

# [***ARTICLE: GETTING TO THE RIGHT SIDE OF THE RIVER: LESSONS FOR BINATIONAL COOPERATION ON THE ROAD TO MINUTE 319***](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:5FFH-9X60-00SW-50D2-00000-00&context=1516831)

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**Text**

**[\*38]**

[*I*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T2X2-D6RV-H374-00000-00&context=1516831). Introduction: The International Significance of the ***Colorado*** ***River***

The American Southwest has been called "the greatest hydraulic society ever built in history." [[1]](#footnote-2)1 At its geological, economic, and political epicenter lies the 1450-mile-long ***Colorado*** ***River*** ("***Colorado*** ***River***" or "***River***"), which provides water to nearly forty million people, irrigates five and a half million acres of land, and flows through dozens of large hydropower and storage dams. [[2]](#footnote-3)2 Its waters also support significant portions of nine US and Mexican states, twenty-two federally-recognized Indian tribes, seven National Wildlife Refuges, four National Recreation Areas, eleven US National Parks, and an internationally recognized Biosphere Reserve in Mexico. [[3]](#footnote-4)3 Areas supported by the ***River***'s waters produce nearly nineteen percent of US gross domestic product; [[4]](#footnote-5)4 some fifteen percent of US crop production and thirteen percent of US livestock production also originates in this region. [[5]](#footnote-6)5

The ***River*** has also been aptly described as "the most legislated, most debated, and most litigated ***river*** in the entire world," [[6]](#footnote-7)6 supporting a voluminous set of treaties, interstate compacts, laws, regulations, court decisions and decrees, agreements, and contracts that collectively are known to its managers and practitioners as the "Law of the ***River***." For better and for worse, the unprecedented development of the ***Colorado*** ***River*** paved the way for subsequent federal projects, such as Grand Coulee Dam, Bonneville Dam, and the Tennessee Valley Project on ***rivers*** across the United States, [[7]](#footnote-8)7 and was a model for other international ***river*** basin development. The ***River***'s Hoover Dam, which retains Lake Mead outside of Las Vegas, Nevada, was the very first of an estimated forty-five thousand large dams (over fifteen meters in height or approximately five stories) now in operation worldwide. [[8]](#footnote-9)8

In addition to providing the engineering blueprints for large dams and other major public water infrastructure worldwide, international and domestic tensions over water sharing in the ***Colorado*** ***River*** Basin ("***Colorado*** ***River*** Basin" or "***River*** Basin" or "Basin") and the greater American West have shaped and **[\*39]** continue to shape many aspects of modern international water law and ***river*** basin development. From the early days of the now-discredited "Harmon Doctrine" [[9]](#footnote-10)9 to the contemporary principles of "equitable utilization," [[10]](#footnote-11)10 numerous key principles of international water law arose in the American West as water users, states, and countries allocated water to facilitate settlement and economic growth. [[11]](#footnote-12)11

Given its iconic importance, both in the American West and at large, the ***River*** has also been the focus of intense criticism as an example of "unsustainable" ***river*** development that sets a poor model for other water-scarce regions to follow. [[12]](#footnote-13)12 In the words of two scholars, "the tremendous challenge for the American west [sic], parts of which use far more than the renewable yield [of water], is to overcome legal, attitudinal, and administrative barriers to effective water use under conditions of scarcity." [[13]](#footnote-14)13 In light of the environmental consequences of the ***River***'s development - which has altered more than ninety-eight percent of the ***River***'s natural riparian areas in the Lower Basin, dried out the ***River***'s natural delta, sent four species of native fish into extinction, and driven nearly half of the remaining native fish in endangered or threatened status [[14]](#footnote-15)14 - there is no doubt that much of this criticism is well-founded.

Despite its controversial history, the ***Colorado*** ***River*** also represents a critical laboratory for a world facing ever-growing challenges of resource scarcity. Since the turn of the century, the ***River*** and its human managers have been confronted with a historic drought that rivals anything seen in the last 1,200 **[\*40]** years. [[15]](#footnote-16)15 At the beginning of the ongoing drought, the Basin's vast reservoir system - capable of storing approximately four years of the Basin's total annual water yield [[16]](#footnote-17)16 - stood at full to overflowing. [[17]](#footnote-18)17 In recent years, storage has been well below fifty percent of capacity [[18]](#footnote-19)18 and at the time of this writing it hovers around half full. [[19]](#footnote-20)19 Adjacent areas of central and southern California are simultaneously experiencing extreme drought, which has cut supplies to farms and cities from the massive Central Valley and State Water Projects to near zero. [[20]](#footnote-21)20 In the process, this ongoing drought has also provided the Basin's residents with a preview of what may be a "new normal" - a much drier future for the region that many climate models and the ***River***'s own reconstructed flow history predict. [[21]](#footnote-22)21

Facing unprecedented water scarcity, the ***River***'s stakeholders [[22]](#footnote-23)22 have produced some remarkable examples of collaboration and compromise, including a 2007 shortage-sharing agreement between the seven US Basin states, [[23]](#footnote-24)23 a landmark **[\*41]** study of future basin-wide supply and demand challenges and the potential impacts of climate change, [[24]](#footnote-25)24 and four new international agreements between the United States and Mexico. [[25]](#footnote-26)25 As part of this evolution, the ***River***'s federal managers - most notably the US Bureau of Reclamation ("Reclamation") and the US and Mexican sections of the International Boundary and Water Commission ("IBWC") - have taken a substantial step away from more traditional, engineering-driven approaches to resource management in favor of more adaptive stakeholder-driven approaches. [[26]](#footnote-27)26 These processes provide for greater flexibility and broader representation of municipal, agricultural, industrial, recreational, and environmental interests alike. [[27]](#footnote-28)27

Among recent innovative approaches, the November 20, 2012, Minute 319 agreement stands out as an important example of cooperation amidst extended drought and basin-wide deficits. [[28]](#footnote-29)28 Minute 319 is an appendage to the 1944 "Treaty Between the United States and Mexico for the Utilization of Water of the ***Colorado*** and Tijuana ***Rivers*** and of the Rio Grande" ("1944 Water Treaty"), which, as relevant here, allocates the flow of the ***Colorado*** ***River*** between the United States and Mexico. [[29]](#footnote-30)29 The Minute encompasses a series of **[\*42]** agreements, operational measures, and cooperative projects that the United States and Mexico have agreed to undertake during a five-year period (the "Pilot Period") that are intended to become the foundation for a more long-term agreement, [[30]](#footnote-31)30 including

. Definitive guidelines for the reduction of water deliveries to Mexico during Lower Basin shortage conditions and increased deliveries to Mexico during surplus conditions; [[31]](#footnote-32)31

. The multi-year storage of Mexico's ***Colorado*** ***River*** water in the United States, enabled by rules for conservation, storage, delivery, and management of salinity impacts; [[32]](#footnote-33)32

. A binational program to finance joint conservation projects, with benefits including exchange of conserved water and environmental flow commitments; [[33]](#footnote-34)33 and

. The delivery of water to the ***Colorado*** ***River*** Delta ecosystem, together with expanded environmental restoration efforts. [[34]](#footnote-35)34

These binational commitments also reference and incorporate the direct cooperation and participation of a series of non-federal government partners in operational measures and projects that will occur during the Pilot Period, including several major US water providers and US and Mexican non-governmental environmental organizations. [[35]](#footnote-36)35

The Minute has tremendous significance for the future of the ***Colorado*** ***River*** Delta, which is one of the most water-stressed ecosystems in the world and a central focus of this article. Jennifer Pitt, [[36]](#footnote-37)36 who has been at the forefront of ***Colorado*** ***River*** issues for more than fifteen years, has often referred to the ***Colorado*** ***River*** Delta as the "canary in a coalmine" for the entire Basin - the first place where environmental problems, along with water shortage, quality, and management issues, became starkly apparent. [[37]](#footnote-38)37 In keeping with this theme, we submit that the story of Minute 319 - as an effort to tackle those issues head on - offers important lessons for international water management at large. It not only exemplifies innovative approaches to promote operational flexibility, reduce uncertainty, and address ecosystem degradation, but also provides a model **[\*43]** for fostering cooperation to overcome a long history of conflict, unilateral action, and mistrust. [[38]](#footnote-39)38

According to the World Health Organization, "more than one billion people around the world now live in water-stressed regions," and that number is expected to double by 2050. [[39]](#footnote-40)39 With increasing demand and uncertainties of climate change straining international freshwater resources, effective models for the management of water scarcity are badly needed. We contend that Minute 319 - and the process used to achieve it - provides a positive blueprint for cooperative international water management that could inform the efforts of decision-makers in other international ***river*** basins.

[*II*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T352-D6RV-H379-00000-00&context=1516831). History and Water Use in the ***Colorado*** ***River*** Delta Region

At its largest extent, the ***Colorado*** ***River*** Delta ("***Colorado*** ***River*** Delta" or "Delta Region" or "Delta") was one of the world's largest ***river*** deltas, originally spanning 8,611 square kilometers (3,325 square miles) and extending across the US-Mexico border. [[40]](#footnote-41)40 The Delta lies within an international region known as the Salton Trough - a geologic extension of the upper Gulf of California that extends to the northernmost point of California's Coachella Valley, and through which the last 150 miles of the ***River*** flow. [[41]](#footnote-42)41 Historically, the Delta ecosystem encompassed the Imperial Valley in southeastern California, the Yuma Valley in the southwestern corner of Arizona, and Mexico's Mexicali and San Luis Valleys. [[42]](#footnote-43)42 Today, these areas have been developed predominantly into agricultural land irrigated by ***Colorado*** ***River*** water. [[43]](#footnote-44)43

The ***Colorado*** ***River*** is essentially the only source of surface water in the Delta Region. [[44]](#footnote-45)44 The vast majority of the flow of the ***Colorado*** ***River*** originates in the US Upper Basin States (***Colorado***, Wyoming, Utah, and New Mexico), **[\*44]** with half of the water resulting from runoff in ***Colorado*** and another third from runoff in Wyoming and Utah. [[45]](#footnote-46)45 The US Lower Basin States (California, Arizona, and Nevada) and Mexico contribute very little water to overall surface flows except for occasional large flood flows out of Arizona's Gila ***River***. [[46]](#footnote-47)46 Additionally, water users from both countries rely heavily on transnational aquifers, [[47]](#footnote-48)47 although issues surrounding rights to the use of these aquifers are as yet largely unresolved both internationally and domestically.

A. The Pre-Development Delta

As early as 1000 BCE, ancestors of the Cocopah Tribe [[48]](#footnote-49)48 arrived in the Delta and established settlements along the ***River***'s banks. [[49]](#footnote-50)49 While few historical records of the Delta's predevelopment state exist, both scientific and literary accounts of the Delta suggest that the Cocopah must have discovered one of the world's great ecological wonders. [[50]](#footnote-51)50 Prior to the twentieth century, the Delta contained one of the world's largest desert estuaries - a vast wetland covering an area roughly the size of Rhode Island with expansive forests of trees. [[51]](#footnote-52)51 Enormous spring floods inundated much of the Delta Region with water and fresh sediment annually, allowing flora and fauna to flourish. [[52]](#footnote-53)52 From an ecological perspective, the ***Colorado*** ***River*** was the most important freshwater inflow into the upper Gulf of California, supporting major shrimp, shellfish, and finfish fisheries as well as a number of now endangered but once plentiful exotic species, including the vaquita porpoise and the totoaba bass. [[53]](#footnote-54)53 A critical link on the Pacific Flyway, the Delta also supported millions of migratory birds, including vast numbers of waterbirds, shorebirds, and riparian songbirds. [[54]](#footnote-55)54

The present-day Imperial Valley, occupying the northern portion of the Delta, is part of what was originally called the "***Colorado*** Desert," a giant alluvial basin at the northernmost point of the Gulf of California that is transected by the San Andreas Fault. [[55]](#footnote-56)55 At its lowest point, due to continuing subsidence as a **[\*45]** result of seismic activity along the Fault, the valley presently lies 227 feet below sea level. [[56]](#footnote-57)56 Although the ***Colorado*** ***River*** currently flows around the Imperial Valley to the east, this has not always been the case; historically, the ***River*** tended to oscillate across the vast, relatively flat surface area of the greater Delta Region, driven by a combination of sedimentation and activity along the fault. [[57]](#footnote-58)57 Several times in its geological history, this oscillation caused the ***River*** to flow into the Imperial Valley depression, creating a giant inland sea drained by the Rio Hardy to the west. [[58]](#footnote-59)58

In its natural capacity, the ***Colorado*** ***River*** carried approximately 380,000 tons of silt per day, making it one of the continent's siltiest ***rivers***. [[59]](#footnote-60)59 Prior to the upstream development of large dams and diversions, the ***River*** deposited up to seventy percent of this sediment load in the Delta; coupled with frequent and capricious flooding and the unusually high (10-meter) ebb and flow of tides in the upper Gulf of California, [[60]](#footnote-61)60 the ***River*** created the most unique and biodiverse ecosystem in the entire Southwest region. [[61]](#footnote-62)61 The Cocopah (Kwapa) or "***river*** people," [[62]](#footnote-63)62 built a rich native culture around the ***River*** and its flood cycle. [[63]](#footnote-64)63 When Spanish explorers reached the Mexicali Valley in the 1700s, they observed a flourishing native population [[64]](#footnote-65)64 that harvested corn and grew melons, pumpkins, and beans. [[65]](#footnote-66)65

This native culture was heavily disrupted by European settlement in the Delta Region, [[66]](#footnote-67)66 as well as the division of its homeland by the intercision of the US-Mexico border as a result of the 1848 Treaty of Guadalupe Hidalgo. [[67]](#footnote-68)67 Although the Cocopah continued to move freely across the border prior to the 1930s, [[68]](#footnote-69)68 developments in US immigration policy increasingly frustrated their **[\*46]** ability to travel through their native lands. [[69]](#footnote-70)69 Eventually, the Cocopah communities separated and developed into distinct Mexican and US groups-the Cocopah in the United States, and the Cucupa in Mexico. [[70]](#footnote-71)70 Historical accounts suggest that around eight thousand native inhabitants lived in the Delta Region along the ***river*** before national borders and development transformed the landscape. [[71]](#footnote-72)71 Today, a combined population of approximately one thousand US Cocopah and Mexican Cucapa remain in the Delta, which now mostly consists of agricultural land framing a dry ***Colorado*** ***River*** Channel - landscape changes driven by the imposition of national and state borders, economic development, and the politics of water. [[72]](#footnote-73)72

B. The Development of the Delta Region

Although it is difficult to believe today, steamships navigated the ***Colorado*** ***River*** as far inland as Yuma, Arizona, through the first decades of the twentieth century. [[73]](#footnote-74)73 However, large-scale agricultural development prompted a wholesale transformation of the Delta landscape in the early part of the twentieth century. As discussed further below, this development necessitated the construction of a vast network of upstream dams and other infrastructure that fundamentally changed the Delta and the border region.

1. Imperial Valley Agricultural Development

The California State Legislature first targeted the Imperial Valley for agricultural development during the 1850s; [[74]](#footnote-75)74 however, the US Senate rejected state efforts to obtain a federal land grant in the region. [[75]](#footnote-76)75 Years later, in 1892, the ***Colorado*** ***River*** Irrigation Company ("CRIC") incorporated [[76]](#footnote-77)76 and claimed the ability to irrigate three million acres of farmland with ***Colorado*** ***River*** water - approximately one million acres in California's Imperial Valley and two million acres in the Mexicali Valley in Baja California, Mexico. [[77]](#footnote-78)77 An economic depression drove CRIC to failure in 1894, but its company engineer, Charles Rockwood, formed the California Development Company ("CDC") soon thereafter. [[78]](#footnote-79)78 Despite the fact that the Mexican Constitution prohibited foreigners from purchasing land within one hundred kilometers of the border, then Mexican president Porfirio Diaz allowed a Mexican developer, Guillermo Andrade, to sell CDC's Mexican subsidiary one hundred thousand acres of land along the **[\*47]** Alamo Canal; [[79]](#footnote-80)79 CDC additionally promised to deliver the water necessary to irrigate six hundred thousand acres in Mexico's Mexicali Valley. [[80]](#footnote-81)80

In 1901 the CDC constructed a wooden headgate and excavated a four-mile-long channel approximately five hundred feet north of the international border to divert water from the ***Colorado*** ***River*** into the ancient Alamo ***River*** riverbed in Mexico. [[81]](#footnote-82)81 On May 14 of the same year the first successful diversion of the ***Colorado*** ***River*** flowed into the Imperial Valley. [[82]](#footnote-83)82 At that point, CDC officials renamed the uninspiring "***Colorado*** Desert" and its "Salton Sink" the "Imperial Valley" in an effort to entice settlement. [[83]](#footnote-84)83 The first settlers arrived shortly thereafter from the Salt ***River*** Valley in Arizona, and within three years more than seven thousand people inhabited the Imperial Valley. [[84]](#footnote-85)84 Reflecting the broader evolution of international water law away from its initial focus on navigation towards non-navigational uses, [[85]](#footnote-86)85 the CDC also became engaged in a contentious dispute with Mexico over the navigable status of the ***Colorado*** ***River***, which had direct bearing on the legality of US diversions from the ***River*** to facilitate settlement. [[86]](#footnote-87)86

This first successful diversion of ***Colorado*** ***River*** water to the Imperial Valley was short-lived, but it had a lasting effect on the region's landscape. The ***River***'s heavy silt load quickly clogged the diversion channel, prompting CDC to build a new headgate just across the border in Mexico. [[87]](#footnote-88)87 By 1905 the CDC had cut a three thousand-foot diversion channel and was awaiting approval from the Mexican government to install a new intake headgate. [[88]](#footnote-89)88 Shortly thereafter, the ***River***'s southernmost US tributary, the Gila ***River***, flooded and abruptly demonstrated the perils of engineering around the ***River***'s highly variable flows. The floodwaters punched through the CDC bypass channel, quickly eroding it to the point where it was nearly a mile wide, and diverted the entire flow of the ***River*** into the old Alamo channel and into the Imperial Valley. [[89]](#footnote-90)89 The resulting **[\*48]** disaster nearly destroyed the city of Mexicali and generated a vast headcut (approaching eighty feet high and one thousand feet wide) that threatened communities throughout the lower portions of the ***River***. [[90]](#footnote-91)90 It also filled the Salton Sink (Imperial Valley's lowest point) with water, creating the present-day Salton Sea. [[91]](#footnote-92)91

It ultimately took two years of costly effort - undertaken by the Southern Pacific Railroad with pressure from the US federal government - to reroute the ***Colorado*** to its original path. [[92]](#footnote-93)92 Thousands of railroad cars loaded with rock were deployed to close the breach, with work continuing night and day for months. [[93]](#footnote-94)93 The scale of the disaster catalyzed government intervention under the Reclamation Act, prompting the construction of federally-controlled water infrastructure in the Imperial Valley and the rest of the Lower Basin; [[94]](#footnote-95)94 it also became one of the primary justifications for constructing the Hoover Dam to serve as a flood management tool.

These early attempts to develop the ***Colorado*** ***River*** made the United States acutely aware of the potential for conflict with Mexico over the ***River***'s resources, due to the fact that much of the Imperial Valley's delivery infrastructure (mainly the Alamo canal) was outside of US jurisdiction. [[95]](#footnote-96)95 "The border and the binational aspects of delta water relations also encouraged farmers, developers, and politicians [in the United States] to worry about what would happen to regional water supplies should development [in Mexico] drastically increase." [[96]](#footnote-97)96 In 1911 the Salton Sea experience and the risk of future flooding, along with the potential increase in Mexican water consumption, led the newly-created Imperial Irrigation District ("IID") [[97]](#footnote-98)97 to lobby the federal government for an "All-American" canal that would provide a reliable source of ***Colorado*** ***River*** water running entirely through US territory. [[98]](#footnote-99)98

By 1925 the population of the Imperial Valley had grown to fifty thousand inhabitants and the region produced crops that were shipped east year round. [[99]](#footnote-100)99 Among the many agricultural goods produced in the highly productive region were cotton, cantaloupes, lettuce, milk fat, watermelons, peas, asparagus, tomatoes, milo maize, wheat, alfalfa hay, sheep, poultry, and eggs. [[100]](#footnote-101)100 By 1927 the Imperial Valley diverted roughly three million acre-feet ("maf") of ***Colorado*** ***River*** water for irrigation annually. [[101]](#footnote-102)101

**[\*49]**

2. Mexicali Valley Agricultural Development

Agricultural development in the Mexicali Valley - a broad, flat basin running from the south end of the Imperial Valley to the Gulf of California - followed a parallel course to that of its US counterpart in the Imperial Valley. Long before an international water-sharing agreement was in place between the two countries, Mexican farmers were withdrawing water from the ***Colorado*** ***River***. [[102]](#footnote-103)102 As the CDC's irrigation activities attracted US settlement in the Imperial Valley, the flow of Mexican settlers to the Mexicali Valley began almost contemporaneously in 1902. [[103]](#footnote-104)103 Playing its role in "a bilateral pursuit for economic independence within the context of asymmetrical interdependence," [[104]](#footnote-105)104 the Mexican Government began its own project of "manifest destiny" and the national integration of Baja California by encouraging its people to migrate north and to occupy the Delta Region. [[105]](#footnote-106)105

In the early 1900s the ***Colorado*** ***River*** Land Company ("CRLC") became the dominant player in the Mexicali Valley. [[106]](#footnote-107)106 In the three years prior to his death in 1905, Andrade (the Mexican developer who facilitated CDC's purchase of land surrounding the Alamo Canal) sold roughly eight hundred thousand acres in the Mexicali Valley to the newly incorporated CRLC. [[107]](#footnote-108)107 The CRLC ultimately bought up most of the CDC land holdings in the Mexicali Valley and had a membership that overlapped considerably with large Imperial Valley landowners. [[108]](#footnote-109)108 The CRLC's reluctance to allow lessees and farmworkers to establish permanent settlement on its land quickly led to heavy centralization of farm labor populations in the city of Mexicali. [[109]](#footnote-110)109

As had occurred in the United States, while entrepreneurs undertook the initial development of water infrastructure in Mexico, both practical and political issues led to increasing government involvement in water management and development. [[110]](#footnote-111)110 Although Mexican concerns over the diminishment of ***Colorado*** ***River*** navigability as a result of upstream diversions were insufficient to drive US federal government intervention in the region, [[111]](#footnote-112)111 the imperatives around flood management eventually led to large-scale federal infrastructure construction. Social factors also drove increasing government intervention on both sides of the border. In the United States, for example, landowners and water users in the Imperial Valley eventually formed the Imperial Valley Water Users Association and began to oppose the land companies' control over water **[\*50]** resources, citing high prices and insufficient supplies. [[112]](#footnote-113)112 On the Mexican side, opposition to the CRLC's presence in the Mexicali Valley developed during the Mexican Civil War and led to increasing pressure to decentralize land ownership. [[113]](#footnote-114)113

As discussed further below, the 1922 ***Colorado*** ***River*** Compact, which allocated ***Colorado*** ***River*** water among the US Basin States, did not include Mexico, [[114]](#footnote-115)114 leaving Mexico in an uncertain position with regard to water supply in both Baja California and Sonora. [[115]](#footnote-116)115 In 1937, following repeated denied requests for a definitive statement of Mexico's rights to the ***Colorado*** ***River***, Mexican President Lazaro Cardenas moved to expropriate the CRLC's eight hundred thousand acres of land in the Mexicali Valley as part of a bid to secure additional ***Colorado*** ***River*** flows through the expansion of agriculture in northern Mexico. [[116]](#footnote-117)116 The construction of the All-American Canal, which gave the US exclusive control of its Imperial Valley diversions, further convinced Mexico that the expropriation was necessary to secure its right to the ***River***. [[117]](#footnote-118)117 At the time, international legal principles of equal use remained unclear, but Mexican experts believed that future arbitration would result in grants to use water for land under development. [[118]](#footnote-119)118 Following the seizure of the CRLC holdings, the Mexican government decentralized farmland ownership in the Mexicali Valley. [[119]](#footnote-120)119

By 1937, 133,906 acres of land in the Mexicali Valley were irrigated by the ***Colorado*** ***River***, and by the end of the 1950s Mexican irrigation from the ***river*** peaked at 475,955 acres, at which point groundwater withdrawals became necessary to meet irrigation water demands. [[120]](#footnote-121)120 As the amount of irrigated acreage expanded in Mexico and the United States, the demand for cheap labor in the Imperial Valley also grew and the region's population rose rapidly. [[121]](#footnote-122)121 In 1940 there were 45,569 inhabitants in the Mexicali Valley, and by 1957 that figure increased to 192,500. [[122]](#footnote-123)122 Ballooning population growth in the Mexicali Valley continued into the twenty-first century. [[123]](#footnote-124)123

**[\*51]**

3. Upstream US Dam Development

On December 21, 1928, Congress approved the Boulder Canyon Project Act ("BCPA"), [[124]](#footnote-125)124 authorizing the construction of two integral infrastructure projects: (i) the present day Hoover Dam, designed to alleviate flooding in the Imperial Valley and create significant water storage; and (ii) the All-American Canal, which, upon completion in 1940, provided de-silted water to the nearly five hundred thousand acres of existing irrigated land in the Imperial Valley. [[125]](#footnote-126)125

Each of the BCPA's authorized projects increased regional competition for ***Colorado*** ***River*** water and strained binational relations. The filling of Lake Mead behind Hoover Dam marked the beginning of long-term diminished ***river*** flows to Mexico (and to the Delta's estuaries and wetlands) and paved the way for other large dams on the ***River***. [[126]](#footnote-127)126 Meanwhile, the construction of the All-American Canal - which today diverts roughly twenty percent of the ***River***'s entire flow at Imperial Dam [[127]](#footnote-128)127 - increased water delivery reliability for Imperial Valley agriculture, [[128]](#footnote-129)128 decreased certainty for Mexican farmers in the Mexicali Valley, and widened the divide of mistrust over international sharing of ***Colorado*** ***River*** water. [[129]](#footnote-130)129

Although the All-American Canal was far less celebrated than the Hoover Dam, its implications for Mexican water users were arguably greater. With a maximum carrying capacity of 15,155 cubic feet per second, the eighty-mile-long canal remains the largest irrigation diversion in the world. [[130]](#footnote-131)130 Moreover, the completion of the canal left Mexico's Alamo Canal - the natural diversion channel through which Imperial Valley irrigation water previously flowed - dry. [[131]](#footnote-132)131 Mexico was thus more vulnerable to water shortage, necessitating its procurement of a legally protected Mexican allocation as well as extensive construction of diversion infrastructure to support continued agriculture and municipal growth in the Mexicali Valley. [[132]](#footnote-133)132

Following the completion of the Hoover Dam, the United States embarked upon an unprecedented and unparalleled program of water development in the ***Colorado*** ***River*** Basin. [[133]](#footnote-134)133 The United States and various local agencies in the Basin ultimately constructed a system of reservoirs on the ***Colorado*** ***River*** capable of collectively storing in excess of sixty million acre-feet of water. [[134]](#footnote-135)134 The **[\*52]** Basin's major storage dams include the massive Hoover and Glen Canyon Dams and the smaller Parker and Davis Dams in the Lower Basin, and numerous other large dams in the Upper Basin. [[135]](#footnote-136)135 Taken together, these structures can store more than four times the average annual yield of the ***River***, and have transformed a ***river*** with an annual yield that once fluctuated between as little as four million acre-feet to more than thirty million acre-feet into a relatively stable, predictable water supply to support farms, cities, and industry throughout the Basin and beyond. [[136]](#footnote-137)136

To take advantage of this storage system, US agencies and water users constructed an equally impressive system of major and minor structures that divert, return, re-divert, and consume in excess of ninety percent of the ***River***'s annual yield. [[137]](#footnote-138)137 With over seventy percent of demand for ***Colorado*** ***River*** water coming from areas located outside of the watershed boundaries, diversions have been of utmost importance for water suppliers. [[138]](#footnote-139)138 Major diversions include the ***Colorado***-Big Thompson Project and the Moffat Tunnel, providing water to Front Range users in the Upper Basin state of ***Colorado***; the All-American Canal; the ***Colorado*** ***River*** Aqueduct, delivering water to the Southern California coast; the Central Arizona Project ("CAP"), serving the farms and cities of Central Arizona; and the Southern Nevada Water Authority's ("SNWA") system, pumping water from Lake Mead to the Las Vegas area. [[139]](#footnote-140)139 Reclamation has projected that, as of 2003, these diversions, together with smaller diversions, the water deliveries to Mexico, evaporation, and various other "system losses," consume all of the water available for development on the ***Colorado*** ***River***. [[140]](#footnote-141)140

Morelos Dam is the only major dam on the Mexican portion of the ***River***. The dam diverts essentially all of the remaining flow of the ***Colorado*** ***River*** (in **[\*53]** non-flood years) to the Mexicali Valley. [[141]](#footnote-142)141 Morelos Dam sends water into a portion of the original Alamo Canal, then through the Canal Reforma, and finally throughout the Mexicali Valley via a substantial network of primary and secondary canals. [[142]](#footnote-143)142 Prior to the 2010 Mexicali Valley earthquake, [[143]](#footnote-144)143 there were approximately 470 km (292 mi) of primary canals, 2,399 km (1,490 mi) of secondary canals, and a total of 1,662 km (1,033 mi) of primary and secondary drains in the Mexicali Valley. [[144]](#footnote-145)144

C. Present-Day Water Use in the Delta Region

Twentieth century development of the ***River*** in the Lower Basin and along the international border facilitated widespread use of the ***river*** by federal, state, and local entities in the United States. [[145]](#footnote-146)145 Under present-day conditions, Imperial Dam diverts approximately 3.1 maf of the ***Colorado*** ***River*** through the All-American Canal to support Imperial Valley agriculture and to provide water to seven municipalities. [[146]](#footnote-147)146 Although the Imperial Valley grows a variety of higher-value crops, [[147]](#footnote-148)147 it is also the number one alfalfa-growing region in the world. [[148]](#footnote-149)148 This "thirsty crop" was responsible for nearly twenty percent of California's agricultural water use in 2000, [[149]](#footnote-150)149 supporting California's dairy industry as well as growing US domestic commerce and international exports. [[150]](#footnote-151)150 Arizona also takes considerable ***Colorado*** ***River*** water from both the All-American Canal (diverted from the Canal at a point downstream and passed back under the ***Colorado*** ***River*** via the Yuma Siphon) and the Gila Gravity Main Canal (which leaves Imperial Dam on the Arizona side of the ***River***). [[151]](#footnote-152)151 The water is used for **[\*54]** agriculture in the Yuma, Arizona region and in the nearby Wellton-Mohawk Irrigation District, located along the last reach of the Gila ***River***. [[152]](#footnote-153)152 Yuma County hosts the majority of Arizona's agricultural lands and provides a substantial portion of the United States' winter vegetable crop. [[153]](#footnote-154)153

On the other side of the border, Mexico diverts between 1.5 maf and 1.6 maf of ***Colorado*** ***River*** water each year - its regular 1944 Water Treaty allocation of 1.5 maf [[154]](#footnote-155)154 plus an additional quantity of unscheduled water the United States regularly delivers each year as a result of cancelled water orders. [[155]](#footnote-156)155 Mexico is also heavily reliant on groundwater pumping, extracting an average of roughly eight hundred thousand acre-feet annually from the Mexicali Valley aquifer. [[156]](#footnote-157)156 In total, the ***Colorado*** ***River*** irrigates just over six hundred thousand acres of farmland in the Mexicali Valley, [[157]](#footnote-158)157 producing predominantly wheat, cotton, alfalfa, and vegetables. [[158]](#footnote-159)158

Water use for municipal purposes is gradually trending upwards throughout the ***Colorado*** ***River*** Basin. Significant municipal uses in Arizona include more than 1.5 maf of diversions each year through the CAP - a substantial fraction of which supports cities and developments in central Arizona, including the Phoenix and Tucson metropolitan areas - and around forty-three thousand acre-feet of municipal use in the City of Yuma area. [[159]](#footnote-160)159 In California, the Metropolitan Water District ("MWD") delivers water to twenty-six different municipal water agencies, twenty-three of which receive water pumped from Lake Havasu by the Whitsett Intake Plant through the ***Colorado*** ***River*** Aqueduct. [[160]](#footnote-161)160 Southern California's greater Los Angeles and San Diego metropolitan areas, with populations of 18.2 million and 3 million people, respectively, represent the greatest municipal demand in the region. [[161]](#footnote-162)161

In Mexico, municipal water supply is a less significant source of overall demand. Per capita water use in Mexican cities - including those that rely on the ***Colorado*** ***River*** for their water supply - generally is much lower than in the United States. [[162]](#footnote-163)162 In 2008 ***Colorado*** ***River*** water deliveries to Tijuana and Mexicali, the two largest Mexican cities in the region, [[163]](#footnote-164)163 were 82,100 acre-feet and **[\*55]** 69,472 acre-feet, respectively. [[164]](#footnote-165)164 As in the United States, most of Mexico's largest municipal users of the ***Colorado*** ***River*** lie outside of the ***Colorado*** ***River*** Basin. The Tijuana aqueduct carries water to the Pacific coast for municipal use in Tijuana, the region's largest Mexican municipal area with a population of roughly 1,650,000 and an average annual growth rate of 5.5 percent since 1950. [[165]](#footnote-166)165

[*III*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T372-8T6X-731R-00000-00&context=1516831). The US-Mexico Border Water Relationship

"In terms of binational relations, perhaps no region better exemplifies some of the tensions and complexities of diplomacy between Mexico and the United States [than the ***Colorado*** ***River*** borderlands]." [[166]](#footnote-167)166

For the past two centuries the United States and Mexico have vied for territory, natural resources, and sovereignty through the development of a well-defined and well-regulated border. Perhaps not surprisingly, the United States has disproportionately influenced the ebb and flow of this power struggle, as it has generally been able to stay several steps ahead of Mexico on the economic development curve. Professor Evan R. Ward aptly described this power struggle as "a bilateral pursuit for economic independence within the context of asymmetrical interdependence." [[167]](#footnote-168)167

While the relationship between the United States and Mexico is extraordinarily complex, the history of the US-Mexico border relationship has had observable and profound influences on the development of the ***Colorado*** ***River*** region. Conversely, many of the most important binational issues between the countries have concerned, either directly or indirectly, the development of water resources on the border. For example, as discussed below in Part III.C, one of the most sensitive contemporary binational border issues - immigration - has historical roots in the physical and legal development of the ***Colorado*** ***River*** Basin. [[168]](#footnote-169)168 The complex and often subtle interrelationships between broader border issues and the management of water were important components of the multiple barriers to transboundary cooperation that were overcome during the Minute 319 process.

