GROUND-WATER DATA AS OF 1967 CENTRAL COASTAL SUBREGION CALIFORNIA

OPEN—FILE REPORT

U.S. DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Water Resources Division

Menlo Park, California, 1969

UNITED STATES
DEPARTMENT OF THE INTERIOR
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CALIFORNIA

By

J. S. Bader

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By J. S. Bader

INTRODUCTION

Purpose and Scope

In 1959 the Senate Select Committee on National Water Resources, which was established at the request of the President, recommended that appropriate agencies should prepare a program for comprehensive planning aimed at the development of the Nation's water and related land resources. This step culminated in the Water Resources Planning Act of 1965 and subsequent creation of the Water Resources Council. Since 1963 the Executive Branch has undertaken coordinated planning studies of water and related land resources covering 18 major river basins in many of the 48 conterminous States.

According to the guidelines for the framework studies, "The basic objective in the formulation of framework plans is to provide a broad guide to the best use, or combination of uses, of water and related land resources of a region to meet foreseeable short- and long-term needs." The studies are to be of the reconnaissance type and must rely largely on existing data and on the reasoning and judgment of competent planners.

This ground-water-data tabulation is for one of 11 hydrologic subregions composing the California Region as defined by the California Region Framework Study Committee (1968); for this series of reports, the Delta-Central Sierra Subregion, the Tulare Basin Subregion, and the San Joaquin Basin Subregion have been combined. The information was compiled almost entirely from reports published by the U.S. Geological Survey and the California Department of Water Resources. However, where unpublished data were readily available, limited use of those data was made. Considerable additional data, both published and unpublished, are available in the reports and files of the U.S. Geological Survey and the California Department of Water Resources. The evaluation of these data would add considerably to the completeness of the information contained in this tabulation. However, because neither time nor funds are available for the much-needed evaluation, this tabulation is released with the hope that it can be updated periodically as the additional data are evaluated.

This report was prepared by the Geological Survey, Water Resources Division, under the general supervision of R. Stanley Lord, district chief in charge of water-resources investigations in California, and under the immediate supervision of Fred Kunkel, assistant district chief for projects and reports.

Acknowledgment

The California Department of Water Resources made available from its files a number of reports which were not widely distributed, as well as a substantial quantity of unpublished data. One major source of information was an unpublished report prepared under the direction of E. C. Marliave and R. T. Bean.

A number of people on the staff of the Department of Water Resources also contributed to the release of this report by reviewing the manuscript, adding more recent data, and offering many helpful suggestions which added substantially to its content. Among these people were R. C. Richter, John Cummings, and Robert Ford.

The cooperation of the Department is greatly appreciated.

Summary

Most usable ground water in the predominantly mountainous Central Coastal Subregion occurs in alluvium-filled valleys and coastal plains and in deeper aquifers of Quaternary and Tertiary age. The intervening mountainous areas are underlain by consolidated sedimentary, igneous, and metamorphic rocks, mainly of Mesozoic age. These older rocks contain only small quantities of recoverable ground water and, therefore, are not considered a major source of ground water.

In the Central Coastal Subregion, 24 basins have been identified as significant sources of ground water. The total area of the 24 basins is about 3,500 square miles. The water-bearing deposits range in thickness from about 200 to 4,000 feet. Depending on local conditions, recharge infiltrates at rates of less than 1½ feet per day to more than 10 feet per day in the upper part of alluvial fans and stream channels and at the outcrops of the deeper aquifers. The maximum measured depth to water in the water-bearing deposits is 568 feet. In several valleys there are flowing wells.

Total storage capacity of 16 of the basins is more than 20,000,000 acre-feet. The usable storage capacity of 18 of the basins is more than 7,600,000 acre-feet; the limiting factors are sea-water intrusion and high pumping lift. Ground-water temperature ranges from about 55° to about 75°F. The dissolved-solids content of the water is generally less than 800 parts per million, but locally is more than 11,000 parts per million. The predominant water type is calcium bicarbonate, but sodium, magnesium, sulfate, and chloride are present locally in significant quantities.

