

# Southwest New Mexico Regional Water Plan

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4. Legal and Water Rights Issues Related to Southwest New Mexico Water Planning Region.....	
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4.1.1 New Mexico Water Law.....	
<i>Will include provisions for mine dewatering, descriptions of completed adjudications, and water rights administration specific to basins within the region.</i>	
4.1.2 Federal Water Law and Other Federal Issues Impacting Water Use.....	
<i>Will discuss relevance of the following:</i>	
<ul style="list-style-type: none"><li>• <i>Arizona v. California (1964)</i></li><li>• <i>Globe Equity Decree</i></li><li>• <i>Apportionment of Gila/San Francisco/San Simeon</i></li><li>• <i>Colorado River Basin Project</i></li><li>• <i>Gila Wilderness and other federal enclaves</i></li><li>• <i>Endangered Species (spike base minnow, loach minnow, Gila chubb)</i></li></ul>	
4.1.3 Water Quality Law.....	
<i>Will include a discussion of state and federal laws.</i>	
4.1.4 Municipal Regulation of Water Use.....	
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<i>Electronic data available from weather stations in the region will be summarized in a table (name of the station, location, elevation, data available, and the period of record). The stations with a long period of record for temperature and precipitation are highlighted in the attached table. Data for the Fort Bayard station from 1868 to 1970 (Trauger, 1972) will be added to the electronic data to provide a long-term summary of precipitation.</i>	
5.1.1 Temperature .....	
<i>Will include a summary table for the stations with the longest periods of record (see attached table) that indicates annual maximum, minimum, and average temperatures.</i>	
5.1.2 Precipitation.....	
<i>Will include a table with the period of record, mean, median, and standard deviation and maximum and minimum precipitation for the stations highlighted in the attached table. A map showing the average annual precipitation for the region will be included. Time series graphs of precipitation will be provided along with the Pacific Decadal Oscillation Index and the Palmer Drought Severity Index for the following stations:</i>	
<ul style="list-style-type: none"><li>• Lordsburg 4 SE</li><li>• Columbus</li><li>• Fort Bayard</li><li>• Beaverhead Ranger Station</li><li>• Quemado</li><li>• Reserve Ranger Station</li></ul>	
<i>A table or graph of mean monthly snowfall will be presented for these six stations and for the following SNOTEL sites:</i>	
<ul style="list-style-type: none"><li>• Signal Peak</li><li>• Silver Creek Divide</li><li>• Lookout Mountain</li><li>• Frisco Divide</li></ul>	
<i>A brief discussion of historical droughts will be included in this section.</i>	
5.1.3 Evaporation and Evapotranspiration .....	
<i>A table will summarize available evaporation data for the following stations:</i>	
<ul style="list-style-type: none"><li>• Animas</li><li>• Cloverdale</li><li>• Florida</li><li>• Reserve Ranger Station</li></ul>	
5.2 Surface Water Supply	
<i>Discussion of major streams, which include:</i>	
<ul style="list-style-type: none"><li>• Gila River (Grant County, small portion in Catron and Hidalgo Counties)</li><li>• San Francisco River (Catron County)</li><li>• Mimbres River (Grant and Luna Counties)</li></ul>	
5.2.1 Streams and Rivers .....	

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*A map of the major streams, drainage basin boundaries, and gaging stations will be provided by WWRI. A table will be prepared for 12 gaging stations with 10 or more years of record (station number, name, period of record; minimum, maximum, mean, median, and standard deviation of annual and daily flows in cubic feet per second). The probability of exceedances for average annual flows at these gaging stations will be calculated. The average monthly flow at each station will also be estimated for these stations. Gaging stations with more than 10 years of record are:*

- 09442680 San Francisco River near Reserve
- 09442692 Tularosa River above Aragon
- 09443000 San Francisco River near Alma
- 09444000 San Francisco River near Glenwood
- 08477000 Mimbres River near Mimbres
- 08477110 Mimbres River at Mimbres
- 08477600 San Vicente Arroyo at Silver City
- 09430500 Gila River near Gila
- 09430600 Mogollon Creek near Cliff
- 09431500 Gila River near Redrock
- 09432000 Gila River below Blue Creek near Virden
- 08477500 Mimbres River near Faywood

*The floods of 1895 and 1902 are not recorded at U.S. Geological Survey (USGS) gaging stations, but their impact will be discussed in the text of the report. For ungaged streams, the results of modeling performed by RTI (1991) in the Southwest Regional Water Plan (Appendix C2) will be discussed.*

5.2.2 Reservoirs and Lakes.....

*Major dams and associated reservoirs in the planning region will be shown on a map (provided by New Mexico Water Resources Research Institute [WRRRI]) and their characteristics summarized in a table. The table will include the name, location, primary purpose, owner and/or operator, capacity, surface area at spillway elevation, average surface area, gross evaporation rate, rainfall, and net evaporation rate from OSE reservoir tables as well as information from previous water planning studies. If available, the date completed, minimum pool requirements, average storage, normal date of earliest and latest releases, average releases per year, loss of usable capacity per year due to sedimentation, projected capacity estimated at one or five year intervals, firm yield of reservoir per year at one or five year intervals, and a description of problems or requirements affecting operation will also be included in the table. Data from RTI (1991; Table 10.1 and Fig 4.6) will be used to augment information from Wilson (2003). Reservoirs in the region include:*

