

Walker Basin Creek Valley Groundwater Basin

- Groundwater Basin Number: 5-26
- County: Kern
- Surface Area: 7,670 acres (12 square miles)

Basin Boundaries and Hydrology

The Walker Basin Creek Valley is a fault-influenced, shallow alluvial basin within the southern Sierra Nevada. The basin is bound by Breckenridge Mountain, Red Mountain and Harper Peak to the west, northeast, and southeast, respectively. The basin is triangular in shape with a drainage outlet (Walker Basin Creek) at its southern apex. The Breckenridge Fault forms the linear western boundary of the basin (Smith 1964). Average annual precipitation ranges from 14 to 16 inches.

Hydrogeologic Information

Water Bearing Formations

The basin is predominantly surrounded by granitic rocks typical of the southern Sierra Nevada. Metamorphic bedrock (including marble) outcrops along the northeastern basin boundary.

Both granitic and metamorphic rocks floor the basin at depth. While mostly granitic bedrock is described in drill logs, some marble bedrock was noted in wells near the northeastern basin boundary and also from the central portion of the basin.

Based on review of available well completion reports, the alluvial basin fill is thin, ranging in thickness from a few feet to over 150 feet, with an average thickness of approximately 70 feet. Description of surficial materials on well completion reports includes abundant decomposed granitic rock, and sand, clay and minor gravel.

Restrictive Structures

Below the decomposed granitic rock, drill logs note that more competent bedrock often exhibits abundant fracturing, probably as a result of proximity to the Breckenridge Fault, or to the Kern Canyon Fault, which projects beneath the valley fill (Smith 1964). Because of the shallow nature of the alluvial fill, much to most of the groundwater in the basin is derived from the bedrock. Well completion reports indicate that some of the best producing wells in the basin are at the basin center and axis where the alluvial fill is thickest.

Recharge Areas

Groundwater recharge is from percolation of direct precipitation and from ephemeral and spring-fed perennial streams entering the basin.

Groundwater Budget (Type C)

There are not enough data to estimate a budget for this basin.

Groundwater Quality

The characterization of the basin has not been determined.

Well Characteristics

| Well yields (gal/min) | | |
|------------------------------|------------------|--|
| Municipal/Irrigation | Range:50 - 650 | Average: (2 Well completion reports) |
| Domestic: | Range: 0.5 – 300 | Average: 41 (56 Well completion reports) |
| Total depths (ft) | | |
| Domestic | Range: 105 - 677 | Average: 278 (48 Well completion reports) |
| Municipal/Irrigation | Range: 120 - 400 | Average: 238 (5 Well completion reports) |

Active Monitoring Data

| Agency | Parameter | Number of wells /measurement frequency |
|---|------------------------|---|
| Department of Health Services and cooperators | Title 22 water quality | 1 Varies |

Basin Management

| | |
|-------------------------|------|
| Groundwater management: | None |
| Water agencies | |
| Public | None |
| Private | None |

References Cited

- California Department of Water Resources, San Joaquin District. Well completion report files.
- Ross, Donald C. 1986. Basement-Rock Correlations Across the White Wolf-Breckenridge-Southern Kern Canyon Fault Zone, Southern Sierra Nevada, California. U.S..Geological Survey Bulletin 1651.
- Smith, Arthur R. (compiler). 1964. Bakersfield Sheet of Geologic Map of California. California Division of Mines and Geology (CDMG). Scale 1:250,000.

Errata

Changes made to the basin description will be noted here.