Properly constructed wells in some areas can yield as much as 425 gallons per minute.

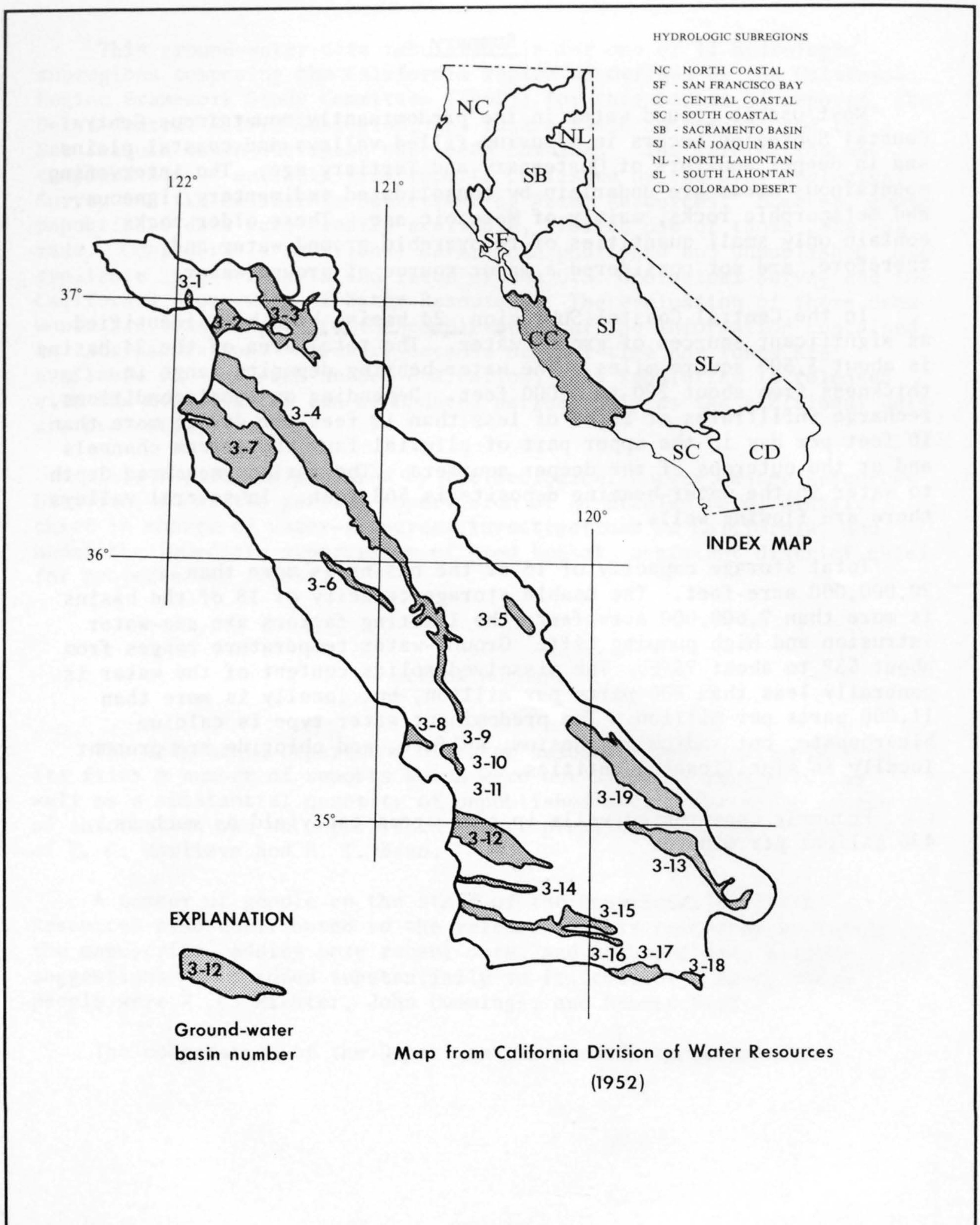

FIGURE 1.--Central Coastal Subregion.

