HYDRAULIC EMPIRE

Sharing a Legacy, Carving a Future for the Colorado River

By Allen Best

Lake Powell above Glen Canyon Dam. Credit: Pete McBride

FOR SIX CENTURIES, a people called the Hohokam inhabited central Arizona. Among their many accomplishments, they created a hydraulic empire of sorts, a spiderlike web of canals intended to deliver water from the Gila and Salt rivers—tributaries of the mighty Colorado—to their agricultural fields. Eventually, the Hohokam abandoned their fields and canals. To this day, the reason is uncertain, but historian Donald Worster once surmised that the productive but ill-fated tribe "suffered the political and environmental consequences of bigness" (Worster 1985).

Bigness. It's the perfect word to describe not only the Colorado River Basin, but so much of the geography, history, culture, politics, and challenges associated with it.

In its sheer complexity, the Colorado stands out among the rivers of America, and probably the world. In this river basin of 244,000 square miles, one-twelfth the land mass of the continental United States, exist great diversities, places of oven-hot heat and icy vastness. All but 2,000 of those square miles lie in the United States. Just 10 percent of that land mass, mostly in an elevation band of 9,000 to 11,000 feet in the Rocky Mountains, produces 90 percent of the water in the system.

Hydraulic infrastructure abounds at almost every turn on the river's 1,450-mile journey. The first diversions occur at its very headwaters in Rocky Mountain National Park, before the river can rightfully be called a creek. Fourteen dams have been erected on the Colorado River, and hundreds more on its tributaries. Hoover Dam, perhaps the best known, hulks a half-hour drive from Las Vegas. The U.S. Bureau of Reclamation (USBR) built it in the 1930s to hold back the river's spring floods, creating a reservoir now known as Lake Mead. A second massive reservoir, Lake Powell, lies upstream 300 miles. It's the result of Glen Canyon Dam, built in the 1960s with the goal of providing a means for the four Upper Basin states—Colorado, New Mexico, Utah, and Wyoming—to store the water they had agreed to deliver to the Lower Basin states of Arizona, California, and Nevada, and to Mexico.

From powering desert cities to providing opportunities for recreation, the Colorado River Basin supports millions of people in many different ways. Left: Las Vegas (Anthony Kernich); right: hikers at Lake Mead National Recreation Area (Andi Rucker).

At their fullest, the two reservoirs—which are the biggest in the country—can hold four years of flows of the Colorado River. A recent paper suggested that the two reservoirs could be considered one giant reservoir, bisected by a "glorious ditch" (CRRG 2018). That ditch is the Grand Canyon, which celebrates the one hundredth anniversary of its designation as a national park this year.

The dams, reservoirs, tunnels, and aqueducts of the Colorado deliver water to 40 million people in seven U.S. states—more than 1 in 10 Americans—and two Mexican states. The river's water also nourishes more than 5.5 million acres of agricultural fields within and outside the river basin. Residents of Denver, Los Angeles, and other cities outside the basin rely on the river; crops in fields reaching almost to Nebraska benefit from transbasin exports and diversions.

The river provides a cultural and economic resource for 28 tribes within the basin. A $1.4 trillion economy hums along in and around the basin. This includes the snowmaking cannons at Vail and Aspen, the nightly water spectacle at the Bellagio in Las Vegas, and the aeronautics industry of Southern California. Up and down the river, more than 225 federal recreation sites draw visitors eager to try their luck at fishing, rafting, hiking, or just taking in the sights. This river and the lands around it loom large in the public imagination.

It's a big, complicated, and now vulnerable hydraulic web. Entering the twenty-first century, the river was already a sponge fully squeezed, its water rarely making it to the Gulf of California.

Rapid population growth, rising temperatures, and declining river flows are putting pressure on the system, forcing river managers and users to devise creative, forward-looking plans that consider both water and land. The Lincoln Institute's Babbitt Center for Land and Water Policy strongly encourages this approach. "We are trying to think more holistically by considering the management and planning of land and water resources together," says Babbitt Center Program Manager Faith Sternlieb. "These are the foundations upon which water policy in the Colorado River Basin has been considered and crafted, and these are the roots we must nurture for a sustainable water future."

Top: Construction on the Laguna Diversion Dam, the first dam on the river, began in 1904 (U.S. Bureau of Reclamation). Bottom: Los Angeles Chamber of Commerce members and guests enjoy a visit to the Grand Canyon in 1906 (National Park Service).