A. The International Boundary and Water Commission

Globally, the process of delineating borders between nations has tended to be a foremost cause of tension and conflict. [[169]](#footnote-170)169 In very few cases have nations drawn borders peacefully; border demarcation efforts typically give way to power politics or military threats, if not outright warfare. [[170]](#footnote-171)170 Consequently, natural resource issues in border regions usually cannot be cleanly separated from larger geopolitical and economic realities, and the Delta Region has been no **[\*56]** exception.

The US-Mexico border relationship has long been a source of controversy between the two governments, not in the least due to its roots in a bitter military and economic conflict during the 1800s that was generally resolved against Mexico's interests. [[171]](#footnote-172)171 Mexico lost over half of its sovereign territory to the United States with the Treaty of Guadalupe Hidalgo in 1848 and the subsequent Gadsden Purchase in 1853. [[172]](#footnote-173)172 Even after the conclusion of the Mexican-American War, difficulties in the international relationship persisted, including substantial tensions related to the movement of immigrant populations, incursions across the border during the Indian wars and the US Civil War, racial and cultural differences, and the ownership and use of land and resources along the border during westward expansion (for example, the previously-discussed land disputes involving the CDC, CRLC, and US and Mexican governments). [[173]](#footnote-174)173

The IBWC, the primary agency responsible for the international management of the ***Colorado*** ***River*** (among other responsibilities), evolved out of the US and Mexican governments' mutual need to manage border movement issues. [[174]](#footnote-175)174 The Treaty of Guadalupe Hidalgo established the Rio Grande ***River*** as a substantial portion of the US-Mexico border; it also designated a twenty-three-mile reach of the ***Colorado*** ***River*** (known as the limitrophe reach) as a portion of the international border between Mexico and Arizona. [[175]](#footnote-176)175 Even after the Treaty of Guadalupe Hidalgo formally settled the location of the border, riverbed accretion [[176]](#footnote-177)176 continued to cause significant portions of the ***river*** boundary to shift over time. [[177]](#footnote-178)177 As agricultural development and settlement took place in these ***river***-boundary areas, the need arose to establish jurisdictional rules for dealing with the two ***rivers***' tendency to shift their banks. [[178]](#footnote-179)178

The Convention of 1884 adopted the requisite rules, and five years later the Convention of 1889 created the International Boundary Commission ("IBC") and vested it with decision-making and administrative power over the previously adopted rules pertaining to the two ***rivers*** where they served as international boundaries. [[179]](#footnote-180)179 The Convention of 1884 limited the IBC's initial power to resolving border disputes resulting from changes in the riverbeds (accretion), future ***river*** infrastructure, and any other cause affecting the international borderline. [[180]](#footnote-181)180

**[\*57]** Sixty years after the United States and Mexico drafted the first rules governing boundary water disputes, it became increasingly obvious that binational water issues affected not just the borderline, but also the borderlands in general. [[181]](#footnote-182)181 As a result, the two countries seized the opportunity while negotiating the 1944 Water Treaty to expand the IBC into the IBWC and to substantially increase its responsibilities. [[182]](#footnote-183)182 Known as La Comision Internacional de Limites y Aguas ("CILA") in Mexico, [[183]](#footnote-184)183 this binational agency consists of a US Section (the IBWC) based in El Paso, Texas, and a Mexican section (the CILA) based in Juarez, Mexico. [[184]](#footnote-185)184 The IBWC is a subsidiary agency of the US Department of State, while CILA is a subsidiary of the Mexican Secretaria de Relaciones Exteriores de Mexico. [[185]](#footnote-186)185

The 1944 Water Treaty authorizes the IBWC to (i) build and manage waterworks; (ii) resolve problems and negotiate further agreements regarding international waters; and (iii) settle treaty interpretation disputes, subject to each country's approval. [[186]](#footnote-187)186 The agency also has authority over the boundary delineation along the land boundary, the boundary sections of the Rio Grande and ***Colorado*** ***Rivers***, the works situated on their common boundary, and any project that lies entirely within either country if its construction or management will affect international treaty compliance. [[187]](#footnote-188)187 Thus, the IBWC's jurisdiction encompasses the entire border region, including dry lands and ***rivers***, and includes the resolution of water disputes and "virtually any border-related issue." [[188]](#footnote-189)188 The IBWC's decisions, known as "Minutes," [[189]](#footnote-190)189 generally have the status of executive agreements under US law [[190]](#footnote-191)190 and are deemed approved by each country unless **[\*58]** disapproved within thirty days after execution by the IBWC Commissioners. [[191]](#footnote-192)191

In practice, however, the IBWC has historically avoided political controversy by focusing on problems that it could solve in a more technical capacity, such as flood control problems, municipal sewage treatment issues, joint waterway management projects, monitoring and detection of boundary problems, and the collection and distribution of hydrological information in the border region. [[192]](#footnote-193)192 Nevertheless, the IBWC's authority is potentially quite broad. For example, Minute 261 expressly recognized the IBWC's authority over problems that concern health and safety or that impair beneficial uses of international waters; Minute 261 also established the IBWC's independent authority to determine when such problems exist. [[193]](#footnote-194)193 As such, the "IBWC's jurisdiction over water quantity and quality issues is well-established and extensive," making it the established forum to facilitate infrastructure projects, water transfers, and cooperative management programs within the framework of the Law of the ***River***. [[194]](#footnote-195)194

B. US-Mexico Water Sharing: A Contentious Past

Until the 1944 Water Treaty, the United States essentially undertook ***Colorado*** ***River*** operations in accordance with the Harmon Doctrine - asserting that, as the upstream sovereign, it had the right to all of the water originating within its territory. [[195]](#footnote-196)195 Given the hydrological realities of the ***Colorado*** ***River*** Basin (i.e., the fact that nearly all flows originate in the US portion of the Basin), this left Mexico without any certain claim on the use of the ***River***. Even as customary international law began to shift towards equitable utilization, Mexico was wary that the United States' delay in acknowledging a Mexican right to the **[\*59]** ***river*** would ultimately weaken Mexico's claim in light of the United States' continued efforts to develop and acquire more and more vested rights to the water of the ***River***. [[196]](#footnote-197)196 Throughout the early part of the twentieth century, Mexico therefore made repeated requests to the United States for a legally protected ***River*** allocation.

1. 1922 ***Colorado*** ***River*** Compact

The 1922 ***Colorado*** ***River*** Compact ("1922 Compact" or "Compact") was the first congressionally ratified US interstate water compact. [[197]](#footnote-198)197 The Compact allocated the water of the ***River*** among the US states of the Upper Basin (***Colorado***, New Mexico, Utah, and Wyoming, along with a small portion of Arizona) and the Lower Basin (Arizona, California, and Nevada). [[198]](#footnote-199)198 It apportioned 7.5 maf per annum to each Basin, requiring the Upper Basin to deliver no less than seventy-five maf every ten years to the Lower Basin at Lee Ferry, a point on the ***river*** just below Glen Canyon Dam in Northern Arizona. [[199]](#footnote-200)199 This delivery requirement effectively gave the Lower Basin the highest priority right. [[200]](#footnote-201)200 The Compact also gave the Lower Basin a right to an additional one maf of tributary water beyond these initial allocations. [[201]](#footnote-202)201

Ironically, the 1922 Compact materialized in part out of various upstream states' efforts to frustrate California's desire for equitable apportionment - a principle that was growing in prevalence internationally in the form of the doctrine of equitable utilization - in the ***Colorado*** ***River*** Basin. [[202]](#footnote-203)202 Recognizing that they would lose out in a race to develop with California, the other Basin states sought to prevent California from acquiring greater rights to the ***Colorado*** ***River*** under equitable apportionment. [[203]](#footnote-204)203 Accordingly, the Basin states sought out an agreement to apportion the ***Colorado*** ***River*** into set amounts during the 1922 Compact negotiations. [[204]](#footnote-205)204 In keeping with these underlying motives, the Compact negotiations did not include Mexico, and the United States continued to resist granting Mexico a guaranteed right to ***Colorado*** ***River*** water throughout the 1920s and 1930s. [[205]](#footnote-206)205

Although the 1922 Compact did not directly address the allocation of water to Mexico, it did recognize that "as a matter of international comity" the United States could recognize a Mexican water right. [[206]](#footnote-207)206 This water would first come **[\*60]** from the water the Compact does not allocate; in the event that there was insufficient unallocated water, the obligation to meet any Mexican treaty obligation would be shared equally by both the Upper and Lower Basin. [[207]](#footnote-208)207

Subsequent to the 1922 Compact's division of the ***Colorado*** ***River*** among the Upper and Lower Basins, the states of the Upper Basin entered into the Upper ***Colorado*** ***River*** Basin Compact of 1948, which divided their share of the ***River*** among ***Colorado***, New Mexico, Utah, Wyoming, and a small area of northern Arizona. [[208]](#footnote-209)208 The 1928 Boulder Canyon Project Act, [[209]](#footnote-210)209 combined with a decree by the United States Supreme Court pursuant to its decision in Arizona v. California, [[210]](#footnote-211)210 accomplished a similar division among the Lower Basin states.

2. 1944 Water Treaty

In the 1940s the United States finally acquiesced to Mexico's persistent requests to recognize its entitlements to the ***Colorado*** ***River*** (as well as the Rio Grande) and entered into the 1944 Water Treaty. [[211]](#footnote-212)211 In entering into the Treaty negotiations, the United States, which was then heavily engaged in World War II, was at least partially motivated by the need to strengthen its alliance and relationship with Mexico. [[212]](#footnote-213)212 Nonetheless, increasing water demand in Baja California and Sonora, along with the US State Department's general desire to maintain strong relations with Mexico and to obtain international recognition of its Good Neighbor policy, also helped to fuel both local and national interest in reaching the 1944 agreement. [[213]](#footnote-214)213

The 1944 Water Treaty obligates the United States to deliver 1.5 maf of water annually to Mexico, except in times of "extraordinary drought," in which case Mexico's allocation would decrease "in the same proportion" as the reduction of consumptive use in the United States. [[214]](#footnote-215)214 The Treaty also stipulated that in times of surplus the United States would deliver up to two hundred thousand acre-feet of additional water, but that Mexico would not acquire any right to the flow of the ***Colorado*** ***River*** beyond the guaranteed 1.5 maf. [[215]](#footnote-216)215

Pursuant to the terms of the Treaty and several subsequent Minutes, Mexico's allocation consists of two primary components. [[216]](#footnote-217)216 The first of these, representing close to ninety percent of Mexico's 1.5 maf entitlement, consists of deliveries at the Northerly International Boundary, arriving at Morelos Dam via a combination of flows in the main channel of the ***Colorado*** ***River*** and flows returned to the ***River*** via the Siphon Drop and the Pilot Knob diversions on the **[\*61]** All-American Canal. [[217]](#footnote-218)217 These deliveries are composed of water releases from Lake Mead and the chain of other Lower Basin reservoirs, mixed with agricultural return flows from the Yuma area. [[218]](#footnote-219)218 The second component - the remainder of Mexico's entitlement - consists of deliveries at the Southerly International Boundary, which occur through the Sanchez Mejorada canal; these flows, which are highly saline, are primarily composed of agricultural drain water from the Yuma, Arizona, region. [[219]](#footnote-220)219

The Treaty imposes certain limitations on the relative quantities of water that the United States can deliver at each location. [[220]](#footnote-221)220 The Treaty's monthly maximum and minimum limits are designed to ensure that the delivery of Mexico's water is spread throughout the calendar year, rather than being concentrated only during peak agricultural demand months. [[221]](#footnote-222)221 Additionally, these caps accommodate limitations in US delivery infrastructure and provide opportunities for US users to generate power year-round at various hydropower facilities downstream of Hoover Dam (including Parker Dam, Davis Dam, Siphon Drop, and Pilot Knob). [[222]](#footnote-223)222

In addition to giving Mexico a 1.5 maf allocation of the ***Colorado*** ***River***, the 1944 Water Treaty called for the construction of various projects associated with the diversion and use of Mexico's new allocation. [[223]](#footnote-224)223 For Mexico, the Treaty authorized the construction of the Morelos Dam just below the northernmost point of the limitrophe section, but required IBWC approval and supervision at Mexico's expense. [[224]](#footnote-225)224 The Treaty also identified the United States' Davis Dam as a storage and diversion structure to facilitate delivery of Mexico's allocation. [[225]](#footnote-226)225

As such, the 1944 Water Treaty had three primary results: (i) most importantly for Mexico, it apportioned a guaranteed amount of ***Colorado*** ***River*** water, essentially a call on the ***river*** equal to that of the United States; (ii) it provided for the construction of Mexico's Morelos Dam, located just below the northernmost point of the limitrophe, to divert water through the Alamo Canal for the Mexicali Valley; and (iii) it replaced the IBC with the IBWC and broadened the scope of the IBWC's authority to manage water-related aspects of the borderlands. [[226]](#footnote-227)226 A secondary, but perhaps more important effect for Mexico was that the 1944 Water Treaty established the character and outlook for Mexican **[\*62]** development along the international border. By creating a legally secure allocation of water for Mexico, it laid the groundwork for the Mexican government to plan development on the basis of a guaranteed water supply. Prior to the signing of the Treaty, all development on the Mexican side subsisted on venture capital and speculation; the outlook for true social development and an equitable distribution of wealth in the region was limited under those conditions. [[227]](#footnote-228)227 As such, the 1944 Water Treaty in many ways redefined the meaning of the border for Mexico. [[228]](#footnote-229)228

Importantly, while these treaty provisions established a Mexican water allocation, a means to deliver it for Mexican use, and a binational agency with jurisdiction to settle water disputes, the agreement left important terms and aspects of water management open to interpretation. [[229]](#footnote-230)229 In particular, the Treaty left at least three very significant issues unresolved: (i) establishment of definitive water quality standards for the Mexican allocation; (ii) agreement on the use of groundwater resources in the border region; and (iii) use of the term "extraordinary drought" to determine circumstances calling for shortage sharing instead of a clearly defined provision that triggers the countries' reduced water use responsibilities. [[230]](#footnote-231)230 This final issue ultimately became a primary driver behind Minute 319, as discussed in detail below. [[231]](#footnote-232)231

3. Minute 242

The absence of a water quality provision in the 1944 Water Treaty, despite Mexican requests for such a provision, resurfaced frequently over the ensuing decades. Although this provision was intentionally omitted - strategically left out under the misguided presumption that the omission would afford the United States greater operational flexibility - the ambiguity it created eventually led to a conflict that would considerably constrain US operations. [[232]](#footnote-233)232

This issue became acute in the 1960s, less than thirty years after Hoover Dam began filling. In 1963 Congress approved the ***Colorado*** ***River*** Storage Project ("CRSP"), which authorized the Glen Canyon Dam. [[233]](#footnote-234)233 After a substantial political battle with environmentalists over construction of a dam at Echo Park, [[234]](#footnote-235)234 Reclamation constructed a seven hundred-foot-high impoundment at Glen Canyon as a cash register dam, intended to produce revenues from hydroelectric power sales to the Southwest and to regulate the Upper Basin's water-delivery requirement to the Lower Basin under the ***Colorado*** Compact. [[235]](#footnote-236)235 **[\*63]** For the majority of the time that Lake Powell filled behind Glen Canyon Dam, the United States released only the minimum amount of water that the 1944 Water Treaty required the United States to deliver to Mexico. [[236]](#footnote-237)236

The effect of this change in ***river*** flows on Mexico brought the dormant salinity issue to a head. In the decades prior to Glen Canyon, the United States was delivering ever-increasing quantities of saline wastewater to the lower ***Colorado*** ***River*** out of the Yuma, Arizona, region - most notably, drain flows from the Wellton-Mohawk Irrigation District - and thereby degrading the quality of water reaching Mexico. [[237]](#footnote-238)237 However, the impact of these wastewater discharges were substantially masked by the fact that Mexico continued to receive well in excess of its 1.5 maf Treaty allocation, providing a substantial volume of receiving water to dilute the drain flows. [[238]](#footnote-239)238 When the gates closed on Glen Canyon, releases to Mexico were reduced to the Treaty minimums while Lake Powell filled. As a result, these wastewater deliveries rose to an excess of thirty percent of the water reaching Mexico under its Treaty allocation: the average annual salinity of the water Mexico received increased from around 800 parts per million ("ppm") to more than 1,500 ppm. [[239]](#footnote-240)239

This decreased water quality led to significant and immediate declines in agricultural production in Mexico, damaging Mexicali Valley farms and precipitating an international crisis that Mexico perceived as both a major security issue and economic threat to Mexicali Valley communities. [[240]](#footnote-241)240 In order to counteract the increase in salinity, Mexico embarked on an intensive program of groundwater pumping that involved drilling a series of new wells along the US-Mexico border to capture relatively low-salinity groundwater flowing out of the United States as part of the regional underflow of the ***Colorado*** ***River***. [[241]](#footnote-242)241 The United States responded by drilling its own series of wells along the border intended to intercept groundwater flow before it reached Mexico. [[242]](#footnote-243)242 This pumping war rapidly created a "trough of depression" in the well field, resulting in adverse groundwater conditions along the border and compounding the effects of compromised surface flows. [[243]](#footnote-244)243

By 1971, tensions had escalated to the point where Mexico threatened to bring its case against the United States to the International Court of Justice ("ICJ"). [[244]](#footnote-245)244 Because the United States' felt pressure from the international community **[\*64]** and feared Mexico would prevail in the ICJ, Mexico's maneuver prevailed. [[245]](#footnote-246)245 After several years of bitter negotiations, Minute 242 finally resolved the crisis.

Minute 242, signed in 1973, addressed the requirements for water quality that are absent in the 1944 Water Treaty. [[246]](#footnote-247)246 The Minute obligated the United States to deliver water to Mexico that has "an annual average salinity of no more than 115 p.p.m. +/- 30 p.p.m… . over the annual average salinity of ***Colorado*** ***River*** waters which arrive at Imperial Dam." [[247]](#footnote-248)247 To achieve this result, a substantial portion of saline wastewater from the Yuma region was bypassed via a new drainage canal (known as the Main Outlet Drain Extension, or "MODE") [[248]](#footnote-249)248 to a remote part of the Delta (a flow that now sustains the Cienega de Santa Clara wetland, or "Cienega"). [[249]](#footnote-250)249 These MODE deliveries, which average 105 thousand acre-feet annually, do not count against Mexico's 1944 Water Treaty entitlement or against the entitlements of any US state. [[250]](#footnote-251)250 Rather, these deliveries operate as an ongoing "system deficit," along with other unaccounted-for system losses on the ***River***, such as Lower Basin reservoir evaporation, phreatophyte use, illegal diversions, and cancelled water orders that flow on an unscheduled basis into Mexico. [[251]](#footnote-252)251 A provision in Minute 242 that limited the volume of water that each country could withdraw within five miles of either side of the border also resolved the groundwater pumping war. [[252]](#footnote-253)252

Through this formula, the United States committed itself to providing Mexico water with a salinity that is not substantially worse than the water received by farmers in the Imperial Irrigation District. Because of the Minute 242 agreement, the United States now carefully regulates wastewater deliveries to the ***River*** above Morelos Dam using a network of computer-controlled groundwater pumps and monitoring gauges to hold salinity levels at the Northerly International Border just below the maximum allowed under the Minute (i.e., 145 ppm more saline than at Imperial Dam). [[253]](#footnote-254)253 In practice, this regulation results in the delivery of water to Mexico at the Northerly International Border with a salinity of around 850 ppm. [[254]](#footnote-255)254

In connection with Minute 242, in 1973 the US Congress appropriated **[\*65]** $ 350 million to construct the MODE canal and the Yuma Desalinization Plant ("YDP") as part of a future plan to treat the MODE discharges so that they could return to the ***River*** for delivery to Mexico. [[255]](#footnote-256)255 Ultimately, the YDP never achieved its purpose - it operated for about nine months before shutting down in 1992 - but around 120 thousand acre feet of saline agricultural runoff from the Wellton-Mohawk Irrigation District continued to pass through the canal into the Cienega each year. [[256]](#footnote-257)256

Despite its positive outcome, the two countries achieved Minute 242 only after bitter dispute that left a legacy of hard feelings, particularly on the Mexican side. [[257]](#footnote-258)257 Binational struggles have continued over the salinity issue, with each country disputing how salinity should be measured and arguing over conflicting laboratory results. [[258]](#footnote-259)258 As US ***river*** operations maintain salinity levels at or nearly at the maximum limit allowable under Minute 242, Mexico's measurements have not infrequently shown violations of the limit when US measurements have not. [[259]](#footnote-260)259

The salinity issue also alerted ***Colorado*** ***River*** managers to the limitations of existing international conflict resolution mechanisms under the Law of the ***River***. Accordingly, Resolution 6 of Minute 242 contains a consultation provision requiring the United States and Mexico to notify and consult with each other before undertaking border area activities that might have adverse effects on the other side of the border. [[260]](#footnote-261)260 This provision acknowledged the interconnectedness of water resources in the border region, but ultimately fell short of its ambition by leaving the term "consultation" open to interpretation. [[261]](#footnote-262)261 This ambiguity would come back to haunt US-Mexico relations in future decades.

C. Influence of Social and Political Issues on the Border

Scholars have widely recognized that social and political developments, as well as imposing engineering schemes, are significant components of international watershed management. [[262]](#footnote-263)262 The ***Colorado*** ***River*** provides a clear example of the role that social and political influences play in ***river*** basin management. **[\*66]** Over the past century, significant developments along the ***Colorado*** ***River***, in the Law of the ***River***, and in US domestic and foreign policy decisions coincided closely to solidify the international border and create tensions in the US-Mexico foreign relationship.

Immigration issues provide one example of how the social effects surrounding water development implicate the ability to manage the ***River***. Immigration has long been a defining feature of the border relationship and cannot easily be disentangled from water management issues, development along the ***Colorado*** ***River***, and related agribusiness ventures in the Mexicali and Imperial Valleys. [[263]](#footnote-264)263

The 1922 ***Colorado*** Compact - which notably excluded Mexico - was negotiated contemporaneously with comprehensive US immigration reforms in the 1920s. [[264]](#footnote-265)264 These reforms were closely connected to US concerns about an influx of Mexican immigration resulting from demand for cheap agribusiness labor and attempts by refugee populations to flee the Mexican Civil War. [[265]](#footnote-266)265 Two decades later, the 1944 Water Treaty was driven, at least in part, by US concern over its international relationship with Mexico and by the Bracero Program, which allowed Mexican contract workers to fuel US agribusiness. [[266]](#footnote-267)266 The Mexican salinity crisis, leading to Minute 242, occurred as US concern about a wave of Mexican immigration resurfaced in the 1970s. [[267]](#footnote-268)267

As the borderlands grew more crowded, the United States often encountered tension between making the border "more real" by funding border security measures, on the one hand, and preserving a porous boundary to permit the free flow of labor and trade in order to furnish development of agriculture and industry along the border, on the other. [[268]](#footnote-269)268 With major private and public financial interests firmly entrenched in the region's water resources and agriculture, the maintenance of a large-scale agricultural labor force has been a primary driver in border policy. [[269]](#footnote-270)269

The 1920s immigration reforms in the United States - which were driven by popular fears about Mexican immigration, severe limits on European immigration, and creation of the US border patrol - nevertheless protected large-scale agribusiness' interests in migrant labor in the lower ***Colorado*** ***River*** Basin by placing no quota on Mexican immigrants [[270]](#footnote-271)270 and maintaining a de-facto "permeable" border policy that continued into the 1940s. [[271]](#footnote-272)271 However, the reforms also set the stage for future conflict by treating undocumented migrants as fugitives **[\*67]** in the United States. [[272]](#footnote-273)272 The United States continued to facilitate migrant contract labor through the Bracero Program, the implementation of which addressed a temporary shortage of labor during World War II (and repressed developing immigrant labor unions elsewhere in the United States by importing a mobile, seasonal workforce). [[273]](#footnote-274)273

The Bracero Program ended with another comprehensive US immigration reform in 1965, [[274]](#footnote-275)274 which led to renewed popular US fears of a wave of Mexican immigrants in the 1970s, which led to further reforms - continuing a twentieth century pattern in which the United States grappled on the one hand with the paradoxical desires of developing water supplies, labor forces, and agricultural industries, and on the other with maintaining an impenetrable border to prevent illegal immigration and criminality. [[275]](#footnote-276)275 Meanwhile, Mexico harbored growing resentment concerning US influence over the borderlands, as well as the United States' apparent reluctance to recognize the adversarial connections among economic, social, immigration, and water development policies. [[276]](#footnote-277)276

In keeping with this same pattern, the economic integration of the border has also driven aggressive binational development of the ***Colorado*** ***River*** - development that has fueled the very economic success and growth that has, in turn, driven national immigration concerns. This "pronounced interdependence between northern Mexico and the US Southwest is a fact of life, and the flow of people and products across the international boundary has long affected population centers near and far beyond the border zone." [[277]](#footnote-278)277 At the same time, absent this integration, "it is inconceivable that the region would have become so attractive to the recent waves of entrepreneurs and immigrants." [[278]](#footnote-279)278

Irrespective of national policies, the reality of the border is that it remains closely interconnected politically, economically, culturally, socially, and environmentally, and many local efforts are aimed at promoting more favorable cross-border interactions. Among many other examples, California and Baja California, as well as Arizona and Sonora, have established regional commissions to coordinate matters of mutual concern. [[279]](#footnote-280)279 For several decades, governors of these states have also met to promote good relations and discuss ways to influence federal policymaking to better reflect border realities. [[280]](#footnote-281)280

This local interest in harmonious border relationships has long provided a powerful countervailing force against national policies that favor separation and closure at the border, because "the close economic links have made it essential that the interruptions in the normal flow of people and trade across the boundary be avoided or at least kept to a minimum." [[281]](#footnote-282)281 Local leaders, businesses, and **[\*68]** managers, "keenly aware of problems of overutilization of scarce resources, overpopulation, poverty, undocumented migration, and delicate economic interdependence, continue to struggle to prevent serious deterioration of cross-border relations." [[282]](#footnote-283)282 Even when a tense national atmosphere prevails at the frontier, residents from both sides recognize the "compelling reasons to preserve a spirit of neighborly coexistence" [[283]](#footnote-284)283 - a local consciousness of the importance of cooperation that, as discussed further below, was also an important feature in the success of the Minute 319 process.

