

Pleasant Valley Groundwater Basin

- Groundwater Basin Number: 4-06
- County: Ventura
- Surface Area: 21,600 acres (33.7 square miles)

Basin Boundaries and Hydrology

This basin underlies Pleasant Valley in southern Ventura County. The basin is bounded on the north by the Camarillo and Las Posas Hills and on the south by the Santa Monica Mountains (CSWRB 1956). The eastern boundary is formed by a constriction in Arroyo Santa Rosa (CSWRB 1956). The basin is bounded on the west by the Oxnard subbasin of the Santa Clara River Groundwater Basin (CSWRB 1956). Ground surface elevations range from about 15 feet in the west to about 240 feet above sea level in the east (CSWRB 1956). Calleguas Creek and other tributary creeks drain the surface waters of the area westward toward the Pacific Ocean (CSWRB 1956). Average annual precipitation ranges from 12 to 16 inches.

Hydrogeologic Information

The primary water-bearing materials are alluvial sands and gravels of upper Pleistocene to Holocene age and the lower Pleistocene San Pedro Formation (CSWRB 1956). Permeable deposits within the upper Santa Barbara Formation underlie the San Pedro Formation and contain fresh groundwater of minor importance (CSWRB 1956). Average specific yield is about 10.5 percent.

Water Bearing Formations

Alluvium. The Pleistocene to Holocene age alluvium consists of silts and clays with lenses of more permeable sand and gravel. Groundwater is unconfined in this unit, but little is extracted.

San Pedro Formation. The Pleistocene age San Pedro Formation consists of an upper unit of fine silt and clay that forms an impermeable layer over an extensive 100 to 300 foot thick gravel unit in the lower San Pedro Formation called the Fox Canyon Aquifer (CSWRB 1956). The average specific yield of the gravels is about 10.5 percent for the confined basin and well yields average about 1,000 gal/min (Panaro 2000a).

Restrictive Structures

Faults and folds trend dominantly east-west through this basin. A change in sedimentary character of the upper alluvium system occurs across the Camarillo fault, with the alluvium on the north side of the fault containing a much higher percentage of sand and gravel. The Springville fault zone displaces and folds the Fox Canyon gravels along the northern boundary of the basin. Folds roughly parallel to the Springville fault zone and the Camarillo fault disturb the Fox Canyon gravels and cause them to crop out in the Camarillo Hills along the north side of the basin (CSWRB 1956).

Recharge Areas

Recharge to the basin comes dominantly from subsurface flow across the Springville fault zone, through Fox Canyon gravels from the Arroyo Santa Rosa Valley Basin, and through fractures in the volcanic rocks that comprise the Santa Monica Mountains to the south. A modest amount of irrigation water and septic system effluent also contribute to basin recharge.

Groundwater Levels Trends

During 1980 through 1999, groundwater levels fluctuated over a range of about 130 feet. Hydrographs show an annual cyclic rise and fall of water level of up to 70 feet with longer-term variations apparently following precipitation cycles. The basin was at a low level in 1991 and 1992, then recovered to moderate levels and has remained stable in the upper range of water level since then. In October 1999, the basin was estimated nearly 60 percent full (Panaro 2000a).

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is calculated at 1,886,000 af (DWR 1975; Panaro 2000a).

Groundwater in Storage. The basin was estimated to be 60 percent full in 1999 (Panaro 2000a) implying about 1,130,000 af of groundwater in storage.

Groundwater Budget (Type A)

For 1999, Panaro (2000b) estimated the applied water recharge to be 8,100 af/yr for irrigation return, approximately 18 af/yr for septic systems, and 3,300 af/yr from subsurface inflow. Average annual total extraction is estimated at 18,500 af (Panaro 2000a).

Groundwater Quality

Characterization. Groundwater has calcium as the major cation in solution and chloride, sulfate, and bicarbonate as the major anions (Panaro 2000a). Average TDS content is 1,110 mg/L with a maximum of 3,490 mg/L (Ventura County 2001). Water samples from for 10 public supply wells show TDS concentration ranging from 597 to 1,420 mg/L, with an average of 922 mg/L.

Impairments.

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	1
Nitrates	10	0
Pesticides	10	0
VOCs and SVOCs	10	0
Inorganics – Secondary	10	10

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 Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range:	Average: 1,000 gal/min (Panaro 2000b)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Ventura County	Groundwater levels	9
Department of Health Services and cooperators	Title 22 water quality	12

Basin Management

Groundwater management:	Management of the basin is provided by the Fox Canyon Groundwater Management Agency , under the AB-2995 Groundwater Management Plan . (Panaro 2000b)
Water agencies	
Public	Ventura County, United Water Conservation District (UWCD)
Private	

References Cited

- California State Water Resources Board (CSWRB). 1956. *Ventura County Investigation*. Bulletin 12. Two Volumes.
- California Department of Water Resources (DWR). 1959. *Water Quality and Water Quality Problems, Ventura County*. Bulletin 75. 195 p.
- Panaro, D. 2000a. Fox Canyon Groundwater Management Agency: Written Communication to R.R. Davis (DWR), March 2000.
- _____. 2000b. Fox Canyon Groundwater Management Agency: Written Communication to B.C. Moniz (DWR), December 2000.
- Ventura County Water Resources Division. 2001. www.ventura.org/vcpwa/wre/wrd

Additional References

California Department of Public Works (CDPW). 1933. *Ventura County Investigation*.
Division of Water

Resources. Bulletin 46, 244 p.

Jennings, C.W., and Strand, R.G. 1969. *Geologic Map of California: Los Angeles Sheet*. Olaf
P. Jenkins Edition: California Division of Mines and Geology, scale 1:250,000, 1 sheet.

Errata

Updated groundwater management information and added hotlinks to applicable websites.
(1/20/06)