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Taming the Colorado

The need to nurture roots has driven the development of the Colorado River Basin since the first people began farming there. The Hohokam, Mojave, and other tribes built canal systems of varying complexity to irrigate their fields. In the late 1800s, federal interest in tapping the river to boost agricultural production surged. By 1902, the U.S. Department of the Interior (DOI) had created what is now the Bureau of Reclamation. During the twentieth century, the bureau became the prime builder, and funder, of agricultural water projects throughout the basin.

Work on the Laguna Diversion Dam, the first dam on the Colorado River, began in 1904, yielding water a few years later for fields near Yuma, Arizona. Yuma sits in the Mojave Desert, where Arizona, California, and Mexico come together. There, long, nearly frost-free growing seasons coupled with fertile soils and Colorado River water enable extraordinary productivity. Today, farmers in the Yuma area of Arizona and Imperial Valley of California proclaim that during winter they grow 80 to 90 percent of the greens and other vegetables in the United States and Canada. This area, declares Arizona's Yuma County Agriculture Water Coalition, is to U.S. agriculture what Silicon Valley is to electronics and what Detroit was to automobiles (YCAWC 2015).

All told, irrigation accounted for 85 percent of total water withdrawals in the basin between 1985–2010 (Maupin 2018). Today, agriculture still accounts for 75 to 80 percent of total water withdrawals. This supports row crops such as corn and the perennial crop of alfalfa, which is grown from Wyoming to Mexico. Much of the crops go to livestock: The Pacific Institute, in a 2013 report, estimated that 60 percent of agricultural production in the basin feeds beef cattle, dairy cattle, and horses (Cohen 2013). Agriculture has always been, and will remain, a key piece of the Colorado River puzzle (Figure 1).

But almost as quickly as the Bureau of Reclamation began diverting water for agriculture, other needs arose, from producing electricity to slaking the thirst of booming Los Angeles. By the early 1920s, the seven states of the arid West realized they had to find a way to share a river that would become—as the river's preeminent historian, the late Norris Hundley, would later write—"the most disputed body of water in the country and probably in the world" (Hundley 1996). Years later, Hundley famously referred to the area as a "basin of contention" (Hundley 2009).

Today, dozens of laws, treaties, and other agreements and rulings collectively called the Law of the River govern the use of Colorado River Basin water. They include federal environmental laws, a treaty over salinity, amendments to treaties, a U.S. Supreme Court case, and interstate compacts. None is more fundamental than the Colorado River Compact of 1922, which still guides the annual share of water each state gets (Figure 2). Representatives of the seven basin states met to hammer out its provisions in grueling meetings held near Santa Fe. They were driven by both ambition and fear.

