

Chocolate Valley Groundwater Basin

- Groundwater Basin Number: 7-32
- County: Riverside
- Surface Area: 130,000 acres (203 square miles)

Basin Boundaries and Hydrology

The Chocolate Valley Groundwater Basin underlies a southwest-trending valley in Riverside County. Elevation of the valley floor ranges from about 230 feet below sea level at the Salton Sea to about 2,400 feet above sea level along the eastern margin. The basin is bounded by nonwater-bearing rocks of the Orocopia and Chuckwalla Mountains on the north and of the Chocolate Mountains on the south and southeast. A low-lying drainage divide forms the eastern boundary, and the Salton Sea forms the western boundary. Elevation in the surrounding mountains range from about 4,500 feet in the Chuckwalla Mountains, about 3,800 feet in the Orocopia Mountains, and about 2,500 feet in the Chocolate Mountains. Much of the southeast portion of the valley lies within the Chocolate Mountain Aerial Gunnery Range (Jennings 1967; USGS 1987).

Annual average precipitation ranges from about 3 to 5 inches. Surface runoff from the surrounding mountains is drained to the Salton Sea by way of Salton Creek (*Salt Creek*) (DWR 1954).

Hydrogeologic Information

Water Bearing Formations

Alluvium forms the major water-bearing material within the basin. Included are the unconsolidated younger Quaternary alluvial deposits and the underlying unconsolidated to semi-consolidated older Tertiary to Quaternary alluvial deposits. Maximum depth of the valley fill is at least 400 feet (DWR 1954).

Restrictive Structures

Much of the north and west portions of the basin are transversed by the San Andreas fault zone, which may impede the movement of groundwater. Included in this zone are the Banning Mission Creek, Salton Creek, Clemens Well, and San Andreas faults (Jennings 1967).

Recharge and Discharge Areas

Recharge to the basin is derived chiefly from the infiltration of runoff through alluvial deposits at the base of the surrounding mountains. Groundwater moves southwest beneath Salton Creek and discharges to the Salton Sea.

Groundwater Level Trends

Records of historical groundwater levels in the basin are sparse and reflect water-levels trends only in the far western portion of the basin near the Salton Sea. The period of record sporadically spans 1957 through 1984. Records show that water levels rose about 41 feet in 1957 through 1969 at a well in the northwestern-most part of the basin. Depth to water during this period fluctuated from about 10 to 63 feet below the surface. To the south,

water levels rose about 3.7 feet during 1959 through 1984, with a depth to water ranging between about 42 and 55 feet below the surface. At another nearby well, water levels rose about 6.5 feet from 1958 through 1962, with a depth to water fluctuating between about 80 to 86 feet. Slightly south of the former location, records show water levels declined from 1958 through 1978 by about 2.0 feet. Depth to water over this period varied between about 86 and 99 feet below the surface.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated to be 1,000,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (C)

Natural recharge to the basin is estimated to be about 200 af/yr (DWR 1975).

Groundwater Quality

Characterization. The predominant cation is sodium, and the predominant anions are either chloride or sulfate or both.

Impairments. Impairments to the quality of the groundwater include elevated levels of fluoride, boron, and TDS. Elevated fluoride levels were found in nearly all mineral analyses of groundwater. Levels range from 0.6 to 60.0 mg/L and averaged about 5.5 mg/L. Boron levels range from 0.08 to 15.8 mg/L and averaged about 2.2 mg/L. TDS was found to range from about 460 to 24,500 mg/L, with an average concentration of about 3,000 mg/L.

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range:	Average:
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

California Department of Public Works. 1954. *Ground Water Occurrence and Quality, Colorado River Basin Region*. Water Quality Investigations Report No. 4. 59 p.

_____. 1975. *California's Groundwater*. Bulletin No. 118. 135 p.

Jennings, C. W. 1967. *Geologic Map of California: Salton Sea Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.

U.S. Geological Survey. 1987. *Augustine Pass, California*. 7.5' Quadrangle. Provisional Edition. Scale 1: 24,000.

Errata

Changes made to the basin description will be noted here.