This tension between national and local interests is a powerful driver in the border region and drives a great deal of policy action that has damaged border relationships, economic movement, and border resources. [[284]](#footnote-285)284 The development of the ***Colorado*** ***River*** - and the associated degradation of both border ecosystems and border relationships - has closely reflected this broader issue. As discussed further below, through its active and thoughtful facilitation of Minute 319 and the preceding Joint ***Colorado*** ***River*** Cooperative Process, the IBWC implicitly acknowledged the importance of these social issues in sound water management, and that utilizing the knowledge and experience of local stakeholders to guide central government decisions is key to effectively navigating these complex border issues.

D. The Forgotten Delta

Beginning with the large-scale development of agriculture in the Imperial and Mexicali Valleys and the Salton Sea disaster in the early 1900s, human impacts began to rapidly transform the Delta. [[285]](#footnote-286)285 Under present-day conditions, the estuaries and marine ecosystems that depended on the ***Colorado*** ***River*** and its sediment suffer significantly from both the absence of regular inflow into the Upper Gulf and substantially diminished water quality. [[286]](#footnote-287)286 As a result of upstream dams and diversions, the once vast Delta wetlands dried up all but completely, declining from an estimated two million acres around 1900 to an estimated forty thousand acres of small, scattered wetlands in the 1970s. [[287]](#footnote-288)287 The effects on the Delta's enormous estuary at the head of the Gulf of California were equally significant, essentially wiping out the once-vibrant fishery the Delta nourished and driving native fish and mammals like the totoaba and vaquita porpoise to the brink of extinction. [[288]](#footnote-289)288

A mere four decades after the completion of the Hoover Dam in 1936, flows in the Delta became so depleted that scientists and the media declared the Delta "dewatered" and "dead." [[289]](#footnote-290)289 Fortunately, the Delta ecosystem proved **[\*69]** to be far more resilient than many observers predicted. Minute 242 inadvertently produced one of the Delta's most significant remaining ecologic resources - the Cienega de Santa Clara - by providing saline agricultural drain water, bypassed from the Wellton-Mohawk Irrigation and Drainage District, to the Santa Clara Slough. [[290]](#footnote-291)290 This saline water expanded a few isolated wetlands at the margins of the former Delta into a fifty thousand-acre wetland. [[291]](#footnote-292)291 Although the saline bypass water is too toxic for use in agriculture, it has proved to be ideal for the maintenance of cattail marsh habitat, mimicking the natural brackish water previously found in the Delta estuary. Today, the Cienega is the most important existing wetland in the Delta Region, [[292]](#footnote-293)292 attracting over 350 migratory bird species and serving as a key stop on the Pacific Flyway. [[293]](#footnote-294)293 Several notable endangered species, including the Yuma Clapper Rail, Desert Pupfish, and Southwestern Willow Flycatcher, rely on the Cienega's habitat. [[294]](#footnote-295)294 As a testament to its significance, Mexico included the Cienega as part of the Mexican Delta's biosphere reserve. [[295]](#footnote-296)295

Subsequent to the emergence of the Cienega, a series of flood events temporarily restored flows to the ***Colorado*** ***River*** Delta's mainstem reaches for short periods between 1980 and 1993. [[296]](#footnote-297)296 In 1983, shortly after Lake Powell reached full capacity for the first time, the spring runoff was plentiful enough that overwhelmed Glen Canyon Dam operators installed plywood boards to keep rising water from over-topping and breaching the Dam. [[297]](#footnote-298)297 This began a period of full reservoirs and significant spring floods that reached the Delta ecosystem from 1983 to 1986; in 1993 a flood on the Gila ***River*** again caused a significant quantity of water to reach the ecosystem. [[298]](#footnote-299)298

The result of these flood events was dramatic: the floodwaters restored an estimated 150 thousand acres of native habitat that sprang up in the flooded areas and facilitated substantial rebounds in shellfish populations in the Upper Gulf. [[299]](#footnote-300)299 Although most of this emergent habitat disappeared once dry conditions returned, the Delta's demonstrated ecologic resilience piqued interest in the scientific and environmental communities and prompted local restoration efforts, spearheaded by the Sonoran Institute and Pronatura Noroeste. [[300]](#footnote-301)300 In 1997 Environmental Defense Fund ("EDF") published a report titled A Delta Once More, which provided rough estimates of the water required to restore a minimally-functioning ecosystem, further fueling interest in local Delta restoration efforts. [[301]](#footnote-302)301

**[\*70]** In 2000, in response to growing binational interest and advocacy surrounding the Delta, the IBWC issued Minute 306, entitled "Conceptual Framework for United States-Mexico Studies for Future Recommendations Concerning the Riparian and Estuarine Ecology of the Limitrophe Section of the ***Colorado*** ***River*** and its Associated Delta," [[302]](#footnote-303)302 which acknowledged the health of the Delta resource as "an issue of bi-national concern." [[303]](#footnote-304)303 Minute 306 established "a framework for cooperation" through joint scientific studies to "examine the effect of flows on the existing riparian and estuarine ecology of the ***Colorado*** ***River*** [below the border] with a focus on defining the habitat needs of fish, and marine and wildlife species of concern to each country." [[304]](#footnote-305)304

Following Minute 306, a series of scientific investigations and discussions took place, including a conservation priority-setting exercise from 2001 to 2004 led by NGOs and academic researchers to identify areas with particular importance to migratory and local birds, terrestrial species, and marine species. [[305]](#footnote-306)305 Through a rigorous evaluative process, respected scientists with extensive research experience and interest in the ***Colorado*** ***River*** Delta region identified specific priority areas for environmental protection and restoration in the Delta. [[306]](#footnote-307)306

This process culminated in the production of a report entitled "Conservation Priorities in the ***Colorado*** ***River*** Delta," which was ***co***-published by the Sonoran Institute, EDF, the University of Arizona, Pronatura Noroeste Direccion de Conservacion Sonora ("Pronatura Sonora"), Centro de Investigacion en Alimentacion y Desarrollo, and World Wildlife Fund in 2005. [[307]](#footnote-308)307 The report identified fifteen high-priority conservation sites throughout the Delta (including locations along the ***Colorado*** ***River*** corridor in the limitrophe and downstream to the Gulf, the Cienega, and various other wetland areas) as priority conservation areas, and identified the water and restoration needs associated with each of these sites. [[308]](#footnote-309)308

Building on the scientific consensus established in the report, Delta restoration efforts centered initially on a high-profile "pilot" restoration program that created a small network of sites to demonstrate the potential for restoration in the Delta, together with a broader vision for restoration across the various environments in the Delta. [[309]](#footnote-310)309 These restoration efforts largely targeted areas with **[\*71]** remnant fractions of native vegetation that were threatened by invasive species that thrive in higher salinity soil, [[310]](#footnote-311)310 and involved mechanically removing invasives and then working to revegetate affected areas with native tree species. [[311]](#footnote-312)311 These restoration efforts involved long-term coordination among a variety of different organizations, including Pronatura Noroeste, Sonoran Institute, the Yuma Crossing Natural Heritage Area, the Cocopah Indian Tribe, the National Wildlife Federation, IBWC, CILA, US Fish and Wildlife, the Comision Nacional de Areas Naturales Protegidas ("CONANP"), and Reclamation. [[312]](#footnote-313)312

The largest restoration sites emerged along a section of the ***Colorado*** ***River*** mainstem just south of the town of Guadalupe Victoria, Baja California. [[313]](#footnote-314)313 The "Laguna Grande" site, as it is known, now consists of a network of interconnected restoration sites and began successfully demonstrating the restoration of native cottonwood, willow, and mesquite habitat in 2011. [[314]](#footnote-315)314 The binational limitrophe reach of the Delta also received considerable ecological conservation attention [[315]](#footnote-316)315 and became the focus of ongoing binational NGO restoration efforts; [[316]](#footnote-317)316 upstream, the City of Yuma also undertook significant restoration work in the Yuma East Wetlands, which lie at the confluence of the Gila and ***Colorado*** ***Rivers***. With twelve miles of the limitrophe located in the Cocopah Indian reservation, indigenous restoration efforts have also been important in this region. [[317]](#footnote-318)317 Among other efforts, the Cocopah Indian Nation and the National Wildlife Federation created the ***Colorado*** ***River*** International Conservation Area ("CRICA") steering committee to obtain permanent cultural and biological resource protection along the limitrophe and to secure sufficient water flows for wildlife and habitat protection. [[318]](#footnote-319)318

These local restoration efforts led to the establishment in 2008 of the ***Colorado*** ***River*** Delta Water Trust ("Delta Water Trust" or "Water Trust"), a formal water trust created under Mexican law as part of a cooperative project among Pronatura Noroeste, the Sonoran Institute, and EDF to acquire water and land assets for specific restoration sites in the Delta. [[319]](#footnote-320)319 The Delta Water Trust takes advantage of unique provisions in Mexico's water laws that allow surface water rights in the Mexicali Valley to be transferred for use in the Delta ecosystem. [[320]](#footnote-321)320 The Water Trust subsequently played a significant role in the negotiations between the United States and Mexico by committing to provide water (matching commitments from the United States and Mexico) in support of **[\*72]** the environmentally related flows in both Minutes 316 and 319, as discussed in detail below. [[321]](#footnote-322)321

Given the absence of water in the ***Colorado*** ***River***'s final reaches, Mexico has not had a significant opportunity to develop recreation-based economic activities in connection with the ***Colorado*** ***River*** like those that now exist in the United States. [[322]](#footnote-323)322 In addition to the enormous damage done to the domestic fishing industry in the Upper Gulf of California - which virtually disappeared in many areas - the lack of water in the ***Colorado*** ***River*** has prevented economic markets in recreation and tourism from developing and expanding. [[323]](#footnote-324)323 Where water is available, however, some ecotourism and recreational opportunities in the Delta have developed and have created work opportunities for local residents. [[324]](#footnote-325)324 Campo Mosqueda, a flood-damaged Baja California shrimp farm, has been transformed into an ecocamp along the Rio Hardy. [[325]](#footnote-326)325 To the east, the Cienega is the Delta's most important wetland ecosystem for maintaining bird species, and has also attracted recreationalists. [[326]](#footnote-327)326 Even aside from the relatively recent recreation boom experienced on the ***Colorado*** ***River*** in the United States, the Delta continues to have tremendous cultural importance for local Mexican communities. If the Delta's remaining wetlands "were to disappear, [local] communities' social fabrics would almost certainly disintegrate." [[327]](#footnote-328)327

[*IV*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T3H2-D6RV-H37G-00000-00&context=1516831). The Recent Evolution of the Border Water Relationship

With a few exceptions, the US-Mexico ***Colorado*** ***River*** water relationship continued to proceed on a somewhat arms-length basis throughout the latter part of the twentieth century. Although Minute 306 engendered some limited optimism regarding the potential for increased cooperation in the early 2000s, this was quickly subdued by setbacks that delayed cooperative efforts in the Delta and further soured the US-Mexico relationship.

These setbacks were closely tied to the growing pressure on ***Colorado*** ***River*** resources within the United States in the face of continued growth and an emerging drought. During the early part of the 2000s, a series of events (including the lining of the All-American Canal, the adoption of new reservoir management guidelines in 2001 and 2007, and other developments discussed below) served to illustrate the limited effectiveness of Minute 242's ambiguous consultation provision, [[328]](#footnote-329)328 and led to ever-increasing tension in the binational relationship.

**[\*73]**

A. The 2001 Interim Surplus Guidelines

In the late 1990s, under pressure from the US federal government and the other ***Colorado*** ***River*** Basin states, California's major ***Colorado*** ***River*** stakeholders began actively negotiating to reduce California's overall use of ***Colorado*** ***River*** water, which had historically exceeded the state's legal allocation of 4.4 maf, through a series of limited reallocations. [[329]](#footnote-330)329 The product of these negotiations was the 1999 Quantification Settlement Agreement ("QSA"), a conditional settlement agreement among the major California water users signed under heavy pressure from then Secretary of Interior Bruce Babbitt. [[330]](#footnote-331)330

The QSA [[331]](#footnote-332)331 consisted of a series of agreements that collectively amended the terms of a 1929 agreement [[332]](#footnote-333)332 that had allocated ***Colorado*** ***River*** water among the major California water users. [[333]](#footnote-334)333 The QSA accomplished significant transfers of water among the major Southern California municipal and agricultural users, effectively fitting Southern California's historically lower-priority municipal use within California's legal allocation of 4.4 maf. [[334]](#footnote-335)334

A key condition of the QSA was that the US Department of Interior provide California a "soft landing," meaning limited surplus water deliveries to California would continue for an additional fifteen years to permit the water users to complete the QSA water transfers. [[335]](#footnote-336)335 Reclamation led negotiations among the Basin states, ultimately releasing a Draft Environmental Impact Statement ("EIS") in July 2000 that evaluated, among others, two competing alternatives submitted by California and by the other Basin States. [[336]](#footnote-337)336 Although California's plan was more aggressive in nature, both alternatives proposed to draw down ***Colorado*** ***River*** storage reservoirs to provide surplus deliveries to California, while capturing a far greater percentage of future flood flows. [[337]](#footnote-338)337 The Basin States **[\*74]** ultimately negotiated a compromise alternative, submitted during the public comment period on the Draft EIS, [[338]](#footnote-339)338 which Reclamation selected in slightly modified form as the preferred alternative in its Final EIS. [[339]](#footnote-340)339 Following Reclamation's release of the Final EIS, the major California water users approved the QSA [[340]](#footnote-341)340 and Secretary Babbitt signed a Record of Decision implementing the new ***Colorado*** ***River*** Surplus Guidelines. [[341]](#footnote-342)341

As the Final EIS correctly noted, the changes in water operations contemplated in the Surplus Guidelines - designed to capture a greater percentage of water generated in high-flow years for use in the United States - would substantially reduce both the frequency and volume of floods and other unplanned releases of water that had reached Mexico and the Delta periodically since 1980. [[342]](#footnote-343)342 From an international perspective, the new guidelines thus adopted a program of ***Colorado*** ***River*** management that was "heavily prejudiced against the delivery of excess water to Mexico," [[343]](#footnote-344)343 and which was apparently antithetical to Minute 306's purported interest in the ecology of the Delta. The Final EIS also rejected a proposal by NGOs (known as the "Pacific Institute proposal") [[344]](#footnote-345)344 that would have guaranteed a small flow of water to preserve existing environmental values in the Delta in connection with the surplus deliveries. [[345]](#footnote-346)345 This proposal was rejected on the basis that any environmental impacts in the Delta were beyond the proper scope of US federal consideration, [[346]](#footnote-347)346 as Mexico was **[\*75]** responsible for the management of all water passing the international boundary [[347]](#footnote-348)347 and was therefore in a position to control whether water reached the Delta; furthermore, Reclamation indicated that it lacked the authority to deliver any water to Mexico beyond that required by the 1944 Water Treaty. [[348]](#footnote-349)348

The position asserted in the 2001 Surplus Guidelines continued a long-standing US policy of disclaiming US federal responsibility for environmental impacts in Mexico from ***river*** operations - a position asserted in Reclamation's 1996 Biological Assessment, [[349]](#footnote-350)349 Fish & Wildlife's 1997 Biological Opinion, [[350]](#footnote-351)350 the ongoing Lower ***Colorado*** Multi-Species Habitat Conservation Plan, [[351]](#footnote-352)351 and other federal actions related to the ***Colorado*** ***River***. While the precise scope of transboundary federal environmental obligations remains undecided, the Federal District Court for the District of Columbia later confirmed Reclamation's argument that it lacked discretion to deliver additional water to Mexico under the 1944 Water Treaty and the Law of the ***River*** in a 2003 decision, Defenders of Wildlife v. Norton. [[352]](#footnote-353)352

Completed just a year after Minute 306, the 2001 Interim Surplus Guidelines were a significant disappointment to Mexico. From Mexico's perspective, they represented a unilateral action by the United States that was undertaken without meaningful input or consultation with Mexico, and served to substantially degrade the US-Mexico water relationship. [[353]](#footnote-354)353 The Mexican Ministry of Foreign Affairs, in a rare formal diplomatic complaint, requested that the US State Department mitigate impacts of the Surplus Guidelines and suggested that the action could adversely impact US-Mexico relations. [[354]](#footnote-355)354

B. Border Water Conflict in the Wake of the 2001 Guidelines

The Interim Surplus Guidelines also led, at least indirectly, to two other **[\*76]** significant conflicts between the United States and Mexico: the proposed operation of the YDP and the lining of the All-American Canal. Taken together, these conflicts took the US-Mexico water relationship to new lows during the mid-2000s.

1. Yuma Desalination Plant

Although the QSA had been approved in principle prior to the Record of Decision, the QSA remained a tentative agreement at best, and many of the details began to prove troublesome. [[355]](#footnote-356)355 Incoming Secretary of the Interior Gale Norton ultimately imposed a December 31, 2002, deadline for all parties to sign the QSA. [[356]](#footnote-357)356 However, with just hours to go before the deadline, the fragile consensus around the QSA broke down. [[357]](#footnote-358)357 In response, Secretary Norton suspended deliveries of surplus water to California, along with a portion of scheduled deliveries to the IID. [[358]](#footnote-359)358 Several intense rounds of further negotiations ultimately salvaged the QSA; however, Secretary Norton's decision to curtail water deliveries to California also triggered a key provision related to the continued bypass of drainage water into the MODE canal pursuant to Minute 242.

The ***Colorado*** ***River*** Basin Salinity Control Act ("CRBSCA"), passed in connection with Minute 242, authorized the construction of the YDP to treat MODE drainage water, and thus to minimize the "loss" of bypass water to Mexico. [[359]](#footnote-360)359 As a temporary measure, however, CRBSCA also provided for the bypass water to be offset during an interim period via pledges of water conserved by federal efforts to line the Coachella Canal in California. [[360]](#footnote-361)360 The curtailment of deliveries to California under the QSA resulted in the loss of this offset water under the terms of the lining agreement, which required the Department of the Interior to begin exploring new alternatives to replace the bypass flow, including potential operation of the YDP. [[361]](#footnote-362)361

Reopening the YDP, which had only operated for two brief periods since its completion in 1992, [[362]](#footnote-363)362 posed a significant threat to the continued existence of the Cienega wetland, as it would have cut MODE flow to the Cienega and replaced it with highly saline brine waste discharge from desalination operations. Scientific studies demonstrated that this would likely drive salinity levels high enough to destroy most of the enormous cattail marsh that had developed in **[\*77]** the northern portion of the Cienega. [[363]](#footnote-364)363 Many water users advocated for operation of the YDP, which led to repeated clashes between Reclamation, Lower Basin water users, environmental organizations, Mexican water managers, and Mexican environmental agencies that further disrupted the diplomatic relationship during the mid-2000s. [[364]](#footnote-365)364

2. Lining the All-American Canal

The US-Mexico relationship only deteriorated further in response to another QSA-related controversy: the lining of the All-American Canal ("AAC"). [[365]](#footnote-366)365 A key feature of the QSA was the conservation (and transfer) of around seventy thousand acre-feet of seepage losses from a twenty-three-mile stretch of the unlined AAC as it passes through the sandy soils of the Algodones region along the US-Mexico border. [[366]](#footnote-367)366 In 1988 the San Luis Rey Indian Water Rights Settlement Act authorized Reclamation to line the AAC. [[367]](#footnote-368)367 Reclamation ultimately issued a Final Environmental Impact Statement/Environmental Impact Report ("FEIS/EIR") and corresponding Record of Decision in 1994, selecting the so-called "Parallel Canal Alternative," which involved constructing a new concrete-lined canal parallel to the existing one. [[368]](#footnote-369)368

The FEIS/EIR estimated that the lining project would cut seepage from the AAC by approximately seventy-five percent. [[369]](#footnote-370)369 At the time, approximately ninety percent of this seepage flowed towards Mexico, where it served to replenish groundwater in the northern Mexicali Valley with relatively low-salinity **[\*78]** water. [[370]](#footnote-371)370 Lining of the canal was thus expected to significantly reduce groundwater recharge to the aquifer in the region and to lower the water table by as much as thirty feet in the northeastern portion of the Mexicali Valley, where Mexican farmers had come to rely on AAC seepage in support of their groundwater pumping. [[371]](#footnote-372)371 Reclamation did not consider impacts to Mexican wetlands in the FEIS/EIR, although studies also suggested that the canal lining project was likely to impact approximately 8,400 acres of wetlands and terrestrial habitat along the Andrade Mesa in Mexico. [[372]](#footnote-373)372

As noted above, the 1944 Water Treaty did not address the use of groundwater in the border region, and aside from the limited provisions of Minute 242 there had been no other broad binational agreement on the sharing of border aquifers. [[373]](#footnote-374)373 Although IBWC held a consultation with CILA in the early stages of the AAC lining project (thus satisfying the requirements of Resolution 6 of Minute 242), [[374]](#footnote-375)374 the alternative adopted in the federal Record of Decision did not attempt to address the related groundwater concerns, nor did the consultation recognize or address potential wetland impacts.

In the absence of a binational groundwater agreement, the formal US position was that the AAC seepage was legally part of California's 4.4 maf water allotment under the Law of the ***River***, such that Mexico had no legal right to the water, [[375]](#footnote-376)375 nor did Mexico have the right to interfere with efficient use of water within US territory. [[376]](#footnote-377)376 Reclamation conducted two five-year re-examinations of the 1994 NEPA documentation without making changes or obtaining further consultation, and Mexico maintained open opposition to the proposed project throughout. Then President of Mexico Felipe Calderon publicly opposed the project, stating that it would "cause enormous damage to the economy and the environment of the Baja California border." [[377]](#footnote-378)377

Mexican interests ultimately joined several organizations in California in a federal lawsuit against the project. [[378]](#footnote-379)378 In 2006, however, Congress overrode these legal challenges, issuing an instruction that Reclamation proceed with the project regardless of any conflicting environmental laws. [[379]](#footnote-380)379 Despite further Mexican protests, Reclamation commenced and completed the lining project in 2009, freeing up water for transfer to San Diego. [[380]](#footnote-381)380 This action by the United States, **[\*79]** which Mexico again perceived as an essentially unilateral move to develop border water resources, [[381]](#footnote-382)381 drove the US-Mexico border water relationship to a new low and provided an excellent example of the resentment that the continued, arms-length water management relationship could generate. [[382]](#footnote-383)382

C. The 2007 Interim Shortage Guidelines

By the mid-2000s the ***Colorado*** ***River*** Basin was experiencing the worst drought in its roughly one hundred-year recorded history, [[383]](#footnote-384)383 a drought that continues as of the writing of this article and which by now is recognized to be among the most significant in the past several thousand years of reconstructed flow. [[384]](#footnote-385)384 With "no specific guidelines to address the operations of Lake Powell and Lake Mead during drought and low reservoir conditions," Reclamation needed to devise a management plan that would provide more certainty to stakeholders. [[385]](#footnote-386)385 After some initial attempts at discussions among the Basin States, Reclamation initiated a NEPA process to generate and consider alternatives for reservoir management. [[386]](#footnote-387)386

In late 2007, following an extensive series of negotiations among the ***Colorado*** ***River*** Basin States and other US stakeholders, then Secretary of the Interior Dirk Kempthorne signed off on a decision to implement the ***Colorado*** ***River*** Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead ("2007 Interim Shortage Guidelines"). [[387]](#footnote-388)387 The 2007 Interim Shortage Guidelines, as well as the series of agreements among the Basin States and the major ***Colorado*** ***River*** users that accompanied them, for the first time in the history of the Law of the ***River*** established criteria for delivery of ***Colorado*** ***River*** water during periods of water shortage. [[388]](#footnote-389)388 Secretary Kempthorne described the 2007 accord as "the most important agreement among the seven basin states since the original ***Colorado*** ***River*** Compact of 1922," [[389]](#footnote-390)389 and praised the Basin States for working together to solve the shortage issues on the ***river*** within the confines of the Law of the ***River***. [[390]](#footnote-391)390

**[\*80]** The 2007 Interim Shortage Guidelines created operational flexibility by coordinating the drawdown of Lakes Powell and Mead during clearly defined periods of shortage, [[391]](#footnote-392)391 and created specific trigger points, based on reservoir elevation levels at Lake Mead, to determine when Lower Basin users would incur shortages. [[392]](#footnote-393)392 These trigger points, together with elevations at Lake Powell, determined release amounts from Powell to Mead. [[393]](#footnote-394)393 Previously, under the "***Colorado*** ***River*** Long Range Operating Criteria" (developed by the Secretary of the Interior pursuant to the 1968 ***Colorado*** ***River*** Basin Project Act), the annual target release at Glen Canyon Dam was 8.23 maf [[394]](#footnote-395)394 - a figure that the Secretary would only alter under "surplus" or flood conditions justifying larger water releases for the Lower Basin. [[395]](#footnote-396)395 The 2007 Interim Shortage Guidelines allowed a wider range of releases based on the relative condition of storage in Lakes Powell and Mead, facilitating conjunctive operation of the reservoirs that allowed them to function more like a single, large reservoir. Furthermore, they provided greater certainty, flexibility, and predictability in the event of prolonged drought conditions. [[396]](#footnote-397)396

Introduced into the Law of the ***River*** in the 2007 Interim Shortage Guidelines was a new management mechanism known as Intentionally Created Surplus ("ICS"). [[397]](#footnote-398)397 The ICS mechanism allows Lower Basin water users to store water in Lake Mead created through extraordinary conservation measures, [[398]](#footnote-399)398 system efficiency improvements, or importation and subsequent recovery in future years. [[399]](#footnote-400)399 In exchange for foregoing a portion of its annual apportionment in the year that the extraordinary conservation occurs, a user that conserves water may receive delivery of water in excess of its annual apportionment in future years (or transfer that excess water for use by another user in the same state). Alternatively, non-***Colorado*** ***River*** water imported to the Basin can then be diverted at another location, allowing a user that augments the ***River*** to receive **[\*81]** water in excess of its normal apportionment. [[400]](#footnote-401)400

Perhaps most importantly, for a ***river*** basin with a long history of interstate conflict the agreements surrounding the Interim Guidelines represented a major step towards basin-wide collaboration and the sharing of risks amongst the US Basin States and the major water delivery agencies in the United States. [[401]](#footnote-402)401 These agreements worked around the Basin stakeholders' deeply conflicting legal interpretations of the ***Colorado*** ***River*** Compact and other elements of the Law of the ***River***, and bound the Basin States to address future dilemmas through consultation and negotiation before initiating any litigation. [[402]](#footnote-403)402

The Guidelines also reflected a changing posture between US water users and the major environmental NGOs, who collaborated closely with other US stakeholders and the Bureau of Reclamation in the development of the Guidelines, reversing a long history of arms-length, litigation-driven relationships between environmental and water user interests. As a result, NGOs developed one of the alternatives considered in the Draft and Final EIS documents and provided significant input into the policies ultimately adopted in the Interim Shortage Guidelines. Many of the concepts proposed by the NGOs survived in some form in the final preferred alternative adopted by Reclamation. [[403]](#footnote-404)403

As a result, the Final Environmental Impact Statement (FEIS) for the Interim Guidelines included a proposal submitted by NGOs titled "Taking ICS to Mexico," which proposed the extension of the ICS program to Mexico as a means of addressing a series of critical binational water management issues, including conservation of the ***Colorado*** ***River*** Delta ecosystem. [[404]](#footnote-405)404 The seven Basin States also provided a statement of support for opening the use of the ICS mechanism to Mexico as part of a broader binational water management package. [[405]](#footnote-406)405 In a letter to Secretary Kempthorne, the Basin States encouraged future discussions with Mexico regarding ***Colorado*** ***River*** management issues, noting that during "the course of [2007 Interim Shortage Guidelines] negotiations no issue [] surpassed the importance of how the United States exercises its authority to reduce the quantity of water allotted to Mexico under Article 10(a) of the Mexican Water Treaty of 1944." [[406]](#footnote-407)406 In other words, the Basin States recognized that the conflicting potential interpretations of the vague "extraordinary drought" language in the 1944 Water Treaty continued to generate unnecessary uncertainty and to undermine efforts to operate the system more flexibly in the face of drought. [[407]](#footnote-408)407

**[\*82]** At the same time, NGO interests were growing increasingly concerned about the need to address issues related to the ***Colorado*** ***River*** Delta - issues that NGO representatives believed stakeholders could effectively address only in the context of a broader binational water management discussion. [[408]](#footnote-409)408 This discussion seemed unlikely to materialize through formal diplomatic channels. Symbolically, the "Taking ICS to Mexico" proposal and the Basin States' letter represented a step away from the tendencies towards unilateralism and conflict over the past several decades, and indicated a growing desire among US stakeholders to engage Mexico in productive binational discussions.

[*V*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T3X2-8T6X-731X-00000-00&context=1516831). The Road to Minute 319

As discussions surrounding the 2007 Interim Shortage Guidelines proceeded, IBWC and CILA began limited discussions regarding Mexican participation in ***Colorado*** ***River*** shortages (at the urging of US stakeholders). [[409]](#footnote-410)409 However, Mexico strongly objected to its exclusion from the extensive discussions surrounding the 2007 Guidelines, taking particular issue with the inclusion of presumed shortage volumes to Mexico as part of Lower Basin shortage management in the modeling work that supported the Draft and Final EIS documents. [[410]](#footnote-411)410 These modeling assumptions allocated Mexico approximately seventeen percent of any US Lower Basin shortage amount, in keeping with the preferred US interpretation of the Treaty's "extraordinary drought" provision. [[411]](#footnote-412)411 In response to the Draft EIS for the Shortage Guidelines, CILA insisted that Mexico should be part of discussions about the sustainable use of water in the ***Colorado*** ***River*** Basin and should be a proportional beneficiary of any conservation programs that modified water availability. [[412]](#footnote-413)412 In these comments, CILA referenced salinity issues, surplus deliveries, environmental flows, and interpretation of the 1944 Water Treaty provisions with regard to "extraordinary drought" as important issues to Mexico. [[413]](#footnote-414)413

Mexico's objections to the 2007 Interim Shortage Guidelines reflected a substantial concern over how to manage shortages within its domestic framework. [[414]](#footnote-415)414 On the US side, institutions like the Arizona Water Bank, the newly developed reservoir storage rules in the 2007 Interim Shortage Guidelines, and other mechanisms had allowed users in the United States to prepare for and mitigate against shortage impacts. By contrast, Mexico has no storage reservoirs of its own and effectively lacks meaningful domestic on-or off-stream storage options. This leaves Mexico heavily dependent on scheduled deliveries of water **[\*83]** from US reservoirs to meet its domestic water needs for municipal, agricultural, and environmental uses. [[415]](#footnote-416)415 As a result, any shortage would directly impact Mexican water users in a manner that Mexico could not control or mitigate.

