Langford Valley Groundwater Basin, Irwin Subbasin

- Groundwater Basin Number: 6-36.02
- County: San Bernardino
- Surface Area: 10,500 acres (16.4 square miles)

Basin Boundaries and Hydrology

The Irwin Subbasin is bounded on the north, west, and east sides by outcrop of low permeability crystalline rocks. A line of hills and an associated drainage divide separates the Irwin Subbasin from Langford Well Lake Subbasin to the south (Jennings and others 1962).

Occasionally surface runoff from surrounding highlands reaches the valley floor. Average annual precipitation of the subbasin ranges from 4 to 6 inches (DWR 1964).

Hydrogeologic Information

Water Bearing Formations

Quaternary alluvium, including unconsolidated younger alluvium and semi-consolidated older alluvium, forms the primary water-bearing unit within the Irwin Subbasin. The thickness of alluvium reaches 950 feet in the northern part of the subbasin (Mendez and Christensen 1997). The older alluvium comprises the more important water-bearing material in the subbasin because the younger alluvium is usually above the groundwater surface (Kunkel and Riley 1959). Groundwater in this subbasin is generally unconfined and the depth to groundwater ranges from 28 feet below land surface at the southeastern end of the subbasin to 263 feet in the northern subbasin (Bader 1969). Six wells drilled in the subbasin in the early 1940s indicated moderately permeable deposits that contained large quantities of water in storage. These wells range from 350 to 524 feet in depth and yield 115 to 550 gpm with little drawdown (Kunkel and Riley 1959).

Restrictive Structures

A steeply dipping hydraulic gradient in the southeastern part of the subbasin suggests that a structure, which restricts groundwater may be present (Mendez and Christensen 1997).

Recharge Areas

Recharge likely occurs chiefly by percolation through alluvial fans in the northern part of the subbasin (DWR 1964).

Groundwater Level Trends

Groundwater elevations declined about 30 feet in the central part of the subbasin from 1943 through 1994 (Mendez and Christensen 1997). A hydrograph from a well in the central part of the subbasin shows a water level rise of about 23 feet from 1993 to 1994. The water level in this well was unchanged in 1994 and 1995, then rose about 5 feet between 1996 and 1999. Water level elevations in the northern part of the subbasin rose about

10 feet between 1993 and 1999. On the east and south sides of the subbasin, changes in water level ranged from 2 to 4 feet between 1993 and 1996. A hydrograph for a well in the western part of the subbasin indicates that the water table declined by as much as 27 feet from 1951 through 1967 and recovered about 16 feet from 1967 through 1981. The water level in the same well fluctuated very little from 1993 through 1995. Groundwater elevations contoured by (Mendez and Christensen 1997) suggest that groundwater flows toward the center of the subbasin, whereas groundwater previously flowed southeastward to Langford Well Lake (DWR 1964; Bader 1969).

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity of Langford Valley Groundwater Basin is estimated to be about 760,000 af (DWR 1975). An estimate of the total storage capacity for the Irwin Subbasin is not available.

Groundwater Budget (Type C)

Groundwater budget information is not available.

Groundwater Quality

Characterization. Groundwater from the subbasin is generally characterized as sodium sulfate-bicarbonate water and has a TDS content ranging from 472 to 634 mg/L (DWR 1964). The average TDS content of 3 public supply wells in the subbasin is 528 mg/L and ranges from 496 to 598 mg/L.

Impairments. Groundwater sampled from the central subbasin has an iron concentration that ranges from 0.1 to 0.25 mg/L. Fluoride concentration in groundwater reaches as high as 10 mg/L.

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	5	0
Radiological	5	0
Nitrates	5	0
Pesticides	4	0
VOCs and SVOCs	4	0
Inorganics – Secondary	5	0

[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	115-550	
	Total depths (ft)	
Domestic		
Municipal/Irrigation	Range: 60-904	Average: 320 (29 wells, Mendez and Christensen 1997)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	40 wells
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	3 wells

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

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Errata

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