

Pahrump Valley Groundwater Basin

- Groundwater Basin Number: 6-28
- County: Inyo
- Surface Area: 93,100 acres (145 square miles)

Basin Boundaries and Hydrology

The Pahrump Valley Groundwater Basin underlies a northwest-trending valley in southeastern Inyo County. Elevation of the valley floor above mean sea level ranges from 2,457 feet at Stewart (dry) Lake to about 3,000 feet in the southwestern part of the basin. The basin is bounded by nonwater-bearing rocks of the Resting Springs and Nopah Ranges on the west and northwest, and by the Kingston Range on the south. Although a substantial portion of the physical groundwater basin extends into Nevada, the California-Nevada state line is the northeastern boundary of the basin for this report. The bordering mountains within California range in elevation from about 6,400 in the Nopah Range and about 7,300 feet in the Kingston Range. The Spring Mountains of Nevada reach 11,910 feet above mean sea level and provide the principal source of recharge to the basin. Stewart Lake, located in the northwest part of the valley, is about 6 square miles, and Pahrump (dry) Lake, located in the central part of the valley, is about 10 square miles (Waring 1920; DWR 1964).

Average annual precipitation ranges from about 4 to 6 inches. Surface runoff drains towards Stewart Lake or into Nevada towards Pahrump Lake (Jennings 1958, 1961, 1962; USGS 1984a, 1984b, 1984c, 1984d).

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 800 feet (DWR 1964).

Recharge and Discharge Areas

Recharge to the basin is derived from 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 alluvium moves towards either Stewart Lake or into Nevada towards Pahrump Lake. Groundwater is confined near the margins of the dry lakes and along the base of the alluvial deposits originating from the Spring Mountains in the Nevada portion of the basin. Groundwater discharge from the alluvial aquifer occurs mainly through pumpage and spring discharge, or by evapotranspiration (Waring 1920; DWR 1964). Hunt and others (1966) have suggested that some discharge from the basin occurs as inter-basin underflow by way of a deep regional carbonate rock aquifer system that transfers groundwater into the lower lying Amargosa and Death Valley Groundwater Basins.

Groundwater Level Trends

The record of groundwater levels within the California portion of the basin intermittently spans a period from 1952 through 1984. In the southern part of the basin, records show that groundwater levels declined by nearly 60 feet at one well during 1952 through 1975, although at another well, water levels declined by 0.6 foot from 1956 through 1972. Along the southeast margin of the basin, water levels declined in one well by about 2.3 feet during 1959 through 1977, and by about 5.1 feet at another well during 1959 through 1984. Depth to water ranged from about 98 to 123 feet below the surface. Near Stewart Lake in the northern portion of the basin, water levels declined by about 2.7 feet at one location during 1960 through 1976, and by about 2.1 feet at another location during 1976 through 1984. Depth to water ranged between about 20 to 40 feet below the surface. Near Pahrump Lake in the central part of the basin, records indicate water levels remained relatively unchanged from 1959 through 1976, water levels remained about 55 feet below the surface.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity is estimated at about 690,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. The character of the groundwater varies from calcium-magnesium bicarbonate to magnesium-calcium bicarbonate. The quality of the groundwater is suitable for all beneficial uses. TDS concentrations range from about 145 to 540 mg/L, with an average concentration of about 340 mg/L. Fluoride content ranges from 0.1 to 0.8 mg/L and averages about 0.4 mg/L. Boron content averages about 0.1 mg/L.

Well Production Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 150–300	Average: 150 (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

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- 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.