Like the major US municipal users, Mexico's urban areas in Tijuana, Ensenada, and other coastal communities in both Baja and Sonora also faced substantial water management challenges related to growing urban demand; although desalinization plants were under serious consideration as a solution, the high infrastructure cost posed challenges for Mexican communities. [[416]](#footnote-417)416 Groundwater overdraft was also a growing concern for agricultural users in the Mexicali Valley, exacerbated by the lining of the All-American Canal. At the same time, system efficiency improvements in the United States, including the 2001 Interim Surplus Guidelines and a new project proposed as part of the 2007 Interim Shortage Guidelines to capture over-deliveries to Mexico, [[417]](#footnote-418)417 were decreasing the quantity of ***river*** flow to Mexico. Additionally, salinity levels were creating economic impacts on Mexican farms, presenting a significant obstacle to efficiency improvements in agriculture due to problems with salt buildup on cultivated lands. [[418]](#footnote-419)418 And not least among Mexican concerns were the significant and growing environmental issues related to the ***Colorado*** ***River*** Delta.

A. The Joint ***Colorado*** ***River*** Cooperative Process

Given the already strained nature of the US-Mexico relationship on the ***River***, it seemed unlikely to many stakeholders that IBWC and CILA would be able to constructively address this growing suite of binational issues through regular channels. [[419]](#footnote-420)419 Instead, a small group of US Lower Basin and Mexican water managers, as well as NGOs from both countries, began exploring the potential for a less formal binational process that would bring together water managers and stakeholders from both nations to seek out and explore new binational water management solutions. [[420]](#footnote-421)420 To this end, Pronatura Noroeste, a Mexican environmental group, organized a series of informal binational workshops to explore potential cooperative binational actions for improving ***Colorado*** ***River*** management in areas related to growth, shortages, and environmental needs. [[421]](#footnote-422)421 The driving force behind these workshops was a mutual desire to move beyond the notion that international ***river*** management was necessarily a zero-sum game, in which the interests of one country or one water user would prevail over the interests of others - an approach which had repeatedly proved to encourage conflict and legalistic, arms-length relationships between water users in the ***Colorado*** ***River*** Basin. [[422]](#footnote-423)422

In a series of workshop discussions, this small group of US and Mexican stakeholders identified the need for a new Minute that would provide a holistic **[\*84]** and broadly-based framework for binational water management, together with a series of potential areas of cooperation, all in connection with basic needs related to efficiency, conservation, augmentation and environmental stewardship. [[423]](#footnote-424)423 The workshops also proposed a process of binational information exchange about ***Colorado*** ***River*** operations and water management, including several field trips to build shared understanding. [[424]](#footnote-425)424 Around this same time, a group of US municipal users also began exploring the potential for specific binational projects that they could undertake in cooperation with their Mexican counterparts, including a potential joint desalinization facility. [[425]](#footnote-426)425

In response to these stakeholder efforts and the growing interest in a joint collaborative process, US and Mexican officials began a series of conversations about the potential for a formal binational collaborative process under the auspices of IBWC and CILA. [[426]](#footnote-427)426 On August 13, 2007, the countries released the US-Mexico Joint Statement on ***Colorado*** ***River*** Cooperative Actions ("2007 Joint Statement"), in which the participants of the prior informal workshops established a framework for "discussion, joint study, investigation and evaluation" [[427]](#footnote-428)427 and agreed that "cooperative, innovative and holistic measures should be considered to ensure that the ***Colorado*** ***River*** is able to continue to meet environmental, agricultural and urban demands of both nations." [[428]](#footnote-429)428 The water management issues prioritized in these discussions were: (i) climate change and the ongoing effects of historic drought in the basin; (ii) the ***Colorado*** ***River*** Delta, habitat protection, and other environmental priorities; (iii) water conservation, storage, and augmentation, including desalinization opportunities; and (iv) the identification of opportunities for more efficient water deliveries to Mexico. [[429]](#footnote-430)429

On March 11, 2008, a binational Core Group established in accordance with the 2007 Joint Statement convened with the purpose of establishing an international group of representatives to identify salient issues and ultimately develop implementation strategies. [[430]](#footnote-431)430 Known as the Joint ***Colorado*** ***River*** Cooperative Process ("JCRCP"), the IBWC and CILA Commissioners formalized the process in an exchange of letters [[431]](#footnote-432)431 and a joint "Terms of Reference."

The Core Group operated under the auspices of the IBWC, but the group **[\*85]** focused more on the inclusion of local stakeholder interests than a typical diplomatic decision-making body. The Core Group consisted of individuals representing federal agencies, state agencies, municipal and agricultural water providers, and NGO stakeholders from both countries. [[432]](#footnote-433)432 Additionally, for the first time outside of Minute 306, the IBWC emphasized the importance of environmental water use along with urban and agricultural use. [[433]](#footnote-434)433 The Core Group ultimately created four Work Groups to pursue cooperative actions in four broad areas: (i) conservation, (ii) new water sources, (iii) environmental issues, and (iv) system operations. [[434]](#footnote-435)434 These Work Groups, closely reflecting the 2007 Joint Statement's selected focus areas, met during 2008, 2009, and 2010 to sketch out potential actions both nations could take in these respective areas, later reporting their findings back to the binational Core Group. [[435]](#footnote-436)435

From the perspective of the authors, two of whom were participants in the JCRCP discussions, the process of trust-building, mutual understanding, and stakeholder empowerment that occurred through the binational process was critical to the future success of these efforts. [[436]](#footnote-437)436 When the JCRCP began, US and Mexican stakeholders began in very different places - the United States with a series of principles, the Mexican side with a long list of potential binational projects. Discussions were long and often difficult due to the significant levels of historic mistrust. Cultural differences made the free flow of communication challenging, language barriers made communication between the United States and Mexican participants cumbersome and led to frequent misunderstandings, and progress towards consensus was at times frustratingly slow. However, through field trips, conversations, and many evenings of shared meals, cerveza, and good company, binational stakeholders built increasing trust, mutual understanding, and ultimately friendships that made communication and consensus possible. In many cases, these relationships built on the existing network of relationships that NGOs and other individuals with experience working across the border had developed by facilitating communications, proposing solutions, and smoothing over misunderstandings. [[437]](#footnote-438)437

B. The First Breakthrough: Minutes 316, 317, and 318

After more than three years of effort in the JCRCP, the two sides built an increasingly robust understanding of the interests and values of the other, and each of the various Work Groups developed a series of consensus-based recommendations for consideration as part of a larger agreement. In early 2009 IBWC and CILA issued another joint declaration ("2009 Joint Declaration") to solidify the progress made by the Joint ***Colorado*** ***River*** Cooperative process on developing cooperative measures for water management. [[438]](#footnote-439)438 The 2009 Joint **[\*86]** Declaration recognized the importance of "representatives from governmental and non-governmental organizations in the United States and Mexico [who] devoted significant effort, particularly over the past two years through the IBWC, to this initiative in order to identify, discuss, and prioritize potential actions for implementation through cooperative efforts to provide additional security and certainty in the water supply of the ***Colorado*** ***River*** System." [[439]](#footnote-440)439 The 2009 Joint Declaration presaged three important new agreements reached during 2009 and 2010 that paved the way to the comprehensive agreement reached in Minute 319.

1. Minute 316: Hope for the Cienega de Santa Clara

The first substantive result of the JCRCP process developed with regard to the long-standing dispute over the Cienega de Santa Clara wetland in Mexico, which as noted above was threatened by the proposed operation of the YDP. [[440]](#footnote-441)440 Rather than allow this issue to disrupt the binational goodwill developing through the JCRCP, Reclamation used the JCRCP process to engage Mexico with regard to a proposed YDP pilot run. [[441]](#footnote-442)441 These consultations took place in November 2008 and July 2009 and included extensive discussions with the JCRCP stakeholders, culminating in an IBWC joint report offering recommendations for a pilot run to determine the feasibility of long-term operations. [[442]](#footnote-443)442 Pursuant to this report, in early 2010 the IBWC adopted Minute 316, which established a joint program for mitigation of potential impacts to the Cienega. [[443]](#footnote-444)443 The United States, Mexico, and participating NGOs each pledged to deliver ten thousand acre-feet of water to the Cienega to replace the water that would not flow through the MODE bypass canal during the test operation of the YDP, [[444]](#footnote-445)444 while most of the costs of YDP operation were borne by MWD, SNWA, and CAWCD under a joint funding agreement. [[445]](#footnote-446)445

Minute 316 became the first binational agreement to provide water for the specific purpose of preserving the ***Colorado*** ***River*** Delta ecosystem. It was also a milestone for the Delta Water Trust, which was the mechanism NGOs employed to match joint federal commitments to the Delta. [[446]](#footnote-447)446 Between 2009 and 2010 the Delta Water Trust facilitated the delivery of approximately ten thousand acre-feet of water to the Cienega in support of Minute 316. [[447]](#footnote-448)447 Working with two Mexican agencies, the Trust temporarily pledged its water rights to **[\*87]** CONAGUA for their stated purpose, and CILA arranged for their delivery to the Cienega via the MODE canal in lieu of their regular delivery as part of Mexico's regular annual water order at Morelos Dam. [[448]](#footnote-449)448 This successful three-way pledge of water among the federal governments and NGOs also carried forward as a strategy for future environmental flows, providing the basic structure for the Minute 319 environmental flows that followed.

Reclamation declared the 328-day YDP pilot run a success. [[449]](#footnote-450)449 During the pilot run, YDP produced 30,496 acre-feet of water, which Reclamation delivered to the ***Colorado*** ***River*** as part of the Mexican allocation in exchange for water remaining in Lake Mead, which it credited to the funding parties. [[450]](#footnote-451)450 However, the most remarkable aspect of YDP's pilot run was the advancement of cooperation among the United States, Mexico, US water users, and environmental groups. Not only did the consultative planning under Minute 316 affirm the emerging commitment to enhanced binational cooperation and alleviate Mexico's concerns over potential adverse impacts to the Cienega, [[451]](#footnote-452)451 but the once-controversial pilot operation also moved forward without a single lawsuit and with the affirmative support of environmental organizations - a remarkable departure from the bitter acrimony of previous years.

2. Minute 317: Formalizing the Stakeholder Process

Minute 317, executed in June 2010, formalized the ongoing JCRCP and reaffirmed IBWC and CILA's commitment to an inclusive stakeholder process as they continued to work towards a cooperative and comprehensive agreement on ***Colorado*** ***River*** management. [[452]](#footnote-453)452 Minute 317 also symbolically reaffirmed the commitment to the binational process on both sides in the wake of a shared tragedy. On September 15, 2008, the US Commissioner of the IBWC, Carlos Marin, and the Mexican Commissioner of CILA, Arturo Herrera, perished together when their plane crashed as they travelled to meet local Mexican officials to assess flood conditions on the Rio Grande ***River***. [[453]](#footnote-454)453 The tragic deaths of the leaders of the process halted discussions for months and easily could have derailed further JCRCP discussions. Instead, after the two sides recovered from the tragedy, they rallied around the newly appointed leadership of IBWC and CILA, unified in their resolve to continue the Commissioners' work.

As part of the continued breakaway from the traditional nation-to-nation structure for international diplomacy, Minute 317 acknowledged the effectiveness of the stakeholder-driven Core Group/Work Group JCRCP process in developing solutions. [[454]](#footnote-455)454 Referencing both the consultation provision of Minute 242 (despite its shortcomings) and the Minute 306 framework for cooperation in joint efforts to ecologically benefit the ***Colorado*** ***River*** Delta, [[455]](#footnote-456)455 Minute 317 **[\*88]** coalesced these previous consultation efforts into this new, more comprehensive approach and effectively institutionalized the Core Group/Workgroup structure for the ongoing evaluation and discussion of binational cooperative actions. [[456]](#footnote-457)456 Minute 317 also took the additional step of creating a binational Consultative Council [[457]](#footnote-458)457 that gave the US Basin States' representatives and their Mexican counterparts standing in the international process, with the ability to review the actions and recommendations of the Core Group. This new institutional mechanism would prove to be critical as negotiations proceeded, as it helped to assure stakeholders that IBWC and CILA would take their interests and water rights into consideration. Although this clearly complicated discussions by bringing domestic issues into the binational conversation, it also allowed the two countries to consider far more significant changes to the binational framework of ***river*** management.

3. Minute 318: Cooperation in the Face of Crisis

By early 2010 the essential elements of a comprehensive agreement had begun to emerge out of continuing binational discussions, including: (i) Mexican use of US reservoir storage via a mechanism similar to ICS; (ii) mechanisms to creatively manage salinity impacts resulting from such storage; (iii) sharing of shortage risks; (iv) a series of potential binational conservation and augmentation projects; and (v) the provision of environmental flows and restoration actions in the ***Colorado*** ***River*** Delta. [[458]](#footnote-459)458 Nonetheless, a great deal of work remained to determine how those potential solutions could fit together in a comprehensive agreement that would work for both sides, and a clear path forward had not yet been identified.

Having only just recovered from the tragic loss of the IBWC Commissioners, the binational discussions suffered what seemed like another substantial setback when a destructive earthquake struck the Mexicali Valley on April 4, 2010, damaging much of Mexico's water delivery infrastructure. [[459]](#footnote-460)459 The 7.2 magnitude earthquake caused severe damage to primary and secondary canals, roads, and related agricultural infrastructure, severely impacting more than eighty thousand acres of farmland and causing significant damage to approximately seventy thousand additional acres (altogether approximately 230 square miles). [[460]](#footnote-461)460 The earthquake was so severe that it also significantly altered the topography of the lower reaches of the ***Colorado*** ***River***, changing land elevations throughout the ***river*** corridor, and creating new lagoons and other features near the historic estuary. [[461]](#footnote-462)461

The severe damage left many Mexicali Valley farmers cut off from water **[\*89]** supplies altogether, causing significant crop failures throughout the Valley. [[462]](#footnote-463)462 Moreover, with major portions of the Mexicali Irrigation District cut off because of damaged canals, Mexico would have been unable to use all of its annual allocation of water from the ***Colorado*** ***River***. [[463]](#footnote-464)463 However, a concept that had been percolating in the ongoing binational discussions offered a potential solution. Building from the "Taking ICS to Mexico" concept that the NGOs advanced in the 2007 Interim Shortage Guidelines, the ongoing binational discussions featured a similar proposed mechanism known as "Intentionally Created Mexican Allocation" ("ICMA"), which would allow Mexico to conserve water and store a portion of its annual 1.5 maf Treaty allocation in Lake Mead for delivery in a future year. [[464]](#footnote-465)464

Although this mechanism was originally developed with the idea that it would be an integral part of a more comprehensive solution, the humanitarian catastrophe in Mexico became the impetus for both sides to immediately authorize its use in order to allow Mexico to store some of its 2010 water allocation in Lake Mead until damaged water infrastructure could be repaired. [[465]](#footnote-466)465 This request led to the adoption of Minute 318 on December 17, 2010, which allowed Mexico to defer treaty deliveries from 2010 to 2013 for recovery in a future year. [[466]](#footnote-467)466 Although the emergency delayed negotiations over the remaining elements of a comprehensive agreement for nearly a year, the success of Minute 318 also helped to build stakeholder confidence in the ICMA mechanism and created an existing volume of Mexican storage that proved critical for Minute 319. Lastly, and perhaps most importantly, the successful binational response to the earthquake built additional goodwill and trust between the two sides and helped provide the catalyst for real progress in more comprehensive binational ***Colorado*** ***River*** discussions. [[467]](#footnote-468)467

C. Reaching Comprehensive Agreement: Minute 319

Beginning in early 2011, discussions recommenced among Reclamation, the Basin States, US water agencies, NGOs, the IBWC, CILA, Mexico, CONAGUA, and other Mexican stakeholders in search of a comprehensive, cohesive agreement. [[468]](#footnote-469)468 Throughout 2011, both sides worked to develop proposals on various specific elements of a framework agreement and met frequently to present their ideas and discuss specific modeling outcomes of different regimes for shortage sharing, reservoir storage, and surplus sharing. [[469]](#footnote-470)469 Although progress was slow, the ongoing process of information exchange was important in building an understanding of the management challenges, operations, and infrastructure on both sides of the border.

Perhaps most significantly, this included Reclamation and CONAGUA **[\*90]** reaching a mutual understanding and agreement on the assumptions, methodologies, and limitations of the ***Colorado*** ***River*** system models that were used to evaluate the results of different binational water management regimes, including storage, surplus, and shortage sharing proposals. [[470]](#footnote-471)470 This seemingly technical concern was in fact critical to the negotiations, since both sides used these models as tools to evaluate the distribution of potential benefits and burdens (and thus the relative fairness) of different water management proposals.

At the outset of the JCRCP process, there was very little common understanding of the water infrastructure and allocation rules that drove operations and management decisions in the two countries. For example, Mexico had relatively little experience with Reclamation's Riverware-based ***Colorado*** ***River*** Support System ("CRSS") model, which drives decisions in the United States. [[471]](#footnote-472)471 To evaluate options for ***Colorado*** ***River*** system management, Mexico had instead built its own independent model of the ***Colorado*** ***River*** system, running on a different software platform. [[472]](#footnote-473)472 With different assumptions, data sets, and inherent limitations, as well as limited understanding of each other's infrastructure and rules, these critical decision support models would produce inconsistent or even contrary results when evaluating the same proposed approach to system management. This made progress in negotiations over mutually acceptable system operating rules extraordinarily difficult. [[473]](#footnote-474)473 However, through a series of technical exchanges and training sessions, Reclamation and CONAGUA reached a mutual understanding and agreement on the modeling approach, allowing Mexican technicians to independently operate the CRSS model to explore their own management concepts and verify the results of Reclamation's work. [[474]](#footnote-475)474 This technical agreement allowed both sides, finally, to proceed on a common factual footing.

By early 2012 both sides were under increasing pressure to reach agreement, but still had not reached consensus on a comprehensive framework. The parties evaluated and discussed dozens of different ideas and proposals, but given the competing interests and complex interrelationships between them no single proposal or idea could move forward in isolation. Only a comprehensive package would provide an appropriate and equitable balance of interests and objectives. For example, shortage sharing tied to reservoir elevations in Lake Mead - a critical element of any agreement for the United States, but understandably controversial in Mexico - would clearly need to be linked to agreements on a number of issues. These interrelated issues included surplus sharing, increased operational transparency, joint projects to conserve water, environmental restoration and flows, the availability of a reservoir storage mechanism, agreements on salinity and shortage sharing, and so forth. [[475]](#footnote-476)475 To try to work through these complex interconnections, the United States and Mexico elected to exchange "best-effort" comprehensive proposals, in which each side **[\*91]** attempted to present what they felt would be a fair, complete agreement. [[476]](#footnote-477)476

To achieve this, each side appointed a small group of key individuals and stakeholders [[477]](#footnote-478)477 to develop proposals. While the initial exchange of proposals showed few places where the two sides were actually in agreement, it did demonstrate consensus on the essential elements of a future agreement - shortage and surplus sharing, reservoir storage, binational conservation projects, salinity, and environmental flows - helping each side understand the nature of the interconnections that the other had drawn between those elements. [[478]](#footnote-479)478 This exchange of proposals also highlighted important misunderstandings that continued to persist and that stemmed in part from the two sides essentially talking past each other, as well as key translation errors that had occurred in moving drafts between English and Spanish. [[479]](#footnote-480)479

Working from these conflicting proposals, the two sides continued to work on a mutually agreeable comprehensive framework in a series of meetings involving (i) key stakeholders, [[480]](#footnote-481)480 (ii) appointed small groups that reported back to the key stakeholders, [[481]](#footnote-482)481 and finally (iii) an even smaller group that hashed out the final details and drafted a proposed agreement. Drafted simultaneously in both English and Spanish, with each draft projected onto matching large screens to ensure consistency and avoid further misunderstandings, the two sides reached a breakthrough on a draft Minute, and got to work on the bevy of supporting funding agreements, forbearance agreements, and other documents necessary to implement the Minute on each side of the border. [[482]](#footnote-483)482 This included a notable domestic agreement among Reclamation, IBWC, the seven ***Colorado*** ***River*** Basin States, and several key water suppliers in which federal and non-federal parties alike confirmed their mutual agreement to cooperate and coordinate as necessary to carry out the terms of Minute 319. [[483]](#footnote-484)483 Additionally, IBWC agreed not to amend or otherwise alter the terms of the binational agreement without the concurrence of the Basin States, [[484]](#footnote-485)484 affirming the growing federal-state commitment to a cooperative approach to ***Colorado*** ***River*** management.

The two sides then began a marathon of presentations and briefing sessions **[\*92]** over a period of several weeks to obtain approvals from the various state agencies, commissions, and water district boards involved in the agreement. [[485]](#footnote-486)485 With only one exception - the Imperial Irrigation District [[486]](#footnote-487)486 - the parties obtained these approvals. On November 20, 2012, at a signing ceremony at the Hotel del Coronado in San Diego, the US and Mexican sections of the IBWC executed Minute 319, "Interim International Cooperative Measures in the ***Colorado*** ***River*** Basin Through 2017 and Extension of Minute 318 Cooperative Measures to Address the Continued Effects of the April 2010 Earthquake in the Mexicali Valley, Baja California" ("Minute 319"). [[487]](#footnote-488)487

D. Overview of Substantive Provisions of Minute 319

As an appendage to the 1944 Water Treaty, [[488]](#footnote-489)488 Minute 319 encompasses a series of agreements, operational measures, and cooperative projects that the United States and Mexico have agreed to undertake during a five-year period (the "Pilot Period") that sunsets on December 31, 2017. [[489]](#footnote-490)489 The intent of Minute 319 is that the agreements, measures, and projects tested during the Pilot Period will become the foundation for a longer-term agreement that will replace Minute 319. [[490]](#footnote-491)490

At the heart of Minute 319 is a new binational framework for the management of the ***Colorado*** ***River*** storage reservoirs built around a basic principle of partnership: that both countries are and should be participants in the management of the shared ***river*** resource, and that both countries share responsibility for that resource. [[491]](#footnote-492)491 The binational commitments in Minute 319 also reference and incorporate the direct cooperation and participation of a series of non-federal government partners in operational measures and projects that will occur during the Pilot Period, including major US water providers and both US and Mexican NGOs. [[492]](#footnote-493)492

1. Reservoir Management Provisions (Surpluses, Shortages, and Storage)

As noted above, under the terms of the 1944 Water Treaty the United States and Mexico share the impacts of shortage "in the same proportion" during times of "extraordinary drought" - an inherently murky standard that created **[\*93]** significant uncertainty. [[493]](#footnote-494)493 In keeping with a broader theory of partnership, Minute 319 affirms as a basic principle that the United States and Mexico should share in both the benefits and the burdens of reservoir storage. [[494]](#footnote-495)494 In accordance with this principle, when one country is in shortage, the other should also be in shortage, and when one country has access to surplus water, so should the other. Similarly, Mexico and the US Lower Basin water users share the ability to store conserved water in Lake Mead and deliver that water in a future year on essentially similar terms - for US users, as ICS, for Mexico, as ICMA. [[495]](#footnote-496)495

Consistent with the 2007 Interim Shortage Guidelines, which reduce deliveries to US users, under Minute 319 water deliveries to Mexico are reduced during low reservoir conditions, with the volume of reductions tied to reservoir conditions at Lake Mead (as the primary Lower Basin storage reservoir). [[496]](#footnote-497)496 Under this program, deliveries to Mexico will decrease by progressively larger volumes (in a range of 50,000 to 125,000 acre-feet) as the elevation of Lake Mead drops below 1,075 feet above mean sea level. [[497]](#footnote-498)497 Deliveries progressively increase (in a range of 40,000 to 200,000 acre-feet) if the Lake rises above 1,145 feet or when flood releases occur. [[498]](#footnote-499)498

Also, in keeping with the partnership principle, Minute 319 continues and expands the storage framework initially established in Minute 318 by which Mexico can conserve and store water in the US reservoir system. [[499]](#footnote-500)499 Under the ICMA program created in the Minute, Mexico is allowed to store up to 250,000 acre-feet each year of its Treaty allocation in US reservoirs, and to deliver up to 200,000 acre-feet of this stored water each year (this limit corresponds to the 1.7 maf limit on surplus deliveries under the 1944 Water Treaty). [[500]](#footnote-501)500 Mexico can exercise these powers on terms substantially similar to that available to US users under the ICS program. Stored ICMA water is subject to a three percent annual charge for evaporation. [[501]](#footnote-502)501 Additionally, when Mexico stores ICMA, Minute 319 requires that two percent of the stored volume be set aside for environmental uses. [[502]](#footnote-503)502 The agreement also creates some flexibility in the existing Minute 242 salinity rules [[503]](#footnote-504)503 in order to accommodate the creation and delivery of ICMA while giving Mexico the ability to exercise some control over the salinity of water delivered as part of its treaty allocation through the dedication of additional saline water to environmental use. [[504]](#footnote-505)504

Critically, Mexico is also able to use this storage to offset delivery reductions during shortage conditions. [[505]](#footnote-506)505 This was a key provision in the shortage-sharing agreement because, as noted above, Mexico lacks available domestic on-or **[\*94]** off-stream storage that it can use to mitigate shortage impacts. As such, this provision allows Mexico to make investments in conservation activities upfront that reduce its use voluntarily in anticipation of future shortages, thus avoiding the impacts of unpredictable, involuntary reductions. However, Mexico also agreed to restrict deliveries of ICMA water during shortages as necessary to protect critical reservoir elevations that could create greater shortages in the United States. [[506]](#footnote-507)506 From an information-sharing and continued collaboration standpoint, the two countries also agreed to regular meetings and exchanges of data, and to monitoring and study of the relationship between reservoir levels and drought indicators in the ***Colorado*** ***River*** Basin in order to inform future management strategies. [[507]](#footnote-508)507

2. Delivery of Water to the ***Colorado*** ***River*** Delta and Restoration Actions

Minute 319 establishes as a basic principle that, to the extent that water supplies can be identified to provide for it, it is desirable to have water flowing through the ***Colorado*** ***River*** limitrophe and Delta ecosystem. [[508]](#footnote-509)508 Minute 319 authorizes a series of related activities to be undertaken during the Pilot Period including (i) the actual delivery of water to the ***Colorado*** ***River*** Delta based on a three-way commitment among the United States, Mexico, and NGOs; (ii) joint US-Mexico monitoring and reporting of the ecological and hydrological results of those deliveries; and (iii) funding for on-the-ground environmental restoration activities. [[509]](#footnote-510)509

To organize the delivery of water to the Delta, Minute 317 required the Environmental Work Group and Consultative Council to develop and submit a plan ("Delivery Plan") to the IBWC for the delivery of 195 million cubic meters (mcm) (approximately 158,088 acre-feet) of water to the ***Colorado*** ***River*** Delta ecosystem during the Pilot Period. [[510]](#footnote-511)510 To create the Delivery Plan, IBWC and CILA convened a binational Environmental Flows workgroup that worked through most of 2013 to prescribe the timing, location, and nature of flows to be undertaken by the program, as well as strategies for monitoring and reporting on hydrological and ecological results. [[511]](#footnote-512)511 To assist in this effort, the workgroup also recruited a team of binational scientific experts recruited from US and Mexican universities, NGOs, and federal agencies. [[512]](#footnote-513)512 The binational Consultative Council, IBWC, and CILA approved the final version of the Delivery Plan in February 2014.

As part of the water delivery obligations under Minute 319, the United States and Mexico agreed to arrange for the delivery of approximately 130 mcm (105,392 acre-feet) of water to the Delta in the form of a "pulse flow." [[513]](#footnote-514)513 The water required for the flow derives from storage in Lake Mead developed pursuant to Minute 318, as well as ICMA water developed through conservation **[\*95]** programs undertaken pursuant to Minute 319. [[514]](#footnote-515)514 The Delivery Plan designed this flow to be a carefully-planned, sequential release of water from Morelos Dam and two downstream waste-way structures intended to benefit the restoration of native trees throughout the Delta's riparian corridor.

Commencing on March 23, 2014, and concluding on May 18, 2014, the flow was timed to coincide as precisely as possible with the peak of native cottonwood seed release in the Delta and to conclude before the non-native and invasive tamarisk seed release reached its peak. [[515]](#footnote-516)515 To further encourage recruitment of native trees, the flow hydrograph was designed to mimic a natural flood release that would promote the germination and survival of native cottonwood and willow seedlings, building rapidly to a high peak flow, and then gradually lowering over time to allow the roots of newly-germinated trees to chase the water as it receded until they reached the water table. [[516]](#footnote-517)516

Additionally, the Minute provided for the delivery of 52,696 acre-feet (65 mcm, or one-third of the total water delivery) of "base flow" water intended to benefit restoration sites, to support native vegetation restored by the pulse flow, and to provide water that would be maintained in portions of the ***Colorado*** ***River*** channel during the remainder of the Pilot Period. [[517]](#footnote-518)517 The Delta Water Trust makes these deliveries. [[518]](#footnote-519)518 Operated by a binational coalition of NGOs, the Trust engaged in a commitment to deliver water rights that it owns or leases in order to meet the base flow objectives, which it evaluates on an ongoing basis under the Delivery Plan. [[519]](#footnote-520)519 To support the Trust in this commitment, a number of NGOs formed a joint fundraising campaign called "Raise the ***River***" that is intended to help provide a foundation for permanent restoration of water to the Delta. [[520]](#footnote-521)520

To support and expand ongoing restoration efforts in the Delta, the United States and Mexico also agreed to finance a series of on-the-ground restoration efforts at sites throughout the Delta. This included an agreement to undertake and finance environmental restoration efforts at the binational Miguel Aleman restoration site, with support from water that the Delta Water Trust would deliver. [[521]](#footnote-522)521 In addition, the Minute provided for three million dollars in funding for additional on-the-ground restoration activities in the Delta. [[522]](#footnote-523)522 Restoration activities are planned at various locations along the ***Colorado*** ***River*** mainstem, starting with a significant expansion of the existing Laguna Grande restoration site. [[523]](#footnote-524)523 Nonprofit groups are also providing significant funding for these activities.

