

Quenching Thirst in the Colorado River Basin



**COLORADO
WATER CENTER**

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Executive Summary



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Lake Mead, photo ©iStock.com

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“Water, is taught by thirst.”

—Emily Dickinson

There is little dispute that the Colorado River Basin (CR Basin) is thirsty. In an attempt to learn from that condition, this series on the Colorado River (CR) is intended to provide an understanding of issues and relationships that have shaped the CR Basin so that the historical doctrines can bend to the needs of the present and future without eroding a foundation upon which we all stand.

Made up of a combination of tributaries and mainstem flows, the CR runs from its Rocky Mountain headwaters in Wyoming and Colorado to the Gulf of California in Mexico. Along its journey, the CR supplies water to millions of people and millions of acres of irrigated agriculture. It also serves to generate affordable power supplies for various municipal and rural customers and is a driving life source for Tribes, national parks, and countless wildlife species throughout the CR Basin.

The CR Basin has been enduring a prolonged drought since 2000 with no apparent relief in sight. The 2021 water year was one of the driest in the CR Basin’s recorded history. Moreover, the current 20-year period ranks as the second driest in the last 1,200 years. The science presents a cautionary tale that the abundance of 20th Century water supplies may be a thing of the past. On the ground experience and various models demonstrate a regularly hotter, drier future for the CR system going forward. In other words, it may not be just a persistent drought but a more pronounced

drying of the system that the CR Basin is experiencing.

At the same time, there remains a strong need to support and maintain the agricultural spirit that has defined

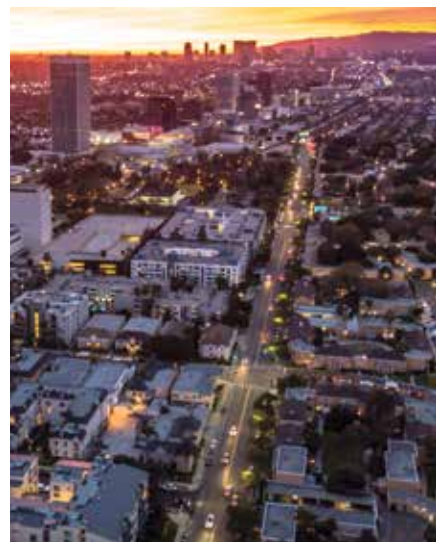
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much of the West’s heritage for well over 100 years. There is also a significant pull to sustain urban cities in places like Los Angeles, San Diego, Denver, Phoenix, Tucson, Las Vegas, Santa Fe/Albuquerque, Salt Lake City, and Cheyenne that rely on CR water to help supply their growing populations. Not to be overlooked, there is an ever-growing recognition that various Native American Tribes hold legitimate claims to the CR to support their cultures, reservations, and homelands throughout the desert southwest. Finally, there is the added pressure to provide for all of these and other demands without deteriorating the aesthetic and ecological values of the CR Basin.

The present challenge is to determine how to best manage the highly erratic and possibly declining CR water



CR Basin map courtesy of the U.S. Geological Survey.



Los Angeles (above), San Diego, Denver, Phoenix, Tucson, Las Vegas, Santa Fe/Albuquerque, Salt Lake City, and Cheyenne all depend on CR water. Photo ©iStock.com.

supplies to fit within expanding values and growing demands for CR water while respecting the storage and distribution systems upon which societies have been built over the past century. Past experience teaches us that neither protracted litigation in courts nor political maneuvering through Congress will guarantee successful outcomes in response to the CR Basin's complex challenges. Instead, collaboration and cooperation are also necessary ingredients for thriving in the 21st Century. For the CR Basin, this requires a commitment to and focus on cooperation and beneficial arrangements among varying interests to help mitigate and adapt to changing conditions throughout the region.

This CR series encourages such commitments by providing background and context regarding the forces that have compelled the development and operation of the CR from the 1920s to today. It provides a more in-depth examination than may otherwise be identified in news stories and articles of four primary forces that influence decision making on the CR: (i) History, Law, and Policy on the CR; (ii) Indian Reserved Water Rights in the Colorado River Basing; (iii) Environmental Perspectives in the Colorado River Basin; and (iv) Sharing the CR Between the U.S. and Mexico. Insight into how the CR Basin has arrived to where it is today will hopefully help inform how best to direct where it needs to be tomorrow.