GROUND-WATER DATA, CENTRAL COASTAL SUBREGION

(Blank spaces in all columns indicate no known available data)

LOCATION AND EXTENT

Basin name: The most generally accepted name is used. If other names have been published they are given in parentheses.

Basin number: The first set of numbers (3-1, 3-2, 3-4.01) is based on a system for describing the geographic regions of California as prescribed by the California Legislature (California Division of Water Resources, 1952). The basins are identified in figure 1 by these numbers. The second set (T-9.HO, T-10.B1) is an areal-designation system devised by the Southern District office of the California Department of Water Resources to facilitate machine handling of basic data (California Department of Water Resources, 1964). The third set (71-L, 71-K) is the basin code number developed by the U.S. Geological Survey, Office of Water Data Coordination, and is for correlation purposes only. The second and third sets are not shown in figure 1.

Area of basin: In most cases only the area of the valley floor is given.

GEOLOGY

Water-bearing units: Qa, younger alluvial deposits of late Pleistocene and Holocene age; QT, older alluvial deposits of late Tertiary and Quaternary age; QTa, Aromas Red Sands of Allen (1946); QTb, San Benito Gravels of Lawson (1893); QTc, Casitas Formation; QTcs, Careaga Sand; QTo, Orcutt Sand; QTp, Paso Robles Formation; QTs, Santa Barbara Formation; Tp, Purisima Formation of Pliocene age.

Depth of principal aquifer: Depth to top of aquifer and depth to bottom of aquifer, or greatest known depth, are given in feet below ground surface.

Principal recharge areas: Location of area and probable rate of recharge are given. Rate of recharge: High, 3-10 feet per day; moderate, 1½-3 feet per day; low, less than 1½ feet per day.

OCCURRENCE

Depth to water: Given in feet below land-surface datum. Date of measurement given to degree known.

Pressure areas: Where known, the general location of artesian head is given. Head not necessarily above ground surface.

MOVEMENT

Direction: The general direction in which the ground water moves through the basin.

Structures affecting movement: A brief description of any known geologic structures which might affect the direction of ground-water movement through the basin.

Subsurface inflow and outflow: The source of ground water entering the basin and the area into which it moves.

STORAGE CAPACITY

Depth zone considered: The depth of top and bottom, in feet below ground surface, between which total storage capacity is estimated. Lower limit of zone not necessarily the base of water-bearing materials or base of fresh water.

Total capacity within depth zone: Estimated average specific yield multiplied by volume of deposits within the zone indicated. Expressed in acre-feet.

Estimated usable capacity: The usable capacity, in acre-feet within the depth zone, economically capable of being dewatered during periods of deficient supply and resaturated during periods of excess supply, and the factors which limit usability.

QUALITY

Range of temperature: Ground-water temperature given in degrees Fahrenheit.

Chemical quality: The principal ions are based on routine complete analyses. The ions are: Ca, calcium; Cl, chloride; CO_3, carbonate; HCO_3, bicarbonate; Mg, magnesium; Na, sodium; SO_4, sulfate. If other ions are present in a large enough quantity to pose a problem they are indicated in the column headed "Problems." The range of dissolved solids is mostly based on routine complete analyses.

UTILIZATION

Present use of ground water: Major use, such as irrigation, domestic, stock, municipal, or industrial, taken from the latest known data.

Withdrawal capacity of wells: The maximum and average are given in gallons per minute.

Cost of pumping: Given in dollars per acre-foot per foot of lift.

PROBLEMS: Conditions known or suspected within the basin which might affect full development of the ground-water resources of the basin.

ADEQUACY OF DATA: A, good coverage of adequate data; B, partly complete data; C, incomplete data; D, scant data.

PRINCIPAL REFERENCES: Complete references are listed at end of text.