**[\*96]** Finally, in order to allow the two countries to learn from the pilot environmental program, to improve understanding of the Delta ecosystem, and to better plan future agreements for water deliveries to the ***Colorado*** ***River*** Delta, the United States and Mexico agreed to undertake joint monitoring and reporting activities on the hydrological, ecological, and operational results of water deliveries to the Delta during the Pilot Period. [[524]](#footnote-525)524 During 2013 the team that developed the Delivery Plan also assisted with the development of a proposed monitoring plan to (i) measure and evaluate surface water, groundwater, temperature, weather, and water quality conditions during the Pilot Period; (ii) gather relevant topographic and remote-sensing data; (iii) monitor the response of vegetation and wildlife to the water delivery program; and (iv) record other critical information. [[525]](#footnote-526)525 The United States and Mexico, supplemented by private nonprofit efforts, have jointly committed funding, equipment, and in-kind contributions to implement the binational monitoring plan, which is being undertaken by a team of US and Mexican scientists in an extraordinary and ongoing binational scientific effort. [[526]](#footnote-527)526

3. Conservation Pilot Projects, Binational Water Exchange, and Future Projects

Finally, Minute 319 creates a framework for joint US and Mexican investment in water conservation infrastructure. [[527]](#footnote-528)527 The United States has committed to provide a total of twenty-one million dollars in funding for infrastructure and environmental projects in Mexico (including the three million dollars for restoration projects referenced above), which includes ten million dollars provided by MWD, the SNWA, and the Central Arizona Water Conservation District ("CAWCD"), which operates the CAP. [[528]](#footnote-529)528 These parties are providing the ten million dollars pursuant to a separate funding agreement among the funding parties and Reclamation. [[529]](#footnote-530)529

Using these US stakeholder funds and matching Mexican funds, the United States and Mexico intend to complete a conservation project that will line some presently unlined portions of the Mexicali Valley delivery system. [[530]](#footnote-531)530 Mexico and the United States will share the benefits of this water conservation. On the US side, the resulting savings will meet the United States' commitment to provide 52,626 acre-feet of water for environmental purposes in support of the pulse flow. [[531]](#footnote-532)531 In addition, 124,000 acre-feet of water (derived either from existing Minute 318 storage or from ICMA) will be made available to the United States as **[\*97]** binational exchange water. [[532]](#footnote-533)532 Ninety-five thousand acre-feet of this exchange water will be converted into ICS for use by MWD, SNWA, and CAWCD [[533]](#footnote-534)533 pursuant to an interlocking series of domestic US agreements signed by Reclamation, the Basin States, and major Lower Basin water providers and contractors that authorize these exchanges and allow for the conversion of a portion of the water stored by Mexico to a special category of ICS known as "Binational Intentionally Created Surplus." [[534]](#footnote-535)534 Mexico is then entitled to all remaining water generated by these conservation activities. [[535]](#footnote-536)535

As part of Minute 319, the United States and Mexico also agreed to work towards the establishment of a new emergency backup interconnection between the two countries to supply Tijuana with water. [[536]](#footnote-537)536 They have further agreed to work together on studies and further investigations of additional projects that could be incorporated into a future Minute, including (i) a regulating reservoir on the Alamo Canal, (ii) a fallowing program, (iii) additional conservation projects as part of the modernization of Irrigation District 14 in Mexico, (iv) binational desalination plants at Rosarito and the Gulf of California, and (v) opportunities for the beneficial use of water from the New ***River***. [[537]](#footnote-538)537

E. The Binational Significance of Minute 319

Taken together, the provisions of Minute 319 work to address many areas of uncertainty under the 1944 Water Treaty and growing water scarcity concerns. Providing clear guidelines for the equitable management of shortages (in light of the vague provisions of the Treaty), coupled with commitments to share information and engage in joint study of shortage risks, the two countries have created a foundation on which they can work together to manage the uncertainties of climate change in the Basin and to share the growing risks of water scarcity. Allowing Mexico to store unused portions of its allocation in Lake Mead, and to use this water to offset future shortages, has helped reduce overall shortage risk to both countries (by holding reservoir levels higher) and provides Mexico with a mechanism for mitigating the impact of those shortages in the absence of domestic storage infrastructure. Minute 319's water quality provisions also create sufficient flexibility within the water quality requirements of Minute 242 to ensure that this storage and delivery will not harm US users, while still honoring the water quality commitments of Minute 242. These provisions also increase Mexico's control over water quality by allowing it to direct the delivery of saline water for environmental benefit.

Provisions for joint investments in conservation and the ICMA-ICS exchange mechanism have also created opportunities in both countries. In the **[\*98]** United States, water users obtain additional water supplies that, although temporary, are critical to short-term flexibility. The Minute facilitates US access to this water through exchanges and calls for key US investments that benefit Mexico's efforts to improve domestic infrastructure. Mexican water users are the long-term beneficiaries of infrastructure investments, as these projects will enable Mexico to better control its own water resources in the future. At the same time, joint commitments to study additional future projects provide both a basis and an impetus for continued binational discussion, collaboration, and relations that will help carry the countries forward into a future, more permanent agreement.

Minute 319's binational environmental flow program also represents an important step towards more holistic consideration of all hydrologic needs in the basin, human and environmental alike, and a first step towards repairing the well-documented damage to the ***Colorado*** ***River*** Delta ecosystem, together with its wildlife, communities, cultures, and economies. Of equal importance, by undertaking this program as a deliberate binational investment and experiment that both demonstrates and tests approaches to environmental restoration, the Minute is creating and reinforcing a joint commitment to developing a scientific understanding of the needs of this shared ecosystem that can inform future binational agreements.

Perhaps most importantly of all, the Minute reflects a commitment to direct stakeholder engagement that is just one part of a growing commitment to cooperation in the ***Colorado*** ***River*** Basin. In a watershed where users have long been renowned for inter-and intrastate conflict, the level of recent cooperation at the local, state, federal, and now international levels is noteworthy. The active participation and contribution of agencies, state representatives, and water resource agencies, together with NGOs - none of which are typical participants in the traditions of formal international diplomacy - has allowed for the development of a unique framework of agreement that is intended to facilitate additional ***river*** management innovations in the future. In this respect, the enduring legacy of Minute 319 in the ***Colorado*** ***River*** Basin may very well turn out to be the increased involvement of non-federal stakeholders in the diplomatic process.

[*VI*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T4F2-D6RV-H37N-00000-00&context=1516831). The International Significance of Minute 319: Lessons for Other Basins

"One cannot be pessimistic about the [American] West. This is the native home of hope. When it fully learns that cooperation, not rugged individualism, is the quality that most characterizes and preserves it, then it will have achieved itself and outlived its origins. Then it has a chance to create a society to match its scenery."

---Wallace Stegner [[538]](#footnote-539)538

Reliable access to freshwater for human health, food production, and other essentials to survival is fundamental to civilization; access to water also fuels **[\*99]** economic growth and enables commerce. [[539]](#footnote-540)539 As such, it is unsurprising that there are a vast number of international agreements concerning shared water resources between neighboring societies that extend deep into human history. [[540]](#footnote-541)540 An agreement over the sharing of water resources between the Sumerian city-states of Lagash and Umma, reached in approximately 2500 BCE, is often cited as the first recorded international treaty of any kind. [[541]](#footnote-542)541 More than half of the world's landmass lies in international ***river*** basins, [[542]](#footnote-543)542 and at present there are over one thousand treaties, agreements, and conventions governing the control and management of freshwater systems throughout the world. [[543]](#footnote-544)543

Globally, the development of international water law has closely paralleled the evolution of human societies and the corresponding, intensifying use of fresh water. [[544]](#footnote-545)544 Before the mid-nineteenth century, most water treaties focused on promoting the flow of commerce and maintaining the navigability of ***rivers***. [[545]](#footnote-546)545 However, with the onset of the industrial revolution and the discovery of new engineering techniques, consumptive uses and other non-navigational issues became the central focus of international water law. [[546]](#footnote-547)546 This phenomenon was particularly notable in the ***Colorado*** ***River*** Basin: the 1922 ***Colorado*** Compact, the 1944 Water Treaty, and the development of other major governing documents in the Basin were largely driven by the competition to divert ***river*** water to serve distant, non-navigational uses in agricultural districts and cities. [[547]](#footnote-548)547 As noted in the Introduction, these and other developments in the ***Colorado*** ***River*** Basin have had a lasting impact on how the world views international freshwater management. [[548]](#footnote-549)548

A comparative analysis of existing international water treaties indicates that for most international ***river*** systems, water quality, not water quantity, has been the most pressing environmental concern associated with water development. [[549]](#footnote-550)549 However, there is an increasingly visible need for agreements to provide for environmental flows in the decimated lower reaches of ***rivers*** around the world. [[550]](#footnote-551)550 Issues related to water scarcity and associated ecosystem degradation **[\*100]** are already affecting many of the world's important international ***rivers***, including the Ganges, the Indus, the Amu Darya and Syr Darya, the Nile, and the Jordan, [[551]](#footnote-552)551 and it appears increasingly likely that many other international ***river*** systems will encounter the challenges of reduced water supplies and radically altered flows in the face of climate change. The increased supply variability widely projected to occur with climate change will bring with it not only shortage risks but also increased likelihood of major flooding, drought, damage to ecosystems, human health concerns, energy supply challenges, and risks to agricultural production. [[552]](#footnote-553)552

These issues will present a particular challenge in transboundary ***river*** systems, [[553]](#footnote-554)553 where it is often the case that at least one country's water originates from sources outside its sovereign territory, creating the potential for significant uncertainty, mistrust, and eventual hostility and lack of cooperation in water resource development and management. [[554]](#footnote-555)554 Almost universally, unilateral action - especially in infrastructure development, as the United States' actions in the ***Colorado*** ***River*** Basin illustrate - has been a foremost source of tension and a significant factor in the failure of basin states to negotiate and cooperate. [[555]](#footnote-556)555 Given that sixty percent of the world's ***river*** flows are transboundary in nature, and that there are no existing agreements related to water sharing on roughly two-thirds of these basins, creating stronger institutional foundations for ***river*** management is immensely important. [[556]](#footnote-557)556

The opportunity to improve water management may be equally significant on ***river*** systems where international water management agreements are already in place, as many experts have predicted that existing international freshwater treaties will fail under the pressures of climate change. [[557]](#footnote-558)557 Although most modern treaties focus on the widely-recognized principle of equitable utilization, [[558]](#footnote-559)558 they **[\*101]** are also normally relatively static in nature, and often do not include specific mechanisms designed to facilitate ongoing negotiations and interactions between nations that promote cooperation and benefit sharing, to allow for continuing adaptation, or to encourage the ongoing resolution of differences in the face of changing conditions. [[559]](#footnote-560)559 In this respect, the United Nations has been critical of the effectiveness of most current international treaties in managing transboundary waterways, asserting that

What is needed are workable monitoring provisions, enforcement mechanisms, and specific water allocation provisions that address variations in water flow and changing needs… . There is a consensus among experts that international watercourse agreements need to be more concrete, setting out measures to enforce treaties made and incorporating detailed conflict resolution mechanisms in case disputes erupt. Better cooperation also entails identifying clear yet flexible water allocations and water quality standards, taking into account hydrological events, changing basin dynamics and societal values. [[560]](#footnote-561)560

In light of these considerations, many international freshwater management experts have argued that the necessary features of a sustainable water agreement include (i) flexibility and allocations that are not written in stone; (ii) agreements based on an appreciation for the political context, including the cultural, historical, and discursive composition of the states in the basin; (iii) a focus on development opportunities that benefit all riparian states within a basin; and (iv) provisions addressing power asymmetries. [[561]](#footnote-562)561

One of the greatest strengths of Minute 319 is that it incorporates many of these features. Minute 319's provisions provide working examples of how both to improve the functioning of existing agreements in the face of growing resource uncertainty, and to design international water resource agreements in developing basins that do not yet have comprehensive agreements in place. Beyond its substantive provisions, the process leading to Minute 319 offers valuable lessons on collaboration and the importance of comprehensive stakeholder inclusion that is likely a necessary element of any healthy ***river*** basin management regime.

As the history of Minute 319 suggests, and as we discuss further below, these features can be traced in no small part to the origins of the agreement in a strong, locally-driven stakeholder process. In a watershed where water users have been renowned for past inter-and intrastate conflict, [[562]](#footnote-563)562 the recent and active participation, cooperation, and contributions of agencies, state representatives, **[\*102]** NGOs, and water resource agencies - none of which are typical participants in the traditions of formal international diplomacy - should not be overlooked. By engaging a broad group of stakeholders in shaping their collective destinies, Minute 319 took a significant step towards overcoming a long historical legacy of border and water conflict, power asymmetry, and environmental damage in one of the world's most water-stressed regions. [[563]](#footnote-564)563

A. Commitment to Benefit Sharing

Domestic and international unilateralism, or at best incomplete alliance, have challenged the ***Colorado*** ***River***'s development throughout its history. [[564]](#footnote-565)564 It is perhaps no accident that the greatest advances in cooperation on the ***River*** have been made over the past decade, simply because - as Reclamation's studies now recognize - the Basin essentially ran out of water resources to develop. [[565]](#footnote-566)565 In other words, "this newfound spirit of cooperation was born of necessity rather than magnanimity." [[566]](#footnote-567)566 These issues are by no means unique. "International water lawyers have long recognized that the central problem of too many international ***rivers*** has been the unilateral practice of damming and diverting and then defending the new status quo against down-or upstream objections." [[567]](#footnote-568)567 Ideally, "dams [and other infrastructure] should be built through cooperation with all the impacted riparian states, and only after adverse impacts have been addressed, a mitigation program developed, and a shared management regime put in place." [[568]](#footnote-569)568

By recognizing the drawbacks of unilateral action and the benefits of adaptive practices, [[569]](#footnote-570)569 water management approaches over the past fifteen years have gravitated towards an increasing emphasis on cooperation, negotiated agreements, and the consequent "sharing of benefits." [[570]](#footnote-571)570 This includes direct benefits such as water allocation, storage, hydropower and fish production, management of costs related to flood and drought management, and various indirect benefits from reduced international tension or increased economic integration. [[571]](#footnote-572)571 The 2007 Interim Shortage Guidelines and the Joint ***Colorado*** ***River*** Cooperative Process leading to Minute 319 are domestic and international examples, respectively, of this encouraging management trend over the past century.

As the history above suggests, a major reason the United States and Mexico reached such a broad-based agreement was due to a similar shift in thinking towards benefit-sharing, [[572]](#footnote-573)572 although the explicit recognition of its corollary - that burdens must also be shared - was equally important. Many aspects of Minute 319 demonstrate commitments to incorporate this benefit and burden-sharing **[\*103]** principle in water management. For example, the agreement's "partnership" framework embraces responsibility for resource management and the sharing of benefits and burdens via clearly defined rules for shortage and surplus allocation and reservoir storage sharing (via the ICMA mechanism), increasing both the flexibility of Mexico's approach to water management and the reliability of US ***Colorado*** ***River*** system reservoirs. [[573]](#footnote-574)573

Similar in intent and result are provisions for increased participation and control in salinity management in response to altered deliveries, for joint investments mechanisms in system efficiency and binational water exchange, and for investigation of a broad range of potential conservation, augmentation, and system operation projects. [[574]](#footnote-575)574 Perhaps most importantly, the commitment to lay the groundwork for longer-term environmental protection via a binational environmental flow demonstration project, joint monitoring and science, and investments in restoration of Delta resources demonstrates significant movement in this direction.

B. A Joint Commitment to Environmental Stewardship

As the ***Colorado*** ***River*** Delta also so vividly illustrates, the failure to consider ecological interests in a ***river*** basin can have substantial adverse economic, social, cultural, and ecological effects on local communities, as well as on basin ecosystems as a whole. Internationally, as one commentator noted, "four categories of environmental change result in potential transboundary problems: degradation (pollution), scarcity (shortage), maldistribution (inequitable access) and disaster." [[575]](#footnote-576)575 The ***Colorado*** ***River*** Delta has experienced all four problems extensively, especially degradation and scarcity. Past failures to account for ecosystem needs as part of binational water management decimated the ***Colorado*** ***River*** Delta and significantly contributed to a strained relationship between the United States and Mexico. [[576]](#footnote-577)576 Conversely, facing crisis and the need to address the management of the resource jointly played an extremely important role in developing the collaboration framework that led to substantive results in Minute 319.

Although the ecological consequences of water development on the ***Colorado*** ***River*** Delta may well have been extreme, they are by no means unique. Throughout the world, "more ***river*** basins are moving towards being "closed,' that is to a situation when there is no more water to allocate." [[577]](#footnote-578)577 However, few, if any, international water treaties have focused explicitly on the substantial environmental consequences of water development. [[578]](#footnote-579)578 Some international agreements and conventions have identified environmental protection and restoration as important goals, [[579]](#footnote-580)579 and there has been a significant amount of academic **[\*104]** ink spilled on ecosystem and environmental services protection benefits. However, Minute 319 appears to be the first international agreement to allocate a specific amount of water to provide an environmental benefit. [[580]](#footnote-581)580

For example, Europe's Convention on the Protection and Use of Transboundary Watercourses and International Lakes - one of the most comprehensive international water agreements in the world - provides a regional framework for European states to collaborate for responsible management of transboundary surface water and groundwater throughout Europe. [[581]](#footnote-582)581 It specifically deals with monitoring, research and development, exchange of information, consultations, warning and alarm systems, and mutual assistance, as well as access to information by the public, but does not squarely address water availability for environmental purposes. [[582]](#footnote-583)582 No major European water resource agreement has allocated water for environmental benefit. [[583]](#footnote-584)583

As early as 1909, the United States and Canada reached freshwater agreements on shared resources; the Boundary Waters Treaty of 1909 is a major component of the US-Canada relationship and provides equal access to citizens of both states to "all navigable boundary waters" shared by the two nations. [[584]](#footnote-585)584 However, neither the 1909 agreement nor any other water resource agreement between the United States and Canada dedicates water for environmental purposes. [[585]](#footnote-586)585 South American freshwater resource agreements have also lacked commitments to environmental water restoration and/or mitigation. One example is the Treaty for Amazonian Cooperation (among Brazil, Bolivia, Venezuela, Columbia, Peru, Suriname, and Guyana), [[586]](#footnote-587)586 which establishes a cooperation framework among its signatories and emphasizes "preservation of the environment, and the conservation and rational utilization of the natural resources" as a core concern, but does not address the availability of water for environmental purposes. [[587]](#footnote-588)587 Likewise, the Protocol of Amendment for the Creation of the Organization of the Amazon Cooperation Treaty (OTCA), [[588]](#footnote-589)588 the **[\*105]** Agreement on Parana ***River*** Projects, [[589]](#footnote-590)589 and the Statute of the ***River*** Uruguay [[590]](#footnote-591)590 are silent on these issues.

Comparable Asian freshwater resource agreements include the Ganges Water-Sharing Treaty [[591]](#footnote-592)591 and the Agreement on the Cooperation for the Sustainable Development of the Mekong ***River*** Basin. [[592]](#footnote-593)592 African freshwater resource agreements include the Nile Waters Treaty of 1959 [[593]](#footnote-594)593 and its corresponding Nile Basin Cooperative Framework, [[594]](#footnote-595)594 which Egypt and Sudan have not signed. [[595]](#footnote-596)595 Notably, the Cooperative Framework obliges its signatories "to protect, conserve and, where necessary, rehabilitate the Nile ***River*** Basin and its ecosystems … [by] protecting and improving water quality within the Nile ***River*** Basin," [[596]](#footnote-597)596 but it does not specifically address water availability for environmental uses.

As these examples suggest, although there are numerous examples in international water law where countries have allocated freshwater resources, to the extent that these agreements have embraced environmental concerns, they have typically focused on water quality protection, and not on actual water availability **[\*106]** for ecosystem needs. At least in this respect, Minute 319's defined water quantity dedicated to environmental restoration - even if on a temporary basis - appears to be unique. Minute 319 also appears to be the first example of a cooperative, binational experiment to assess the binational environmental resource restoration potential. "This integration of human and ecosystem goals in an international agreement can become a model for international environmental policy." [[597]](#footnote-598)597 As one US official noted, the agreement embodied in Minute 319 "demonstrates that even in an over-allocated ***river*** system, water supplies can be found to secure or expand instream flows." [[598]](#footnote-599)598 "It is a success story not just for the ***Colorado*** ***River***, but for all other ecosystems looking to make a comeback." [[599]](#footnote-600)599

As the Delta history related above suggests, this result would not have been possible in the absence of binational collaboration and a collective willingness to move beyond the status quo. The joint commitment to providing tangible environmental flows in the Delta reflected in Minutes 316 and 319 - as well as in the binational partnership to plan, study, and report on the same - was extremely important in Mexico. [[600]](#footnote-601)600 As a general matter, Mexico's central government demonstrated that it supports and prioritizes ***river*** restoration, as it "conceded federal land for restoration purposes that will ensure that water purchased for conservation is used for that purpose." [[601]](#footnote-602)601 But Mexico has historically lacked the capacity to deal with jointly-caused environmental issues in the Delta on its own. [[602]](#footnote-603)602 In this regard, the Delta has long stood as a stark reminder of an inherently asymmetrical border relationship. [[603]](#footnote-604)603

By building a narrative around the ***Colorado*** ***River*** Delta restoration that focused on future proactive joint management opportunities instead of casting blame for the results of past power struggles, Minute 319 took an important step towards defusing the ongoing local, regional, and national tension surrounding the loss of the Delta resource. In this sense, the environmental program reflected in Minute 319 also provides a framework within which the two nations can talk about longer-term solutions to the difficult challenges they face. By focusing on what the two countries can accomplish together - through funding of expanded restoration efforts in the ***Colorado*** ***River*** Delta, through a commitment to the joint plan development for environmental water deliveries, and through the development and funding of a joint environmental monitoring and science effort to study, evaluate, and report on the results - the environmental flow program provides a basis for continued and expanded cooperation in future agreements. At the same time, the program's success and the growing public attention paid to it [[604]](#footnote-605)604 create an imperative for stakeholders to continue to **[\*107]** cooperate to find proactive solutions to avoid a regression back to the adversarial relationship on the ***Colorado*** ***River***. [[605]](#footnote-606)605

C. The Critical Link Between Flexibility and Specificity

In general, transboundary water agreements in developed basins often lack the flexibility to adapt to changing conditions. [[606]](#footnote-607)606 Existing international water sharing treaties are usually static and seldom account for climate and flow variability within the basin. [[607]](#footnote-608)607 This is an especially troubling problem insofar as climate change is likely to exacerbate seasonal and annual flow variations, creating more volatile conditions that stress these brittle systems. [[608]](#footnote-609)608 Flexibility - "the ability to implement changes to an agreement to better manage changes in the water flow/availability or in the existing political framework" - is key to an international institution's ability to deal with environmental issues. [[609]](#footnote-610)609

Although on its face this need for flexibility would seem to call for incorporating less, not more, detail into international agreements, the historical US-Mexico relationship over the ***Colorado*** ***River*** points to a key, if counterintuitive, lesson. That is that, at least in the transboundary context, ambiguous treaty provisions can have the unintended effect of creating rigidity and can actually undermine water agreements' flexibility. Such intentionally ambiguous, difficult-to-enforce language can be a weakness of international freshwater treaties. [[610]](#footnote-611)610 By contrast, clearly defined and specific treaty provisions that provide both sides with a clear understanding of an agreement's provisions help to reduce uncertainty. [[611]](#footnote-612)611 Specificity, in this context, refers to "how detailed and exact the institutional framework is," and often times relates closely to a treaty's enforceability. [[612]](#footnote-613)612

Without precise rules or procedures, the relationship between basin countries can suffer due to multiple interpretations of unspecific provisions, undermining agreement enforceability. [[613]](#footnote-614)613 As noted in the history of the US-Mexico relationship on the ***Colorado*** ***River***, the 1944 Water Treaty's ambiguous language with regard to "extraordinary drought" was the source of significant uncertainty that motivated the United States and Mexico to develop more specific agreements on voluntary shortage-sharing in Minute 319. [[614]](#footnote-615)614

Minute 319's focus on clearly defined voluntary obligations for additional water deliveries or reductions in deliveries - each based on verifiable, objective conditions - avoided conflict concerning the parties' various and conflicting interpretations of the 1944 Water Treaty's ambiguous language, thereby alleviating the problematic uncertainty that resulted from this language and making the **[\*108]** water management framework more enforceable. This also served as a conflict resolution mechanism, as the Minute adopted these solutions as part of a voluntary program overlaying the provisions of the Treaty (rather than purporting to interpret it). By so doing, the Minute allowed the parties to preserve their legal positions with regard to the language interpretation of the Treaty itself, while sidestepping the need to resolve those conflicts in advance of more effective collaboration on binational ***river*** management.

D. Effective Communication and Joint Development of Information

Many commentators have noted the central importance of providing for effective communication and coordination in the international water agreement context. Failing to provide for effective communication and coordination between international basin states can impede the development of clear and precise guidelines, which obstructs flexibility and adaptability and makes identifying proactive, win-win solutions more difficult. [[615]](#footnote-616)615 However, many water management frameworks emphasize the centralized control of water resources, which can substantially limit multi-level communication opportunities and the flow of information between two countries. [[616]](#footnote-617)616

This tendency was obvious throughout the history of the US-Mexico ***Colorado*** ***River*** relationship. With IBWC and CILA serving as the primary gatekeepers for communication on water issues, the countries became locked in a spiraling series of communication failures around the 2001 Guidelines, the All-American Canal lining, and other issues once that relationship broke down. By contrast, multi-level communication at the local, national, and international level can "allow[] policymakers to quickly respond to what are often dynamic and highly variable end-user requirements." [[617]](#footnote-618)617

In particular, Minute 319 emphasizes the importance of facilitating the development of informal, information-sharing relationships among binational actors. The gradual development of understanding and trust - and eventually, friendship - among US and Mexican interests through repeated meetings, workshops, field trips, and less formal interactions was critical to reaching a comprehensive international agreement. Improved communication can also serve to reduce tensions resulting from inevitable inequalities and unilateral actions, whether real or merely perceived, [[618]](#footnote-619)618 as well as to establish a mutual understanding of the underlying interests and values of each basin state. [[619]](#footnote-620)619 In this respect, some experts have observed that using a third party facilitator can greatly enhance communication by diminishing outside political influences and helping to maintain trust and focus. [[620]](#footnote-621)620

Minute 319 and the process leading to its adoption also points to the importance of jointly developing information so as to improve binational communication. As described in Section V above, before the two countries reached an **[\*109]** understanding on a common modeling platform, it was nearly impossible for them to reach agreement on the policies and strategies for ***river*** management. Joint assessment of shortage triggers, joint investigation of potential future projects, joint development of the Delta environmental flow program, and joint investigation and monitoring of the hydrological and biological outcomes of that program are all key features of the Minute will that drive continued binational cooperation.

Joint development of information relevant to water management issues, such as joint environmental monitoring, can also improve flexibility by providing a politically neutral platform for negotiation and cooperation on controversial issues. [[621]](#footnote-622)621 This information-sharing ensures that agreements are built upon the best scientific knowledge available instead of political considerations that may result in unworkable tradeoffs that are not well understood. [[622]](#footnote-623)622 Implementing management approaches that "focus[] on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems" [[623]](#footnote-624)623 can help water managers move past traditional arms-length approaches to water management and improve institutional cooperation.

E. Bringing Stakeholders to Diplomacy: Laying the Groundwork for Cooperation

The importance of increased communication and collaboration in both developed and developing basins is probably self-evident. However, the Minute 319 process revealed several important lessons that other international basins, both developed and developing, might apply to their own experiences.

[*First*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T2X2-D6RV-H374-00000-00&context=1516831), as the deteriorating relationship between the United States and Mexico throughout the early 2000s demonstrated, the existence of a formal, centralized framework for collaboration is by no means a precondition to commencing binational cooperation, even if ultimately a binational agency or facilitator is needed to bring about a result. [[624]](#footnote-625)624 In the absence of such a framework, initial efforts can begin with short-term, ground-level projects that involve local stakeholders and build binational trust. [[625]](#footnote-626)625 On-the-ground efforts can be particularly effective in creating initial collaboration by providing tangible results that build trust, mutual understanding, and a history of shared success; the binational efforts that proved restoration in the Delta was possible are one useful example.

In the case of Minute 319, it was the efforts of a small group of NGOs, US and Mexican water agencies and managers, and other interested parties whose initial discussions broke through a long-standing stalemate on a variety of water management issues and laid the groundwork for a formal binational discussion, which in turn laid the groundwork for a formal binational negotiation. [[626]](#footnote-627)626 As this process developed, it of course relied upon the IBWC as the formal facilitator; **[\*110]** however, the Treaty's formal structures may well have initially inhibited collaboration between stakeholders across the border since each side could simply place pressure upon the IBWC to advance its own interests at the other side's expense. It was only after this domestically-driven, unilateral approach that led to a series of controversial actions and a deteriorating relationship among IBWC and CILA - a development that the ***River***'s stakeholders understood to be antithetical to their own interests in light of growing ***river*** management challenges - that the stakeholders had an incentive to cooperate with each other.

[*Second*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T352-D6RV-H379-00000-00&context=1516831), it is never too soon to begin the process. [[627]](#footnote-628)627 Patiently developed collaboration is built upon relationships between individuals; those relationships may be far more important to reaching an agreement than the substance of the agreement. As noted above, a healthy dose of "cerveza, camaraderie, and good company" was a key ingredient of Minute 319; the relationships that ultimately led to information-sharing, the bridging of cultural and language gaps, and the understandings reached had complex roots that built upon a decade of informal communications between scientists, NGOs, community leaders, and water managers - not just upon the formal diplomatic ties of two nations.

[*Third*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T372-8T6X-731R-00000-00&context=1516831), bringing a diverse group of local interests to the table can make a different kind of agreement possible. It was precisely the ground-up process used to reach Minute 319 - and Minutes 316, 317, and 318 before it - that provided the means of reaching a comprehensive and creative agreement. Many provisions of the agreement could never have been conceptualized, proposed, or undertaken without the involvement of the Basin States and major municipal water providers like SNWA, MWD, and CAWCD. In light of the extraordinary sensitivity surrounding the US basin states' and individual providers' ***Colorado*** ***River*** water allocations, it is unlikely that the US section of IBWC would have been afforded the political leeway to discuss issues that potentially affected those allocations. These sensitive issues include the sharing of US reservoir storage via ICMA, binational water exchanges, surplus sharing, allowing the use of ICMA to offset shortage-related reductions in water deliveries, and funding of conservation and restoration projects. Similar political sensitivities would have imposed the same constraints on CILA in Mexico. The cooperative, multi-leveled, and stakeholder-driven approach that led to the JCRCP was the foundation for Minute 319 and its innovative provisions.

