

## Cahuilla Valley Groundwater Basin

- Groundwater Basin Number: 9-06
- County: Riverside
- Surface Area: 18,200 acres (28.4 square miles)

### Basin Boundaries and Hydrology

This groundwater basin underlies Cahuilla and Anza Valleys and part of Duranso and Duransna Valleys in south-central Riverside County (Moyle 1976). This inland basin lies within the Peninsular Ranges and abuts the boundary with the Colorado River Hydrologic Region. The basin is bounded by impermeable crystalline rocks of the Peninsular Ranges and the northeastern boundary is the San Jacinto fault zone. Cahuilla Creek drains surface water westward toward the Pacific Ocean. Average annual precipitation ranges from 7 to 15 inches.

### Hydrogeologic Information

#### *Water Bearing Formations*

The water-bearing units within the basin are alluvium, older alluvium, and residuum (DWR 1956; 1967).

**Alluvium.** Holocene age alluvium in this basin consists of unconsolidated gravel, sand, silt, and clay. Sand and gravel bodies occur as discontinuous stringers within a matrix of mainly silt and clay deposits. The maximum thickness of the alluvium is estimated to be less than 200 feet. Well yields range from less than 25 gpm to 500 gpm. This unit is the principal water bearing unit in the basin (DWR 1956; 1967).

**Older Alluvium.** These deposits are Pleistocene in age and consist of clay, silt, sand, gravel, and boulders, in part overlain by Holocene alluvium (DWR 1956; 1967; Moyle 1976). This unit is semi-consolidated to indurated, often highly weathered, and ranges in thickness to at least 550 feet (DWR 1967; Moyle 1976). The well yield in these deposits can be low (DWR 1956; 1967), yet Moyle (1976) states that the highest yielding wells are completed in thick deposits of older alluvium.

**Residuum.** Residuum is Quaternary or older in age and is wide-spread throughout the basin (DWR 1956; 1967). This material is crystalline rock that has been weathered in place, creating an arkose-like grus, typically with low yield, but locally can be the main source of groundwater (DWR 1956; 1967).

#### *Restrictive Structures*

Splays of the San Jacinto fault zone cut through and abut the eastern edge of the basin (Rogers 1965; DWR 1956; 1967). This fault probably inhibits subsurface flow. Water level contours are offset by as much as 140 feet along a north-trending structure along the west edge of Anza Valley, implying that a fault restricts groundwater flow at that location (DWR 1956).

### **Groundwater Level Trends**

Water level contours for 1953 indicate that movement of groundwater is generally towards Cahuilla Creek, then west, following the course of the creek (DWR 1956). No appreciable change was noticed for 1916 through 1953 in the basin (DWR 1956). One hydrograph of a well located in the Anza Valley portion of the basin shows a decline in water level of about 35 feet from 1952 through 1976, then a rise of about 10 feet from 1976 through 1986, then a slow decline through 1992. A comparison of water level contours for 1950 and 1973 indicated that a widespread pumping depression developed by 1973 in Anza Valley. Water levels were depressed as far as 70 feet below their 1950 level (Moyle 1976).

### **Groundwater Storage**

**Groundwater Storage Capacity.** Total storage capacity is estimated at about 75,000 af (DWR 1975).

**Groundwater in Storage.** Unknown.

### **Groundwater Budget (Type C)**

Information is not available to construct a budget.

### **Groundwater Quality**

**Characterization.** The character of groundwater in this basin ranges from a sodium-calcium bicarbonate to sodium chloride in character. TDS concentrations ranged from 304 to 969 mg/L in 1956 (DWR 1956).

**Impairments.** Locally, sulfates and nitrates are high for domestic use (DWR 1975). Nitrate concentrations reach as much as 128 mg/L (Moyle 1976).

### **Well Characteristics**

<b>Well yields (gal/min)</b>		
Municipal/Irrigation	Range: to 500 gal/min	Average:
<b>Total depths (ft)</b>		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

### **Active Monitoring Data**

<b>Agency</b>	<b>Parameter</b>	<b>Number of wells /measurement frequency</b>
Anza Mutual Water Co.	Groundwater levels	2/monthly
Department of Health Services and cooperators	Title 22 water quality	1

## Basin Management

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Groundwater management:

Water agencies

Public	Cahuilla Indian Reservation.
Private	Anza Mutual Water Company.

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## References Cited

- California Department of Water Resources (DWR). 1956. *Santa Margarita River Investigation*. Bulletin 57. 273 p.
- \_\_\_\_\_. 1967. *Ground Water Occurrence and Quality: San Diego Region*. Bulletin No. 106-2. 235 p.
- \_\_\_\_\_. 1975. *California's Ground Water*. Bulletin 118. 135 p.
- Moyle, W. R. Jr. 1976. *Geohydrology of the Anza-Terwilliger Area Riverside County, California*. U.S. Geological Survey. Water Resources Investigations 76-10. 25p.
- Rogers, T.H. 1965. *Geologic Map of California: Santa Ana Sheet*. California Division of Mines and Geology. Scale 1:250,000.

## Additional References

- Jenks, James, Watermaster, Santa Margarita River Watershed. 2000. Letter to Brian Moniz, Groundwater Section, Southern District, California Department of Water Resources. July 17.

## Errata

Substantive changes made to the basin description will be noted here.