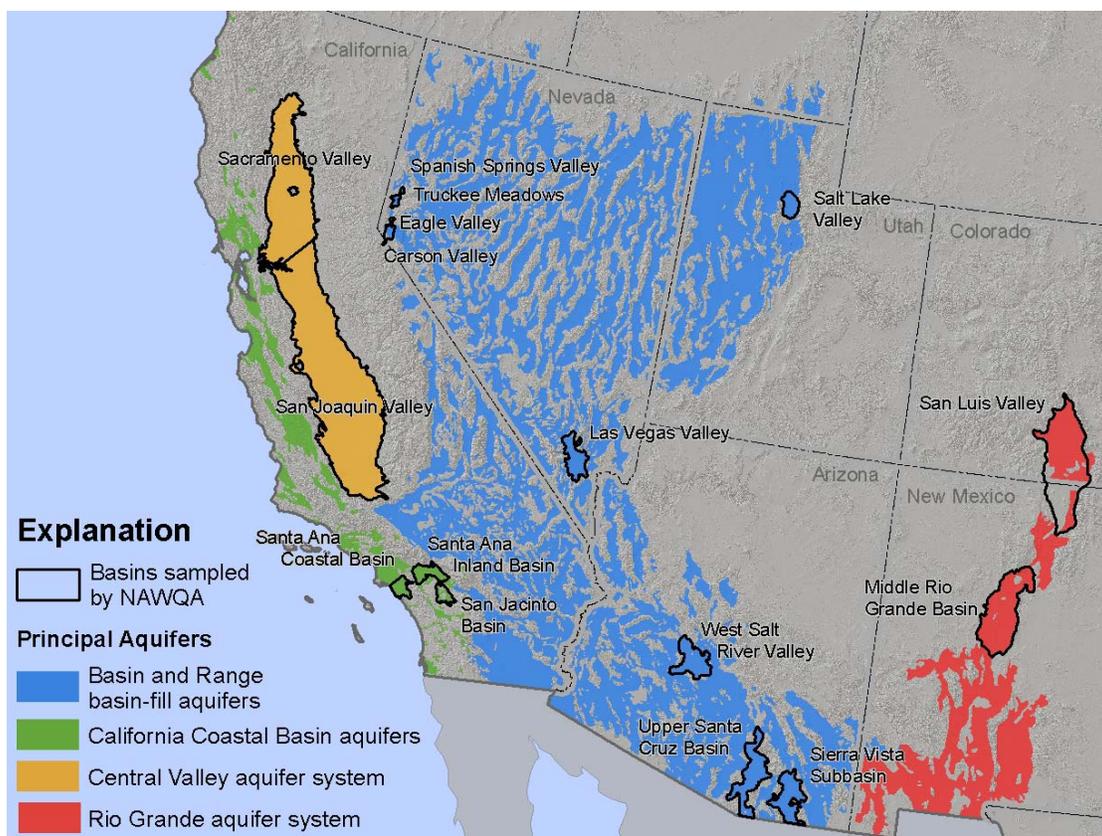


Regional Assessment of Ground-Water Quality in the Basin and Range, Rio Grande, Coastal Basins, and Central Valley Aquifer Systems of the Southwestern United States

Aquifers are an important source of ground water for many cities and agricultural communities in the arid and semiarid southwestern United States. The quality of this ground water is of concern because of the general scarcity of renewable water supplies in the region. To address this concern, the National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is conducting a regional analysis of water quality in the principal aquifer systems (U.S. Geological Survey, 2003) in the Southwest: the **Basin and Range basin-fill aquifers** in Nevada, Utah, and Arizona; the **Rio Grande aquifer system** in New Mexico and Colorado; and the **Coastal Basin aquifers** and the **Central Valley aquifer system** in California. These principal aquifers consist primarily of unconsolidated basin-fill deposits with similar land- and water-use practices, and water-quality issues. Withdrawals from these aquifers accounted for about one-third of ground water used for irrigation in the United States in 2000 (Maupin and Barber, 2005). More than 36 million people live above these aquifers, and almost one-half of the water used for public supply in the region is ground water. Information collected by the NAWQA Program on natural contaminants in ground water, such as dissolved solids (salinity) and arsenic, and contaminants related to human activities, such as nitrate and pesticides, is available for many basins in the Southwest (see map).



Topics studied in the Southwest region

- **Salinity in ground and surface water** – What are the sources and sinks of dissolved solids in water, and are concentrations changing over time?
Report and findings are available at <http://water.usgs.gov/nawqa/studies/mrb/salinity.html>
- **Land-use effects on shallow ground water** – How do differences in land use, chemical use, irrigation, and other land-management practices help explain differences in the occurrence and distribution of selected constituents?
Report is available at <http://pubs.usgs.gov/sir/2007/5179>
- **Factors affecting water quality in basin-fill aquifers used for drinking-water supply** – What natural factors, such as geology and climate, or human factors, such as land and water use, influence selected constituents in ground water used for drinking?
Study in progress
- **Statistical models of factors that influence the vulnerability of aquifers to contamination** – How can we quantify natural and human factors that affect the distribution of a constituent, such as nitrate in ground water, and assess where changes in water quality are likely to occur? *Study in progress*

The purpose of the regional assessment is to provide a better understanding of the hydrology of ground-water systems in the region and how water quality is affected by natural and human factors. Increased understanding of natural and human factors affecting ground-water quality will help managers, scientists, and policy makers to better anticipate conditions; implement cost-effective water-development and protection strategies; and prioritize data-collection and assessments.



Spanish Springs Valley, Nevada – A typical basin-fill aquifer setting in the southwestern United States.

References Cited

- Maupin, M. A., Barber, N. L., 2005, Estimated withdrawals from principal aquifers in the United States, 2000: U.S. Geological Survey Circular 1279, 52 p. Available online at <http://pubs.usgs.gov/circ/2005/1279/>
- U.S. Geological Survey, 2003, Principal aquifers, *in* National Atlas of the United States of America. Available online at <http://nationalatlas.gov/mld/aquifrp.html>

For additional information about the regional assessment of water quality in the principal aquifers in the Southwest, contact:

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For online information on the principal aquifers in the southwestern United States:
<http://water.usgs.gov/nawqa/studies/praq/swpa>

This site has links to reports describing the basins studied by NAWQA in the region and to the water-quality data collected by the program.