In this last respect, one particularly interesting feature of Minute 319 was the role played by a binational network of US and Mexican NGOs. Building from more than a decade of experience in binational collaboration, NGOs played a pivotal yet unusual role in drawing attention to the ***Colorado*** ***River*** Delta by starting dialogue and negotiations to bridge the gap between the two countries. [[628]](#footnote-629)628 As detailed in the history above, NGOs helped to overcome enormous obstacles associated with the general binational ignorance of the Delta, paucity of scientific information, persistent language and cultural barriers, lack of international communication, and an inadequate legal framework. The NGOs did so through a flexible, adaptive strategy that built local support and interest in Delta restoration through local demonstration sites and science efforts; these successes changed the posture of NGOs vis-a-vis traditional water **[\*111]** users and improved transboundary cooperation and communication by exploring a broad range of options that sought to address environmental needs as part of a broader water management solution on the border. [[629]](#footnote-630)629

The rising influence of NGO stakeholders is a relatively recent trend in international environmental and water law. [[630]](#footnote-631)630 Minute 319 (and the 2007 Shortage Guidelines and JCRCP that preceded it) represented a particularly significant evolution for NGOs in the ***Colorado*** ***River*** Basin, which has had a long history of arms-length relationships between NGOs and traditional water user interests; in the past, litigation was a far more common tool to drive change than collaboration. [[631]](#footnote-632)631 US environmental NGOs and water users began the 2000s far apart in their interests and objectives, as evidenced by the deep divisions caused by the 2001 Interim Surplus Guidelines and ESA litigation. [[632]](#footnote-633)632 They ended the 2000s working together, for the most part, to bring about both the 2007 Shortage Guidelines and Minutes 316, 317, 318, and 319 - an essentially unprecedented level of collaboration among traditionally divided interests.

Although NGOs were not included in all of the negotiating sessions - some were conducted on a purely sovereign-to-sovereign basis (or at least nearly so) - NGOs participated throughout the process in a manner that is nearly unprecedented in the ***Colorado*** ***River*** Basin, sitting "at the table" for much of the process and chairing or ***co***-chairing many of the relevant working groups. [[633]](#footnote-634)633 Perhaps even more importantly, NGOs have helped to implement Minute 319 by providing many resources necessary for its implementation. NGOs and their retained experts have participated in most facets of the agreement implementation - not just in the more traditional role of scientific support, but also through the ***Colorado*** ***River*** Delta Water Trust, which has been an explicit participant in the planning and provision of environmental flows to the Delta.

Ten years ago, when NGOs with interests in the Delta began to focus on acquiring water rights for transfer to environmental flows, one prominent water law expert described their restoration efforts as "a creative second best compared to a binational cooperative, adaptive management regime." [[634]](#footnote-635)634 While this assessment of the importance of future binational adaptive management was undoubtedly correct, what this description overlooked was that these efforts were laying the foundation for binational cooperation in Minute 319 - an agreement that is positioned to become a leading, if not preeminent, example of adaptive management in international ***river*** basins. As such, this "creative second best" has proved to be the catalyst for a binational adaptive management regime - illustrating that, at least in this context of a complex and entrenched system of water management, sustained ground-level efforts that demonstrate creative solutions can be an effective means of gaining recognition and driving **[\*112]** larger-scale change.

[*VII*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-T4S2-D6RV-H37V-00000-00&context=1516831). Conclusion: The Promise of Cooperation and the Challenges Ahead

At 8:00 a.m. local time on March 23, 2014, a large group of federal water managers, US and Mexican water users, NGOs, media, and local Mexican and US residents gathered at Morelos Dam to watch as the gates opened on the historic Delta "pulse flow." Cheers went up as water began rushing through the dam; champagne was poured, and the ***Colorado*** ***River*** began a fifty-three-day journey through the dry reaches of its former Delta, flooding vast stretches of dry and damaged Delta habitat, finally reaching the Gulf of California on May 15, 2014. [[635]](#footnote-636)635 The event, which received broad media coverage in both the United States and Mexico, featured a joint celebration on the morning the flow reached its peak, during which numerous dignitaries proclaimed the renewed spirit of binational cooperation and its benefits.

Perhaps the most poignant moments of the pulse flow, however, occurred during a spontaneous, multi-week beach party in the Mexican town of San Luis Rio ***Colorado*** - whose residents had not seen a flowing ***River*** for decades - complete with mariachi bands, dancing horses, carne asada cookouts, and children splashing in the water. [[636]](#footnote-637)636 And few who witnessed it will forget the experience of watching the ***River*** make its slow, inexorable way across the remnants of its barren Delta to the sea, and the amazingly rapid, if fleeting, return of birds, fish, beavers, otters, and other wildlife to the dry channel.

Without diminishing the importance of the binational achievement in reaching Minute 319, there is a long road ahead for the United States and Mexico as each country moves to implement, learn from, and ultimately replace Minute 319. This will, of course, include ongoing conflicts over international water use that could erode the spirit of local goodwill and cooperation. Perhaps more significantly, the US-Mexico relationship on the Rio Grande, where disagreements over Mexico's delivery obligations have become an ongoing source of conflict, [[637]](#footnote-638)637 have repeatedly threatened to spill over into the ***Colorado*** ***River*** Basin.

Perhaps the most significant test of Minute 319, however, is likely to come from the extraordinary hydrology of the ***River*** itself. Less than a year after the international agreement, Reclamation's twenty-four month study revealed that Lake Powell would reduce releases to Lake Mead for the first time in history, [[638]](#footnote-639)638 and more recent modeling from Reclamation shows a high likelihood of the **[\*113]** first-ever shortages on the ***Colorado*** ***River*** within just a few years. [[639]](#footnote-640)639 Given its temporary nature, Minute 319's ability to endure will likely depend heavily on continued stakeholder commitment to binational cooperation in the face of adversity and potentially worsening conditions. [[640]](#footnote-641)640 One US official called Minute 319 "a good way to open the door" to those future conversations. [[641]](#footnote-642)641

Although driven by the ongoing drought, these current conditions may well provide a preview of conditions that will become commonplace in the Basin's future. Reclamation's 2012 Basin Study, the product of more than two years of collaboration among federal and state agencies, Indian tribes, NGOs, and scientists, provided a comprehensive analysis of ***river*** system supply and demand looking forward into the ***River***'s future. [[642]](#footnote-643)642 The Basin Study evaluated a variety of potential future scenarios for the growth in demand and water supply availability to meet those demands, including scenarios built from the leading global climate models. [[643]](#footnote-644)643 This study demonstrated that water users on the ***Colorado*** ***River*** face significant projected imbalances in future supply and demand - imbalances that could grow to an annual average of around 3.2 million acre-feet over the next five decades (approximately twenty percent of current Basin-wide demands). [[644]](#footnote-645)644 Worst-case scenarios suggest potential imbalances reaching as much as fifty percent of current demands. [[645]](#footnote-646)645

More importantly, the 2012 Basin Study also indicated that the ***Colorado*** ***River***'s human and environmental users inevitably face growing risks of water supply shortages, reservoir declines, and critical reductions in stream flows that cannot be completely controlled or avoided. [[646]](#footnote-647)646 As a result, the Basin's water users must plan for, and work together to manage, the impacts of extreme conditions not previously seen or experienced in historical memory. This will require new flexibility in water management and the ability to adapt a historically rigid water distribution system to accommodate inevitable disruption. [[647]](#footnote-648)647

This issue is by no means unique to the ***Colorado*** ***River*** basin. Population growth, politics, economic issues, social evolution, and climate change, together with other landscape and seasonal changes, create real problems for water managers around the world. Typically, nations have built water management institutions to control natural variability and impose stability on water supplies to support economic growth. [[648]](#footnote-649)648 In the face of uncertainty and the potential for conditions that fall outside of managers' historical experience, however, these water supply systems - which lie at the heart of our social, economic, and political order and civilization - are likely to prove more fragile and prone to failure than we have planned them to be. Locally, domestically, and internationally, **[\*114]** this could have major consequences in many parts of the world, and the management of this kind of uncertainty will demand strong institutions that are able to respond to challenges flexibly.

Whether other international ***river*** basins can act with more initial success and prudence in water resource development remains to be seen; internationally, the "project of constraining unilateral action can at best be described as a very limited success … as China, India, and Turkey continue to engage in large multipurpose water projects unilaterally." [[649]](#footnote-650)649 Given water's significance to municipal, agricultural, and industrial development and the economic destiny of cities, regions, and nations, this is perhaps inevitable. However, as countries such as Brazil, China, and India follow the traditional models of "big dam development" and more stories like the ***Colorado*** ***River*** Delta illuminate the "social, equitable, environmental, and economic costs of [large scale infrastructure development]," it can be hoped that more countries will seize the opportunity to build foundations for strong communication and benefit-sharing into international agreements. [[650]](#footnote-651)650

While Minute 319's substantive provisions are likely to evolve as new information and basin conditions emerge, we contend that Minute 319's real legacy is likely to be less the substance of its provisions than the framework for cooperation it created. Inclusiveness and "stakeholder participation [are] widely considered [] key prerequisites for adaptive and integrated water resources management" in the international context. [[651]](#footnote-652)651 As we have argued, the key to Minute 319's success in putting together a comprehensive package of innovative environmental, conservation, and water sharing provisions was the broad engagement of stakeholders on both sides of the border within a collaborative process that pushed both sides towards agreement. This process unified states, federal water contractors, and NGOs representing a range of local interests who have all traditionally operated with a narrower vision. Minute 319 "is a breakthrough in communication about and understanding of the interrelated importance of ***Colorado*** ***River*** water to both nations." [[652]](#footnote-653)652

This direct stakeholder involvement was particularly important in light of the history of arms-length interactions that led to ongoing conflict in the border water relationship, a growing disconnect between local and national priorities and needs, and substantial mistrust and lack of understanding that had made collaboration through usual diplomatic channels more difficult. This ground-up process of negotiation, facilitated and guided by the diplomatic corps of both nations, but to an important extent led and initiated by the Basin's major water stakeholders themselves, could provide a potential model for building trust and managing emerging conflicts over resource scarcity in other arid and semi-arid regions.

