9.92	12 / 0.31	0 / 0.00	160 / 2.62	17 / 0.35	649 / 18.30	11 / 0.18	0.2 / 0.01	0.22	68		1,260	47	547	416	DWR
Sunset International domestic	-11P1	7-20-60	-	582	8.1	50 / 2.50	14 / 1.20	43 / 1.87	3.5 / 0.09	0 / 0.00	143 / 2.34	28 / 0.58	94 / 2.65	4.7 / 0.08	0.2 / 0.01	0.08	56		363	33	185	68	DWR
irrigation	-12J1	7-19-60	70	542	8.1	38 / 1.90	19 / 1.56	38 / 1.65	7.6 / 0.19	0 / 0.00	142 / 2.33	27 / 0.56	80 / 2.26	8.2 / 0.13	0.2 / 0.01	0.12	85		373	31	173	57	DWR
Seaboard Oil Company domestic	-13R1	7-19-60	-	1,020	8.0	84 / 4.19	16 / 1.30	83 / 3.61	12 / 0.31	0 / 0.00	128 / 2.10	2.3 / 0.05	250 / 7.05	3.8 / 0.06	0.3 / 0.02	0.07	72		586	38	275	170	DWR
Seaboard Oil Company domestic & industrial	-14G1	7-20-60	-	885	8.1	31 / 1.55	5.5 / 0.45	136 / 5.92	4.4 / 0.11	0 / 0.00	116 / 1.90	4.0 / 0.08	215 / 6.06	0.6 / 0.01	0.4 / 0.02	0.20	64		518	74	100	5	DWR
Signal Oil Company domestic	-15B1	7-19-60	76	666	8.2	46 / 2.30	8.8 / 0.72	77 / 3.35	7.2 / 0.18	0 / 0.00	150 / 2.46	29 / 0.60	117 / 3.30	5.4 / 0.09	0.2 / 0.01	0.06	66		431	51	151	28	DWR
Nobel irrigation	-15F1	7-19-60	71	822	8.3	27 / 1.35	4.0 / 0.33	142 / 6.18	4.8 / 0.12	1 / 0.03	181 / 2.97	31 / 0.64	154 / 4.34	2.6 / 0.04	0.3 / 0.02	0.45	65		521	77	84	0	DWR
Nobel irrigation	-15H1	7-19-60	73	1,007	8.4	11 / 0.55	0.4 / 0.03	216 / 9.40	5.0 / 0.13	0 / 0.00	235 / 3.85	12 / 0.25	201 / 5.67	0.7 / 0.01	0.4 / 0.02	1.4	67		636	93	29	0	DWR
James Irr. Dist. irrigation	-22R1	7-19-60	70	533	8.3	29 / 1.45	1.8 / 0.15	85 / 3.70	1.7 / 0.04	1 / 0.03	149 / 2.44	12 / 0.25	89 / 2.51	1.2 / 0.02	0.3 / 0.02	0.14	58		352	69	80	0	DWR
James Irr. Dist. irrigation	-27H2	7-19-60	71	483	8.2	6.1 / 0.30	0.5 / 0.04	100 / 4.35	3.2 / 0.08	0 / 0.00	144 / 2.36	32 / 0.67	58 / 1.64	0.5 / 0.01	0.5 / 0.03	0.48	66		338	91	17	0	DWR
James Irr. Dist. irrigation	-34A1	7-21-60	72	472	8.2	6.8 / 0.34	0.0 / 0.00	94 / 4.09	33 / 0.08	0 / 0.00	153 / 2.51	29 / 0.60	51 / 1.44	0.5 / 0.01	0.6 / 0.03	0.54	65		326	91	17	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

12C5-F-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (upper value ppm / lower value epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
	[illegible]									[illegible] COUNTY (Cont.)													
James Irr. Dist. irrigation	15S/17E-[illegible]	7-21-[illegible]	70	342	8.0	6.8 / 0.34	[illegible] / 0.00	79 / 3.44	[illegible]	[illegible] / 0.00	142 / 2.33	12 / 0.25	[illegible] / 1.21	[illegible]	[illegible] / 0.03	0.[illegible]	[illegible]		[illegible]	89	17	0	[illegible]
James Irr. Dist. irrigation	15S/19E-1[illegible]	7-19-6[illegible]	72	326	8.2	25 / 1.25	4.2 / 0.35	35 / 1.52	6.6 / 0.17	0 / 0.00	14[illegible] / 2.29	5.3 / [illegible].11	25 / [illegible].70	7.9 / [illegible]13	0.2 / [illegible].01	[illegible]	74		252	[illegible]	[illegible]	0	[illegible]
James Irr. Dist. irrigation	-20G1	7-17-60	70	389	8.1	23 / 1.15	2.6 / 0.21	53 / 2.30	6.8 / 0.17	0 / 0.00	14[illegible] / 2.29	7.7 / 0.16	42 / 1.18	5.5 / 0.09	0.3 / 0.0[illegible]	[illegible]	69		279	[illegible]	68	0	DWR
James Irr. Dist. irrigation	-20N1	7-19-60	7[illegible]	3[illegible]	8.2	6.8 / 0.34	0.0 / 0.00	56 / 2.44	4.[illegible] / 0.12	0 / [illegible].00	1[illegible] / 1.98	[illegible] / [illegible].05	3 / 0.85	[illegible]	[illegible].3 / 0.02	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]7	[illegible]	[illegible]
G. Bixby domestic	15S/20E-10C3	7-21-[illegible]	-	[illegible]	8.4	51 / 2.54	23 / 1.86	[illegible] / 0.87	[illegible] / 0.[illegible]	5 / 0.17	215 / 3.52	22 / 0.46	[illegible] / 0.68	[illegible]	[illegible] / .01	[illegible]	[illegible]		333	1[illegible]	[illegible]	36	[illegible]
P G & E industrial	15S/21E-24L1	7-21-60	78	510	8.3	39 / 1.95	11 / 0.93	53 / 2.30	3.[illegible] / [illegible]	[illegible] / 0.00	2[illegible]5 / 3.[illegible]	26 / 0.54	34 / 0.97	[illegible]	0.2 / 0.01	[illegible].11	[illegible]		51[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
J. Goertz irrigation	15S/23E-1J1	7-21-60	60	86	7.[illegible]	7.3 / 0.36	3.2 / 0.26	5.8 / 0.25	0.[illegible] / 0.01	[illegible] / 0.00	4[illegible] / [illegible].7[illegible]	2.[illegible] / 0.04	1 / [illegible]	1.3 / 0.03	0.2 / 0.01	[illegible]	[illegible]		[illegible]	[illegible]8	[illegible]	[illegible]	[illegible]
Pasque Ranch irrigation	15S/24E-36R	7-21-60	-	507	8.5	32 / 1.60	20 / 1.[illegible]	52 / 2.26	1.[illegible] / 0.02	6 / 0.20	2[illegible]9 / 4.[illegible]	21 / [illegible].44	17 / [illegible].4[illegible]	[illegible] / 0.3[illegible]	[illegible].2 / .01	.09	31		32[illegible]	4[illegible]	16[illegible]	0	[illegible]
F. A. Yearout irrigation	16S/15E-8N1	7-21-6[illegible]	-	1,4[illegible]	8.3	83 / 4.1[illegible]	63 / [illegible].17	145 / [illegible]	[illegible] / [illegible].7	0 / .00	190 / 3.11	535 / 11.14	59 / 1.66	[illegible].0 / 0.03	0.3 / 0.02	1.2	36		1,0[illegible]0	40	466	31[illegible]	DWR
Vista del Llano irrigation	-25[illegible]1	7-21-60	-	1,750	8.1	108 / 5.39	92 / 7.54	1[illegible]2 / [illegible]	3.2 / .0[illegible]	0 / .00	165 / 2.70	732 / 15.24	72 / 2.03	4.5 / 0.07	0.0 / 0.00	1.4	38		1,290	35	647	512	DWR
Rabb Brothers irrigation	16S/16E-9N2	7-21-[illegible]	75	1,[illegible]	7.8	76 / 3.79	29 / 2.36	[illegible] / [illegible].27	[illegible] / 0.[illegible]	[illegible] / 0.[illegible]	[illegible] / 2.42	495 / 10.30	50 / 1.41	[illegible].7 / 0.01	[illegible].2 / [illegible].01	1.3	40		956	56	[illegible]	187	DWR
Vista del Llano irrigation	-20N1	7-[illegible]	[illegible]	[illegible]	8.0	147 / 7.34	[illegible] / [illegible].30	1.5 / [illegible]	[illegible] / [illegible]	[illegible] / .00	[illegible] / 3.21	915 / 19.[illegible]	59 / 1.6[illegible]	62 / 1.00	0.1 / 0.00	1.1	45		1,600	22	983	3[illegible]	DWR
Vista del Llano irrigation	17S/16E-18E1	7-1[illegible]-60	97	1,[illegible]	7.[illegible]	[illegible]5 / 1.[illegible]5	[illegible] / [illegible].55	[illegible] / [illegible]	1.[illegible] / [illegible]	[illegible]	[illegible] / [illegible].41	451 / 9.39	[illegible] / 2.[illegible]5	1.5 / 0.02	[illegible].8 / 0.04	1.8	21		913	83	115	[illegible]5	DWR
H. W. Leavenport irrigation	17S/17E-[illegible]	7-19-60	-	1,[illegible]	[illegible].1	[illegible]5 / [illegible]	[illegible] / 1.74	1[illegible]6 / [illegible]	1.7 / [illegible]	[illegible]	1[illegible]7 / 2.0[illegible]	458 / 9.54	[illegible]8 / 1.3[illegible]	[illegible].2 / [illegible]	[illegible]	[illegible].12	25		868	6[illegible]	[illegible]	1[illegible]5	DWR
Y. Raceburn irrigation	-25N1	7-1[illegible]	76	1,[illegible]	[illegible]	[illegible]7 / [illegible]	[illegible] / 1.[illegible]7	[illegible] / [illegible]	[illegible]	[illegible]	[illegible] / 1.9[illegible]	[illegible]08 / [illegible]	43 / 1.35	[illegible].4 / [illegible].01	[illegible]	[illegible].14	[illegible]		3[illegible]5	[illegible]	[illegible]	1[illegible]	DWR
H. W. Leavenport	-27R1	7-19-6[illegible]	76	[illegible]	[illegible].1	[illegible] / [illegible]	[illegible] / 1.[illegible]	178 / 7.7[illegible]	[illegible]	[illegible]	[illegible]9 / 1.7[illegible]	5[illegible] / 1[illegible]	5[illegible] / 1.41	[illegible].4 / [illegible].01	[illegible] / .01	[illegible]	[illegible]		[illegible]	5[illegible]	[illegible]	[illegible]	[illegible]
E. Berry irrigation	17S/1[illegible]E-[illegible]	7-[illegible]	71	1,[illegible]	[illegible]	[illegible] / [illegible]	[illegible] / [illegible]	[illegible] / 1[illegible].22	[illegible].1 / .03	[illegible] / [illegible]	[illegible] / [illegible].97	[illegible]7 / 6.39	[illegible] / 2.27	[illegible].4 / 0.01	[illegible].3 / .04	[illegible]	[illegible]		855	7[illegible]	[illegible]	0	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium [illegible]

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO₃)	Bicarbonate (HCO₃)	Sulfate (SO₄)	Chloride (Cl)	Nitrate (NO₃)	Fluoride (F)	Boron (B)	Silica (SiO₂)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as CaCO₃ Total ppm	Hardness as CaCO₃ N C ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M											FRESNO COUNTY (Cont.)											
F. C. Diener irrigation	18S/17E-13N1	7-18-60	88	1,110	8.0	30 / 1.50	6.1 / 0.50	198 / 8.61	1.4 / 0.04	0 / 0.00	95 / 1.56	325 / 0.77	87 / 2.45	0.9 / 0.01	0.4 / 0.02	1.1	22		719	81	100	22	DWR
F. C. Diener irrigation	-13Q1	7-19-60	79	1,250	8.0	63 / 3.14	20 / 1.68	186 / 8.09	2.1 / .05	0 / 0.00	113 / 1.85	462 / 9.62	52 / 1.47	1.0 / 0.02	0.2 / 0.01	0.68	22		865	62	241	148	DWR
Benson irrigation	-30P1	7-21-60	91	2,620	7.8	63 / 3.14	1.9 / 0.16	515 / 22.40	2.8 / 0.07	0 / 0.00	100 / 1.64	191 / 3.98	710 / 20.02	0.5 / 0.01	0.4 / 0.02	0.6	28		1,560	87	165	83	DWR
Calfax irrigation	-33N1	7-19-60	-	3,190	7.8	86 / 4.29	35 / 2.90	600 / 26.10	3.7 / 0.09	0 / 0.00	156 / 2.56	314 / 6.54	834 / 23.52	0.5 / 0.01	0.3 / 0.02	1.4	30		1,980	78	360	232	DWR
Giffen Incorporated irrigation	19S/17E-13N1	7-18-60	81	1,370	8.2	67 / 3.34	60 / 4.93	142 / 6.18	2.6 / 0.07	0 / 0.00	155 / 2.54	509 / 10.60	54 / 1.52	1.7 / 0.03	0.3 / 0.02	0.82	28		941	42	414	287	DWR
Boston Land Company irrigation	19S/18E-23D2	7-18-60	88	1,510	8.2	28 / 1.40	5.4 / 0.44	282 / 12.27	1.3 / 0.03	0 / 0.00	213 / 3.49	190 / 3.96	242 / 6.82	0.7 / 0.01	0.4 / 0.02	1.6	25		881	87	92	0	DWR
Boston Land Company irrigation	-28E1	7-18-60	89	1,790	8.2	37 / 1.85	16 / 1.33	334 / 14.53	2.0 / 0.05	0 / 0.00	256 / 4.20	209 / 4.35	315 / [illegible]	4.0 / 0.06	0.3 / 0.02	1.3	25		1,070	82	159	0	DWR
Allen irrigation	20S/15E-25D2	7-18-60	73	2,140	8.2	83 / 4.14	121 / 9.96	238 / 10.35	3.9 / 0.10	0 / 0.00	201 / 3.29	810 / 10.86	157 / 4.43	10 / 0.16	0.2 / 0.01	1.8	32		1,560	42	706	541	DWR
irrigation	-26M2	7-18-60	70	2,270	8.4	84 / 4.19	138 / 11.39	250 / 10.88	4.2 / 0.11	0 / 0.00	236 / 3.87	795 / 16.55	153 / 4.31	128 / 2.06	0.2 / 0.01	1.4	24		1,6[illegible]	41	730	586	DWR
Shell Oil Company industrial	20S/16E-4F1	7-19-60	97	1,920	8.0	58 / [illegible].89	32 / 2.6[illegible]	308 / 13.40	2.1 / 0.05	0 / 0.00	72 / 1.18	703 / 14.64	117 / 3.30	0.2 / 0.00	0.2 / 0.01	1.5	9.5		1,270	71	275	216	DWR
Giffen Incorporated irrigation	20S/17E-9R1	7-19-60	73	2,670	8.0	172 / [illegible].58	173 / 14.20	242 / 10.53	5.2 / 0.13	0 / 0.00	149 / 2.44	1280 / 26.65	136 / 3.84	61 / 0.99	0.4 / 0.02	1.3	26		2,170	31	1140	1010	DWR
F. Kucher Ranch irrigation	-11N1	7-19-60	78	1,430	8.2	72 / 3.59	68 / 5.64	150 / 6.52	3.1 / 0.08	0 / 0.00	175 / 2.87	560 / 11.66	48 / 1.35	2.4 / 0.04	0.3 / 0.02	0.94	29		1,020	41	462	318	DWR
S & V Thomas irrigation	-36D1	7-18-60	-	1,280	8.0	78 / 3.89	44 / 3.58	137 / 5.96	1.9 / 0.05	0 / 0.00	124 / 2.03	501 / 10.43	33 / 0.93	15 / 0.24	0.2 / 0.01	0.60	29		901	44	374	272	DWR
Boston Land Company irrigation	20S/18E-24D1	7-18-60	90	1,710	9.5	21 / 1.05	5.7 / 0.47	345 / 15.01	1.7 / 0.04	7 / [illegible]	245 / 4.02	120 / 2.50	342 / 9.64	5.9 / 0.10	0.4 / 0.02	1.4	28		998	90	76	0	DWR
											TULARE COUNTY												
J. Aquiav domestic	17S/23E-8H1	7-27-60	67	957	8.0	47 / 2.37	34 / 2.78	102 / 4.45	4.0 / 0.09	0 / 0.00	269 / 4.42	51 / 1.06	110 / 3.08	49 / 0.79	0.0 / 0.00	0.0	44		575	46	259	37	TTL
H. F. Weber irrigation & domestic	17S/25E-34	7-15-60	-	570	8.5	52 / 2.59	20 / 1.67	41 / 1.82	3.0 / .07	28 / 0.94	202 / 3.31	18 / 0.39	40 / 1.13	12 / 0.20	0.0 / 0.00	0.0	43		[illegible]	30	[illegible]	[illegible]	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									TULARE COUNTY (Cont.)													
[illegible]. Castiko domestic	18S/24E-19M1	7-27-60	67	234	8.3	15/0.77	2.0/0.20	35/1.52	0.0/0.01	14/0.46	97/1.59	1.0/0.03	8.0/0.21	10/0.16	0.0/0.00	0.0	20		153	61	49	0	TTL
Jinette Brothers domestic	19S/23E-24G1	7-27-60	64	245	8.2	33/1.63	3.0/0.27	17/0.73	0.0/0.01	0/0.00	130/2.14	0.0/0.00	10/0.28	8.0/0.13	0.0/0.00	0.04	20		156	28	85	0	TTL
Pacific States Corp. irrigation	19S 24E-22C1	7-27-60	64	236	8.0	19/0.97	2.0/0.20	31/1.36	1.0/0.03	0/0.00	110/1.80	12/0.24	13/0.37	8.0/0.14	0.0/0.00	0.02	20		161	53	59	0	TTL
J. Lewis domestic	19S/25E-31J1	7-29-60	70	220	8.2	30/1.48	5.0/0.37	9.0/0.38	1.0/0.03	0/0.00	127/2.09	1.0/0.03	4.0/0.11	0.0/0.00	0.0/0.00	0.0	17		130	17	93	0	TTL
City of Exeter domestic	19S/26E-3K1	7-29-60	72	457	8.3	28/1.42	14/1.17	44/1.92	3.0/0.08	0/0.00	166/2.72	16/0.35	45/1.25	9.0/0.15	0.0/0.00	0.0	29		270	42	130	0	TTL
R. Montgomery irrigation	-26M1	7-29-60	74	459	8.4	13/0.67	12/0.95	69/2.97	2.0/0.05	11/0.38	149/2.45	13/0.27	45/1.27	13/0.21	0.0/0.00	0.0	15		267	64	81	41	TTL
Harrie & Cade irrigation	20S/23E-27F	7-27-60	64	236	8.3	19/0.94	1.0/0.14	32/1.42	1.0/0.02	12/0.40	94/1.53	12/0.24	10/0.27	7.0/0.12	0.1/0.01	0.0	20		161	56	54	0	TTL
A. W. Furez irrigation	20S/26E-5R1	7-29-60	72	691	8.1	30/1.50	26/2.10	67/2.91	3.0/0.08	0/0.00	144/2.37	25/0.52	122/3.44	10/0.17	0.0/0.00	0.0	21		376	44	180	61	TTL
Roger's Farms irrigation	-20	8-17-60	74	421	8.3	25/1.24	13/1.06	41/1.78	3.0/0.08	16/0.52	100/1.63	24/0.50	42/1.17	14/0.24	0.0/0.00	0.09	38		266	43	115	7	TTL
W. Harness irrigation & domestic	21S/27E-15P2	8-5-60	69	472	7.9	43/2.16	18/1.46	29/1.24	2.0/0.06	0/0.00	231/3.78	9.0/0.19	28/0.77	13/0.22	0.0/0.00	0.11	24		281	25	181	0	TTL
G. Schott irrigation	22S/25E-22A	8-4-60	73	255	8.2	18/0.91	2.0/0.20	32/1.42	2.0/0.04	0/0.00	124/2.03	3.0/0.07	13/0.35	4.0/0.07	0.0/0.00	0.0	19		155	55	56	0	TTL
J. Pemberton domestic	22S/27E-11C1	8-5-60	80	440	7.9	41/2.04	17/1.40	28/1.20	2.0/0.06	0/0.00	238/3.90	9.0/0.18	15/0.41	12/0.20	0.0/0.00	0.0	23		266	26	172	0	TTL
T. Kirksey irrigation	23S/25E-9F1	8-4-60	72	225	8.2	17/0.86	1.0/0.05	32/1.40	1.0/0.02	0/0.00	95/1.55	6.0/0.12	17/0.46	6.0/0.10	0.1/0.01	0.09	34		161	60	46	0	TTL
R. Burke irrigation	23S/27E-21H	8-5-60	91	605	8.3	7.0/0.37	1.0/0.11	121/5.25	3.0/0.07	16/0.52	117/1.91	52/1.09	82/2.30	2.0/0.04	0.6/0.03	0.62	38		380	91	24	0	TTL
C. Classen irrigation	-27G1	9-14-60	79	623	8.4	25/1.25	6.0/0.53	98/4.25	3.0/0.08	9/0.29	155/2.55	50/1.04	38/1.07	57/0.91	0.0/0.00	0.0	25		388	70	89	0	TTL
M. Gutinich irrigation	24S/27E-32P1	8-5-60	80	461	8.4	4.0/0.19	1.0/0.07	100/4.35	3.0/0.07	21/0.70	127/2.08	31/0.64	37/1.04	2.0/0.03	0.5/0.29	-	69		331	93	13	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M										KINGS COUNTY												
R. Hallsten domestic	17S/22E-2H	7-22-60	72	204	7.6	21 / 1.05	7.7 / 0.63	6.5 / 0.28	1.7 / 0.04	0 / 0.00	81 / 1.33	7.7 / 0.16	7.4 / 0.21	22 / 0.35	0.2 / 0.01	0.05	26		140	14	84	18	DWR
H. I. Brown irrigation	18S/19E-6G1	7-22-60	68	1,160	8.6	26 / 1.30	8.0 / 0.72	220 / 9.57	0.9 / 0.02	12 / 0.40	289 / 4.74	209 / 4.35	79 / 2.23	0.5 / 0.01	1.4 / 0.07	1.8	1.9		708	82	101	0	DWR
Doyle Johns irrigation	-26H1	8-10-60	68	477	8.4	1.0 / 0.07	1.0 / 0.11	113 / 4.90	1.0 / 0.01	16 / 0.52	209 / 3.44	5.0 / 0.10	28 / 0.77	1.0 / 0.01	1.3 / 0.07	0.97	16		288	96	9	0	TTL
W. Verboon irrigation	18S/21E-14F1	8-2-60	66	295	8.1	37 / 1.85	3.5 / 0.29	17 / 0.74	1.0 / 0.02	0 / 0.00	113 / 1.85	31 / 0.64	13 / 0.37	3.1 / 0.05	0.2 / 0.01	0.06	31		193	26	1C7	14	DWR
Weddeburn Brothers irrigation	19S/19E-15N1	7-25-60	78	1,490	8.3	51 / 2.54	5.8 / C.48	266 / 11.57	2.0 / 0.05	0 / 0.00	282 / 4.62	297 / 6.18	145 / 4.09	2.3 / 0.04	0.9 / 0.05	1.6	37		992	77	182	0	DWR
Serpe domestic	19S/20E-33A1	7-25-60	74	537	8.5	3.9 / 0.19	0.1 / 0.01	129 / 5.61	0.9 / 0.02	6 / 0.20	280 / 4.59	0.0 / 0.00	29 / 0.82	3.6 / 0.06	0.5 / 0.03	1.1	25		337	96	10	0	DWR
L. Anderson irrigation	19S/21E-3B1	7-22-60	69	264	8.3	5.3 / 0.26	1.2 / 0.10	56 / 2.44	0.4 / 0.01	0 / 0.00	149 / 2.44	7.6 / 0.16	6.9 / 0.19	0.7 / 0.01	1.0 / 0.05	0.37	36		188	87	18	0	DWR
Manzanillo Ranch irrigation	19S/23E-8H1	7-22-60	82	135	7.9	4.2 / 0.21	0.4 / 0.03	26 / 1.13	0.3 / 0.01	0 / 0.00	72 / 1.18	3.0 / 0.06	5.4 / 0.15	1.4 / 0.02	0.2 / 0.01	0.07	24		100	82	12	0	DWR
C. Orton irrigation & domestic	20S/20E-10L1	7-25-60	72	839	8.6	7.9 / 0.39	1.3 / 0.11	188 / 8.18	1.7 / 0.04	16 / 0.53	422 / 6.92	24 / 0.50	33 / 0.93	5.8 / 0.09	0.3 / 0.02	1.3	46		533	94	25	0	DWR
F. A. Peters domestic	20S/21E-12A1	9-22-60	71	853	8.0	51 / 2.54	15 / 1.26	106 / 4.61	0.8 / 0.02	0 / 0.00	232 / 3.80	40 / 0.83	132 / 3.72	1.7 / 0.03	0.4 / 0.02	0.23	29		490	55	190	0	DWR
Salyer Land Company irrigation	-16	8-2-60	76	542	8.1	6.0 / 0.28	2.0 / 0.23	102 / 4.45	1.0 / 0.03	0 / 0.00	189 / 3.10	0.0 / 0.00	67 / 1.87	0.0 / 0.00	0.8 / 0.04	0.40	25		298	89	26	0	TTL
J. Hahsey domestic	20S/22E-1A1	7-22-60	70	209	8.1	13 / 0.65	0.4 / 0.03	34 / 1.48	0.4 / 0.01	0 / 0.00	106 / 1.74	6.7 / 0.14	8.3 / 0.23	4.2 / 0.07	0.1 / 0.00	0.05	20		139	68	34	0	DWR
Corcoran Irr. Dist. irrigation	-34J	7-20-60	70	344	8.1	14 / 0.70	0.0 / 0.02	48 / 2.10	1.0 / 0.01	0 / 0.00	69 / 1.13	38 / 0.80	32 / 0.89	0.0 / 0.00	0.2 / 0.C1	0.18	17		184	74	36	0	TTL
J. G. Stone Lane Co. irrigation & domestic	21S/18E-1D1	7-25-60	75	1,440	8.0	82 / 4.09	36 / 2.98	172 / 7.48	1.6 / 0.04	0 / 0.00	93 / 1.52	555 / 11.56	62 / 1.75	8.2 / 0.13	2.2 / 0.12	0.67	31		997	51	354	278	DWR
E. H. Aldrin irrigation	-17M1	7-20-60	77	1,317	8.3	85 / 4.24	37 / 3.09	118 / 5.15	3.0 / 0.08	0 / 0.00	109 / 1.78	483 / 10.06	29 / 0.80	7.0 / 0.12	0.1 / 0.21	0.33	23		840	41	367	278	TTL
J. Verboon irrigation	21S/21E-1H2	7-20-60	63	1,572	8.6	22 / 1.11	11 / 0.90	322 / 14.00	2.0 / 0.06	68 / 2.26	578 / 9.49	48 / 1.01	143 / 4.01	0.0 / 0.00	0.1 / 0.01	1.0	28		941	35	101	0	TTL
J. B. Boyett stock & irrigation	21S/22E-13G1	7-20-60	68	338	8.3	20 / 1.02	2.0 / 0.22	47 / 2.04	1.0 / 0.01	10 / 0.34	136 / 2.24	10 / 0.20	18 / 0.51	0.0 / 0.00	0.2 / 0.01	0.42	20		197	62	61	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	M.D.B.&M.									KINGS COUNTY (Cont.)													
[illegible] domestic	21S/[illegible]E-2[illegible]	7-2[illegible]-60	7[illegible]	1,[illegible]7	7.9	13 / [illegible].67	6.0 / 0.53	205 / 8.[illegible]	1.[illegible] / [illegible].03	0 / 0.[illegible]	358 / 5.86	1.0 / 0.03	149 / 4.2[illegible]	2.0 / 0.04	0.0 / 0.00	0.42	21		579	8[illegible]	[illegible]	[illegible]	TTL
[illegible] High School domestic	22S/17E-15M2	7-2[illegible]-60	81	1,454	7.9	44 / 2.2[illegible]	1.0 / [illegible]	259 / 11.2[illegible]	1.6 / [illegible]	0 / [illegible]	68 / 1.12	534 / 11.12	49 / 1.38	1.0 / 0.[illegible]	0.3 / 0.02	0.75	28		951	83	115	59	TTL
[illegible] irrigation	22S/19E-2[illegible]N	7-25-6[illegible]	79	1,[illegible]30	8.6	10 / 0.5[illegible]	3.6 / 0.30	220 / 9.[illegible]	1.4 / 0.04	12 / [illegible].4[illegible]	353 / [illegible]	39 / .81	124 / 3.50	0.4 / [illegible].01	0.3 / [illegible].02	1.0	39		625	92	40	0	DWR
[illegible] domestic	2[illegible]S/22E-1[illegible]	7-20-60	[illegible]	[illegible]69	-	16 / 0.81	2.0 / [illegible].19	76 / 3.27	4.0 / [illegible].[illegible]9	0 / [illegible].00	192 / 3.15	1.0 / 0.03	27 / 0.76	29 / [illegible].46	0.6 / 0.03	0.53	36		288	74	54	0	TTL
	23S/1[illegible]E-2[illegible]M	7-20-60	79	[illegible],468	8.2	72 / [illegible].60	173 / 14.20	1430 / 62.00	4.0 / .10	0 / 0.[illegible]	354 / 5.80	202 / 4.2[illegible]	2502 / [illegible]	0.0 / 0.00	0.1 / 0.01	4.7	32		4,597	79	884	594	TTL
	23S/20E-13F[illegible]	7-20-60	70	6,909	8.1	26 / 1.29	243 / 19.9[illegible]	724 / 31.50	47 / 1.2[illegible]	0 / 0.00	2038 / 33.40	0.0 / [illegible].00	1464 / 41.2[illegible]	0.0 / 0.0[illegible]	0.0 / 0.00	2.5	32		3,937	42	1062	0	TTL
South Lake Farms domestic & irrigation	23S/21E-19[illegible]1	7-2[illegible]-60	70	11,538	8.2	42 / 2.12	217 / 17.83	2420 / 1[illegible]	16 / 0.4[illegible]	0 / 0.[illegible]	1617 / 26.50	198 / 4.12	3364 / 94.73	0.0 / [illegible]	0.1 / [illegible]	6.6	54		7,126	84	1000	[illegible]	TTL
	24S/19E-2[illegible]	7-20-6[illegible]	7[illegible]	1,[illegible]33	8.[illegible]	53 / [illegible].65	79 / 6.48	205 / 8.[illegible]	78 / [illegible].18	0 / 0.00	245 / 4.[illegible]	585 / 12.17	78 / 2.20	10 / 0.16	0.3 / 0.02	2.3	44		1,186	49	457	256	TTL
Hacienda Ranch irrigation	24S/22E-27[illegible]1	[illegible]-2[illegible]-60	80	[illegible]	8.[illegible]	18 / [illegible].90	6.0 / 0.45	91 / 3.95	3.0 / 0.08	25 / [illegible].82	185 / 3.[illegible]	4.0 / [illegible].09	68 / 1.90	0.0 / 0.00	0.9 / [illegible].05	0.0	28		344	68	63	0	TTL
	S.B.B.&M.										KERN COUNTY												
[illegible] Ranch domestic	1[illegible]N/[illegible]W-[illegible]M1	7-14-60	74	514	7.7	55 / 2.75	20 / 1.68	20 / [illegible]	2.9 / [illegible].07	0 / [illegible]	227 / 3.72	60 / 1.24	13 / 0.36	7.0 / 0.11	0.0 / 0.00	0.20	21		313	16	221	35	TTL
[illegible] Ranch irrigation & domestic	11N/19W-25F1	7-15-60	70	555	7.6	53 / 2.65	19 / 1.58	37 / 1.58	2.8 / [illegible]	0 / [illegible]	244 / 4.00	49 / 1.03	23 / .65	6.0 / 0.10	0.4 / 0.02	0.20	20		332	27	211	11	TTL
Walter D. Fry irrigation	11N/20W-8R1	7-15-60	78	1,620	7.7	85 / 4.27	29 / 2.41	146 / 6.35	8.0 / [illegible].20	0 / 0.00	142 / 2.33	247 / 5.65	196 / 5.52	10 / 0.17	0.6 / 0.03	0.60	28		821	48	334	218	DWR
[illegible] Rock Company industrial	-25F1	7-15-[illegible]	92	2,[illegible]58	7.3	202 / 10.08	59 / 4.84	198 / 8.60	10.3 / 0.27	0 / 0.[illegible]	122 / 2.00	918 / 19.12	54 / 1.52	45 / 0.73	0.4 / 0.02	0.56	20		1,568	36	746	646	TTL
[illegible] irrigation	[illegible]N/27W-26N1	7-25-60	101	47[illegible]	8.1	48 / 2.42	12 / 1.01	23 / 1.02	[illegible] / .0[illegible]	0 / [illegible]	1[illegible]3 / 2.84	37 / 0.77	232 / [illegible].56	14 / 0.23	0.1 / 0.01	[illegible].0	28		492	23	171	29	DWR
R. [illegible]lidebrand irrigation	12N/19W-33R1	7-14-60	72	341	8.2	26 / 1.30	7.8 / 0.64	35 / 1.52	2.9 / 0.07	0 / 0.00	161 / 2.64	28 / 0.58	7.2 / 0.20	2.0 / 0.03	0.6 / 0.03	0.14	19		208	43	97	0	DWR
Standard Oil Company irrigation	12N/2[illegible]W-33N1	7-15-60	90	1,55[illegible]	7.8	166 / 8.28	45 / 3.68	122 / 5.28	9.2 / .24	0 / 0.00	127 / 2.09	691 / 14.38	29 / 0.83	11 / 0.18	0.8 / 0.05	0.24	18		1,156	30	598	493	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by[c]
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									KERN COUNTY (Cont.)													
A. M. Baker industrial	25S/18E-3N2	7-21-60	71	3,190	8.0	190 / 9.48	210 / 17.29	312 / 13.57	5.6 / 0.14	0 / 0.00	182 / 2.98	1070 / 22.28	542 / 15.28	14 / 0.22	0.2 / 0.01	2.5	38		2,470	34	1340	1191	DWR
K. K. Ranch irrigation	25S/19E-6D2	7-21-60	75	2,320	8.3	98 / 4.89	124 / 10.21	266 / 11.57	6.2 / 0.16	4 / 0.13	274 / 4.49	760 / 15.82	226 / 6.37	30 / 0.48	0.2 / 0.01	2.3	63		1,710	43	756	525	DWR
K. K. Ranch irrigation	-7P1	7-21-60	77	4,760	7.9	152 / 7.58	270 / 22.19	806 / 35.06	14 / 0.36	0 / 0.00	439 / 7.20	2250 / 46.84	415 / 11.70	11 / 0.18	0.3 / 0.02	7.9	71		4,210	54	1490	1130	DWR
Juang Goni stock	25S/20E-26Q1	7-28-60	-	6,289	7.9	97 / 4.84	100 / 8.20	1173 / 51.00	9.2 / 0.24	0 / 0.00	224 / 3.66	709 / 14.76	1618 / 45.62	1.0 / 0.01	0.3 / 0.01	7.5	44		3,828	79	652	469	DWR
Tulare Gun Club irrigation	25S/23E-11J1	7-13-60	72	165	8.4	1.4 / 0.07	0.1 / 0.01	35 / 1.52	0.0 / 0.00	0 / 0.00	7.4 / 1.21	9.7 / 0.20	5.0 / 0.14	0.3 / 0.00	0.7 / 0.04	0.05	28		116	95	4	0	DWR
C. Fairini irrigation	25S/24E-27R1	7-11-60	72	607	7.7	66 / 3.28	1.0 / 0.14	52 / 2.24	0.3 / 0.01	0 / 0.00	79 / 1.30	148 / 3.09	32 / 0.91	19 / 0.30	0.0 / 0.00	0.04	42		379	40	171	106	DWR
irrigation	25S/25E-4Q1	7-11-60	72	354	7.9	31 / 1.56	5.0 / 0.42	32 / 1.42	1.9 / 0.05	0 / 0.00	133 / 2.19	25 / 0.53	19 / 0.53	11 / 0.18	0.0 / 0.00	0.12	53		244	41	99	0	DWR
Mid-State Hort. Co. irrigation	25S/26E-1R1	7-11-60	77	335	7.8	15 / 0.74	2.0 / 0.18	46 / 2.10	3.1 / 0.08	0 / 0.00	101 / 1.65	23 / 0.48	24 / 0.69	15 / 0.25	0.0 / 0.00	0.42	20		200	68	46	46	DWR
irrigation	26S/18E-1A	8-26-60	-	4,950	8.3	88 / 4.39	94 / 7.72	851 / 37.02	3.8 / 0.10	0 / 0.00	404 / 6.62	420 / 8.74	1200 / 33.84	0.6 / 0.01	0.3 / 0.02	2.5	34		4,950	75	606	275	DWR
E. Still irrigation	-23M2	7-13-60	76	2,631	8.0	120 / 5.10	122 / 10.00	317 / 13.80	3.1 / 0.08	0 / 0.00	216 / 3.54	908 / 18.90	223 / 6.28	21 / 0.33	0.5 / 0.03	1.6	30		1,754	48	755	578	TTL
R. Heitzig irrigation	26S/24E-3R1	7-11-60	76	198	7.4	4.0 / 0.20	1.0 / 0.11	33 / 1.46	0.3 / 0.01	0 / 0.00	59 / 0.96	21 / 0.45	11 / 0.30	4.0 / 0.06	0.2 / 0.01	0.0	20		124	82	15	15	TTL
N. G. Smith domestic & stock	26S/27E-9G1	7-11-60	76	2,134	7.6	200 / 10.02	72 / 5.94	156 / 6.80	16.3 / 0.42	0 / 0.00	87 / 1.44	653 / 13.61	290 / 8.17	1.0 / 0.02	0.1 / 0.01	0.16	41		1,473	29	798	726	TTL
Tidewater Oil Company industrial	27S/20E-34G1	7-28-60	80	4,903	8.2	17 / 0.84	25 / 2.08	1070 / 46.50	36 / 0.92	0 / 0.00	825 / 13.52	483 / 10.06	923 / 26.02	13 / 0.22	0.0 / 0.00	5.6	42		3,028	92	146	146	DWR
E. A. Meyer irrigation	27S/22E-2Q2	9-7-60	76	1,650	7.9	44 / 2.20	0.7 / 0.06	290 / 12.62	1.1 / 0.03	0 / C.00	84 / 1.38	62 / 1.29	439 / 12.38	0.5 / 0.01	1.4 / 0.07	0.78	22		902	85	113	44	DWR
Houchin Farms irrigation	-21P1	7-27-60	67	2,560	7.7	181 / 9.03	11 / 0.92	353 / 15.36	1.7 / 0.04	0 / 0.00	135 / 2.21	402 / 8.37	533 / 15.03	1.0 / 0.02	0.3 / 0.02	0.95	22		1,570	60	498	387	DWR
A. Palla irrigation	-28G2	7-27-60	67	2,670	8.0	211 / 10.53	33 / 2.74	348 / 15.14	3.1 / 0.08	0 / 0.00	100 / 1.64	672 / 13.99	445 / 12.55	1.7 / 0.03	0.5 / 0.03	0.98	27		1,790	53	664	582	DWR
R. Neumand irrigation	27S/23E-27J1	7-12-60	76	247	8.6	3.6 / 0.18	0.0 / 0.00	47 / 2.04	0.0 / 0.00	1 / 0.03	57 / 0.93	16 / 0.33	33 / 0.93	0.6 / 0.01	0.4 / 0.02	0.06	23		155	92	9	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	N.C. ppm	Analyzed by[c]
	MDB&M									KERN COUNTY (Cont.)													
Kern County Land Co. irrigation	27S/24E-5R1	7-8-60	74	158	7.7	4.0 / 0.22	2.0 / 0.15	26 / 1.14	0.3 / 0.01	0 / 0.00	59 / 0.97	12.5 / 0.26	8.2 / 0.23	3.72 / 0.06	0.0 / 0.00	0.04	16		102	75	19	19	DWR
Kern County Land Co. irrigation	27S/25E-5R1	7-8-60	74	300	7.9	27 / 1.33	4.0 / 0.31	29 / 1.26	1.5 / 0.04	0 / 0.00	122 / 2.00	18 / 0.38	9.0 / 0.26	19 / 0.30	0.0 / 0.00	0.20	20		189	43	82	0	TTL
C. West irrigation	27S/26E-27R1	7-25-60	74	1,047	7.8	123 / 6.14	19 / 1.62	37 / 1.62	3.9 / 0.10	0 / 0.00	129 / 2.12	57 / 1.18	203 / 5.72	20 / 0.31	0.0 / 0.00	0.10	24		552	17	388	282	TTL
E. West irrigation	27S/27E-29J1	7-8-60	72	1,464	7.7	108 / 5.38	22 / 1.82	147 / 6.40	3.5 / 0.09	0 / 0.00	177 / 2.90	97 / 2.03	310 / 8.74	6.0 / 0.09	0.0 / 0.00	0.60	29		812	47	360	215	TTL
Houchin Farms irrigation & domestic	28S/22E-4A1	8-23-60	68	2,440	7.8	116 / 5.79	4.1 / 0.34	408 / 17.75	1.6 / 0.04	0 / 0.00	60 / 0.98	536 / 11.16	470 / 12.13	0.5 / 0.01	0.3 / 0.02	0.87	18		1,540	74	307	258	DWR
Blue Moon Farms domestic	-10R1	7-27-60	68	1,070	8.1	59 / 2.94	1.2 / 0.10	179 / 7.79	1.3 / 0.03	0 / 0.00	193 / 3.16	238 / 4.96	92 / 2.59	0.6 / 0.01	0.4 / 0.02	0.52	22		689	72	152	0	DWR
Houchin Farms irrigation & domestic	-26J1	7-27-60	70	1,510	8.0	137 / 6.84	25 / 2.05	170 / 7.40	3.0 / 0.08	0 / 0.00	225 / 3.69	490 / 10.20	83 / 2.34	1.4 / 0.02	0.6 / 0.03	0.70	32		1,054	45	445	261	DWR
Houchin Farms irrigation & domestic	-36N1	7-27-60	67	1,080	8.1	76 / 3.79	9.4 / 0.77	146 / 6.35	1.7 / 0.05	0 / 0.00	194 / 3.18	273 / 5.68	76 / 2.14	1.1 / 0.02	0.4 / 0.02	0.58	26		705	58	228	69	DWR
Crawford irrigation	28S/23E-25P1	7-12-60	70	336	8.0	13 / 0.65	0.8 / 0.07	53 / 2.30	0.0 / 0.00	0 / 0.00	48 / 0.79	53 / 1.10	39 / 1.10	1.4 / 0.02	0.4 / 0.02	0.12	18		203	76	36	0	DWR
B. Issoc irrigation	28S/25E-17L	7-11-60	72	186	8.1	9.4 / 0.47	0.1 / 0.01	31 / 1.35	0.3 / 0.01	0 / 0.00	84 / 1.38	10 / 0.21	7.4 / 0.21	1.0 / 0.02	0.4 / 0.02	0.11	19		120	73	24	0	DWR
S. A. Camp irrigation	28S/26E-11A	7-28-60	77	2,716	7.5	363 / 18.08	3.0 / 0.26	189 / 8.20	5.7 / 0.15	0 / 0.00	47 / 0.76	439 / 9.14	515 / 14.53	125 / 2.02	0.0 / 0.00	0.0	15		1,678	31	917	879	DWR
Kern County Land Co. irrigation	-30A1	7-8-60	76	940	7.3	123 / 6.14	5.0 / 0.39	57 / 2.49	0.7 / 0.02	0 / 0.00	84 / 1.39	547 / 5.15	84 / 2.35	10 / 0.17	0.0 / 0.00	0.08	15		884	27	326	257	DWR
Pacific Western Oil Co. industrial	28S/27E-22D1	7-25-60	86	257	3.1	2.0 / 0.10	1.0 / 0.09	49 / 2.14	0.3 / 0.01	0 / 0.00	83 / 1.37	26 / 0.54	15 / 0.42	1.0 / 0.01	0.0 / 0.00	0.0	15		151	91	9	9	TTL
Houchin Ranch domestic	29S/23E-24H1	7-26-60	64	405	7.9	21 / 1.05	0.8 / 0.07	62 / 2.70	0.6 / 0.02	0 / 0.00	92 / 1.51	78 / 1.62	22 / 0.62	0.8 / 0.01	0.3 / 0.02	0.16	18		249	70	56	0	DWR
B. Curtis irrigation	29S/25E-10N1	7-7-60	73	382	7.9	40 / 1.99	1.0 / 0.13	30 / 1.28	1.0 / 0.03	0 / 0.00	83 / 1.36	34 / 0.69	48 / 1.34	2.0 / 0.04	0.0 / 0.00	0.16	16		213	37	106	38	DWR
D. C. McCann	29S/28E-12E1	7-14-60	79	396	8.1	23 / 1.15	0.1 / 0.01	66 / 2.97	2.4 / 0.06	0 / 0.00	159 / 2.61	47 / 0.98	15 / 0.42	1.4 / 0.02	0.1 / 0.00	0.11	25		258	70	58	0	DWR
Kern Growers Exg. irrigation & domestic	-36J1	7-14-60	76	3,604	7.7	496 / 24.75	90 / 7.42	208 / 9.05	12 / 0.31	0 / 0.00	153 / 2.51	1010 / 21.03	534 / 15.06	142 / 2.29	0.3 / 0.02	0.28	28		2,600	22	1610	1490	DWR

