

Goleta Groundwater Basin

- Groundwater Basin Number: 3-16
- County: Santa Barbara
- Surface Area: 9,210 acres (14.4 square miles)

Basin Boundaries and Hydrology

The Goleta Groundwater Basin is bounded on the west by the topographic divide east of Ellwood Canyon and on the southeast by the Modoc fault. Consolidated Tertiary age sedimentary rocks underlie and bound the basin to the north and northeast and are uplifted along the More Ranch fault on the southern boundary (Kaehler 1997). The surface of the basin is drained by the Maria Ygnacio, Atascadero, San Antonio, San Jose, and Carneros Creeks. Average precipitation for the basin is about 17 inches.

Hydrogeologic Information

Water Bearing Formations

The principal water-bearing units in the Goleta Groundwater Basin are alluvium ranging in age from Holocene to Pleistocene, and the Santa Barbara Formation of Pleistocene age.

DWR (1999) estimated the specific yield of underlying sediments at 10 percent for the basin.

Alluvium. Holocene alluvium is composed mainly of fine-grained clay and silt and some sand, with local bodies of gravel at the base. This alluvium, which yields appreciable amounts of water, can reach a maximum thickness of up to 100 feet (Upson 1951; DWR 1999). Pleistocene alluvium is composed of boulders and reddish clay, which, where saturated, yields only modest amounts of water to wells (DWR 1999). Pleistocene alluvium also consists of clay, silt, sand, and gravel in lenticular beds. These coarse-grained materials yield only small to moderate quantities of water, and can reach a maximum thickness of up about 250 feet in the foothills northeast of Goleta (Upson 1951; DWR 1999). Water is generally unconfined within the Holocene and Pleistocene alluvium.

Santa Barbara Formation. The Pleistocene Santa Barbara Formation consists of marine sand, silt, and clay and has a maximum thickness of 2,000 feet in the southern part of the basin (Upson 1951). This formation is the main source of water in the Goleta Groundwater Basin. Groundwater within the Santa Barbara Formation is generally confined (Freckleton 1989).

Restrictive Structures

The Goleta fault acts as a barrier to groundwater movement in the Santa Barbara Formation. The northwest-trending Modoc fault also restricts the flow of groundwater from the northeast, except near the fault's southeast juncture with the More Ranch fault, where groundwater is allowed to discharge freely from the adjacent Foothill Groundwater Basin into the Goleta Groundwater Basin (Freckleton 1989). Uplifted consolidated rock along the south side of the More Ranch fault is an effective barrier to seawater intrusion (Kaehler 1997).

Recharge Areas

Natural recharge of the basin is from infiltration of precipitation, seepage from streams, and subsurface inflow from consolidated rocks (DWR 1999).

Groundwater Level Trends

Hydrographs for wells show that water levels have been rising throughout the basin since 1991 (DWR 1999). Groundwater levels rose between 1988 and 1996 based on storage data (DWR 1999). SBCWA (1999) states that during 1996 and 1997, water levels remained relatively stable primarily because of the wet winters of 1993 and 1995. Shallow wells exhibited slight water level declines during the moderate winters of water years 1998 through 2000, whereas some deep wells showed a rise in water level during the same period (SBCWA 2001).

Groundwater Storage

Groundwater Storage Capacity. Toups (1974) estimated the usable groundwater in storage at 200,000 af in the upper 400 feet of saturated sediments.

Groundwater in Storage. Groundwater in storage fluctuated from 40,000 to 60,000 af during 1941 through 1964 (Soil Conservation 1968).

Groundwater Budget (Type A)

Based on 1971 through 1976 conditions, recharge from stream seepage was estimated at 1,550 afy and recharge from rainfall infiltration was estimated at 1,400 afy (Jones 1979). Subsurface inflow was estimated at 100 afy (Jones 1979). The percolation from surface imports was estimated at 800 afy (Jones 1979). Evenson and Wilson (1962) estimated the average recharge from rainfall infiltration at 2,500 afy and seepage losses at 1,400 afy.

Groundwater Quality

Characterization. Groundwater in the Goleta Groundwater Basin is of calcium bicarbonate nature with TDS concentrations ranging from 700 to 800 mg/L (DWR 1981). Average TDS is 755 mg/L in the basin with a range from 617 to 929 mg/L based on analyses of four public supply wells.

Impairments. No information is available.

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	12	0
Radiological	12	1
Nitrates	12	0
Pesticides	5	0
VOCs and SVOCs	11	0
Inorganics – Secondary	12	5

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)	
Municipal/Irrigation	
Total depths (ft)	
Domestic	
Municipal/Irrigation	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	49 wells/semi-annually
Goleta Water District	Miscellaneous water quality	11wells/quarterly
Department of Health Services and cooperators	Title 22 water quality	17 wells

Basin Management

Groundwater management:	The Goleta WD has adopted a groundwater management plan. The north-central part of this basin is managed under the 1989 Wright Judgement adjudication (SBCWA 1999).
Water agencies	
Public	Goleta WD, Santa Barbara County, Goleta Sanitary District, Goleta West Sanitary District
Private	

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Errata

Changes made to the basin description will be noted here.