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1. 1 Stephen C. McCaffrey, The Law of International Watercourses 13 (2nd ed. 2007); Donald Worster, ***Rivers*** of Empire: Water, Aridity, and the Growth of the American West 276 (1985). [↑](#footnote-ref-2)
2. 2 Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Basin Water Supply and Demand Study 3 (Dec. 2012) [hereinafter ***Colorado*** ***River*** Basin Water Supply], available at [*http://www.usbr.gov/lc/region/programs/crbstudy/finalreport/Executive%20Summary/CRBS\_Executive\_Summary\_FINAL.pdf*](http://www.usbr.gov/lc/region/programs/crbstudy/finalreport/Executive%20Summary/CRBS_Executive_Summary_FINAL.pdf); see also The ***Colorado*** ***River***, Nat'l Geographic, [*http://environment.nationalgeographic.com/environment/freshwater/change-the-course/****colorado****-****river****-map/*](http://environment.nationalgeographic.com/environment/freshwater/change-the-course/colorado-river-map/) (last visited Nov. 3, 2014). [↑](#footnote-ref-3)
3. 3 ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 3. [↑](#footnote-ref-4)
4. 4 Andrew Maddocks & Paul Reid, World's 18 Most Water-Stressed ***Rivers***, World Res. Inst. (Mar. 20, 2014), [*http://www.wri.org/blog/2014/03/world%E2%80%99s-18-most-water-stressed-****rivers***](http://www.wri.org/blog/2014/03/world%E2%80%99s-18-most-water-stressed-rivers). [↑](#footnote-ref-5)
5. 5 Agriculture, ***Colo.*** ***River*** Water Users Ass'n, [*http://www.crwua.org/****colorado****-****river****/uses/agriculture*](http://www.crwua.org/colorado-river/uses/agriculture) (last visited Nov. 22, 2014). [↑](#footnote-ref-6)
6. 6 Mark Reisner, Cadillac Desert: The American West and its Disappearing Water 120 (rev. ed., Penguin Books 1993) (1986); see also McCaffrey, supra note 1, at 13. [↑](#footnote-ref-7)
7. 7 McCaffrey, supra note 1, at 13. [↑](#footnote-ref-8)
8. 8 James Lawrence Powell, Dead Pool: Lake Powell, Global Warming, and the Future of Water in the West 6 (2008). [↑](#footnote-ref-9)
9. 9 See McCaffrey, supra note 1, at 112-13. One of the first theories of international water law to emerge from the West was that of "absolute territorial sovereignty" - the notion that downstream users cannot control or dictate how upstream nations use freshwater resources within their own boundaries. Id. Also known as the "Harmon Doctrine," it was first articulated in 1895 by US Attorney General Judson Harmon to support the US position that it had no obligation to consult with Mexico regarding how it chose to utilize the waters of the Rio Grande within US territory. Id. at 113. This approach, which obviously disproportionately favored upstream states and greatly compromised downstream users' rights to international waterways, soon fell out of favor. [↑](#footnote-ref-10)
10. 10 Equitable utilization is an international principle of water management derived from the US principle of equitable apportionment, which originated in United States Supreme Court decisions regarding allocation of interstate water resources. Id. at 384-385. The 1966 Helsinki Rules adopted equitable utilization as the fundamental norm in international water law - a notion that was reinforced by the Gabcikovo-Nagymoros Case and the 1997 UN Convention. Id. (providing an extensive discussion on the doctrine of equitable utilization); see also Int'l Law Ass'n, The 1966 Helsinki Rules on the Uses of the Waters of International ***Rivers*** (1967), available at [*http://www.unece.org/fileadmin/DAM/env/water/meetings/legal\_board/2010/annexes\_groundwater\_paper/Annex\_II\_Helsinki\_Rules\_ILA.pdf*](http://www.unece.org/fileadmin/DAM/env/water/meetings/legal_board/2010/annexes_groundwater_paper/Annex_II_Helsinki_Rules_ILA.pdf). [↑](#footnote-ref-11)
11. 11 The United States Supreme Court announced the doctrine of equitable apportionment for interstate water allocation in 1906, stating that "equality of right," not equality of amount, should govern when dividing transboundary ***rivers*** amongst states. See [*Kansas v.* ***Colorado****, 206 U.S. 46, 97, 103 (1906)*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) (citations omitted). In later decisions the Court declared that "equality of right" signifies that states stand on "equal level or plane … in point of power and right, under [the US] constitutional system." [*Wyoming v.* ***Colorado****, 259 U.S. 419, 465 (1922).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-45S0-003B-H2C4-00000-00&context=1516831) Thus, according to this federal common law doctrine, the laws of the individual states do not bind the Court, and it will balance the equities in order to achieve an equitable apportionment. [↑](#footnote-ref-12)
12. 12 McCaffrey, supra note 1, at 14. [↑](#footnote-ref-13)
13. 13 Malin Falkenmark & Gunnar Lindh, Water and Economic Development, in Water in Crisis: A Guide to the World's Freshwater Resources 80, 87 (Peter H. Gleick ed. 1993). [↑](#footnote-ref-14)
14. 14 ***Colorado*** ***River*** Program: How We Work, The Nature Conservancy, [*http://www.nature.org/ourinitiatives/regions/northamerica/areas/coloradoriver/howwework/index.htm*](http://www.nature.org/ourinitiatives/regions/northamerica/areas/coloradoriver/howwework/index.htm) (last visited June 24, 2014). [↑](#footnote-ref-15)
15. 15 See Michael Wines, ***Colorado*** ***River*** Drought Forces a Painful Reckoning for States, N.Y. Times (Jan. 5, 2014), [*http://www.nytimes.com/2014/01/06/us/****colorado****-****river****-drought-forces-a-painful-reckoning-for-states.html?\_r=0*](http://www.nytimes.com/2014/01/06/us/colorado-river-drought-forces-a-painful-reckoning-for-states.html?_r=0); see also Sally Deenan, Feds Slash ***Colorado*** ***River*** Release to Historic Lows, Nat'l Geographic (Aug. 16, 2013), [*http://news.nationalgeographic.com/news/2013/08/130816-****colorado****-****river****-drought-lake-powell-mead-water-scarcity/*](http://news.nationalgeographic.com/news/2013/08/130816-colorado-river-drought-lake-powell-mead-water-scarcity/). [↑](#footnote-ref-16)
16. 16 See ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 3. [↑](#footnote-ref-17)
17. 17 Drought in the Upper ***Colorado*** ***River*** Basin, Bureau of Reclamation, U.S. Dep't of The Interior, [*http://www.usbr.gov/uc/feature/drought.html*](http://www.usbr.gov/uc/feature/drought.html) (last updated Aug. 16, 2011); see Powell, supra note 8, at 180-81, 183. [↑](#footnote-ref-18)
18. 18 See Drought in the Upper ***Colorado*** ***River*** Basin, supra note 17; see also ***Colorado*** ***River*** Basin Water Supply and Demand Study: Before the Senate Comm. on Energy and Natural Resources, 113th Cong. (2013) [hereinafter Statement of Michael L. Connor] (statement of Michael L. Connor, Comm'r, Bureau of Reclamation, U.S. Dep't of the Interior), available at [*http://www.usbr.gov/newsroom/testimony/detail.cfm?RecordID=2421*](http://www.usbr.gov/newsroom/testimony/detail.cfm?RecordID=2421) (last visited Nov. 22, 2014). [↑](#footnote-ref-19)
19. 19 Lower ***Colorado*** Water Supply Report, ***River*** Operations, Bureau of Reclamation, U.S. Dep't of the Interior (December 22, 2014), [*http://www.usbr.gov/lc/region/g4000/weekly.pdf*](http://www.usbr.gov/lc/region/g4000/weekly.pdf) (on file with author). [↑](#footnote-ref-20)
20. 20 See Notice to State Water Project Contractors from Carl A. Torgersen, Deputy Dir. of Cal. Dep't of Water Res. (Apr. 18, 2014), available at [*http://www.water.ca.gov/swpao/docs/notices/14-07.pdf*](http://www.water.ca.gov/swpao/docs/notices/14-07.pdf); see also Bettina Boxall, Most Central Valley Growers to get no water from Central Valley Project, L.A. Times (Feb. 21, 2014) [*http://articles.latimes.com/2014/feb/21/science/la-sci-sn-drought-cvp-20140221*](http://articles.latimes.com/2014/feb/21/science/la-sci-sn-drought-cvp-20140221). [↑](#footnote-ref-21)
21. 21 Intergovernmental Panel on Climate Change [IPCC], Climate Change and Water 105, (June 2008), available at [*http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf*](http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf); see Powell, supra note 8, at 167-68 (noting that tree ring studies indicated that the very highest possible average annual flow of the ***Colorado*** is 14.6 million acre-feet). [↑](#footnote-ref-22)
22. 22 There is a broad range of entities involved in the decisions and policymaking surrounding the ***Colorado*** ***River*** including US federal agencies such as the US Bureau of Reclamation and the International Boundary and Water Commission ("IBWC"); Mexican federal agencies such as the National Water Commission (CONAGUA) and the Comision Internacional de Limites y Aguas ("CILA"); the states of Arizona, California, ***Colorado***, Nevada, New Mexico, Utah, and Wyoming; various large water utilities and water providers such as the Metropolitan Water District of Southern California ("MWD"), the Central Arizona Water Conservation District ("CAWCD") (operators of the Central Arizona Project), Southern Nevada Water Authority, and Denver Water; ten Indian tribes; major agricultural districts in the Yuma, Arizona region; California's Imperial Irrigation District, Coachella Valley Water District, and Palo Verde Irrigation District; Mexico's Irrigation District 14; and various nonprofit organizations such as the Nature Conservancy, Environmental Defense Fund, Western Resource Advocates, the Pacific Institute, Trout Unlimited, the Sonoran Institute, and Pronatura Noroeste; among others. [↑](#footnote-ref-23)
23. 23 See U.S. Dep't of the Interior, Record of Decision, ***Colorado*** ***River*** Interim Guidelines for Lower Basin Shortages and the Coordinated Operation of Lake Powell and Lake Mead 12 (Dec. 2007), [hereinafter 2007 Interim Shortage Guidelines], available at [*http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf*](http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf). [↑](#footnote-ref-24)
24. 24 ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 3-4. [↑](#footnote-ref-25)
25. 25 See Int'l Boundary and Water Comm'n [IBWC], Minute 319: Interim International Cooperative Measures in the ***Colorado*** ***River*** Basin through 2017 and Extension of Minute 318 Cooperative Measures to Address the Continued Effects of the April 2010 Earthquake in the Mexicali Valley, Baja California (Nov. 20, 2012) [hereinafter Minute 319]; see also Int'l Boundary and Water Comm'n [IBWC], Minute 318: Adjustment of Delivery Schedules for Water Allotted to Mexico for the Years 2010 through 2013 as a Result of Infrastructure Damage in Irrigation District 014, Rio ***Colorado***, Caused by the April 2010 Earthquake in the Mexicali Valley, Baja California (Dec. 17, 2010) [hereinafter Minute 318]; see also Int'l Boundary and Water Comm'n [IBWC], Minute 317: Conceptual Framework For U.S.-Mexico Discussions on ***Colorado*** ***River*** Cooperative Actions (June 17, 2010) [hereinafter Minute 317]; see also Int'l Boundary and Water Comm'n [IBWC], Minute 316: Utilization of the Wellton-Mohawk Bypass Drain and Necessary Infrastructure in the U.S. for the Conveyance of Water by Mexico and Non-Governmental Organizations of Both Countries to the Santa Clara Wetland During the Yuma Desalting Plant Pilot Run (Apr. 16, 2010) [hereinafter Minute 316]; see also Int'l Boundary and Water Comm'n [IBWC], Joint Report of the Principal Engineers Concerning U.S.-Mexico Joint Cooperative Actions Related to the Yuma Desalting Plant (YDP) Pilot Run and the Santa Clara Wetland, Proposed Joint Cooperative Action, (July 17, 2009). [↑](#footnote-ref-26)
26. 26 See ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 11-15. [↑](#footnote-ref-27)
27. 27 Reclamation's 2012 ***Colorado*** ***River*** Basin Water Supply and Demand Study provides a clear example of this change in thinking. The agency's analysis of potential methods to resolve growing supply and demand imbalances in the ***Colorado*** ***River*** Basin stands in stark contrast to its past history as a developer and proponent of large-scale engineering solutions. In the Study, only twelve of the 150 solutions that Reclamation considered to diminish the supply and demand gap were traditional proposals involving major infrastructure and water supply projects. See ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 11-15. In favor of more cost-effective solutions, the study focused on various types of conservation, local desalinization, and other "soft path" alternatives as options to attain needed flexibility in water management. Id. Just as noteworthy, Reclamation's analysis embraced the potential for climate change in the ***Colorado*** ***River*** Basin, with the study predicting possible declines in runoff and increases in evaporation. See id. at 7; see also Robert J. Glennon & Peter W. Culp, West Must Strive for Water Sustainability, Ariz. Republic (Jan. 5, 2013), [*http://www.azcentral.com/arizonarepublic/opinions/articles/2013/01/02/20130102glennon-culp-west-must-strive-water-sustainability.html?nclick\_check=1*](http://www.azcentral.com/arizonarepublic/opinions/articles/2013/01/02/20130102glennon-culp-west-must-strive-water-sustainability.html?nclick_check=1). [↑](#footnote-ref-28)
28. 28 See Wines, supra note 15. [↑](#footnote-ref-29)
29. 29 See Treaty for the Utilization of Waters of the ***Colorado*** and Tijuana ***Rivers*** and of the Rio Grande, U.S.-Mex., Feb. 3, 1944, [*59 Stat. 1219*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CBP-FY70-01XN-S099-00000-00&context=1516831) [hereinafter 1944 Water Treaty], available at [*http://ibwc.gov/Files/1944Treaty.pdf*](http://ibwc.gov/Files/1944Treaty.pdf). [↑](#footnote-ref-30)
30. 30 Minute 319, supra note 25, § III. [↑](#footnote-ref-31)
31. 31 See id. § III(3). [↑](#footnote-ref-32)
32. 32 See id. § III(4)-(5). [↑](#footnote-ref-33)
33. 33 See id. § III(6). [↑](#footnote-ref-34)
34. 34 See id. § III(7). [↑](#footnote-ref-35)
35. 35 See id. § III(6)(a)-(c). [↑](#footnote-ref-36)
36. 36 Jennifer Pitt is the Director of the ***Colorado*** ***River*** Project for the Environmental Defense Fund. See Jennifer Pitt, Envtl. Def. Fund, [*http://www.edf.org/people/jennifer-pitt*](http://www.edf.org/people/jennifer-pitt) (last visited Nov. 5, 2014). [↑](#footnote-ref-37)
37. 37 Telephone Interview with Jennifer Pitt, Dir., ***Colo.*** ***River*** Project, Envtl. Def. Fund (May 3, 2012). [↑](#footnote-ref-38)
38. 38 See David Festa & John Entsminger, A Historic Course Change on the ***Colorado*** ***River***, Las Vegas Rev.-J. (May 29, 2014), [*http://www.reviewjournal.com/opinion/historic-course-change-****colorado****-****river***](http://www.reviewjournal.com/opinion/historic-course-change-colorado-river). [↑](#footnote-ref-39)
39. 39 Sarah Zielinski, The ***Colorado*** ***River*** Runs Dry, Smithsonian Mag. (Oct. 2010), [*http://www.smithsonianmag.com/science-nature/The-****Colorado****-****River****-Runs-Dry.html*](http://www.smithsonianmag.com/science-nature/The-Colorado-River-Runs-Dry.html). [↑](#footnote-ref-40)
40. 40 Michael Cohen & Christine Henges-Jeck, Missing Water: Report and Article Examine Water in the ***Colorado*** ***River*** Delta, Pacific Inst. 1 (Sep. 2001), available at [*http://pacinst.org/wp-content/uploads/sites/21/2013/02/missing\_water\_full\_report.pdf*](http://pacinst.org/wp-content/uploads/sites/21/2013/02/missing_water_full_report.pdf); See generally Mark Lellouch et al., Ecosystem Changes and Water Policy Choices: Four Scenarios for the Lower ***Colorado*** ***River*** Basin to 2050, at 7-11 (2007), available at [*http://www.sonoraninstitute.org/component/docman/doc\_details/1383-ecosystem-changes-and-water-policy-choices-four-scenarios-for-the-lower-****colorado****-****river****-basin-to-2050-full-summary-09152007.html?Itemid=3*](http://www.sonoraninstitute.org/component/docman/doc_details/1383-ecosystem-changes-and-water-policy-choices-four-scenarios-for-the-lower-colorado-river-basin-to-2050-full-summary-09152007.html?Itemid=3). [↑](#footnote-ref-41)
41. 41 Michael Cohen, Groundwater Dynamics in the ***Colorado*** ***River*** Limitrophe 1-2, 4 (Paula Luu & Nancy Ross eds., 2013), available at [*http://pacinst.org/wp-content/uploads/2013/05/pacinst-cor-limitrophe-report.pdf*](http://pacinst.org/wp-content/uploads/2013/05/pacinst-cor-limitrophe-report.pdf); see also Salton Trough, Nasa Earth Observatory, [*http://earthobservatory.nasa.gov/IOTD/view.php?id=81711*](http://earthobservatory.nasa.gov/IOTD/view.php?id=81711) (last visited Oct. 10, 2014); see also Earthshots: Satellite Images Of Environmental Change, U.S. Geological surv., [*http://earthshots.usgs.gov/earthshots/node/43#ad-image-0*](http://earthshots.usgs.gov/earthshots/node/43#ad-image-0) (last visited Oct. 10, 2014). [↑](#footnote-ref-42)
42. 42 Cohen & Henges-Jeck; supra note 40; see also Lellouch et al. supra note 40, at 21-22. [↑](#footnote-ref-43)
43. 43 See Jonathan Waterman, Running Dry: A Journey from Source to Sea Down the ***Colorado*** ***River*** 255-59 (2010). [↑](#footnote-ref-44)
44. 44 See id. at 275; Worster, supra note 1, at 273; Norris Hundley, Jr., Dividing the Waters: A Century of Controversy Between the United States and Mexico 12 (1966). [↑](#footnote-ref-45)
45. 45 Reisner, supra note 6, at 124. [↑](#footnote-ref-46)
46. 46 Id. at 123-24. [↑](#footnote-ref-47)
47. 47 See Nicole T. Carter et al., Cong. Research Serv., U.S.-Mexico Water Sharing: Background and Recent Developments 6 (2013), available at [*http://www.fas.org/sgp/crs/row/R43312.pdf*](http://www.fas.org/sgp/crs/row/R43312.pdf). [↑](#footnote-ref-48)
48. 48 The 1848 Treaty of Guadalupe Hidalgo effectively split the indigenous peoples into two separate communities: the Cocopah in the United States., and the Cucapa in Mexico. Evan R. Ward, Border Oasis, at xxx (2003); Charles Bergman, Red Delta: Fighting for Life at the End of the ***Colorado*** ***River*** 11 (Marlene Blessing et al. eds., 2002). [↑](#footnote-ref-49)
49. 49 Edna Jael Feirstein et al., Simulations of Groundwater Conditions in the ***Colorado*** ***River*** Delta 27-28 (2008). [↑](#footnote-ref-50)
50. 50 Powell, supra note 8, at 202; see also Ward, supra note 48, at xx-xxiii; Aldo Leopold, A Sand County Almanac 142-43 (1949) (providing a vibrant and detailed description of the Delta Region even as it existed in 1922). [↑](#footnote-ref-51)
51. 51 Daniel F. Luecke et al., A Delta Once More: Restoring Wetland and Habitat in the ***Colorado*** ***River*** Delta 1-2 (1999), available at [*http://www.edf.org/sites/default/files/425\_delta.pdf*](http://www.edf.org/sites/default/files/425_delta.pdf). [↑](#footnote-ref-52)
52. 52 Id. at 2. [↑](#footnote-ref-53)
53. 53 ***Colorado*** ***River*** Delta Legacy Program: Where We Work, Sonoran Institute, http://www.sonoraninstitute. org/where-we-work/22-***colorado***-***river***-delta.html (last visited Nov. 6, 2014). [↑](#footnote-ref-54)
54. 54 Luecke et al., supra note 51, at 6. [↑](#footnote-ref-55)
55. 55 See Geography, Salton Sea Auth., [*http://saltonsea.ca.gov/Resources/Geography*](http://saltonsea.ca.gov/Resources/Geography) (last accessed Oct. 12, 2014). [↑](#footnote-ref-56)
56. 56 Id. [↑](#footnote-ref-57)
57. 57 Id. [↑](#footnote-ref-58)
58. 58 See Pat Laflin, The Salton Sea: California's Overlooked Treasure, (reprt. 1999) (1995), available at [*http://www.sci.sdsu.edu/salton/PeriscopeSaltonSeaCh1-4.html*](http://www.sci.sdsu.edu/salton/PeriscopeSaltonSeaCh1-4.html) (last visited Nov. 22, 2014). [↑](#footnote-ref-59)
59. 59 Jim Carrier, The ***Colorado***: A ***River*** at Risk 19-20 (Rich Clarkson & John Fielder eds., 1992). [↑](#footnote-ref-60)
60. 60 Luecke et al., supra note 51, at 2. [↑](#footnote-ref-61)
61. 61 Bergman, supra note 48, at 14; Peter L. Kresan, A Geologic Tour of the Lower ***Colorado*** ***River*** Region of Arizona and Sonora, 39 J. Sw. 567, 576 (1997). [↑](#footnote-ref-62)
62. 62 About Us, Cocopah Indian Tribe [hereinafter Cocopah Indian Tribe], [*http://www.cocopah.com/about-us.html*](http://www.cocopah.com/about-us.html) (last visited Sep. 06, 2014). [↑](#footnote-ref-63)
63. 63 Maria Rosa Garcia-Acevedo, The Confluence of Water, Patterns of Settlement, and Constructions of the Border in the Imperial and Mexicali Valleys (1900-1999), in Reflections on Water: New Approaches to Transboundary Conflicts and Cooperation 57, 59 (Joachim Blatter and Helen Ingram eds., 2001); see also Feirstein et al., supra note 49, at 28; see also Ward, supra note 48, at xxv. [↑](#footnote-ref-64)
64. 64 Explorer Jose Joaquin de Arrillaga remarked that, along the Rio Hardy, "everything that the eye can reach is populated, and far from the ***river***." See Ward, supra note 48, at xxx (internal quotation marks omitted). [↑](#footnote-ref-65)
65. 65 Id. [↑](#footnote-ref-66)
66. 66 See id. at xxv, xxx, 21-22. [↑](#footnote-ref-67)
67. 67 See Treaty of Peace, Friendship, Limits and Settlement between the United States of America and the Mexican Republic, U.S.-Mex., Feb. 2, 1848, [*9 Stat. 922*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C6W-DC70-01XN-S0GF-00000-00&context=1516831) [hereinafter Treaty of Guadalupe Hidalgo]. [↑](#footnote-ref-68)
68. 68 See Garcia-Acevedo, supra note 63, at 61. [↑](#footnote-ref-69)
69. 69 Id. [↑](#footnote-ref-70)
70. 70 Waterman, supra note 43, at 267; Garcia-Acevedo, supra note 63, at 61. [↑](#footnote-ref-71)
71. 71 Waterman, supra note 43, at 267; see also Cocopah Indian Tribe, supra note 62. [↑](#footnote-ref-72)
72. 72 Cocopah Indian Tribe, supra note 62; see infra, Parts II.C, III. [↑](#footnote-ref-73)
73. 73 Robert Jerome Glennon & Peter W. Culp, The Last Green Lagoon: How and Why the Bush Administration Should Save the ***Colorado*** ***River*** Delta, [*28 Ecology L.Q. 903, 905 (2002)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:463N-WHW0-00CV-J2DJ-00000-00&context=1516831) [hereinafter Last Green Lagoon]. [↑](#footnote-ref-74)
74. 74 Eric A. Stene, Bureau of Reclamation, U.S. Dep't of the Interior, All-American Canal: Boulder Canyon Project 3 (rev. ed. 2009), available at [*http://www.usbr.gov/projects//ImageServer?imgName=Doc\_1262724516142.pdf*](http://www.usbr.gov/projects//ImageServer?imgName=Doc_1262724516142.pdf). [↑](#footnote-ref-75)
75. 75 Id. [↑](#footnote-ref-76)
76. 76 Id. [↑](#footnote-ref-77)
77. 77 See ***Title Ins. & Trust Co. v. Cal. Dev. Co., 152 P. 542, 545 (Cal. 1915);*** To Irrigate Arid Lands; Incorporation of the ***Colorado*** ***River*** Company, N.Y. Times, May 13, 1893. [↑](#footnote-ref-78)
78. 78 See Garcia-Acevedo, supra note 63, at 63-64. [↑](#footnote-ref-79)
79. 79 See Ward, supra note 48, at 5; Norris Hundley, Jr., Water and the West: The ***Colorado*** ***River*** Compact and the Politics of Water in the American West 22 (2009). [↑](#footnote-ref-80)
80. 80 Hundley, supra note 79, at 22. [↑](#footnote-ref-81)
81. 81 Stene, supra note 74, at 4. The Alamo ***River*** riverbed was an older geologic channel of the ***Colorado*** ***River*** that could be used to carry water through Mexico to the Imperial Valley, re-entering the United States near Calexico, California. See Powell, supra note 8, at 62-63. [↑](#footnote-ref-82)
82. 82 Powell, supra note 8, at 63. [↑](#footnote-ref-83)
83. 83 See id. at 62; Worster, supra note 1, at 196; Hundley, supra note 79, at 21. [↑](#footnote-ref-84)
84. 84 Worster, supra note 1, at 196. [↑](#footnote-ref-85)
85. 85 See McCaffrey, supra note 1, at 11-12, 58-63. [↑](#footnote-ref-86)
86. 86 Garcia-Acevedo, supra note 63, at 67; cf. Case Relating to the Territorial Jurisdiction of the International Commission of the ***River*** Oder, Judgment No. 16, 1929 I.C.J. (ser. A) No. 23, at 27 (Sept. 10) (where "a single waterway traverses or separates the territory of more than one State, and the possibility of fulfilling the requirements of justice and the considerations of utility which this fact places in relief, it is at once seen that a solution of the problem has been sought not in the idea of a right of passage in favour of upstream States, but in that of a community of interest of riparian States. This community of interest in a navigable ***river*** becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian States in the user [sic] of the whole course of the ***river*** and the exclusion of any preferential privilege of any one riparian State in relation to the others."). [↑](#footnote-ref-87)
87. 87 Powell, supra note 8, at 63. [↑](#footnote-ref-88)
88. 88 Id. [↑](#footnote-ref-89)
89. 89 ***Title Ins. & Trust Co. v. Cal. Dev. Co., 152 P. 542, 546 (Cal. 1915);*** Powell, supra note 8, at 63; see also Waterman, supra note 43, at 257; Hundley, supra note 79, at 27. [↑](#footnote-ref-90)
90. 90 William deBuys & Joan Myers, Salt Dreams: Land and Water in Low-Down California 65 (1999); see also ***Title Ins. & Trust Co., 152 P. at 546.*** [↑](#footnote-ref-91)
91. 91 ***Title Ins. & Trust Co., 152 P. at 546.*** [↑](#footnote-ref-92)
92. 92 See Hundley, supra note 79, at 27. [↑](#footnote-ref-93)
93. 93 See ***Title Ins. & Trust Co., 152 P. at 546;*** see also deBuys & Myers, supra note 90, at 103-113; Powell, supra note 8, at 63. [↑](#footnote-ref-94)
94. 94 Garcia-Acevedo, supra note 63, at 67. [↑](#footnote-ref-95)
95. 95 Worster, supra note 1, at 207. [↑](#footnote-ref-96)
96. 96 Ward, supra note 48, at 41. [↑](#footnote-ref-97)
97. 97 Following CDC's bankruptcy in the wake of the Salton Sea disaster, Southern Pacific Railroad engineered the takeover of the majority of CDC's land and infrastructure assets to cover its expenses in shoring up the ***Colorado*** ***River*** channel; the Imperial Irrigation District ("IID") was then created to take over and operate the Imperial Valley infrastructure. See ***Title Ins. & Trust Co., 152 P. at 549;*** Stene, supra note 74, at 5. [↑](#footnote-ref-98)
98. 98 Powell, supra note 8, at 64. [↑](#footnote-ref-99)
99. 99 Worster, supra note 1, at 200. [↑](#footnote-ref-100)
100. 100 Id. [↑](#footnote-ref-101)
101. 101 Id. [↑](#footnote-ref-102)
102. 102 Id. at 273. [↑](#footnote-ref-103)
103. 103 Garcia-Acevedo, supra note 63, at 64. [↑](#footnote-ref-104)
104. 104 Ward, supra note 48, at 20. [↑](#footnote-ref-105)
105. 105 Id. at 13-15. [↑](#footnote-ref-106)
106. 106 Garcia-Acevedo, supra note 63, at 64. [↑](#footnote-ref-107)
107. 107 Ward, supra note 48, at 5. [↑](#footnote-ref-108)
108. 108 Garcia-Acevedo, supra note 63, at 64, 66. [↑](#footnote-ref-109)
109. 109 Id. at 64. Several commentators have noted that this early pattern of settlement inhibited social mobility and contributed to many of the contemporary problems with poverty and immigration in Baja California, including the Imperial Valley's exploitation of cheap Mexican farm labor throughout the twentieth century. See Michael Dear, Why Walls Won't Work: Repairing the U.S.-Mexico Divide 46 (2013); Oscar J. Martinez, Troublesome Border 112-13 (rev. ed. 2006). [↑](#footnote-ref-110)
110. 110 See Garcia-Acevedo, supra note 63, at 63, 67. [↑](#footnote-ref-111)
111. 111 Id. at 67. [↑](#footnote-ref-112)
112. 112 Id. [↑](#footnote-ref-113)
113. 113 Id. at 67-68, 74, 76-78. [↑](#footnote-ref-114)
114. 114 See ch. 72, ***42 Stat. 171 (1921)*** (authorizing the states to enter into a compact); see also ***Colorado*** ***River*** Compact, [***Colo.*** *Rev. Stat. Ann. § 37-61-101*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J33S-00000-00&context=1516831) (2014). [↑](#footnote-ref-115)
115. 115 The Compact reads, in relevant part, as follows: "If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the ***Colorado*** ***River*** System, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the Upper Basin and the Lower Basin, and whenever necessary the States of the Upper Division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d)." ***Colorado*** ***River*** Compact art. III(c). [↑](#footnote-ref-116)
116. 116 Ward, supra note 48, at 4-5. [↑](#footnote-ref-117)
117. 117 See Waterman, supra note 43, at 270-71. [↑](#footnote-ref-118)
118. 118 Ward, supra note 48, at 16. [↑](#footnote-ref-119)
119. 119 Id. at 15-16. [↑](#footnote-ref-120)
120. 120 Id. at 38. [↑](#footnote-ref-121)
121. 121 Id. at 29-32. [↑](#footnote-ref-122)
122. 122 Id. at 37-38. [↑](#footnote-ref-123)
123. 123 Alfonso Cortez-Lara & Maria Rosa Garcia-Acevedo, The Lining of the All-American Canal: The Forgotten Voices, 40 Nat. Resources J. 261, 268 (2000). [↑](#footnote-ref-124)
124. 124 Boulder Canyon Project Act, Pub. L. No. 70-642, [*45 Stat. 1057 (1928)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNP0-01XN-S392-00000-00&context=1516831) (codified as amended at [*43 U.S.C § 617*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SDD-0HD2-8T6X-73R7-00000-00&context=1516831) (2012)). [↑](#footnote-ref-125)
125. 125 Stene, supra note 74, at 5-6. [↑](#footnote-ref-126)
126. 126 See Hundley, supra note 44, at 102-04; Powell, supra note 8, at 83. [↑](#footnote-ref-127)
127. 127 MJ Cohen, The ***Colorado*** ***River*** Basin, Harc.edu, at 7 (Apr. 2014), available at [*http://www.harc.edu/sites/default/files/Project\_Documents/Report%201%20-%20Colorado%*](http://www.harc.edu/sites/default/files/Project_Documents/Report%201%20-%20Colorado%) 20River.pdf. [↑](#footnote-ref-128)
128. 128 See All-American Canal, Imperial Irrigation Dist., [*http://www.iid.com/index*](http://www.iid.com/index) aspx?page=177 (last visited Oct. 17, 2014). [↑](#footnote-ref-129)
129. 129 Ward, supra note 48, at 24-25; see also Waterman, supra note 43, at 270-71. [↑](#footnote-ref-130)
130. 130 All-American Canal, Image of the Day, NASA Earth Observatory, [*http://earthobservatory.nasa.gov/IOTD/view.php?id=37078*](http://earthobservatory.nasa.gov/IOTD/view.php?id=37078) (last visited Oct. 17, 2014); All-American Canal, supra note 128. [↑](#footnote-ref-131)
131. 131 See All-American Canal, supra note 128; IID Water History, Imperial Irrigation Dist., [*http://www.iid.com/index.aspx?page=125*](http://www.iid.com/index.aspx?page=125) (last visited Oct. 17, 2014). [↑](#footnote-ref-132)
132. 132 Ward, supra note 48, at 24-25. [↑](#footnote-ref-133)
133. 133 See Reisner, supra note 6, at 259-305. [↑](#footnote-ref-134)
134. 134 Statement of Michael L. Connor, supra note 18; Powell, supra note 8, at 7. [↑](#footnote-ref-135)
135. 135 See Dams along the Lower ***Colorado*** ***River***, Bureau of Reclamation, U.S. Dep't of the Interior, [*http://www.usbr.gov/lc/yuma/facilities/dams/yao\_dams\_map.html*](http://www.usbr.gov/lc/yuma/facilities/dams/yao_dams_map.html) (last updated July 27, 2012); Facilities by Region, Bureau of Reclamation, U.S. Dep't of the Interior, [*http://www.usbr.gov/projects/FacilitiesByRegion.jsp?RegionName=Upper%20Colorado*](http://www.usbr.gov/projects/FacilitiesByRegion.jsp?RegionName=Upper%20Colorado) (last updated May 1, 2007). [↑](#footnote-ref-136)
136. 136 See Statement of Michael L. Connor, supra note 18; ***Colorado*** ***River*** Storage Project, Bureau of Reclamation, U.S. Dep't of the Interior, [*http://www.usbr.gov/projects/Project.jsp?proj\_Name=****Colorado****+****River****+Storage+Project*](http://www.usbr.gov/projects/Project.jsp?proj_Name=Colorado+River+Storage+Project) (last updated May 4, 2010). [↑](#footnote-ref-137)
137. 137 See 1944 Water Treaty, supra note 29, at art. 10 (discussing United States' obligation to deliver 1.5 maf to Mexico, and general administrative procedures); See ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 3 (stating that the ***Colorado*** ***River***'s average historical flow is 16.4 maf per year); Powell, supra note 8, at 210 ("Thus Mexico, once the destination of 100 percent of the water in the lower ***Colorado***, had to settle for 10 percent). [↑](#footnote-ref-138)
138. 138 See Michael J. Cohen, Municipal Deliveries of ***Colorado*** ***River*** Basin Water, at iii (2011), available at [*http://pacinst.org/wp-content/uploads/sites/21/2013/02/crb\_water\_8\_21\_2011.pdf*](http://pacinst.org/wp-content/uploads/sites/21/2013/02/crb_water_8_21_2011.pdf). [↑](#footnote-ref-139)
139. 139 See Bureau of Reclamation - Projects, Bureau of Reclamation, U.S. Dep't of the Interior, [*http://www.usbr.gov/projects/projects.jsp*](http://www.usbr.gov/projects/projects.jsp) (last updated Jan. 24, 2008); Parker Dam and Powerplant, Bureau of Reclamation Lower ***Colo.*** Region, U.S. Dep't of the Interior, [*http://www.usbr.gov/lc/region/pao/brochures/parker.html*](http://www.usbr.gov/lc/region/pao/brochures/parker.html) (last updated Sep. 2013); Division 5 (Glenwood Springs): ***Colorado*** ***River*** Basin, ***Colo.*** Dep't of Nat. Res., [*http://water.state.****co****.us/DivisionsOffices/Div5ColoradoRiverBasin/Pages/Div5ColoradoRB.aspx*](http://water.state.co.us/DivisionsOffices/Div5ColoradoRiverBasin/Pages/Div5ColoradoRB.aspx) (last visited Oct. 18, 2014); Regional Water System, S. Nev. Water Auth., [*http://www.snwa.com*](http://www.snwa.com) /about/regional.html (last visited Oct. 12, 2014). [↑](#footnote-ref-140)
140. 140 See Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Consumptive Uses and Losses report 2001-2005, at iv (Dec. 2011) available at [*http://www.usbr.gov/uc/library/envdocs/reports/crs/pdfs/cul2001-05.pdf*](http://www.usbr.gov/uc/library/envdocs/reports/crs/pdfs/cul2001-05.pdf) (summary of water usage from 2001-2005 and system losses for the period). [↑](#footnote-ref-141)
141. 141 Feirstein, supra note 49, at 38. [↑](#footnote-ref-142)
142. 142 Id. [↑](#footnote-ref-143)
143. 143 See 7.2-Magnitude Quake near Mexcali, Mexico: Image of the Day, NASA Earth Observatory (Apr. 6, 2010) [*http://earthobservatory.nasa.gov/IOTD/view.php?id=43416*](http://earthobservatory.nasa.gov/IOTD/view.php?id=43416); see also infra Part V.B.3. [↑](#footnote-ref-144)
144. 144 Feirstein, supra note 49, at 38. [↑](#footnote-ref-145)
145. 145 The primary ***Colorado*** ***River*** water users in the Lower Basin are: (i) California: MWD, IID; Coachella Valley Water District, Palo Verde Irrigation District, Bard Water District; (ii) Arizona: CAWCD, Yuma County Water Users' Association, Wellton-Mohawk Irrigation and Drainage District, Yuma Mesa Division of the Gila Project (Three Districts), Unit B Irrigation and Drainage District; City of Bullhead City, City of Yuma, Lake Havasu City, Mohave Valley Irrigation and Drainage District, Cibola Valley Irrigation and Drainage District; (iii) Nevada: Southern Nevada Water Authority; (iv) Native American Tribes: Fort Mojave Indian Tribe (California, Arizona and Nevada); ***Colorado*** ***River*** Indian Tribes (California and Arizona); Chemehuevi Indian Tribe (California); Cocopah Indian Tribe (Arizona); Quechan Indian Tribe (California). Lower ***Colorado*** ***River*** Water Delivery Contracts, Questions and Answers, Bureau of Reclamation Lower ***Colo.*** Region, U.S. Dep't of the Interior, [*http://www.usbr.gov/lc/region/g4000/contracts/wateruse.html*](http://www.usbr.gov/lc/region/g4000/contracts/wateruse.html) (last visited Dec. 30, 2014). [↑](#footnote-ref-146)
146. 146 All-American Canal, supra note 128; Water, Imperial Irrigation Dist., [*http://www.iid.com/index.aspx?page=4*](http://www.iid.com/index.aspx?page=4) (last visited Oct. 18, 2014). [↑](#footnote-ref-147)
147. 147 Waterman, supra note 43, at 262. [↑](#footnote-ref-148)
148. 148 Powell, supra note 8, at 83. [↑](#footnote-ref-149)
149. 149 Id. [↑](#footnote-ref-150)
150. 150 Peter Culp & Robert Glennon, Parched in the West but Shipping Water to China, Bale by Bale, Wall St. J. (Oct. 6, 2012) [*http://online.wsj.com/news/articles/SB10000872396390444517304577653432417208116*](http://online.wsj.com/news/articles/SB10000872396390444517304577653432417208116). [↑](#footnote-ref-151)
151. 151 Lower ***Colorado*** ***River*** Cultural Water Demand - Agricultural Demand, Ariz. Dep't of Water Res., [*http://www.azwater.gov/AzDWR/StatewidePlanning/WaterAtlas/LowerColoradoRiver/PlanningAreaOverview/WaterSupply-AgriculturalDemand.htm*](http://www.azwater.gov/AzDWR/StatewidePlanning/WaterAtlas/LowerColoradoRiver/PlanningAreaOverview/WaterSupply-AgriculturalDemand.htm) (last updated March 27, 2014). [↑](#footnote-ref-152)
152. 152 Id. [↑](#footnote-ref-153)
153. 153 Id. [↑](#footnote-ref-154)
154. 154 1944 Water Treaty, supra note 29, art. 10(b). [↑](#footnote-ref-155)
