

Mike A. Hamman grew up in Taos, New Mexico and has lived in the Rio Grande area for most of his life. He is a graduate of the University of New Mexico and is a registered professional engineer in New Mexico. Over the past 18 years, he has been involved with water resource development and management. Prior to his current position, he worked for the New Mexico Interstate Stream Commission for a year as the Regional Water Planning program coordinator. He currently manages the Operations and Maintenance contract for the City of Santa Fe's water system, directs the water development and infrastructure planning, and coordinates activities on a regional basis within the middle Rio Grande basin.



Current and Projected San Juan/Chama Water Use for the City of Santa Fe

Given what we have heard today, Y2K looks like a walk in the park. You all look like you're ready for some refreshments and one of the advantages of speaking last is that you get to keep your presentation very brief.

I'll start today with the City of Santa Fe's historical uses of San Juan/Chama water. Our contracted amount of San Juan/Chama water is 5,605 acre-feet, and as you saw during Jaci Gould's presentation, we have a small piece of the pie. We have some "have to" requirements like 2,000 acre-feet per year that are dedicated to our Buckman Well Field offset. The Buckman wells supply roughly 50% of the city's annual and peak demand. The Buckman Well Field is a post-1956 water right requiring any impacts to the Rio Grande or any of its tributaries be offset as calculated by models for particular basins by the Office of the State Engineer. Our impact to the Rio Grande, as we speak today, is about a third of

our pumping at Buckman. We pump 6,000 acre-feet on average requiring us to offset about 2,000 acre-feet per year. However, that offset requirement increases over time and it will approach a one-for-one ratio, instead of the current situation where we're pumping three and offsetting one. The other "have to" that is absolutely required is the transportation costs associated with releasing water from Heron and getting it to the point of diversion, which in our case, is near the Otowi Gauge. It has been determined that there is about a 2% loss rate that must be applied to San Juan/Chama water. That represents another "have to" as far as our consumption uses go right now.

There were some issues that occurred during the 1970s during a period when New Mexico was in a debt situation. The City of Santa Fe has two reservoirs located above town that supply, in a good year, about 40% of the city's water supply. Roughly two-thirds of the water in those post-compact reservoirs are considered storage capacity, and one-third is considered to be pre-compact. When we are in a debit situation, in theory, we are not supposed to use any of our water that is locked in storage in those two reservoirs. Given that we had excess water in the system up in the San Juan/Chama Project, we were able to work with the state engineer and the Middle Rio Grande Conservancy District (MRGCD), and others, on methods for offsetting impacts to the water stored in our compact space. In essence, it was a one-

for-one exchange. We were able to use our surface water from the Santa Fe River in exchange for running San Juan/Chama water down the Rio Grande to offset any compact implications.

Other things we have done in the past and will continue to do, in the near future anyway, include our option of offsetting our storage payments to the MRGCD, with whom we have a contract to store our excess supply at El Vado, and our option of using some of our San Juan/Chama water to pay for our storage costs, or of paying \$2.50 per acre-foot per year, which is an alternative.

We've entered into agreements on occasion when MRGCD needed supplemental irrigation water in low years. They would borrow from us and we have been paid back as of this date. There also are evaporative losses associated with these transfers and those constitute "have to" requirements. We store water in Heron and have it released on an "on-call" basis, so to speak. It is highly unlikely that we will completely eliminate the need to store San Juan/Chama water in El Vado and Abiquiu, but over time the need to store excess water diminishes as we consume our full amount.

Concerning operational uses for minimum flows and boating on the Chama, we've essentially provided operational flexibility to the Bureau of Reclamation to use our contracted water to enhance flows both above and below Abiquiu Dam for minimum flows and boating opportunities. More recently, we have leased water to the Bureau of Reclamation for supplemental Middle Rio Grande operations and silvery minnow minimum flow requirements. Oops, I blew it, that is not the way I'm supposed to describe it. For you Compact people in the room, we will actually be releasing San Juan/Chama water for irrigation diversion so that MRGCD can use natural water to supplement the Rio Grande for silvery minnow habitat.

