Coachella Valley Groundwater Basin, San Gorgonio Pass Subbasin

- Groundwater Basin Number: 7-21.04
- County: Riverside
- Surface Area: 38,650 acres (60 square miles)

Basin Boundaries and Hydrology

The portion of the Coachella Valley Groundwater Basin that lies entirely within the San Gorgonio Pass is described as the San Gorgonio Pass Subbasin (DWR 1964). This subbasin is bounded on the north by the San Bernardino Mountains and by semi-permeable rocks, and on the south by the San Jacinto Mountains. A surface drainage divide between the Colorado River and South Coastal Hydrologic Study Areas bounds the subbasin on the west. The eastern boundary is formed by a bedrock constriction that creates a groundwater cascade into the Indio Subbasin (DWR 1964).

Average annual rainfall over the subbasin ranges from 15 to 18 inches. The San Gorgonio River flows intermittently over the subbasin and is the main surface drainage feature for the subbasin (Bloyd 1971). Precipitation in the northern San Bernardino Mountains contributes its runoff to the San Gorgonio River.

Hydrogeologic Information

Water Bearing Formations

The main water bearing deposits in the subbasin are Holocene and Pleistocene age alluvium and Pliocene to Pleistocene age San Timoteo Formation.

Alluvium. Holocene alluvium is mostly gravel and sand and, where saturated, would yield water readily to wells. Within the subbasin, these deposits lie largely above the water table and contribute little water to wells. Holocene alluvium is found in the tributaries of the subbasin and allows runoff to infiltrate and recharge the subbasin (DWR 1987).
Older, Pleistocene age alluvium contains sand and gravel, but also large amounts of clay and silt. These deposits yield moderate amounts of water to wells (DWR 1987).

San Timoteo Formation. The Pliocene to Pleistocene age San Timoteo Formation consists of poorly sorted to sorted, partly consolidated, fine to coarse sandstone along with layers of gravel and thin interbeds of clay (Frick 1921). Well yield from these deposits is typically poor, but some deep wells have pumped more than 1,000 gallons per minute (DWR 1987). The San Timoteo Formation may extend to over 2,000 feet below the surface and is one of the major water-bearing deposits in the subbasin (Bloyd 1971).

The subbasin has a complex geologic and hydrogeologic history along with a scarcity of historical data for certain parts of the subbasin. A steep groundwater gradient is present in most of the subbasin because of construction of the San Jacinto Tunnel during 1933 through 1939. Intense de-watering increased the groundwater gradient and changed groundwater movement from westward to southeastward (Bloyd 1971).

Restrictive Structures

Many faults are mapped cutting the subbasin materials (Rogers 1965; Bloyd 1971). The subbasin is structurally complex and these faults likely add to the complexity by reducing groundwater flow within the subbasin.

Groundwater Level Trends

Groundwater levels throughout the subbasin declined significantly from 1933 through 1939 during the construction of the San Jacinto Tunnel as large quantities of groundwater were pumped and diverted into the Indio Subbasin (SGPWA 2001). Groundwater levels in the eastern part of the subbasin rose or stayed the same between 1967 and 1987 (DWR 1987).

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity of the subbasin was estimated to be about 2,700,000 af by DWR (1964). A re-evaluation by DWR (1987) estimates total storage capacity to be about 2, 200,000 af.

Groundwater in Storage. Groundwater in storage in the first 60 feet below 1961 water levels was estimated by DWR (1964) to be about 245,000 af using a 10 percent specific yield. Groundwater in storage for the entire saturated thickness of the subbasin was estimated at 1,400,000 af (DWR 1987).

Groundwater Budget (Type A)

Little subsurface inflow occurs (BEC 1988) for the subbasin, but about 9,000 af/yr of groundwater leaves the subbasin as subsurface outflow into the Indio Subbasin (DWR 1987)

Groundwater extraction from the subbasin in 1999 is estimated to be 7,488 af (San Gorgonio Pass Water Agency 2001).

Average precipitation over the subbasin is approximately 18,000 af/yr, and average stream flow is 5,000 af/yr (BEC 1988). About 9 percent, or 2,100 af, of this precipitation and stream flow is estimated to provide recharge to the subbasin annually (Bloyd 1971).

Agricultural return and wastewater effluent contribute little recharge to the subbasin (SGPWA 2001).

Groundwater Quality

Characterization. Groundwater in the subbasin is characterized as predominantly calcium-sodium bicarbonate type (DWR 1987). TDS content for selected samples from municipal wells ranged from 106 to 205 mg/L (DWR 1987).

Impairments.

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
SGPWA	Groundwater levels	17/semi-annual
SGPWA and other local agencies	Miscellaneous water quality	8/semi-annual
Department of Health Services and cooperators	Title 22 water quality	5

Basin Management

Groundwater management:	Currently SGPWA is working with state and federal agencies to develop a more extensive monitoring and management system.
Water agencies	
Public	City of Banning Water District, San Gorgonio Pass Water Agency, Beaumont-Cherry Valley Water District.
Private	Morongo Indian Tribe

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Additional References

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Errata

Changes made to the basin description will be noted here.