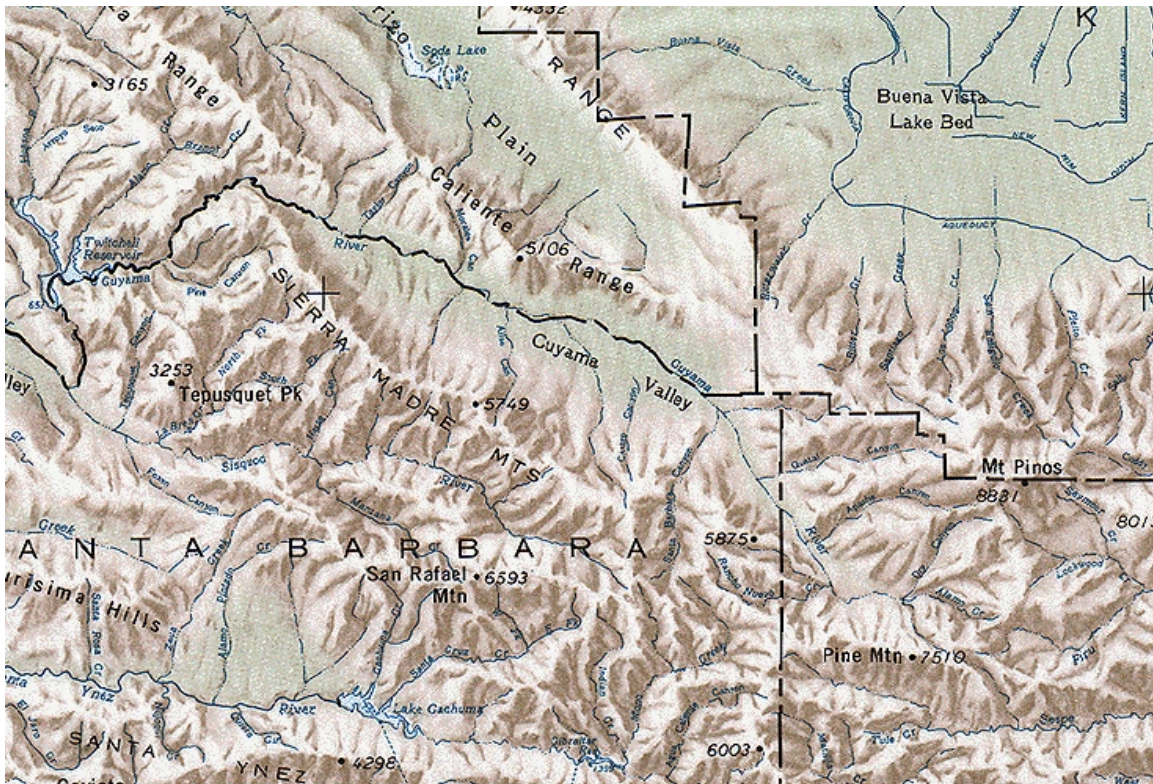


Cuyama Groundwater Basin

Physical Description

The Cuyama Groundwater Basin is comprised of unconsolidated sands and gravels that fill a 225 square-mile intermountain topographic depression named the Cuyama Valley. This northwest-southeast trending valley lies about 35 miles north of the City of Santa Barbara between the Sierra Madre Mountains on the south and the Caliente Mountain Range on the north. The basin extends east into Ventura County as well as north and east into San Luis Obispo and Kern Counties. Elevation within the groundwater basin varies between approximately 1970' and 3100' above sea level. Average rainfall ranges from about 24 inches per year at the crest of the Sierra Madre Mountains to as little as 8 inches per year in the central part of the basin.



Printed from TOPO! ©1997 Wildflower Productions (www.topo.com)