History, Law, and Policy

The framework for present-day CR operations can be traced to the history, law, and policies dating back to the early 1900s. Water users in California were seeking federal assistance to construct and operate federal facilities that would even out and reliably distribute the erratic flows of the CR. Elsewhere, other CR Basin States were concerned that the "Prior Appropriation Doctrine" would be applied across state lines to allow California's water users to lay claim to the CR before others had a chance to develop any water. In response, the seven CR Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming)

collectively persuaded Congress to authorize negotiation of the CR Compact. As the first interstate water compact in the country, the CR Compact is the keystone to a series of laws, regulations, and agreements, commonly referred to as the "Law of the River," that have been used to guide the operations and management of the CR System up through today.

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The Law of the River governs the distribution and uses of the CR System among the seven CR Basin States and the Republic of Mexico. Most would agree that it includes two multi-state compacts, an international treaty, a U.S. Supreme Court decision and decree, an extensive body of federal legislation, and numerous agreements, permits, and regulations. The pieces of the Law of the River serve as a foundation upon which the CR Basin has stood when determining questions of authority, rights, and obligations about CR use and management within the Basin. They are the result of countless negotiations, litigations, congressional hearings, and trade-offs beginning in the 1920s that have influenced the development of not only water but also societies, economies, and cultures from the peaks of the Rocky Mountains to the deltas in the Gulf of California.

The Law of the River's primary focus is on water supply. It revolves around apportionment of the CR water supply,

construction of federally authorized projects to aid in accessing and developing the CR water supply, and regulation and operation of the federal infrastructure to distribute the CR water supply.

Through the years, the application and expansion of the Law of the River have worked to moderate conflict and provide some sense of order amidst great uncertainty. That does not mean that the Law of the River is the panacea for all things related to the CR. It is not a Magic 8 Ball that one can shake to reveal the answer. There are differences of opinions concerning its application and interpretation that require regular attention to avoid the threat of conflict and controversy. There are also complex matters that the Law of the River has either kicked down the road or simply overlooked.

Nonetheless, it remains the foundation around which societies and individuals have built identities and a way of life. Moreover, it has demonstrated through the years that it can evolve and grow with the times. With that understanding, it appears time yet again to examine and elaborate on the Law of the River to help meet the needs required of the CR Basin today.

Indian Reserved Water Rights in the Colorado River Basin

The 30 federally recognized Tribes¹ in the CR Basin collectively hold rights to almost 20 percent of the CR water supply. Twelve of those Tribes still await a process for recognizing and quantifying additional rights to the water. While each Tribe maintains its own views and unique perspectives on the CR Basin, it is safe to say that many consider the CR to be sacred, and all rely on the CR resource in some manner for cultural, social, economic, and spiritual survival.

Tribes obtain rights to a significant portion of their water supplies based on the doctrine of federal Indian reserved water rights. This doctrine stems from the U.S. Supreme Court's decision in *Winters v. United States* in 1908. In *Winters*, the Court held that the U.S. had impliedly reserved the amount of water necessary to help accomplish that purpose for establishing the reservation of the Tribes in question. This case serves



Signing of the 1944 Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande between the U.S. and Mexico. Photo courtesy of the International Boundary and Water Commission, U.S. Section.

as the foundational element to the doctrine of reserved water rights, and federal Indian reserved water rights are often referred to as “Winters rights.”

Winters rights have some unique characteristics. First, they are held in trust by the U.S. for the benefit of the relevant Tribe(s). The trust responsibility is a legal obligation for the federal government to protect Native American resources and assets and manage them in the Tribes’ best interests. Second, federal Indian reserved water rights exist independent of use, cannot be lost due to nonuse, and can displace other water rights who commenced water uses after the land reservations for Tribes were created. Third, the volume of a federal Indian reserved water right is limited by the amount of water determined to be necessary to fulfill the purposes of the reservations.

The CR and Upper CR Basin Compacts leave the door open for Tribal water rights to be recognized within the CR Basin. They do not, however, clarify how such rights should be integrated with the compact apportionments of water among the States. This “omission” has been a source of debate regarding, among other things, the magnitude of valid reserved rights claims to CR water, the volume of water reserved under each federal Indian reserved right, and the accessibility/use of federal Indian reserved rights within the CR Basin.

The magnitude of valid CR reserved right claims has yet to be fully defined.

In *Arizona v. California*, the U.S. Supreme Court pronounced that uses of mainstream CR water by the U.S. (which is assumed to apply to Tribal reserved rights) is limited to the uses apportioned to the CR Basin States by compact or decree. However, questions remain. Among them are whether the Court’s decision applies to rights that existed before the CR Compact or to sources other than the CR mainstream? Moreover, how will recognition of any federal Indian reserved water right implicate or affect existing rights held by non-Indian water users within a state?

