

## Urban Water Administration in the Albuquerque Urban Area

Susan Kelly, *Utton Transboundary Resources Center, University of New Mexico School of Law*

The allocation of Rio Grande waters in the Albuquerque urban area involves a complex system of administration of surface and ground water rights by the Office of the State Engineer. This administration takes place within a framework of interstate compacts, federal and state laws, the rights of six Middle Rio Grande pueblos, and several local water agency projects and operations. Coordination of the many regulatory agencies and water rights holders into a workable water allocation and distribution system is complicated, made even more difficult by the fact that the Rio Grande is a fully appropriated river system—or an over-appropriated system, as many would argue. The terminology doesn't really matter; in most years there are more claimed water rights than there is actual water. As the Albuquerque area grows in population and as municipal use is transitioned from ground water to conjunctive use of both surface and ground water, the area's residents will become more aware of water supply issues.

Albuquerque's historic water supply practice, and indeed the water supply practices of other communities in the Middle Rio Grande, have relied on ground water pumping from the aquifer far from the river. The city's strategy also includes returning treated effluent to the river, which has augmented the river's natural flows. Ground water pumping in the basin is regulated and administered to protect surface flows in the Rio Grande. A water right to divert ground water is in reality a right to diminish surface flows in the river by the amount of the right. The Rio Grande Underground Water Basin was "declared" in 1956. After 1956 a permit was required to pump water from wells and also to provide offsetting water rights (usually purchased or retired surface water irrigation rights). By 1956 State Engineer Steve Reynolds had determined that the water in the Rio Grande was fully appropriated and that pumping from the aquifer ultimately had an effect on the flow in the river. He stated at the time that use of ground water was viable to increase water use for a number of decades, but eventually the usage should be stabilized at approximately the 1956 total rate. The declaration of the basin in 1956 was the beginning of the water rights transfer process in the Middle Rio Grande.

Like most other western states, New Mexico water law is based on the notion of prior appropriation,

meaning that rights to water were initially distributed on a first-come, first-serve basis, as long as the user put the water to some sort of beneficial use. These water rights are tied to property and run with the title to the land; so that if land is sold, the water rights go with it, with the original date of appropriation, unless the water rights are explicitly severed. Although the law is rooted in prior appropriations, as a practical matter (for many reasons, including the un-adjudicated nature of Middle Rio Grande water rights and inherent difficulty in curtailing junior ground water pumping), water rights have not been managed that way.

The earliest priority rights are irrigation water rights, and the Rio Grande valley is the oldest continually irrigated area in North America. The Treaty of Guadalupe Hidalgo in 1848 recognized that the oldest rights belonged to Native American users, followed by Spanish colonial settlers. About a thousand irrigation and drainage ditches and channels built by the early inhabitants are still in use today. The most senior water rights holders are the pueblos. Albuquerque is bounded on the north by lands of Sandia Pueblo and on the south by those of Isleta Pueblo. The senior rights of those pueblos, along with four other pueblos in the Middle Rio Grande region, are recognized as having priority use of water before all other users in the area. Yet the total quantity and nature of these rights is not settled. Short of adjudication or settlement, however, at least one practice to protect the pueblos is in place: Even in severe drought conditions when flows are bypassed by New Mexico for delivery to Texas, prior and paramount water for the six middle Rio Grande pueblos is stored in El Vado Reservoir and is available for their use. And in recent years, believing that the transfer of water rights from downstream of Isleta to upstream will impair its water rights, the Pueblo has filed a number of protests.

In 1907 New Mexico's territorial government enacted a state water code, requiring that new diversions after that point in time obtain a permit from the state engineer. The law recognized that all the water rights allocated before 1907 were vested in the landowner. Therefore, permits issued after 1907 are considered junior to "pre-1907" water rights. These junior rights include part of the water rights held by the Middle Rio Grande Conservancy District, created in 1923. But the MRGCD permit also includes early irrigation rights,

developed before the creation of the MRGCD and later consolidated into the MRGCD system, that are vested, privately owned rights and Pueblo rights. The MRGCD permit claimed 123,000 acres having water rights. But the district's irrigation plans were never fully realized, and the full 123,000 acres were never developed, mainly because of insufficient water supply. About 80,000 acres of MRGCD water rights were claimed to be perfected before 1907 (which included 7,000 acres of Indian land in cultivation). Of these 80,000 acres, about 27,000 acres were by that time in swamp, alkali, or salt grass conditions but had been cultivated at some point prior to the creation of the MRGCD.

