Planning for a Sustainable Nevada: Cooperative Solutions and Responsible Water Resource Development

Kenneth Albright, Director of Groundwater Resources, Southern Nevada Water Authority

Background:

The Southern Nevada Water Authority (Authority) was formed in 1991 to acquire and manage water resources for southern Nevada, construct and manage regional water facilities and promote responsible water use. For over a decade, the Authority has worked collaboratively with diverse stakeholder groups, both locally and regionally, to develop cooperative solutions to difficult and dynamic water resource challenges prompted by increasing water demands and diminishing supplies. These challenges came to a head near the end of the 20th century when the Colorado River – the region's primary water supply – began to experience extraordinary drought conditions. Never before in recorded history had this lifeblood supply, which serves more than 30 million users in seven western states, been subject to the severity of conditions experienced over the last ten years.

This paper will explore the Authority's efforts to redefine outdated water management strategies by working with other states and Nevada counties that depend on shared resources. As we will explore in greater detail, these efforts that have led to the implementation of a number of unprecedented cooperative interstate agreements, principally with the seven basin states that share Colorado River resources. Closer to home, the Authority has forged other agreements for groundwater supplies in the state that will allow for the development of these resources, while protecting existing rights as well as important environmental and cultural assets.

These challenges have taught us the value of cooperation. As water issues become even more complicated over time, meeting water demands will require continued communication, collaboration and the development of innovative partnerships. In order to stretch water resources to meet the needs of all stakeholders, we must move beyond the traditions that divided us in the past.

The Law of the River

The Colorado River is governed by a body of laws, agreements, regulations and court decisions collectively known as the "Law of the River." In 1922, under the Colorado River Compact, which defined the Colorado River system, the Department of the Interior divided the annual flows of the river. The river's flow was estimated at 16.5 million acre-feet per year and distributed among seven states – Wyoming, Colorado, Utah, New Mexico, Nevada, Arizona and California. The first four states, known as the Upper Basin, received 7.5 million acre-feet of water. An equal amount of water was allocated to the three remaining states, known as the Lower Basin. Nevada received the smallest apportionment of all seven states – a mere 2 percent or 300,000 acre-feet each year. Mexico was allocated 1.5 million acre-feet per year.

At the time of the compact, Nevada had few residents and little agriculture, and thus little need for the river water. This state of affairs continued well into the 1970s, with southern Nevada depending exclusively on groundwater to meet resource demands. This changed as post-War growth accelerated and the area quickly utilized all its groundwater. By the 1950s, groundwater pumpage was exceeding natural recharge and planners began work to bring Colorado River water into the Las Vegas Valley. The River would soon become the primary focus of southern Nevada's effort to meet water demands into the 21st century.

Today, Nevada withdraws its share of the river at Lake Mead, named after Elwood Mead, an early commissioner for the Bureau of Reclamation. Lake Mead is the nation's largest man-made lake, created by the building of Hoover Dam. In 1967, the Bureau of Reclamation teamed with the Colorado River Commission of Nevada to build the Southern Nevada Water System (SNWS), a series of facilities designed to treat and deliver Colorado River water into the Las Vegas Valley. Today, at more than twice its original capacity, the SNWS delivers nearly every drop of Nevada's Colorado River apportionment to the Las Vegas Valley.

The Southern Nevada Water Authority oversees the operation of the SNWS and southern Nevada's use of its Colorado River water. The Authority was formed in 1991 when local leaders and water managers alike recognized the need for a coordinated water planning effort in southern Nevada. The Authority was created through a cooperative agreement among seven water and wastewater agencies operating in southern Nevada to acquire and manage water resources for southern Nevada, construct and manage regional water facilities and promote responsible water use. The agency is governed by a board of directors, comprised of one elected official from each of the Authority's seven member agencies. These agencies include the City of Las Vegas, City of North Las Vegas, City of Boulder City, Clark County Water Reclamation District, City of Henderson and Las Vegas Valley Water District. One of the most important first steps the Authority's member agencies took was to pool their water resources, thereby ending long-time conflicts over water resources. To prevent future disputes, the Authority was charged to work for all of southern Nevada's residents on behalf of its seven member agencies and manage the development and operation of water resources to meet the long-term demands of the region as a whole.

Meeting Future Demands

One of the Authority's highest priorities is long-term water resource management – not just managing existing resources, but identifying and acquiring additional future resources. The Authority has been very successful in this regard, having secured additional supplies to meet the increasing water demands of the past 17 years, and to meet projected demands through 2055.

Beginning in the early 1990s and continuing to the present day, the Authority has also worked closely with other Colorado River basin states to maximize opportunities to extend and increase the flexible use of the Colorado River, thereby stretching available supplies for the future of all users. Cooperative agreements have provided additional

reliability for the basin states during times of unforeseen water shortages on the river system. It wasn't until the beginning of the 21st century that water managers along the Colorado River fully recognized how invaluable these agreements had become.

