Anderson Valley Groundwater Basin

- Groundwater Basin Number: 1-19
- County: Mendocino
- Surface Area: 4,970 acres (approximately 8 square miles)

Basin Boundaries and Hydrology

The Anderson Valley Groundwater Basin is located within the southwestern portion of Anderson Valley, a long, narrow inland valley located in the Coast Ranges of central Mendocino County. This northwest-southeast oriented basin is approximately nine miles long and averages less than one mile in width. The basin is bounded on all sides by bedrock of the Franciscan Complex.

On the southeast end of the Anderson Valley near Boonville, Anderson Creek is joined by several streams and traverses the southwest side of the valley until joining with Rancheria Creek, near the town of Philo, to form the Navarro River. The Navarro River eventually drains directly into the Pacific Ocean. Precipitation in Anderson Valley ranges from approximately 34 to 40 inches per year.

Hydrogeologic Information

Water-Bearing Formations

Water-bearing units of primary importance within Anderson Valley include Recent Alluvium/Stream Channel Deposits and Terrace Deposits. Water-bearing units of secondary importance include semi-consolidated sediments of Tertiary to Quaternary Age. The Franciscan Complex underlies the entire area and is considered essentially non-waterbearing. Groundwater movement within the basin is in a general northwest direction along the axis of the valley, whereas along the flanks groundwater moves toward the valley axis. Groundwater is unconfined except for a localized area of pressure around Boonville. Information on the water-bearing formations and groundwater conditions was taken from DWR (1958) and DWR (1965).

Recent Alluvium/Stream Channel Deposits. These deposits are Holocene in age and consist of loose, unconsolidated gravel, sand, silt, and clay, ranging in thickness from less than 1 foot to more than 20 feet thick. These units were most commonly deposited as lenticular and discontinuous, sand and gravel bodies interbedded with less permeable sands, silts, and clays, which lends to their highly variable permeability.

Terrace Deposits. The Terrace Deposits of Recent and Pleistocene age were laid down as continental flood plain and fan deposits. The flood plain and fan deposits consist of yellow clay, silt, sandy clay, sand and gravel, and are interbedded with blue and green clays that were deposited as lake sediments. The thickness of these deposits ranges from 5 to over 150 feet near Boonville. Although slightly lower in average permeability than the recent alluvium and stream channel deposits, the terrace deposits provide the most important source of groundwater due to their widespread areal and vertical extent throughout the basin.

Tertiary- to Quaternary-Age Deposits. These secondary water-bearing units are estimated to be Pliocene or Early Pleistocene in age, and are composed of interbedded clay, sand, and gravel which have undergone considerable consolidation and cementation. Although these units are over 200 feet thick, as measured from outcrops in the low hills near the town of Philo, their overall permeability is very low.

Groundwater Level Trends

No hydrographs were available from wells in this basin to analyze groundwater level trends.

Groundwater Storage

Groundwater Storage Capacity. The useable groundwater storage capacity for this basin has been estimated to be approximately 47,000 af based on an average useable saturated aquifer thickness of 150 feet and an average specific yield of 5.5 percent (DWR 1965).

Groundwater in Storage. There are no published data available on groundwater in storage for this basin.

Groundwater Budget (Type C)

Insufficient data exists to determine the groundwater budget for this basin.

Water Quality

Characterization. Groundwater in Anderson Valley is a sodium-magnesium bicarbonate type and of good quality, except for higher concentrations of iron. Water in 10 of 11 wells was classified as Class 1 for irrigation with 21 to 56 percent sodium concentrations (of total TDS) and 0.03 to 0.38 ppm boron (DWR 1968). TDS ranges from 76 to 361 mg/L based on 11 wells (DWR 1968).

Impairments. Iron concentrations ranging from 0.05 to 24 ppm, in excess of the US Public Health Services limit of 0.3 in 9 out of 11 wells (DWR 1968).

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	6	0
Radiological	4	0
Nitrates	6	0
Pesticides	4	0
VOCs and SVOCs	3	0
Inorganics – Secondary	6	2

[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)

Yields from Recent Alluvium, River-Channel Deposits, and Terrace Deposits range from 5 to 300 and average 10 to 50. Specific capacities range from less than 1 to 5 gal/min/ft drawdown with an average of 0.1 to 0.7 gal/min/ft drawdown
Well yield data obtained from DWR (1958)

Total depths (ft)

Domestic	Range: 30 - 300	Average: 143 (74 Well Completion Reports)
Municipal/Irrigation	Range: 63 - 138	Average: 101 (2 Well Completion Reports) (DWR unpublished data)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	7 / semiannual
DWR (incl. Cooperators)	Mineral, nutrient, & minor element.	5 / biennial
Department of Health Services	Coliform, nitrates, mineral, organic chemicals, and radiological.	7 wells as required in Title 22, Calif. Code of Regulations

Basin Management

Groundwater management:	No groundwater management plans were identified
Water agencies	
Public	Mendocino County Water Agency
Private	Meadow Estates Mutual Water Company

Selected Bibliography

California Department of Water Resources (DWR) 1958. Recommended Water Well Construction and Sealing Standards, Mendocino County. DWR 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.

California Department of Water Resources (DWR) 1968. DWR Memorandum Report. Future Water Projects: Fort Bragg and Anderson Valley Areas - June.

Errata

Changes made to the basin description will be noted here.