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Testimony  
Before the Subcommittee on Water and Power  
United States House of Representatives

Hearing on issues surrounding the costs of desalination  
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Honorable members of Congress, I appreciate the opportunity to address the Subcommittee on Water and Power regarding this important issue of desalination research and water resource management. As you know, this topic is highly relevant in the southwest. I am Pat McCourt, City Manager in Alamogordo, New Mexico, a city of approximately 37,000 citizens. Cultivating reliable and long-term water availability has been one of my most important and challenging tasks since I arrived in Alamogordo.

In the late 1990s, The City of Alamogordo recognized the need for a new long-term, reliable, and cost efficient water source for current and future residents. Our region has a dwindling supply of readily-potable water for a growing population. This problem is exacerbated by a severe, prolonged drought. We have sought many avenues to protect our most elusive resource. We have taken two approaches for addressing the challenge of providing an adequate water supply. The first step has been to conserve our existing supply, and the second step was to seek a new long-term and dependable water source.

To conserve water, the City of Alamogordo has undertaken proactive, innovative, costly, and some difficult techniques. We have covered and lined all of our potable water reservoirs and treated waste-water reservoirs to prevent leakage and evaporation. To our knowledge, we are the only community in New Mexico and one of very few nationally to have completed such a task. The cost to our City was almost \$2,000,000. The combined effect of this program has been a loss prevention of up to 1.44 million gallons a day during the summer months, and up to 600 acre-feet per year. The City has instituted an ongoing repair and replacement program that is designed to keep the delivery system in a good state of repair. This is essential to minimizing unnecessary losses from the system and to assuring that the maximum amount of water is delivered to the users. The City has adopted a very extensive reclaimed water program to reuse available water and maintain a quality of life in the community beyond bare subsistence. The City has routed reclaimed water to all major city green space, the high school athletic fields, one junior high athletic field, city ball fields, two cemeteries, the landscaping on city buildings, and the zoo. Additionally, the City requires the construction industry to use reclaimed water for construction purposes (dust control and settlement). Reclaimed water is sold to contractors. They must sign up for a meter with the Utility Billing Department. The City uses reclaimed water in the Public Works yard for cleaning of equipment and for any City repair work on streets. The net result has been to shift from potable water to reclaimed water – approximately 499 million gallons of reclaimed water were used in 2004. Recent updates to the reclaimed water system include the addition of a one million gallon storage tank. This will increase our storage capacities to 2.5 million gallons. This extensive reclaimed system has been highlighted in a water conservation documentary regarding the drought situation in New Mexico. The City has spent over \$4 million constructing 16.2 miles of pipeline, two booster stations, and storage for this reclaimed system.

In 2004, the Department of Public Safety/ Fire Services implemented innovative methods to conduct required equipment testing. They built a pump test facility and installed an in-ground tank to re-circulate fire truck testing water. A modified surplus tanker is used for hydrant flushing. Water is captured by the tanker, released into the sewer system, and used in our reclaimed water program. The Department contracted a consultant to conduct a computer analysis of hydrant flow capabilities throughout the City, which provided an accurate gallons-per-minute measurement of each hydrant's capacity. These testing methods save tens of thousands of gallons per year.

The City Commission has adopted a Water Conservation and Rationing Ordinance, which has been updated several times, to establish community values for appropriate uses of water and to allocate the available resources when they are in short supply. The City uses a tier rate structure, reviewed yearly, to encourage the prudent use of water by each customer. Our average daily use has declined steadily, and reached a low measure of 4.82 million gallons per day (MGD) in 2003. This amount is down from as much as 7.73 MGD in 1992. The City has provided education and incentives to assist citizens in reducing usage of water while maintaining a reasonable lifestyle. We use a broad-based program that incorporates the customer's freedom of choice, economics, and good stewardship of the water resource to provide a high quality water delivery system in Alamogordo. Our water conservation success has gained Alamogordo national attention from entities such as the National Municipal League and the Ash Institute for Democratic Governance and Innovation.

Unfortunately, water conservation alone is not enough to ensure a future supply for even our current residents, or to provide

the water necessary for the continued growth of our community. During periods of low storage, we have had to enact emergency stages of rationing. In our approach towards securing a new, long-term, reliable potable water source, several options were researched in great detail. Consulting engineers looked at current and future feasible sources for the City. Current water sources include Bonito Lake, canyon flows, and well fields. In March 2003, at the time of the development of the 40-Year Water Plan, our water rights totaled to a consistent, firm supply of 4,500 acre-feet/ year, but we were using over 6,000 acre-feet/ year. Research, and the resulting 40-Year Water Plan, provided suggestions for making the current supply last as long as possible. These suggestions were agreed to and accomplished; such as expansion of the reclaimed water system and restoring two dilapidated wells in a well field southwest of the community. The following alternatives for a future supply were investigated and considered not feasible: a Sacramento River pipeline, flood control recharge, fresh ground water south of Alamogordo, Salt Basin water pipeline, Three Rivers water pipeline, and agricultural water conversion.