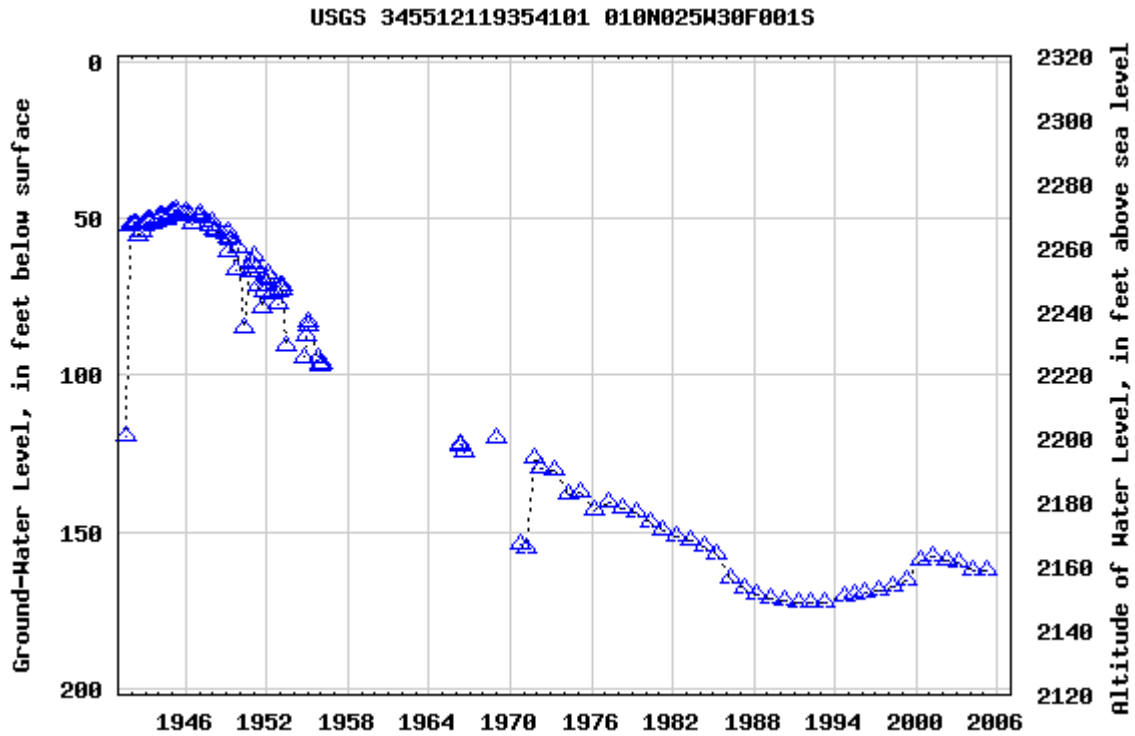
History and Analyses

Agricultural water use began in 1938 and has since progressively increased. The constant cycling and evaporation of irrigation water has resulted in decreasing water quality. Groundwater within the basin makes up 100 percent of water supply for Cuyama Valley agriculture, petroleum operations, businesses, homes and farmsteads. Agriculture accounts for over 95 percent of the water use within the Valley.

The supply/demand status of this basin was updated in a 1992 study (Baca et al., 1992) prepared by the County. Available Storage in this basin is estimated to be 1,500,000 AF. Safe Yield has been estimated to be 10,667 AFY (gross) and 8,000 AFY (net). The gross demand on the Cuyama Valley Groundwater Basin has been estimated to be

48,700 AFY, with a net demand of about 36,525 AFY. The overdraft is therefore in excess of 28,000 AFY. Water level declines since the 1940's in excess of 100 feet are not unusual in many parts of the basin. According to the Cachuma Resource Conservation District (CRCD) irrigated acreage within the basin is about 30,000 and thus previous estimates of the gross water demand may be low.

Hydrograph from the Center Part of the Basin, State Well ID 10N/25W-30F1



From this hydrograph it is evident that water levels in the center part of the Basin are around 100' lower than before the development of agriculture in the area. The extremely wet 1990's appear to have stabilized the progressive drop but as the 2nd wettest period of climate on record dating back to the late 1800's but one cannot expect that trend to continue and indeed after 2 dry years and 1 slightly above average year the downward trend has again re-appeared.

