Pilot Knob Valley Groundwater Basin

- Groundwater Basin Number: 6-51
- County: San Bernardino
- Surface Area: 139,000 acres (217 square miles)

Basin Boundaries and Hydrology

The Pilot Knob Valley Groundwater Basin underlies a northeast-trending valley in northwestern San Bernardino County. Surface elevations range from 2,250 to about 3,500 feet above mean sea level. The basin is bounded by nonwater-bearing consolidated rocks of the Slate Range and Quail Mountains on the north, the Lava Mountains on the west, and by a number of isolated peaks, including Eagle Crags, Robbers Mountain, and Pilot Knob, on the south and east. The Blackwater fault forms part of the southwestern boundary to the basin. Mountains on both the north and south sides of the valley attain elevations of about 5,500 feet. The basin lies within the China Lake U.S. Naval Weapons Center (Jennings 1962; DWR 1964).

Average annual rainfall ranges from 4 to 8 inches. In the eastern portion of the valley, surface runoff flows northwest toward a canyon, which separates the Quail and Slate Mountains, and discharges into Brown Mountain Valley. Runoff from the western portion of the valley flows north through Randsburg Wash and into Searles Valley (DWR 1964; Jennings 1962; USGS 1973).

Hydrogeologic Information

Water Bearing Formations

Quaternary alluvium forms the principal water-bearing unit within the basin. Included in this unit are the unconsolidated younger alluvial deposits and underlying unconsolidated to poorly consolidated older alluvial deposits (DWR 1964). Maximum thickness of the alluvial fill is at least 687 feet (DWR 1969).

Restrictive Structures

The Garlock fault, which is parallel to the northern boundary of the basin, is cited as a probable barrier to the movement of groundwater (DWR 1964). The Blackwater fault may also impede groundwater movement.

Recharge and Discharge Areas

Recharge to the basin is primarily from the percolation of occasional runoff through alluvial fan deposits emanating from the adjacent mountains. A minor source of recharge may include the infiltration of rain that falls on the valley floor. Groundwater moves northwards towards either Brown Mountain or Searles Valleys (DWR 1964).

Groundwater Level Trends

Water levels from a well in the central part of the basin, ranged from 239.7 feet below ground surface in 1953 to 269.2 feet in 1966 (DWR 1969).
Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated to be about 2,460,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. Few wells or springs are known to exist in the Pilot Knob Valley. Utilization of the groundwater resources has been largely confined to occasional extractions by the U. S. Naval Weapons Center. However, the few analyses available indicate the basin's groundwater may be suitable for most beneficial uses.

Groundwater from a domestic well in the northwest part of the basin, was sodium bicarbonate in character and had TDS content ranging from 400 to 450 mg/L. Fluoride and boron content were suitable for domestic and most irrigation purposes (DWR 1964; 1969).

In the southwest part of the basin, a developed spring known as Granite Wells was analyzed for the chemical constituents of its water in 1918. This water was found to be calcium bicarbonate in character with a TDS content of 404 mg/L. Historically, water from this well has been used for domestic and stock-watering purposes (DWR 1964). Water from one public supply well has a TDS content of 140 mg/L.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	2	0
Radiological	2	0
Nitrates	2	0
Pesticides	2	0
VOCs and SVOCs	2	0
Inorganics – Secondary	2	0

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)
Municipal/Irrigation	
	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	1

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. p. 379-382.

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

Jennings, C.W. et al. 1962. *Geologic Map of California: Trona Sheet.* Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.

U. S. Geologic Survey. 1973. *Christmas Canyon 7.5' Quadrangle.* Scale. 1: 24,000.

Errata

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