Location and extent			Geology					Occurrence				Movement		
Basin name	Basin number	Area of basin (sq mi)	Water-bearing units	Depth of principal aquifer, in feet below ground surface: To top	Depth of principal aquifer, in feet below ground surface: To bottom	Principal recharge areas: Location	Principal recharge areas: Rate of recharge	Depth to water, in feet below land-surface datum: Date	Depth to water, in feet below land-surface datum: Maximum	Depth to water, in feet below land-surface datum: Minimum	Pressure areas	Direction	Structures affecting movement	Subsurface inflow and outflow
Soquel-Aptos area	3-1 71-L	100	Tp	Main aquifer 200 ft thick. Regional dip is southeastward. Depth is from outcrop in west part of area to 1,200 ft below sea level on east side		Outcrop of major producing zone on west side of area. Also from stream channels and direct precipitation	Moderate to low	3-66	250	+1	Purisima Formation is largely confined	Generally southward	Zayante fault in northern part of area is probably a barrier	Inflow negligible. Outflow to Monterey Bay and southwestward toward Pajaro Valley.
Pajaro Valley	3-2 71-K	140	Qa QTa Tp	0	500	Outcrop of permeable zones of Purisima Formation in Soquel-Aptos area and from stream channels	Moderate	5-64	136.7	22.2	Principal water-producing zone is confined throughout area	Partly westward toward Monterey Bay. Confined water possibly southward	Vergeles fault may act as barrier to westward movement	Inflow from Soquel-Aptos area. Outflow to Monterey Bay.
Gilroy-Hollister Valley	3-3 71-K	350	Qa QTb Tp	0	800	Areas adjacent to the uplands and along Pacheco Creek and San Benito River	Low to moderate	8-63 1951	 150	7.8	Confinement in area between about 2 miles south of San Martin to 2 miles north of Hollister. Also in western part of San Benito Valley	Toward pumping depression east of Hollister	San Andreas Sargent, Calaveras, and probably other faults form barriers	No appreciable inflow or outflow.
Salinas Valley pressure area	3-4.01 71-I	190	Qa QTa QTp	0 Principal aquifers are at 180 and 400 ft average depth	1,000	Subsurface inflow from upper parts of valley		12-63 7-63	 100.7	12.6	Entire area	Northwestward to Monterey Bay	None known	Inflow from east-side unit and forebay. Outflow to Monterey Bay.
Salinas Valley east-side unit	3-4.02 71-I	130	Qa QTa QTp	0	1,000	North and eastern areas near foothills	Moderate	1951	225	40	Largely unconfined	Generally westward to Monterey Bay	None known	Inflow negligible. Outflow to pressure area.
Salinas Valley forebay and Arroyo Seco cone	3-4.03 3-4.04 71-I	300	Qa QTp	0	1,000	Seepage from stream channels	Moderate	1953	200	20	Largely unconfined, some confinement at depth	Northwestward	None known	Inflow from upper part of valley. Outflow to pressure area.