a. Determined by addition of constituents
b. Gravimetric determination
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
						Mineral constituents in parts per million / equivalents per million																	
	MDB&M									KERN	COUNTY	(Cont.)											
Kern Oil Company irrigation	29S/29E-34N1	7-14-60	80	616	8.0	29 / 1.45	3.8 / 0.31	110 / 4.78	2.3 / 0.06	0 / 0.00	327 / 5.36	0.0 / 0.00	43 / 1.21	0.3 / 0.00	0.1 / 0.00	0.17	30		380	72	88	0	DWR
L & P Dadini domestic	30S/23E-1C1	7-26-60	66	511	7.4	8.2 / 0.42	0.1 / 0.01	91 / 3.96	0.5 / 0.01	0 / 0.00	38 / 0.62	15 / 0.31	122 / 3.44	0.3 / 0.00	0.6 / 0.03	0.41	18		275	90	21	0	LWR
State of California irrigation	30S/24E-14H1	7-12-60	77	782	8.1	92 / 4.59	1.3 / 0.11	74 / 3.22	1.0 / 0.02	0 / 0.00	125 / 2.05	240 / 5.00	29 / 0.82	0.3 / 0.00	0.1 / 0.00	0.20	20		519	40	235	133	LWR
Kern County Land Co. irrigation & domestic	30S/27E-21D1	7-7-60	70	467	8.1	52 / 2.59	10 / 0.85	30 / 1.30	1.5 / 0.04	0 / 0.00	186 / 3.05	38 / 0.79	29 / 0.82	2.0 / 0.03	0.3 / 0.02	0.22	29		283	27	172	20	DWR
C. Samulee irrigation & domestic	30S/28E-11R2	7-28-60	72	625	8.1	54 / 2.70	12 / 1.10	53 / 2.31	4.6 / 0.12	0 / 0.00	217 / 3.53	67 / 1.41	43 / 1.20	2 / 0.04	0.1 / 0.01	0.22	20		365	37	190	14	UWR
Douglas Oil Company industrial & domestic	-25A1	7-5-60	-	464	7.7	33 / 1.66	11 / 0.88	44 / 1.92	4.6 / 0.12	0 / 0.00	203 / 3.34	30 / 0.62	21 / 0.58	1 / 0.01	0.0 / 0.00	0.20	23		270	42	127	127	DWR
T. Panella domestic	30S/29E-5D2	7-14-60	78	2,140	7.8	216 / 10.78	48 / 3.92	137 / 5.96	8.0 / 0.20	0 / 0.00	203 / 3.33	144 / 3.00	436 / 12.30	118 / 1.90	0.1 / 0.00	0.12	28		1,240	28	736	570	UWR
E. Pressler irrigation	-15G1	7-5-60	-	586	7.6	52 / 2.60	16 / 1.25	45 / 1.94	3.5 / 0.09	0 / 0.00	214 / 3.50	58 / 1.20	42 / 1.17	0.0 / 0.00	0.0 / 0.00	0.20	21		345	33	192	17	TTL
H. Porter irrigation	-20A1	7-5-60	-	762	7.6	48 / 2.40	33 / 2.67	49 / 2.16	4.6 / 0.12	0 / 0.00	200 / 3.28	86 / 1.79	63 / 1.77	28 / 0.45	0.2 / 0.01	0.28	21		433	29	254	90	TTL
F. Alexis irrigation & domestic	-27J1	7-5-60	-	978	7.6	81 / 4.03	31 / 2.55	55 / 2.37	5.7 / 0.15	0 / 0.00	235 / 3.85	100 / 2.08	58 / 1.62	99 / 1.60	0.2 / 0.01	0.12	25		573	26	329	137	TTL
Banduchi irrigation	31S/24E-28B1	7-15-60	77	6,139	7.6	539 / 26.90	138 / 10.50	805 / 35.00	13.7 / 0.35	0 / 0.00	102 / 1.66	2205 / 45.90	859 / 24.22	9.0 / 0.15	0.2 / 0.02	3.9	35		4,649	48	1870	1787	TTL
Houchin Farms irrigation	31S/25E-25H1	9-1-60	73	422	8.4	17 / 0.85	0.4 / 0.03	74 / 3.22	1.2 / 0.03	0 / 0.00	107 / 1.77	95 / 1.98	7.5 / 0.21	0.5 / 0.01	4.2 / 0.22	0.49	37		290	78	44	0	DWR
Palm Dairy domestic	31S/28E-7R3	7-5-60	71	505	7.8	43 / 2.16	9.0 / 0.69	49 / 2.16	1.9 / 0.05	0 / 0.00	179 / 2.93	61 / 1.27	30 / 0.84	0.0 / 0.00	0.0 / 0.00	0.24	24		307	43	142	142	TTL
E. Yakeitch irrigation	31S/29E-17E1	7-15-60	72	582	7.6	41 / 2.04	10 / 0.82	63 / 2.76	4.2 / 0.11	0 / 0.00	206 / 3.39	69 / 1.45	29 / 0.83	6.0 / 0.10	0.0 / 0.00	0.46	19		345	48	143	143	TTL
Maple Ranch irrigation	32S/27E-6D1	8-16-60	74	386	8.2	10 / 0.50	1.2 / 0.10	74 / 3.22	1.1 / 0.03	0 / 0.00	125 / 2.05	65 / 1.35	11 / 0.31	0.6 / 0.01	2.6 / 0.14	0.36	34		261	84	30	0	LWR
H. M. Herford irrigation & domestic	32S/28E-12F1	7-25-60	81	419	8.0	31 / 1.54	18 / 0.46	51 / 2.20	2.4 / 0.06	0 / 0.00	172 / 2.81	39 / 0.82	20 / 0.55	1.0 / 0.01	0.4 / 0.02	0.10	14		263	52	100	100	TTL
C. B. Dickey irrigation	32S/29E-11R1	7-5-60	72	2,095	7.4	136 / 6.78	14 / 1.16	244 / 10.60	4.9 / 0.13	0 / 0.00	128 / 2.10	126 / 2.62	492 / 13.88	14 / 0.24	0.4 / 0.22	1.2	20		1,117	57	397	292	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

32505-E-G 6-61 500 SPO

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by c
	MDB&M										KERN COUNTY (Cont.)												
C. B. Dickey irrigation	32S/29E-16R1	7-14-60	-	638	8.1	50 2.50	20 1.62	52 2.25	4.0 0.10	0 0.00	229 3.75	46 0.96	48 1.35	23 0.37	0.4 0.02	0.18	22		378	35	206	18	DWR
											PANOCHE VALLEY (5-23)												
F. Mendez irrigation & stock	15S/12E-15G1	9-1-60	-	984	7.9	53 2.66	32 2.61	107 4.56	3.0 0.07	0 0.00	130 2.14	321 6.68	34 0.96	11 0.18	0.4 0.02	1.1	38		666	47	264	157	TTL
Rey Brothers irrigation	-16C1	9-1-60	76	687	7.9	34 1.70	23 1.87	71 3.09	2.0 0.05	0 0.00	208 3.41	107 2.23	33 0.93	8.0 0.14	0.4 0.02	1.5	32		416	46	172	8	TTL
Rey Brothers irrigation	-20D	9-1-60	75	1,195	7.7	78 3.92	45 3.65	122 5.30	3.0 0.08	0 0.00	271 4.45	333 6.95	52 1.46	6.0 0.09	0.1 0.01	1.9	35		811	41	379	156	TTL
Panoche Inn domestic	-21L1	9-1-60	-	1,384	7.9	94 4.68	55 4.46	129 5.60	4.0 0.10	0 0.00	246 4.03	451 9.38	50 1.39	14 0.24	0.5 0.03	1.1	28		950	38	457	255	TTL
Rey Brothers irrigation	-22D1	9-1-60	-	1,308	7.7	86 4.28	48 3.99	122 5.30	4.0 0.09	0 0.00	118 1.94	500 10.41	51 1.42	8.0 0.14	0.5 0.03	1.6	30		910	39	414	327	TTL
Henry Berg irrigation	15S/11E-30F	9-1-60	70	1,010	7.7	69 3.47	39 3.23	124 5.4	4.0 0.09	0 0.00	177 2.90	395 8.23	46 1.28	10 0.16	0.2 0.01	1.7	36		813	44	335	190	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Per cent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
									Mineral constituents in parts per million / equivalents per million														
	"DRW"								LAHONTAN REGION (NO. 6) SURPRISE VALLEY (6-1)														
Christensen Brothers stock	38N/17E-10D1	7-23-60	57	217	7.8	3.2 / 0.16	0.0 / 0.00	44 / 1.91	1.6 / 0.04	0 / 0.00	99 / 1.62	5.8 / 0.12	12 / 0.34	0.9 / 0.01	0.7 / 0.04	0.18	59		176	90	83	0	DWR
[illegible] Grove stock	39N/17E-5D1	7-23-60	66	333	[illegible]	[illegible] / 0.34	2.4 / 0.20	70 / 3.04	2.7 / 0.07	0 / 0.00	91 / 1.49	75 / 1.56	17 / 0.48	0.0 / 0.00	2.5 / 0.13	0.72	48		270	93	27	0	DWR
L. Cockrell domestic	40N/15E-11C1	7-28-60	55	220	8.2	25 / 1.24	6.0 / 0.47	12 / 0.56	1.9 / 0.05	0 / 0.00	135 / 2.21	0.0 / 0.00	4.0 / 0.11	2.0 / 0.04	0.0 / 0.00	0.80	18		136	24	86	0	DWR
H. J. Powers irrigation	-13J1	7-28-60	54	213	8.1	25 / 1.25	6.2 / 0.51	9.9 / 0.43	3.4 / 0.09	0 / 0.00	131 / 2.15	2.0 / 0.04	1.0 / 0.03	0.9 / 0.01	0.1 / 0.00	0.05	41		153	19	88	0	DWR
[illegible] Grove domestic	-36 1	7-28-60	-	327	8.3	41 / 2.04	17 / 1.38	24 / 1.04	2.9 / 0.07	0 / 0.00	251 / 4.11	9.0 / 0.19	2.5 / 0.07	2.0 / 0.03	0.1 / 0.00	0.08	47		269	23	171	0	DWR
J. Cambron stock	40N/17E-20C1	7-28-60	55	362	8.0	25 / 1.25	6.9 / 0.57	36 / 1.57	5.7 / 0.14	0 / 0.00	133 / 2.18	37 / 0.77	22 / 0.62	0.5 / 0.01	0.2 / 0.01	0.18	59		257	44	91	0	DWR
L. Heryford stock	41N/16E-4G1	7-28-60	50	226	8.1	23 / 1.13	6.0 / 0.49	17 / 0.76	0.3 / 0.01	0 / 0.00	131 / 2.15	3.0 / 0.06	6.0 / 0.15	1.0 / 0.02	0.0 / 0.00	0.08	19		139	32	81	0	TTL
[illegible] Coop stock	-13N1	7-28-60	59	179	7.9	16 / 0.82	7.0 / 0.60	8.0 / 0.36	0.7 / 0.02	0 / 0.00	98 / 1.60	0.0 / 0.00	7.0 / 0.17	4.0 / 0.06	0.0 / 0.00	0.00	26		117	20	71	0	TTL
H. Vailits domestic	-25C3	7-28-60	57	195	7.9	5.0 / 0.27	2.0 / 0.23	33 / 1.44	1.9 / 0.05	0 / 0.00	82 / 1.35	17 / 0.37	9.0 / 0.25	1.0 / 0.02	0.4 / 0.02	0.30	25		135	72	25	0	TTL
Surprise Valley Lumber Co. domestic	42N/16E-6J2	7-28-60	50	368	8.2	48 / 2.40	14 / 1.15	13 / 0.56	0.9 / 0.02	0 / 0.00	237 / 3.88	9.1 / 0.1[illegible]	2.3 / 0.06	1.4 / 0.02	0.0 / 0.00	0.03	33		237	14	178	0	DWR
J. R. Laxague domestic and stock	-21L1	7-28-60	56	230	8.[illegible]	24 / 1.20	4.1 / 0.34	22 / 0.96	0.8 / 0.02	0 / 0.00	142 / 2.33	5.4 / 0.11	0.8 / 0.02	0.7 / 0.01	0.0 / 0.00	0.04	26		154	38	77	0	DWR
E. Cook domestic	-34F1	7-28-60	58	260	8.3	14 / 0.70	3.6 / 0.30	41 / 1.78	3.1 / 0.08	0 / 0.00	100 / 1.64	1.0 / 0.02	1.6 / 0.04	0.1 / 0.00	0.1 / 0.00	0.09	38		184	62	50	0	DWR
[illegible] W. Warren domestic	43N/16E-20B1	7-28-60	70	275	8.1	4.6 / 0.23	0.1 / 0.01	61 / 2.65	0.8 / 0.02	0 / 0.00	161 / 2.64	5.8 / 0.12	1.8 / 0.05	5.7 / 0.09	0.0 / 0.00	0.12	25		184	91	12	0	DWR
[illegible] Arreche domestic and stock	-33M3	7-28-60	68	267	8.2	14 / 0.70	2.9 / 0.24	42 / 1.83	0.6 / 0.02	0 / 0.00	158 / 2.59	5.3 / 0.11	2.8 / 0.08	3.4 / 0.05	0.0 / 0.00	0.16	24		173	66	47	0	DWR
[illegible] Quirk irrigation	44N/16E-6E2	7-28-60	77	648	8.0	3.5 / 0.17	0.4 / 0.03	145 / 6.31	3.2 / 0.08	0 / 0.00	276 / 4.52	0.0 / 0.00	71 / 2.00	1.3 / 0.02	0.8 / 0.04	4.5	67		433	96	10	0	DWR
[illegible] Patch irrigation	-29N1	7-28-60	67	518	8.4	1.9 / 0.09	0.1 / 0.01	127 / 5.52	1.7 / 0.04	4 / 0.13	321 / 5.26	3.3 / 0.07	2.9 / 0.08	2.4 / 0.04	2.3 / 0.12	0.44	56		360	98	5	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

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1960

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						Mineral constituents in parts per million / equivalents per million																	
	MODOC					SURPRISE VALLEY (6-1) (Cont.)																	
L. Hanks domestic	45N/16E-17D1	7-28-60	-	296	8.2	37 / 1.85	10 / 0.87	10 / 0.44	2.1 / 0.05	0 / 0.00	183 / 3.00	3.4 / 0.07	3.2 / 0.09	4.3 / 0.07	0.1 / 0.00	0.16	43		203	14	130	0	DWR
L. Hill domestic and irrigation	-19Q1	7-28-60	65	299	8.2	26 / 1.30	9.2 / 0.76	28 / 1.22	3.1 / 0.08	0 / 0.00	190 / 3.11	6.7 / 0.14	3.7 / 0.10	0.8 / 0.01	0.2 / 0.01	0.29	47		218	36	103	0	DWR
R. W. Peterson domestic	46N/16E-13C1	7-28-60	-	469	8.4	37 / 1.85	14 / 1.15	47 / 2.04	5.6 / 0.14	5 / 0.17	248 / 4.06	24 / 0.50	12 / 0.34	0.3 / 0.00	0.3 / 0.02	0.37	53		320	39	150	0	DWR
J. Stooksberry stock	-25R2	7-28-60	69	430	8.2	19 / 0.95	8.1 / 0.67	55 / 2.39	8.2 / 0.21	0 / 0.00	164 / 2.69	37 / 0.77	28 / 0.79	2.3 / 0.04	0.4 / 0.02	0.95	64		304	57	81	0	DWR
H. Talbots irrigation	-29D1	7-28-60	56	550	8.4	1.2 / 0.06	0.0 / 0.00	137 / 5.96	1.6 / 0.04	4 / 0.13	302 / 4.95	6.6 / 0.14	18 / 0.51	3.2 / 0.05	2.2 / 0.12	0.72	51		374	98	3	0	DWR
						MADELINE PLAINS (6-2)																	
E. Williams stock	34N/13E-18B1	8-11-60	53	486	8.6	34 / 1.70	23 / 1.88	34 / 1.48	6.9 / 0.17	10 / 0.33	249 / 4.08	12 / 0.25	17 / 0.48	2.1 / 0.03	0.1 / 0.00	0.06	65	Al 0.02 Fe 0.01 (dis.) Fe 0.31 (total) Zn 0.07	326	29	179	0	DWR
G. Dromand domestic	34N/14E-15H1	8-11-60	-	354	8.4	30 / 1.50	15 / 1.22	21 / 0.91	5.1 / 0.13	2 / 0.07	188 / 3.08	17 / 0.35	5.6 / 0.16	1.6 / 0.02	0.1 / 0.00	0.04	26	Fe 0.75 (total) Zn 0.02 Cu 0.01	216	24	136	0	DWR
Southern Pacific R.R. domestic and industrial	-22A1	8-11-60	-	264	8.3	21 / 1.05	13 / 1.11	14 / 0.61	2.8 / 0.07	0 / 0.00	156 / 2.56	0.8 / 0.02	3.4 / 0.10	4.1 / 0.07	0.1 / 0.00	0.04	34	Cu 0.01 Fe 0.06 (total) Zn 0.01	170	21	108	0	DWR
T. Garate stock	34N/15E-21L1	8-11-60	-	136	9.0	4.3 / 0.21	1.8 / 0.15	20 / 0.87	3.9 / 0.10	0 / 0.00	76 / 1.24	0.0 / 0.00	1.7 / 0.05	0.3 / 0.00	0.1 / 0.00	0.06	23	Fe 0.03 (dis.) Fe 0.12 (total) Zn 0.04	92	65	18	0	DWR
D. E. Hatch stock	-31H1	8-11-60	55	221	8.1	20 / 1.00	8.3 / 0.68	10 / 0.44	1.7 / 0.04	0 / 0.00	104 / 1.70	3.0 / 0.06	5.3 / 0.15	12 / 0.19	0.1 / 0.00	0.25	40	Fe 0.04 (total) Zn 0.01	151	30	84	0	DWR
Hoch Hill Ranch stock	35N/12E-21D1	8-11-60	61	348	8.4	25 / 1.25	19 / 1.55	16 / 0.70	9.3 / 0.24	4 / 0.13	209 / 3.42	1.6 / 0.03	4.3 / 0.12	0.9 / 0.01	0.1 / 0.00	0.12	60	As 0.01 Fe 0.10 (total) Zn 0.01	243	19	140	0	DWR
Abandon property	-24R1	8-11-60	-	927	8.6	14 / 0.70	32 / 2.64	142 / 6.18	20 / 0.51	17 / 0.57	407 / 6.67	83 / 1.73	40 / 1.13	0.1 / 0.00	0.3 / 0.02	0.18	51	Al 0.02 Cu 0.01 Fe 0.37 (total)	600	62	167	0	DWR
State of California domestic	35N/13E-26J1	8-11-60	-	672	8.6	30 / 1.50	40 / 3.29	67 / 2.91	8.5 / 0.22	14 / 0.47	352 / 5.77	16 / 0.33	21 / 0.59	39 / 0.63	0.3 / 0.02	0.10	45	Al 0.03 As 0.01 Zn 0.06	454	37	239	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

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						Mineral constituents in parts per million / equivalents per million																	
	MDB&M							MADELINE PLAINS (6-2) (Cont.)															
P. Jones stock	35N/14E-15N1	8-11-60	-	242	8.2	17 0.85	13 1.07	13 0.56	4.3 0.11	0 0.00	144 2.36	3.1 0.06	4.9 0.14	3.4 0.05	0.4 0.02	0.05	44	Fe 0.13 (total) Zn 0.02	174	22	90	0	DWR
H. Marr stock	-24G2	8-11-60	67	243	8.2	8.7 0.43	5.5 0.45	36 1.57	3.5 0.09	0 0.00	142 2.33	4.0 0.08	5.7 0.16	0.5 0.01	0.2 0.01	0.02	21	Al 0.02 Fe 0.08 (total) Zn 0.04	155	62	44	0	DWR
P. L. Fredrickson stock	35N/16E-18D1	8-11-60	56	905	8.7	20 1.00	13 1.04	176 7.66	19 0.49	28 0.93	490 8.03	12 0.25	33 0.93	2.7 0.04	0.6 0.03	0.06	57	Al 0.02 Fe 0.02 (dis.) Fe 0.08 (total) Zn 0.02	602	75	102	0	DWR
Unknown stock	36N/12E-21H1	8-11-60	70	433	8.4	19 0.95	17 1.39	51 2.22	11 0.28	5 0.17	248 4.06	6.7 0.14	14 0.39	0.6 0.01	0.2 0.01	0.10	41	Al 0.01 Cu 0.01 Fe 0.10 (dis.) Fe 0.62 (total) Zn 0.02	287	46	117	0	DWR
Pit River Ranch domestic	37N/13E-20Q1	8-11-60	-	2630	8.1	85 4.24	127 10.42	262 11.40	20 0.51	0 0.00	278 4.56	581 12.10	344 9.70	19 0.31	0.2 0.01	0.13	56	Al 0.02 As 0.01 Fe 0.08 (total) Zn 0.41	1630	43	734	506	DWR
								HONEY LAKE VALLEY (6-4)															
R. Brashear	22N/17E-4K1	8-17-60	-	382	8.0	31 1.57	11 0.89	32 1.38	2.0 0.05	0 0.00	195 3.20	4.0 0.08	13 0.37	14 0.24	0.2 0.01	0.44	40		246	35	123	0	TTL
P. Hall artesian	25N/17E-21N3	8-16-60	59	300	8.0	3.0 0.14	2.0 0.19	56 2.44	0.0 0.00	0 0.00	83 1.37	36 0.74	15 0.51	0.0 0.00	3.1 0.16	1.04	19		175	39	17	0	TTL
F. Flux irrigation	26N/15E-3F1	8-16-60	-	205	8.1	17 0.85	4.0 0.33	19 0.83	3.4 0.09	0 0.00	107 1.75	9.7 0.20	3.1 0.09	0.1 0.00	0.2 0.01	0.03	32		142	40	59	0	DWR
R. L. Slaughter domestic and commercial	27N/14E-26E1	8-16-60	58	205	7.8	19 0.97	3.0 0.27	17 0.74	2.0 0.04	0 0.00	77 1.26	11 0.22	11 0.31	12 0.21	0.0 0.00	0.14	34		147	37	62	0	TTL
U.S. Army industrial	27N/16E-11E1	8-16-60	-	1946	7.8	101 5.05	18 1.47	239 10.40	15 0.37	0 0.00	107 1.75	171 3.57	433 12.18	5.0 0.08	0.4 0.02	0.92	31		1067	60	325	239	TTL
U.S. Army domestic	-36Q2	8-16-60	-	996	8.2	69 3.46	27 2.18	102 4.45	6.0 0.15	0 0.00	189 3.10	271 5.64	58 1.64	0.0 0.00	0.5 0.03	0.62	33		661	43	561	506	TTL
City of Janesville commercial	28N/13E-9E1	8-15-60	55	233	8.0	23 1.15	7.0 0.60	9.0 0.42	1.0 0.03	0 0.00	95 1.55	0.0 0.00	11 0.30	20 0.32	0.0 0.00	0.14	34		152	[illegible]	[illegible]	10	TTL
R. Luke irrigation	-11K1	8-15-60	62	264	8.2	22 1.10	8.5 0.70	22 0.96	4.1 0.10	0 0.00	160 2.62	2.8 0.06	2.4 0.07	2.0 0.03	0.2 0.01	0.07	47		190	34	[illegible]	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