An Office of the State Engineer on-the-ground survey dated 1917–18 is the primary source of information about conditions before 1907. Under current OSE policy, the water rights appurtenant to property shown on the 1917–18 maps as swamp, alkali, or salt grass are not available for transfer unless additional evidence of cultivation is provided.

The Rio Grande Compact was ratified by Congress in 1939 and was based on the apportionments in a temporary compact (1929) that reflected the magnitude of the various water uses at that time. A 1937 report stated the Rio Grande was at or beyond the limits of water that it could be expected to provide. The compact is an agreement between New Mexico, Colorado, and Texas. Under this agreement, Colorado is required to deliver a certain amount of water to New Mexico every year, and New Mexico is required to deliver a certain amount of water to Texas. The delivery obligations are based on gaged flows in the Rio Grande at specified locations, so that in dry years the requirements are lower. The compact contains a system of credits and debits, to help achieve compliance with delivery obligations. But the maximum amount allowed to be depleted in the Middle Rio Grande cannot exceed 405,000 acre-feet. So even in extremely high flow years, the Middle Rio Grande valley's usage is capped. The Interstate Stream Commission manages New Mexico's compliance with the Rio Grande Compact.

Next, enter the growth of Albuquerque and the boom that followed World War II. Albuquerque has always relied heavily on ground water from the aquifer. After the state engineer declared the basin in 1956—based on the understanding that ground water development was affecting river flows and potentially inhibiting New Mexico's ability to meet its obligations under the Rio Grande Compact—Albuquerque challenged the state engineer's declaration. Albuquerque filed four well applications without proposing to offset the wells' effects on the river. The

state engineer denied the applications after a hearing in 1957. The city challenged the decision and initially won in district court. But the Supreme Court decided against the city in *City of Albuquerque v. Reynolds* (1963), emphasizing the connection between ground water and surface water and upholding the state engineer's plan to require offsets. As part of the settlement of the litigation, Albuquerque's existing ground water pumping was "grandfathered" with no offset rights requirement. These rights constitute the current city-county water utility's vested or "pre-basin" rights.

In the middle of the twentieth century, when Albuquerque's infrastructure was growing fastest, it was believed that there was an enormous amount of water in the ground beneath the city. Advertisements for builders and residents to come to the city boasted that a virtual Lake Superior was contained in the aquifer. The city was indeed built on that belief, and even in 1980, an *Albuquerque Journal* article describing Reynolds' views said the Albuquerque Basin had sufficient recoverable fresh water to serve the entire state for 575 years at the current rate of withdrawal. But as early as 1984 the city began to experience unexpected draw downs in wells, which led hydrologists to begin more detailed and comprehensive studies of the aquifer. In the early 1990s a U.S. Geological Survey study revealed there was far less water than was previously thought. By that time, moreover, Albuquerque was removing far more water from the ground than could be naturally replenished. The USGS also found that the connection between the river and the aquifer was misunderstood—it was not as direct as had been thought.

The timing of the effects of ground water pumping on the river is still not fully understood, but models have been created by the USGS and are used by the state engineer to simulate these effects. Depending upon many factors, including distance from the river, many years may be needed for the delayed effects of ground water pumping to diminish surface water flows.

This fact is one of the prime motivations for the Albuquerque Bernalillo County Water Utility Authority's (ABCWUA) project to divert and use its San Juan–Chama water. The San Juan–Chama Project was approved by Congress in 1962 and was built by the U.S. Bureau of Reclamation. The project diverts water from the Colorado River system into the Rio Grande for use by Albuquerque, the MRGCD, several other towns, and some of the pueblos and tribes of the upper Rio Grande. Albuquerque originally planned to keep its 48,000 acre-feet per year in the river to offset future pumping effects. But because the studies in the

1990s revealed that water pumped from the aquifer was not drawing water from the river in the timeframe the scientists had thought, the city decided instead to directly use the San Juan–Chama water.