Concerning future uses of San Juan/Chama water, we are implementing the 40-year water plan that we developed, which calls for us to exercise our contract rights to the fullest extent. What that entails is putting together an infrastructure system that allows us to consume the imported water that we have been contracted and paying for since the mid 1970s. Currently, in a

good year, we use 60% groundwater and 40% surface water to meet our demands. In a dry year, that can drop down to an 80:20 ratio, like we experienced in 1996. To enhance our ability to meet existing demands and diminish our reliance on groundwater, we want to flip that ratio. In a normal year, we only want to consume about 20% from groundwater in our well fields and meet demands by using 80% surface water. That would allow us to bank our groundwater for the possibility of an 80:20 future scenario if indeed the drought predictions prove correct.

The whole purpose of the San Juan/Chama Project that Steve Reynolds, Stewart Udall, Presidents Kennedy and Johnson and everyone else who was involved in the original authorization of the project was to provide imported water to be consumed 100%. Through direct diversion on our part, less our transportation losses, we would be able to obtain full use of our return flow. The implementation of our program allows us to maximize our return flow options and shifts existing non-potable demands from potable to treated effluent. For example, right now we have a couple of large golf courses and facilities using potable groundwater for irrigation and it would be easy to convert those to treated effluent. Another method for full utilization, with the right infrastructure, would be some kind of method to enhance our return flow credit opportunities by figuring out a way to get the return flow back to as close to the point of diversion as possible. By doing so, you get a one-for-one return and then you can take your original diversion over time so in essence you are able to triple it. If we have the appropriate infrastructure, we can take our original diversion and consume about 40% of it on the first-time through, and return 60%, which then allows us an additional diversion. That is important because we are dealing with a closed system that allows you to consume fully the San Juan/Chama water within the municipality.

We also are looking toward using the Santa Fe River to recharge treated wastewater and consider whether there would be effective groundwater recharge if we were to put it into the stream channel of the river. Discharging effluent into the river upstream from the downtown area would also have a secondary benefit of aesthetics and recreation.

What are the implications of our implementation plan? What we are really saying is that in Santa Fe, if we're allowed to fully implement the program we are proposing, we can virtually eliminate ourselves from markets for native water on the Rio Grande. If we are not able to implement our plan or to take full advantage of our San Juan/Chama water, we are back in the business of trying to find native flows. It is critical that we implement this program. We have been able to convince our congressional delegation of how critical the situation is and they have been very helpful in assisting us.

This situation has presented us with opportunities to develop some focus for minimum flow and stream-bank improvement programs on some of the degraded reaches of the Santa Fe River. We believe that if we combine our treated effluent efforts with some of the stream-bank enhancements, we can actually improve riparian conditions and degraded river situations.

Another implementation aspect is that if we take our San Juan/Chama allocation in a more uniform manner, our operations could actually enhance the base flows of the Rio Chama, primarily below Abiquiu Dam to Otowi bridge—our point of diversion. But this could all lead, however, to problems with flood water recreation. However, I think over time if all the San Juan Chama contractors begin doing exactly what we are proposing, flat water recreation in the Rio Chama is going to become somewhat nonexistent in the future as I see it, unless we do some other water banking and native flow storage up there. But that's kind of a sleeping giant politically.

By removing ourselves from the native flow situation and by giving ourselves the flexibility to move back and forth between groundwater and surface water, I think that on at least an incremental basis, we can enhance the minimum flows on the Rio Grande during critical periods. However, it is going to take an awful lot of infrastructure, planning, and cooperation with all the municipalities in the district as well as some other folks who are involved. There are times when I say that we can squeeze that turnip Steve Hansen was talking about a little bit tighter during critical low-flow periods and keep some of those riparian habitats on the Rio Grande in good shape.

Thank you again for bearing with us this afternoon and I'll see you at the bar.