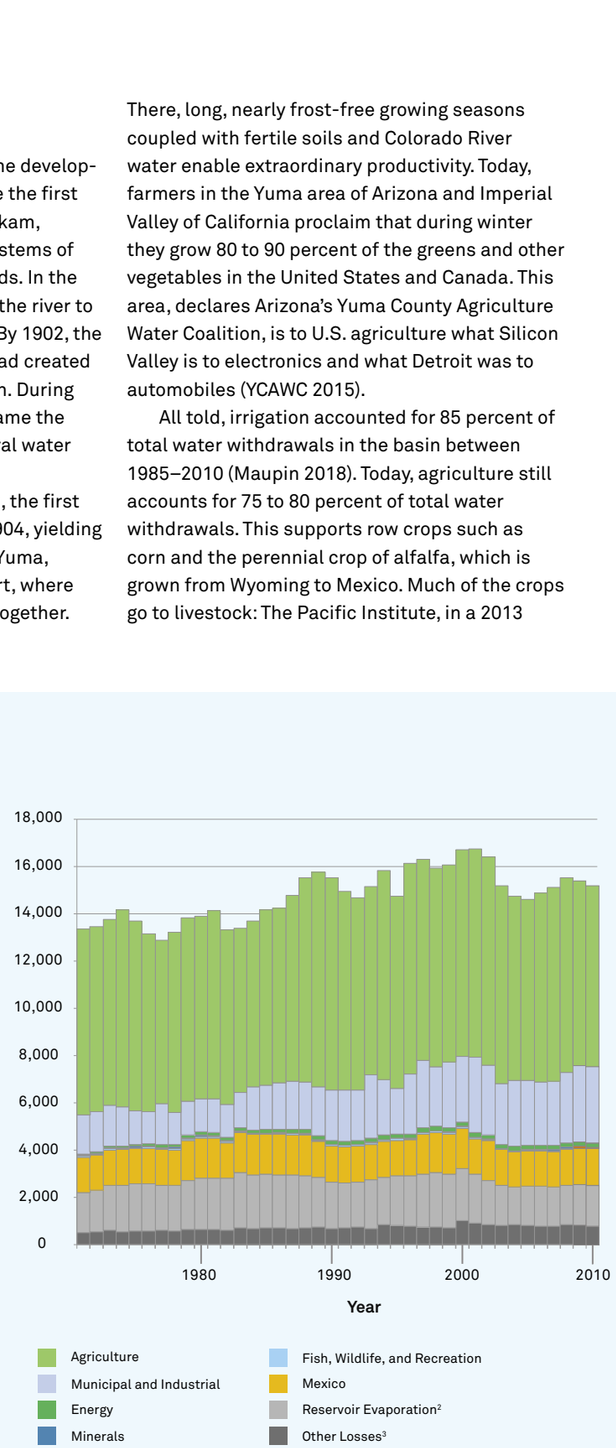
Ambitious California needed federal muscle to tame the Colorado River if it was to realize its agricultural potential. Los Angeles had aspirations, too. In the century's first two decades, it had grown more than 500 percent and wanted the electricity that a large dam on the river could deliver. A few years later, it also decided it wanted the water itself. To pay for this giant dam, California needed federal help. Congress would approve that aid only if California had secured support from the other southwestern states.

Fear drove the other basin states. If the first-in-time, first-in-right legal system of prior appropriation used by Western states was to be applied to the Colorado River, California and perhaps Arizona would reap the benefits. The headwaters states, including Colorado, were developing too slowly to benefit from their own long and snowy winters. Delph Carpenter, a Colorado farm boy turned water lawyer, forged the consensus. Both basins, upper and lower, got 7.5 million acre-feet, for a total of 15 million acre-feet. Mexico needed water, too, which the compact assumed would come from surplus waters. A later treaty between the two nations specified 1.5 million acre-feet for Mexico.

Figure 1

Historical Colorado River Water Consumption[1] by Category, 1971–2010

Measurements are in thousand acre-feet per year.



[1] Excluding Consumptive Use in Lower Basin Tributaries.

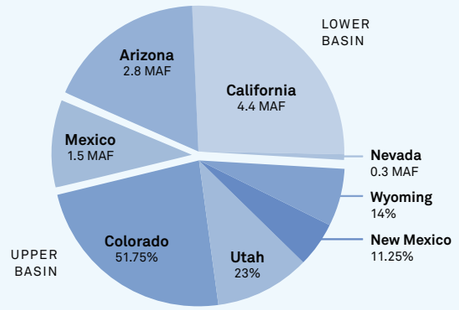
[2] Reservoir evaporation losses are accounted differently in the Upper and Lower Basin. In the Upper Basin, reservoir evaporation losses are accounted as part of each state's total uses. In the Lower Basin, reservoir evaporation losses are accounted separately from each state's uses. Reservoir evaporation losses from Upper and Lower Basin reservoirs have been aggregated for this presentation.

[3] Phreatophyte and operational inefficiency losses.

Source: U.S. Bureau of Reclamation

Figure 2

How They Divided the Colorado River Pie



TOTAL: 16.5 MILLION ACRE-FEET/YEAR

According to agreements reached between 1922 and 1948, each state in the Colorado River Basin has the right to an annual amount of water from the river, as does Mexico. This chart shows the original apportionments, which are based on an assumed annual flow of at least 15 million acre-feet. Lower Basin apportionments are measured in acre-feet, while Upper Basin apportionments are a percentage of the available water. Tribal water rights, which have been confirmed in more recent decades through congressionally approved settlements, cross state lines and account for 2.4 million acre-feet of the total amount shown. The river's average annual flow has been less than 12.4 million acre-feet per year since 2000.

An **acre-foot** is the amount of water it takes to cover one acre at a depth of one foot. It is generally considered enough to meet the annual needs of one household.

