

## Mil Potrero Groundwater Basin

- Groundwater Basin Number: 5-85
- County: Kern
- Surface Area: 2,300 acres (4 square miles)

### Basin Boundaries and Hydrology

Mil Potrero (one-thousand meadows in Spanish) is an irregularly shaped, east trending fault-controlled basin in southernmost Kern County. The basin is in the San Emigdio Mountains and within the Los Padres National Forest at an approximate elevation of 5,400 feet. It is bound to the north by the San Emigdio Mountains, to the south by Mount Pinos and Sawmill Mountain, and is drained by the west fork of San Emigdio Creek. Pine Mountain Club, composed of approximately 1,900 mountain residences, is the major development in the basin. Average annual precipitation ranges from 14 to 16 inches. Average precipitation from 1941 to 1968 has been reported at 15.5 inches (CM Engineering 1970) and at 16.4 inches from 1979 to 1999 (MPMWC 2000).

### Hydrogeologic Information

#### ***Water Bearing Formations***

The basin is composed of stream-derived alluvium and of mudflow debris, slope wash and colluvium shed from the adjacent steep valley walls. Basin fill thickness is estimated at approximately 250 to 400 feet based on drilling and geophysical data (CM Engineering, 1970). Bedrock consists of the Tertiary Caliente Formation wedged between the San Andreas Fault and granitic rocks along the north edge of the basin and the Abel Fault and Cretaceous(?) Pelona Schist which bound this unit to the south (Davis 1983).

The Caliente Formation consists of moderately indurated sandstone, conglomerate, siltstone and claystone. This unit has apparently been overthrust by the Pelona Schist along the Abel Fault (Davis 1983). The possible thrust component of fault movement may help explain the initial occurrence of artesian conditions in one of the community water supply wells (MPMWC 2000). The basin is otherwise assumed to be under unconfined conditions.

Well completion reports describe the sediments penetrated by community water supply wells as predominantly sandy clay with gravel and some cobbles/boulders. CM Engineering (1970) estimates average specific yield to be 12.5 percent based on analysis of well logs and cuttings. The average specific yield (based on aquifer testing) is estimated at 1 percent, characteristic of a slow-draining unconfined aquifer (Stoppelman 1999).

#### ***Recharge Areas***

Basin recharge is from direct precipitation over an approximate 8,800 acre watershed and from spring flows emanating from the south canyon walls (CM Engineering 1970). Over 1,900 septic systems contribute approximately 400 acre feet per year of recharge, based on standard effluent generation rates of 60 gpcd and 3.2 persons per residence.

### Groundwater Level Trends

Historical water level data is limited. However, during 1999, static water levels ranged from a depth of approximately 50 feet in the eastern basin to artesian conditions in 3 wells in the central basin (MPMWC 2000).

### Groundwater Budget (Type C)

There were not enough data to provide a complete estimate of the basin's budget because there were no data for subsurface inflow or outflow. Natural recharge is 2,700 AF and applied water recharge from approximately 1,900 septic systems is 400 AF (CM Eng. 1970). Annual urban extraction is 420 AF (MPMWC 2000). Total basin inflow and outflow is not determined.

### Groundwater Quality

The water is classified as having a general water chemistry of calcium bicarbonate. TDS values range from 372 mg/L to 657 mg/L, with an average value of 460 mg/L (based on 7 wells). EC values range from 592  $\mu$ mhos to 937  $\mu$ mhos, with an average value of 712  $\mu$ mhos (based on 7 wells). The water supply of Mil Potrero Mutual Water Company exceeds secondary drinking water standards for aluminum, iron, and manganese (MPMWC 2000).

### Water Quality in Public Supply Wells

Constituent Group <sup>1</sup>	Number of wells sampled <sup>2</sup>	Number of wells with a concentration above an MCL <sup>3</sup>
Inorganics – Primary	7	1
Radiological	6	0
Nitrates	7	0
Pesticides	6	0
VOCs and SVOCs	6	0
Inorganics – Secondary	7	5

<sup>1</sup> 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).

<sup>2</sup> Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

<sup>3</sup> 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: 80 – 3,200	Average: 240 ( 6 Supply wells)
Total depths (ft)		
Domestic		
Municipal/Irrigation	Range: 320-400	Average: 360 ( 7 Supply wells)

## Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Mil Potrero Mutual Water Co.	Groundwater levels	7 Weekly
Department of Health Services	Title 22 Water quality	7 Varies

## Basin Management

Groundwater management:	None
Water agencies	
Public	None
Private	Mil Potrero Mutual Water Co.

## References Cited

- California Department of Water Resources, San Joaquin District. Well completion report files.
- CM Engineering. 1970. *Interim Report, Water Availability for Mil Potrero Area*. Consultant Report, CM Engineering Associates. 19 p.
- Davis, Thomas L. 1983. "Late Cenozoic Structure and Tectonic History of the Western "Big Bend" of the San Andreas Fault and Adjacent San Emigdio Mountains". Ph.D. Dissertation, University of California, Santa Barbara. 564 p.
- Mil Potrero Mutual Water Company (MPMWC). 2000. District file data and personal communication with Mr. Lance Rosmaier, General Manager on 06/27/00.
- Stoppelman, Paul E. 1999. "Hydrogeology of an Aquifer in a Semi-Arid Mountainous Environment, Mil Potrero Area, Pine Mountain Club, Kern County, California". Master's Thesis, California State University, Fullerton.

## Additional References

- Geotechnical Consultants. 1987. *Hydrogeologic Assessment of the Mil Potrero Area, Kern County, California*. Consultant report, Geotechnical Consultants, Inc. 7 p.
- Jennings, Charles W. and Strand, Rudolph G. (compilers). 1969. Los Angeles Sheet of *Geologic Map of California*. California Division of Mines and Geology (CDMG). Scale 1:250,000.

## Errata

Changes made to the basin description will be noted here.