Ames Valley Groundwater Basin

- Groundwater Basin Number: 7-16
- County: San Bernardino
- Surface Area: 110,000 acres (169.7 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies Ames Valley, Homestead Valley, and Pipes Wash in the southcentral San Bernardino County. The basin is bounded by nonwater-bearing rocks of the San Benrardino Mountains on the west, of Iron Ridge on the north, and of Hidalgo Mountain on the northeast (Rogers 1967). The Emerson, Copper Mountain, and West Calico faults form parts of the eastern and northern boundaries. The southern boundary and parts of the northern and eastern boundaries lie along surface drainage divides. The valley is drained northeastward by Pipes Wash to Emerson (dry) Lake. Average annual precipitation ranges from 4 to 12 inches.

Hydrogeologic Information

Water Bearing Formations

The water-bearing materials in this basin consist of unconsolidated to partly consolidated Miocene to Quaternary age continental deposits (Mendez and Christensen 1997). Wells in Ames Valley Groundwater Basin reach a maximum depth of 838 feet without encountering bedrock. Regionally, these deposits are estimated to range to 10,000 feet in thickness (Moyle 1984).

The main water-bearing deposits are interbedded gravels, conglomerates, and silts deposited in alluvial fans (Schaefer 1978). Other less productive deposits include alluvial channel sands and gravels; silt, clay, and sandy-clay deposits in Emerson Lake playa; and dune sands (Schaefer 1978; Bookman-Edmonston Engineering 1994). These deposits have an average specific yield of about 14 percent (Lewis 1972), and well yields range from 30 to 2,000 gpm. Groundwater is typically unconfined in the alluvial deposits (Schaefer 1978), but may be confined near dry lakes where fine-grained deposits are found.

Restrictive Structures

Several faults cut northwestward across this basin causing the water table to step down toward the east (Moyle 1974; French 1978; Mendez and Christensen 1997), which indicates they are partial barriers to groundwater flow. Groundwater levels drop eastward across the Johnson Valley fault 100 to 175 feet and across the Emerson fault 25 to 50 feet (Lewis 1972; Moyle 1974). Groundwater levels may drop eastward about 550 feet across the Homestead Valley fault (Moyle 1974).

Recharge Areas

Natural recharge of the basin is mainly from percolation of stream flow from the San Bernardino Mountains and precipitation to the valley floor (Mendez and Christensen 1997; Bookman-Edmonston Engineering 1994). Percolation of septic tank effluent from the town of Landers and surrounding communities also contributes to recharge of groundwater. Some subsurface inflow may come from Means Valley Groundwater Basin, and subsurface

outflow probably crosses the Emerson fault into Deadman Valley Groundwater Basin (French 1978; Mendez and Christensen 1997).

Groundwater Level Trends

Groundwater in this basin flows eastward from the San Bernardino Mountains to the Emerson fault and northeast toward Emerson (dry) Lake (Mendez and Christensen 1997). In the central part of the basin near Landers, one well declined about 15 feet during 1981 through 1999. In the eastern and northern parts of the basin, water levels were stable during 1952 through 2000, varying about 2 feet.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated to be 1,200,000 af (DWR 1975).

Groundwater in Storage. Groundwater in storage in 1969 is estimated to be 540,000 af (Lewis 1972).

Groundwater Budget (Type C)

About 500 af/yr of underflow may be moving through the sediments in Pipes Wash, the main recharge source (Lewis 1972).

Groundwater Quality

Characterization. Groundwater in the basin is sodium bicarbonate in character. The TDS content of water from one well near Landers is 233 mg/L (MWA 1999). The TSD content of water from 8 public supply wells ranges from 246 to 390 mg/L and averages 312 mg/L.

Impairments. Groundwater in the basin has locally high TDS, fluoride, and chloride contents (DWR 1975). TDS content reaches about 1,000 mg/L southwest of Emerson Lake (MWA 1999).

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	10	0
Radiological	10	3
Nitrates	10	0
Pesticides	10	0
VOCs and SVOCs	10	0
Inorganics – Secondary	10	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	Range: 30 – 2,000 (Well Completion Reports)
	Total depths (ft)
Domestic	
Municipal/Irrigation	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	19
USGS	Miscellaneous water quality	3
Department of Health Services and cooperators	Title 22 water quality	11

Basin Management

Groundwater management:	This basin is managed under a Regional Water Management Plan adopted in 1994 by the Mojave Water Agency (MWA 1999).
Water agencies	
Public	Mojave Water Agency
Private	

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Additional References

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Errata

Changes made to the basin description will be noted here.