Mono Valley Groundwater Basin

- Groundwater Basin Number: 6-09
- County: Mono
- Surface Area: 173,000 acres (270 Square miles)

Basin Boundaries and Hydrology

Mono Valley Groundwater Basin underlies Mono Valley, in the central part of Mono County (DWR 1964). The basin is bounded by the Biedeman Mountains on the north and the Cowtrack Mountains on the southeast. Impermeable rock of the Sierra Nevada bounds the basin to the west and semi-permeable volcanic and glacial deposits bound the basin on the south. A portion of the northeast boundary is the California-Nevada state line.

Mono Lake is a remnant of a much larger Pleistocene lake that was located in the center of Mono Valley (Koenig 1963; Strand 1967; DWR 1964; 1979). Mill, Lee Vining, Walker, Parker, and Rush creeks flow into Mono Lake, a natural closed drainage. Average annual precipitation ranges from about 8 inches on eastern part of the valley floor to about 28 inches in the west near the Sierra Nevada (DWR 1964).

Hydrogeologic Information

Water Bearing Formations

Mono Valley Groundwater Basin consists of Quaternary age alluvial and lake sediments. Alluvial fan deposits form the most productive aquifer in the region and have saturated thickness that reaches 945 feet (Bader 1969; DWR 1964). Unconsolidated alluvium is interbedded with semi-consolidated, fine-grained lake sediments that increase in thickness and proportion toward Mono Lake. This intercalation forms a semi-confined aquifer. Glacial deposits and fractured volcanic rocks with variable well yields are also interbedded with the alluvial and lacustrine deposits (DWR 1964).

Restrictive Structures

The Sierra Nevada frontal fault system places impermeable crystalline rock against the permeable rocks of the basin. These faults restrict groundwater flow on the west side of the basin (USDA 1988). Several other faults are interpreted to cut deposits in the basin (Koenig 1963; Strand 1967). It is not known whether these faults inhibit groundwater flow in the basin.

Recharge Areas

Recharge to the basin is from infiltration of rainfall to the valley floor and percolation of runoff from the surrounding mountains. Percolation of runoff occurs in glacial moraines and alluvial fans at the margin of the basin. The groundwater flows generally from the edges of the basin toward Mono Lake (DWR 1964).

Groundwater Level Trends

Groundwater levels are close to ground surface at Mono Lake and are approximately 300 to 400 feet below the surface along the foothills (DWR

1964). A hydrograph shows that water levels in a well in the southern part of the basin declined 78.5 feet during 1978 through 1982 and rose 20 feet the next two years.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity of the basin was estimated to be about 3,400,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

Extraction of groundwater for irrigation and domestic use was estimated at about 6,800 af/yr (DWR 1964).

Groundwater Quality

Characterization. Groundwater quality is generally marginal to poor (DWR 1975). Water sampled from Warm Springs in the western part of the basin was calcium bicarbonate in character, with a TDS content of 2,060 mg/L. Groundwater in the east is sodium bicarbonate in character. High concentrations of sodium are reported in water samples from Burkham Springs and from artesian wells located in the northern part of the basin (DWR 1964).

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	1	0
Radiological	1	0
Nitrates	1	0
Pesticides	1	0
VOCs and SOCs	1	0
Inorganics – Secondary	1	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: 300–800	Average: 480 (6 well completion reports)
	Total depths (ft)	
Domestic	Range: 110–555	Average: 266 (6 well completion reports)
Municipal/Irrigation	Range: 131–600	Average: 264 (6 well completion reports)

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

Bader, J.S. 1969. *Ground-Water Data as of 1967 South Lahontan Subregion California*. U.S. Department of the Interior Geological Survey, Water Resources Division, Open-File Report, 25p.

California Department of Water Resources (DWR). 1964. *Ground Water Occurrence and Quality Lahontan Region*. p.91-98.

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United States Department of Agriculture, Inyo National Forest. 1988. *Environmental impact Statement and Comprehensive Management Plan, Mono Basin National Forest Scenic Area*, 104p.

Koenig, J.B. ed. 1963. *Geologic Map of California Walker Lake Sheet*. Olaf P. Jenkins Edition. California Department of Conservation. Division of Mines and Geology. Scale 1:250,000.

Strand, Rudolf. ed. 1967. *Geologic Map of California Mariposa Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1:250,000.

Errata

Changes made to the basin description will be noted here.