As a result of cooperative efforts among the seven basin states, Interim Surplus Guidelines were adopted in 2003 as a result of a Record of Decision signed by the Secretary of the Interior. These guidelines allow the states of California, Arizona and Nevada to access interim surplus Colorado River water through 2016. Typically a function of Colorado River storage and weather conditions, a surplus can be declared by the Secretary if it is forecasted that the amount of Colorado River water in the system will exceed 7.5 million acre-feet in that year. The Interim Surplus Guidelines utilize the elevations at Lake Mead to determine the amount of water that is available for lower basin states to divert in addition to their basic river apportion. This landmark agreements effectively ended disagreements between the lower basin states as to how the surplus water would be divided, and allowed water managers in the lower basin another water resource to meet future demands.

In addition, water banking agreements provide Nevada with a "savings account" of additional water to meet future demands. The Authority has water banking agreements with the states of Arizona and California, which allows the states to bank a portion of their unused Colorado River water for Nevada's future use. For example, the Arizona Water Banking Authority banks a portion of that state's Colorado River allocation in Arizona's underground aquifer. When the SNWA needs the water, Arizona will utilize its banked water and forego a portion of its Colorado River apportionment to Nevada, allowing the SNWA to divert the water from existing facilities at Lake Mead.

The Interim Surplus Guidelines and the water banking agreements are only a few examples of how the Colorado River's users are using cooperative efforts to develop solutions to the unique issues facing water managers. At the time these solutions were developed, runoff in the system was exceeding average and water managers were developing solutions to end conflicts over what to do with the excess water. As drought along the Colorado River became more severe, water managers are now faced with new issues as the resource that serves 30 million users was beginning to run dry.

Responding to Drought

Beginning in 1999 and continuing today, the Colorado River Basin began to experience drought conditions that, over the next few years, quickly became one of the worst droughts in the recorded history of the basin. In response to reduced inflows, water levels in the two primary storage reservoirs on the Lower Colorado River (Lake Mead and Lake Powell) declined, from a near full condition in 1999, to levels not observed since Lake Powell began filling in the early sixties. Beginning in 2000, annual inflows to Lake Powell experienced drastic declines to rates as low as 25% of normal.[1] During this time, 90 percent of southern Nevada's water supply was from the Colorado River. Continued drought throughout 2003 and 2004 resulted in the lowest five-year average

[1] U.S. Department of the Interior, Bureau of Reclamation, Final Draft Annual Operating Plan for Colorado River Reservoirs 2008, 5-6 (January 25, 2008).

runoff in recorded history; annual runoff into the river system during that time was about 50 percent of average.[2]

The reduction of inflows into Lake Powell and subsequently Lake Mead caused a significant decrease in water levels in Lake Mead. The accumulation of a white mineral "bathtub ring" on the landscape surrounding the lake served as an ominous reminder of potential water shortage to southern Nevada residents. A water supply shortage meant devastating consequences for Las Vegas, a city that was one of the fastest growing in the nation at that time. A water supply shortage or interruption would certainly affect the tourism, gaming and entertainment industries, pillars of the region's robust economy. In addition, property development would likely decline, causing home and property values to crash and leaving residents without work and decreasing the region's enviable quality of life. Because of the need to assure that southern Nevada had a reliable water supply to meet current and future needs, the Authority and its member agencies began to take deliberate steps to change the culture of water use.

The Authority began with more aggressive implementation of its conservation programs, which includes a comprehensive drought response plan that has resulted in permanent changes to how the community uses water.[3] A variety of tools that serve to promote conservation and reduce overall water use include regulation, education, pricing and incentives; coupled with a more targeted approach to water consumers, shape the SNWA's conservation initiatives. This mix includes unique approaches to regional water management including tiered water rates that penalize the highest water users, development codes that prohibit turf in front yards of new development and landscape watering restrictions. The pillar of the conservation program is the Water Smart Landscapes Program, which provides customers with rebates for replacing turf from their landscaping with water-efficient, native plants.[4] Since the program's inception, the Authority has provided over $109 million in rebates, saving the community more than 6 billion gallons of water each year. The ongoing success of water conservation efforts illustrates the community's shift from temporary drought response to a permanent way of life. Despite the successes of the Authority's conservation program, local water managers recognized that conservation alone would not address effects of severe drought in southern Nevada. Simply, more resources were needed to reduce southern Nevada's 90% dependence on the Colorado River.

The severe and persistent drought conditions in the Colorado River basin left increased the concerns by users in all the potential consequences of shortage on the system. The mighty Colorado River's future as a reliable water source was in question and the states were growing increasingly aware of the devastating consequences that would threaten their communities. As states looked to develop new water resources, critics to alternative water projects argued for reopening the Compact and renegotiating river allocations.