After considering all available alternatives, the study concluded that desalination of brackish water was the most feasible way to produce a quality and quantity of "wet" water to cover future demands. The Tularosa Basin sits atop a vast aquifer of brackish water. The City is also involved in an associated national desalination project. The Tularosa Basin Desalination Research Facility is a joint project managed by the U.S. Bureau of Reclamation. A Naval Research Unit is currently conducting the research at the facility. The City of Alamogordo has provided the land for the facility. This is a research facility designed to look at the growing shortage of potable water at inland sites. Desalination research which has been conducted in the past has focused on the techniques needed to operate desalination facilities on ocean front areas. Inland sites face unique problems in operation that are not faced by ocean-site facilities. These problems include how to dispose of the brine waste product in an environmentally acceptable manner. Ideally, solutions will be developed to use the brine waste product in not only an environmentally acceptable manner but also in an economically advantageous manner. The City of Alamogordo will integrate the results of this facility's studies into our desalination project.

The City of Alamogordo's plan is to utilize desalination to provide potable water to residents in Alamogordo and the surrounding area. This method will allow other potential users, such as Holloman Air Force Base, the Villages of Tularosa and possibly La Luz, to utilize the expanded water supply. Alamogordo is currently in a legal process to obtain water rights necessary for the project at the most appropriate location, north of Tularosa. Alamogordo is also undergoing a NEPA study to determine if there will be any significant impact to the environment and if so, how to best avoid potential impacts. Mineral by-product disposal management is just one of the issues that this in-depth environmental study is considering.

Research has brought down the cost of desalination by providing standardized equipment. There are several methods of desalination, all of which were considered during our feasibility phase. Two such methods are ion exchange and reverse osmosis membrane filtering. The City of Alamogordo has chosen to use a membrane to treat brackish water because it is the most cost effective for our use, as we are utilizing gravity pressure to save on electricity costs. In 2001, during our water plan development and the desalination feasibility study, it was estimated that the costs associated with the desalination method would be approximately \$34 million to construct the plant and delivery system, and \$0.65 per 1000 gallons in operating and maintenance costs. The May 2005 estimate is \$0.90 per 1000 gallons. This increase is due mainly to power and chemical costs, which have risen since the 2001 estimate. Our production, or operating and maintenance expenses, will also vary depending upon the method chosen for disposal of concentrate. These figures will be above and beyond our current system's delivery costs. Currently, the cost to deliver water to a residential customer averages about \$2.93 per 1000 gallons.

Alamogordo submits our rates to the State of New Mexico every year by survey for a community comparison. The State compares communities by looking at a consumption rate of 6,000 gallons per month. We are right in the middle of the State's average range, which for 2003 was between \$17 and \$20 billed for 6,000 gallons consumed. Our current water rates for 6,000 gallons run \$18.05. Desalination will raise customer rates, and the capital costs for completing the project are still being acquired as each phase is initiated. However, research and a careful review of our available resources makes us confident in the decision that desalination is the only method which can provide the quality and quantity of water that Alamogordo will need in the very near future.

The permitting process in New Mexico is a lengthy and sometimes difficult process. The State of New Mexico along with 18 other western states have water laws based upon the doctrine of "prior appropriation" with beneficial use being the basis, the measure, and the limit of the right to use water. The water in New Mexico does not belong to the surface owners, but to the people of the State of New Mexico. To appropriate these waters, an application must be filed that states the intended points of diversion, place, and purpose of use. This application must be advertised, per statute, and is subject to protest. If no protests are filed the application is reviewed by the New Mexico State Engineer's Office Water Rights Division to assure that there is water available for appropriation that the appropriation will not impair existing rights, and that granting of the application will not be contrary to conservation or public welfare in the State. If the application is protested, as was the case for the City of Alamogordo, the application goes to an administrative hearing process where the Protestants are provided an opportunity to present evidence that the application should be denied based upon the aforementioned criteria. The Water Rights Division is also a party and presents their evidence. The applicant is faced with the burden of proof and presents

its case in favor of the application. This process involves hydrologic analysis, engineering assumptions, supply and demand analysis, and the legal presentation of those tasks and results. All evidence is presented to a hearing officer representing the State Engineer. After weighing the evidence, a determination on the application is made. Based upon the outcome of the hearing process, the State Engineer either approves the application to appropriate water and issues permits to drill at pre-described locations and depths, or he denies the application. Alamogordo's application was approved at less than the amount requested, and this allocation has been appealed to the judicial system. We are still in a legal battle to be able to utilize the rights approved by the Office of the State Engineer in 2004.

What Congress can do to further bolster our efforts is to recognize the urgent need for alternative, non-traditional water supplies, to continue funding support through sources such as the Environmental Protection Agency, the Corps of Engineers, and the Department of Interior – Bureau of Reclamation, and to assist entities with identification of potential sources by supporting research and development. Alamogordo truly appreciates the funding and technical assistance we have received on this project. We have utilized Federal, State, and local dollars to come this far. We have completed a pilot project, a feasibility study, infrastructure improvements, planning stages, and are in the middle of our NEPA study and water rights allocation process. I look forward to the opportunity of updating you with the good news that we have begun construction within the next two years. Thank you again distinguished members of Congress for your interest in this important issue of affordable, clean water, and for the opportunity to share my community's story with you.