The 1922 Colorado River Compact also nodded, but no more, at what later writers called a sword of Damocles hanging over these allocations: water for the basin's Indian reservations. In 1908, the U.S. Supreme Court had declared that when Congress reserved land for a reservation, it implicitly reserved water sufficient to fulfill the purpose of that reservation, including agriculture. That ruling did not determine the amounts that were needed. Tribal water rights within the basin now constitute 2.4 million acre-feet, in many cases senior in priority to all other users within the allocations of the individual states (Figure 3). That's a fifth of the river's total flows. Importantly, specific water allocations for some of the largest tribes still have not been resolved.

The framers of the 1922 compact made a big, and fatally flawed, assumption: That enough water existed to meet everyone's needs. Annual flows from 1906 to 1921 had averaged 18 million acre-feet. But even by 1925, just three years after the compact came into being and three years short of its congressional approval, a U.S. Geological Survey scientist named Eugene Clyde La Rue had delivered a report indicating the river probably would deliver too little water to meet these hopes and expectations. Other studies about the same time delivered the same conclusions.

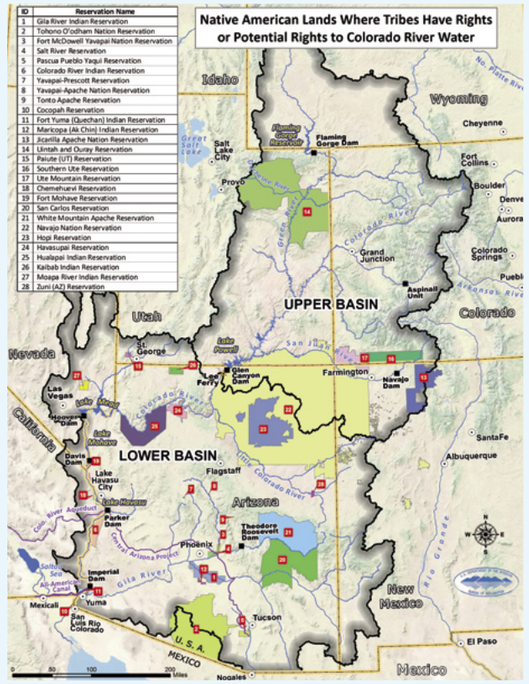
They were right. Over a longer period, from 1906 to 2018, the river has averaged 14.8 million acre-feet per year. Averages have dropped during the twenty-first century, in the midst of a 19-year

Figure 3

Native American Lands Where Tribes Have Rights or Potential Rights to Colorado River Water

Tribal water rights within the basin constitute 2.4 million acre-feet, in many cases senior in priority to other users within the allocations of the individual states. Specific allocations for some of the largest tribes remain unresolved.

1 Gila River Indian Reservation
2 Tonoho O'odham Nation Reservation
3 Fort McDowell Yavapai Nation Reservation
4 Salt River Reservation
5 Pascua Pueblo Yaqui Reservation
6 Colorado River Indian Reservation
7 Yavapai-Prescott Reservation
8 Yavapai-Apache Nation Reservation
9 Tonto Apache Reservation
10 Cocopah Reservation
11 Fort Yuma (Quechan) Indian Reservation
12 Maricopa (Ak Chin) Indian Reservation
13 Jicarilla Apache Nation Reservation
14 Uintah and Ouray Reservation
15 Paiute (UT) Reservation
16 Southern Ute Reservation
17 Ute Mountain Reservation
18 Chemehuevi Reservation
19 Fort Mohave Reservation
20 San Carlos Reservation
21 White Mountain Apache Reservation
22 Navajo Nation Reservation
23 Hopi Reservation
24 Havasupai Reservation
25 Hualapai Indian Reservation
26 Kaibab Indian Reservation
27 Moapa River Indian Reservation
28 Zuni (AZ) Reservation



Credit: U.S. Bureau of Reclamation

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drought, to 12.3 million acre-feet. In the last water year, ending in September 2018, the river carried only 4.6 million acre-feet. That's just 200,000 more acre-feet than California's annual entitlement.

A River Shared

In late 1928, Congress approved the Boulder Canyon Project Act. This legislation accomplished three significant things: It authorized construction of a dam in Boulder Canyon, near Las Vegas, which was later named Hoover Dam. The law also authorized construction of the All American Canal, crucial for developing the productive farmland of California's Imperial Valley, an area that's now the single largest user of Colorado River water. And the Boulder Canyon Project Act divided waters among the Lower Basin states: 4.4 million acre-feet each year to California, 2.8 million acre-feet to Arizona, and 300,000 acre-feet for Nevada. Las Vegas then had a population of fewer than 3,000 people.

