Mesquite Valley Groundwater Basin

- Groundwater Basin Number: 6-29
- County: Inyo, San Bernardino
- Surface Area: 88,400 acres (138 square miles)

Basin Boundaries and Hydrology

The Mesquite Valley Groundwater Basin underlies a northwest-trending valley located along the California-Nevada border in northeast San Bernardino and southeast Inyo Counties. Elevation of the valley floor ranges from 2,540 feet at Mesquite (dry) Lake to about 2,700 feet above mean sea level at the northeast end of the valley. The basin is bounded by nonwater-bearing rocks of the Kingston Range on the northwest, the Mesquite Mountains on the west, the Clark Mountains on the south, and by an alluvial drainage divide on the north. Although the physical groundwater basin extends into Nevada, the California-Nevada state line is the northeastern boundary for this report. Kingston Peak rises to an elevation of 7,328 feet, and the Mesquite and Clark Mountains range in elevation from about 4,000 to 5,200 feet. Mesquite Lake, located in the southern part of the basin, covers about 7 square miles (Waring 1920; DWR 1964).

Average annual precipitation ranges from about 4 to 6 inches. Surface runoff from the bordering mountains drains towards Mesquite Lake (Jennings 1961).

Hydrogeologic Information

Water Bearing Formations

Quaternary alluvium, which forms the primary water-bearing unit within the basin, includes unconsolidated younger alluvial fan material underlain by semi-consolidated, older alluvium. Maximum thickness of the alluvium is at least 1,180 feet (DWR 1964).

Recharge and Discharge Areas

The principal source of recharge to the basin is the percolation of runoff through alluvial deposits at the base of the bordering mountains, and from the infiltration of precipitation that falls to the valley floor. Groundwater in the younger and underlying older alluvium moves, as does surface runoff, towards Mesquite Lake. Confinement of the groundwater body occurs beneath and along the margins of the lake. Groundwater discharge occurs mainly through pumpage by wells or by evapotranspiration (Waring 1920; DWR 1964).

Groundwater Level Trends

The record of groundwater levels in the California portion of the basin intermittently spans 1954 through 1984. South of Mesquite Lake, records show that water levels rose by about 2.8 feet from 1954 through 1957. Depth to water ranged from about 37 to 40 feet below the surface. North of Mesquite Lake in the central part of the basin, water levels declined by about 3.2 feet from 1959 to 1979 at one location and declined at another location

by about 2.0 feet during 1979 through 1984. Depth to water between the two locations ranged from about 10 to 40 feet below the surface. In the north portion of the basin, water level information is sparse but show that levels declined by about 2.8 feet from 1956 through 1964. Depth to water at this location was between about 50 and 53 feet below the surface. Further north of this location, water levels declined by about 2.2 feet over the same period, with a depth to water ranging from about 127 to 130 feet below the surface.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity within California is estimated to be about 580,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. The character of the groundwater generally varies from calcium-magnesium bicarbonate to magnesium-calcium bicarbonate in the northern half of the basin and is generally sodium chloride in the southern half of the basin.

Impairments. In general, the quality of groundwater in the northern half of the basin is suitable for most beneficial uses. TDS concentrations range from about 400 to 800 mg/L. The quality of groundwater in the southern half of the basin near Mesquite Lake tends to be marginal to inferior for both domestic and irrigation purposes. Impairments to the groundwater include TDS concentrations that generally range from about 1,000 to 1,500 mg/L, but have ranged as high as 6,000 mg/L. Elevated concentrations of chloride and sodium impair the water for use in irrigation, and fluoride concentrations in some parts of the basin are at levels marginal for domestic consumption.

Well Production Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 1,020–1,500	1,020 (DWR 1975)
	Total depths (ft)	
Domestic		
Municipal/Irrigation		

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 Water Resources (DWR). 1964. *Ground Water Occurrence and Quality Lahontan Region.* Bulletin No.106-1. 439 p.

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

Jennings, C. W., 1961. *Geologic Map of California: Kingman Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.

Waring, G. A. 1920. *Ground Water in Pahrump, Mesquite, and Ivanpah Valleys Nevada and California*. Water–Supply Paper 450-C. pp. 51-85.

Errata

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