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	[illegible]							[illegible] LAKE VALLEY ([illegible]) (Cont.)															
State of California irrigation	23[illegible]/2[illegible]-[illegible]1	[illegible]-1[illegible]-[illegible]	[illegible]	1[illegible]	[illegible]	23 / 1.[illegible]	1 / 1.33	214 / [illegible]	[illegible] / [illegible]	0 / [illegible]	354 / [illegible]	30 / [illegible]	1[illegible] / 1.73	2.0 / [illegible]	0.3 / [illegible]	[illegible].36	31		723	76	136	0	TTL
[illegible] irrigation	-[illegible]2	8-15-[illegible]	62	[illegible]	[illegible].1	45 / [illegible].25	1[illegible] / [illegible]	[illegible] / 1.[illegible]	[illegible] / [illegible]	0 / [illegible]	2[illegible] / [illegible]	4.0 / [illegible]	[illegible] / [illegible]	1.0 / [illegible]	[illegible] / [illegible]	[illegible]	34		[illegible]	27	161	0	TTL
Tri[illegible] Cattle Corp. [illegible]	-1[illegible]1	[illegible]-1[illegible]-60	-	[illegible]	[illegible]	32 / 1.[illegible]	1[illegible] / 1.[illegible]	[illegible] / [illegible]	2.[illegible] / [illegible]	0 / [illegible]	2[illegible] / 4.[illegible]	21 / [illegible]	[illegible] / 0.24	2.0 / [illegible]	0.0 / [illegible]	0.19	29		299	52	13[illegible]	0	TTL
Tanner Ranch domestic	2[illegible]/15 - K1	-1[illegible]-[illegible]	[illegible]	[illegible]16	[illegible].1	[illegible] / 1.[illegible]	14 / 1.1[illegible]	137 / [illegible]	[illegible] / [illegible].10	0 / [illegible]	33[illegible] / [illegible]	76 / 2.0[illegible]	18 / [illegible]	1.0 / [illegible]	0.[illegible] / [illegible]	0.32	23		512	69	129	0	TTL
[illegible] Hot Springs	2[illegible]/1[illegible]-[illegible]	3-10-60	21[illegible]	13[illegible]	7.[illegible]	2[illegible] / 1.02	[illegible] / [illegible]	2[illegible] / 9.[illegible]	[illegible] / 0.17	[illegible] / [illegible]	49 / [illegible]	2[illegible] / [illegible]	1[illegible] / 1.03	1.[illegible] / [illegible].02	4.3 / 0.23	3.6	[illegible]		[illegible]04	84	85	45	TTL
[illegible] Tinsley public fountain	2[illegible]/17[illegible]-1[illegible]K1	[illegible]-60	-	[illegible]	[illegible]	1[illegible] / [illegible]	[illegible] / 0.37	[illegible] / 1.[illegible]	4.0 / [illegible]	[illegible] / [illegible]	111 / 1.[illegible]	17 / [illegible]	19 / [illegible]	3.[illegible] / [illegible]	0.0 / [illegible]	0.20	30		1[illegible]4	65	43	0	TTL
E. [illegible] irrigation	-20J1	[illegible]-1[illegible]-[illegible]	-	[illegible]1	[illegible].1	[illegible] / [illegible].31	[illegible] / [illegible]	39 / 1.[illegible]	4.0 / [illegible].1	[illegible] / [illegible]	117 / 1.[illegible]	13 / [illegible]	17 / [illegible]	1.[illegible] / [illegible]	0.1 / 0.01	[illegible]	30		175	63	[illegible]	0	TTL
Fruit Growers Supply Company industrial	[illegible]/12[illegible]-[illegible]1	[illegible]-1[illegible]-[illegible]	77	7[illegible]	7.[illegible]	13 / [illegible]	3.[illegible] / [illegible]	137 / [illegible]	2.[illegible] / [illegible]	0 / [illegible]	33 / 1.[illegible]	181 / 3.77	64 / 1.[illegible]	[illegible] / [illegible]	1.9 / [illegible]	1.9	40		[illegible]	9[illegible]	45	0	DWR
M. A. Mallory domestic	-1[illegible]A1	[illegible]	-	[illegible]15	9.	21 / 1.[illegible]	7.[illegible] / [illegible]	1[illegible] / [illegible]	1.[illegible] / [illegible]	0 / [illegible]	126 / [illegible]	[illegible] / [illegible]	9.[illegible] / [illegible]	[illegible] / [illegible]	[illegible] / [illegible]	[illegible]	39		1[illegible]	26	85	0	TTL
[illegible] Ranch domestic	2[illegible]/13 -1[illegible]1	[illegible]-[illegible]	60	[illegible]	7.8	3.0 / 0.1[illegible]	2.[illegible] / [illegible].22	11 / [illegible]	[illegible] / [illegible]	[illegible] / [illegible]	17[illegible] / [illegible]	[illegible] / 1.75	23 / [illegible]	1[illegible] / [illegible]	[illegible] / [illegible].03	0.[illegible]	41		[illegible]67	91	13	0	TTL
[illegible] domestic	[illegible]/1 E-1[illegible]G1	8-14-[illegible]	-	[illegible]	[illegible]	[illegible] / [illegible]	[illegible] / [illegible]	104 / [illegible]	3.[illegible] / [illegible]	0 / 0.[illegible]	[illegible] / 3.37	[illegible] / [illegible]	23 / [illegible]	[illegible] / [illegible]	[illegible] / [illegible]	[illegible].26	44		369	93	13	0	TTL
[illegible] Davis	-[illegible]1	8-1[illegible]-[illegible]	[illegible]	31[illegible]	7.[illegible]	26 / 1.[illegible]	1[illegible] / [illegible]	14 / [illegible]	1.0 / [illegible]	0 / [illegible]	69 / 1.1[illegible]	[illegible] / [illegible]	17 / [illegible]	5[illegible] / [illegible]	[illegible] / [illegible]	[illegible].00	36		199	22	1[illegible]	50	TTL
[illegible] Curtis domestic	[illegible]/14 -[illegible]1	[illegible]-15-[illegible]	[illegible]	73[illegible]	[illegible].1	11 / [illegible]	[illegible] / [illegible]	139 / [illegible]	10 / [illegible]	[illegible] / [illegible]	339 / [illegible]	63 / 1.3[illegible]	22 / [illegible]	4.0 / 0.06	0.4 / 0.02	[illegible].33	39		425	[illegible]	55	0	TTL
[illegible] & [illegible] domestic	-[illegible]1	3-1[illegible]-[illegible]	-	1[illegible]	[illegible].3	[illegible] / 1.[illegible]	11 / [illegible]	[illegible] / 1[illegible].45	7.0 / [illegible].1[illegible]	36 / 1.[illegible]	33[illegible] / [illegible]	[illegible] / [illegible].13	26 / [illegible]	14 / [illegible]	0.2 / [illegible]	0.68	35		306	83	97	[illegible]	TTL
[illegible] abandon	-1[illegible]2	3-1[illegible]	6[illegible]	1[illegible]	[illegible]	22 / 1.1[illegible]	12 / [illegible]	[illegible]33 / 1[illegible]	19 / [illegible]	12 / [illegible].63	[illegible]2 / 7.[illegible]	[illegible] / 7.[illegible]	4[illegible] / 1.2[illegible]	12[illegible] / [illegible]	1.7 / [illegible]	3.4	62		1120	[illegible]	10[illegible]	[illegible]	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfactant (ABS).

ANALYSES OF GROUND WATER
1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
	MDB&M							HONEY LAKE VALLEY (6-4) (Cont.)															
State of California irrigation	29N/15E-21H1	1-14-60	62	964	8.3	6.0 / 0.30	7.0 / 0.60	194 / 8.30	5.0 / 0.14	41 / 1.38	370 / 6.07	3.0 / 0.06	45 / 1.25	16 / 0.26	0.3 / 0.02	0.32	38		531	88	45	0	TTL
Mrs. J. Dewitt domestic	-30A2	8-15-60	-	604	8.0	41 / 2.05	17 / 1.33	71 / 3.09	4.0 / 0.09	0 / 0.00	306 / 5.02	62 / 1.30	14 / 0.39	1.0 / 0.01	0.0 / 0.00	0.26	34		397	47	172	0	TTL
Southern Pacific R.R. domestic	29N/16E-30L1	8-16-60	83	315	8.0	7.0 / 0.35	2.1 / 0.17	52 / 2.26	9.2 / 0.24	0 / 0.00	113 / 1.85	27 / 0.56	19 / 0.54	2.8 / 0.04	.1 / 0.00	0.22	45		220	75	26	0	DWR
California Pacific Utility Co. industrial	30N/12E-33N2	8-15-60	74	560	6.9	20 / 0.99	7.0 / 0.60	79 / 3.45	4.0 / 0.09	0 / 0.00	100 / 1.64	111 / 2.33	43 / 1.21	2.0 / 0.03	0.8 / 0.04	0.82	31		349	67	30	0	TTL

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^{+6}), Bromide (Br), and Detergent Surfacant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1960

Mineral constituents in parts per million / equivalents per million (each cell: ppm / epm)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N C ppm	Analyzed by [c]
										TAHOE VALLEY (6-1)													
F. Parker domestic	12[illegible]-3C1	9-21-60	-	74	[illegible]	6 / 0.30	2 / 0.19	[illegible] / 0.22	1 / 0.01	0 / 0.00	3[illegible] / 0.[illegible]0	0 / 0.00	[illegible] / 0.12	0 / 0.00	0 / 0.00	0	1[illegible]		4[illegible]	31	25	[illegible]	TTL
Tahoe-Sierra Water Co. domestic	-[illegible]F1	9-21-60	-	130	7.1	1[illegible] / 0.[illegible]	2 / 0.21	8 / 0.3[illegible]	1 / 0.02	0 / 0.00	84 / 1.38	0 / 0.00	3 / 0.0[illegible]	0 / 0.00	0 / 0.00	0	24		9[illegible]	23	[illegible]	0	TTL
R. Dound domestic	-5L1	9-21-60	-	100	7.9	8 / 0.39	4 / 0.32	[illegible] / 0.32	1 / 0.02	0 / 0.00	59 / 0.9[illegible]	0 / 0.00	3 / 0.08	0 / 0.00	0 / 0.00	0	2[illegible]		81	30	35	0	TTL
Gardner Mt. Water Co. domestic	- P1	9-21-60	-	[illegible]2	[illegible].0	6 / 0.31	2 / 0.20	6 / 0.2[illegible]	1 / 0.02	0 / 0.00	[illegible] / 0.72	0 / 0.00	2 / 0.06	0 / 0.00	0 / 0.00	0	24		66	32	26	0	TTL
State of California domestic	-29L1	9-21-60	-	83	8.0	[illegible] / 0.35	1 / 0.09	8 / 0.3[illegible]	1 / 0.03	0 / 0.00	44 / 0.71	0 / 0.00	[illegible] / 0.12	0 / 0.00	0 / 0.00	0	12		59	[illegible]2	23	0	TTL
										CARSON VALLEY (6-6)													
A. Riggs domestic	11[illegible]-2[illegible]1	9-22-60	-	141	8.2	10 / 0.[illegible]0	[illegible] / 0.40	11 / 0.4[illegible]	2 / 0.0[illegible]	0 / 0.00	[illegible]3 / 1.20	0 / 0.00	4 / 0.10	[illegible] / 0.12	0 / 0.00	0.11	22		9[illegible]	3[illegible]	4[illegible]	0	TTL
Alpine County Schools domestic	-3 D1	9-22-60	-	1[illegible]1	[illegible].2	13 / 0.6[illegible]	[illegible] / 0.40	10 / 0.44	3 / 0.0[illegible]	0 / 0.00	89 / 1.[illegible]	0 / 0.00	3 / 0.08	0 / 0.00	0.10 / 0.01	0.20	21		70	28	[illegible]3	0	TTL
Alpine County Schools domestic	-3 D2	9-22-60	-	13[illegible]	[illegible].3	12 / 0.[illegible]9	3 / 0.29	10 / 0.[illegible]3	2 / 0.06	0 / 0.00	[illegible]4 / 1.21	2 / 0.0[illegible]	4 / 0.11	0 / 0.00	0 / 0.00	0.13	20		66	31	4[illegible]	0	TTL
Alpine County Road Department domestic	-3[illegible]K1	9-23-60	-	88	[illegible].6	8 / 0.42	1 / 0.12	[illegible] / 0.2[illegible]	1 / 0.02	0 / 0.00	[illegible] / 0.[illegible]	0 / 0.00	3 / 0.07	0 / 0.00	0 / 0.00	0.0[illegible]	26		69	33	27	0	TTL
Alpine County Schools domestic	11[illegible] 20E-[illegible]M1	9-22-60	-	9[illegible]	8.0	10 / 0.[illegible]0	1 / 0.12	[illegible] / 0.2[illegible]	2 / 0.0[illegible]	0 / 0.00	48 / 0.78	0 / 0.00	4 / 0.09	4 / 0.07	0 / 0.00	0	20		71	29	31	0	TTL
H. Payne domestic	-18P2	9-22-60	-	238	8.4	20 / 1.01	[illegible] / .64	1[illegible] / 0.[illegible]5	[illegible] / 0.09	15 / 0.[illegible]0	111 / 1.[illegible]1	0 / 0.00	[illegible] / 0.12	4 / 0.0[illegible]	0.11 / 0.01	0	31		1[illegible]	30	[illegible]3	[illegible]	TTL
										TOPAZ VALLEY (6-7)													
[illegible]. Kindell domestic	6N/23E-26F3	9-22-60	-	2[illegible]2	8.2	1[illegible] / 0.[illegible]	3 / 0.2[illegible]	3 / 1.00	1 / 0.02	0 / 0.00	[illegible]0 / 1.32	36 / 0.76	1[illegible] / 0.[illegible]2	1 / 0.01	2.[illegible]4 / 0.14	0.2[illegible]	20		1[illegible]	60	[illegible]3	[illegible]	TTL
Mono County Road Dept. domestic	-2[illegible]2	9-23-60	0	123	8.1	11 / 0.[illegible]	2 / 0.21	9 / 0.41	1 / 0.03	0 / 0.00	61 / 1.00	4 / 0.08	[illegible] / 0.13	0 / 0.00	0.11 / 0.01	0.11	1[illegible]		7[illegible]	[illegible]	3[illegible]	[illegible]	TTL

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U S Geological Survey, Quality of Water Branch (U S G S), Pacific Chemical Consultants (P C C), Terminal Testing Laboratory (T T L) or State Department of Water Resources (D W R) as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4)

ANALYSES OF GROUND WATER

1960

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ N.C. ppm	Analyzed by [c]
						Mineral constituents in parts per million / equivalents per million																	
TOPAZ VALLEY (6-7) (Cont.)																							
H. Williams domestic	9N/22E-24D1	9-22-60	-	152	8.0	13 / 0.65	2 / 0.22	15 / 0.63	1 / 0.03	0 / 0.00	78 / 1.28	4 / 0.09	5 / 0.14	0 / 0.00	0.35 / 0.02	0	26		10[illegible]	41	44	0	TTL
E. Kinzy domestic	-24M1	9-22-60	-	211	8.2	17 / 0.83	7 / 0.58	18 / 0.82	2 / 0.05	0 / 0.00	111 / 1.82	6 / 0.13	7 / 0.21	2 / 0.03	0.29 / 0.02	0	24		13[illegible]	35	71	0	TTL
East Camp Ranch domestic	9N/23E-20P1	9-22-60	-	304	8.3	30 / 1.50	6 / 0.54	26 / 1.16	2 / 0.04	11 / 0.38	144 / 2.37	9 / 0.19	9 / 0.24	4 / 0.07	0.43 / 0.02	0	29		196	36	102	0	TTL
A. Sciarani domestic	-30C2	9-22-60	-	344	8.3	14 / 0.68	1 / 0.14	56 / 2.46	2 / 0.06	0 / 0.00	90 / 1.48	25 / 0.52	43 / 1.20	0 / 0.00	2.88 / 0.15	0.31	21		215	74	41	0	TTL
Bellview Ranch domestic	-32A1	9-22-60	-	364	8.4	12 / 0.58	1 / 0.06	71 / 3.09	1 / 0.03	11 / 0.38	121 / 1.98	21 / 0.45	22 / 0.61	2 / 0.03	5.60 / 0.29	0.20	31		236	82	32	0	TTL
BRIDGEPORT VALLEY (6-8)																							
Humewell Ranch domestic	4N/24E-13E1	9-22-60	-	117	7.[illegible]	12 / 0.60	5 / 0.39	5 / 0.21	2 / 0.04	0 / 0.00	61 / 1.00	3 / 0.07	5 / 0.14	0 / 0.00	0 / 0.00	0.68	19		82	18	4	0	TTL
F. Carner domestic	4N/25E-4B1	9-22-60	-	809	8.5	51 / 2.54	22 / 1.76	83 / 3.57	14 / 0.36	28 / 0.92	114 / 1.86	232 / 4.82	17 / 0.48	0 / 0.00	0.11 / 0.01	0.44	56		561	43	215	76	TTL
J. Van Dyke domestic	4F1	9-22-60	-	2,660	8.1	36 / 1.80	33 / 2.66	552 / 24.00	2 / 0.05	0 / 0.00	920 / 15.08	505 / 10.53	123 / 3.45	0 / 0.00	1.02 / 0.05	4.31	39		1,755	84	223	0	TTL
R. Snider domestic	5N/24E-25G1	9-22-60	-	140	8.3	14 / 0.72	4 / 0.32	[illegible] / 0.30	2 / 0.04	2 / 0.08	71 / 1.16	2 / 0.04	4 / 0.10	0 / 0.00	0.10 / 0.01	0.18	17		87	22	52	0	TTL
Bridgeport P.U.D. Municipal	5N/25E-28Q1	9-22-60	-	341	8.4	24 / 1.23	11 / 0.86	30 / 1.30	5 / 0.13	18 / 0.60	138 / 2.27	16 / 0.34	10 / 0.28	1 / 0.01	0 / 0.00	0.20	39		223	37	105	0	TTL

a Determined by addition of constituents
b Gravimetric determination
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Hexavalent Chromium (Cr^{+6}), reported here as $\frac{0.0}{0.00}$ except as shown
e Iron (Fe) Total, Detergent Surfactant (ABS), Ammonium (NH_4), Perchlorate (ClO_4).

RADIOASSAY OF GROUND WATER

1960

Well number	Date sampled	Gross activity[a]	Date analyzed
	UKIAH VALLEY 1-15		
M.D.B.& M.			
14N/12W-5K1	9-60	2.6 ± 3.2	2-20-61
14N/12W-11N1	9-60	5.7 ± 3.3	2-20-61
14N/12W-26K1	9-60	8.1 ± 3.1	2-17-61
15N/12W-16E1	8-60	2.0 ± 3.2	2-20-61
15N/12W-21H1	9-21-60	7.4 ± 3.1	2-17-61
15N/12W-35D1	9-60	0.0 ± 3.0	2-20-61
16N/12W-5D1	9-60	0.0 ± 3.2	2-20-61
16N/12W-9Q1	9-60	0.0 ± 3.0	2-20-61
17N/12W-12A1	9-60	0.0 ± 3.1	2-20-61
17N/12W-28M1	9-60	3.6 ± 3.2	2-20-61
	SANEL VALLEY 1-16		
12N/11W-2F1	8-60	1.3 ± 3.2	2-20-61
13N/11W-7D1	9-60	0.0 ± 3.1	2-20-61
13N/11W-18B1	9-60	5.3 ± 3.2	2-20-61
13N/11W-18D1	9-60	5.4 ± 3.3	2-20-61
13N/11W-19N1	9-60	1.0 ± 3.1	2-20-61
13N/11W-30H1	9-60	0.0 ± 3.2	2-20-61

a – Micromicrocuries per liter

RADIOASSAY OF GROUND WATER

1960

Well number	Date sampled	Gross activity[a]	Date analyzed
SANTA ROSA VALLEY 1-18			
M.D.B.& M.			
5N/9W-3F1	8-60	0.0 ± 3.2	2-16-61
6N/7W-17E1	8-60	1.1 ± 2.6	1-26-61
6N/7W-30D1	8-60	0.0 ± 3.2	2-16-61
6N/8W-3B1	8-60	0.0 ± 3.3	2-16-61
6N/8W-16K1	8-60	2.3 ± 3.3	2-16-61
7N/6W-29P1	8-60	1.3 ± 3.3	2-16-61
7N/7W-15C1	8-60	0.0 ± 3.1	2-16-61
7N/7W-29D1	8-60	2.9 ± 3.4	2-16-61
7N/8W-3L1	8-60	2.0 ± 3.3	2-16-61
7N/8W-5G1	8-60	0.0 ± 3.2	2-16-61
7N/8W-18Q1	8-60	0.0 ± 3.3	2-16-61
7N/8W-33M1	8-60	0.1 ± 3.3	2-16-61
7N/9W-9F1	8-60	0.0 ± 3.5	2-16-61
7N/9W-29R1	8-60	6.8 ± 3.4	2-16-61
7N/9W-36M1	9-60	0.0 ± 3.4	2-16-61
8N/8W-20Q1	8-60	0.0 ± 3.2	2-16-61
9N/10W-1C1	8-60	1.0 ± 3.3	2-16-61

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
PETALUMA VALLEY 2-1			
M.D.B.& M.			
3N/6W-1Q1	4-19-60	3.11 ± 2.67	5-23-60
3N/6W-3C1	4-19-60	0.00 ± 2.55	5-23-60
3N/6W-5A1	4-19-60	2.82 ± 2.63	5-23-60
3N/6W-11B1	4-19-60	2.63 ± 2.63	5-23-60
3N/6W-18M1	4-19-60	0.00 ± 2.50	5-23-60
3N/7W-14F1	4-19-60	0.00 ± 2.54	5-23-60
4N/6W-7H1	4-19-60	4.25 ± 2.63	5-23-60
4N/6W-7H2	4-19-60	2.63 ± 2.63	5-23-60
4N/6W-21Q1	4-19-60	5.19 ± 2.65	5-23-60
4N/6W-27N1	4-19-60	0.50 ± 2.57	5-23-60
4N/6W-33R1	4-19-60	0.03 ± 2.57	5-23-60
4N/7W-2D1	4-19-60	0.00 ± 2.52	5-23-60
5N/6W-30D1	4-18-60	0.53 ± 2.73	5-23-60
5N/7W-8D3	4-18-60	3.27 ± 2.63	5-23-60
5N/7W-19A1	4-18-60	0.00 ± 2.52	5-23-60
5N/7W-20C1	4-18-60	2.20 ± 2.77	5-23-60
5N/7W-20L3	4-18-60	0.45 ± 2.54	5-23-60
5N/7W-22Q1	4-18-60	4.92 ± 2.86	5-23-60
5N/7W-26E1	4-18-60	2.66 ± 2.69	5-23-60
5N/7W-28H3	4-18-60	2.42 ± 2.80	5-23-60
5N/7W-28N1	4-19-60	0.00 ± 2.54	5-23-60
5N/7W-34E2	4-19-60	0.00 ± 2.60	5-23-60
5N/7W-35K1	4-19-60	4.21 ± 2.63	5-23-60

a — Micromicrocuries per liter

NAPA-SONOMA VALLEY 2-2

Well number	Date sampled	Gross activity[a]	Date analyzed
M.D.B.& M.			
3N/3W-18G1	4-10-60	0.18 ±	5-23-60
3N/3W-18G2	4-19-60	2.20 ± 2.61	5-19-60
4N/4W-2L1	4-19-60	0.00 ± 2.58	5-19-60
4N/4W-5C1	4-19-60	0.00 ± 2.53	5-23-60
4N/4W-7A1	4-19-60	4.28 ± 2.66	5-23-60
4N/4W-13E1	4-19-60	0.00 ± 2.55	5-19-60
4N/4W-25K1	4-19-60	2.31 ± 2.60	5-23-60
4N/5W-32B1	4-19-60	1.83 ± 2.63	5-23-60
5N/4W-9Q2	4-19-60	0.48 ± 2.63	5-19-60
5N/4W-11F3	4-19-60	0.66 ± 2.56	5-19-60
5N/4W-14C1	4-19-60	0.98 ± 2.58	5-19-60
5N/4W-15E1	4-19-60	0.00 ± 2.84	5-19-60
5N/4W-21P2	4-19-60	2.21 ± 2.90	5-19-60
5N/4W-26B1	4-19-60	2.23 ± 2.69	5-19-60
5N/5W-18D2	4-20-60	1.67 ± 2.60	5-23-60
5N/5W-20R1	4-20-60	4.63 ± 2.87	5-27-60
5N/5W-33K1	4-20-60	2.58 ± 2.82	5-27-60
5N/6W-12F1	4-20-60	1.49 ± 2.58	5-23-60
5N/6W-24K1	4-20-60	0.00 ± 2.98	5-23-60
5N/6W-25P1	4-20-60	5.37 ± 2.69	5-23-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
NAPA-SONOMA VALLEY 2-2 (Continued)			
M.D.B.& M.			
6N/4W-15Q1	4-19-60	5.11 ± 2.69	5-19-60
6N/6W-23M2	4-20-60	7.48 ± 2.75	5-23-60
6N/6W-26E1	4-20-60	5.14 ± 2.69	5-23-60
7N/4W-30L1	4-19-60	5.00 ± 2.67	5-23-60
7N/5W-5A1	4-18-60	1.57 ± 2.58	5-23-60
7N/5W-22G2	4-18-60	1.19 ± 2.58	5-23-60
9N/6W-31Q1	4-18-60	2.79 ± 2.63	5-23-60
9N/7W-25N1	4-18-60	3.85 ± 2.65	5-23-60
SUISUN-FAIRFIELD VALLEY 2-3			
3N/1E-4B	5-9-60	6.62 ± 2.65	5-27-60
3N/1E-21D1	5-9-60	0.00 ± 2.46	5-27-60
3N/1E-22F2	5-9-60	0.00 ± 2.44	5-27-60
3N/1E-22F3	5-9-60	3.80 ± 2.54	5-27-60
4N/1E-8F1	5-9-60	7.82 ± 2.69	5-27-60
4N/1W-33A1	5-9-60	4.52 ± 2.61	5-27-60
4N/2W-4D1	5-12-60	0.00 ± 2.44	5-27-60
4N/2W-5Q	5-9-60	0.00 ± 2.56	5-27-60
4N/2W-18M1	5-9-60	0.66 ± 2.52	5-27-60
4N/3W-13G1	5-9-60	1.46 ± 2.54	5-27-60
5N/2W-29L3	5-9-60	0.00 ± 2.50	5-27-60
5N/2W-34B	5-9-60	0.00 ± 2.37	5-27-60
5N/2W-34P3	5-9-60	2.07 ± 2.50	6-24-60

a — Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1960

Well number	Date sampled	Gross activity[a]	Date analyzed
EAST BAY AREA OF SANTA CLARA VALLEY 2-9			
M.D.B.& M.			
1S/4W-4A1	6-28-60	0.03 ± 2.22	7-28-60
1S/4W-34F2	6-28-60	0.31 ± 2.30	7-28-60
2S/3W-8Q	6-28-60	1.07 ± 2.30	7-28-60
2S/3W-21J	6-28-60	0.29 ± 2.49	7-28-60
2S/3W-28G1	6-28-60	5.27 ± 2.45	7-28-60
2S/3W-30A	6-30-60	0.00 ± 2.07	7-28-60
2S/3W-30D2	6-28-60	2.44 ± 2.55	7-28-60
2S/3W-33H3	6-28-60	7.28 ± 2.65	7-28-60
2S/3W-34A2	6-30-60	0.03 ± 2.07	7-28-60
2S/4W-3E1	6-29-60	4.61 ± 2.61	7-28-60
2S/4W-3F1	6-29-60	7.94 ± 2.57	7-28-60
2S/4W-12R1	6-29-60	3.95 ± 2.45	7-28-60
2S/4W-25A1	6-28-60	2.65 ± 2.55	7-28-60
3S/2W-7J1	6-29-60	1.13 ± 2.38	7-28-60
3S/2W-19R4	6-29-60	2.02 ± 2.53	7-28-60
3S/2W-30R14	6-29-60	3.91 ± 2.55	7-28-60
3S/2W-31H1	7-5-60	2.91 ± 2.22	7-28-60
3S/2W-31K1	6-29-60	1.99 ± 2.53	7-28-60
3S/2W-32D3	6-29-60	1.39 ± 2.09	7-28-60
3S/3W-1G3	6-30-60	2.41 ± 2.11	7-28-60
3S/3W-3J2	7-5-60	4.51 ± 2.32	7-28-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)			
M.D.B.& M.			
3S/3W-11Q1	6-30-60	0.00 ± 2.09	7-28-60
3S/3W-13B2	6-30-60	0.00 ± 2.05	7-28-60
3S/3W-24J1	6-30-60	0.00 ± 2.15	7-28-60
3S/3W-24Q2	7-5-60	0.00 ± 2.19	7-28-60
4S/1W-21M1	6-6-60	2.15 ± 3.30	6-20-60
4S/1W-21P1	6-6-60	0.00 ± 3.15	6-20-60
4S/1W-21R2	7-19-60	1.1 ± 2.5	1-26-61
4S/1W-22M2	9-14-60	0.0 ± 2.4	1-26-61
4S/1W-28D4	9-13-60	0.0 ± 2.4	1-26-61
4S/1W-28E3	9-13-60	5.7 ± 2.6	1-26-61
4S/1W-29B2	9-14-60	0.0 ± 2.5	1-26-61
4S/1W-29M2	9-12-60	2.2 ± 2.6	1-26-61
4S/1W-29M6	9-21-60	0.0 ± 2.4	1-26-61
4S/1W-30C2	9-13-60	0.0 ± 2.3	1-26-61
4S/1W-30G1	9-13-60	0.0 ± 2.4	1-26-61
4S/1W-31B3	9-13-60	0.0 ± 2.4	1-26-61
4S/1W-32A5	9-12-60	0.0 ± 2.5	1-26-61
4S/1W-33G3	9-12-60	1.9 ± 2.4	1-26-61
4S/1W-34P2	9-12-60	5.3 ± 2.5	1-26-61
4S/1W-35P3	9-12-60	4.1 ± 2.5	1-26-61
4S/2W-3R1	9-13-60	0.3 ± 2.5	1-26-61

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
EAST BAY AREA OF SANTA CLARA VALLEY 2-9 (Continued)			
M.D.B.& M.			
4S/2W-5A14	7-5-60	1.10 ± 2.38	7-28-60
4S/2W-9Q2	7-5-60	0.00 ± 2.11	7-28-60
4S/2W-10C1	9-13-60	7.4 ± 2.5	1-26-61
4S/2W-10Q2	9-13-60	0.0 ± 2.5	1-26-61
4S/2W-10Q3	9-14-60	0.1 ± 2.5	1-26-61
4S/2W-11Q5	9-13-60	0.0 ± 2.2	1-26-61
4S/2W-13C2	9-13-60	0.0 ± 2.2	1-26-61
4S/2W-14J1	9-13-60	0.0 ± 2.5	1-26-61
4S/2W-15C1	9-15-60	0.2 ± 2.6	1-26-61
4S/2W-15L4	9-13-60	0.0 ± 2.4	1-26-61
4S/2W-23F2	9-13-60	1.3 ± 2.6	1-26-61
4S/2W-24D4	9-13-60	0.0 ± 2.5	1-26-61
4S/2W-24F6	9-14-60	0.0 ± 2.5	1-26-61
4S/2W-24J1	9-15-60	0.0 ± 2.5	1-26-61
4S/2W-24L6	9-13-60	8.0 ± 2.6	1-26-61
4S/2W-26A1	9-13-60	0.0 ± 2.5	1-26-61
4S/2W-26J1	9-13-60	0.0 ± 2.3	1-26-61
4S/2W-27L1	9-13-60	0.0 ± 2.6	1-26-61
5S/1E-6G1	9-14-60	0.0 ± 2.2	1-26-61
5S/1E-9K1	9-12-60	5.5 ± 2.5	1-26-61
5S/1W-9M1	9-12-60	0.0 ± 2.2	1-26-61
5S/2W-1B1	9-14-60	0.1 ± 2.4	1-26-61
5S/2W-1N1	9-13-60	0.0 ± 2.4	1-26-61

a — Micromicrocuries per liter

RADIOASSAY OF GROUND WATER

1960

Well number	Date sampled	Gross activity[a]	Date analyzed
	LIVERMORE VALLEY 2-10		
M.D.B.& M.			
3S/1E-3Q1	6-10-60	0.00 ± 2.54	7-22-60
3S/1E-8H3	6-14-60	3.65 ± 2.65	7-22-60
3S/1E-11H1	6-10-60	0.00 ± 2.46	7-22-60
3S/1E-13P2	6-10-60	0.23 ± 2.49	7-22-60
3S/1E-15L1	6-9-60	3.36 ± 2.57	7-22-60
3S/1E-17H2	6-9-60	1.24 ± 2.53	7-22-60
3S/1E-19A5	6-20-60	0.00 ± 2.47	7-22-60
3S/1W-1G1	6-9-60	0.00 ± 2.43	7-22-60
3S/2E-4H1	6-10-60	2.90 ± 2.56	7-22-60
3S/2E-7K1	6-10-60	0.00 ± 2.37	7-22-60
3S/2E-8H1	6-9-60	2.10 ± 2.56	7-22-60
3S/2E-10H1	6-10-60	0.00 ± 2.45	7-22-60
3S/2E-17N1	6-9-60	0.00 ± 2.54	7-22-60
3S/2E-29D1	6-9-60	2.98 ± 2.63	7-22-60
3S/3E-19C1	6-10-60	0.00 ± 2.47	7-22-60
	GILROY-HOLLISTER BASIN 3-3		
9S/3E-25N3	6-17-60	4.47 ± 3.35	6-28-60
10S/3E-1E2	4-21-60	1.91 ± 2.69	5-27-60
10S/3E-23J1	4-21-60	0.37 ± 2.65	5-27-60
10S/3E-26J1	4-21-60	7.80 ± 2.84	5-27-60