As the twentieth century rolled on, headwaters states also built dams, tunnels, and other hydraulic infrastructure. In 1937, Congress agreed to bankroll the Colorado-Big Thompson Project, what historian David Lavender called a "massive violation of geography" intended to divert Colorado River waters to farms in northeastern Colorado, outside of the hydrological basin. In 1956, Congress approved the Colorado River Storage Project Act, authorizing a handful of dams, including Glen Canyon.

Only Arizona remained left out. It had vigorously opposed the 1922 compact, then remained defiant. Its Congressional representatives opposed Hoover Dam and, in 1934, then-Governor Benjamin Moeur even dispatched the state's National Guard in a showy opposition to construction of another dam being built downstream to deliver water to Los Angeles. "Put simply, Arizonans feared there would be little water remaining for them after the Upper Basin, California, and Mexico got what they wanted," Hundley explains (Hundley 1996). Finally, in 1944—the same year the U.S. and Mexico reached an agreement about the amount of water due to the latter—Arizona legislators succumbed to political realities. Cooperation, not confrontation, would be needed for the state to get federal help to develop its share of the river. At last, the compact had the signatures of all seven states.

Arizona finally got its big slice of Colorado River pie in the 1960s. A U.S. Supreme Court decision in 1963—one in a series of Arizona vs. California cases over many decades—confirmed Arizona had the right to 2.8 million acre-feet, as Congress had specified in 1928, along with all the water in its own tributaries. This is what Arizona had wanted all along. In 1968, Congress approved funding for the massive Central Arizona Project, ultimately resulting in the construction of 307 miles of concrete canal to deliver water from Lake Havasu to Phoenix and Tucson and farmers between. California supported the authorization, with a hitch: In times of shortage, it would still have rights to its 4.4 million acre-feet first. This led Arizona to later create a water banking authority to store Colorado River water in underground aquifers, providing at least partial security against future shortages.

Upper Basin states had reached accord about how to apportion their 7.5 million acre-feet without notable friction: Colorado 51.75 percent, Utah 23 percent, Wyoming 14 percent, and New Mexico 11.25 percent. They used percentages, as Hundley explained, because of "uncertainty over how much water would remain after the upper basin had fulfilled its obligation to the lower-basin states" and

Mexico. Fluctuations in the river's flow, they reasoned, might mean that some years they had an amount smaller than 7.5 million acre-feet to divide between themselves. It was, in retrospect, an eminently wise decision.

Nowhere and Everywhere

The same year the basin states framed the original Colorado River Compact, the great naturalist Aldo Leopold canoed through the Colorado River Delta in Mexico. In an essay later published in *A Sand County Almanac*, he described the delta as "a milk and honey wilderness." The river itself was "nowhere and everywhere," he wrote, and was camouflaged by a "hundred green lagoons" in its leisurely journey to the ocean. Six decades later, visiting the delta after a half-century of feverish engineering, construction, and management had emerged to put the river's waters to good use, the journalist Philip Fradkin had a different take. He called his book *A River No More*.

As the twentieth century closed, the environmental impacts of essentially regarding a river as plumbing drew new attention, especially in the now dewatered delta. The lagoons that had so enchanted Leopold were gone, because the stopped-up river no longer reached its southern outlet. Drainage from vast agricultural enterprises had made the river so saline that, among other things, Mexico protested that the water it was receiving was unfit to use. The many dams and diversions that came after Leopold's visit had also put 102 river-dependent rare birds, fish, and mammals on the brink of extinction, reported the *Arizona Daily Star*. The newspaper lauded the work of stakeholders in a new transborder conservation effort: "The fundamental principle of ecology calls for land managers to look to the good of the whole system, not just its parts."

Environmental groups might have used the Endangered Species Act to force the argument about solutions, but the delta was not within the United States. So they looked to find collaborative solutions. In the closing days of the tenure of Bruce Babbitt, secretary of the Interior in the Clinton administration and namesake of the Babbitt Center (see interview page 10), the two countries adopted Minute 306. It created the framework for a dialogue that produced, under Babbitt's successors in the Bush administration, an agreement called Minute 319 and a one-time pulse flow of more than 100,000 acre-feet in the river in 2014.