155. 155 See Bureau of Reclamation, U.S. Dep't of the Interior, Lower ***Colorado*** ***River***, Drop 2 Storage Reservoir Project, Imperial County, California, Final Environmental Assessment, at ES-2 (June 2007) [hereinafter Drop 2], available at [*http://www.usbr.gov/lc/region/programs/drop2/envdocs/finalea/fea1.pdf*](http://www.usbr.gov/lc/region/programs/drop2/envdocs/finalea/fea1.pdf). [↑](#footnote-ref-156)
156. 156 See Feirstein, supra note 49, at 54-55. [↑](#footnote-ref-157)
157. 157 Lellouch et al., supra note 40, at 35. [↑](#footnote-ref-158)
158. 158 Lukas Brun et. al, Center on Globalization, Governance, & Competitiveness, Agricultural Value Chains in the Mexicali Valley of Mexico: Main Producers and Buyers 7 (Sept. 15, 2010), available at [*http://www.cggc.duke.edu/pdfs/Agricultural-Value-Chains-in-the-Mexicali-Valley-of-Mexico\_9-15-2010.pdf*](http://www.cggc.duke.edu/pdfs/Agricultural-Value-Chains-in-the-Mexicali-Valley-of-Mexico_9-15-2010.pdf). [↑](#footnote-ref-159)
159. 159 Cohen, supra note 138, at 14. [↑](#footnote-ref-160)
160. 160 Id. at 20-21. [↑](#footnote-ref-161)
161. 161 See id. at 18. [↑](#footnote-ref-162)
162. 162 See id. at 16, 21, 24, 26-27, 31-32, 35. [↑](#footnote-ref-163)
163. 163 Id. at 33. [↑](#footnote-ref-164)
164. 164 Id. at 34. [↑](#footnote-ref-165)
165. 165 Id. at 33-34. [↑](#footnote-ref-166)
166. 166 Ward, supra note 48, at 20. [↑](#footnote-ref-167)
167. 167 Id. [↑](#footnote-ref-168)
168. 168 See infra Part III.C. [↑](#footnote-ref-169)
169. 169 Martinez, supra note 109, at 4. [↑](#footnote-ref-170)
170. 170 Id. [↑](#footnote-ref-171)
171. 171 Id. at 6-7. [↑](#footnote-ref-172)
172. 172 Garcia-Acevedo, supra note 63, at 69. [↑](#footnote-ref-173)
173. 173 See Ward, supra note 48, at 3-22. [↑](#footnote-ref-174)
174. 174 See Convention Touching the International Boundary-Line Where it Follows the Bed of the Rio ***Colorado***, U.S.-Mex., Nov. 12, 1884, T.S. No. 226 [hereinafter Convention of 1884]. [↑](#footnote-ref-175)
175. 175 See Treaty of Guadalupe Hidalgo, supra note 67, art. V; Cohen, supra note 138, at i. [↑](#footnote-ref-176)
176. 176 Accretion is the increase of property by gradual natural additions, as of land by alluvium. Black's Law Dictionary 23 (9th ed. 2009). [↑](#footnote-ref-177)
177. 177 See generally Convention of 1884, supra note 174. [↑](#footnote-ref-178)
178. 178 History of the International Boundary and Water Commission, Int'l Boundary and Water Comm'n, [*http://www.ibwc.state.gov/About\_Us/history.html*](http://www.ibwc.state.gov/About_Us/history.html) (last visited Oct. 25, 2014). [↑](#footnote-ref-179)
179. 179 Convention to Facilitate the Carrying Out of the Principles Contained in the Treaty of November 12, 1884, and to Avoid the Difficulties Occasioned by Reason of the Changes Which Take Place in the Beds of the Rio Grande and ***Colorado*** ***Rivers***, U.S.-Mex., Mar. 1, 1889, T.S. No. 232, art. 1 [hereinafter Convention of 1889]. [↑](#footnote-ref-180)
180. 180 Id. [↑](#footnote-ref-181)
181. 181 See Ward, supra note 48, at 23. [↑](#footnote-ref-182)
182. 182 See 1944 Water Treaty, supra note 29, arts. 2, 24. [↑](#footnote-ref-183)
183. 183 Id. art. 2. [↑](#footnote-ref-184)
184. 184 The International Boundary and Water Commission - Its Mission, Organization and Procedures for Solution of Boundary and Water Problems, Int'l Boundary and Water Commission, [*http://www.ibwc.state.gov/About\_Us/About\_Us.html*](http://www.ibwc.state.gov/About_Us/About_Us.html) (last visited Oct. 26, 2014). [↑](#footnote-ref-185)
185. 185 See 1944 Water Treaty, supra note 29, at art. 2. [↑](#footnote-ref-186)
186. 186 See id. at art. 24. The IBWC's jurisdiction under the 1944 Water Treaty consists of three distinct categories: its adjudicative functions, which give it power to call witnesses and bring actions in the courts of the United States and Mexico; its administrative functions, which allow the IBWC to undertake construction projects and similar activities to carry out agreements; and its investigative functions, which allow the IBWC to develop and collect information relevant to water management and the IBWC's other functions. George R. Hesse, Securing Tangible Results of Self-Determination: A Scheme to Solicit Support from the International Boundary and Water Commission for Indigenous Peoples' Water Rights Claims, 8 Ariz. J. Int'l & Comp. L. 149, 154 (1991). [↑](#footnote-ref-187)
187. 187 Marc A. Sinclair, The Environmental Cooperation Agreement Between Mexico and the United States: A Response to the Pollution Problems of the Borderlands, 19 Cornell Int'l L.J. 87, 111-12 (1986). [↑](#footnote-ref-188)
188. 188 Hesse, supra note 186, at 153-54. [↑](#footnote-ref-189)
189. 189 See Int'l Boundary and Water Comm'n, U.S. Sec., Strategic Plan: FY 2008-FY 2013, at 1 (Dec. 2008), available at [*http://www.ibwc.state.gov/files/fy06\_strategic\_plan.pdf*](http://www.ibwc.state.gov/files/fy06_strategic_plan.pdf). [↑](#footnote-ref-190)
190. 190 See Curtis A. Bradley, Chevron Deference and Foreign Affairs, [*86 Va. L. Rev. 649, 657 (2000)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:40S1-VK70-00CV-512T-00000-00&context=1516831) ("Executive agreements are, quite simply, international agreements concluded by the Executive without resort to the Article II senatorial consent process"); see generally Robert Jerome Glennon, The Status of International Law in United States Domestic Law, 6 Kanto Gakuin Law Review 1, 2-18 (1996) (Japan) (explaining international law's effect on domestic law) (on file with author). While there is no express constitutional authority for executive agreements, they are the most common form of international agreement into which the United States enters. Thomas William France, The Domestic Legal Status of the GATT: The Need for Clarification, [*51 Wash. & Lee L. Rev. 1481, 1487 (1994);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:3S3T-WJD0-00CW-11D4-00000-00&context=1516831) see generally Bruce Ackerman & David Golove, Is NAFTA Constitutional?, [*108 Harv. L. Rev. 801 (1995).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:3S41-22X0-00CV-50Y8-00000-00&context=1516831) Their acceptance as valid international agreements under US law results from the Executive's repeated use of them for more than two hundred years, a series of Supreme Court cases, and a long history of congressional acquiescence in the practice. Donald P. Oulton, A Review of Executive Agreements from the Standpoint of Current Case Law, [*23 Suffolk Transnat'l L. Rev. 101, 107 (1999).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:41DB-89W0-00CV-90TJ-00000-00&context=1516831) There are three types of executive agreements: (i) "treaty authorized executive agreements," which are executive agreements Congress authorizes under the terms of a treaty or are otherwise required to successfully carry out the terms of a treaty; (ii) "congressional-executive agreements," which are executive agreements Congress approves in advance or ratifies after the fact by a majority vote of both Houses in a joint resolution; and (iii) "sole-executive agreements," which are executive agreements entered into under the President's authority alone. Kenneth C. Randall, The Treaty Power, [*51 Ohio St. L.J. 1089, 1092-93 (1990).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:3S3T-WV30-00CW-01V5-00000-00&context=1516831) As a general rule, both treaty-executive and congressional-executive agreements enjoy the same status as treaties under US law. See Curtis A. Bradley, The Treaty Power and American Federalism, [*97 Mich. L. Rev. 390, 398 (1998).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:3VJ2-RHP0-00CV-5048-00000-00&context=1516831) For instance, because the provisions of Minute 319 are fully accomplished within the enumerated limits of IBWC authority under the 1944 Water Treaty, Minute 319 did not require congressional ratification and thus would be a treaty-executive agreement for purposes of US law. See generally Minute No. 319, supra note 25. [↑](#footnote-ref-191)
191. 191 1944 Water Treaty, supra note 29, art. 25. [↑](#footnote-ref-192)
192. 192 Sinclair, supra note 187, at 112, 114. [↑](#footnote-ref-193)
193. 193 See Int'l Boundary and Water Comm'n [IBWC], Minute No. 261: Recommendations for the Solution to the Border Sanitation Problem (Sept. 24, 1979); Sinclair, supra note 187, at 119-20. [↑](#footnote-ref-194)
194. 194 Last Green Lagoon, supra note 73, at 978. [↑](#footnote-ref-195)
195. 195 See supra note 9. [↑](#footnote-ref-196)
196. 196 See supra Part II.B. Under the equitable apportionment and equitable utilization doctrines, courts consider, inter alia, the extent to which a party has already developed; thus, a more developed state is likely to receive a greater allocation of transboundary water resource based on its existing need for water. See [***Colorado*** *v. New Mexico, 467 U.S. 310, 314 (1984).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) [↑](#footnote-ref-197)
197. 197 See generally ***Colorado*** ***River*** Compact, [***Colo.*** *Rev. Stat. Ann. § 37-61-101*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:61P5-WY01-DYDC-J33S-00000-00&context=1516831) (2014). Interstate compacts settle various disputes by mutual agreement between the states. The US Constitution impliedly recognizes states' power to negotiate and enter into interstate compacts with congressional approval. See [*U.S. Const. art. I, § 10, cl. 3*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8T9R-PPF2-8T6X-72VY-00000-00&context=1516831). [↑](#footnote-ref-198)
198. 198 ***Colorado*** ***River*** Compact arts. I-II. [↑](#footnote-ref-199)
199. 199 Id. art. III(a), (d). [↑](#footnote-ref-200)
200. 200 See id. [↑](#footnote-ref-201)
201. 201 Id. art. III(b). [↑](#footnote-ref-202)
202. 202 See [*Arizona v. California, 373 U.S. 546, 556 (1963).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) [↑](#footnote-ref-203)
203. 203 Id. [↑](#footnote-ref-204)
204. 204 [*Id. at 557.*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) [↑](#footnote-ref-205)
205. 205 See Last Green Lagoon, supra note 73, at 913-15. [↑](#footnote-ref-206)
206. 206 ***Colorado*** ***River*** Compact art. III(c). [↑](#footnote-ref-207)
207. 207 Id. [↑](#footnote-ref-208)
208. 208 See Upper ***Colorado*** ***River*** Basin Compact, [*N.M. Stat. Ann. § 72-15-26*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8NH6-SX72-8T6X-7218-00000-00&context=1516831) (2014). [↑](#footnote-ref-209)
209. 209 See Boulder Canyon Project Act, Pub. L. No. 70-642, [*45 Stat. 1057 (1928)*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5C9D-VNP0-01XN-S392-00000-00&context=1516831) (codified as amended at [*43 U.S.C § 617*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SDD-0HD2-8T6X-73R7-00000-00&context=1516831) (2012)); see also Ray Lyman Wilbur & Northcutt Ely, The Hoover Dam Documents, H.R. Doc No. 80-717, at A213 (1948). [↑](#footnote-ref-210)
210. 210 [*Arizona v. California, 373 U.S. 546, 560-61 (1963).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-H3B0-003B-S2D7-00000-00&context=1516831) [↑](#footnote-ref-211)
211. 211 See generally 1944 Water Treaty, supra note 29. [↑](#footnote-ref-212)
212. 212 See Ward, supra note 48, at 31; see also Melissa Crane, Note, Diminishing Natural Resources and International Law: U.S.-Mexico, A Case Study, 24 Cornell Int'l L.J. 299, 302 n.27 (1991). [↑](#footnote-ref-213)
213. 213 See Ward, supra note 48, at 31-32. [↑](#footnote-ref-214)
214. 214 1944 Water Treaty, supra note 29, art.10. [↑](#footnote-ref-215)
215. 215 Id. [↑](#footnote-ref-216)
216. 216 Id. art. 11(b). [↑](#footnote-ref-217)
217. 217 Id. art. 11(c); Jennifer Pitt et al., Two Nations, One ***River***: Managing Ecosystem Conservation in the ***Colorado*** Delta, 40 Nat. Resources J. 819, 829 (2000). [↑](#footnote-ref-218)
218. 218 Cohen & Henges-Jeck, supra note 40, at 6. [↑](#footnote-ref-219)
219. 219 See id. at 20, 36; Border Region Infrastructure Map (on file with author); Pitt et al., supra note 217, at 829. [↑](#footnote-ref-220)
220. 220 1944 Water Treaty, supra note 29, art. 15. [↑](#footnote-ref-221)
221. 221 See id. [↑](#footnote-ref-222)
222. 222 See id.; Reclamation, ***Colo.*** ***River*** Water Users Ass'n, [*http://www.crwua.org/****colorado****-****river****/uses/reclamation*](http://www.crwua.org/colorado-river/uses/reclamation) (last visited Nov. 16, 2014). [↑](#footnote-ref-223)
223. 223 Id. art. 12. [↑](#footnote-ref-224)
224. 224 Id. art. 12(a). Mexico built the Morelos Dam along the northernmost portion of the twenty-three mile limitrophe reach to divert Mexico's share of the ***Colorado*** ***River*** west to the Mexicali Valley for agricultural irrigation and urban use. See ***Colorado*** ***River*** Boundary Section, Int'l Boundary and Water Comm'n, [*http://www.ibwc.state.gov/Water\_Data/****Colorado****/Index.html*](http://www.ibwc.state.gov/Water_Data/Colorado/Index.html) (last visited Oct. 27, 2014). [↑](#footnote-ref-225)
225. 225 See 1944 Water Treaty, supra note 29, art. 12(b). [↑](#footnote-ref-226)
226. 226 Id. arts. 2, 10, 12. [↑](#footnote-ref-227)
227. 227 Personal knowledge of Carlos De La Parra. [↑](#footnote-ref-228)
228. 228 Id. [↑](#footnote-ref-229)
229. 229 See McCaffrey, supra note 1, at 344-45 (discussing water quality of the "naturally salty" ***Colorado*** ***River***). [↑](#footnote-ref-230)
230. 230 See 1944 Water Treaty, supra note 29, art. 10; McCaffrey, supra note 1, at 344-45; Letter from Herbert R. Guenther, Director, Ariz. Dep't of Water, et al., to Dirk Kempthorne, Sec'y, U.S. Dep't of the Interior (Apr. 30, 2007) [hereinafter Basin States' Letter]. [↑](#footnote-ref-231)
231. 231 See discussion infra Part V.C. [↑](#footnote-ref-232)
232. 232 See McCaffrey, supra note 1, at 344-45. [↑](#footnote-ref-233)
233. 233 ***Colorado*** ***River*** Storage Project Act of 1956, Pub. L. No. 84-485, ***70 Stat. 105;*** see also [*43 U.S.C. § 620*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:8SDD-0HD2-8T6X-73SX-00000-00&context=1516831) (2012). [↑](#footnote-ref-234)
234. 234 See John McPhee, Encounters with the Archdruid 102-27 (1971); Powell, supra note 8, at 119-128. [↑](#footnote-ref-235)
235. 235 David P. Billington et al., The History of Large Federal Dams: Planning, Design, and Construction, U.S. Dep't of Interior 183-84 (2005), available at [*http://www.cr.nps.gov/history/online\_books/dams/federal\_dams.pdf*](http://www.cr.nps.gov/history/online_books/dams/federal_dams.pdf). [↑](#footnote-ref-236)
236. 236 See Powell, supra note 8, at 223; see also Paul R. Baumann, Drought in The ***Colorado*** ***River*** Basin 10 (2008) (noting that Lake Powell took seventeen years of the ***River***'s entire inflow (presumably except for treaty obligations) to fill). [↑](#footnote-ref-237)
237. 237 Powell, supra note 8, at 223; see also Ward, supra note 48, at 58, 65. [↑](#footnote-ref-238)
238. 238 See Powell, supra note 8, at 223. [↑](#footnote-ref-239)
239. 239 See Herbert Brownell & Samuel D. Eaton, The ***Colorado*** ***River*** Salinity Problem with Mexico, 69 Am. J. Int'l L. 255, 256 (1975). Mexican sources differ in the level of salinity. [↑](#footnote-ref-240)
240. 240 See generally Ward, supra note 48, at 44-64. [↑](#footnote-ref-241)
241. 241 Douglas L. Hayes, The All-American Canal Lining Project: A Catalyst for Rational and Comprehensive Groundwater Management on the United States-Mexico Border, 31 Nat. Resources J. 803, 808, 818 (1991). [↑](#footnote-ref-242)
242. 242 See id. [↑](#footnote-ref-243)
243. 243 See generally Ward, supra note 48, at 44-64. [↑](#footnote-ref-244)
244. 244 Allie Alexis Umoff, An Analysis of the 1944 U.S.-Mexico Water Treaty: Its Past, Present, and Future, [*32 Environs Envtl L. & Pol'y J. 69, 79 (2008).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4VS5-B3S0-00SW-507X-00000-00&context=1516831) [↑](#footnote-ref-245)
245. 245 Id. [↑](#footnote-ref-246)
246. 246 Int'l Boundary and Water Comm'n, Minute 242: Permanent and Definitive Solution to the International Problem of the Salinity of the ***Colorado*** ***River*** (Aug. 30, 1973) [hereinafter Minute 242]. [↑](#footnote-ref-247)
247. 247 Id. [↑](#footnote-ref-248)
248. 248 See Project Details - CRBSCP - Desalting Complex Unit - Title I, Bureau of Reclamation, U.S. Dep't of the Interior, [*http://www.usbr.gov/projects/Project.jsp?proj\_Name=CRBSCP+-+Desalting+Complex+Unit+-+Title+I*](http://www.usbr.gov/projects/Project.jsp?proj_Name=CRBSCP+-+Desalting+Complex+Unit+-+Title+I) (last visited Nov. 22, 2014). [↑](#footnote-ref-249)
249. 249 Waterman, supra note 43, at 251-52. [↑](#footnote-ref-250)
250. 250 Dale Pontius, Western Water Policy Review Advisory Comm'n, ***Colorado*** ***River*** Basin Study Final Report 56-57 (1997), available at [*www.gcmrc.gov/library/reports/other/Pontius1997.pdf*](http://www.gcmrc.gov/library/reports/other/Pontius1997.pdf). [↑](#footnote-ref-251)
251. 251 See Cohen & Henges-Jeck, supra note 40, at 6 tbl.2.1. [↑](#footnote-ref-252)
252. 252 Minute 242, supra note 246, § 5. [↑](#footnote-ref-253)
253. 253 Reclamation Powerpoint Presentation on Salinity Control Operations, Feb. 2011 (on file with author). [↑](#footnote-ref-254)
254. 254 Minute 242, supra note 246, § 1(a); see also McCaffrey, supra note 1, at 344 (noting that the salinity levels at Imperial Dam reach around 700 ppm). [↑](#footnote-ref-255)
255. 255 Bergman, supra note 48, at 47. [↑](#footnote-ref-256)
256. 256 Id. at 47-48. [↑](#footnote-ref-257)
257. 257 See generally Phillip Fradkin, A ***River*** No More: The ***Colorado*** ***River*** and the West 303-18 (1996). [↑](#footnote-ref-258)
258. 258 See Int'l Boundary and Water Comm'n, Binational Study Regarding the Technical Methods and Joint Monitoring of the Salinity in the ***Colorado*** ***River*** for the fulfillment of International Boundary and Water Commission Minute No. 242 Between the United States and Mexico Conducted from January 2006 to December 2007- Final Report (2011). [↑](#footnote-ref-259)
259. 259 See Int'l Boundary and Water Comm'n, A Report on ***Colorado*** ***River*** Salinity Operations, Under International Boundary and Water Commission Minute No. 242, at 4-5 (September 2012); see also Reclamation Powerpoint Presentation on Salinity Control Operations, supra note 253. [↑](#footnote-ref-260)
260. 260 See Minute 242, supra note 246, at Resolution 6. [↑](#footnote-ref-261)
261. 261 See id.; see also James S. Lochhead, An Upper Basin Perspective on California's Claims to Water from the ***Colorado*** ***River*** Part II: The Development, Implementation, and Collapse of California's Plan to Live Within Its Basic Apportionment, [*6 U. Denv. Water L. Rev. 318, 384 (2003).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:499F-8J80-00SW-50NP-00000-00&context=1516831) [↑](#footnote-ref-262)
262. 262 See Malin Falkenmark & Anders Jagerskog, Sustainability of Transnational Water Agreements in the Face of Socioeconomic and Environmental Change, Transboundary Water Management: Principles and Practice 157 (2010). [↑](#footnote-ref-263)
263. 263 See Garcia-Acevedo, supra note 63, at 58, 64. [↑](#footnote-ref-264)
264. 264 See Immigration Act of 1924, Pub. L. No. 68-139, ***43 Stat. 153.*** [↑](#footnote-ref-265)
265. 265 See Ward, supra note 48, at 30-31; Mexican Immigrant Labor History, PBS, [*http://www.pbs.org/kpbs/theborder/history/timeline/17.html*](http://www.pbs.org/kpbs/theborder/history/timeline/17.html) (last visited Oct. 27, 2014). [↑](#footnote-ref-266)
266. 266 See Immigration Act of 1924, ***43 Stat. 153;*** see also Dear, supra note 109, at 46; Mexican Immigrant Labor History, supra note 265. For a detailed discussion of how President Roosevelt's Good Neighbor Policy influenced negotiations on the 1944 Water Treaty with Mexico, see Ward, supra note 48, and Mexico and the United States (Lee Stacey ed. 2003). [↑](#footnote-ref-267)
267. 267 See Francisco Alba, Mexico: A Crucial Crossroads, Migration Pol'y Inst. (Feb. 25, 2010), [*http://www.migrationpolicy.org/article/mexico-crucial-crossroads*](http://www.migrationpolicy.org/article/mexico-crucial-crossroads). [↑](#footnote-ref-268)
268. 268 Interview with Tom Romero, Professor, U. Denv. Sturm Coll. of Law (Nov. 11, 2013). [↑](#footnote-ref-269)
269. 269 See Ward, supra note 48, at 30-31. [↑](#footnote-ref-270)
270. 270 See Immigration Act of 1924, Pub. L. No. 68-139, ***43 Stat. 153.*** [↑](#footnote-ref-271)
271. 271 See Mexican Immigrant Labor History, supra note 265. [↑](#footnote-ref-272)
272. 272 Id. [↑](#footnote-ref-273)
273. 273 Dear, supra note 109, at 46; Martinez, supra note 109, at 133 (noting that, with little oversight, the program is also credited with exacerbating poor conditions for immigrant workers and with fueling negative perceptions of Mexican Americans). [↑](#footnote-ref-274)
274. 274 Immigration and Nationality (Hart-Cellar) Act of 1965, Pub. L. No. 89-236, [*79 Stat. 911.*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CCB-R200-01XN-S21T-00000-00&context=1516831) [↑](#footnote-ref-275)
275. 275 See Martinez, supra note 109, at 119, 126. [↑](#footnote-ref-276)
276. 276 See id. [↑](#footnote-ref-277)
277. 277 Id. at 126. [↑](#footnote-ref-278)
278. 278 Id. at 124. [↑](#footnote-ref-279)
279. 279 Id. at 130. [↑](#footnote-ref-280)
280. 280 See id. [↑](#footnote-ref-281)
281. 281 Id. at 136-37. [↑](#footnote-ref-282)
282. 282 Id. at 124. [↑](#footnote-ref-283)
283. 283 Id. [↑](#footnote-ref-284)
284. 284 Id. at 126. [↑](#footnote-ref-285)
285. 285 Kresan, supra note 61, at 577. [↑](#footnote-ref-286)
286. 286 See Powell, supra note 8, at 223. Naturally occurring salts are responsible for only half of the ***Colorado*** ***River***'s high salinity - the rest comes from fertilizers and pesticides carried in agricultural runoff and other anthropogenic activity on the ***river***. See McCaffrey, supra note 1, at 344. [↑](#footnote-ref-287)
287. 287 See Luecke et al., supra note 51, at 1; Lellouch et al. supra note 40, at 8. [↑](#footnote-ref-288)
288. 288 Luecke et al., supra note 51, at 18. [↑](#footnote-ref-289)
289. 289 Id. at 1. [↑](#footnote-ref-290)
290. 290 See id. at 31; Minute 242, supra note 246. [↑](#footnote-ref-291)
291. 291 Waterman, supra note 43, at 252. [↑](#footnote-ref-292)
292. 292 See id. [↑](#footnote-ref-293)
293. 293 Id. [↑](#footnote-ref-294)
294. 294 See id.; see also Bergman, supra note 48, at 27. [↑](#footnote-ref-295)
295. 295 See Cocopah's Efforts to Restore the Lower ***Colorado*** ***River*** Limitrophe, Envtl. Prot. Agency, [*http://www.epa.gov/region9/tribal/features/cocopah/index.html*](http://www.epa.gov/region9/tribal/features/cocopah/index.html) (last visited Oct. 28, 2014) [hereinafter Cocopah's Efforts]. [↑](#footnote-ref-296)
296. 296 Powell, supra note 8, at 223. [↑](#footnote-ref-297)
297. 297 Id. at 9-17. [↑](#footnote-ref-298)
298. 298 See Luecke et al., supra note 51, at 13, 15. [↑](#footnote-ref-299)
299. 299 Id. at iv, 18. [↑](#footnote-ref-300)
300. 300 See id. at 1. [↑](#footnote-ref-301)
301. 301 See id. at 42. [↑](#footnote-ref-302)
302. 302 Int'l Boundary & Water Comm'n, Minute 306: Conceptual Framework for United States-Mexico Studies for Future Recommendations Concerning Riparian and Estuarine Ecology of the Limitrophe Section of the ***Colorado*** ***River*** and its Associated Delta (Dec. 12, 2000) [hereinafter Minute 306]. [↑](#footnote-ref-303)
303. 303 Last Green Lagoon, supra note 73, at 980. [↑](#footnote-ref-304)
304. 304 Minute 306, supra note 302. [↑](#footnote-ref-305)
305. 305 These discussions took place during the "Mapping Conservation Priorities in the ***Colorado*** ***River*** Delta: A State-of-Knowledge Workshop." Francisco Zamora-Arroyo et al., Conservation Priorities in the ***Colorado*** ***River*** Delta iii, 2 (2005) available at [*www.sonoraninstitute.org/component/docman/doc\_view/1307-conservation-priorities-in-the-****colorado****-****river****-delta-06152005.html*](http://www.sonoraninstitute.org/component/docman/doc_view/1307-conservation-priorities-in-the-colorado-river-delta-06152005.html). [↑](#footnote-ref-306)
306. 306 Id. at 9. [↑](#footnote-ref-307)
307. 307 Id. at ii-iii. [↑](#footnote-ref-308)
308. 308 Id. at 24. [↑](#footnote-ref-309)
309. 309 Sonoran Inst., ***Colorado*** ***River*** Delta Restoration Project: A Plan of Action 6 (2011), available at [*www.sonoraninstitute.org/component/docman/doc\_view/1302-****colorado****-****river****-delta-project-a-plan-of-action-prospectus.html*](http://www.sonoraninstitute.org/component/docman/doc_view/1302-colorado-river-delta-project-a-plan-of-action-prospectus.html). [↑](#footnote-ref-310)
310. 310 See Lellouch et al., supra note 40, at 49. [↑](#footnote-ref-311)
311. 311 See id. [↑](#footnote-ref-312)
312. 312 Personal knowledge of the authors. [↑](#footnote-ref-313)
313. 313 Sonoran Inst., ***Colorado*** ***River*** Delta Restoration Project: Laguna Grande Restoration Area 1 (2013), available at [*http://www.sonoraninstitute.org/component/docman/doc\_view/1550-****colorado****-****river****-delta-program-restoration-project-laguna-grande-09152013.html*](http://www.sonoraninstitute.org/component/docman/doc_view/1550-colorado-river-delta-program-restoration-project-laguna-grande-09152013.html). [↑](#footnote-ref-314)
314. 314 Id. at 1-2. [↑](#footnote-ref-315)
315. 315 Minute 306, supra note 302. [↑](#footnote-ref-316)
316. 316 Cocopah's Efforts, supra note 295, at 7-8. [↑](#footnote-ref-317)
317. 317 Id. [↑](#footnote-ref-318)
318. 318 Id. at 8. [↑](#footnote-ref-319)
319. 319 Sonoran Inst., ***Colorado*** ***River*** Delta Restoration Project: Landmark Binational Agreement: Minute 319, at ii (2010) available at, [*http://www.sonoraninstitute.org/component/docman/doc\_details/1552-minute-319-factsheet-09152013.html?Itemid=3*](http://www.sonoraninstitute.org/component/docman/doc_details/1552-minute-319-factsheet-09152013.html?Itemid=3) [hereinafter Delta Water Trust]. [↑](#footnote-ref-320)
320. 320 ***Delta Water Trust, supra*** note 319, at i. [↑](#footnote-ref-321)
321. 321 See id. [↑](#footnote-ref-322)
322. 322 See generally Southwick Assocs., Economic Contributions of Outdoor Recreation on the ***Colorado*** ***River*** and its Tributaries (May 3, 2013), available at [*http://protectflows.com/wp-content/uploads/2013/09/****Colorado****-****River****-Recreational-Economic-Impacts-Southwick-Associates-5-3-12\_2.pdf*](http://protectflows.com/wp-content/uploads/2013/09/Colorado-River-Recreational-Economic-Impacts-Southwick-Associates-5-3-12_2.pdf). [↑](#footnote-ref-323)
323. 323 Sandra Postel, Revival in the ***Colorado*** ***River*** Delta, Nat'l Geographic News Watch (Mar. 22, 2013), [*http://newswatch.nationalgeographic.com/2013/03/22/revival-in-the-****colorado****-****river****-delta/*](http://newswatch.nationalgeographic.com/2013/03/22/revival-in-the-colorado-river-delta/). [↑](#footnote-ref-324)
324. 324 Id. [↑](#footnote-ref-325)
325. 325 Waterman, supra note 43, at 279-80; Quienes Somos, Campo Mosqueda, [*http://www.campomosqueda.com/*](http://www.campomosqueda.com/) (last visited Oct. 28, 2014). [↑](#footnote-ref-326)
326. 326 See Waterman, supra note 43, at 252. [↑](#footnote-ref-327)
327. 327 Lellouch et al., supra note 40, at 36. [↑](#footnote-ref-328)
328. 328 Lochhead, supra note 261, at 384-85. [↑](#footnote-ref-329)
329. 329 Id. at 354-55. [↑](#footnote-ref-330)
330. 330 See Tony Perry, 3 Agencies Reach Truce on ***Colorado*** ***River*** Water, L.A. Times (Aug. 5, 1999) [*http://articles.latimes.com/1999/aug/05/news/mn-62828*](http://articles.latimes.com/1999/aug/05/news/mn-62828). [↑](#footnote-ref-331)
331. 331 Quantification Settlement Agreement and Related Agreements and Documents (Oct. 10, 2003), available at [*http://www.sdcwa.org/sites/default/files/files/QSA\_final.pdf*](http://www.sdcwa.org/sites/default/files/files/QSA_final.pdf) [hereinafter QSA]. [↑](#footnote-ref-332)
332. 332 In 1929, to move forward with construction of the Hoover Dam, California's legislature limited the state's use of ***Colorado*** ***River*** water to 4.4 maf per year, providing the other basin states security that ***Colorado*** ***River*** water would be available to them. California Limitation Act of 1929, ch. 16, 48 Cal. Stat. 38, 38-39 (1929); see also Lochhead, supra note 261, at 332. [↑](#footnote-ref-333)
333. 333 See Lochhead, supra note 261, at 380 (providing an excellent discussion on the QSA). [↑](#footnote-ref-334)
334. 334 See Quantification Settlement Agreement, San Diego Cnty. Water Auth., [*http://www.sdcwa.org/quantification-settlement-agreement*](http://www.sdcwa.org/quantification-settlement-agreement) (last visited Oct. 28, 2014). [↑](#footnote-ref-335)
335. 335 See Staff of S. Agric. & Water Res. Comm., 2003-2004 Sess., Bill Analysis on S. 277 (Cal. 2003), available at [*http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb\_0251-0300/sb\_277\_cfa\_20030910\_121209\_sen\_comm.html*](http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0251-0300/sb_277_cfa_20030910_121209_sen_comm.html). [↑](#footnote-ref-336)
336. 336 Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Interim Surplus Criteria Draft Environmental Impact Statement Summary, at S-4 (2000), available at [*http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS\_DEIS.html#*](http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS_DEIS.html#) (click to view "Summary"). [↑](#footnote-ref-337)
337. 337 See Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Interim Surplus Criteria Draft Environmental Impact Statement Attachment D part 1 (2000), available at [*http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS\_DEIS.html#*](http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS_DEIS.html#) (click to view "Attachment D" and then "Part 1"); Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Interim Surplus Criteria Draft Environmental Impact Statement Attachment D part 2 (2000) available at [*http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS\_DEIS.html#*](http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS_DEIS.html#) (click to view "Attachment D" and then "Part 2"); Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Interim Surplus Criteria Draft Environmental Impact Statement Attachment E (2000) available at [*http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS\_DEIS.html#*](http://www.usbr.gov/lc/region/g4000/surplus1/SURPLUS_DEIS.html#) (click to view "Attachment E"). [↑](#footnote-ref-338)
338. 338 See ***Colorado*** ***River*** Interim Surplus Criteria, [*65 Fed. Reg. 48,531*](https://advance.lexis.com/api/document?collection=administrative-codes&id=urn:contentItem:40XF-BNY0-006W-84R5-00000-00&context=1516831) (Dep't of Interior Aug. 8, 2000). [↑](#footnote-ref-339)
339. 339 See Bureau of Reclamation, U.S. Dep't of the Interior, ***Colorado*** ***River*** Interim Surplus Criteria Final Environmental Impact Statement, at 2-5, 2-10 (2000), available at [*http://www.usbr.gov/lc/region/g4000/surplus/SURPLUS\_FEIS.html*](http://www.usbr.gov/lc/region/g4000/surplus/SURPLUS_FEIS.html) (click to view "Description of Alternatives") [hereinafter Interim Surplus Criteria FEIS]. [↑](#footnote-ref-340)
340. 340 QSA, supra note 331. [↑](#footnote-ref-341)
341. 341 See ***Colorado*** ***River*** Interim Surplus Guidelines, ***66 Fed. Reg. 7772, 7772-73*** (Dep't of Interior Jan. 25, 2001). [↑](#footnote-ref-342)
342. 342 See Interim Surplus Criteria FEIS, supra note 339, at 3.16-3.23. The FEIS projected reductions in flow below the already-depleted Morelos Dam of anywhere between seven percent to one hundred percent (depending on system hydrology); for all intents and purposes, aside from occasional flows out of the Gila ***River*** (which are not captured by the major ***Colorado*** ***River*** reservoirs), the new reservoir operations were projected to effectively eliminate flows below Morelos Dam in dry and normal years. [↑](#footnote-ref-343)
343. 343 Last Green Lagoon, supra note 73, at 950. [↑](#footnote-ref-344)
344. 344 See Letter from Mindy Schlimgen-Wilson, Assoc. Dir., Sw. Reg'l Office, American ***Rivers***, et al., to David Hayes, Acting Deputy Sec'y of the Interior, and Robert Johnson, Reg'l Director, Bureau of Reclamation (Feb. 15, 2000), reprinted in Interim Surplus Criteria FEIS, supra note 339, at Attachment G. The coalition included American ***Rivers***, Defenders of Wildlife, Environmental Defense, Friends of Arizona ***Rivers***, Glen Canyon Institute, Grand Canyon Trust, Land and Water Fund of the Rockies, the Pacific Institute for Studies in Development, Environment, and Security, the Sierra Club, and the Sonoran Institute. [↑](#footnote-ref-345)
345. 345 Id. A modified version of the proposal was also submitted with regard to the compromise Basin States alternative. See Interim Surplus Criteria FEIS, supra note 339, at Attachment G. [↑](#footnote-ref-346)
346. 346 See Interim Surplus Criteria FEIS, supra note 339, at 3.16.1-3.16.4. [↑](#footnote-ref-347)
347. 347 See id. at 3.16.1. [↑](#footnote-ref-348)
348. 348 See id. at 3.16.1-3.16.4; see also ***Colorado*** ***River*** Interim Surplus Criteria Draft Environmental Impact Statement Summary, supra note 336, at S-1. [↑](#footnote-ref-349)
349. 349 U.S. Bureau of Reclamation, Dep't of the Interior, Description and Assessment of Operations, Maintenance, and Sensitive Species of the Lower ***Colorado*** ***River***: Biological Assessment Prepared for U.S. Fish & Wildlife Service and Lower ***Colorado*** Multi-Species Conservation Program (Aug. 1996), available at [*http://www.usbr.gov/lc/region/g2000/assess/cover.htm*](http://www.usbr.gov/lc/region/g2000/assess/cover.htm). [↑](#footnote-ref-350)
350. 350 See U.S. Fish & Wildlife Serv., Biological and Conference Opinion on Lower ***Colorado*** ***River*** Operations & Maintenance - Lake Mead to Southerly International Boundary 33, 35 (Apr. 30, 1997), available at [*http://www.usbr.gov/lc/region/g2000/BO1997operations.pdf*](http://www.usbr.gov/lc/region/g2000/BO1997operations.pdf). [↑](#footnote-ref-351)
351. 351 See U.S. Dep't of the Interior, Record of Decision, Lower ***Colorado*** ***River*** Multi-Species Conservation Plan 6 (Apr. 2005), available at [*http://www.lcrmscp.gov/publications/rec\_of\_dec\_apr05.pdf*](http://www.lcrmscp.gov/publications/rec_of_dec_apr05.pdf). [↑](#footnote-ref-352)
352. 352 [*Defenders of Wildlife v. Norton, 257 F. Supp. 2d 53, 67-68 (D.D.C. 2003).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:488R-4RT0-0038-Y0GF-00000-00&context=1516831) Defenders of Wildlife v. Norton involved a challenge to Reclamation's Multi-Species Conservation Program under the Endangered Species Act, on the basis that Reclamation had failed to consider impacts in Mexico. [↑](#footnote-ref-353)
353. 353 Rudy E. Verner, Short Term Solutions, Interim Surplus Guidelines, and the Future of the ***Colorado*** ***River*** Delta, [*14* ***Colo.*** *J. Int'l. Envtl. L. & Pol'y 241, 270 (2003);*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:48TC-VKJ0-00CV-H064-00000-00&context=1516831) see David Getches et al., Immediate Options for Augmenting Water Flows to the ***Colorado*** ***River*** Delta in Mexico (May 2001) (unpublished presentation) (on file with University of ***Colorado*** Library system). [↑](#footnote-ref-354)
354. 354 Getches et al., supra note 353. [↑](#footnote-ref-355)
355. 355 Lochhead, supra note 261, at 355-56. [↑](#footnote-ref-356)
356. 356 Dean E. Murphy, Southern California Water Officials Race Deadline, N.Y. Times (Dec. 31, 2002), [*http://www.nytimes.com/2002/12/31/national/31WATE.html*](http://www.nytimes.com/2002/12/31/national/31WATE.html). [↑](#footnote-ref-357)
357. 357 Water: Salton Sea: ***Colorado*** ***River***: Hearing on S.B. 654 Before the S. Agric. & Res. Comm., 2003-2004 Reg. Sess. (Cal. 2003), available at [*http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb\_0651-0700/sb\_654\_cfa\_20030910\_120952\_sen\_comm.html*](http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0651-0700/sb_654_cfa_20030910_120952_sen_comm.html). [↑](#footnote-ref-358)
358. 358 Id. [↑](#footnote-ref-359)
359. 359 ***Colorado*** ***River*** Basin Salinity Control Act, Pub. L. No. 93-320, [*88 Stat. 266 (1974).*](https://advance.lexis.com/api/document?collection=statutes-legislation&id=urn:contentItem:5CD7-HSF0-01XN-S3CK-00000-00&context=1516831) [↑](#footnote-ref-360)
360. 360 Id. § 102(a). [↑](#footnote-ref-361)
361. 361 See David Steffen, Water Agencies Revive Long-Dormant Yuma Desalting Plant, