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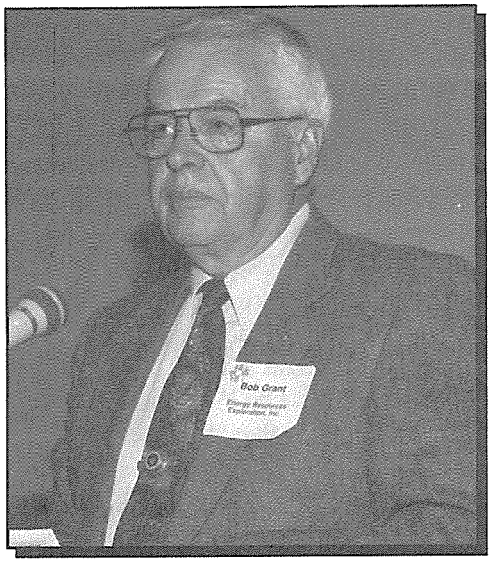

ALBUQUERQUE'S WATER—GRIPPING REALITY

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Like Kelly Summers, I thought it would be difficult, having only six minutes for this part of the program to condense over 40 years of institutional memory down to the allotted amount of time. But, then, after I got into it I found it was pretty easy.

First, I would like to talk about trying to help dispel the myth about Lake Superior and that unlimited supply of water we had below Albuquerque. I could be somewhat culpable because when I wrote and made presentations about Albuquerque's water supply 20 or so years ago, one of the things I used was Sam West and Bill Broadhurst's excellent U.S. Geological Survey Professional Paper 813-D. Published in 1975, this paper went into great detail about the Rio Grande basin's water resources based on information then available.

What West and Broadhurst did was take the entire middle Rio Grande basin with parameters that stretched from the Colorado state line, not Cochiti Dam, down to Elephant Butte, not Bernardo. There's about 5,000 square miles in that region. They estimated that the upper 4,000 feet of valley fill would store about 2.8 billion acre-feet of recoverable fresh water with 5 to 15 percent specific yield. I said then, they did not, that 2.8 billion acre-feet is roughly 70 percent of the volume of fresh water in Lake Michigan. Now that's a heck of a lot of water!

Unfortunately, other people took that comment and said all of that water was immediately beneath Albuquerque and created the Lake Superior analogy. Clearly, the water is not all under Albuquerque. In that 5,000 square-mile area, Albuquerque occupies about 100 square miles or 2 percent of the area, which would suggest our city's fair share of water would be 56,000,000 acre-feet, about ten

times what the recent studies indicate. Much of the rest of that water is still out there, and it's still available in some manner or another to be accessed in terms of a usable supply.

Albuquerque's recent discovery—and I emphasize recent—that we are using too much water was predicted in a massive study done in 1979 under the auspices of the Corps of Engineers. I don't know how many of you still have that AGUA, Albuquerque Greater Urban Area, study on your shelves. Look at their projection for the year 2000 of the drawdown in Albuquerque's city wells and you'll find that you can overlay it almost precisely with what the 1993 USGS report came up with. What has occurred is that it happened eight years earlier than the AGUA study predicted. Albuquerque didn't pay any attention to that study.

We have found some encouraging news with the recent studies. It certainly isn't all bad news. This city has a fabulous, incredibly bountiful, world class aquifer beneath parts of it. The specific yields, storage capacities and so on are enormous, with porosities ranging from 15 to 35 percent. That's two to three times greater than what an average, good groundwater aquifer would be. That ancestral Rio Grande part of our regional Santa Fe aquifer may be much smaller in extent than we had previously thought, but its parameters as we know them now and didn't know them several years ago, are far greater than we had anticipated they would be.

The problem is how do we get surface water into that aquifer and keep it recharged? Well, plain and simply, the water is there on a regional basis; it just isn't all there beneath the city where its well fields are located. Over the years the city's traditional solution to meeting additional demands for water as its population grew has simply been to go to an existing well field and drill one more production well.

Nature is indeed bountiful and she is forgiving, but she has limits. We've reached and exceeded the limits of what we can produce in Albuquerque's well fields. We're now producing water faster than natural processes will replace it from the river.

If we were able to reduce those volumes of water produced from the aquifer beneath Albuquerque, the reservoir would be naturally replenished and restored. Also, if we were successful in doing that, we could determine what the best balance was between what we can produce and what will be naturally and, perhaps, artificially recharged, providing us with the needed volume of water indefinitely.

It's unfortunate that it may take a $30-$50 million study to get this accomplished and determine other parameters of our underground water supply. It also is unfortunate that governmental entities operate on a crisis basis. We can see a war coming on a national level, but we never gear up to meet it until we have a crisis. That's about where we are now. It's going to cost us far more than if we had been addressing this problem several years ago.

Back to the questions, "Are there alternatives? What can we do? What should we be doing?" Among some solutions are that we should now be using every effort to initiate compacts with some of the Indian pueblos upstream to use their areas as supplements to Albuquerque's well fields. We could then transfer some of our water rights upstream and pump significant volumes from these sources while we let our city well fields replenish. We could alternate the process over years: as upstream aquifers deplete, we switch demands to the city's restored aquifer, establishing balances between optimum depletion and replenishing upstream and downstream reservoirs.

We need to take a very serious look at interbasin transfers. Politically, the timing has never been better in our state to start looking at availabilities like the 226,000 acre-feet in the Navajo irrigation project and determining whether some of this water can be leased or purchased. The Jicarilla Apache tribe has 40,000 acre-feet of surplus water in the San Juan-Chama system.

There are other mechanisms that should be considered. One that may not be popular but is done in other parts of the country where there are water shortages is to have the developer of urban lands purchase and retire the water rights to supply the additional population. This might add $1,500 to $2,000 to the cost of a housing unit, but it would help resolve the problem.