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[2] United States Bureau of Reclamation; Lake Powell Realtime Inflows located at http://www.usbr.gov/uc/water/rsvrs/ops/crsp_40_gc.html. Updated daily.
[3] Southern Nevada Water Authority, Drought Plan (2007). Available at www.snwa.com/html/drought_plan.html.
[4] Program information, terms and conditions available at www.snwa.com/html/cons_wsl.html.

However, a lengthy and protracted legal battle over allocations would not provide near-term drought relief and would make it harder to cooperate in the future.

Cooperative Solutions: The Interim Guidelines

In an effort to assist the Colorado River basin states and design methods for drought protection, the U.S. Department of the Interior (Interior), on behalf of the Bureau of Reclamation, announced its intent to prepare an Environmental Impact Statement (EIS) for the development of Interim Guidelines for lower basin shortage and coordinated reservoir operation for Lakes Powell and Mead.[5] In response, the states also recognized the need for the development of strategies to respond to declining water levels and submitted a preliminary proposal to the Interior in February 2006.[6] The preliminary proposal outlined components that the states wanted to be considered in any final guidelines to help manage the Colorado River system. Some of the key components related to coordinated reservoir operation between Lake Powell and Lake Mead, quantified shortages among lower basin states and the creation of a water conservation program for use in the lower basin. These components were proposed to offer the states a number of opportunities to stretch supplies, and in some cases, add additional water to the Colorado River system. The proposal also included an agreement among the seven basin states to facilitate cooperation and to avoid conflicts. The Bureau of Reclamation reviewed the basin states' proposal and included it as the preferred alternative in the Draft EIS, published in November 2007. In December 2007, the Secretary of the Interior signed the Record of Decision on the Final EIS, formalizing the preferred alternative and creating the first set of guidelines to manage lower basin shortages, implement communication to create additional supplies and provide for the coordinated operation of Lakes Powell and Mead.[7]

The adoption of the preferred alternative both recognizes and underscores the need for collaboration and coordination of interests and stakeholders. Agreements that are developed in a way that involves all stakeholders will result in better decisions with less conflict. In this way, the Record of Decision provides each basin state a number of wins, but also demanded a few compromises in order for all the states to come to agreement. For example, the Interim Guidelines provides a means for the Authority to fund a storage reservoir along the All-American Canal, located near the U.S./Mexico border, which will store water from the Colorado River system that was ordered, but not delivered and that would otherwise go unused and flow into Mexico. Projects like these allow the seven states a number of opportunities to work together, conserve water in the river system and work cooperatively for the development of a shared natural resource.

The water challenges facing Nevada and the six other Colorado River basin states are similar to those in other parts of the nation. Recently, drought in the southeastern United States has required those states to rethink current approaches to meeting water demands.

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[5] Colorado River Reservoir Operations: Development of Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead Under Low Reservoir Conditions

[6] Ibid

[7] Department of Interior, Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead.

In fall 2007, officials at the Environmental Protection Division in Georgia were predicting that the city of Atlanta could run out of water in as fast as three months, which left local water managers scrambling to find additional water resources of water.[8] Similar water challenges caused by severe drought, changing weather conditions and increasing customer demands are facing water utilities across the nation, forcing local water managers to develop collaborative solutions that maximize interests, minimize impacts and ultimately deliver more water. For this reason, regions that rely almost solely on one water source, like Atlanta, are looking to diversify their portfolio of water resources.

Diversifying Resources

In an effort to become less reliant on the Colorado River, the Authority is currently working to develop additional non-Colorado River resources that exist within Nevada. The project will provide diversification to southern Nevada's existing water resources, and provide its residents a reliable water supply. The Clark, Lincoln and White Pine Counties Groundwater Development Project will draw unused, unappropriated groundwater from hydrologic basins in northeastern Nevada. Up to 167,000 acre-feet of groundwater will be developed and piped through approximately 235 miles of buried pipeline for municipal use in southern Nevada. Moving some of this unused water to southern Nevada will increase the reliability of the region's water supply during droughts or future shortages on the Colorado River and will also help to meet future demands.

Before the Authority can develop any groundwater, legal rights to the water must be obtained through a formal, regulatory process administered by the Nevada State Engineer. As it stands, Nevada water law is one of the most comprehensive water laws in the western United States. It has the unique flexibility to accommodate new and growing uses of water in Nevada, while protecting those who have used water in the past. In Nevada, the water belongs to the people and water rights are permitted through the Nevada State Engineer, who has full authority over the permitting of water rights in the state and considers a number of factors when granting or denying water applications. These considerations include water availability, potential for conflicts with existing rights, public interest and impacts to domestic wells. When granting these rights, the State Engineer may request an administrative hearing to consider the applications and allow an opportunity for protestants to present testimony and other evidence in regards to the applications. At an administrative hearing, the water applicant and protestants have the opportunity to discuss and provide evidence related to impacts in the area, especially those that may impact existing users, the environment and economy.

