

McDowell Valley Groundwater Basin

- Groundwater Basin Number: 1-56
- County: Mendocino
- Surface Area: 1,500 acres (2 square miles)

Basin Boundaries and Hydrology

McDowell Valley is an irregularly shaped, north to northwest-trending structural basin located within the Coast Ranges of southeastern Mendocino County. This valley ranges in length from about 2.5 to 3.4 miles and has a maximum width of about one mile. The McDowell Valley Groundwater Basin is defined by the areal extent of Quaternary alluvium, which is bounded on all sides by bedrock of the Franciscan Formation. Several strands of the northwest-trending Maacama Fault Zone extend through McDowell Valley (Farrar 1986). The McDowell Valley Groundwater Basin is separated from the Sanel Valley Groundwater Basin by a narrow constriction in Franciscan Formation bedrock formed by passage of McDowell Creek.

McDowell Valley is drained to the west and northwest by McDowell Creek and several of its tributaries. McDowell Creek exits the valley along its northwest side and flow west to Sanel Valley where it joins the Russian River. Precipitation in McDowell Valley ranges from approximately 36 inches in the southwest to 40 inches per year on the northeast.

Hydrogeologic Information

Water-Bearing Formations

Significant water-bearing formations that occur in McDowell Valley include Dissected Alluvium and Continental Deposits. Bedrock of the Franciscan Complex surrounds and underlies McDowell Valley but due to its consolidated nature, it is essentially non-water bearing except for areas with significant fracture porosity. Information on water-bearing formations and groundwater occurrence was taken from Cardwell (1965) and DWR (1965).

Dissected Alluvium. These deposits are Holocene in age and consist largely of gravelly and sandy clay, with thin gravel, sand and gravel, and some thick sections of clay. A well log from T13/R11-Section 22 suggests the alluvium in this valley may have a thickness of over 200 feet. The maximum thickness of this unit is not known. No well yield data was identified for wells in McDowell Valley but the alluvium is the principal source of groundwater in the neighboring Sanel Valley and is capable of providing sustained yields of 500 gpm or more to wells. Groundwater in the alluvial deposits is typically unconfined but may be semi-confined locally. No published specific yield data for alluvium in McDowell Valley are available.

Continental Deposits. These deposits are Pliocene to Pleistocene in age and crop out in an area east and southeast of Hopland. These deposits are inferred to underlie the dissected alluvium in McDowell Valley. They are at least in part age equivalent to the Glen Ellen Formation of the middle Russian River Valley. They consist primarily of massive, cross-bedded silty

and clayey gravel and silty clay that originated from alluvial fans, lacustrine sediments, and valley alluvium. These deposits are inferred from drillers' logs to underlie most of the alluvium east of East Hopland, in the Sanel Valley, and in McDowell Valley. The thickness of these deposits is not known; however, they are estimated to be at least 2,000 feet thick near the axis of the Ukiah and Sanel Valleys. Groundwater in this unit occurs under generally confined conditions. Groundwater production from this unit is highly variable ranging from less than 1 to 50 gpm; however, rare yields of 180 to 500 gpm have been reported. Published specific yield values for this unit were not identified.

Groundwater Level Trends

No groundwater level data for wells in McDowell Valley are available and therefore, groundwater levels trends could not be determined.

Groundwater Storage

Groundwater Storage Capacity. No published values for groundwater storage capacity were identified.

Groundwater in Storage. No published values for the amount of groundwater in storage were identified.

Groundwater Budget (Type C)

No data available.

Groundwater Quality

Characterization. No recent published groundwater quality data is available for wells in McDowell Valley however, water quality data from 1953 from two domestic wells showed TDS levels of 143 to 146 ppm and calcium and magnesium bicarbonate water types (DWR 1958). Groundwater in the neighboring Sanel Valley is a calcium bicarbonate or calcium-magnesium bicarbonate type and is generally good for all uses (Farrar 1986).

Impairments. No data available.

Well Characteristics

Well yields (gal/min)		
Limited data from wells in Sanel/McDowell Valleys suggest alluvial well yields ranging from 500 to 1,200 gpm with specific capacities of 20 to over 100 gpm/ft (DWR 1965). Groundwater production from the Pliocene and Pleistocene continental deposits is highly variable ranging from less than 1 to 50 gpm (Farrar 1986).		
Total depths (ft)		
Domestic	Range: 60 to 285	Average: 186 (based on 8 well completion reports)
Municipal/Irrigation	One well completion report indicates a well of 300 feet depth. (DWR unpublished data)	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	None
DWR (incl. Cooperators)	Mineral, nutrient, & minor element.	None
Department of Health Services	Coliform, nitrates, mineral, organic chemicals, and radiological.	None

Basin Management

Groundwater management:	No groundwater management plans were identified
Water agencies	
Public	Mendocino County Water Agency
Private	

Selected Bibliography

- California Department of Water Resources (DWR) 1958. Recommended Water Well Construction and Sealing Standards, Mendocino County. Bulletin No. 62 – November.
- California Department of Water Resources (DWR) 1965. Water Resources and Future Water Requirements – North Coastal Hydrographic Area, Volume 1: Southern Portion (Preliminary Edition) – Bulletin No. 142-1. April.
- Cardwell, G.T. 1965. Geology and Ground Water in Russian River Valley Areas and in Round, Laytonville and Little Lake Valleys, Sonoma and Mendocino Counties, California. USGS Water Supply Paper 1548.
- Farrar, C.D. 1986. Ground-Water Resources in Mendocino County, California. USGS Water-Resources Investigations Report 85-4258. July.

Errata

Changes made to the basin description will be noted here.