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
GILROY-HOLLISTER BASIN 3-3 (Continued)			
M.D.B.& M.			
10S/4E-17F1	4-21-60	1.65 ± 2.58	5-27-60
10S/4E-18J1	4-21-60	3.80 ± 2.65	5-27-60
10S/4E-28D2	4-21-60	1.89 ± 2.69	5-27-60
10S/4E-34L5	4-21-60	2.47 ± 2.61	5-27-60
11S/4E-4Q3	4-13-60	0.00 ± 2.70	5-27-60
11S/4E-8P2	4-19-60	2.55 ± 2.82	5-27-60
11S/4E-21B2	4-21-60	0.29 ± 2.54	5-27-60
11S/5E-26Q1	6-17-60	2.50 ± 3.25	6-28-60
11S/5E-27L	6-17-60	0.24 ± 3.20	6-28-60
12S/4E-34Q	6-16-60	1.83 ± 3.30	6-28-60
12S/4E-35C	6-16-60	4.42 ± 2.73	6-28-60
12S/4E-36H		2.69 ± 2.69	6-28-60
12S/5E-8E	6-17-60	1.01 ± 3.22	6-28-60
12S/5E-9N	6-17-60	2.45 ± 3.28	6-28-60
12S/5E-12M	6-17-60	9.10 ± 3.43	6-28-60
12S/5E-36A	6-17-60	0.00 ± 3.07	6-28-60
12S/6E-7M	6-17-60	3.75 ± 3.30	6-28-60
12S/6E-19E	6-17-60	6.01 ± 3.37	6-28-60
13S/5E-3J	6-16-60	3.30 ± 3.35	6-28-60
13S/5E-11G	6-16-60	2.82 ± 3.28	6-28-60
13S/6E-19N1	6-16-60	0.00 ± 3.18	6-28-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
SIERRA VALLEY 5-12			
MDB&M			
20N/14E-4G2	8/17/60	1.2 ± 2.6	11/10/60
21N/14E-15J1	8/17/60	1.8 ± 2.6	11/10/60
21N/14E-22L1	8/17/60	2.6 ± 2.7	11/10/60
21N/14E-36K1	8/17/60	0.0 ± 2.5	11/10/60
21N/15E-5D1	8/17/60	7.0 ± 2.7	11/10/60
21N/15E-9Q3	8/17/60	1.4 ± 2.6	11/10/60
22N/14E-14F1	8/16/60	5.3 ± 2.5	11/7/60
22N/15E-11F1	8/16/60	6.7 ± 2.5	11/7/60
22N/15E-17C3	8/16/60	2.3 ± 2.4	11/7/60
22N/15E-26K1	8/17/60	1.9 ± 2.6	11/10/60
22N/15E-32R1	8/17/60	4.5 ± 2.7	11/10/60
22N/16E-5N2	8/16/60	4.6 ± 2.5	11/7/60
22N/16E-19E1	8/17/60	15.4 ± 2.8	11/7/60
23N/14E-25G1	8/16/60	0.4 ± 2.3	11/7/60
23N/14E-35L	8/16/60	0.0 ± 2.5	11/10/60
23N/15E-28H4	8/16/60	7.1 ± 2.5	11/7/60
23N/15E-35C1	8/16/60	4.7 ± 2.5	11/7/60
UPPER LAKE VALLEY 5-13			
14N/9W-6F2	7/6/60	4.19 ± 2.58	7/22/60
14N/10W-14E2	7/6/60	0.00 ± 2.45	7/22/60
15N/9W-6F1	7/6/60	0.15 ± 2.29	7/22/60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
UPPER LAKE VALLEY 5-13 (CONTD.)			
MDB&M			
15N/9W-7B1	7/6/60	0.00 ± 2.37	7/22/60
15N/9W-17P1	7/6/60	0.00 ± 2.41	7/22/60
15N/9W-31P1	7/6/60	0.08 ± 2.49	7/22/60
15N/10W-3C1	7/7/60	0.00 ± 2.35	7/22/60
15N/10W-3J1	7/7/60	0.33 ± 2.41	7/22/60
15N/10W-10E1	7/7/60	1.32 ± 2.41	7/22/60
15N/10W-12K2	7/7/60	0.00 ± 2.25	7/22/60
15N/10W-13A1	7/7/60	0.05 ± 2.29	7/22/60
15N/10W-24H1	7/6/60	5.92 ± 2.65	7/22/60
16N/9W-31L2	7/7/60	0.00 ± 2.27	7/22/60
16N/9W-31L3	7/7/60	3.05 ± 2.37	7/22/60
KELSEYVILLE VALLEY 5-15			
13N/9W-2K2	7/8/60	3.59 ± 2.38	7/28/60
13N/9W-8C1	7/8/60	2.23 ± 2.31	7/28/60
13N/9W-8N1	7/8/60	0.00 ± 2.41	7/22/60
13N/9W-12M1	7/8/60	5.07 ± 2.49	7/22/60
13N/9W-16D1	7/8/60	0.41 ± 2.37	7/22/60
13N/9W-16D2	7/8/60	4.52 ± 2.47	7/22/60
13N/9W-22J1	7/8/60	1.76 ± 2.41	7/22/60
14N/9W-32J1	7/8/60	0.57 ± 2.46	7/22/60
14N/9W-33J2	7/8/60	2.19 ± 2.49	7/22/60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
SACRAMENTO VALLEY (5-21)			
Yolo County			
MDB&M			
6N/3E-25A2	7/21/60	4.6 ± 3.0	11/4/60
7N/3E-31M1	7/15/60	1.7 ± 2.9	11/4/60
7N/4E-33G1	7/21/60	0.0 ± 2.8	11/4/60
8N/1E-9E1	7/27/60	8.2 ± 3.0	11/4/60
8N/1W-13G1	7/20/60	1.94 ± 2.38	8/12/60
8S/2E-13F2	7/15/60	8.8 ± 3.0	11/4/60
8N/3E-5P1	7/21/60	7.0 ± 3.0	11/4/60
8S/3E-5Q1	7/20/60	5.69 ± 2.49	8/12/60
8S/3E-19D1	7/15/60	0.2 ± 2.9	11/4/60
8N/3E-19M2	7/15/60	6.5 ± 3.1	11/4/60
8N/4E-3B1	7/21/60	3.90 ± 2.61	8/12/60
9N/1E-12A1	7/15/60	18.3 ± 3.3	11/4/60
9N/1W-16H1	7/20/60	4.8 ± 3.1	11/4/60
9N/1W-30L1	7/20/60	1.0 ± 3.0	11/4/60
9N/2E-4L1	7/29/60	2.4 ± 3.0	11/4/60
9N/2E-10D1	7/15/60	9.3 ± 3.0	11/4/60
9N/2E-35D1	7/15/60	5.7 ± 3.0	11/4/60
9N/3E-7D1	7/15/60	3.7 ± 2.9	11/4/60
9N/4E-33L1	7/21/60	.44 ± 2.53	8/12/60
10N/1E-1C1	7/13/60	2.6 ± 3.0	11/4/60
10N/1E-15G1	7/20/60	2.07 ± 2.38	8/12/60
10N/1E-26A	7/15/60	4.8 ± 2.9	11/4/60

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
Yolo County (Cont.)			
MDB&M			
10N/2E-1Q1	7/13/60	5.6 ± 3.0	11/4/60
10N/2E-16B1	7/15/60	5.1 ± 3.0	11/4/60
10N/2E-27H1	7/15/60	15.7 ± 3.2	11/4/60
10N/1W-4B1	7/12/60	0.00 ± 2.38	8/12/60
10N/1W-36K1	7/20/60	0.9 ± 3.0	11/4/60
10N/2W-14A1	7/12/60	4.6 ± 3.0	11/4/60
10N/2W-16L1	7/20/60	1.83 ± 2.38	8/12/60
10N/2W-17J1	7/12/60	5.76 ± 2.55	8/12/60
10N/2W-18F1	7/12/60	0.0 ± 2.8	11/4/60
10N/2W-18F2	7/12/60	0.4 ± 2.9	11/4/60
10N/2W-18L1	7/12/60	1.08 ± 2.43	8/12/60
10N/2W-23A1	7/12/60	1.8 ± 2.9	11/4/60
11N/1E-17M1	7/13/60	1.86 ± 2.61	8/12/60
11N/2E-22A1	7/13/60	0.0 ± 2.9	11/4/60
11N/2W-35J1	7/12/60	3.0 ± 3.0	11/4/60
11N/3W-9Q1	7/12/60	0.00 ± 2.38	8/12/60
11N/3W-10E1	7/12/60	0.00 ± 2.40	8/12/60
11N/3W-26M3	7/14/60	2.9 ± 3.0	11/4/60
12N/1W-15N2	7/13/60	.63 ± 2.53	8/12/60
12N/2W-2A1	7/13/60	1.44 ± 2.55	8/12/60

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
	SAN JOAQUIN VALLEY (5-22)		
	San Joaquin County		
MDB&M			
1N/6E-3H3	8/4/60	6.6 ± 3.0	11/4/60
1N/6E-4D1	8/4/60	1.8 ± 2.9	11/4/60
1N/6E-10P1	8/4/60	6.3 ± 3.0	11/4/60
1N/6E-14H1	8/4/60	5.9 ± 3.0	11/4/60
1N/7E-11J1	8/4/60	6.9 ± 3.0	11/4/60
1N/7E-12C1	8/9/60	1.3 ± 2.9	11/4/60
2N/6E-27L1	8/4/60	9.4 ± 3.1	11/4/60
2N/8E-15L1	8/5/60	3.1 ± 2.6	11/7/60
2N/9E-7G1	8/5/60	6.4 ± 2.6	11/7/60
3N/6E-27B1	8/5/60	6.1 ± 3.0	11/4/60
3N/7E-11G1	8/5/60	5.9 ± 2.6	11/7/60
3N/8E-8E1	8/5/60	0.0 ± 2.5	11/7/60
4N/4E-14C1	8/5/60	1.2 ± 2.4	11/7/60
4N/5E-8H1	8/5/60	2.4 ± 2.4	11/7/60
4N/6E-11P1	8/5/60	5.6 ± 2.5	11/7/60
4N/7E-23B2	8/5/60	6.7 ± 2.5	11/7/60
1S/4E-14M1	8/4/60	0.0 ± 2.3	11/7/60
1S/5E-10H1	8/4/60	0.6 ± 2.4	11/7/60
1S/6E-4A1	8/4/60	5.0 ± 2.9	11/4/60
1S/7E-10A1	8/5/60	3.7 ± 2.5	11/7/60
1S/9E-8H1	8/5/60	2.7 ± 2.5	11/7/60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
San Joaquin County (Cont.)			
MDB&M			
2S/4E-1P1	8/4/60	0.9 ± 2.5	11/7/60
2S/4E-36P1	8/4/60	3.4 ± 2.4	11/7/60
2S/5E-23P1	8/4/60	7.4 ± 2.6	11/7/60
2S/6E-20J4	8/4/60	4.4 ± 2.5	11/7/60
2S/7E-20R1	8/5/60	7.8 ± 2.6	11/7/60
3S/5E-8L1	8/4/60	4.5 ± 2.5	11/7/60
3S/5E-14D1	8/9/60	0.5 ± 2.3	11/7/60
3S/5E-24F1	8/4/60	6.2 ± 2.6	11/7/60
3S/5E-35B1	8/4/60	0.0 ± 2.4	11/7/60
3S/6E-7F1	8/4/60	3.4 ± 2.5	11/7/60
3S/6E-22Q1	8/4/60	3.9 ± 2.5	11/7/60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
Merced County			
MDB & M			
5S/11E-29F1	8-11-60	8.6 ± 2.7	11-17-60
5S/12E-32P1	8-31-60	5.4 ± 2.5	11-17-60
6S/10E-2H1	8-11-60	9.8 ± 2.7	11-17-60
6S/10E-9B1	8-11-60	22.3 ± 3.0	11-17-60
6S/10E-24L1	8-12-50	15.4 ± 2.8	11-17-60
6S/10E-28K1	8-12-60	20.9 ± 3.0	11-17-60
6S/11E-3B1	8-12-60	18.4 ± 2.9	11-17-60
6S/11E-9C1	8-12-60	5.2 ± 2.6	11-17-60
6S/11E-10J1	8-16-60	3.5 ± 2.6	11-17-60
6S/11E-27K1	7-26-60	0.0 ± 3.3	2-17-61
6S/11E-36P1	7-14-60	4.6 ± 3.4	2-17-61
6S/12E-6L1	8-12-60	3.3 ± 2.5	11-17-60
6S/12E-8D1	8-31-60	2.8 ± 2.4	11-17-60
6S/12E-8D2	8-31-60	1.0 ± 2.5	11-17-60
6S/12E-9D1	8-31-60	0.0 ± 2.4	11-17-60
6S/12E-21N1	6-27-60	1.8 ± 3.4	2-17-61
6S/12E-23H1	6-29-60	3.5 ± 3.3	2-17-61
6S/13E-6N1	7-28-60	4.0 ± 3.3	2-17-61
6S/13E-31F1	6-28-60	0.0 ± 3.2	2-17-61
7S/9E-32H1	8-17-60	0.0 ± 2.3	11-17-60
7S/11E-4M1	7-20-60	53.4 ± 4.8	2-17-61
7S/11E-14G1	7-20-60	21.8 ± 3.8	2-17-61

a — Micromicrocuries per liter

RADIOASSAY OF GROUND WATER

1960

Well number	Date sampled	Gross activity[a]	Date analyzed
Merced County (cont.)			
MDB & M			
7S/12E-1Q1	8-15-60	7.1 ± 3.4	2-17-61
7S/12E-3F1	6-28-60	0.0 ± 3.2	2-17-61
7S/12E-8E1	7-28-60	10.4 ± 3.5	2-17-61
7S/12E-19A1	7-19-60	4.3 ± 3.3	2-17-61
7S/12E-22H1	6-29-60	7.1 ± 3.4	2-17-61
7S/13E-4P1	6-27-60	6.6 ± 3.5	2-17-61
7S/13E-19H1	6-28-60	6.8 ± 3.5	2-17-61
7S/13E-22C1	6-28-60	2.4 ± 3.3	2-17-61
7S/14E-9R1	7-28-60	2.7 ± 3.3	2-17-61
7S/14E-28J1	7-11-60	11.2 ± 3.5	2-17-61
7S/14E-31M1	7-26-60	0.2 ± 3.4	2-17-61
7S/15E-18K	7-29-60	9.7 ± 3.5	2-17-61
7S/15E-30E1	7-26-60	0.0 ± 3.3	2-17-61
7S/15E-34R1	7-27-60	0.0 ± 3.4	2-17-61
8S/9E-16E1	8-17-60	6.5 ± 2.5	11-17-60
8S/14E-2D1	8-16-60	0.6 ± 3.3	2-17-61
8S/14E-24A1	7-28-60	7.6 ± 3.4	2-17-61
8S/16E-17P1	7-27-60	0.9 ± 3.3	2-17-61
9S/9E-5B1	8-17-60	6.0 ± 2.5	11-17-60
9S/9E-21F1	7-25-60	13.6 ± 2.8	11-17-60
9S/10E-36R1	7-15-60	3.9 ± 2.6	11-17-60
9S/13E-31D1	7-10-60	3.8 ± 2.5	11-17-60
10S/10E-28D1	8-17-60	4.5 ± 2.6	11-17-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
Merced County (cont.)			
MDB & M			
10S/12E-6K1	7-15-60	0.3 ± 2.4	11-17-60
10S/12E-25L	7-10-60	0.0 ± 2.3	11-17-60
10S/12E-27K1	7-23-60	6.1 ± 2.5	11-17-60
10S/12E-35K1	7-23-60	1.9 ± 2.6	11-17-60
11S/10E-23K1	8-18-60	4.6 ± 2.5	11-17-60
12S/11E-14C1	9- 1-60	0.0 ± 2.4	11-17-60
Madera County			
9S/15E-24F1	7-20-60	5.9 ± 3.2	11-23-60
9S/16E-30C1	7-20-60	5.1 ± 3.6	11-23-60
9S/16E-35N1	7-20-60	10.0 ± 3.3	11-23-60
10S/14E-8B1	7-26-60	10.6 ± 3.2	11-23-60
10S/14E-24B1	7-20-60	3.3 ± 3.1	11-23-60
10S/15E-31A1	7-20-60	8.0 ± 3.2	11-23-60
10S/16E-30K1	7-20-60	8.7 ± 3.3	11-23-60
10S/17E-25N1	7-26-60	4.4 ± 3.1	11-23-60
11S/14E-1A1	7-26-60	5.0 ± 3.2	11-23-60
11S/14E-5B1	7-26-60	4.9 ± 3.1	11-23-60
11S/14E-16A1	11-23-60	3.3 ± 3.2	11-23-60
11S/15E-23L1	7-26-60	7.1 ± 3.1	11-23-60
11S/15E-29H1	7-26-60	8.4 ± 3.4	11-23-60
11S/16E-22K1	7-26-60	1.4 ± 3.0	11-23-60
11S/17E-25B1	7-26-60	6.6 ± 3.1	11-23-60
11S/18E-17H1	7-25-60	8.0 ± 3.1	11-23-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
		Madera County (cont.)	
MDB & M			
11S/18E-20E1	7-25-60	10.1 ± 3.2	11-23-60
12S/14E-34H1	8-13-60	5.5 ± 3.0	11-23-60
12S/15E-4K1	7-26-60	7.4 ± 3.1	11-23-60
12S/15E-22F1	7-26-60	16.0 ± 3.3	11-23-60
12S/15E-27G1	7-26-60	1.4 ± 3.1	11-23-60
12S/17E-5R1	8-23-60	2.3 ± 3.1	11-23-60
12S/17E-7F1	7-25-60	7.6 ± 3.3	11-23-60
12S/17E-24A1	7-25-60	9.5 ± 3.3	11-23-60
12S/18E-7L1	7-25-60	13.9 ± 3.5	11-23-60
12S/18E-14J1	7-25-60	8.0 ± 3.1	11-23-60
12S/19E-32R1	7-25-60	10.6 ± 3.1	11-23-60
13S/15E-22J1	8- 1-60	5.7 ± 3.2	11-23-60
13S/15E-25C1	8- 1-60	2.8 ± 3.2	11-23-60
13S/16E-2C1	8- 1-60	4.2 ± 3.0	11-23-60
13S/17E-5P1	7-25-60	61.9 ± 1.3	11-23-60
		Fresno County	
11S/12E-13J1	7-23-60	12.3 ± 2.8	11-17-60
11S/13E-17F1	7-23-60	0.2 ± 2.4	11-17-60
11S/13E-36B1	7-23-60	0.0 ± 3.1	11-23-60
12S/12E-25J	7-22-60	2.2 ± 2.5	8-10-60
12S/13F-9C1	7-19-60	3.1 ± 3.2	11-23-60
12S/14E-29B1	7-19-60	1.8 ± 2.4	11-17-60
12S/20E-32J1	7-20-60	8.3 ± 2.8	8- 5-60

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
Fresno County (cont.)			
MDB & M			
12S/21E-31P1	7-20-60	8.7 ± 2.7	8- 5-60
12S/22E-30C2	7-20-60	5.5 ± 2.6	8- 5-60
13S/14E-15B1	7-19-60	1.1 ± 1.8	8- 5-60
13S/14E-34M1	7-19-60	0.9 ± 1.8	8- 5-60
13S/15E-18L1	7-19-60	14.2 ± 3.6	11-23-60
13S/17E-14R1	7-20-60	26.0 ± 3.4	8-10-60
13S/17E-29L1	7-20-60	18.5 ± 3.2	8-10-60
13S/18E-33L1	7-20-60	17.4 ± 3.1	8-10-60
13S/19E-30L1	7-20-60	6.4 ± 2.7	8- 5-60
13S/20E-3D1	7-20-60	3.3 ± 2.6	8- 5-60
13S/20E-27J1	7-21-60	9.0 ± 2.7	8-12-60
13S/21E-15N2	7-20-60	8.2 ± 2.6	8- 5-60
13S/21E-33K1	7-21-60	4.3 ± 2.4	8-10-60
13S/22E-28C2	7-20-60	3.4 ± 2.5	8- 5-60
14S/13E-12N1	7-19-60	3.4 ± 1.9	8- 5-60
14S/13E-21N1	7-19-60	4.3 ± 2.1	8- 5-60
14S/13E-22N1	7-19-60	3.9 ± 2.1	8- 5-60
14S/13E-25N1	7-19-60	5.4 ± 2.5	8- 5-60
14S/14E-9M1	7-19-60	6.5 ± 2.7	8- 5-60
14S/14E-11N1	7-19-60	2.4 ± 2.6	8- 5-60
14S/14E-17Q1	7-19-60	1.6 ± 2.5	8- 5-60
14S/14E-33N1	7-19-60	2.0 ± 2.5	8- 5-60
14S/15E-28L1	7-21-60	2.7 ± 2.5	8-10-60

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
Fresno County (cont.)			
MDB & M			
14S/16E-36A1	7-20-60	1.2 ± 2.7	8-10-60
14S/17E-13H1	7-20-60	8.3 ± 2.9	8-10-60
14S/18E-26N1	7-20-60	12.2 ± 2.8	8-10-60
14S/19E-7M1	7-20-60	12.2 ± 2.8	8-10-60
14S/19E-22R1	7-20-60	12.4 ± 2.8	8-10-60
14S/20E-2J1	7-21-60	9.9 ± 2.7	8-12-60
14S/20E-27C1	7-20-60	11.7 ± 2.8	8-10-60
14S/21E-12P1	7-21-60	7.5 ± 2.4	8-10-60
14S/22E-1B1	7-21-60	0.5 ± 2.2	8-10-60
14S/24E-14B1	7-21-60	0.8 ± 2.3	8-10-60
15S/12E-1N1	7-19-60	5.6 ± 2.3	8- 5-60
15S/13E-5R1	7-19-60	5.7 ± 2.5	8- 5-60
15S/15E-20N2	7-21-60	9.0 ± 2.6	8- 5-60
15S/15E-25N1	7-21-60	4.1 ± 2.8	8- 5-60
15S/15E-35N1	7-21-60	5.7 ± 2.8	8- 5-60
15S/16E-7Q1	8- 5-60	6.7 ± 2.8	8- 5-60
15S/17E-1H1	7-19-60	16.9 ± 2.9	8-10-60
15S/17E-3R1	7-19-60	15.3 ± 2.9	8-10-60
15S/17E-10R1	7-19-60	0.0 ± 2.4	8-10-60
15S/17E-11P1	7-20-60	6.5 ± 2.5	8-10-60
15S/17E-12J1	7-19-60	10.6 ± 2.8	8-10-60
15S/17E-13R1	7-19-60	7.8 ± 2.6	8-10-60
15S/17E-14G1	7-21-60	3.4 ± 2.4	8-10-60

a – Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
	Fresno County (cont.)		
MDB & M			
15S/17E-15B1	7-19-60	10.5 ± 2.8	8-10-60
15S/17E-15F1	7-19-60	12.8 ± 2.9	8-10-60
15S/17E-15H1	7-19-60	1.7 ± 2.7	8-10-60
15S/17E-22R1	8-10-60	11.6 ± 3.0	8-10-60
15S/17E-27H2	7-19-60	7.5 ± 2.9	8-10-60
15S/17E-34A1	7-21-60	11.2 ± 2.7	8-12-60
15S/17E-34J1	7-21-60	8.3 ± 2.6	8-12-60
15S/18E-16G1	7-19-60	2.0 ± 2.5	8-10-60
15S/18E-20G1	7-19-60	1.5 ± 2.5	8-10-60
15S/18E-20N1	7-19-60	0.0 ± 2.4	8-10-60
15S/20E-10D3	7-21-60	2.8 ± 2.4	8-10-60
15S/21E-24L1	7-21-60	16.4 ± 2.6	8-10-60
15S/23E-1J1	7-21-60	0.0 ± 2.1	8-10-60
16S/15E-8N1	7-21-60	0.3 ± 2.4	8- 5-60
16S/15E-25Q1	7-21-60	0.0 ± 2.4	8- 5-60
16S/16E-9N1	7-21-60	0.0 ± 2.6	8- 5-60
16S/16E-20N1	7-21-60	0.0 ± 2.3	8- 5-60
17S/16E-18E1	7-19-60	0.0 ± 2.5	8-12-60
17S/17E-23Q1	7-19-60	2.5 ± 2.4	8-12-60
17S/17E-25N1	7-19-60	0.2 ± 2.4	8-12-60
17S/17E-27R1	7-19-60	0.6 ± 2.4	8-12-60
17S/18E-35Q1	7-19-60	0.0 ± 2.3	8-12-60
18S/17E-13N1	7-19-60	0.0 ± 2.5	8-12-60

a — Micromicrocuries per liter

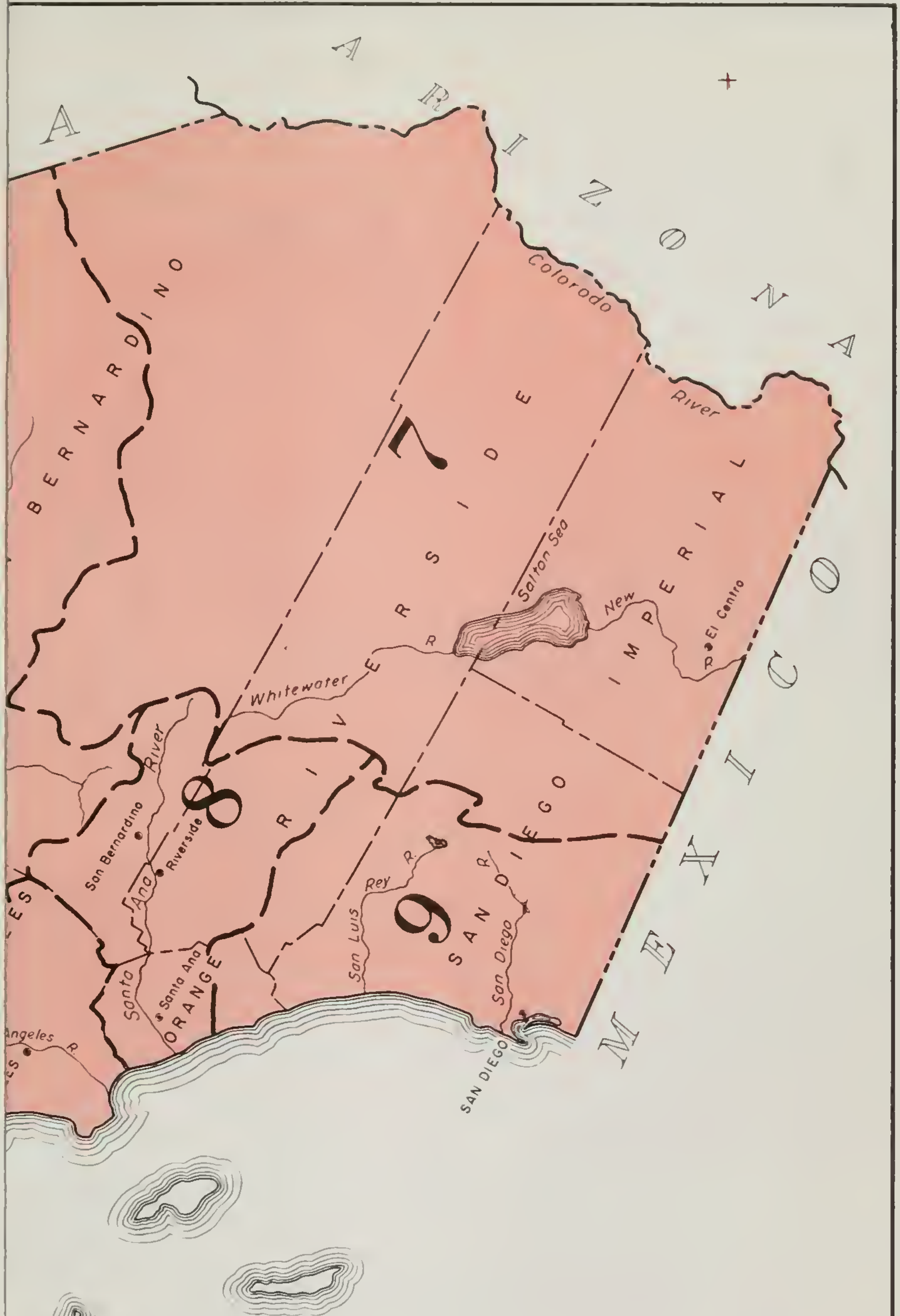
Well number	Date sampled	Gross activity[a]	Date analyzed
	Fresno County (cont.)		
MDB & M			
18S/17E-13Q1	7-19-60	0.3 ± 2.5	8-12-60
18S/17E-30P1	7-21-60	3.6 ± 2.5	8-12-60
18S/17E-33N1	7-19-60	0.0 ± 2.3	8-12-60
19S/17E-13N1	7-18-60	0.3 ± 2.5	8-10-60
19S/18E-23D2	7-18-60	1.8 ± 2.4	8-10-60
19S/18E-28E1	7-18-60	2.6 ± 2.4	8-10-60
20S/15E-25D2	7-18-60	0.0 ± 2.3	8-12-60
20S/15E-26M2	7-18-60	1.0 ± 2.4	8-12-60
20S/16E-4P1	7-18-60	0.0 ± 2.3	8-12-60
20S/17E-9R1	7-18-60	1.8 ± 2.4	8-10-60
20S/17E-11N1	7-18-60	5.5 ± 2.6	8-10-60
20S/17E-36D1	7-18-60	0.0 ± 2.5	8-10-60
20S/18E-24D1	7-18-60	0.6 ± 2.4	8-12-60
	Tulare County		
17S/23E-8H1	7-27-60	14.0 ± 3.2	2-16-61
17S/25E-34	7-27-60	6.7 ± 3.3	2-16-61
18S/24E-19M1	7-27-60	8.9 ± 3.1	2-16-61
19S/23E-24G1	7-27-60	9.6 ± 3.6	2-16-61
19S/34E-22C1	7-27-60	3.6 ± 3.5	2-16-61
19S/25E-31J1	7-27-60	10.0 ± 3.4	2-16-61
19S/26E-3K1	7-29-60	4.3 ± 3.0	2-16-61
19S/26E-26M1	7-29-60	0.7 ± 3.1	2-16-61
20S/23E-27P	7-27-60	11.0 ± 3.7	2-16-61

a — Micromicrocuries per liter

Well number	Date sampled	Gross activity[a]	Date analyzed
	Tulare County (cont.)		
MDB & M			
20S/26E-5R1	7-29-60	14.0 ± 3.5	2-16-61
20S/26E-20	8-17-60	0.0 ± 3.3	2-16-61
21S/17E-15P2	8- 5-60	0.0 ± 3.3	2-16-61
22S/25E-22A	8- 4-60	0.0 ± 3.3	2-16-61
22S/27E-10C1	8- 6-60	4.2 ± 3.5	2-16-61
23S/25E-9Q1	8- 4-60	5.9 ± 3.0	2-16-61
23S/27E-21H	8- 5-60	0.0 ± 3.2	2-16-61
23S/27E-27G1	9-14-60	1.8 ± 3.3	2-17-61
24S/27E-32P1	8- 5-60	0.3 ± 3.4	2-16-61
	Kern County		
25S/18E-3N2	7-21-60	0.0 ± 2.3	8-12-60
25S/19E-6D2	7-21-60	4.7 ± 2.5	8-12-60
25S/19E-7P1	7-21-60	2.8 ± 2.5	8-12-60
	PANOCHE VALLEY (5-23)		
15S/10E-15G1	9- 1-60	4.9 ± 3.3	11-23-60
15S/10E-16C	9- 1-60	3.0 ± 3.2	11-23-60
15S/10E-20D	9- 1-60	3.8 ± 3.2	11-23-60
15S/10E-21L1	9- 1-60	6.6 ± 3.3	11-23-60
15S/10E-22D1	9- 1-60	5.4 ± 3.3	11-23-60
15S/11E-30F	9- 1-60	5.4 ± 3.3	11-23-60

a — Micromicrocuries per liter

66686 6-62 550 SPO



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

MONITORED AREAS
1960

SCALE OF MILES
0 32 64

PLATE 1

INDEX OF MONITORED AREAS

NORTH COASTAL REGION (NO. 1)

1-1 SMITH RIVER PLAIN
1-3 BUTTE VALLEY
1-4 SHASTA VALLEY
1-5 SCOTT RIVER VALLEY
1-6 HAYFORK VALLEY
1-8 MAD RIVER VALLEY
1-9 EUREKA PLAIN
1-10 EEL RIVER VALLEY
1-11 ROUND VALLEY
1-15 UKIAH VALLEY
1-16 SANEL VALLEY
1-17 ALEXANDER VALLEY
1-18 SANTA ROSA VALLEY

SAN FRANCISCO BAY REGION (NO. 2)

2-1 PETALUMA VALLEY
2-2 NAPA-SONOMA VALLEY
2-3 SUISUN-FAIRFIELD VALLEY
2-4 PITTSBURG PLAIN
2-5 CLAYTON VALLEY
2-6 YGNACIO VALLEY
2-9 SANTA CLARA VALLEY
EAST BAY AREA
SOUTH BAY AREA
2-10 LIVERMORE VALLEY

CENTRAL COASTAL REGION (NO. 3)

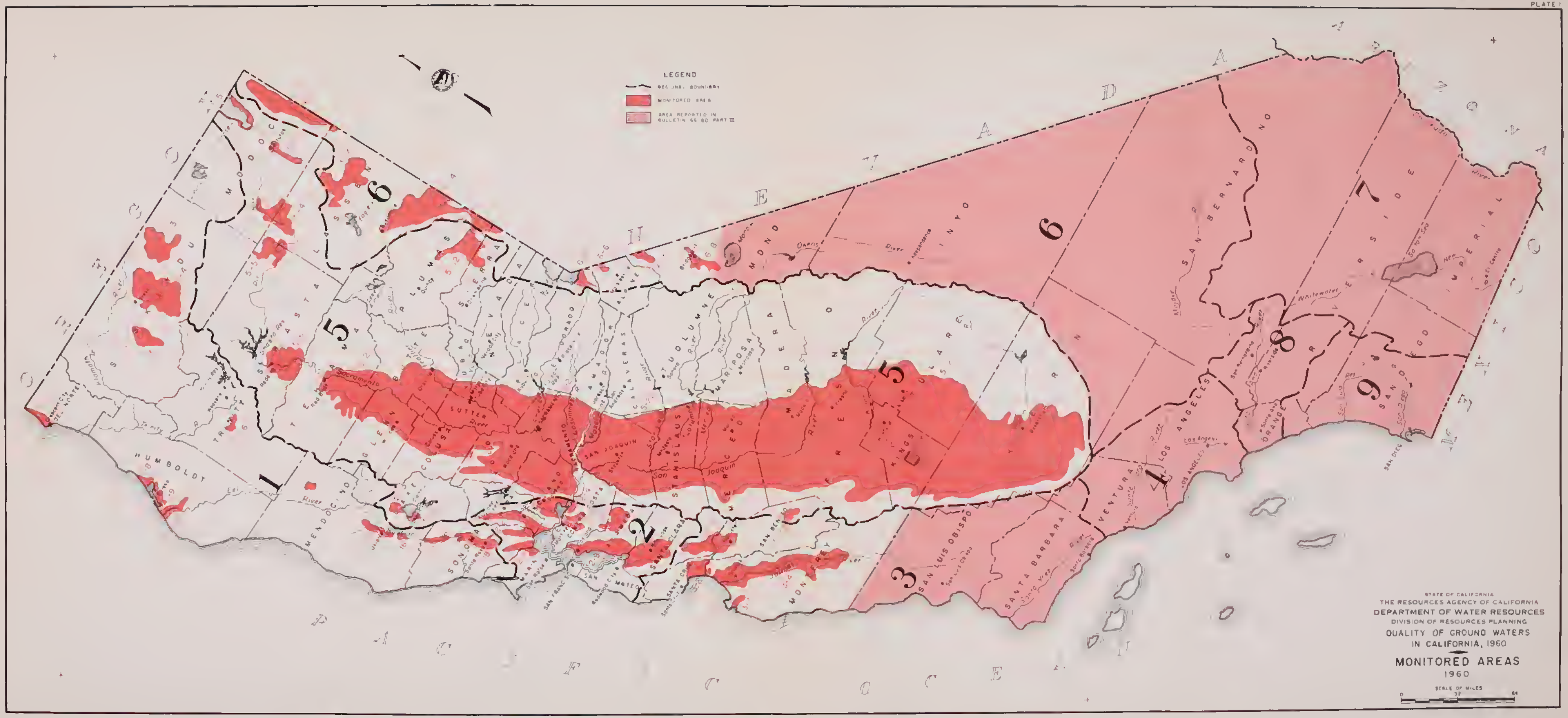
3-2 PAJARO VALLEY
3-3 GILROY-HOLLISTER BASIN
3-4 SALINAS VALLEY
3-7 CARMEL VALLEY