The process for quantifying federal Indian reserved water rights is not guaranteed to produce successful results. Congressional quantification requires political jockeying to finalize legislation, which can be problematic if politically powerful interests are pitted against each other inside the U.S. capitol. Judicial quantification often involves decades long proceedings at great cost to Tribes, governments, and water users alike. Negotiated settlements have become a preferred approach to quantifying federal Indian reserved water rights. They have the potential to clarify Tribal water rights while garnering support for resolving long-standing uncertainties and avoiding litigation. However, they are not always successful either. Unless and until a majority of people from each negotiating party feel they have received fair consideration of their rights and interests, the likelihood of agreement and congressional consent remain fleeting.

Access to water entitled to Tribes under a federal Indian reserved water rights remains another critical element to addressing uncertainties related to water uses in the CR Basin. Many Tribes with water rights on paper (statute, court decree, and settlement agreement) still struggle to secure access to sufficient water to meet the basic needs of their communities because they lack the necessary infrastructure to provide the water where it is needed. Unlike courts, negotiated settlements approved by Congress can include terms for funding and construction of water infrastructure that allows Tribal communities to gain actual access to their quantified rights.

As water supplies tighten and policy makers contemplate innovative water management strategies for the CR Basin, there is a growing realization that Tribal considerations and water rights to CR sources are key elements to the continued operation of the system. Recent examples of important Tribal contributions include the 2018 CR Basin Ten Tribes Partnership Tribal Water Study and the 2019 CR Drought Contingency Plans.

Environmental Perspectives in the Colorado River Basin

Conservation efforts to protect watersheds, lands, and resource qualities began to take hold in the U.S. in the 1960s and 1970s. Laws such as the Clean Water Act, Wilderness Act, and Wild and Scenic Rivers Act, are some of the environmental statutes that still serve as an environmental overlay to existing management frameworks throughout the country.

The CR Basin is comprised of watersheds and resources that are unmatched in nature. It is home to an abundance of national parks and monuments, provides irreplaceable habitat for multiple rare and endemic fish and wildlife, serves as a source of refuge for migratory birds traversing the Pacific Flyway and accommodates a Delta Region that once served as one of the most biologically diverse places on the continent. A recreational magnet for fishing, boating, rafting, swimming, skiing, rock climbing, hiking, camping, and kayaking enthusiasts around the world, the CR also makes up an essential part of the cultural fabric for Tribal and other

communities spanning both the lands of snow and sun in the mountain and desert southwest.

Despite the undeniable richness of the CR Basin's environmental and cultural assets, natural resource policy and management decisions are frequently dominated by consumptive use and water allocation considerations within the CR Basin. This structure, however, has proven somewhat malleable through the years. Policies to consider natural resources, minimize environmental harms, and protect, improve, or enhance river assets in key areas have become part of the societal norm as awareness of environmental values has grown. Such policies have also led to procedural requirements and substantive programs that supplement the basic management principles for the CR system.

Species Protection within the Upper and Lower Colorado River Basins

The CR is home to a large number of native species that are found nowhere else in the world. Demands for water and power and the introduction of non-native species through the decades have transformed CR Basin ecosystems. Governments, Tribes, and stakeholders have collectively worked in key areas to develop mechanisms and programs intended to encourage imperiled and native species to succeed. Programs such as high flow release events from Glen Canyon Dam, mechanical removal of non-native species, and recovery implementation programs have become (and will continue to be) integral to the CR Basin's overall health.

Protection of Grand Canyon National Park Resources

The CR is essential to the Grand Canyon National Park. Flowing through 277 miles of the park, from Marble Canyon (just downstream of Lee Ferry and Lake Powell) to the Lake Mead National Recreation Area, the CR has shaped the complex natural and cultural histories of the park and surrounding region. The National Park Service (NPS) manages

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the Grand Canyon to conserve resources within park boundaries and provide for the enjoyment of those resources for current and future generations. However, the CR resource is also managed by seven CR Basin States and the Bureau of Reclamation (Reclamation) to provide water and power to millions of people and irrigated acres in the U.S. and the Republic of Mexico. These two missions do not always align neatly and require continuous efforts to balance and integrate the values and responsibilities associated with managing the Grand Canyon National Park with the obligations to manage the CR system pursuant to and consistent with the Law of the CR.