Basin name	Storage capacity				Quality			Utilization				Problems	Ade-quacy of data	Principal references
	Depth zone considered, in feet below ground surface	Total capacity within depth zone (acre-ft)	Estimated usable capacity		Range of tempera-ture (°F)	Chemical quality		Present (1967) use of ground water	Withdrawal capacity of wells (gpm)		Cost of pumping per acre-foot per foot of lift			
			Within depth zone (acre-ft)	Limiting factors		Prin-cipal ions	Range of dissolved solids (ppm)		Maximum	Average				
Soquel-Aptos area				Sea-water intrusion	65-74	Ca Mg HCO_3 SO_4	300-600	Irrigation Domestic Municipal	800	350		Sea-water intrusion	C	California Department of Water Resources (1958, 1966). California Water Resources Board (1953). Data in files of U.S. Geological Survey.
Pajaro Valley	20-300		Annual safe yield 21,000	Sea-water intrusion	60-66	Ca Mg Na HCO_3	255-759	Irrigation Domestic Stock Industrial Municipal	1,200	500		Sea-water intrusion	B	California Department of Water Resources (1958, 1966). California Water Resources Board (1953).
Gilroy-Hollister Valley	20-200	932,000	800,000	Water quality	65-69	Ca Mg Na HCO_3	276-2,560	Irrigation Domestic Stock Industrial	1,700	400		Water quality, high boron locally	B	California Department of Water Resources (1966). California Water Resources Board (1955).
Salinas Valley pressure area				Sea-water intrusion	59-74	Ca Mg Na HCO_3 SO_4 Cl	251-3,010	Irrigation Domestic Stock Industrial	1,600	500		Sea-water intrusion	B	California Department of Water Resources (1966). California Division of Water Resources (1946). California Water Resources Board (1955).
Salinas Valley east-side unit	20-200	690,000	412,000		59-74	Ca Mg Na HCO_3 SO_4 Cl	251-3,010	Irrigation Domestic Stock Industrial	2,235	750			B	California Department of Water Resources (1966). California Division of Water Resources (1946). California Water Resources Board (1955).
Salinas Valley forebay and Arroyo Seco cone	20-200	2,380,000	900,000		59-74	Ca Mg Na HCO_3 SO_4 Cl	251-3,010	Irrigation Domestic Stock Industrial	3,750	1,600			B	California Department of Water Resources (1966). California Division of Water Resources (1946). California Water Resources Board (1955).

Location and extent			Geology					Occurrence				Movement		
Basin name	Basin number	Area of basin (sq mi)	Water-bearing units	Depth of principal aquifer, in feet below ground surface: To top	To bottom	Principal recharge areas: Location	Rate of recharge	Depth to water, in feet below land-surface datum: Date	Maximum	Minimum	Pressure areas	Direction	Structures affecting movement	Subsurface inflow and outflow
Salinas Valley upper valley	3-4.05 71-I	80	Qa QTp	0	1,000	Upper part of fans	Moderate	1953	70	15	Largely unconfined	Generally northwestward	None known	Inflow from Paso Robles basin. Outflow to forebay.
Paso Robles	3-4.06 T-9.HO T-9.IO 71-I	900	Qa QTp	0	2,000	Alluvial areas near Creston, Parkfield, San Juan Ranch, Commatti Ranch, and Salinas River	Moderate to high	4-64	194	1.5	Some local pressure effects, but largely unconfined	Toward streams	Structure (folding and faulting probably forms some barriers)	Inflow negligible. Outflow to upper Salinas Valley.
Cholame Valley	3-5 71-H	20	Qa	0	100	Near Parkfield	Moderate	1954	64	17	About 30 percent of the southern part of the area has a clay layer which may act as a confining bed	Downstream south and westward	None known	Inflow and outflow through Paso Robles Formation.
San Antonio River valley (Lockwood Valley)	3-6 71-I	90	Qa QTp	0	600	At valley margins and from river channel	Moderate to high	1954	92	11	Some confinement locally, but largely unconfined	Toward the river		Inflow and outflow probably negligible.
Carmel Valley	3-7 71-G	10	Qa	0	125	Probably stream channels	Moderate	1955	30	15	Generally unconfined	Generally northwestward	None known	Inflow negligible. Outflow to Monterey Bay.
Morro Bay Valley	3-8 T-10.B1 71-G	20	Qa	0	212	Stream channels and older sand dunes	Moderate	1954	83	2	Some confinement locally, but largely unconfined	Parallel to surface drainage	None known	Inflow negligible. Outflow to ocean.
San Luis Obispo Valley	3-9 T-10.BO 71-G	15	Qa QTp	0	160	North edge of basin	Moderate	1954	30	Flowing	Some confinement locally, but largely unconfined	Generally follows topography	Bedrock constriction causes rising water about 4 miles south of San Luis Obispo	Inflow negligible. Outflow to ocean.

