

Ygnacio Valley Groundwater Basin

- Groundwater Basin Number: 2-6
- County: Contra Costa
- Surface Area: 15,900 acres (25 square miles)

Basin Boundaries and Hydrology

The Ygnacio Valley Groundwater Basin is in northern Contra Costa County along the south shore of Suisun Bay. The basin is about 30 miles northeast of San Francisco. It is bounded by Suisun Bay on the north, by Highway 680 and Taylor Road on the west, by the Concord Fault, which separates this basin from the Clayton Valley Groundwater Basin, on the east, and by the City of Walnut Creek on the south. The Contra Costa Canal, and the cities of Pleasant Hill and Walnut Creek overlie the basin. Walnut and Grayson Creeks flow through the basin before draining into Pacheco Creek and then into the Suisun Bay. The Mokelumne Aqueduct also passes through the basin.

The topography of the area consists of gentle sloping lowlands ranging in elevation from sea level to 200 feet. The floor of the valley slopes gently to the northwest. Average annual precipitation in the basin ranges from 17 to 21 inches increasing from east to west.

Hydrogeologic Information

Water Bearing Formations

The Ygnacio Valley Basin occupies a structural depression between the Berkeley Hills and the Mt. Diablo Range. Thick alluvial deposits that cover a faulted and folded complex of consolidated Cretaceous and Tertiary rocks underlie the basin. The water bearing units in the basin are Quaternary Alluvium and Alluvial valley fill deposits. The combined thickness of these deposits exceeds 700 feet. Aquifers in the basin area are hydrologically connected to the Sacramento River (DWR 1975). There are limited data regarding the occurrence and movement of groundwater in the basin.

Quaternary Alluvium. Unconsolidated Quaternary alluvium and semi-consolidated Tertiary-Quaternary deposits with interbedded lenses of clays, sands, and gravels contain the main groundwater supply. These deposits can be found throughout the southern portion of the basin (DWR 1959).

Alluvium. Modern alluvial sediments are located along the Suisun Bay shoreline of the basin. These sediments are characterised by soft, water-saturated muds, peat and loose sands (CCCPD 1975). They become progressively finer toward the bay. These Recent surface deposits originated from stream deposition.

Groundwater Level Trends

Hydrographs created from DWR well data in the Ygnacio Valley Groundwater Basin indicate that groundwater levels have declined gradually over the period of record. The depth to groundwater is generally greatest in summer months and shallowest in winter months. The 1976 - 1977 and 1987- 1992 drought periods showed groundwater levels dropped and

subsequently recovered. Groundwater elevations in the examined wells are considered to be suggestive of relative changes in groundwater levels within the basin.

Groundwater Storage

Groundwater Storage Capacity. No published groundwater storage capacity data for the basin was found.

Groundwater in Storage. No published groundwater in storage data for the basin was found.

Groundwater Budget (Type C)

Due to lack of groundwater budget data, inflows, including natural, applied, and artificial recharge and outflows including urban and agricultural extraction have not been included.

Groundwater Quality

Characterization. No published groundwater quality data for the basin was found, although DWR examined sea-water intrusion in Bulletin 63-5.

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	0	0
Radiological	1	0
Nitrates	1	0
Pesticides	0	0
VOCs and SVOCs	0	0
Inorganics – Secondary	0	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		Average: 200 (DWR 1959)
Total depths (ft)		
Domestic	Range: 60 - 400	Average: 194 (based on 11 wells)
Municipal/Irrigation	Range: 35 –330	Average: 155 (based on 17 wells)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	2 well semi annual
Department of Health Services and cooperators	Miscellaneous water quality	Unknown wells are monitored at this time
	Title 22 water quality	Unknown wells are monitored at this time

Basin Management

Groundwater management:	None identified
Water agencies	
Public	City of Martinez Sanitary Agency, Contra Costa Water District, Central Contra Costa Sanitary District, Diablo Vista Water System, East Bay Municipal Utility District
Private	

References Cited

- California Department of Water Resources, Bulletin No. 118-80, Ground Water Basins in California, January 1980.
- California Department of Water Resources, Bulletin No. 130-72, Volume II Northeastern California, December 1973.
- California Department of Water Resources, Bulletin No. 63-5, Sea-Water Intrusion in California, October 1975.
- California Department of Water Resources, Bulletin No. 77-58, Ground Water Conditions in Central and Northern California 1957-58, October 1959.
- Contra Costa County Planning Department, Seismic Safety Element, being a part of the Contra Costa County General Plan, December 1975.
- Jennings, O.P. 1973, Geologic map of California: California Division of Mines and Geology, Geologic Map Series, San Francisco Sheet, scale 1:250,000.
- Jennings, O.P. 1973, Geologic map of California: California Division of Mines and Geology, Geologic Map Series, Santa Rosa Sheet, scale 1:250,000.
- Oakeshott, G.O. 1973, Geologic map of Contra Costa County: California Division of Mines, Journal Vol. 54, No. 4, Plate 5.

Errata

Changes made to the basin description will be noted here.