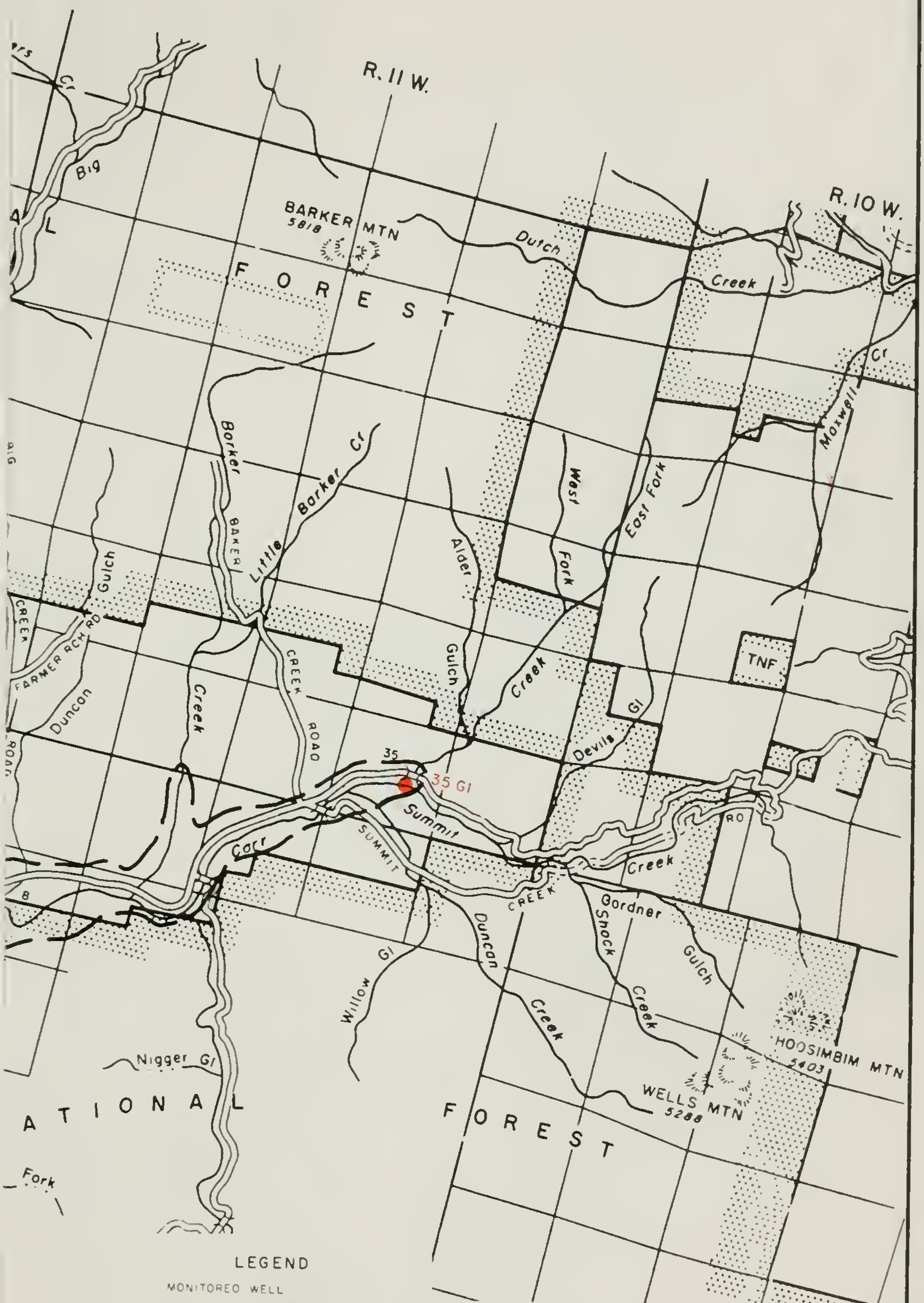
CENTRAL VALLEY REGION (NO. 5)

5-1 GOOSE LAKE VALLEY
5-2 ALTURAS BASIN
5-4 BIG VALLEY
5-5 FALL RIVER VALLEY
5-6 REDDING BASIN
5-12 SIERRA VALLEY
5-13 UPPER LAKE VALLEY
5-15 KELSEYVILLE VALLEY
5-21 SACRAMENTO VALLEY
TEHAMA COUNTY
GLENN COUNTY
BUTTE COUNTY
COLUSA COUNTY
SUTTER COUNTY
YUBA COUNTY
PLACER COUNTY
YOLO COUNTY
SACRAMENTO COUNTY
SOLANO COUNTY
5-22 SAN JOAQUIN VALLEY
SAN JOAQUIN COUNTY
STANISLAUS COUNTY
MERCED COUNTY
MADERA COUNTY
FRESNO COUNTY
TULARE COUNTY
KINGS COUNTY
KERN COUNTY
5-23 PANOCHE VALLEY

LAHONTAN REGION (NO. 6)

6-1 SURPRISE VALLEY
6-2 MADELINE PLAINS
6-4 HONEY LAKE VALLEY
6-5 TAHOE VALLEY
6-6 CARSON VALLEY
6-7 TOPAZ VALLEY
6-8 BRIDGEPORT VALLEY





LEGEND

MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J
N	P	Q	R

Wells are designated by Township, Range, Section and 1/16 section, e.g. 4N 3E - 22J1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

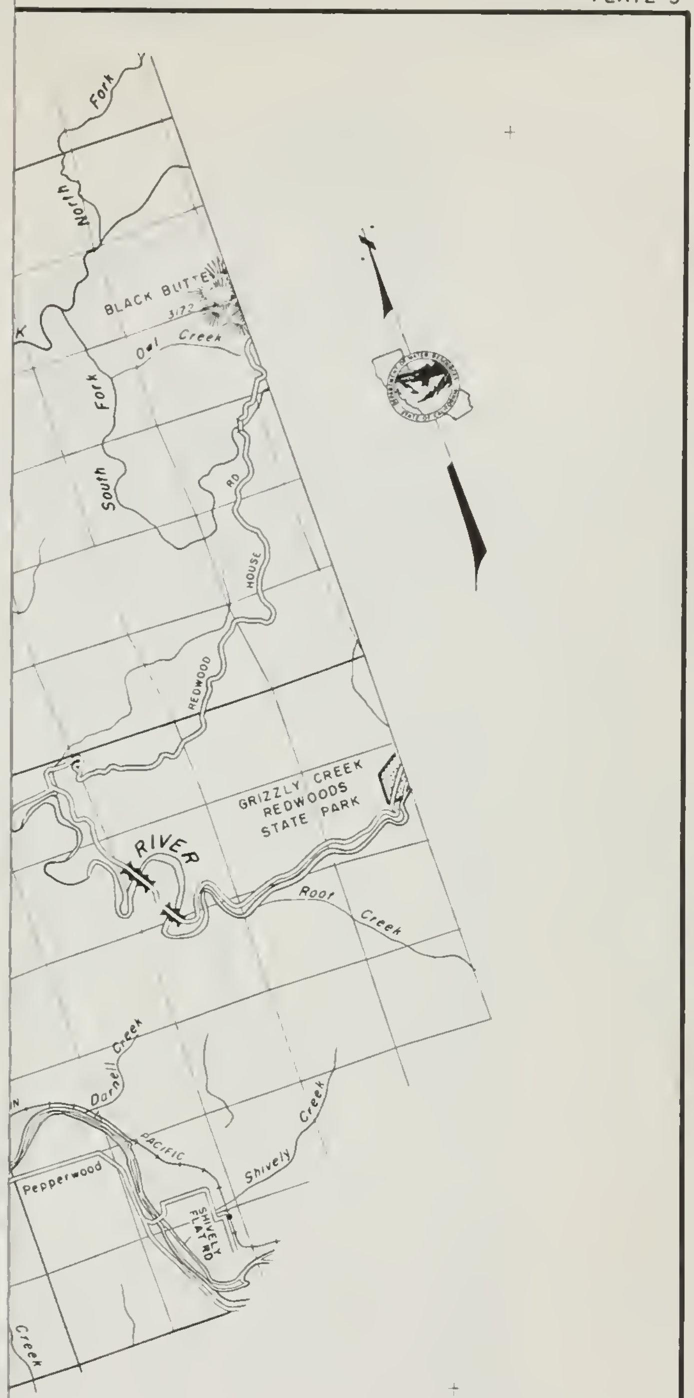
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

HAYFORK VALLEY

SCALE OF MILES

1 0 1 2 3


R. 12 W.
R. 11 W.
R. 10 W.
T. 32 N.
T. 31 N.
HAYFORK BALLY
6273
TRINITY NATIONAL FOREST
Packers Cr
Big
Donaldson Creek
BARKER MTN
5816
Dutch Creek
Bear Creek
Creek
THOMPSON PEAK
4957
Thompson
HYAMPOM
James Cr
Little
ROAD
Drinkwater Gl
Cedar Gl
CRISTIE RD
Carter Gulch
Big Creek
FARMER RCH RD
Duncon Gulch
Barker
BAKER
Little Barker Cr
CREEK ROAD
Alder Gulch
West Fork
East Fork
Maxwell Cr
TNF
Devils Gl
HAYFORK
11
12
15
8
35
11 Q1
12 L1
15 K1
8 M1
35 G1
West
Tule Creek
ROAD
VALLEY ROAD
TULE CREEK RD
Salt
Corr
Summit
SUMMIT
CREEK
Creek
Gardner
Shock Creek
Gulch
Duncon Creek
Willow Gl
HOOSIMBIM MTN
5403
WELLS MTN
5288
Kingsbury Gulch
KINGSBURY ROAD
North Fork
Middle Fork
NATIONAL FOREST
TRINITY
Tule
Cr
PLUMMER PEAK
(Lookout)
4411 STANDARD
LEGEND
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg. 4N/3E-22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
HAYFORK VALLEY
SCALE OF MILES
1 0 1 2 3



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

EEL RIVER VALLEY

SCALE OF MILES
0 1 2

LEGEND

2F1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED AREA

LINE OF 300 PARTS PER MILLION CHLORIDE CONCENTRATION IN GROUND WATERS, 1959

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

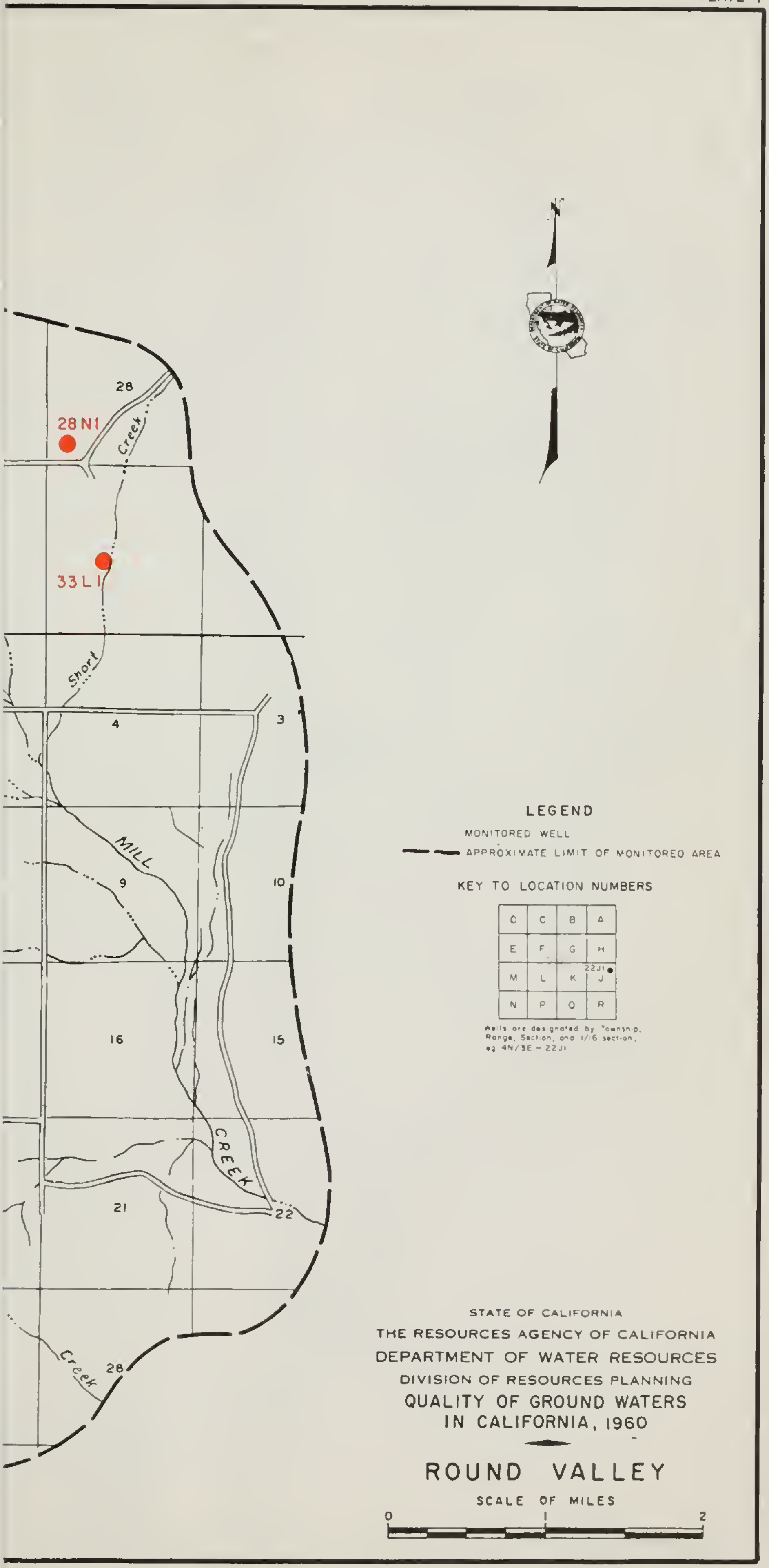
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E – 22J1

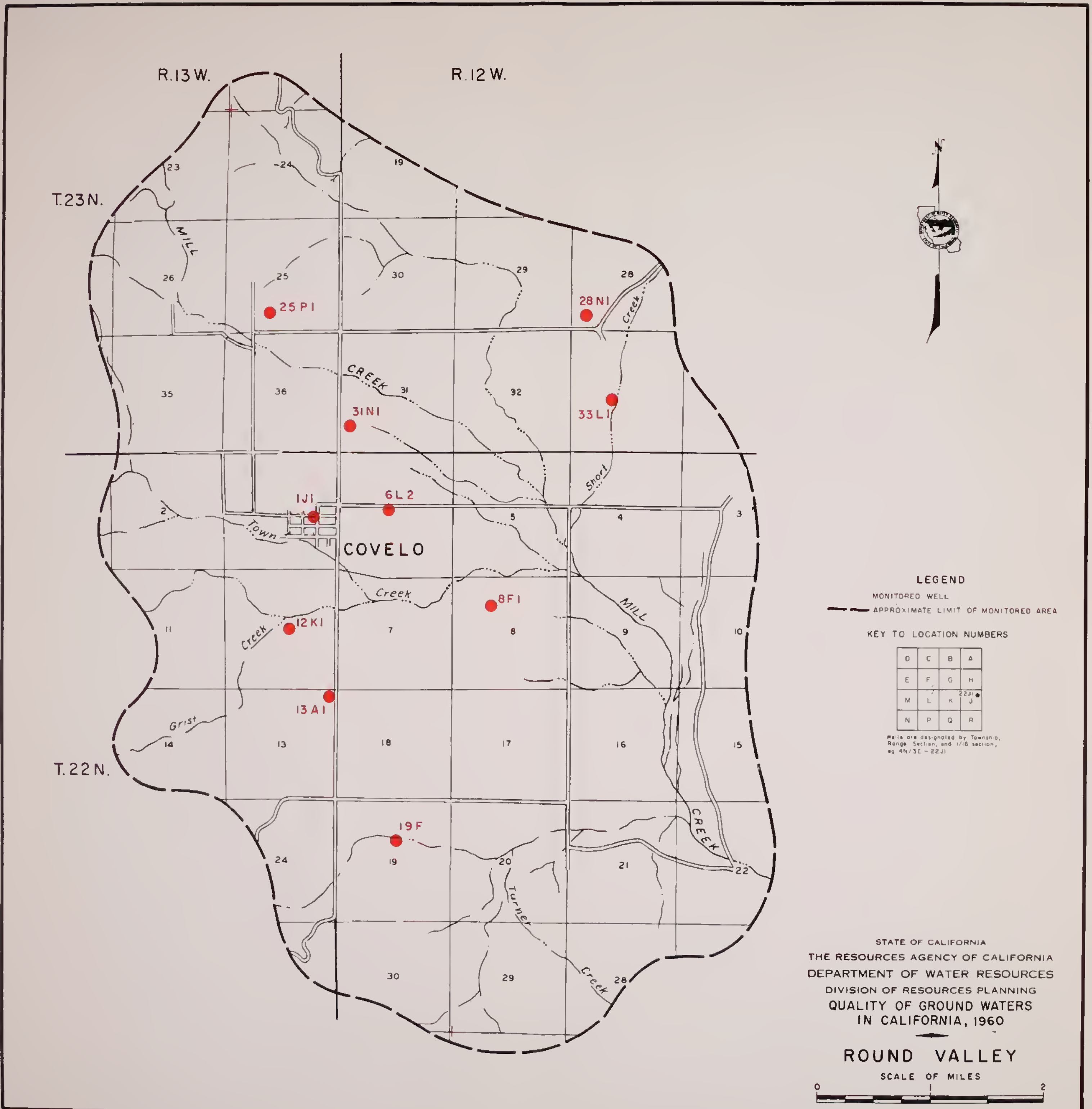
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

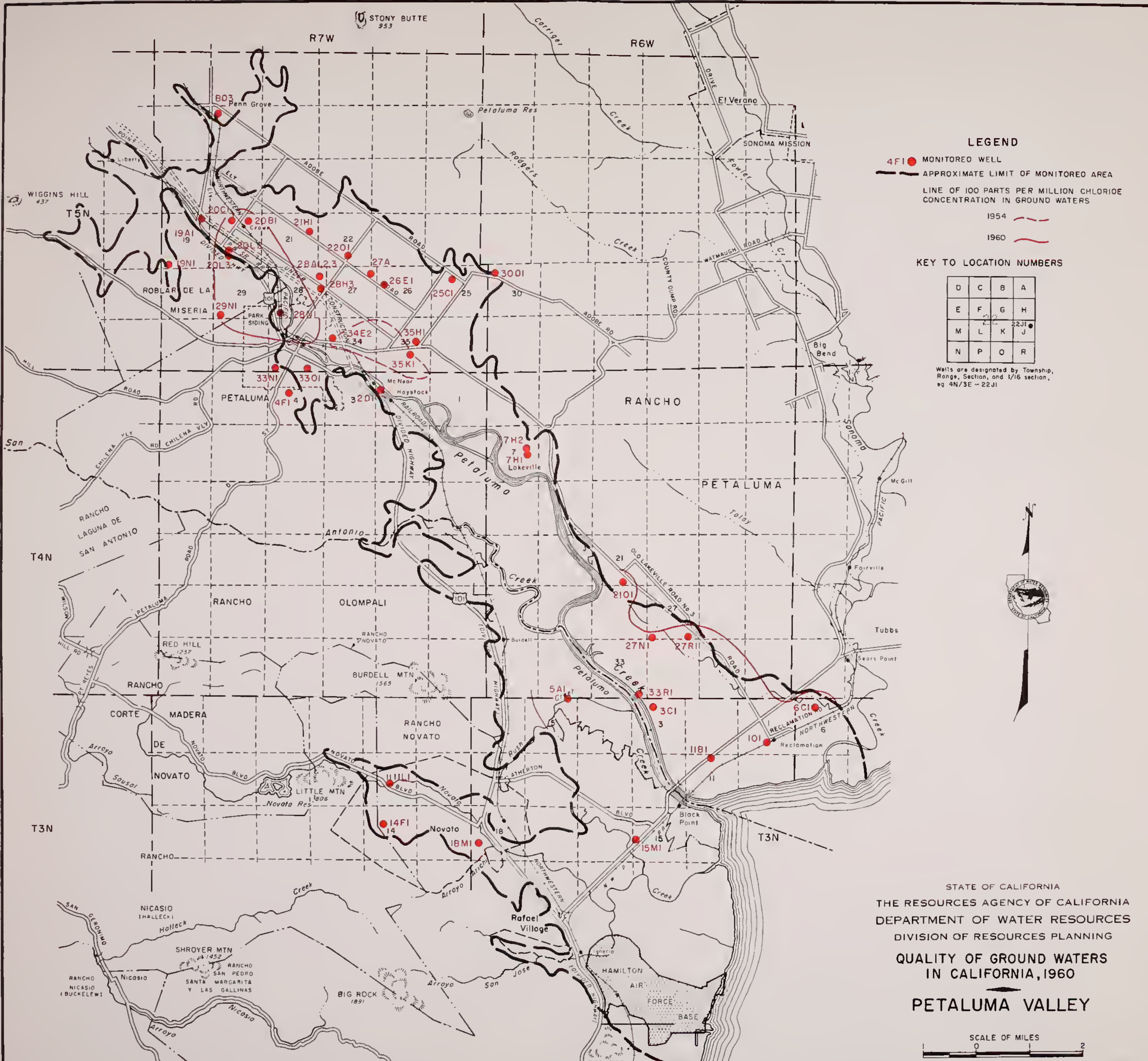
EEL RIVER VALLEY

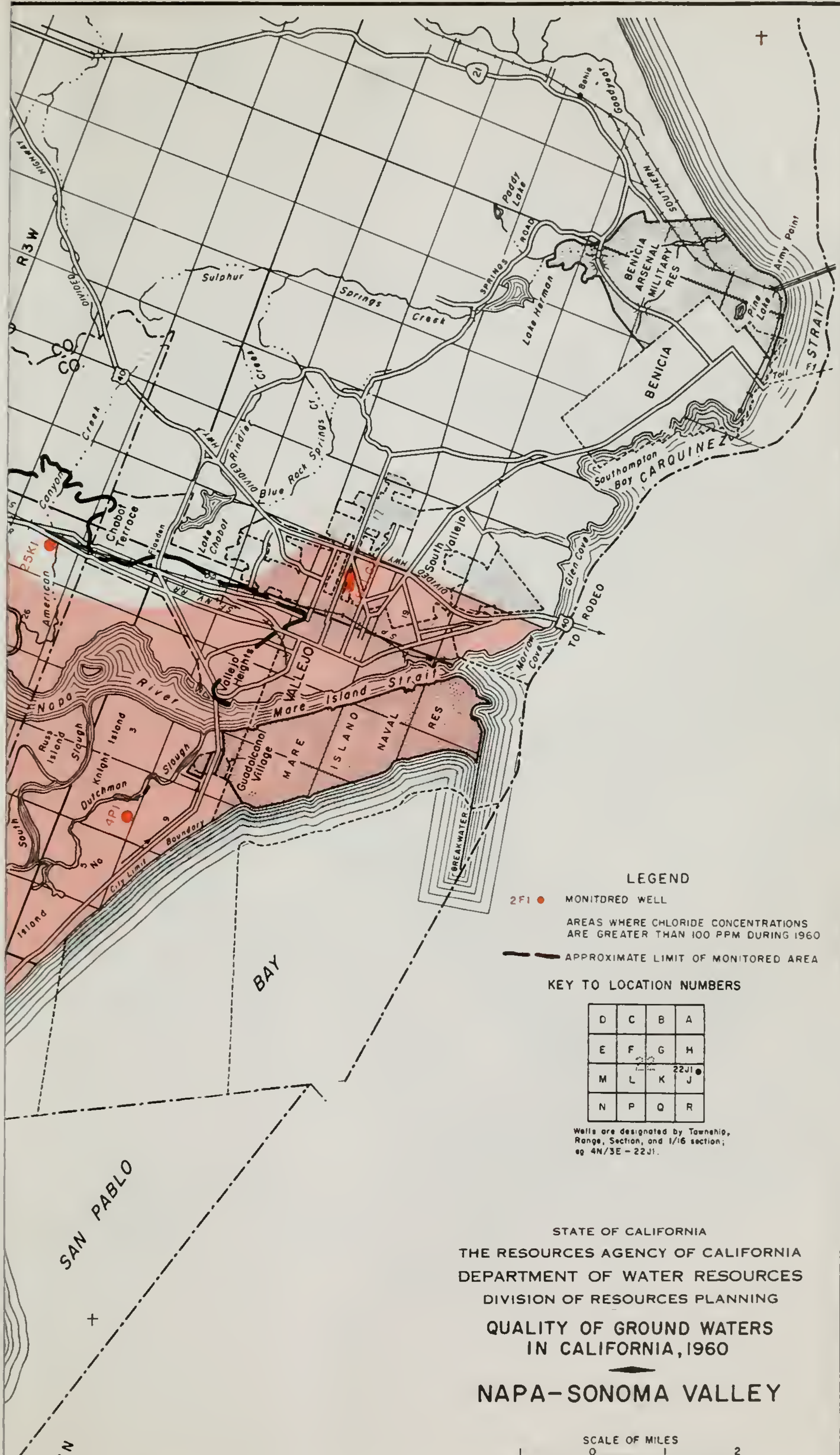
SCALE OF MILES
0 1 2


28
28N1
Creek
33L1
Short
4
3
MILL
9
10
16
15
CREEK
21
22
Creek
28
LEGEND
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED AREA
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E – 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
ROUND VALLEY
SCALE OF MILES
0
1
2


R.13 W.
R.12 W.
T.23 N.
T.22 N.
COVELO
25 P1
28 N1
31 N1
33 L1
1J1
6L2
8F1
12K1
13A1
19F
MILL
CREEK
Creek
Short
Town
Grist
Turner
LEGEND
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED AREA
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
ROUND VALLEY
SCALE OF MILES
0 1 2


R6W
El Verano
SONOMA MISSION
DRIVE
Creek
Fowler
WATMAUGH ROAD
COUNTY DUMP RD
ADOBE RD
Big Bend
RANCHO
PETALUMA
Tolay
Sonoma
McGill
PACIFIC
Fairville
Tubbs
Sears Point
OLD LAKEVILLE ROAD No 3
21
21Q1
27
27N1
27R1
33
33R1
3C1
3
Petaluma
Creek
6C1
6
RECLAMATION RD
NORTHWESTERN
1Q1
Reclamation
11B1
11
BLVD
Black Point
15
15M1
T3N
HAMILTON
AIR
FORCE
BASE
PACHECO
HILL
LEGEND
4F1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED AREA
LINE OF 100 PARTS PER MILLION CHLORIDE CONCENTRATION IN GROUND WATERS
1954
1960
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E – 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
PETALUMA VALLEY
SCALE OF MILES
1 0 1 2

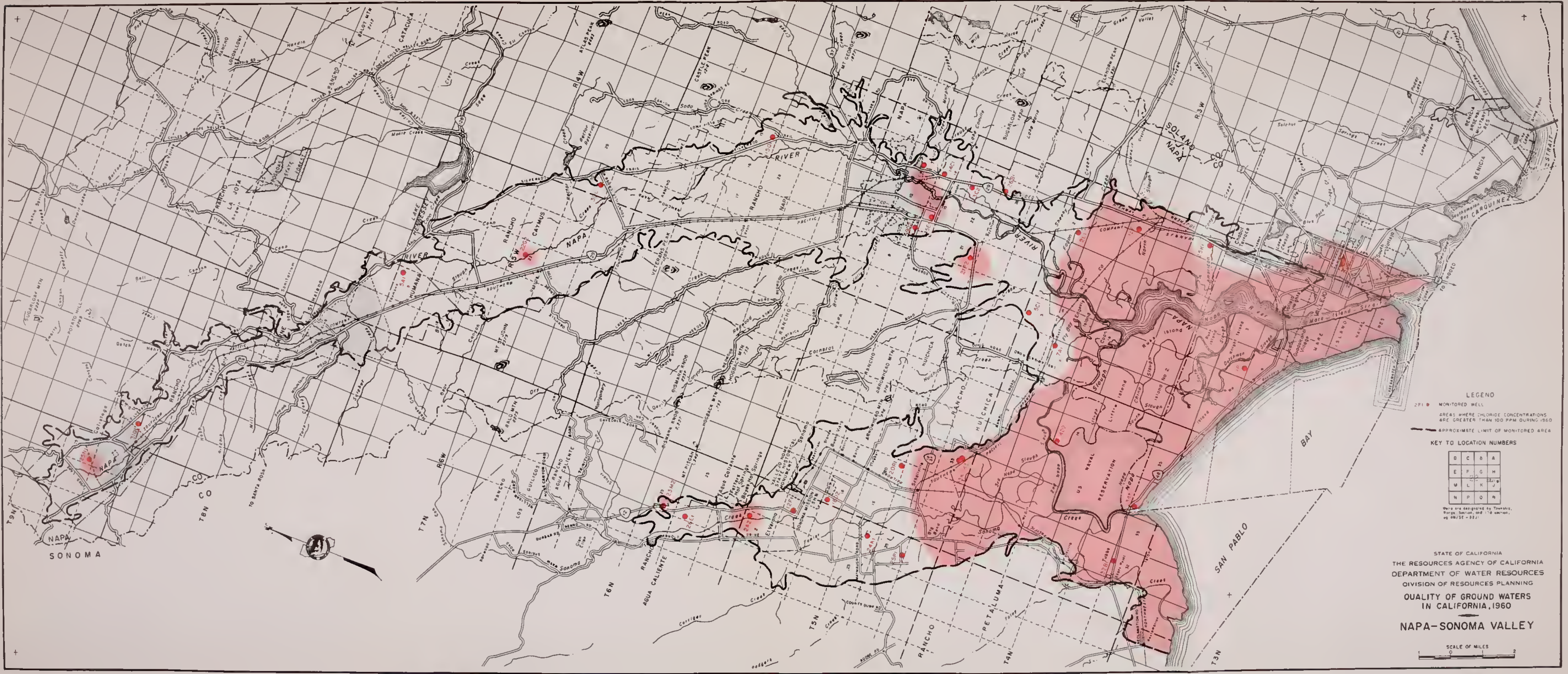

LEGEND
4F1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED AREA
LINE OF 100 PARTS PER MILLION CHLORIDE CONCENTRATION IN GROUND WATERS
1954
1960
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
PETALUMA VALLEY
SCALE OF MILES
1 0 1 2
STONY BUTTE 953
R7W
R6W
T5N
T4N
T3N
WIGGINS HILL 437
Penn Grove
El Verano
SONOMA MISSION
Petaluma Res
Liberty
PETALUMA
Lakeville
RANCHO
PETALUMA
RANCHO LAGUNA DE SAN ANTONIO
RANCHO
OLOMPALI
RANCHO NOVATO
BURDELL MTN 1565
RED HILL 1257
RANCHO CORTE MADERA DE NOVATO
LITTLE MTN 1606
Novato Res
Novato
Black Point
Reclamation
Rafael Village
HAMILTON AIR FORCE BASE
NICASIO (HALLECK)
SHROYER MTN 1452
RANCHO SAN PEDRO SANTA MARGARITA Y LAS GALLINAS
RANCHO NICASIO (BUCKELEW)
BIG ROCK 1891
PACHECO HILL
Big Bend
McGill
Fairville
Tubbs
Sears Point
Burdell
Ignacio
8Q3
20C1
20B1
21H1
19A1
20L2
19N1
20L3
22Q1
27A
28A1,2,3
28H3
26E1
25C1
30Q1
29N1
28J1
34E2
35H1
35K1
33N1
33Q1
4F1
32Q1
7H2
7H1
21Q1
27N1
27R1
5A1
33R1
3C1
6C1
10I
11B1
11J1
14F1
18M1
15M1