Basin name	Storage capacity				Quality			Utilization				Problems	Adequacy of data	Principal references
	Depth zone considered, in feet below ground surface	Total capacity within depth zone (acre-ft)	Estimated usable capacity		Range of temperature (°F)	Chemical quality		Present (1967) use of ground water	Withdrawal capacity of wells (gpm)		Cost of pumping per acre-foot per foot of lift			
			Within depth zone (acre-ft)	Limiting factors		Principal ions	Range of dissolved solids (ppm)		Maximum	Average				
Salinas Valley upper valley					59-74	Ca Mg Na HCO_3 SO_4 Cl	251-3,010	Irrigation Domestic Stock Industrial	2,190	1,695			C	California Department of Water Resources (1966). California Division of Water Resources (1946). California Water Resources Board (1955).
Paso Robles	50-250	6,800,000	1,700,000					Irrigation Domestic Municipal	3,300	500		High boron content locally	C	California Department of Water Resources (1966). California Water Resources Board (1958).
Cholame Valley								Irrigation Domestic Stock	3,300	1,000			D	California Water Resources Board (1958).
San Antonio River valley (Lockwood Valley)	20-230	1,000,000	500,000					Irrigation Domestic	3,300	1,000			D	California Water Resources Board (1958).
Carmel Valley					60-75	Ca CO_3	324-767	Irrigation Domestic Stock					D	California Department of Water Resources (1958).
Morro Bay Valley	10-200	112,200	14,700	Sea level				Irrigation Domestic	700	230		Possible sea-water encroachment in lower part of valley	D	California Water Resources Board (1958).
San Luis Obispo Valley	20-160	67,000	10,000					Irrigation Domestic	600	300		Possible sea-water encroachment	D	California Water Resources Board (1958).

Location and extent			Geology					Occurrence				Movement		
Basin name	Basin number	Area of basin (sq mi)	Water-bearing units	Depth of principal aquifer, in feet below ground surface: To top	Depth of principal aquifer, in feet below ground surface: To bottom	Principal recharge areas: Location	Principal recharge areas: Rate of recharge	Depth to water, in feet below land-surface datum: Date	Depth to water: Maximum	Depth to water: Minimum	Pressure areas	Direction	Structures affecting movement	Subsurface inflow and outflow
Pismo Creek valley	3-10 T-10.B6 71-G	10	Qa QTcs QTp	0	100 Base of fresh water	Underflow from Arroyo Grande basin and underflow through Pismo Formation	Moderate to low	1954	21	Flowing	Qa partly confined near coast, but mostly unconfined upstream. QT confined at coast	Generally follows topography	Bedrock constriction causes rising water about 5 miles from ocean	Inflow from Pismo Formation in downstream canyon and from Arroyo Grande Valley at coast. Outflow to ocean.
Arroyo Grande Valley (includes Nipomo Mesa)	3-11 T-10.CO 71-G	40	Qa QTcs QTp	0	1,000 Base of fresh water	Stream channels and near valley margins. Also infiltration of precipitation	Low to moderate	1954	190	Flowing	Qa mostly confined in lower valley, grading upstream to unconfined. QT confined at coast, grading landward to unconfined. Not present in upstream reaches	Generally follows topography in upper valley, westward to ocean in lower valley	Bedrock constriction causes rising water above city of Arroyo Grande	Inflow negligible. Outflow to ocean and Santa Maria basin.
Santa Maria Valley	3-12 T-12.AO T-12.BO 71-F	200	Qa QTcs QTo QTp	0	4,000 Maximum depth of fresh water	Channel of Santa Maria River	Moderate to high	3-17-67	568	>+12	Western half of alluvial zone and local areas in other aquifers	Generally westward	Santa Maria and Bradley Canyon faults probably affect deep movement. Folding thins aquifer system at coast	Surface water spread at Twitchell Reservoir. Inflow from Nipomo Mesa. Outflow to ocean.
Cuyama Valley	3-13 T-12.CO 71-E	230	Qa QT	0	1,500	Channels of Cuyama River and some tributary streams	Moderate	3-28-67	304	18.1	Some confinement locally, but largely unconfined	Downvalley, generally northwestward except toward pumping depression near Cuyama	Probably not affected by faults	Inflow negligible. Minor outflow down alluvial channel of Cuyama River.
San Antonio Creek valley	3-14 T-13.00 71-D	90	Qa QTcs QTo QTp	0	2,000	Stream channels and near valley margins	Low to moderate	3-20-67	152	Flowing	Some local confinement	Generally westward toward ocean	Folding may affect movement to some degree. Bedrock constriction causes rising water about 7 miles from coast	Inflow negligible. Outflow to ocean.

