El Cajon Groundwater Basin

- Groundwater Basin Number: 9-16
- County: San Diego
- Surface Area: 7,160 acres (11.2 square miles)

Basin Boundaries and Hydrology

The El Cajon Groundwater Basin lies in the southcentral part of San Diego County. The basin is bounded by impermeable crystalline rocks on the south and east, by semi-permeable older Tertiary sedimentary rocks on the west, and by the San Diego River Valley Groundwater Basin on the north. Surface waters drain northwestward to the San Diego River. Average annual precipitation ranges from 11 to 15 inches.

Hydrogeologic Information

Water Bearing Formations

Water-bearing materials in the basin include Pleistocene age alluvium, the Poway Conglomerate, and an older, an underlying sandy siltstone unit (DWR 1986). In addition, water is produced from the underlying fractured crystalline rocks. Total thickness of valley fill ranges to about 350 feet (DWR 1986). An average specific yield for this basin is about 5 percent (DWR 1986).

Pleistocene Alluvium. Pleistocene age alluvium ranges to 50 feet thick and consists of gravel, sand, and silt (DWR 1967; 1986). Wells in this unit yield as much as 250 gpm (DWR 1986).

Poway Conglomerate. The Eocene age Poway Conglomerate consists of sandy conglomerate and conglomeratic sandstone with some interbeds of sand and shale (DWR 1986). This unit ranges to more than 300 feet thick in this basin (DWR 1986).

Sandy Siltstone. A sandy siltstone to mudstone unit underlies the Poway Conglomerate and reaches a maximum of about 325 feet thick (DWR 1986). This unit bears some water, but wells typically yield less than 5 gpm (DWR 1986).

Recharge and Discharge Areas

The dominant source of natural recharge to the basin is from percolation of precipitation, with lesser contributions from underflow from underlying fractured crystalline rocks (DWR 1986). Additional recharge comes from return of applied irrigation water and percolation of septic tank effluent DWR 1986).

Groundwater Level Trends

Groundwater in this basin moves northwestward towards the San Diego River (DWR 1986).

Groundwater Storage

Groundwater Storage Capacity. The total capacity of this basin is estimated to be about 32,500 af (DWR 1986).

Groundwater in Storage. Groundwater in storage in 1984 was estimated to be about 27,800 af (DWR 1986).

Groundwater Budget (Type C)

Subsurface outflow to the northwest is estimated to be 100 to 140 af/yr (DWR 1986).

Groundwater Quality

Characterization. Groundwater in this basin is generally of sodium chloride character (DWR 1967; 1986). Water from wells sampled in 1984 had TDS concentrations ranging from 637 to 3,960 mg/L with a mean value of 1,640 mg/L (DWR 1986). Water from one public supply well has a TDS concentration of 2,340 mg/L.

Impairments. In the 1960s, groundwater in the basin was rated suitable to inferior for domestic use because of high nitrate content and marginal to inferior for irrigation use because of high chloride content (DWR 1967). In the 1970s, high nitrate and TDS concentrations were listed as a cause for impairment for domestic use (DWR 1975). Groundwater analyzed in 1984 had nitrate concentrations ranging to 185 mg/L with a mean concentration of 69 mg/L, chloride concentrations ranging from 186 to 1,910 mg/L with a mean of 412 mg/L, and sulfate concentrations of 78 to 680 mg/L with a mean of 345 mg/L (DWR 1986).

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

[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: to 250 gal/min (DWR 1986)	Average: 300 gal/min (DWR 1975); 50 gal/min (DWR 1975)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	1

Basin Management

Groundwater management:

Water agencies

Public	Padre Dam Municipal Water District, San Diego County Water Authority.
Private	

References Cited

Izbicki, J. A. 1985. Evaluation of the Mission, Santee, and Tijuana Hydrologic Subareas for Reclaimed-Water Use, San Diego County, California. U.S. Geological Survey Water-Resources Investigations Report 85-4032. 99 p.

California Department of Water Resources (DWR). 1967. Ground Water Occurrence and Quality: San Diego Region. Bulletin No. 106-2. 235 p.

_____. 1975. California's Ground Water. Bulletin 118. 135 p.

_____. 1986. San Diego Region Ground Water Studies, Phase III. Southern District Memorandum Report. October 1986. 213 p.

Additional References

Ellis, A. J., and C. H. Lee. 1919. *Geology and ground waters of the western part of San Diego County, California.* U.S. Geological Survey Water Supply Paper 446. 321 p.

Errata

Substantive changes made to the basin description will be noted here.