Monterrey--Mexico's second largest city--is drawing much of the Rio San Juan's water.

Within the subarea, the rapidly growing cities of Reynosa, McAllen, Brownsville, and Matamoros are placing increasing demands on the Rio Grande for freshwater. Ground water is usually not a suitable alternative water source for these urban areas due to high salinity, and elsewhere in the subarea there is concern that increased future water demands could exacerbate the problem due to salt-water encroachment into the aquifer. Within the subarea, a high percentage of the surface-water supply is presently allocated to agriculture, and increased municipal and industrial demands are raising concerns as to whether sufficient water supplies will be available during dry periods.

Surface flow in the Rio Grande below Falcon Reservoir is highly controlled. Falcon Reservoir, which is the most downstream of the major international storage reservoirs, was authorized for construction by the U.S.-Mexico Water Treaty of 1944. The reservoir has a storage capacity of about 2.7 million acre-feet and a maximum storage capacity of about 4 million acre-feet. Much of the water released from the reservoir is diverted during April, May, and June to satisfy irrigation needs. Average diversions during January through June exceed the total annual flow in the Rio Grande at Brownsville. Water for use in the United States is diverted along the river by local irrigation districts and stored in holding ponds. Most of the water for use in Mexico is diverted at Anzalduas Dam (fig. 6).

The most downstream tributary to the river is located 10 miles west of Mission, TX (fig. 6). A low ridge extends from the southern edge of the upland plain near Mission in Hidalgo County, preventing runoff in the area north of the ridge from flowing to the river. Much of the eastern part of the valley is drained by small coastal streams, the Arroyo Colorado, *resacas*, and drainage ditches that flow into the Laguna Madre. Two floodways, constructed by the International Boundary and Water Commission (IBWC) to receive excess floodwater, dissect the valley. A small portion (less than 10 percent) of the water withdrawn for irrigation is returned to the Rio Grande. The Arroyo Colorado carries much of the natural drainage and irrigation-return flows to the Laguna Madre just north of the Laguna Atascosa. Much of the drainage from the northeastern parts of the study area are carried to the Laguna Madre by the Raymondville Drain (fig 6). As a result of these diversions, the Rio Grande itself delivers only a portion of water in the subarea to the Gulf.

The principal flow to the Laguna Atascosa National Wildlife Refuge is through the Cayo Atascoso (fig 6). The Cayo Atascoso flows into Laguna Atascosa, which is the largest lake on the refuge (fig 6). The Cayo Atascoco continues past the northern side of the refuge and ultimately discharges into the Arroyo Colorado. Although the Cayo Atascoso continues past Laguna Atascosa, sediment has been deposited near the outlet of the laguna to such an extent that it can no longer be completely drained. The refuge also receives agricultural drainwater through the Resaca de los Cuates (fig. 6).

Ground water in the area is obtained from the Gulf Coast aquifer system of Texas and is produced in small volumes from Eocene-age strata and the Miocene-age Oakville Sandstone. Moderate to large volumes come from the Evangeline and Chicot aquifers (part of the Gulf Coast aquifer system) in Cameron, Hidalgo, and Willacy Counties. These aquifers are hydraulically connected and function as a unit (Baker and Dale, 1961). Water levels in the area have declined dramatically since the 1950's due to irrigation pumpage and severe drought. In 1985, the total pumpage of ground water in the Lower Rio Grande Valley was 17,268 acre-feet. Total surface-water use was 824,250 acre-feet. Surface water has been, and will continue to be, the most important source of water supply for the subarea.

Of particular concern to DOI Bureaus is the continued availablility of water for habitat and wildlife management purposes. The four southernmost counties of Texas have one of the highest diversities of plants and animals in the continental U.S. which sustains eco-tourism in south Texas and northeastern Mexico. Seven of the 11 biotic communities in these counties are riparian or partially riparian. Additionally, the extreme lower section of the river supports a very diverse estuarine community and serves as a valuable nursery area for sport and commercial species of shrimp, crabs, and fish.

The Santa Ana, Lower Rio Grande Valley, and Laguna Atascosa NWR in this subarea provide habitat to a wide variety of species, and serve as important wintering and production habitat for migratory waterfowl and neotropical birds. The U.S. Fish and Wildlife Service also is actively purchasing land easements and water rights in the Lower Rio Grande Valley to form the Rio Grande Valley Wildlife Corridor in an attempt to preserve, restore, and integrate what remains of the unique Tamaulipan brushland habitat. The Corridor now includes about 64,000 acres of federally managed land.

Palo Alto Battlefield National Historic Site, north of Brownsville, commemorates the causes and consequences of the Mexican-American War from both the Mexican and the United States perspectives. While the landscape at the time of the 1846 battle contained a number of *resacas (fig. 3)*, many were later modified by livestock operations, agriculture, drainage, road building, and other activities. A long-term goal of the National Park Service is to eventually restore a portion of the historic landscape in order to both interpret the importance of these wetland features in determining troop movements during the battle and to preserve their natural-resource values.

The natural resources under protection in the Lower Rio Grande Valley are closely associated with both the coastal estuary systems and the flows of the Rio Grande and its associated floodplain wetland systems. Maintenance of many of these wetland resources, in particular the *resacas*, requires a natural cycling of flood events, which no longer regularly occurs in the system due to water-management practices.