Basin name	Storage capacity: Depth zone considered, in feet below ground surface	Storage capacity: Total capacity within depth zone (acre-ft)	Storage capacity: Estimated usable capacity: Within depth zone (acre-ft)	Storage capacity: Estimated usable capacity: Limiting factors	Quality: Range of tempera-ture (°F)	Quality: Chemical quality: Prin-cipal ions	Quality: Chemical quality: Range of dissolved solids (ppm)	Utilization: Present (1967) use of ground water	Utilization: Withdrawal capacity of wells (gpm): Maximum	Utilization: Withdrawal capacity of wells (gpm): Average	Utilization: Cost of pumping per acre-foot per foot of lift	Problems	Ade-quacy of data	Principal references
Pismo Creek valley	10-110	30,000	5,000	Sea level in small coastal part of basin		Ca Mg Na HCO_3 Cl	500-1,700	Irrigation Domestic Stock	200			Possible sea-water intrusion. Increase of chloride, sulfate, and dissolved solids near coast from evaporites. High nitrate locally at Pismo Beach		California Water Resources Board (1958). Data in files of California Department of Water Resources.
Arroyo Grande Valley (includes Nipomo Mesa)	100-800	996,000	40,000 (Does not include Nipomo Mesa)	Sea level		Ca Mg Na HCO_3 SO_4 Cl	200-2,900	Irrigation Domestic Industrial Municipal	1,500	225		Possible sea-water intrusion. High nitrate locally. Increase of chloride, sulfate, and dissolved solids from evaporites and tidal lagoons		California Water Resources Board (1958). Data in files of California Department of Water Resources.
Santa Maria Valley	20-200	2,000,000	1,000,000	Sea level	57-65	Ca Na HCO_3 SO_4 Cl	200-3,200	Irrigation Domestic Municipal Industrial	2,200	1,000		Possible sea-water intrusion	A	LaRocque and others (1950). Miller and Evenson (1966). U.S. Geological Survey (1957-64). Worts (1951). Data in files of U.S. Geological Survey. Data in files of California Department of Water Resources.
Cuyama Valley	100-300	2,100,000	400,000	Pumping lift	65-70	Ca Mg SO_4	400-5,000	Irrigation Domestic Stock	4,400	1,100		Water quality locally	B	Swarzenski (1967). Upson and Worts (1951). U.S. Geological Survey (1957-64). Data in files of U.S. Geological Survey.
San Antonio Creek valley	50-250	2,100,000	300,000		60-65	Ca Na HCO_3 SO_4	306-3,040	Irrigation Domestic Stock		400			C	Muir (1964). U.S. Geological Survey (1957-64). Data in files of U.S. Geological Survey.