The ABCWUA, formerly the City of Albuquerque water department, was granted a permit in 2004 to withdraw roughly twice its SJC water allocation, use the water and return half of it to the river at the wastewater treatment plant. The permit has many conditions and operational requirements, including minimum flows for the Rio Grande silvery minnow; municipal water conservation requirements; releases from storage in Abiquiu Reservoir to offset impacts on Rio Grande water supplies beyond the utility's water rights holdings; accounting and reporting; and environmental protection and monitoring. Issuance of the permit is currently on appeal in state court by several interest groups protesting the permit. The protestors have a number of concerns, including a concern that the project may cause harm to the ecosystem in the 17-mile reach between where the water is withdrawn and where one-half is returned. But the main point of the protest is their conviction that the project will impair senior water rights downstream of the Albuquerque urban area.

The ABCWUA provides the infrastructure and water to its customers for much of the Albuquerque/Bernalillo County area's municipal water use. It was created in 2003 by state statute and is the largest water utility in the state. It is in charge of 172,000 customer accounts, representing approximately 520,000 water users. It has 96 major wells, which collectively pump out more than 32 billion gallons per year. The authority's board is made up of appointed members: three Albuquerque city councilors, three Bernalillo County commissioners, the mayor of Albuquerque, and a non-voting member from the village of Los Ranchos. Rio Grande water rights for its well permits are consolidated under Permit RG-960. In 2003 the allowable pumping limits under RG-960 were increased from 132,000 to 155,000 acre-feet per year, under the conditions of the state engineer's Middle Rio Grande Administrative Area Guidelines.

The state engineer established its Middle Rio Grande Administrative Area Guidelines in 2000 to prescribe the process for permits from that date forward. The guidelines, developed under State Engineer Tom Turney's administration, designate a Critical Management Area in Albuquerque where there have been excessive water table declines. No new wells will be approved in this area, except replacement wells and domestic wells. The guidelines provide for joint

management of ground water and surface water, and the rules state that the ground water table may not be drawn down more than 2.75 feet per year in the non-critical areas. The guidelines also require that anyone wanting to pump ground water must own valid surface water rights before diverting (pumping) ground water, while taking return flows to surface water into account. Since these guidelines only apply to permits granted after 2000, permitted rights of municipalities (mainly Albuquerque, Rio Rancho, and New Mexico Utilities Company) that were granted their permits before the guidelines took effect are subject to a different rule: Valid surface water rights must be in effect at the time the modeled pumping effects are determined to reduce flows in the river, which, as mentioned, may be many years in the future.

The City of Rio Rancho takes ground water from the Middle Rio Grande as well. It is one of the more rapidly growing cities in the Southwest, and its water demand will exceed supply within the next twenty years. Since 1981 it has seen a 420 percent population increase, from 10,000 people to more than 52,000, and the population is expected to double again by 2020. Until now Rio Rancho has been using approximately 3.5 billion gallons of water per year, but it will need about 10 billion gallons of water per year by 2040. Under the requirements of its diversion permit, which was doubled to allow pumping of as much as 24,000 acre-feet in 2001, Rio Rancho is seeking new water rights, as well as aggressively developing conservation, reuse, treatment, and recharge programs.

The Albuquerque urban area experiences effects not only from municipal wells but from the drilling of domestic wells. Domestic wells are exempt from the offset required for larger wells; surface water use does not have to be retired in proportion to the amount pumped out of each new well. Domestic wells have been viewed as a *de minimus* withdrawal from the ground (i.e., not significant enough to justify requiring a water right), but in the three-county region of Bernalillo, Valencia, and Sandoval Counties, domestic well withdrawals were estimated to be 12,000 acre-feet in 2005. Although permits are technically required, metering is not, except in the Critical Management Area, and no real record is available. The state does not know how many domestic wells exist or how much they pump out of the aquifer every year, although thousands of drilling permits are issued every year. State Engineer John D'Antonio adopted Domestic Well Management Guidelines in 2006, which allow significant restrictions on domestic well permits in areas where such wells are contributing to excessive

draw downs or are impacting stream flows. A New Mexico District Court recently held that the domestic well policy of the state violates the doctrine of prior appropriation, but the Office of the State Engineer has appealed. The appeal stays the enforcement of the court decision, so for now the domestic well policy continues.