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

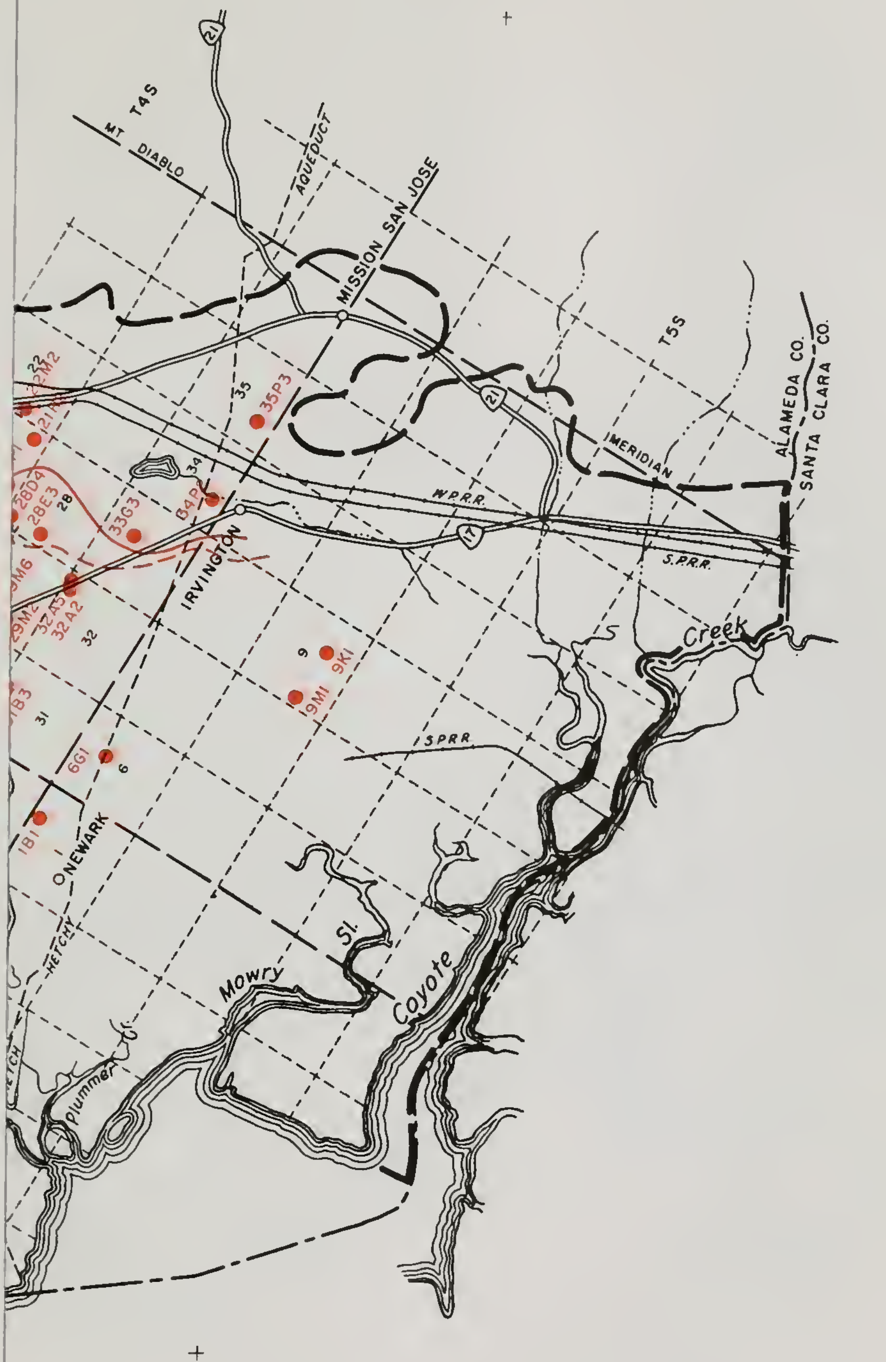
NAPA–SONOMA VALLEY



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

NAPA–SONOMA VALLEY

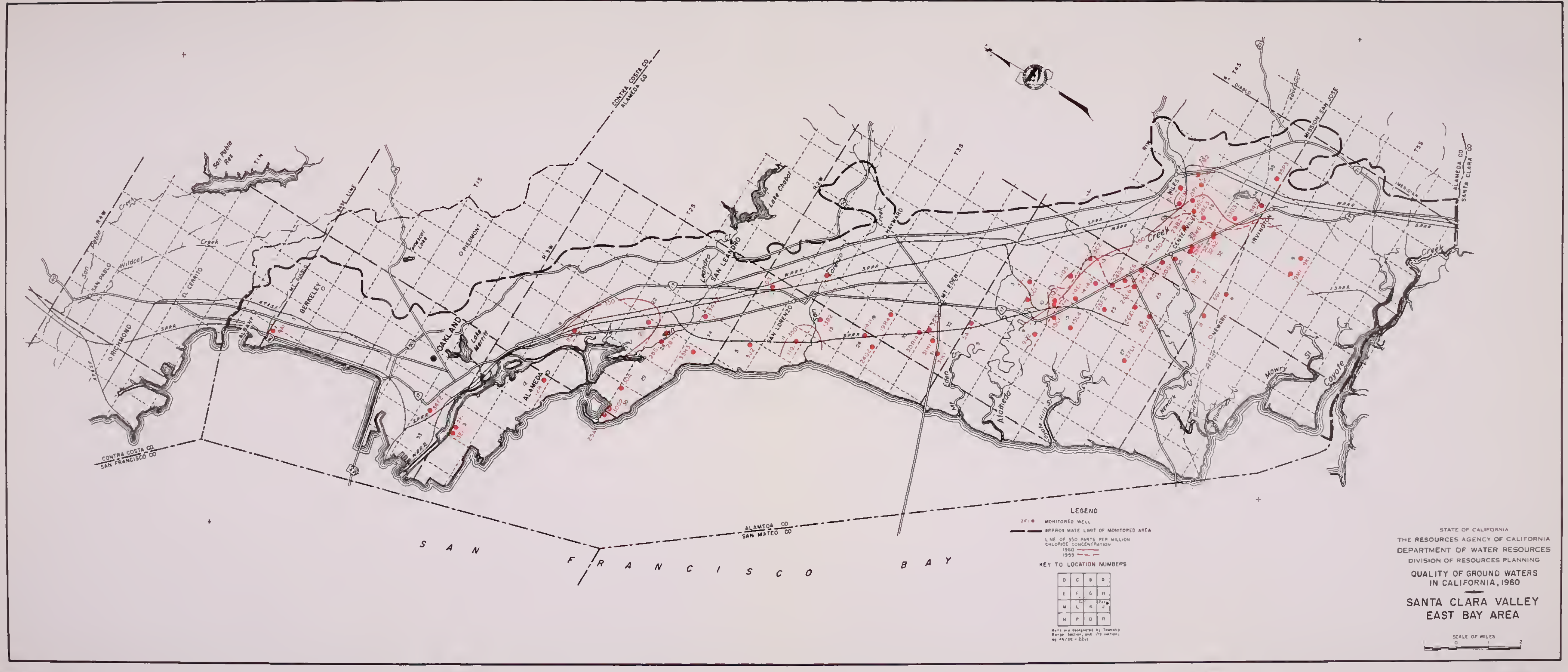


STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

SANTA CLARA VALLEY
EAST BAY AREA

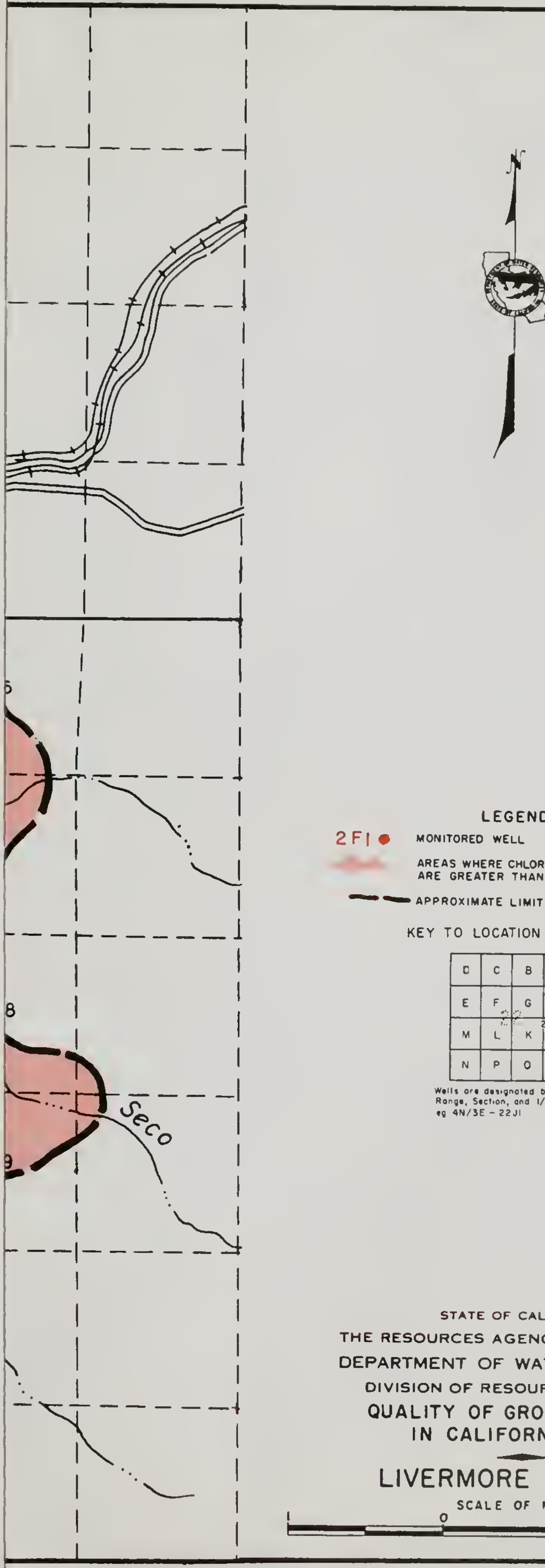
SCALE OF MILES
1 0 1 2



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

SANTA CLARA VALLEY EAST BAY AREA



LEGEND

2F1 ● MONITORED WELL

AREAS WHERE CHLORIDE CONCENTRATIONS ARE GREATER THAN 100 PPM DURING 1960

APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

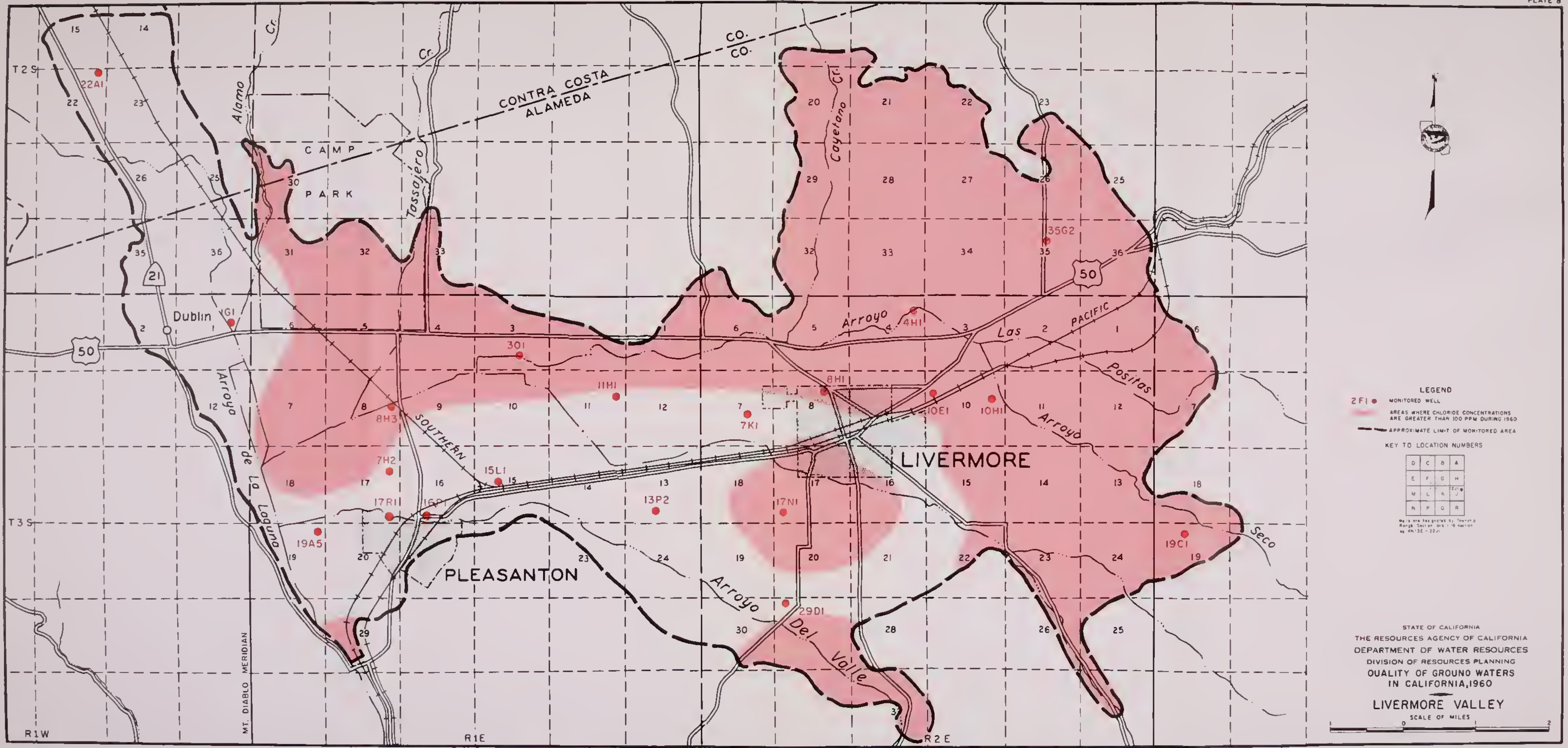
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

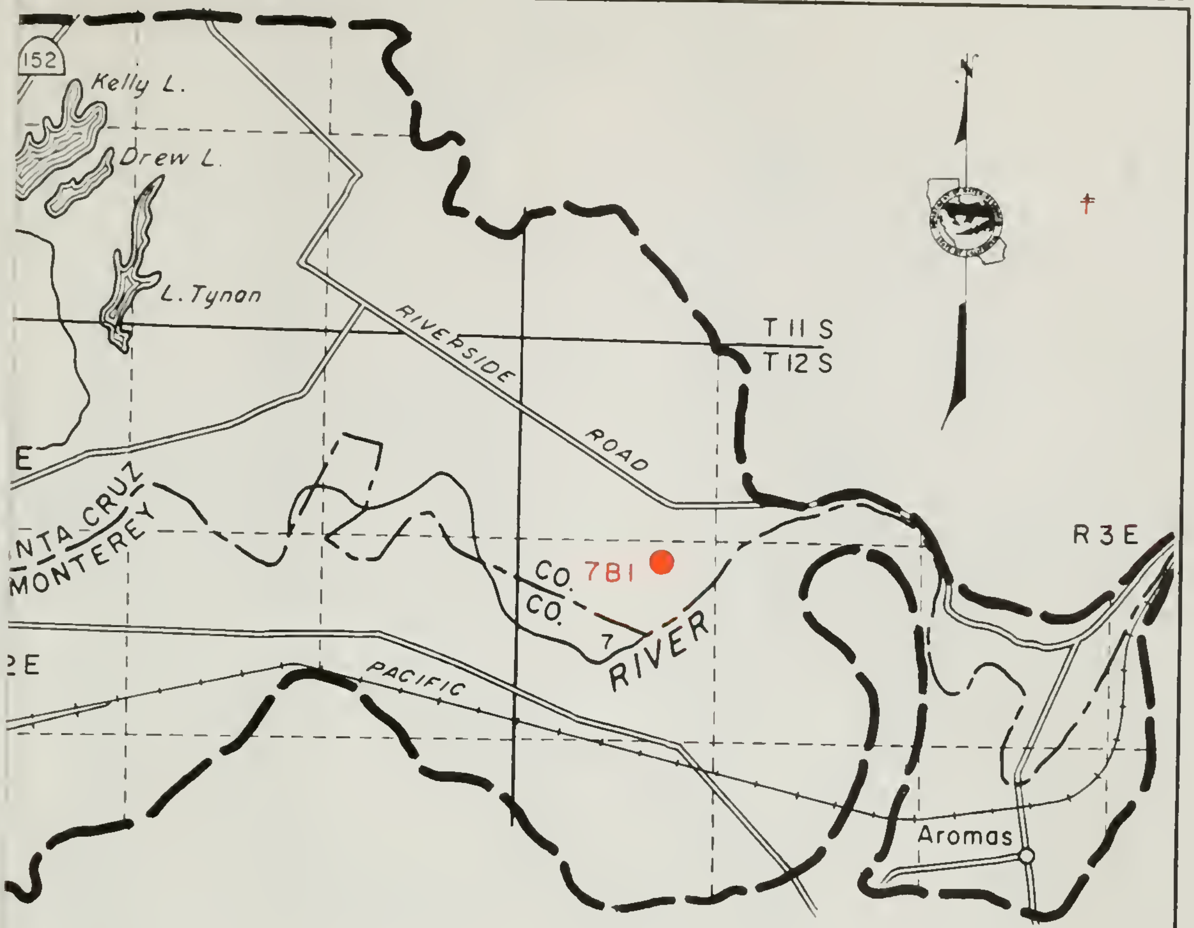
LIVERMORE VALLEY

SCALE OF MILES

1 0 1 2

PLATE 8


CONTRA COSTA CO.
ALAMEDA CO.
CAMP PARK
Alamo Cr.
Tassajero Cr.
Cayetano Cr.
Dublin
PLEASANTON
LIVERMORE
SOUTHERN PACIFIC
Arroyo de La Laguna
Arroyo Las Positas
Arroyo Seco
Arroyo Del Valle
MT. DIABLO MERIDIAN
T2S
T3S
R1W
R1E
R2E
50
21
22A1
1G1
30I
11H1
7K1
8H1
8H3
7H2
15L1
17R1
16P1
13P2
19A5
17N1
29D1
4H1
10E1
10H1
35G2
19C1
LEGEND
2F1 MONITORED WELL
AREAS WHERE CHLORIDE CONCENTRATIONS ARE GREATER THAN 100 PPM DURING 1960
APPROXIMATE LIMIT OF MONITORED AREA
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
LIVERMORE VALLEY
SCALE OF MILES
0
2



LEGEND

2F1 ● MONITORED WELL

AREAS WHERE CHLORIDE CONCENTRATIONS ARE GREATER THAN 100 PPM DURING 1960

APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E – 22J1

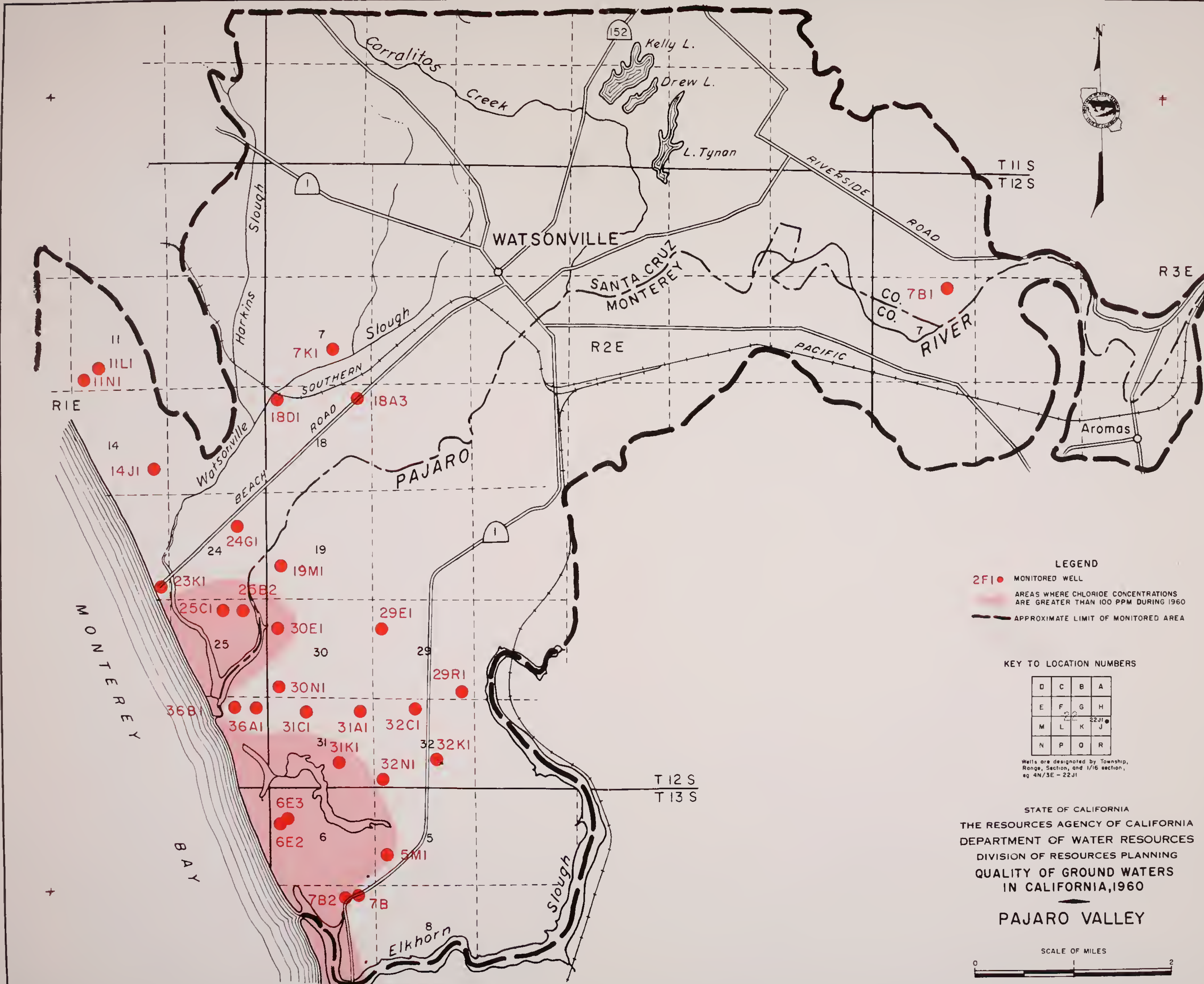
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

PAJARO VALLEY

SCALE OF MILES

0 1 2



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

PAJARO VALLEY

PLATE 10

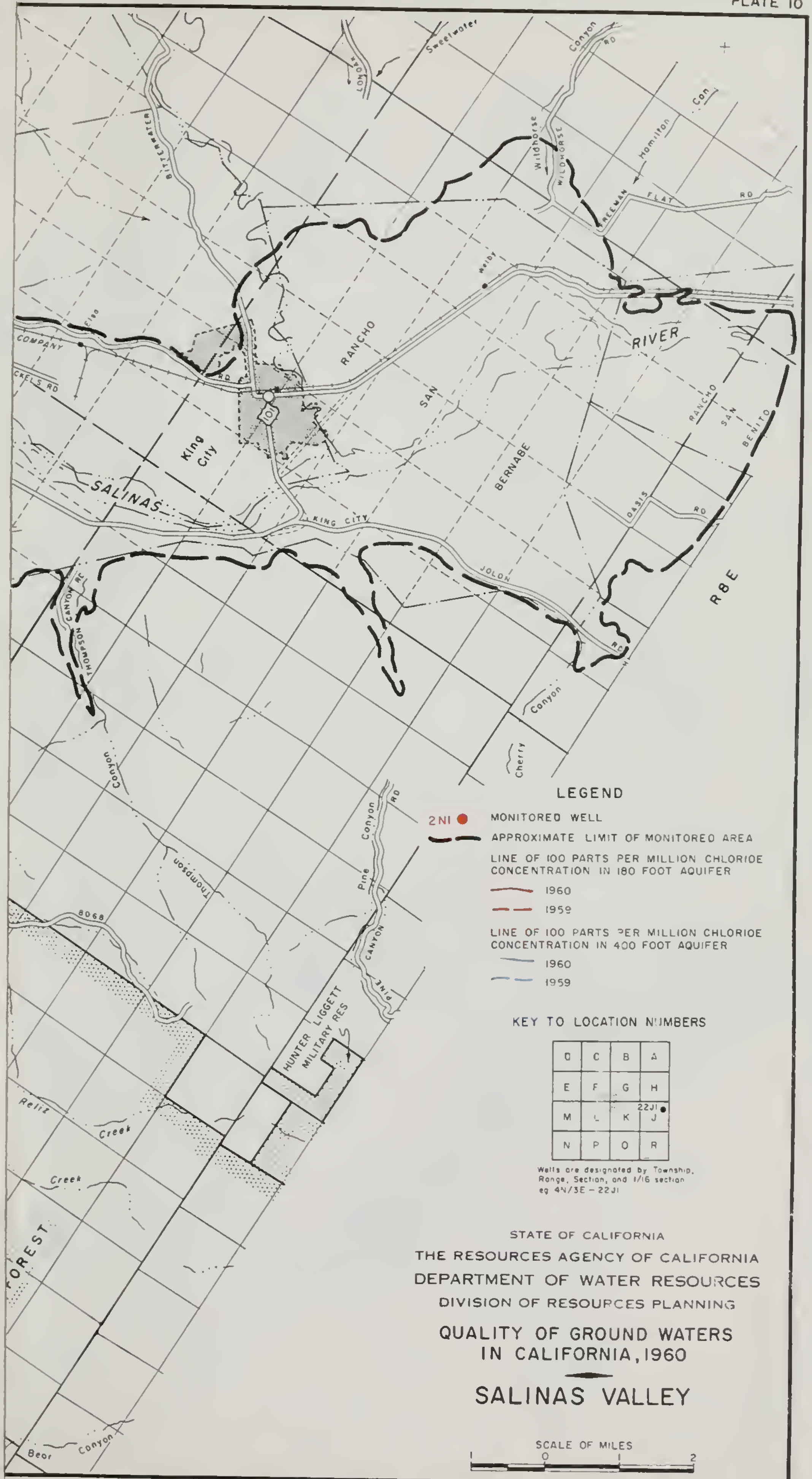
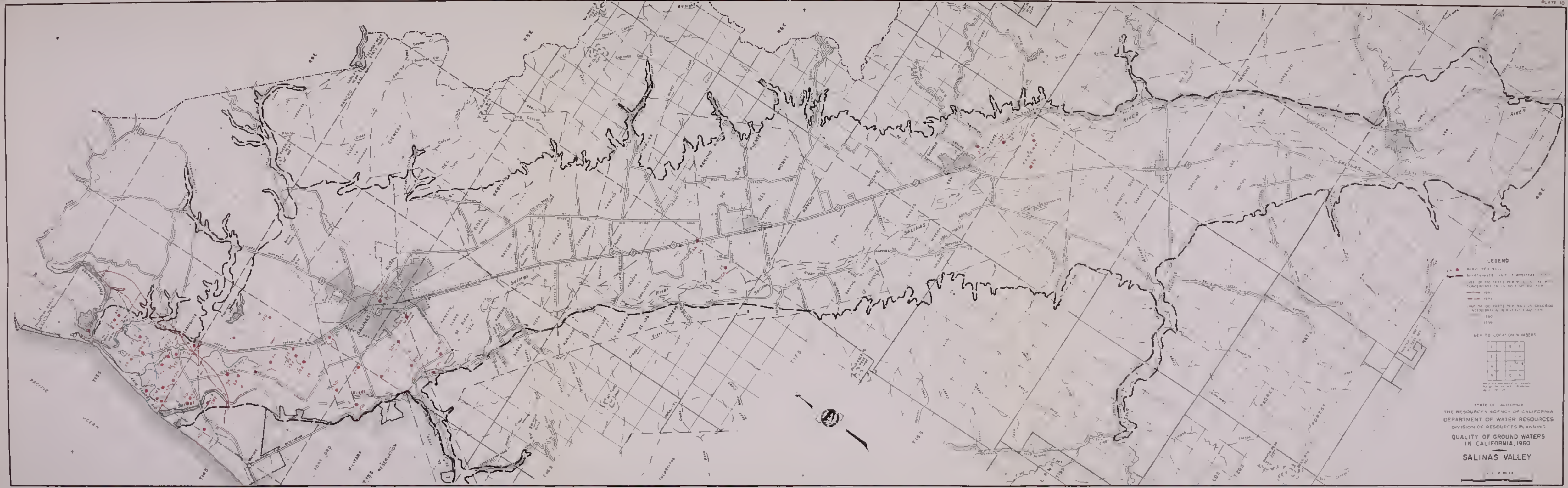
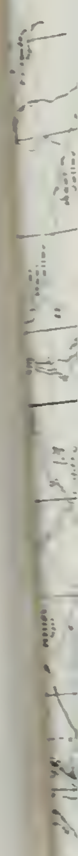
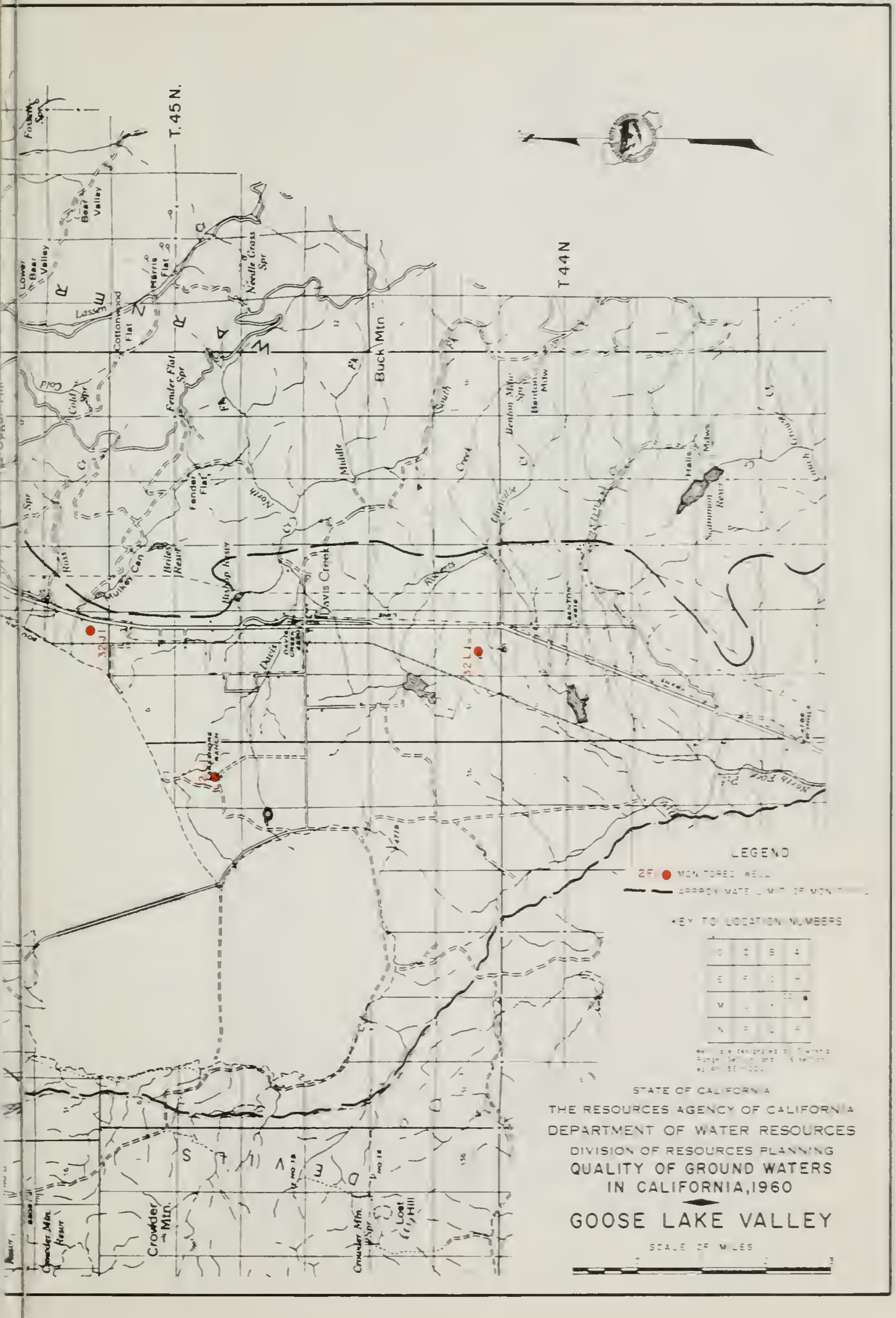
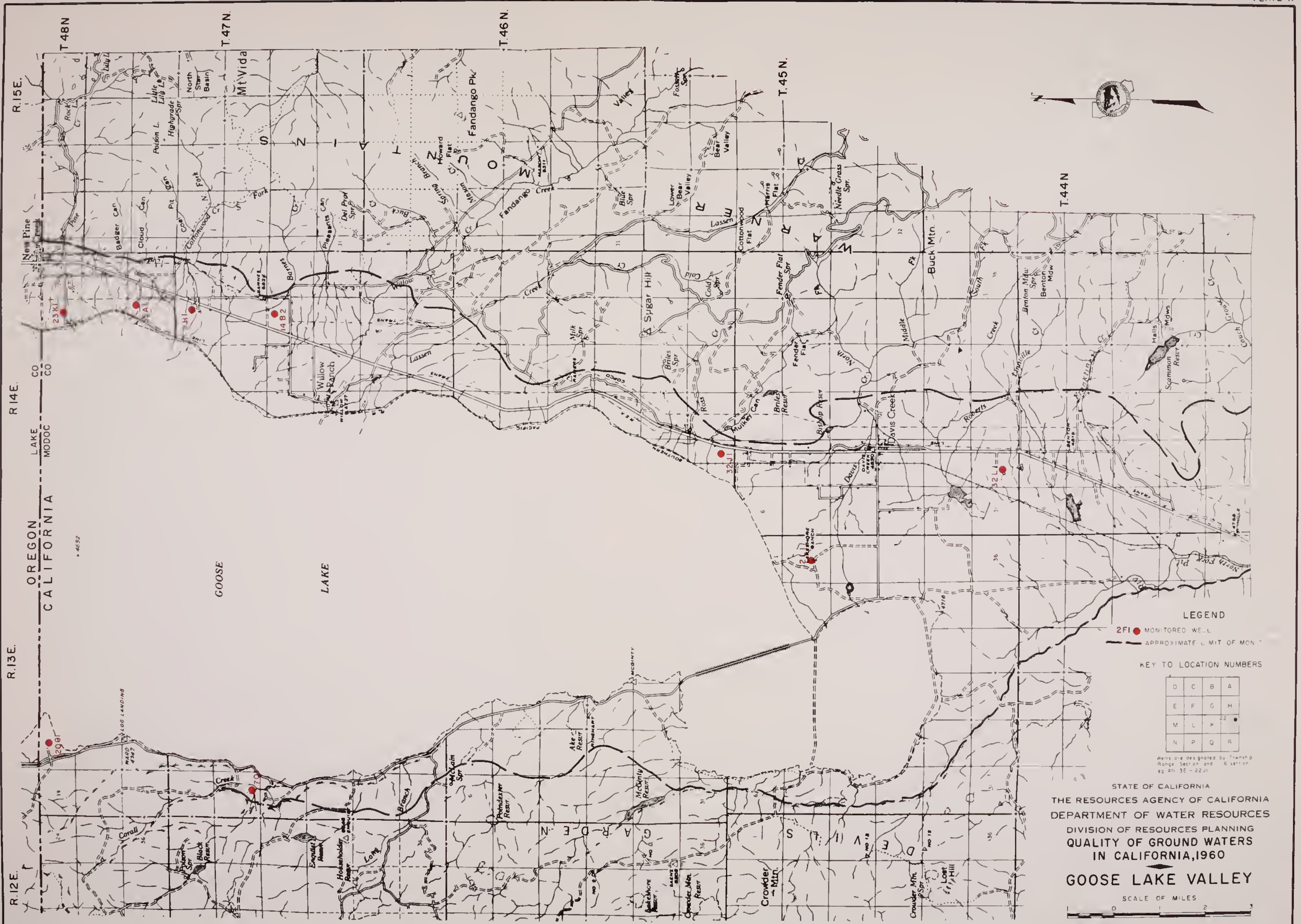

LEGEND
2N1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED AREA
LINE OF 100 PARTS PER MILLION CHLORIDE CONCENTRATION IN 180 FOOT AQUIFER
1960
1959
LINE OF 100 PARTS PER MILLION CHLORIDE CONCENTRATION IN 400 FOOT AQUIFER
1960
1959
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section eg 4N/3E – 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
SALINAS VALLEY
SCALE OF MILES
1 0 1 2
King City
SALINAS
RIVER
RANCHO
SAN
BERNABE
RANCHO SAN BENITO
R8E
101
KING CITY
JOLON
RD
COMPANY
Sweetwater
Canyon
Wildhorse
WILDHORSE
Hamilton
FREEMAN
FLAT
RD
Con
BITTERWATER
LONOKE
OASIS
THOMPSON CANYON RD
Thompson
Canyon
Cherry
Pine
PINE CANYON
HUNTER LIGGETT MILITARY RES
8068
Reliz
Creek
Bear
FOREST

