Santa Rosa Valley, Rincon Valley Subbasin

- Groundwater Basin Number: 1-55.03
- County: Sonoma
- Surface Area: 5,600 acres (9 square miles)

Basin Boundaries and Hydrology

The Santa Rosa Valley occupies a northwest-trending structural depression in the southern part of the Coast Ranges of northern California, which divides the Mendocino Range on the west from the Mayacmas and Sonoma Mountains on the east. Rincon Valley occupies a portion of a small north to northwest-trending structural trough located east of the larger Santa Rosa Valley and the City of Santa Rosa. This valley is approximately 7 miles long along its eastern edge and varies in width from about 0.5 miles to 2.5 miles.

The majority of the valley is bounded by the Napa-Sonoma Volcanic Highlands with two exceptions. On the southeast side, Rincon valley is separated from Kenwood Valley subbasin by Santa Rosa Creek and on the southwest side, Rincon Valley is separated from the Santa Rosa Plain by a narrow constriction formed in bedrock of the Sonoma Volcanics.

Rincon Valley drains to the south through Brush Creek, a small intermittent stream, which is a tributary of Santa Rosa Creek. Precipitation in Rincon Valley ranges from about 32 inches in the south to over 40 inches in the north-northeast.

Hydrogeologic Information

Water Bearing Formations

The primary water-bearing units in the Rincon Valley are Alluvium and the Glen Ellen Formation.

Alluvium. Alluvial deposits are present over a significant proportion of Rincon Valley. These deposits consist of poorly sorted coarse sand and gravel, and moderately sorted fine sand, silt, and clay, and have a specific yield of 8 to 17 percent (DWR 1982). The older alluvial deposits are Late Pleistocene in age, are sometimes disected, and have a maximum exposed thickness of 100 feet in the Santa Rosa Valley (Cardwell 1958). The younger alluvium is a thin veneer over the old, ranging from 30 to 100 feet thick, and is Late Pleistocene to Holocene in age. The deposits are not perennially saturated, have low permeability, and are generally unconfined or slightly confined (Cardwell 1958). The water quality is generally good for most uses, and the unit yields water to some wells in the downstream part of the Rincon Valley (Cardwell 1958).

Glen Ellen Formation. The Glen Ellen Formation provides the major water source in the Rincon Valley subbasin, and is connected to the principal groundwater body in the Santa Rosa Valley (Cardwell 1958). The Glen Ellen consists of partially cemented beds and lenses of poorly sorted gravel, sand, silt, and clay that vary widely in thickness and extent (Cardwell 1958; DWR 1982). This continental deposit is Pliocene (?) to Pleistocene age, and

was deposited in structural troughs so it varies in thickness from 3,000 feet to less than 1,500 feet on the west side of the Santa Rosa Valley (Cardwell 1958). In the southeast part of the Rincon valley, confined conditions exist and some wells are flowing (Cardwell 1958). Since the unit crops out in favorable areas and has moderate permeability (HLA 1978), recharge may occur fairly quickly, but it can be inhibited in areas of well-developed soils with hardpan (Cardwell 1958). Average specific yield for the Glen Ellen Formation is 3 to 7 percent (DWR 1982). This formation is tapped for domestic use (Cardwell 1958).

Groundwater Level Trends

Review of water level data from representative wells within Rincon Valley indicate that water levels have remained relatively stable during the period of 1951 to 2000 and that the subbasin is nearly full (DWR 1975; DWR unpublished data). One well located in the southeast part of the subbasin near Santa Rosa Creek has shown a gradual increase in water level of over 20 feet between 1990 and 2000 (DWR unpublished data).

Groundwater Storage

Groundwater Storage Capacity. An estimate of the gross groundwater storage capacity for the Rincon Valley of 21,000 af was obtained by the USGS using an average specific yield of 5.5 percent for an estimated 190 feet of primary water-bearing materials (Cardwell 1958). An estimate of the total groundwater storage capacity of 45,000 af was calculated for a large portion of the Rincon Valley subbasin and a smaller portion of the Kenwood Valley subbasin (DWR 1965). This estimate was based on the alluvium from a depth of 10 to 200 feet and an average specific yield of 5.5 percent. The depth range used for this estimate probably includes a portion of the Glen Ellen Formation. Bulletin 118-4 provided an estimate of the gross storage capacity for the Rincon Valley subbasin of 290,000 af (DWR 1975). This estimate was obtained using the GEOLOG program and an average specific yield of 6.83 percent; however, this value cannot be construed to be the usable groundwater storage capacity.

Groundwater in Storage. An estimate of the groundwater in storage during the spring of 1980 of approximately 43,000 af was obtained using data from Bulletin 118-4 Volume 2 (DWR 1982). This estimate was obtained for an area less than that of the currently defined Rincon Valley subbasin.

Groundwater Budget (Type C)

There is not enough data available in order to estimate a groundwater budget.

Groundwater Quality

Characterization. The Rincon Valley subbasin is generally characterized by a calcium-bicarbonate water type (DWR 1975). A localized area of sodium and/or magnesium chloride water is present in the southwest portion of the subbasin. In the southern portions of the subbasin, groundwater hardness ranges from about 100 to 200 mg/L (DWR 1975).

Impairments. In the southwest portion of the subbasin near the boundary with the Santa Rosa Plain, an area of elevated iron, manganese, and boron was reported (DWR 1975).

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	12	0
Radiological	9	0
Nitrates	14	0
Pesticides	11	0
VOCs and SVOCs	10	0
Inorganics – Secondary	12	5

[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: –	Average: (based on ___wells)
	Total depths (ft)	
Domestic	Range: 85 to 500	Average: 231 (based on 8 wells)
Municipal/Irrigation	N/A	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	2 wells/semi-annually
DWR (incl. Cooperators)	Mineral, nutrient, & minor element.	None known
Department of Health Services	Coliform, nitrates, mineral, organic chemicals, and radiological.	12 wells as required in Title 22, Calif. Code of Regulations

Basin Management

Groundwater management:	No groundwater management plans identified.
Water agencies	
Public	Sonoma County Water Agency
Private	

References Cited

Cardwell, G.T., 1958. Geology and Ground Water in the Santa Rosa and Petaluma Valley Areas, Sonoma County, California. USGS Water Supply Paper 1427.

California Department of Water Resources (DWR). 1965. Water Resources and Future Water Requirements. North Coast Hydrographic Region. Volume 1: Southern Region. DWR Bulletin 142-1.

_____. 1975. Evaluation of Ground Water Resources: Sonoma County. Volume 1: Geologic and Hydrologic Data. DWR Bulletin 118-4.

_____. 1982. Evaluation of Ground Water Resources - Sonoma County. Volume 2: Santa Rosa Plain. DWR Bulletin 118-4.

Additional References

Harding-Lawson Associates 1978. Evaluation of Alternatives for Recharge of the Santa Rosa Plain Ground-Water Basin. March 1978.

Errata

Changes made to the basin description will be noted here.