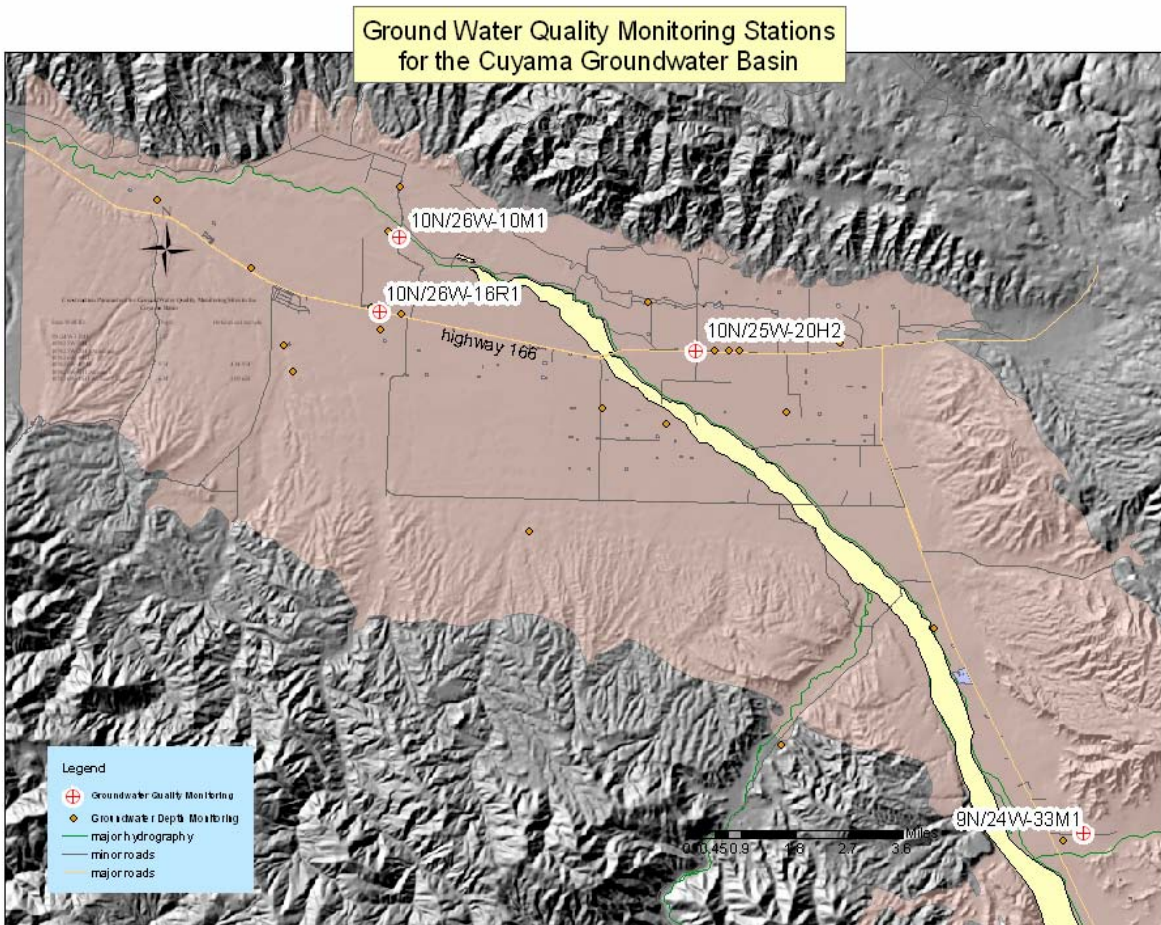
Water Quality

The water quality in the Cuyama Basin ranges from hard to very hard and is predominantly of the calcium and magnesium-sulfate type (Upson and Worts, 1948), in great part due to the abundance of gypsum as a source material in the middle and upper parts of the watershed. Water quality generally deteriorates towards the west end of the basin, where the sediments thin. Towards the northeast end of the basin at extreme depth is poor quality water, perhaps connate from rocks of marine origin. Although groundwater in the Cuyama Valley is only of fair chemical quality, it has been used successfully to irrigate most crops. Presumably this has been possible because the sodium content of most of the water is relatively low and the soils are quite permeable (Singer and Swarzenski, 1970).

Construction Parameters for Ground Water Quality Monitoring Sites in the Cuyama Basin

<u>State Well ID</u>	<u>Depth</u>	<u>Perforation Intervals</u>
9N/24W-33M1*	233'	
10N/25W-20H2*		
10N/25W-20H3 Alternate*		
10N/26W-16R1*		
10N/26W-10M1	974'	434-974'
10N/26W-9H1 Alternate*		
10N/26W-15B1 Alternate #2	634'	200-628'

*To date the USGS has not been able to supply depth and perforation interval information for these sites



Aerial View of the Cuyama Groundwater Basin from May 2000