During the pulse flow of 2014, children played in water where they had known only desert. Credit: Pete McBride

Children gleefully splashed in the rare waters of the river in Mexico during that pulse flow, but adults on both sides of the border were equally happy. Among those grinning was Jennifer Pitt, then of the Environmental Defense Fund. Litigation had been a possible route, she said, but an inclusive and transparent process with stakeholders was more productive.

"The institutional legal and physical framework we have on the Colorado River is the basis for great competition and the potential for litigation between parties," says Pitt, who is now with Audubon. "But it is exactly that same framework that has given those parties the opportunity to collaborate as an alternative to having solutions handed to them by a court."

Collaboration Is Critical

Reservoirs were full as the next century arrived, thanks to robust snowfall in the Rockies during the 1990s. Still, there was tension. California for

THE SHIFT FROM FARMS TO CITIES

Agriculture was the main driver of development along the Colorado River. According to a recent USGS report, 85 percent of water withdrawals went toward irrigation between 1985 and 2010. The fields around Yuma, Arizona, and the Imperial and Palo Verde valleys of California consume more than 4 million acre-feet of Colorado River water annually, nearly a third of the river's annual flows. But with population growth, water use has shifted to urban needs. In Colorado, for example, 95 percent of water imported from the Colorado River headwaters through the Colorado-Big Thompson (CBT) project was once used for agriculture; now, that number is closer to 50 percent. As another example of the complexity of systems in the basin, CBT water is divided into units which can be bought and sold. The amount of water in a unit varies year to year depending on the total amount of water available; when CBT is at full capacity, a unit is one acre-foot. Agricultural users owned 85 percent of the units when trading began in the late 1950s, but currently own less than one-third of available units. Municipalities own the balance, but often lease the water to farms until it's needed. The current price for a CBT unit is close to $30,000.

Such water-sharing agreements are becoming more common in a system stretched too thin. Rotational fallowing, also known as lease-fallowing or alternative-transfer mechanisms, has played a role in shifting water from farms to cities. Farmers in the Palo Verde Valley struck a deal with the Metropolitan Water District of Southern California, which serves 19 million customers, to fallow between 7 and 35 percent of their land on a rotating basis. Metropolitan's customers, in turn, get the water, which can be stored in Lake Mead. Similar deals, still underlined with tension but increasingly accepted, exist between Southern California municipalities and farmers in the Imperial Valley and between cities and farmers along Colorado's Front Range urban corridor.

For their part, cities tend to tout conservation and development efforts they've made with water in mind (Figure 4). Many are encouraging density, reducing the water needed for landscaping; some have implemented turf-removal programs; and toilets, showers and other fixtures have become more efficient (see page 38 for a closer look at how two cities are integrating land and water use). Metropolitan Water District of Southern California chalked up a 36 percent per capita reduction in water use from 1985 to 2015, a time of several droughts, according to *Planning* magazine (Best 2018).

In Nevada, the population served by the Southern Nevada Water Authority has increased 41 percent since 2002, but the per-capita consumption of Colorado River water fell 36 percent.

The agency's Colby Pellegrino, speaking at a September 2018 conference called "Risky Business on the Colorado River," said conservation is the first, second, and third strategy for achieving reduced water consumption. "If you live in the Las Vegas Valley, where there is less than four inches of rainfall a year, and you have a median covered in turf, and the only person walking on that turf is the person pushing a lawn mower—that is a luxury our community cannot afford, if we want to continue to have the economy we have today," she said.

Economy, culture, and values have been at the core of the basinwide debate about how to respond to the drought. No one sector or region can absorb the full burden of necessary reductions, and it's clear that everyone must begin to think differently. Speaking at the "Risky Business" conference, Andy Mueller, general manager of the Colorado River Water Conservation District, put it this way: Instead of the intentional use of water, Colorado is now talking about the intentional non-use of water. As is everyone who lives and works in the Colorado River Basin.

Working the fields in Yuma, Arizona. Credit: Amy Martin, courtesy of American Rivers

Figure 4

Per Capita Decline in Municipal Water Delivery, 1990–2017

Even as major cities that rely on Colorado River water experience record population growth, most have instituted programs and policies that have reduced the total gallons per capita per day (GPCD) they deliver to residents and businesses, from upgrading infrastructure to offering turf-removal rebates. GPCD is calculated by dividing total water delivered by population.

