

Fact Sheet: Groundwater Supply

An essential task in regional water planning is to identify what the region's available water supply is. To that end, the Socorro-Sierra regional water planning activities have examined existing information from a variety of governmental agencies, academic researchers, and business and government consultants to determine the occurrence of groundwater in the region. Because other ongoing studies are investigating the surface water and groundwater supply in the Rio Grande Valley, the Socorro-Sierra planning activities have focused on U.S. Geological Survey-defined groundwater basins that are minimally or not at all hydraulically connected with surface water in the Rio Grande.

The presence of water resources does not necessarily mean that they are available for development, nor that they are of high enough quality to be useful as a water supply. This study touched very generally on water quality issues that may affect the viability of the supply, but has not addressed the cost or feasibility of developing the groundwater resources, which may be limited by water rights, land access, economic or political feasibility, environmental issues, or other concerns. Additional feasibility and water quality studies will need to be conducted as part of the alternative selection portion of regional water planning.

Four groundwater basins (San Agustin, Alamosa Creek, Jornada del Muerto, and Tularosa) within the Socorro-Sierra planning region are outside the study area of other investigations and were therefore characterized in detail. These basins were chosen because of their separation from the Rio Grande. Each of the basins contains several distinct saturated regions (i.e., aquifers).

The *San Agustin Basin* is a topographically closed basin (i.e., it is not hydraulically connected to any other groundwater basins) located in Socorro and Catron Counties. Approximately 460 square miles of its 2,000-square-mile area are located within the planning region. Although water levels fluctuate within the basin, it is not exhibiting steady depletion as is seen elsewhere in New Mexico. In addition, the water quality is generally good, with only isolated areas of inferior water quality in the planning region. Thus the San Agustin Basin offers a potentially significant supply of potable water.

A little more than 300 square miles of the *Alamosa Creek Basin*'s 400 square miles lie within the west-central portion of the planning region, mostly in Socorro County. This relatively small basin may

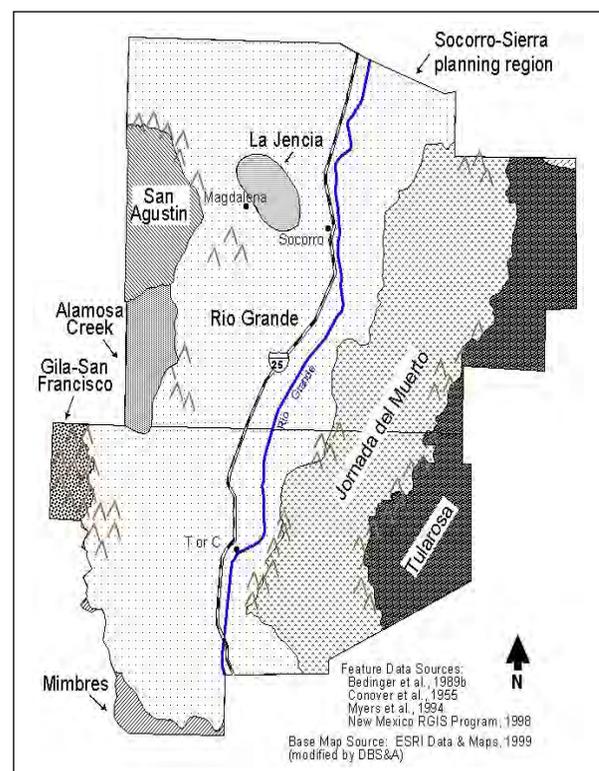


Figure 1. Major USGS-Defined Groundwater Basins in the Planning Region

provide a minor supplemental supply of potable water to the planning region. It has not been extensively studied, though, and no recent data are available.

Most of the approximately 2,700-square-mile **Jornada del Muerto Basin** falls within the eastern portions of Socorro and Sierra Counties. This basin contains significant quantities of groundwater; however, much of the groundwater from this basin is of poor quality and would require treatment to be suitable for most uses. Some potable water can be found in isolated areas that are recharged by runoff from precipitation.

The **Tularosa Basin**'s total area is 6,500 square miles, but only two quadrants of the northern portion of the basin, about 950 square miles of total area, lie within the Socorro-Sierra planning region (roughly half in each county). This basin contains small amounts of potentially developable fresh water, primarily in alluvial fans located at the bases of the highland margins of the basin.

Rates of recharge (i.e., water from precipitation and other sources that infiltrates to the subsurface) to the groundwater basins in the Socorro-Sierra water planning region were estimated using two different approaches based on the findings of various studies of natural areal groundwater recharge in arid and semiarid environments. The calculated recharge rates range from approximately 2,000 (in

the Alamosa Creek Basin) to 45,000 (Jornada del Muerto) acre-feet per year with a total recharge rate for the four basins of 77,624 acre-feet per year.

The quantity of the groundwater resources stored in the four basins was also estimated, based on the areas of the basin aquifers reported in the literature and the types of materials found in the basins. Minimum and maximum estimated amounts of groundwater storage ranged from a low of 0.5 million to 3 million acre-feet in the Alamosa Creek Basin to a high of 34 million to 87 million acre-feet in the Jornada del Muerto. The estimated total quantity of groundwater resources stored in the four basins is approximately 50 million to 67 million acre-feet.

Although the quantity of the available water in storage is abundant, the quality of much of that water limits its usability. Most of the potable groundwater in the planning region is found in shallow aquifers of the four basins considered. For the Alamosa Creek and eastern San Agustin Basins, the quality of this shallow groundwater is generally good. To a certain extent in Jornada del Muerto and to a much larger degree in the Tularosa Basin, however, the shallow groundwater is of inferior quality. On the other hand, alluvial fans on the eastern flanks of the San Andres Mountains in the Tularosa Basin may contain some freshwater resources of much higher quality.



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