Colorado River Delta and Cienega de Santa Clara

At one point, the CR Delta spanned over 1.9 million acres of wetlands and marshes in the U.S. and Mexico that were fed by the CR and the Sea of Cortez. It was home to "green lagoons" that provided habitat for fish, dolphins, mollusks, birds, beavers, deer, bobcats, and even jaguars. However, efforts to divert, dam, and channel the CR to farms and cities throughout the 1900s have caused the CR Delta to

be only a trace of its former self. Collaborative agreements consistent with the 1944 Water treaty have taken hold more recently to promote binational measures for reviving parts of the Delta. Future management decisions with binational implications will likely have to take into account ways to further mitigate and restore portions of the Delta and its riverine areas going forward.

Salton Sea Management and Mitigation

The Salton Sea is an important food source as well as a nesting, wintering, and stopover site for thousands of bird species in Southern California. Irrigation runoff from farms in the region have been the primary water source for the Salton Sea since its most recent formation in 1905. Changes to CR supplies in the early 2000s as a result of a regional agreement among water users have drastically reduced the Salton Sea's inflow. The resulting adverse impacts to both public health and wildlife in the region have been cause for significant environmental and financial concerns. Some California water users are demanding attention to address the Salton Sea in future CR management efforts.

Incorporating environmental resource policy into water supply management decisions is an ongoing process. As the CR Basin continues to work through its complex water challenges, it will be important to consider how to further integrate the environmental values that support the CR Basin going forward. Past lessons suggest that the extent to which a balance can be struck will be informed not only by the changing conditions of the CR Basin but also by the interest and willingness of governments, Tribes, water users, and scientists to work together to fully address the real-world challenges of our times.



Photographed at sunset, the Salton Sea is an important food source as well as a nesting, wintering, and stopover site for thousands of bird species in Southern California. Photo ©iStock.com

Sharing the Colorado River Between the U.S. and Mexico

The CR is a source of both tension and triumph in the overall U.S.-Mexican relationship. The binational challenges and problem-solving efforts employed to address U.S./Mexico water management issues provide useful lessons when looking to the next steps in CR System operations.

The last 100-mile reach of the CR flows through Mexico. There, it forms a boundary and serves as the primary source of water for agriculture and domestic water in the states of Baja California Norte, and Sonora. The CR also serves as the freshwater source for the CR Delta on the Gulf of California (Sea of Cortez). Today, however, the CR only reaches the Gulf under rare conditions that usually require heavily negotiated arrangements to remain consistent with the terms and expectations of the Law of the River.

The 1944 *Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande* (hereinafter 1944 Water Treaty) apportions the CR (and other rivers) between the U.S. and Mexico. Under the Treaty, the U.S. guarantees Mexico 1.5 million acre-feet (maf) of CR water each year. In the event of an “ex-

traordinary drought or serious accident” reductions can be made to Mexico’s allocation in proportion to shortages taken in the U.S. The Treaty also established the International Boundary and Water Commission (IBWC) as an international body to administer the U.S. - Mexico water treaties. The IBWC consists of both a U.S. and Mexico Section that exist to implement the Treaty provisions, exercise the rights and obligations of both governments under the Treaty, and settle all disputes that arise under the Treaty, subject to authorities of each country’s federal government. To accomplish these duties, the Treaty authorizes the IBWC to develop rules and issue proposed decisions called “Minutes.”

Minutes adopted pursuant to the 1944 Treaty have addressed a range of issues, including the operation and maintenance of cross-border sanitation plants, water conveyance during droughts, dam construction, and water salinity problems (among others). Recently, Minutes have addressed international cooperation on projects and the sharing of CR water during shortage and surplus conditions.

Review of the events and binational relationship status leading up to each of these Minutes reveals that inter-

national negotiations on multiple basin-wide issues are particularly difficult. Differences in language, culture, laws, economic structure, and geography bring to light that the U.S. and Mexico manage water and prioritize and perceive issues in the CR Basin differently. Bridging such diverse views takes time, commitment, and high stakes to motivate all parties to reach an agreement. It also takes the shared recognition that both countries are better off reaching an agreement than operating in conflict and uncertainty.

Overall, the lessons of sharing the CR between the U.S. and Mexico demonstrate that binational collaboration is a critical piece to addressing complex CR management challenges going forward. To be successful, such collaboration will require dedicated commitment from leaders and representatives in both countries to perpetually invest in relationships that can inform and produce beneficial outcomes for both sides of the border. □

Endnote

1 Since there is no official consensus on how to respectfully refer to Indigenous peoples or when to capitalize certain terms, this paper series uses Native American as well as general capitalization of the words Tribe and Tribal as a sign of respect.



The Colorado River photographed in its headwaters region near Grand Lake. Photo © Brian Wolski/Shutterstock.com.



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