	1990 GPCD	2008 GPCD	2017 GPCD	% DECREASE 1990-2017
Phoenix	248	190	174	30
Tucson	208	182	122	41
San Diego Region	235	194	124	47
Denver	238	171	145	39
Las Vegas Region	214*	144	127	41
Albuquerque	247	163	127	49
Salt Lake City	345	210	199	42

* Southern Nevada Water Authority recently updated its GPCD methodology to account for recycling of indoor water. This metric is for 1994, the earliest year for which the recalculated data are available.

Sources: Albuquerque Water Authority, City of Phoenix Water Services Department, Denver Water, San Diego County Water Authority, Salt Lake City Department of Public Utilities, Southern Nevada Water Authority, Tucson Water.

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decades had exceeded its apportionment of 4.4 million acre-feet, consuming a high of 5.4 million acre-feet in 1974. Upper Basin states never have fully developed their 7.5 million acre-feet, averaging 3.7 to 4 million since the 1980s, plus 500,000 acre-feet from reservoir evaporation.

Then came drought, deep and extended. The river carried just 69 percent in 2000. The winter of 2001 to 2002 was even more stingy, the river delivering just 5.9 million acre-feet, or 39 percent of average, at Lake Powell. The period from 2000 to 2004 had the lowest five-year cumulative flow in the observed record. Since then, more years have been dry than wet. The reservoir levels are at near-record lows.

The 1922 compact had not contemplated this kind of long-term drought. A "structural deficit" came into sharp relief. Tom McCann, assistant general manager of the Central Arizona Project, coined the phrase. Very simply, the Lower Basin states were using more water than was delivered from Lake Powell each year. This was so even when the Bureau of Reclamation authorized the release of extra "equalization" flows from Powell.

"Equalization releases are like hitting the jackpot on the slot machine," McCann says. "Back then, we were hitting the jackpot every three or four or five years, and we thought we had nothing to worry about." Even with the jackpots, Lake Mead continued to decline, the reservoir's widening bathtub ring charting the losses.

Climate change overlays the structural deficit. Scientists argue that warming temperatures swing a big bat in the Colorado River Basin. They term the early tweny-first century declines a "hot drought" as distinguished from a "dry drought."

The prospect of this new, human-induced "hot" drought on top of a conventional drought worries many. Tree-ring studies show that the region has suffered longer, deeper droughts in the past, before measurements began. "A number of folks claim that the current 19-year period of 2000 to 2018 is the driest 19-year period on the Colorado River," says Eric Kuhn, former general manager of the Colorado River Water Conservation District. "Nonsense. It's not even close. If these past droughts were to happen with today's temperatures, things could be much worse."

The first two decades of the new millennium have seen a series of efforts to confront this new reality. In 2007, the Department of the Interior issued interim shortage guidelines, the first formal response to the drought. The Bureau of Reclamation released a Basin Supply and Demand Study in 2012, an exhaustive effort to provide a platform for future decisions. The many reports stacked tall enough to fill a box that could ship a football. They discussed population growth, rising temperatures, and the impact of increasing rain on snowpack. Demand, the study concluded, would exceed supply by 3.2 million acre-feet by 2060 (USBR 2012).

"You can argue about the numbers, you can argue about the forecast, but it was something that got everybody's attention," says Colorado's Anne Castle, who was assistant secretary of Interior for water and science at the time. "It served as a catalyst to focus the discussion about Colorado River management more directly in dealing with future scarcity."

Castle sees the basin now struggling to find collaborative solutions. "In a complex water system, there are so many moving parts, it's not about one answer," she says. "You have to manage a complex system, and you can only do that through negotiated agreements."

Those negotiations are happening now, in the form of drought contingency planning (see page 26). Even as scarcity has become more prominent, collaboration has also grown. But the measuring stick for success may well be the white mineralized walls of Lake Mead, a big reservoir in a big basin facing big challenges. Now the seven states, the tribes, and the governments of the U.S. and Mexico, with input from environmental and other nongovernmental organizations, must figure out how to keep those water levels from sagging even more. They must concoct a plan that ensures a sustainable future, while heeding the twists and turns of the past.

Allen Best writes about water, energy and other topics from a base in metropolitan Denver, where 78 percent of his water comes from the Colorado River Basin.

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