Redding Groundwater Basin, Rosewood Subbasin

- Groundwater Basin Number: 5-6.02
- County: Tehama
- Surface Area: 45,230 acres (71 square miles)

Basin Boundaries and Hydrology

The Rosewood Subbasin is comprised of the portion of the Redding Groundwater Basin bounded on the west and northwest by the Coast Ranges, on the north by North Fork Cottonwood Creek, and on the southeast by Salt Creek, Dry Creek, and Cottonwood Creek. Annual precipitation ranges from 25- to 29-inches.

Hydrogeologic Information

Water-Bearing Formations.

The Rosewood Subbasin aquifer system west of the Sacramento River is comprised of continental deposits of late Tertiary to Quaternary age. The Quaternary deposits include Holocene alluvium and Pleistocene Modesto and Riverbank formations. The Tertiary deposits include the Pliocene Tehama Formation. The following descriptions are from Helley and Harwood (1985) unless otherwise noted.

Holocene Alluvium. The alluvium consists of unconsolidated gravel, sand, silt and clay from stream channel and floodplain deposits. These deposits are found along stream and river channels. The thickness ranges up to 30 feet. This unit represents the perched water table and the upper part of the unconfined zone of the aquifer. Although the alluvium is moderately permeable, it is not a significant contributor to groundwater usage.

Pleistocene Modesto and Riverbank Formations. The Modesto and Riverbank formations consist of poorly consolidated gravel with some sand and silt deposited during the Pleistocene time. They are usually found as terrace deposits near the surface along the Sacramento River and its tributaries. Modesto Formation deposits are observed along parts of Cottonwood Creek. Riverbank Formation deposits are observed along all major creeks. The thickness ranges up to 50 feet. The deposits are moderately to highly permeable and yield limited domestic water supplies.

Pliocene Tehama Formation. The Tehama Formation consists of locally cemented silts, sand, gravel, and clay of fluviatile origin derived from the Klamath Mountains and Coast Ranges. The formation is the principal water-bearing formation in the subbasin and is exposed over approximately 80 percent of the subbasin surface area. Thickness of the deposits is unknown but may reach up to 500 feet, thinning to the west where the Great Valley Sequence daylights at the subbasin boundary (DWR 1964). The permeability of the formation is moderate to high with yields of 100- to 1,000-gpm.

Recharge Areas

Recharge to the principal aquifer formation is mostly by infiltration of streamflows at the margins of the subbasin. Infiltration of applied water and

streamflows, and direct infiltration of precipitation are the main sources of recharge into the alluvium (Pierce 1983).

Groundwater Level Trends

Review of the hydrographs for long-term comparison of spring-spring groundwater levels indicates a slight decline in groundwater levels associated with the 1976-77 and 1987-94 droughts, followed by a recovery to pre-drought conditions of the early 1970's and 1980's. Generally, groundwater levels have a seasonal fluctuation of approximately 5- to 10-feet for normal and dry years. Overall, there does not appear to be any increasing or decreasing trends in the groundwater levels.

Groundwater Storage

Groundwater Storage Capacity. The storage capacity for the entire Redding Basin is estimated to be 5.5 million acre-feet for 200 feet of saturated thickness over an area of approximately 510 square miles (Pierce 1983). Specific yield data for the Rosewood Subbasin aquifer system is not available to estimate storage capacity at the subbasin level.

Groundwater Budget (Type B)

Estimates of groundwater extraction are based on surveys conducted by the California Department of Water Resources during 1994 and 1995. Surveys included land use and sources of water. Estimates of groundwater extraction for agricultural and municipal/industrial uses are 680 and 990 acre-feet respectively. Deep percolation of applied water is estimated to be 1,200 acre-feet.

Groundwater Quality

Characterization. Groundwater in the subbasin is characterized as magnesium-calcium bicarbonate and calcium-magnesium bicarbonate type waters. Total dissolved solids concentrations range from 118- to 218-mg/L (DWR unpublished data).

Impairments. No impairments have been identified.

Well Characteristics

	Well yields (gal/min)	
Irrigation	No known data	
	Total depths (ft)	
Domestic	Range: 48 – 398	Average: 181 (447 Well Completion Reports)
Irrigation	Range: 65 – 565	Average: 311 (15 Well Completion Reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	4 wells semi-annually
	Miscellaneous Water Quality	0

Basin Management

Groundwater management:	Tehama County adopted a Countywide AB3030 plan in 1996. Tehama County adopted a groundwater management ordinance in 1994.
Water agencies	
Public	Anderson-Cottonwood ID; Igo-Ono Community Service District
Private	

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Errata

Changes made to the basin description will be noted here.