Local agencies and groups have an important role in water issues as well. The Middle Rio Grande Water Assembly is a volunteer, nonprofit organization that has organized around long-term planning for the Middle Rio Grande region and the Rio Puerco y Jemez sub-region. With the Mid Region Council of Governments, the assembly developed a Regional Water Plan for the Middle Rio Grande, which was adopted by the Interstate Stream Commission and nineteen local governments in 2004. The plan contains a vast amount of information about the region's water development history, legal framework, current water use, and future projected supply and demand. The plan identifies and evaluates 44 alternatives for meeting water supply. Most require local governmental or state action. If the region follows through on these ambitious activities, there is a good possibility of achieving a long-term sustainable water supply. The Water Assembly continues to promote implementation of the plan, and local governments and agency actions often coincide with the plan's recommendations.

## CONCLUSION

We face many challenges in stretching our water supply to sustain future generations in the Albuquerque urban area. Critical management decisions will need to be made that are going to be difficult. Can we effectively manage water deliveries in times of shortage without a full adjudication of water rights, yet still protect senior water users and meet due process requirements? Can we preserve flow in the river and support the riparian corridor given continued growth in demand, delayed ground water pumping effects on the Rio Grande, and projected climate change? Can we preserve a healthy agricultural area given future urban demands? Can we conserve water now to preserve the aquifer as a future drought reserve?

There are some encouraging signs: The ABCWUA, Rio Rancho, and Bernalillo and Sandoval Counties are aggressively pursuing water conservation, and there are many more tools available to them to continue to improve. The ABCWUA is working on aquifer recharge and reuse projects. Rio Rancho is pursuing reuse and is developing surface infiltration and direct injection recharge demonstration projects to determine require-

ments for aquifer storage and recovery of treated water.

The state senate passed legislation in 2007 that allows transfer of "conserved" water. If rules can be developed that create incentives for farmers to conserve water and transfer the conserved water to meet growing demand, there may be an opportunity to preserve Middle Valley agriculture and still meet municipal demands. Care must be taken to develop rules to ensure that there is no resulting increase in consumptive use. And resources will be necessary for the Office of the State Engineer to develop such rules and a system of monitoring.

Many agencies are working collaboratively on habitat restoration, and on ways to reduce riparian depletions while enhancing the quality of the bosque and the river habitat for ecosystem health.

The ABCWUA strategy—to rest the aquifer for a period of time after the start of the project to divert and treat San Juan–Chama water for drinking water—will provide some time and space to allow the divergent interests in the Albuquerque urban area to work on the challenges of meeting long-term demand. We will have an opportunity to refine and implement plans and to be strategic about how to meet the future needs of this urban area. The Albuquerque area is part of the Rio Grande growth corridor and vital to the New Mexico economy. We can work with the state and other communities in the larger region to sustain our water supply, quality of life, and treasured natural environment.

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## Suggested Reading

*Water Resources Management Strategy, Albuquerque Bernalillo County Water Utility Authority*, available at: [www.abcwua.org/content/view/full/190/332/](http://www.abcwua.org/content/view/full/190/332/)

*History of Water Development in the Middle Valley, New Mexico*, Gary Daves, WRR, 1994.

*Middle Rio Grande Administrative Area Guidelines*, available at: [www.ose.state.nm.us/doing-business/mrgbasin/crit9-13.pdf](http://www.ose.state.nm.us/doing-business/mrgbasin/crit9-13.pdf)

*New Mexico Administrative Code, Part 19.27.5, Domestic Wells Rules and Regulations*.

The Middle Rio Grande Regional Water Plan and other materials are located on the Middle Rio Grande Water Assembly Web site at: [www.waterassembly.org/](http://www.waterassembly.org/)