

Sustaining the Santa Fe River

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In a time when growing municipalities are scrambling to meet increasing demands, the City of Santa Fe, New Mexico, true to its nickname, “the City Different,” is using a portion of its water supply to sustain minimal flows in the otherwise often-dry Santa Fe River (see map). This policy originates from the city’s growing commitment to a living Santa Fe River and the enhanced quality of life it brings to the city center.

The River’s History

Historians, ecologists, and hydrologists disagree to what extent the pre-historic river flowed perennially and where, if at all, the ephemeral reaches began. When the Spanish explorers arrived in 1598, they found four active Indian pueblos where springs merged with the Santa Fe River (Goldman, 2003). The Santa Fe settlement that Don Pedro de Peralta founded in 1608 was not at a perennial spring, although the area next to the “little stream” was described as marshy. For the next 350 years, the Santa Fe River singly provided for the community’s agricultural and domestic needs, first

through an extensive acequia (irrigation canal) system and, beginning in the 20th century, with dams and underground transmission lines. Dams were built to protect the community from floods and to provide reliable water for household use and firefighting (Goldman, 2003). In 1774, a local resident, Señor Don Pedro Alonso O’Crouley, described the river as “a crystal clear river full of small but choice trout,” but by the 1950s, after the last major dam improvements had been completed

The emphasis today is to build a river ecosystem that will thrive within current water availability constraints.

and a multi-year drought arrived, locals remember the Santa Fe River frequently drying out in late summer.

Since the 1950s the amount of water in the urban reach is highly uncertain from year to year. In the city limits, without bypasses from upstream reservoirs, the Santa Fe River flows only as the result of precipitation events or when the upper watershed yield exceeds municipal water

demand and upstream storage capacity (see chart, right). The 4,974 acre-feet median annual yield of the Santa Fe River (1914-2008; Lewis and Borchert, 2009) is only slightly less than the city’s water right of 5,040 acre-feet/year and half of the city’s annual demand of 10,000 acre-feet/year. Since streamflow gauging downstream of the municipal reservoirs began in 1999, the urban Santa Fe River has been dry on average about 220 days of the year; of those days with flow, 30 percent result from storms.

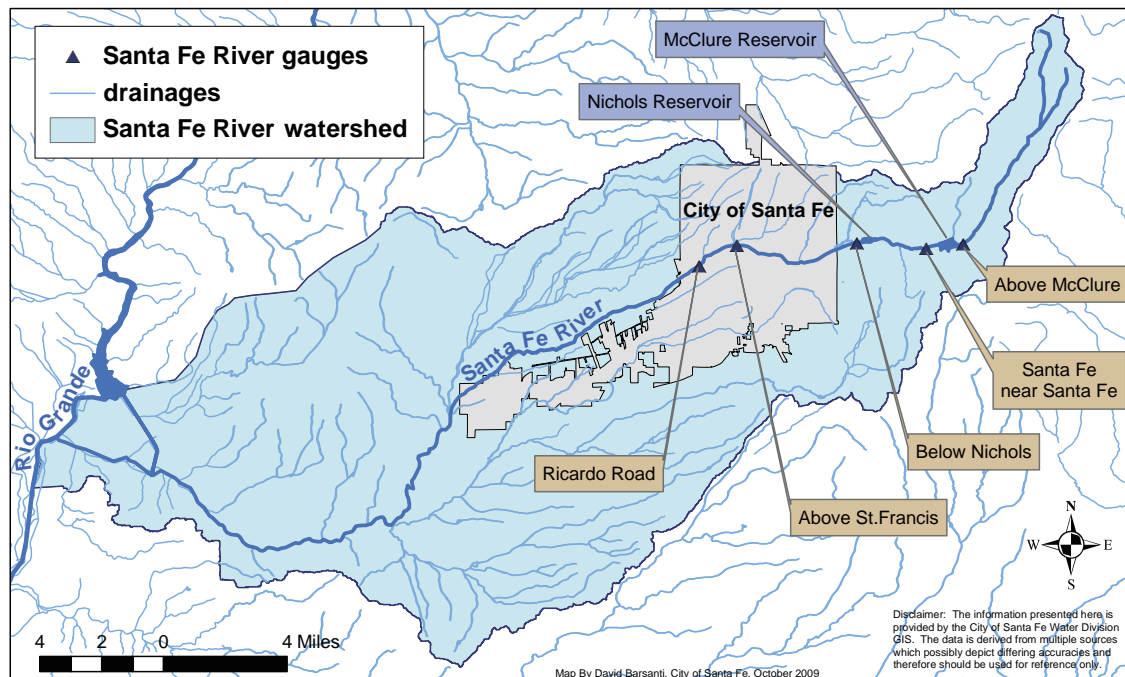
Support for Perennial Flow

While dreams and discussions of reviving the Santa Fe River have gone on for

decades, the first municipal decision to result in water bypassed explicitly for the river occurred in September 2008, when the city adopted its long-range water-supply plan. The plan included the initiative to bypass 1,000 acre-feet (one-fifth the average annual yield) into the river during normal and wet years once a new, \$216 million surface-water diversion facility on the Rio Grande is operational. Since the adoption of the plan, the city

council has twice (2008 and 2009) supported resolutions directing the water utility to bypass seasonal flow through the municipal reservoirs for the Santa Fe River.