As the Project began taking shape, the Authority recognized the value of addressing local concerns regarding groundwater development in those counties where the pipeline was expected to extend through a combination of outreach, education and formal agreements. In 2003, the Authority entered into a cooperative agreement with Lincoln County that affords the parties a number of protections and rights regarding future groundwater

[8] Atlanta Suffers as Southeast Drought Continues. Oct. 15, 2007. abcnews.com http://abcnews.go.com/GMA/story?id=3730145

development.[9] This agreement divided a portion of the Authority's pending groundwater applications between the Authority and Lincoln County, thereby assuring Lincoln County a means of future growth, in terms of groundwater supplies. As a result, the county withdrew its protests to all of the Authority's groundwater applications, and this cooperative relationship has proved invaluable to the Authority throughout the duration of the Project.

In 2006, the State Engineer held an administrative hearing to consider the Authority's groundwater applications in the Spring Valley hydrographic basin, located near Ely, Nevada. Prior to the hearing, the Authority and the U.S. Department of the Interior, on behalf of four bureaus listed as protestants, entered into a Stipulation to address federal concerns over the Authority's applications for groundwater in Spring Valley.[10] The Stipulation will manage the development of groundwater rights in a way to avoid adverse effects to federal water rights, resources and water-dependent ecosystems; thereby addressing federal concerns while developing resources in a sustainable, environmentally sensitive manner. Under the agreement, the federal agencies withdrew their protests to the SNWA's groundwater applications in Spring Valley in return for specific monitoring, management and mitigation commitments by the SNWA, and a leading role in oversight of those commitments. Included in the agreement are two key documents, which provide the backbone of the Stipulation: the Hydrologic Monitoring, Management and Mitigation Plan and the Biologic Monitoring, Management and Mitigation Plan. Through the development of these plans, along with the number of committees set forth in the Stipulation to regulate the development of the plans, the Stipulation is a very comprehensive agreement that involves cooperation among a number of stakeholders to develop groundwater resources in an environmentally responsible manner.

Facing New Challenges: Climate Change

Agreements that include a number of options for all parties to participate, as evidenced by the Colorado River basin states Record of Decision and the Federal Stipulation program are becoming a "best practice" for water managers, particularly those in the Southwest who are facing new water resource challenges. Climate change is quickly becoming of increasing interest to water managers across the nation as water resource availabilities are becoming less and less permanent. At a local level, climate change may be represented by increasing air and water temperatures; changing precipitation patterns and stream flow intensity; less snow pack, earlier snowmelt and runoff; an increase in the number and severity of events such as storms and flooding; and intensified drought conditions.[11] To address these concerns, water managers are participating in a number of efforts related to assessing and adapting to the impacts of climate change. Recently, eight of the nation's largest water agencies have partnered to form the Water Utility Climate Alliance (WUCA). WUCA work to improve research into the impacts of climate change

[9] Cooperative Agreement Among Lincoln County, the Southern Nevada Water Authority and the Las Vegas Valley Water District. Approved February 20, 2003.

[10] Stipulation for Withdrawal of Protests among the Southern Nevada Water Authority and the U.S. Department of Interior on behalf of its four bureaus: Bureau of Indian Affairs, Bureau of Land Management, National Park Service and Fish and Wildlife Service concerning Groundwater Development in Spring Valley, Nevada. September 2006.

[11] National Center for Atmospheric Research, Climate Change Workshop, August 28-29, 2007.

on water utilities, develop strategies for adapting to climate change and implement tactics to reduce their greenhouse gas emissions. Climate change will inevitably create a new set of challenges for water utilities, and solving these challenges will require the support and cooperation of water utilities and resource managers across the nation.

Moving Forward

As climate change is continuing to change water resource forecasts, water managers recognize the importance of developing a diverse portfolio of water resources and enhancing the efficient use of those resources moving forward. The onset of global climate change reinforces the need for a continuous and flexible approach to water resource planning. Furthermore, water managers also recognize the value in having collaborative and cooperative work groups in order to develop agreements that yield better solutions to resource challenges.

In coordination with other Southwest water managers, the Southern Nevada Water Authority has participated in establishing a new precedent of communication, collaboration and the development of innovative partnerships. These partnerships have allowed the region to successfully manage scarce resources through a severe, prolonged drought— emerging with stronger, positive relationships between states and with federal leadership. This foundation will prove invaluable as we prepare for and respond to the challenges on the horizon.