- Quemado Lake
- Snow Lake
- Wall Lake
- King Reservoir
- Bill Evans Dam
- Lake Roberts-Sapillo Creek
- Bear Canyon Reservoir

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5.2.3	Irrigated Agriculture ..... <i>The estimated irrigated acreage within the region will be summarized by county using information from Wilson and Lucero (2003). Diversion quantities, depletions, return flows, and acres irrigated will be included in this table. A LANDSAT image map of irrigated acreage will be provided if available.</i>
5.3	Groundwater Supply.....
5.3.1	Regional Hydrogeology ..... <i>A geologic map will be prepared by WRRRI and a description of the hydrogeology will be included. Existing cross sections of the geology for the Mimbres Basin, Animas and Playas Valleys, and Gila Basin (from published reports) will also be included. A summary of previous investigations will be included.</i>
5.3.2	Groundwater Basins..... <i>Will include a brief summary of each of the following declared groundwater basins:</i> <ul style="list-style-type: none"><li>• Gallup</li><li>• Rio Grande</li><li>• Gila-San Francisco</li><li>• Mimbres</li><li>• Virden Valley</li><li>• Nutt-Hockett</li><li>• Lordsburg</li><li>• San Simon</li><li>• Animas</li><li>• Playas Valley</li></ul>
5.3.3	Aquifer Characteristics ..... <i>Will describe the hydraulic conductivity, transmissivity, and storage coefficients of aquifers in the region. A table will summarize the aquifer parameters (derived from RTI, 1991, Table 4.2 with updates and revisions based on Hansen et al., 1994; Johnson 2000; Basabilvazo 1997; WRRRI et al., 2000; and Myers et al., 1994). The table will include parameters derived from aquifer pump test data (compiled from Hansen, et al., 1994; Doty 1960; Reeder, 1957; Trauger &amp; Herrick, 1962; and the online USGS database). The amount of water in storage will be summarized by county for the Animas, Playas, and Hachita Basins (based on WRRRI et al., 2000); the San Agustin Basin (based on Myers et al., 1994); and the Mimbres Basin (based on Hansen et al., 1994). A map of the region showing aquifer thickness estimates (based on abovementioned references) will be included. This section will discuss aquifer recharge and provide estimates of recharge for each of the basins. It will also discuss the interconnection of streams and aquifers.</i>  <i>A water table map of the region will be prepared by WRRRI. Historical water level fluctuations will be discussed and selected hydrographs will be provided for the Mimbres Basin, Animas Basin, Playas Valley, Hachita Valley, San Simon Basin, Gila Basin, Gallup Basin, and San Agustin Basin. Water level data available electronically from the USGS will be incorporated, supplemented with information from published references as necessary.</i>

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5.3.4 Well Fields .....	
<i>Major well fields in the region will be identified on a map and the diversion amounts summarized in a table. A graph showing the cumulative historical production from the major well fields will be included, if available.</i>	
5.3.5 Recharge.....	
5.3.6 Sustainable Yields.....	
<i>Summary of Johnson et al. (2002) report</i>	
5.4 Water Quality.....	
5.4.1 Surface Water Quality .....	
<i>Will identify both point and nonpoint sources of contamination. The total maximum daily loads (TMDLs) for streams in the region will be summarized in a table.</i>	
5.4.1.1 Potential Sources of Contamination.....	
<i>Will discuss existing NPDES permits (point sources) and nonpoint sources.</i>	
5.4.1.2 Existing Surface Water Quality .....	
<i>Will discuss TMDLs.</i>	
5.4.2 Groundwater Quality.....	
<i>General water quality characteristics will be described as well as locations of groundwater contamination based on the New Mexico Environment Department's database (including underground storage tanks, mineral extraction, discharge permits, superfund sites, landfills, septic systems). Parameters that routinely exceed water quality standards will be discussed.</i>	
5.4.3 Summary of Water Quality by County .....	
<i>A summary discussion of water quality by county will be included.</i>	
5.5 Summary of Water Supply Considering Legal Limitations .....	
6. Water Demand and Water Budget.....	
6.1 Present Uses .....	
<i>The water use for the following categories will be presented in tables (based on OSE water use reports for 1975, 1980, 1985, 1990, 1995, and 2000).</i>	
6.1.1 Public Water Supply .....	
6.1.2 Self-Supplied Domestic Wells .....	
6.1.3 Irrigated Agriculture .....	
6.1.4 Mining .....	
6.1.5 Commercial .....	
6.1.6 Industrial.....	
6.1.7 Livestock.....	
6.1.8 Power .....	
6.1.9 Other Categories .....	
<i>The per capita water use by county will be included in a table. The amount of water diverted for agriculture from surface water and groundwater, the acreage irrigated, consumptive irrigation requirement, and return flow amounts will be included in a table</i>	

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	<i>summarizing agricultural water use. A map showing the location of wells in each county by use will be presented.</i>
6.2 Projected Water Uses for 40-Year Planning Horizon .....	.....
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6.2.2 Projected Water Demands by Category of Use.....	.....
6.3 Water Conservation .....	.....
6.4 Summary of Present and Future Water Demand .....	.....
6.5 Water Rights .....	.....
7. Alternatives For Meeting Future Demand .....	.....
	<i>Not included under current scope, to be completed later.</i>
8. Recommendations .....	.....
	<i>Not included under current scope, to be completed later.</i>
References.....	.....