The volume of water allocated to the river in the recent resolutions took into account how much water was available in storage, the hydrologic outlook, and a safety net of 40 percent end-of-year, carry-over storage for the following year. In 2009, because reservoirs were three-quarters full by February and the hydrologic outlook predicted an average yield, 700 acre-feet was bypassed to the river. The 2009



The Santa Fe River is frequently dry below the municipal reservoirs.

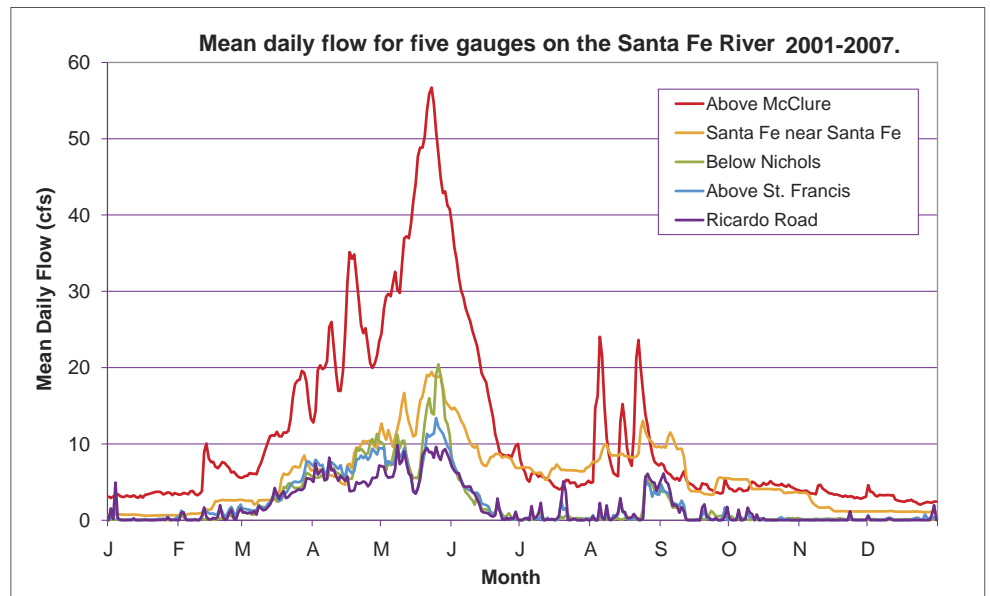
resolution has been a win-win for the river and the city's water supply, because the city diverted its full water-right allocation, will carry over 40 percent stored water in the reservoirs, and has bypassed 700 acre-feet to the river. In drier years, however, the city may have to pump groundwater to maintain this arrangement. For the next few years, the bypass policy will be adaptively managed to fit yearly hydrologic conditions and water supply needs of the city.

Dovetailing with efforts to provide minimal flows in the Santa Fe River, the City of Santa Fe and Santa Fe County are investing over \$8 million to restore the riparian ecosystem, stabilize the streambed and river banks, and improve community access through eight miles of riverside trails and parks. Current challenges include building consensus on restoration approaches, acquiring the necessary land, redefining land-use regulations on flood plains, and developing engineering designs that will simultaneously thrive at low flows and withstand large, aggressive storm flows.

The decision to strive for more sustained flows derives from multiple factors. The community has a long-standing interest in reviving the Santa Fe River, recently exemplified by the campaign pledge of the city's progressive mayor, David Coss, who has defined a "living Santa Fe River" as one of his administration's top priorities. The municipal water utility embarked on its first long-range water-supply study since purchasing the water utility and incorporated the river's demand in some alternatives studied. A 38-percent reduction in demand through conservation incentives over the past 12 years allowed water planners to consider keeping the river wet, an alternative that would not have been otherwise considered. Finally, an almost 50-percent increase in water rates over the next four years will allow the city to complete a project that provides the City of Santa Fe direct access to its San Juan-Chama project contract water, thereby reducing its heavy reliance on the river for water supply.

Community and Ecological Benefits

The city's decision to restore the Santa Fe River is rooted in ethical, practical, and aesthetic considerations. Many residents, especially families who have lived in the area for generations,



Santa Fe River mean daily flows (2001-2007) decrease significantly downstream of the municipal reservoirs.

feel a sense of stewardship toward the resource that has provided the community its lifeblood for centuries.

In addition to added recreational and economic—via tourism—benefits, a healthy Santa Fe River corridor (and eventually, hopefully, the entire urban watershed) provides significant ecosystem services. Vibrant riparian vegetation will armor the stream banks against the erosive power of large storm flows that can exceed base flow by a factor of 500, thus protecting property and reducing long-term maintenance needs. A healthy riparian ecosystem may also slow the urban flood pulse and increase streambed infiltration. The infiltrated streamflow, whether from storm or bypassed flows, helps recharge the local aquifer.

The beauty of the current plan is its simplicity. In order to provide minimal flows, the city does not need to build extensive infrastructure. Nor will it need a continual source of energy to move water. It will not even increase labor costs. The city will, however, need to decide on a streamflow pattern that meets the community's diverse goals, and determine how to share the scant water in the river with other, mostly agricultural, water rights holders. These and other issues will be best addressed through a comprehensive and long-term river management plan. Adoption of such a plan, in turn, will require community willingness to focus on needs rather than wants and on benefit to the community versus the individual. ■

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References

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