PLATE 10

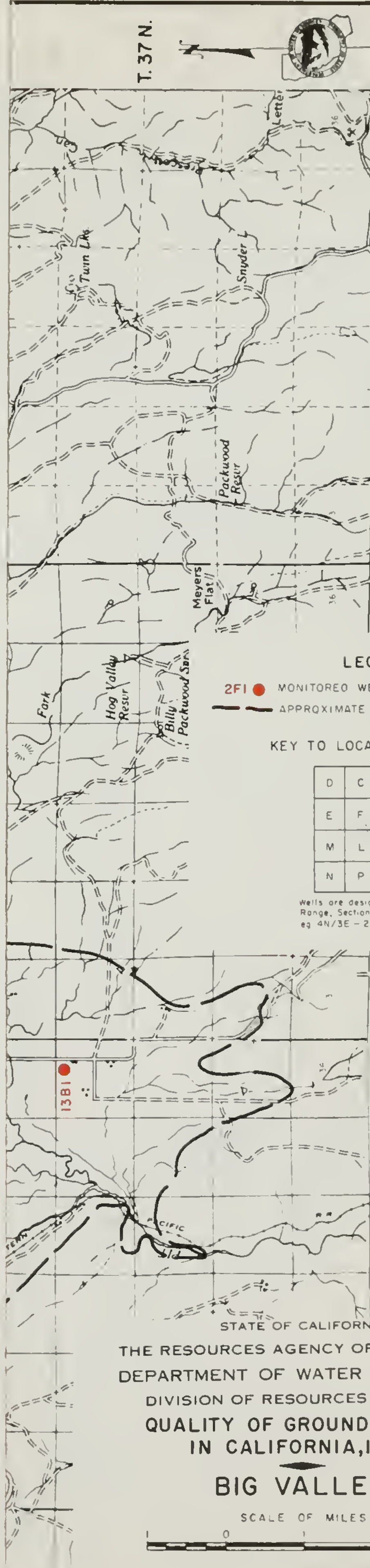

LEGEND
KEY TO LOCATION NUMBERS
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
SALINAS VALLEY
PACIFIC
OCEAN
Salinas
SALINAS
RIVER




T. 45 N.
T 44 N
Buck Mtn.
Davis Creek
Lower Bear Valley
Bear Valley
Harris Flat
Cottonwood Flat
Needle Grass Spr
Fender Flat Spr
Fender Flat
Benton Mdw
Middle
North
Crowder Mtn.
Lost Hill
32J1
32L1
LEGEND
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
GOOSE LAKE VALLEY
SCALE OF MILES



LEGEND
2F1 MONITORED WELL
APPROXIMATE LIMIT OF MON
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
GOOSE LAKE VALLEY
SCALE OF MILES
OREGON
CALIFORNIA
LAKE
MODOC
GOOSE
LAKE
T 48N
T.47 N.
T.46 N.
T.45 N.
T.44 N
R.15E.
R.14E.
R.13E.
R.12E.
New Pine
Willow Ranch
Davis Creek
Buck Mtn.
Sugar Hill
Fandango Pk.
Mt Vida
Crowder Mtn.
23K1
1A1
1H1
14B2
32J1
2J1
32L1
29G1



LEGEND

2F1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	22J1 ● J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

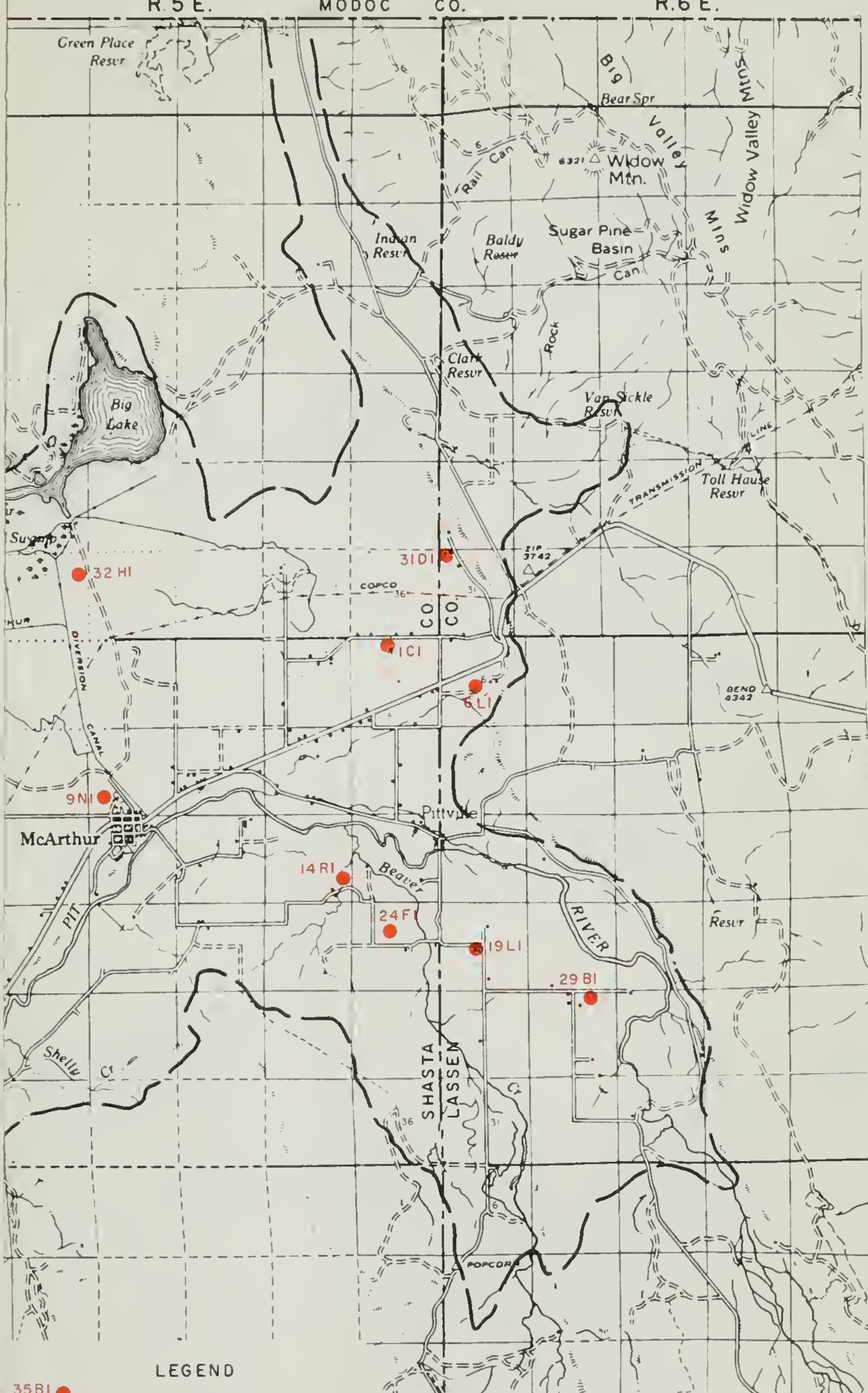
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

BIG VALLEY

SCALE OF MILES

1 0 1 2 3


R.9E.
R.10E.
R.11E.
R.12E.
R.13E.
R.14E.
T.42N.
T.41N.
T.40N.
T.39N
WARM SPRINGS VALLEY
NORTH FORK PIT RIVER VALLEY
SOUTH FORK PIT RIVER VALLEY
ALTURAS
Canby
Likely
Portuguese Ridge
Signal Butte
Dorris Resr.
Delta Lake
MODOC
LASSEN
29H1
9E1
3K1
24A1
2J1
31Q1
32G1
15H1
18P1
25J1
36A1
LEGEND
2F1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
ALTURAS BASIN
SCALE OF MILES
1 0 1 2 3



LEGEND

35 B1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

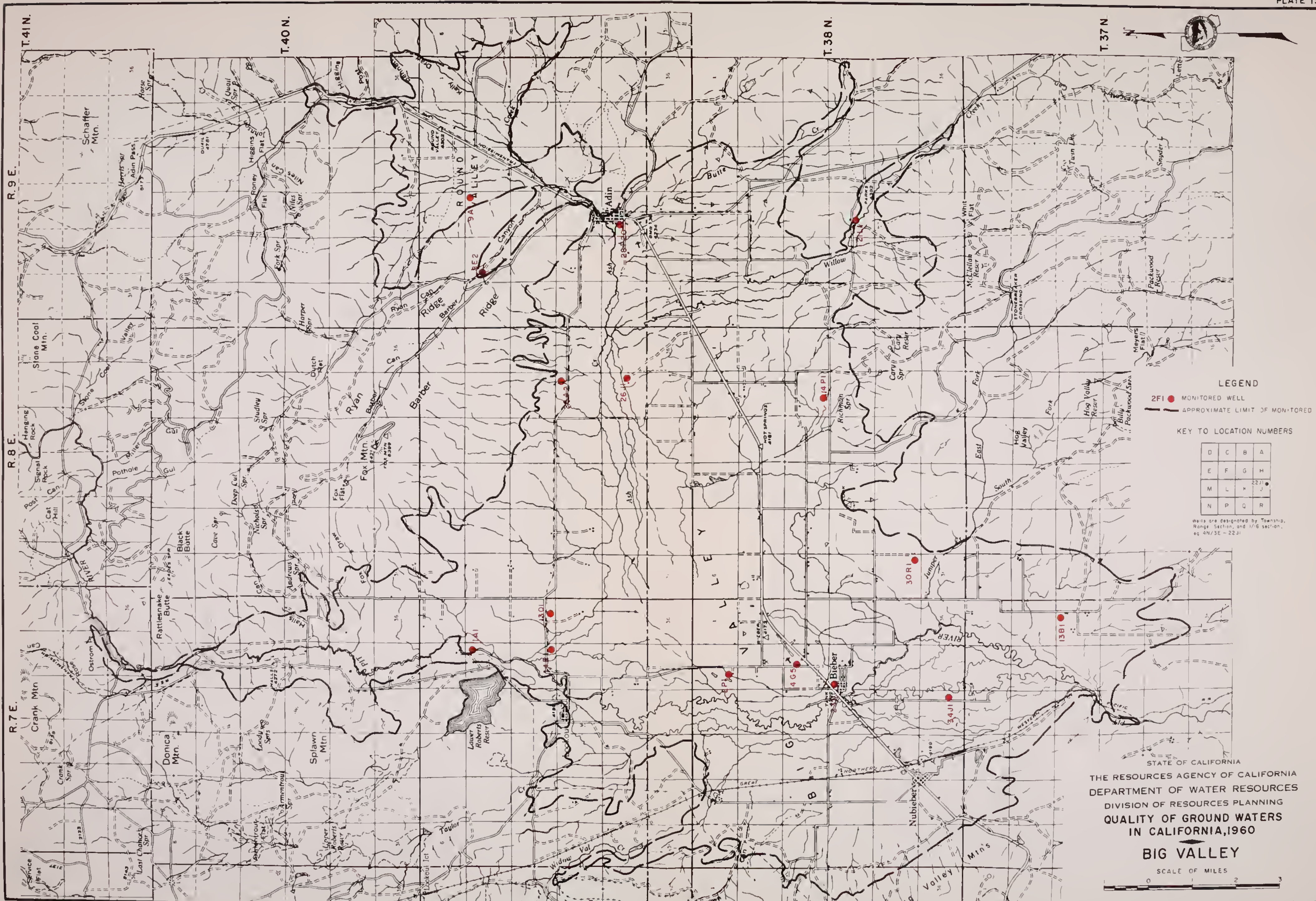
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

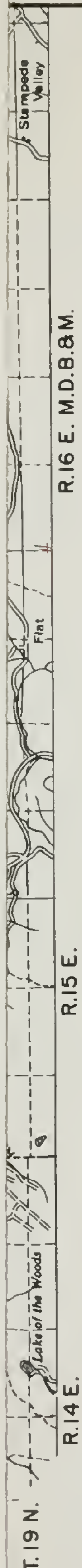
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

FALL RIVER VALLEY

SCALE OF MILES

1 0 1 2 3


STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
BIG VALLEY
SCALE OF MILES
0 1 2 3
LEGEND
2F1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg. 4N/3E-22J1
T. 41 N.
T. 40 N.
T. 38 N.
T. 37 N.
R. 9 E.
R. 8 E.
R. 7 E.
ROUND VALLEY
BIG VALLEY
Adin
Bieber
Nubieber
Lookout
Schaffer Mtn.
Stone Coal Mtn.
Hanging Rock
Signal Rock
Cat Hill
Black Butte
Rattlesnake Butte
Crank Mtn
Donica Mtn.
Splawn Mtn
Fox Mtn
Lower Roberts Resvr
Ash Cr
Willow
Juniper
South Fork
East Fork
Hog Valley
Richman Spr
Packwood Resvr
Meyers Flat
Twin Lks
Snyder
Adin Pass
Harper Rsvr
Dutch Res
Studley Spr
Pothole
Barber Ridge
Ryan Can
Widow Val
Big Valley Mtn's
Taylor
Lookout Jct
Ostrom
Halls
RIVER
9A1
8E2
28Q1
2L1
26H1
14P1
30R1
13B1
13Q1
11A1
4G5
34J1



LEGEND

501 ● MONITORED WELL

— — APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	22J1 ● J
N	P	Q	R

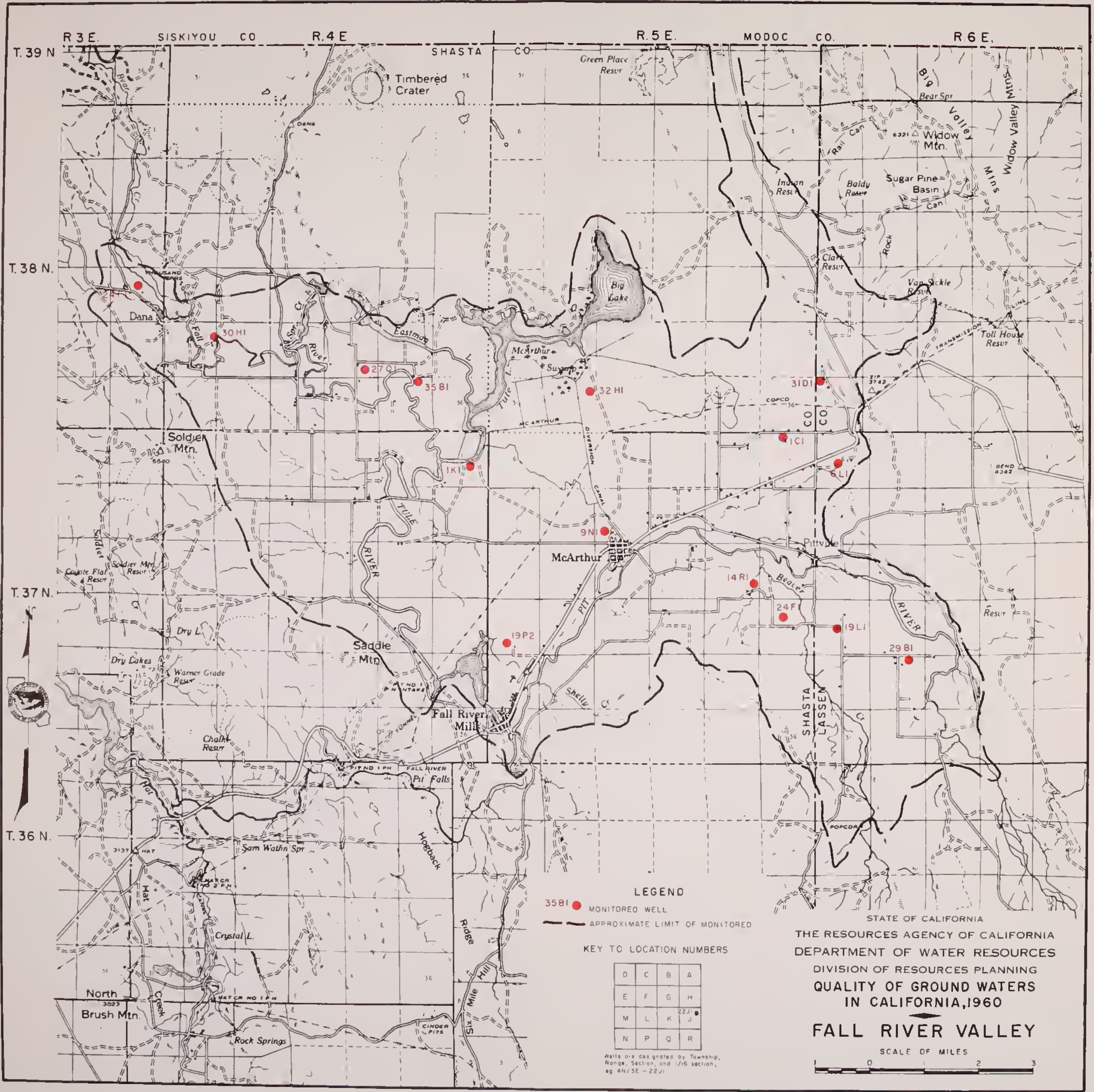
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

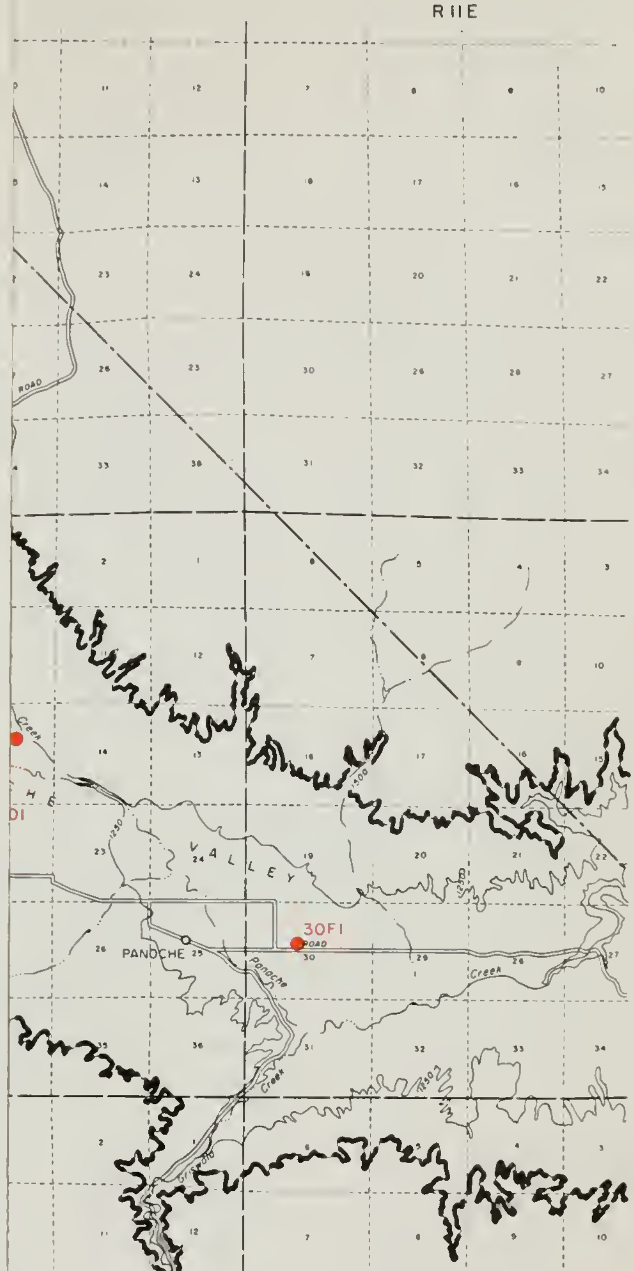
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

SIERRA VALLEY

SCALE OF MILES
1 0 1 2



R 3 E.
SISKIYOU CO
R.4 E
SHASTA CO.
R.5 E.
MODOC CO.
R 6 E.
T. 39 N
T. 38 N.
T. 37 N.
T. 36 N.
Timbered Crater
Green Place Resvr
Big Valley Mtns
Bear Spr
Widow Mtn.
Widow Valley Mtns
Rail Can
Indian Resvr
Baldy Resvr
Sugar Pine Basin
Clark Resvr
Rock
Van Sickle Resvr
Toll House Resvr
TRANSMISSION LINE
Big Lake
McArthur Swamp
Eastman
Dana
Fall
Spr Cr
River
Tule
MC ARTHUR
DIVERSION CANAL
COPCO
CO
CO
Soldier Mtn.
Tule River
McArthur
Pittville
Beaver
River
Resvr
Saddle Mtn
Fall River Mills
Shelly Cr
Soldier Mtn Resvr
Coyote Flat Resvr
Dry L.
Dry Lakes
Warner Grade Resvr
Chalk Resvr
Pit
SHASTA
LASSEN
Cr
Pit Falls
FALL RIVER
Hat
Sam Wathn Spr
Hogback
Crystal L.
North Brush Mtn.
Creek
Rock Springs
Ridge
Hill
Six Mile
CINDER PITS
POPCORN
2A1
30H1
27Q1
35B1
32H1
31D1
1C1
6L1
1K1
9N1
14R1
24F1
19L1
29B1
19P2
LEGEND
35B1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E – 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
FALL RIVER VALLEY
SCALE OF MILES
1 0 2 3

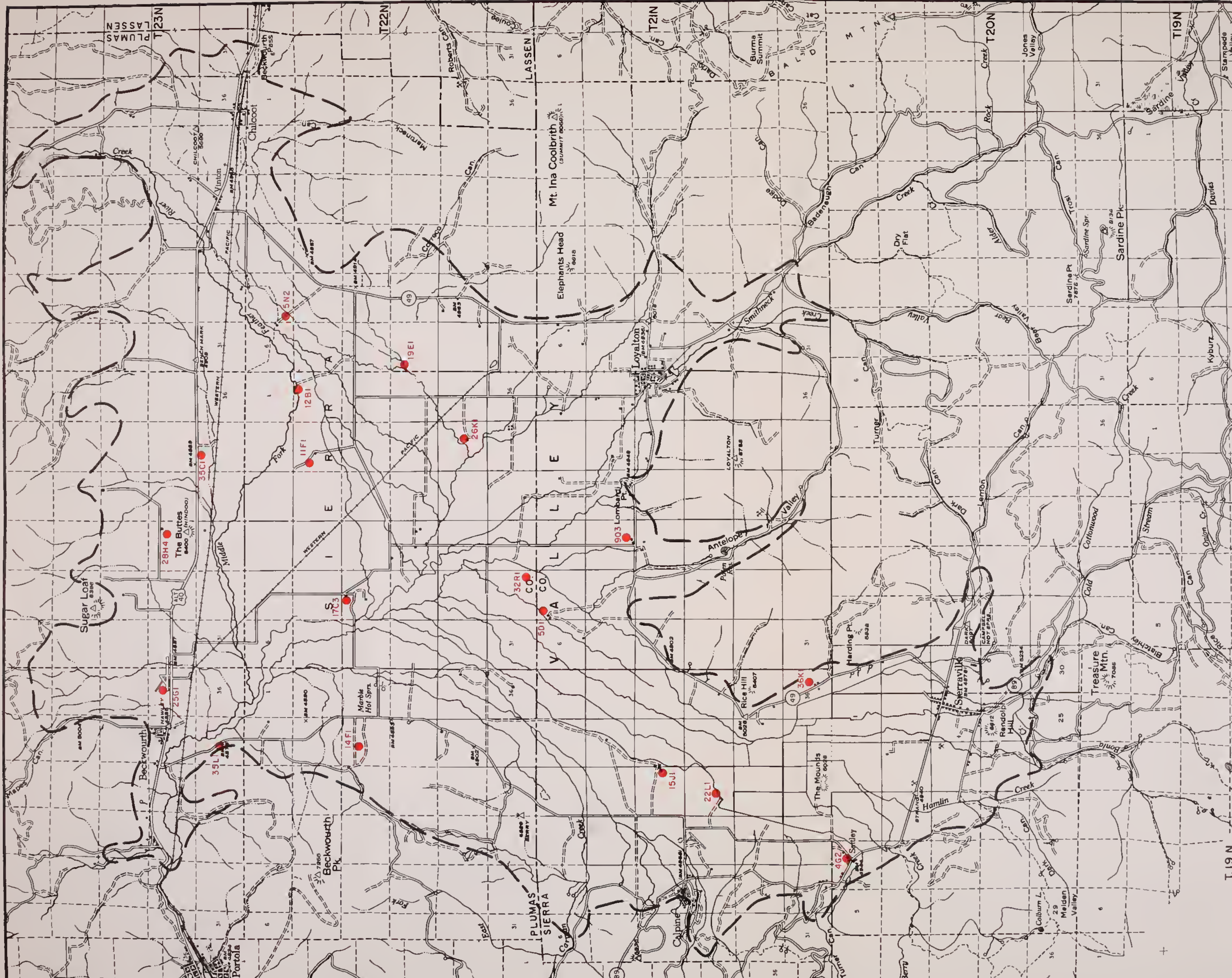


STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

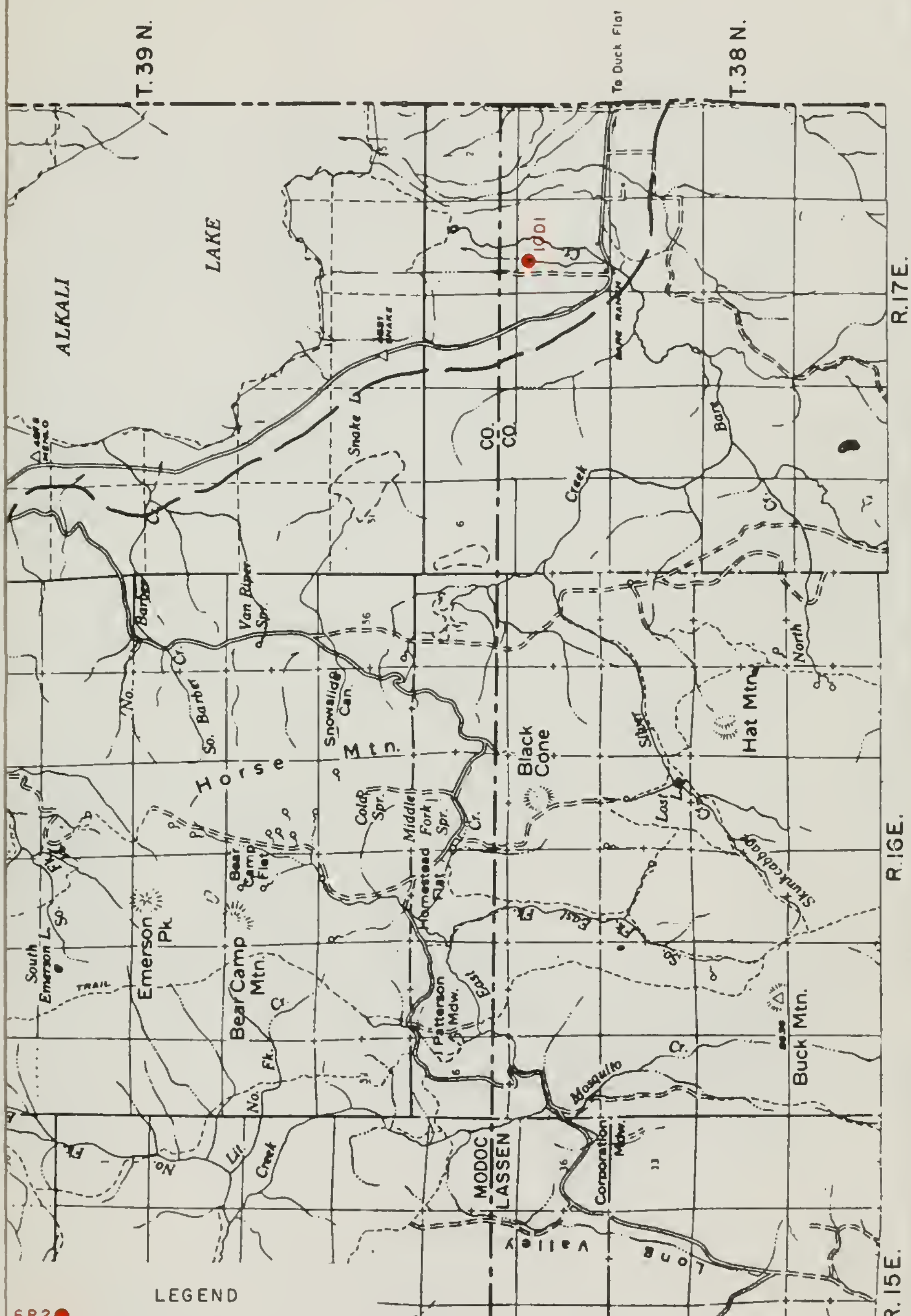
PANOCHE VALLEY

SCALE OF MILES
0 1 2 3



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

SIERRA VALLEY



LEGEND

6R2 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

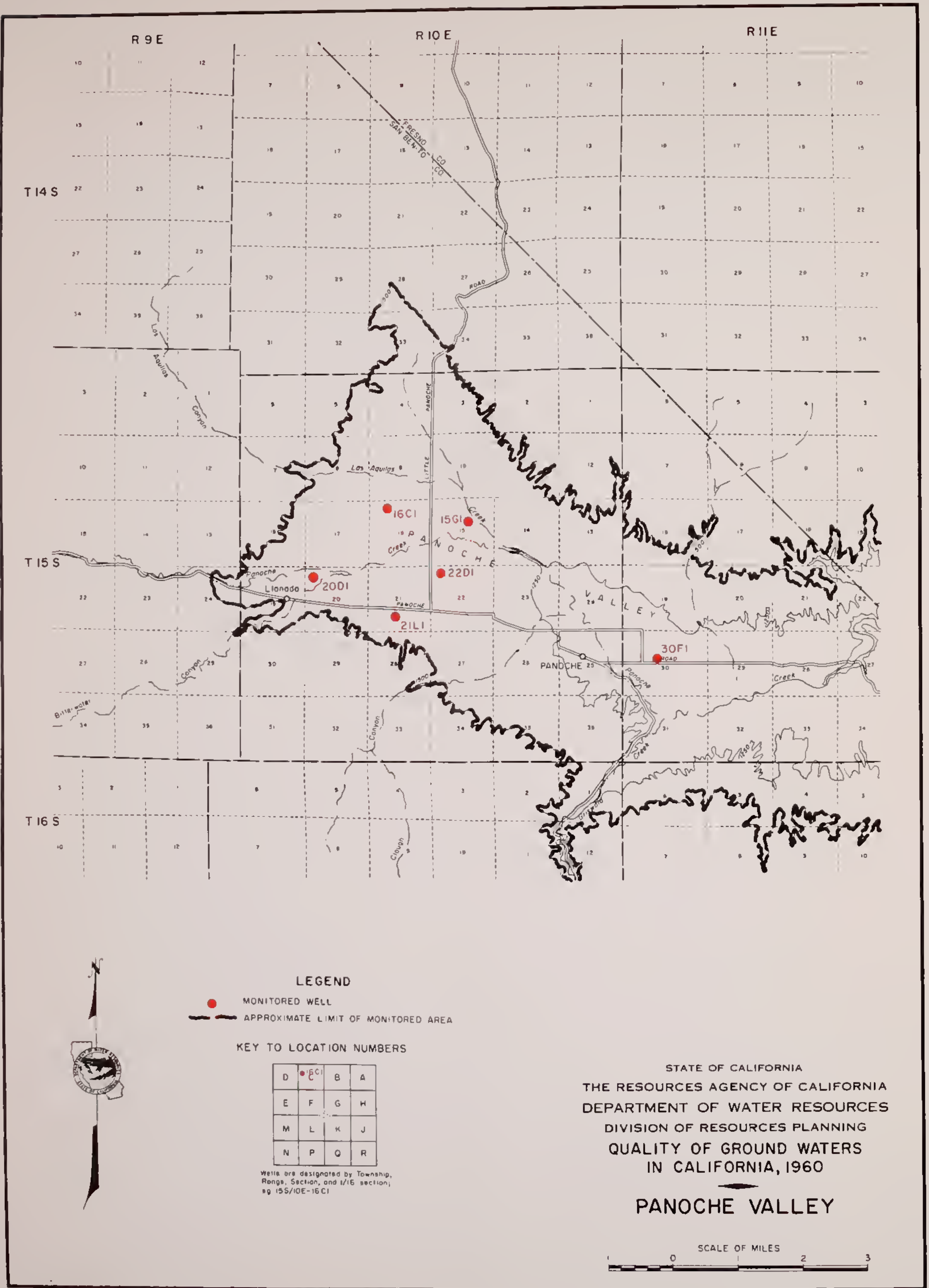
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

