

Tierra Rejada Groundwater Basin

- Groundwater Basin Number: 4-15
- County: Ventura
- Surface Area: 4,390 acres (6.9 square miles)

Basin Boundaries and Hydrology

Tierra Rejada Groundwater Basin is near the headwaters of Arroyo Santa Rosa in southern Ventura County. This basin is bounded on the south and east by surface drainage divides and on the north and west by faults that restrict groundwater flow. An unnamed north-trending fault forms the western boundary and the east-trending Simi fault is the northern boundary (CSWRB 1956). Average annual precipitation ranges from 14 to 16 inches.

Hydrogeologic Information

Water Bearing Formations

Groundwater in the basin is found in alluvium and the Modelo, Topanga, and Conejo Formations.

Alluvium. Quaternary age alluvium is generally found only near the center of the valley where it is interpreted as about 25 feet thick (Schaaf 1998). This unit can bear water, but is not the major producer in the basin.

Modelo Formation. The Miocene age Modelo Formation consists of marine sandstone and shale. The unit reaches a thickness of 6,500 feet regionally and unconformably overlies the Topanga and Conejo Formations (CSWRB 1956).

Topanga and Conejo Formations. The Miocene age Topanga Formation and Conejo Formation are coeval intercalated deposits. The Topanga Formation contains sandstone, conglomerate and shale in this basin. The Conejo Formation consists of volcanic tuff, debris flow, and basaltic flow and breccia deposits that reach 2,000 feet thick in this basin (CSWRB 1956). The high porosity in the fractured basalt flows allows moderate production from these units. An average well yield of 172 gpm was estimated by Panaro (2000). Well yields in the basin reach 1,200 gpm. Specific yield was estimated at 11 percent (Schaaf 1998).

Restrictive Structures

The geologic structure of the basin is dominated by a westward plunging syncline. The volcanic rocks south and east of the basin dip from 10 to 30 degrees toward the center of the basin. North of the basin, the attitude of the volcanic rocks is nearly vertical. The volcanic rocks are terminated near the north boundary of the basin by the west-trending Simi fault, which acts as a groundwater barrier (CSWRB 1956). An unnamed north-trending fault displaces the volcanic rocks near the western side of the basin, forming a groundwater barrier and a displacement of water level of about 100 feet in the fractured volcanic rocks (CSWRB 1956).

Recharge Areas

Tierra Rejada Groundwater Basin is replenished by percolation of rainfall to the valley floor, stream flow, and irrigation return. Percolation of effluent from septic systems and a wastewater treatment plant add a minor amount of water to the basin.

Groundwater Level Trends

Groundwater moves westward through the basin. Most hydrographs of wells monitored in the basin display a marked rise in water levels since the 1970s, with some hydrographs indicating more than 100 feet of rise. Most hydrographs show 15 to 20 feet of annual variation about a stable mean water level between 1995 and 2001.

Groundwater Storage

Groundwater Storage Capacity. Groundwater storage capacity is estimated to be 39,320 af by Panaro (2000a) and greater than 80,000 af by Schaaf (1998).

Groundwater in Storage. In 1999, the basin was estimated at 75 percent full, or having 29,490 af of groundwater in storage (Panaro 2000a). About 80,000 af of groundwater in storage was estimated by Schaaf (1998), based on an average specific yield of 11 percent.

Groundwater Budget (Type A)

Panaro (2000a) estimates annual recharge from underflow of about 500 af/yr, irrigation return of about 675 af/yr, and discharge from a wastewater treatment plant of 125 af/yr. Annual production from wells is about 1,500 af/yr (Panaro 2000a). About 6,200 af/yr of inflow is estimated by Schaaf (1998), including 5,250 af/yr from precipitation, 50 af/yr from stream flow, 280 af/yr from treated wastewater and 150 af/yr from imported water (Schaaf 1998). Outflow includes about 5,075 af/yr from evapotranspiration and consumptive use, 540 af/yr as surface outflow, 225 af/yr as subsurface outflow, and 370 af/yr as exported domestic supply water (Schaaf 1998).

Groundwater Quality

Characterization. Groundwater in this basin is characterized as magnesium-calcium bicarbonate (DWR 1959; Schaaf 1998), though the basin is also reported to contain calcium, magnesium and sodium in roughly equal amounts, with bicarbonate and sulfate as dominate anions (Ventura County 2001). In 1996, the maximum TDS concentration was 930 mg/L and the maximum nitrate concentration was 16 mg/L (Ventura County 2001). Water sampled from one public supply well in the basin had an average TDS content of 619 mg/L and a specific conductivity of 935 μ mohs (Camrosa Water District 2001).

Impairments. High nitrate concentrations occur locally the basin (Panaro 2000a).

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 6 - 1,200 gal/min (well completion reports)	Average: 172 gal/min (Panaro 2000a)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range: 250 - 800 ft	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Ventura County	Groundwater levels	4 wells
Camrosa Water District	Miscellaneous water quality	1

Basin Management

Groundwater management:	Currently there is no management of the basin. (Panaro 2000)
Water agencies	
Public	Ventura County Groundwater Management Agency Camrosa Water District
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.
- Camrosa Water District. 2001. *Consumer Confidence Report*. www.camrosa.com.
- Panaro, D. 2000a. Fox Canyon Groundwater Management Agency: Written Communication to B. C. Moniz (DWR), December 2000.
- Schaaf, Joseph H. 1998. *Hydrogeology of the Tierra Rejada Groundwater Basin, Ventura County, California*. California State University, Northridge. Unpublished M.S. Thesis.
- Ventura County. 2001. Ventura County Public Works. www.ventura.org/vcpwa. October 2001.

Additional References

- California Department of Public Works (DPW). 1933. *Ventura County Investigation*. Division of Water Resources. Bulletin 46, 244 p.

Errata

Changes made to the basin description will be noted here.