Sacramento Valley Groundwater Basin
Capay Valley Subbasin

- Groundwater Basin Number: 5-21.68
- County: Yolo
- Surface Area: 25,000 acres (39 square miles)

Basin Boundaries and Hydrology

The Capay Valley Subbasin, located within the Coastal Ranges in the western portion of Yolo County, is defined by depositional sediments within the northwest-southeast trending Capay Valley. The subbasin extends from the Yolo County boundary on the north end to the confluence of Salt Creek and Cache Creek on the south end. Structurally, the Capay Valley is a broad, elongated synclinal depression between the Blue Hills of the Vaca Mountains and the Rumsey Hills in the Coast Range Geomorphic Province (DWR 1961). Annual precipitation ranges from approximately 17-inches in the valley floor to approximately 25-inches at the ridge tops.

Hydrogeologic Information

Water Bearing Formations

Primary water bearing deposits within the Capay Valley subbasin include Recent stream channel deposits and the Tehama Formation, which is underlain by older non-freshwater bearing Cretaceous Marine Rocks (DWR 1978, Wagner and Bortugno, E.J. 1982).

Recent stream channel deposits consist of unconsolidated silt, fine- to medium-grained sand, gravel and occasionally cobbles deposited in and adjacent to Cache Creek and its tributaries. These deposits are moderately to highly permeable and range in thickness from approximately 0 to 150 feet (DWR 1978).

The **Tehama Formation** consists of moderately compacted silt, clay, and silty fine sand enclosing lenses of sand and gravel, silt and gravel, and cemented conglomerate. This formation can be seen outcropping along the edges of the Capay Valley, and in other places within the western Yolo, Colusa, and Solano Counties. The Tehama Formation within the Capay Valley is generally less than a few hundred feet thick, however is found in much greater thickness to the east in the Sacramento Valley. The permeability of the Tehama Formation is variable, but generally less than the overlying recent stream channel deposits units.

Cretaceous Marine Rocks make up the basement rock beneath the fresh water bearing deposits of the Capay Valley Subbasin. Consisting of consolidated sandstone and shale of marine origin, these basement rocks generally contain saline connate water and are not considered useable water bearing formations.

Recharge Areas

Recharge for the Capay Valley Subbasin comes primarily from Cache Creek. Additional recharge comes from surrounding minor tributaries, including

Bear Creek. Bear Creek is the source of waters high in boron, and has an influence on water quality within Cache Creek and on groundwater extracted from Cache Creek deposits within the Capay and Sacramento Valleys (DWR 1961).

Groundwater Level Trends

Groundwater levels within most the Capay Valley Subbasin vary from approximately 10 to 40 feet below ground surface and remain relatively stable, even through dry years. Wells located in the higher elevations along the edge of the valley show a greater variability, and appear to be more impacted by dry years (DWR WDL 2001).

Groundwater Storage

Groundwater Storage for the Capay Valley region was calculated in DWR Bulletin 90 (1961) based on estimated specific yield values for three discrete intervals between the depths of 20 to 200 feet. It was estimated that the Groundwater Storage Capacity of the Capay Valley is approximately 99,800 acre-feet. It can be assumed that the **Groundwater in Storage** for the Capay Valley is roughly equal to the groundwater storage capacity, since water levels tend to remain at relatively shallow depths (see groundwater level trends, above).

Groundwater Budget (Type C)

The DWR Bulletin 90 (1961) provides estimates for the "safe yield of the presently developed water supply" for the Clear Lake-Cache Creek watershed for a six-year period between 1953 and 1959. Specific hydrologic data for the Capay Valley was lacking in this Bulletin, however it was estimated that the average annual safe yield for the Capay Valley over the 6-year study period was 7,300 acre-feet based on the average annual groundwater draft.

Groundwater Quality

Characterization. Groundwater quality within the Capay Valley Subbasin is derived almost exclusively from Cache Creek and its tributaries. Consequently, water quality samples taken from Cache Creek within the Capay Valley reflect the quality of the water within the groundwater basin. Water samples taken from a diversion dam near the lower end of the Capay Valley indicate principally good quality calcium-sodium bicarbonate-type with moderate to very high hardness. Highly mineralized water from Bear Creek and North Fork Cache Creek is a primary source of mineral constituents, especially Boron, in groundwater in the Capay Valley Subbasin (DWR 1961). Total dissolved solids measured in water taken from 6 wells in the Capay Valley ranges from approximately 300 to 500 ppm, and is comparable to that found in water samples taken from Cache Creek (EPA 2001, DWR 1961).

Impairments. Moderate to high levels of boron (1 to over 5 ppm) degrades the quality of water in Cache Creek. Boron levels of over 0.5 ppm are potentially harmful to boron sensitive crops, while levels higher than 2.0 ppm are potentially injurious to crops (DWR 1961).

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 150 – 1500 (approximate)	Average: 660 (DWR 1961)
	Total depths (ft)	
Domestic	Range: approx. 45 to 360 feet	Average: approx. 215 feet
Municipal/Irrigation	Range: approx. 50 to 560 feet	Average: approx. 220 feet

Total depths of completed wells (from DWR Well Master Database 2001)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
YCFC&WCD	Groundwater Levels	11 semi-annually
Department of Health Services and cooperators	Title 22 water quality	3 semi-annually

Basin Management

Groundwater management:	Yolo County Flood Control and Water Conservation District are drafting plan but not pursuant to AB3030
Water agencies	
Public	Yolo County Flood Control and Water Conservation District
Private	n/a

Cited References

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Errata

Changes made to the basin description will be noted here.