SURPRISE VALLEY

SCALE OF MILES

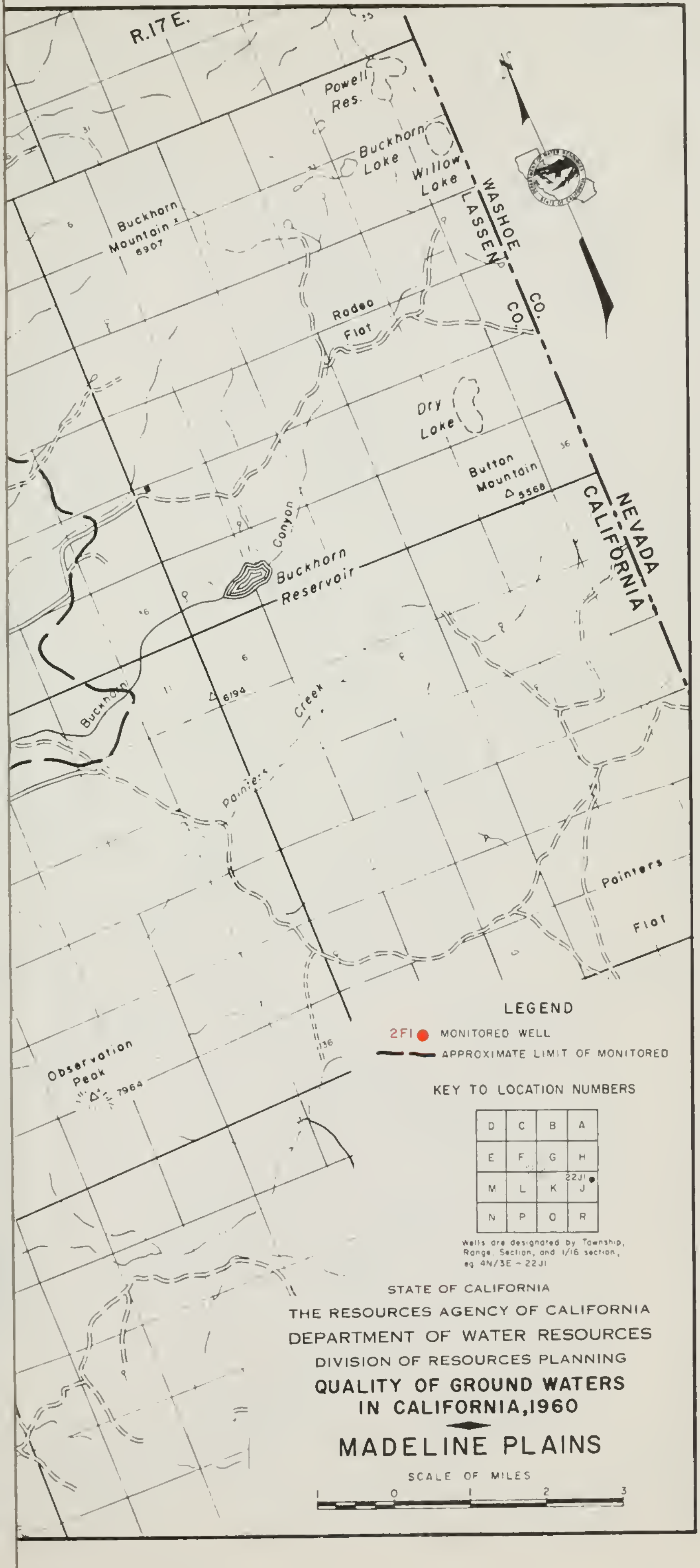
1 0 1 2 3



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

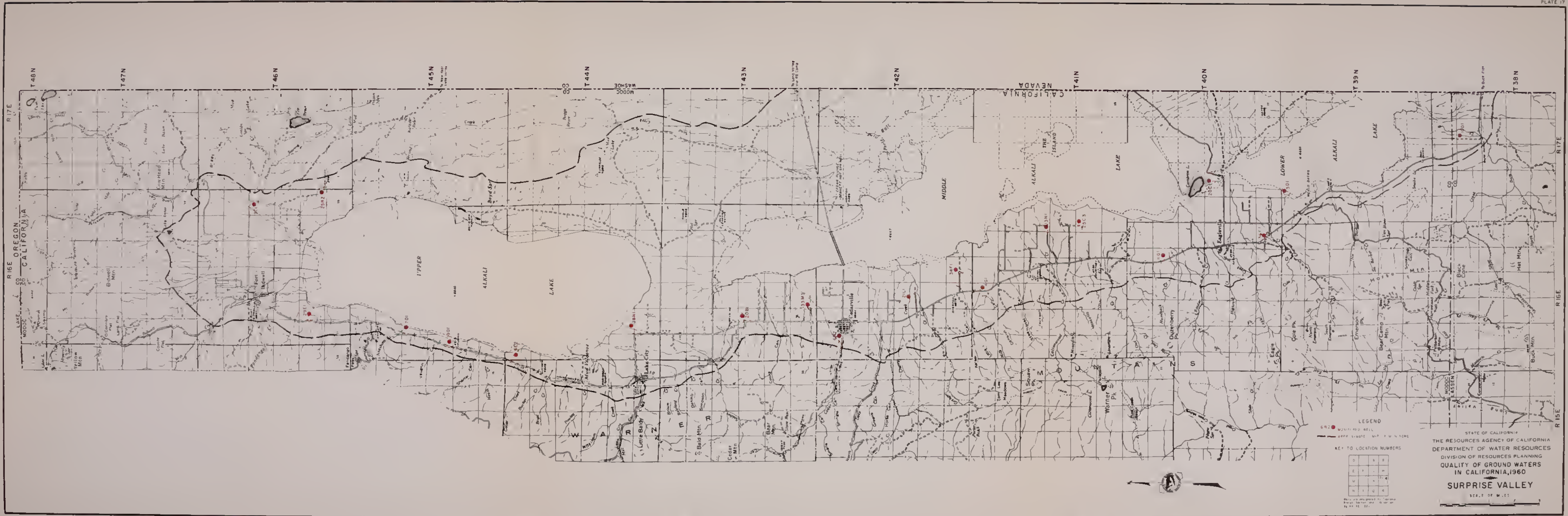
PANOCHE VALLEY

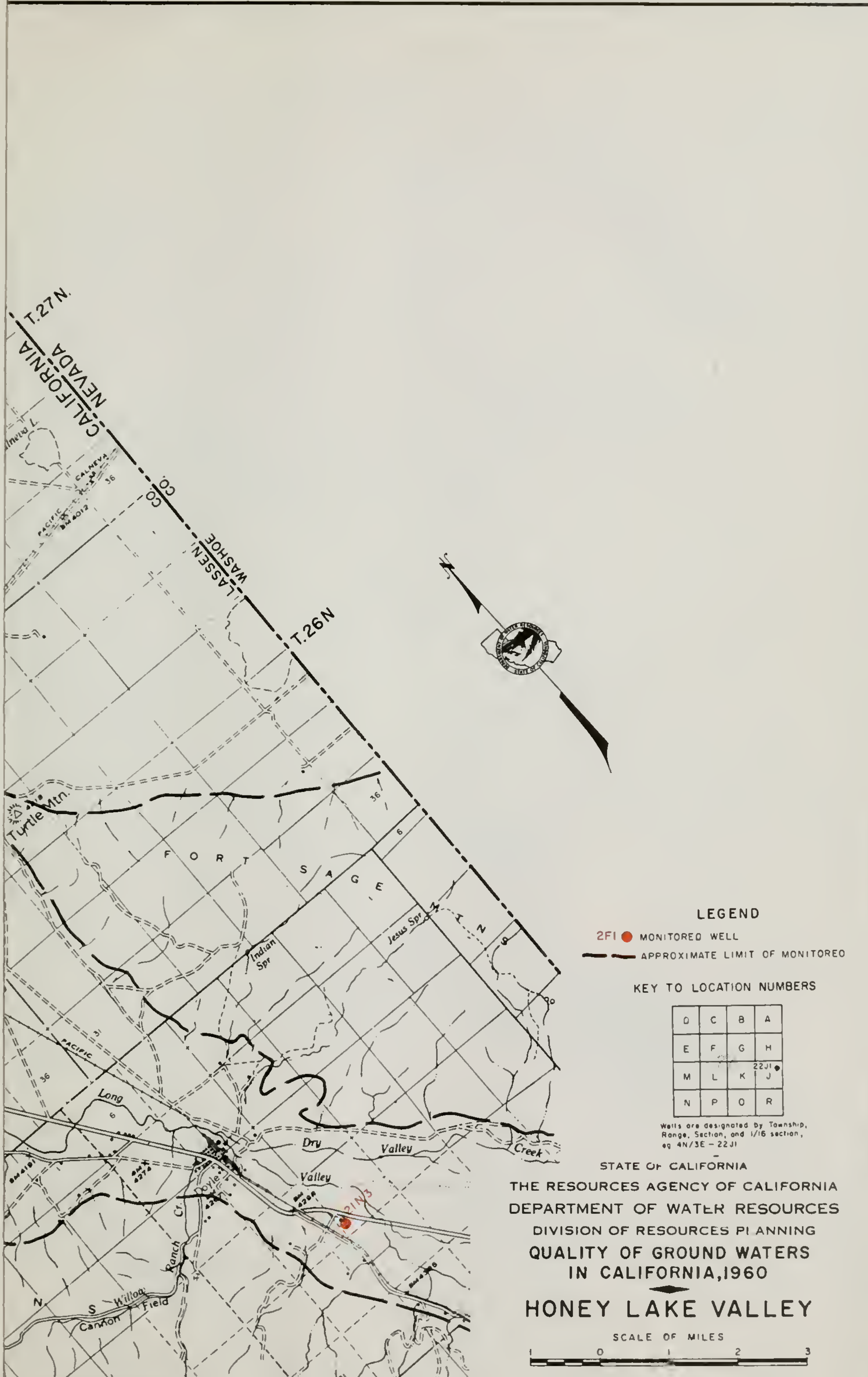


STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

MADELINE PLAINS


T 48 N
T 47 N
T 46 N
T 45 N
T 44 N
T 43 N
T 42 N
T 41 N
T 40 N
T 39 N
T 38 N
R 17 E
R 16 E
R 15 E
OREGON
CALIFORNIA
NEVADA
CALIFORNIA
MODOC
WASHOE
LASSEN
UPPER ALKALI LAKE
MIDDLE ALKALI LAKE
LOWER ALKALI LAKE
THE ISLAND
Fort Bidwell
Lake City
Cedarville
Eagleville
Little Baldy
Bald Mtn.
Cedar Mtn
Warner Pk
Squaw
Emerson Pk
Eagle Pk
Buck Mtn.
Hat Mtn
W A R N E R
M O U N T A I N S
LEGEND
MONITORED WELL
KEY TO LOCATION NUMBERS
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
SURPRISE VALLEY



LEGEND

2F1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

STATE OF CALIFORNIA
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DIVISION OF RESOURCES PLANNING

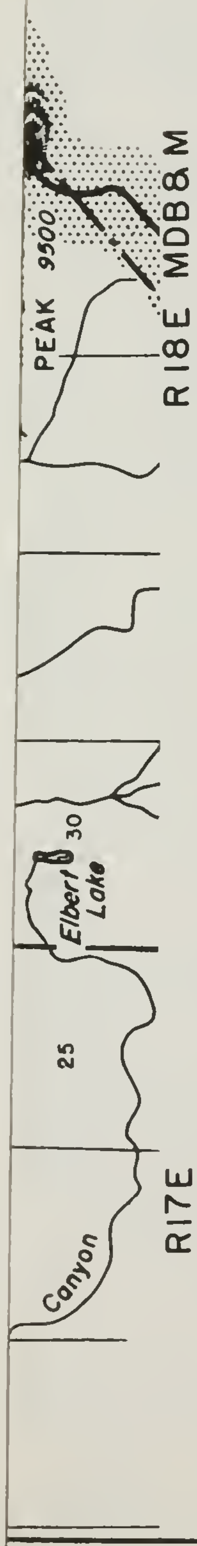
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

HONEY LAKE VALLEY

SCALE OF MILES

1 0 1 2 3


LEGEND
2F1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg. 4N, 3E - 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
MADELINE PLAINS
SCALE OF MILES
1 0 1 2 3
R.12 E.
R.13 E.
R.14 E.
R.15 E.
R.16 E.
R.17 E.
T.38 N.
T.37 N.
T.36 N.
T.35 N.
MADELINE
MADELINE PLAINS
Dodge Reservoir
Sugarloaf Mountain
Dunn Reservoir
Dorsey Butte
Skeleton Flat
Maiden Flat
McDonald Peak
Three Peaks
Long Canyon
Juniper Ridge
Coyote Flat
Cold Spring Creek
Red Rock
Buckhorn Mountain
Buckhorn Reservoir
Powell Res
Buckhorn Lake
Willow Lake
Rodeo Flat
Dry Lake
Button Mountain
Pointers Flat
Observation Peak
Dill Butte
Termo
Termo Buttes
Ravendale
Twin Buttes
Spanish Springs Peak
Dry Valley Ridge
Dry Valley
Dry Valley Gap
Grasshopper
Spooner Reser.
WASHOE CO.
LASSEN CO.
NEVADA
CALIFORNIA
20Q1
21H1
21Q1
24R1
26J1
15N1
24G2
18D1
21L1
15H1
22A1
31H1
18B1



LEGEND

2A1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J 22J1 ●
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E – 22J1

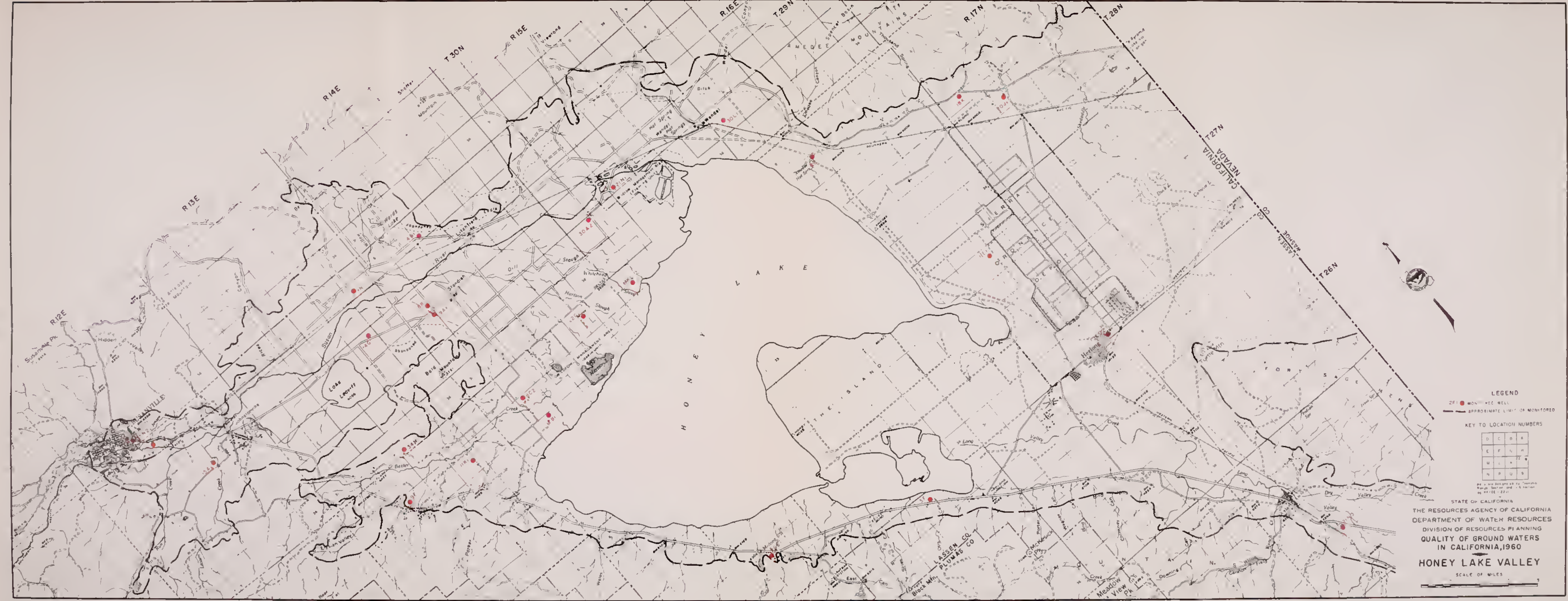
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

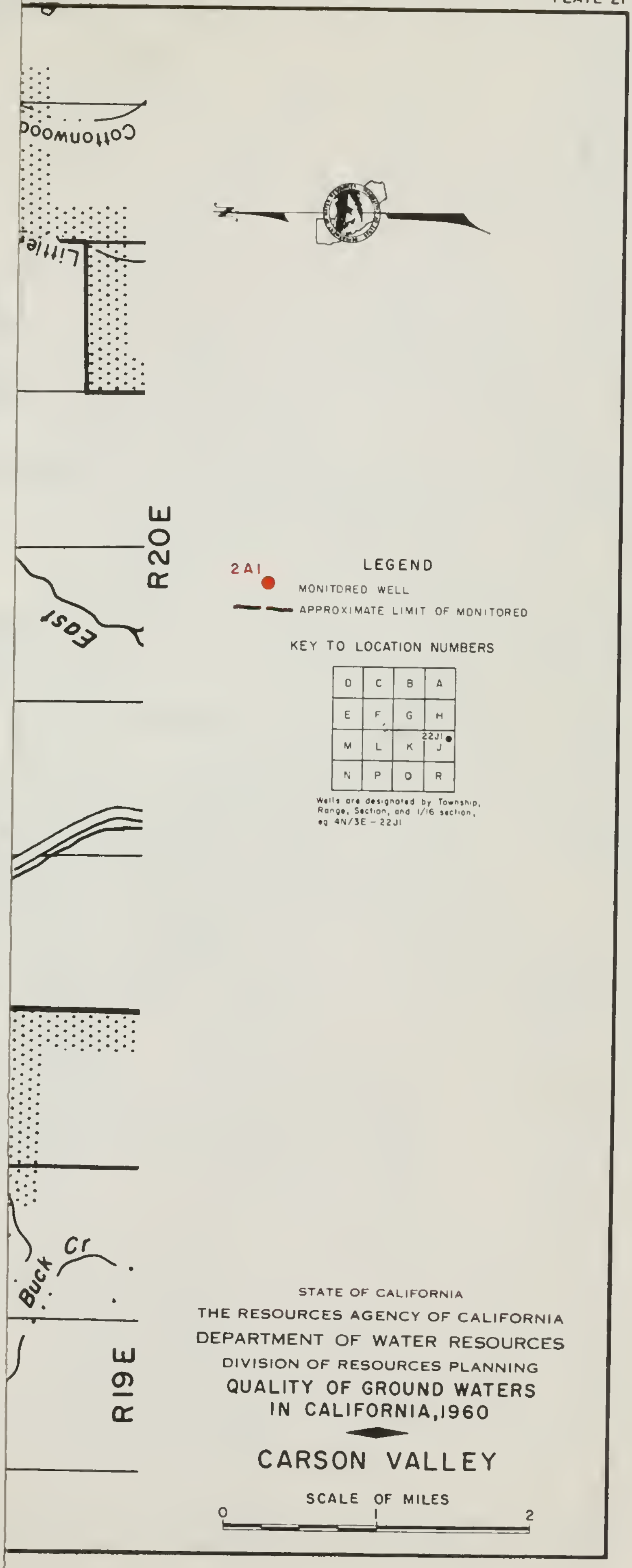
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960

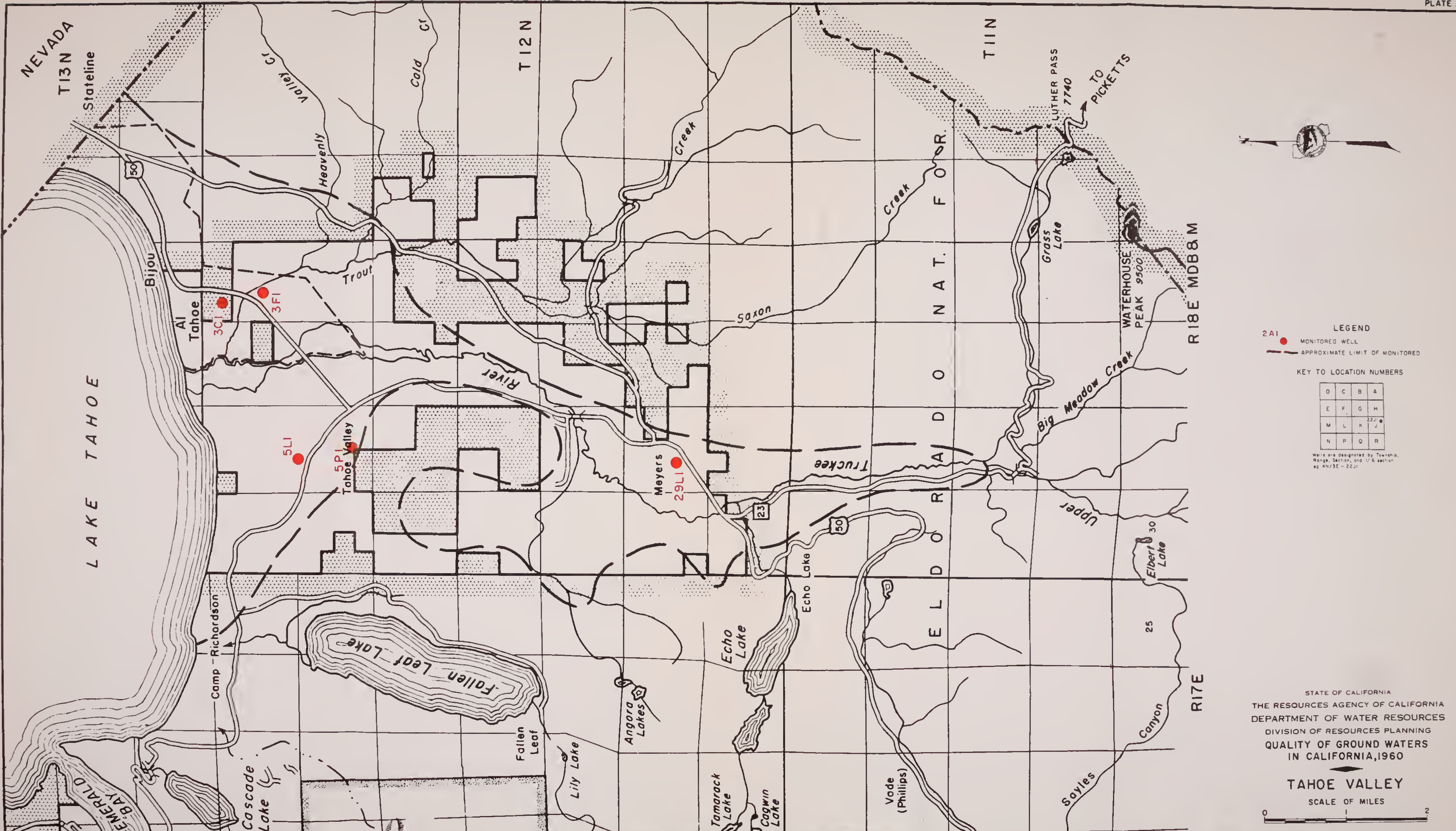
TAHOE VALLEY

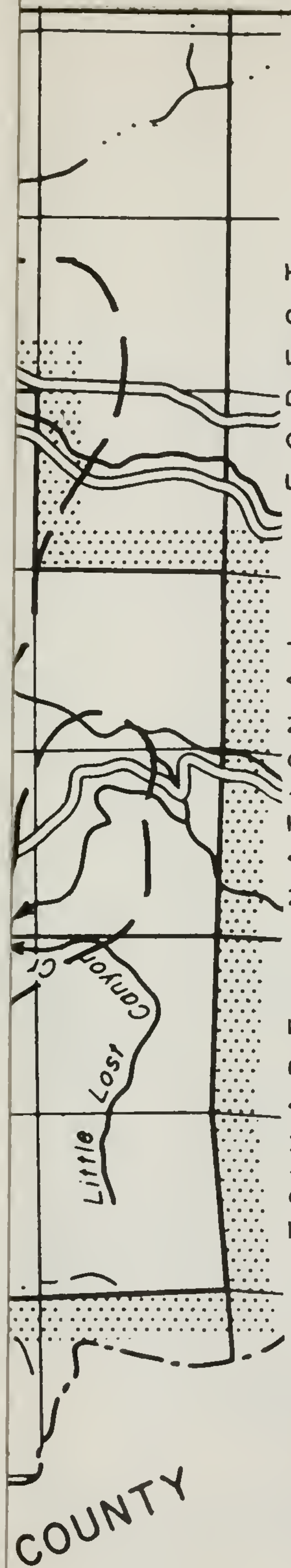
SCALE OF MILES

0 1 2


HONEY LAKE
SUSANVILLE
Herlong
Wendel
Amedee
R.12E
R.13E
R.14E
R.15E
R.16E
R.17N
T.30N
T.29N
T.28N
T.27N
T.26N
CALIFORNIA
NEVADA
LASSEN CO
WASHOE CO
LASSEN CO
PLUMAS CO
THE ISLAND
Susan River
Lake Leavitt
Long Valley
Dry Valley
LEGEND
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
HONEY LAKE VALLEY
SCALE OF MILES


Cottonwood
Little
East
R20E
Buck Cr
R19E
LEGEND
2A1
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
CARSON VALLEY
SCALE OF MILES
0
1
2


NEVADA
T13N
Stateline
LAKE TAHOE
Bijou
Al Tahoe
3C1
3F1
Trout
Heavenly Valley
Cold Cr.
Creek
Saxon Creek
River
Upper Truckee
5L1
5P1
Tahoe Valley
Meyers
29L1
T12N
T11N
ELDORADO NAT. FOR.
LUTHER PASS 7740
TO PICKETTS
Grass Lake
WATERHOUSE PEAK 9500
Big Meadow Creek
R18E MDB&M
R17E
Elbert Lake
Camp Richardson
Fallen Leaf Lake
Fallen Leaf
Lily Lake
Angora Lakes
Echo Lake
Tamarack Lake
Cagwin Lake
Vade (Phillips)
Sayles Canyon
Cascade Lake
EMERALD BAY
50
23
25
30
LEGEND
2A1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
TAHOE VALLEY
SCALE OF MILES
0
1
2



LEGEND

2A1 ● MONITORED WELL

APPROXIMATE LIMIT OF MONITORED

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	22J1 ● J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
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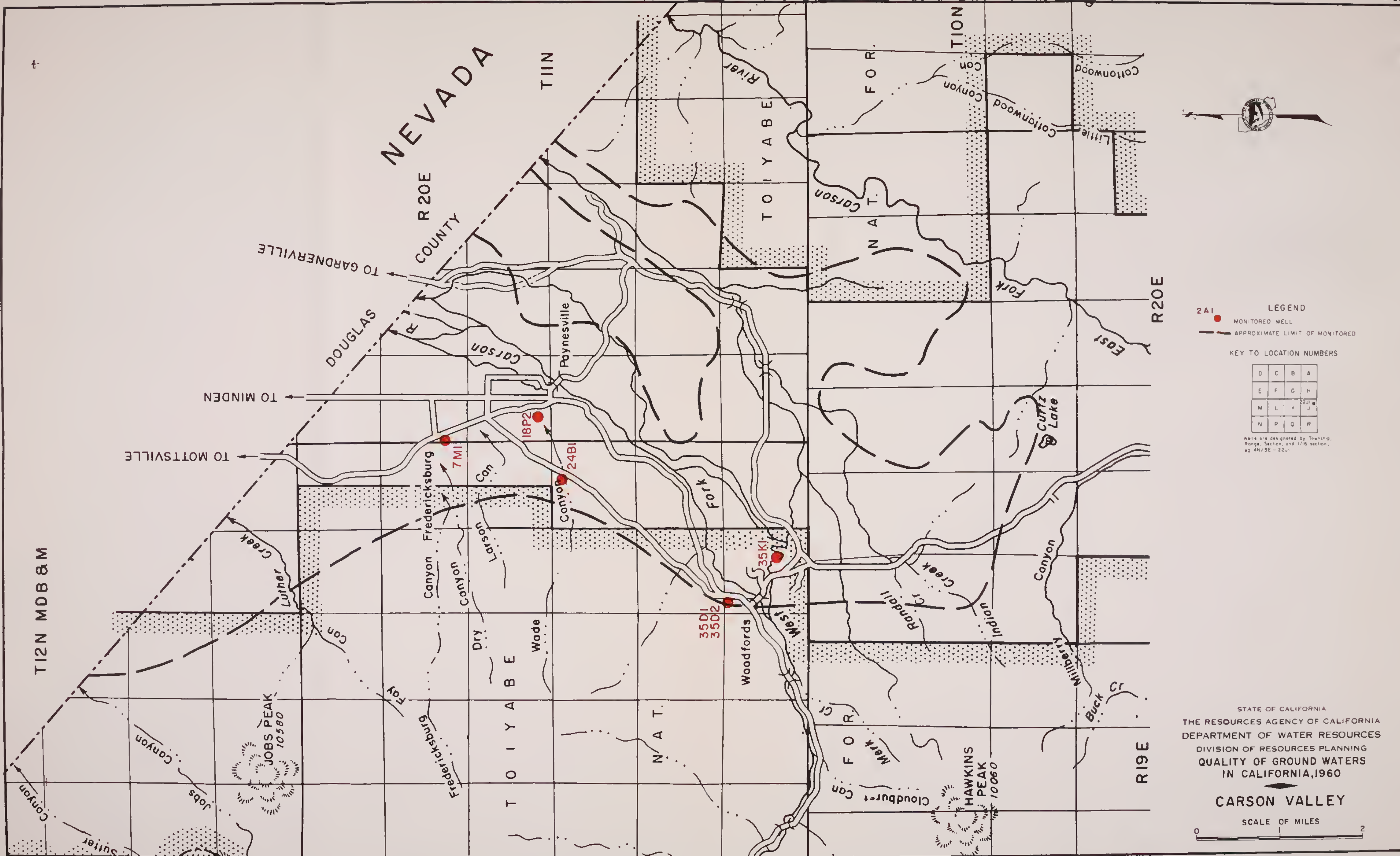
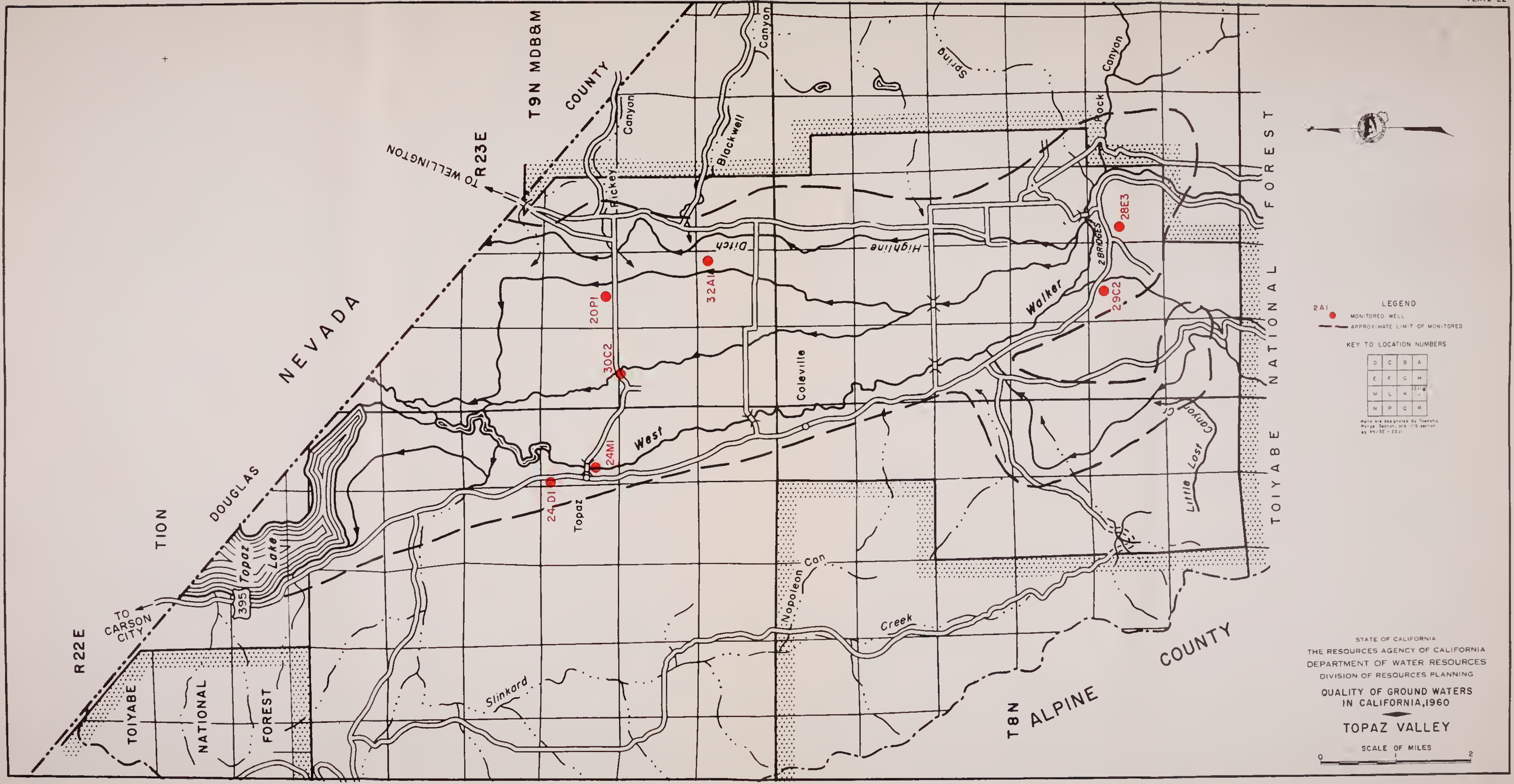
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960

TOPAZ VALLEY

SCALE OF MILES

0 1 2


NEVADA
DOUGLAS COUNTY
R 20E
T11N
T12N MDB & M
R19E
TO GARDNERVILLE
TO MINDEN
TO MOTTSVILLE
Paynesville
Fredericksburg
Woodfords
Carson River
West Fork
East Fork
Cottonwood Canyon
Little Cottonwood
Indian Creek
Mill Creek
Millberry Canyon
Buck Cr
Curtz Lake
TOIYABE NAT. FOR.
JOBS PEAK 10580
HAWKINS PEAK 10060
18P2
7M1
24B1
35K1
35D1
35D2
LEGEND
2A1 MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
22J1
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS IN CALIFORNIA, 1960
CARSON VALLEY
SCALE OF MILES
0 1 2


T9N MDB&M
R23E
R22E
T8N
TO WELLINGTON
TO CARSON CITY
DOUGLAS COUNTY
NEVADA
TION
ALPINE COUNTY
TOIYABE NATIONAL FOREST
TOIYABE NATIONAL FOREST
Canyon
Canyon
Rickey
Blackwell
Spring
Rock
Canyon
Highline Ditch
West Walker
2 BRIDGES
Coleville
Topaz
Topaz Lake
395
Napoleon Can
Creek
Slinkard
Little Lost Canyon Cr
20P1
32A1
28E3
29C2
30C2
24M1
24D1
LEGEND
2A1
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K J
N P Q R
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
TOPAZ VALLEY
SCALE OF MILES
0
1
2


T6N
T5N
T4N
T3N
R2JE MDB&M
R 24 E
Bridgeport Reservoir
BRIDGEPORT
28Q1
4B1
4F1
25G1
13E1
395
East Walker River
Green Creek Reservoir
MT JACKSON 9372
BUSH MTN 8848
VOLCANIC BUTTE 8607
RICKEY PEAK 10126
EAGLE PEAK 11825
ROBINSON PEAK 10823
MATTERHORN PEAK 12281
TWIN PEAKS 12314
Twin Lakes
Tamarack Lake
Hunewill Lake
West Lake
Green Lake
Glenberry Lake
Turquoise Lake
Bergona Lake
Lake Francis
Avalanche Lake
Glacier Lake
Bockwater Pond
Fales Hot Springs
TOIYABLE NATIONAL FOREST
LEGEND
2A1
MONITORED WELL
APPROXIMATE LIMIT OF MONITORED
KEY TO LOCATION NUMBERS
D C B A
E F G H
M L K 22J1
N P Q R
STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1960
BRIDGEPORT VALLEY
SCALE OF MILES
0
1
2