Grasshopper Valley Groundwater Basin

- Groundwater Basin Number: 6-94
- County: Lassen
- Surface Area: 17,670 acres (28 square miles)

Basin Boundaries and Hydrology

The Grasshopper Valley Groundwater Basin is a closed basin bounded primarily by Plio-Pleistocene basalt. Miocene basalt bounds the basin to the north (Lydon 1960). Faulting in the region generally trends to the northwest and likely serves as barrier to the east. Grasshopper Ridge separates much of Grasshopper Valley from Dry Valley to the east. Annual precipitation ranges from 13- to 19-inches, increasing to the west.

Hydrogeologic Information

Water-Bearing Formations

The principal water-bearing units in the basin are Holocene sedimentary deposits, Pleistocene lake and near-shore deposits, and Plio-Pleistocene and Pleistocene basalt flows. The following summary of the area formations is from DWR (1963).

Holocene Sedimentary Deposits. The Holocene sedimentary deposits consist of intermediate alluvium and alluvial fans located at the margins of the valley floor. The alluvium consists of unconsolidated silt, clay, sand, and gravel. The alluvial fan deposits consist of unconsolidated, poorly sorted silt, sand, and gravel, with some clay. The deposits are moderately permeable, have limited areal extents, and yield moderate quantities of groundwater to shallow wells. Thickness of the deposits ranges to 100 feet.

Pleistocene Near-shore Deposits. These deposits are slightly consolidated beach deposits of sand and gravel with minor amounts of silt and clay found along the margins of the basin. Thickness of the deposits ranges to 75 feet. These are moderately permeable and yield moderate supplies of water to shallow wells. The deposits serve primarily as recharge areas.

Pleistocene Lake Deposits. The Pleistocene lake deposits consist of slightly to moderately consolidated clay, silt, and fine sand with interbedded lava flows. Yields may be sufficient for domestic and stock uses with greater yields occurring from areas where the deposits are interstratified with buried lava flows.

Plio-Pleistocene and Pleistocene Basalt. The basalt units consist of gray-black jointed, fractured, vesicular basalt. The unit is highly permeable where it is fractured or jointed. Buried flows provide large amounts of groundwater to wells and also serve as recharge to the basin. The basalt interbeds range in thickness to 50 feet. Well yields are generally less than 500 gpm. Some wells reportedly yield between 1,000- and 3,800-gpm.

Recharge Areas

The recharge areas of the basin consist of Plio-Pleistocene basalts exposed in the uplands surrounding the basin.

Groundwater Level Trends

Published information is not available.

Groundwater Budget

The estimate of groundwater extraction for the Grasshopper Valley Basin is based on a1997 survey conducted by the California Department of Water Resources. The survey included land use and sources of water. Groundwater extraction for municipal and industrial uses is estimated to be 2 acre-feet. Deep percolation of applied water is estimated to be 120 acre-feet.

Groundwater Quality

Characterization. Information regarding water characterization for the Grasshopper Valley Groundwater Basin is not available. For the Madeline Plains basin to the east, the water type is bicarbonate with mixed cationic character. The concentration of total dissolved solids ranges from 81- to 1790-mg/L, averaging 402 mg/L (DWR unpublished data).

Impairments. Areas of the Madeline Plains basin have high conductivity and salinity concentrations. There are locally high total dissolved solids, hardness, nitrates, iron, boron, calcium, magnesium, sodium, ASAR, sulfate, and chloride that occur in the basin.

Well Production Characteristics

	Well yields (gal/min)
Municipal/Irrigation	No data available
	Total depths (ft)
Domestic	190 (1 well completion report)
Municipal/Irrigation	No data

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	0
	Miscellaneous water quality	0

Basin Management

Groundwater management:

Water agencies

Public

Private

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Errata

Changes made to the basin description will be noted here.