Location and extent			Geology					Occurrence				Movement		
Basin name	Basin number	Area of basin (sq mi)	Water-bearing units	Depth of principal aquifer, in feet below ground surface		Principal recharge areas		Depth to water, in feet below land-surface datum			Pressure areas	Direction	Structures affecting movement	Subsurface inflow and outflow
				To top	To bottom	Location	Rate of recharge	Date	Maximum	Minimum				
Santa Ynez River valley	3-15 T-14.00 71-C	260	Qa QTcs QTo QTp	0	1,500	Channel of Santa Ynez River and outcrop of Paso Robles Formation in north and northeast part of area	Low to moderate	4-67	320	0.02	Partial confinement in coastal part of Lompoc plain	Generally south and southwestward	Folding affects movement to some degree	Inflow negligible. Outflow to ocean.
Goleta basin	3-16 T-15.C1 71-B	16	Qa QTs	0	1,200	Stream channels and margins of basin	Low	10-19-67	211.6	+5.00	Coastal 50 percent of the basin	Toward the center of the Goleta alluvial plain from all sides	Bedrock at surface near the coast and Modoc and Goleta faults	Inflow and outflow negligible.
Santa Barbara basin	3-17 T-15.C2 T-15.C3 71-B	15	Qa QTc QTs	0	2,000	Stream channels in alluvial areas	Low	10-17-67	88.5	17.8	Water in the Santa Barbara and Casitas Formations and alluvium is locally under pressure	Generally westward toward ocean	Mesa and Lavigia faults act as barriers. Consolidated rocks also divert flow locally	Perhaps up to about 600 acre-ft per year inflow from consolidated rocks. Major outflow is by pumpage. All other forms are insignificant.
Carpinteria basin	3-18 T-15.C4 71-B	12	Qa QTc QTs	0	2,000	Outcrop of Casitas Formation east and northeast of alluvial plain	Moderate	3-27-67	240	+1.6	Most of the Casitas and Santa Barbara Formations where they underlie the alluvium	Westward and southward toward the ocean	Possibly two unnamed faults and a bedrock "high" along the coast in southeast part of basin	Inflow negligible. Major outflow is by pumpage. Outflow to ocean considered minor.
Carrizo plain	3-19 T-11.00 71-N	270	Qa QTp	0	1,000	Upper parts of alluvial fans	Low	1954	58	12	Some local confinement, but largely unconfined	Generally toward Soda Lake	Active faults including the San Andreas probably affect movement	Inflow and outflow negligible.

Basin name	Storage capacity: Depth zone considered, in feet below ground surface	Storage capacity: Total capacity within depth zone (acre-ft)	Storage capacity: Estimated usable capacity: Within depth zone (acre-ft)	Storage capacity: Estimated usable capacity: Limiting factors	Quality: Range of tempera-ture (°F)	Quality: Chemical quality: Prin-cipal ions	Quality: Chemical quality: Range of dissolved solids (ppm)	Utilization: Present (1967) use of ground water	Utilization: Withdrawal capacity of wells (gpm): Maximum	Utilization: Withdrawal capacity of wells (gpm): Average	Utilization: Cost of pumping per acre-foot per foot of lift	Problems	Ade-quacy of data	Principal references
Santa Ynez River valley	20-250	2,700,000	362,000	Sea level, pumping lift	57-75	Ca Mg HCO_3 SO_4	400-11,000	Irrigation Domestic Military Municipal	1,300	750		Possible sea-water intrusion. Change in water quality because of deep leaching and recirculation of irrigation water	B	Upson and Thomasson (1951). Data in files of U.S. Geological Survey
Goleta basin	50-250	180,000	17,000	Sea level	62-70	Ca Na HCO_3 SO_4	738-1,400	Irrigation Domestic Municipal	800	500			B	Evenson, Wilson, and Muir (1962). Upson (1951).
Santa Barbara basin	50-250		281,000	Sea-water intrusion		Ca Mg HCO_3 SO_4	450-1,000	Municipal Irrigation Domestic Stock Industrial	1,000	500		Potential sea-water intrusion	B	Muir (1967). Upson (1951).
Carpinteria basin	50-250	140,000	19,000	Sea level	63-67	Ca Na HCO_3 SO_4 Cl	473-795	Irrigation Municipal Domestic Stock	500	300		Water quality, possible sea-water intrusion	B	Evenson, Wilson, and Muir (1962). Upson (1951).
Carrizo plain	30-230	400,000	100,000	Pumping lift				Irrigation Domestic Stock	1,000	500		Water quality	D	California Water Resources Board (1958).

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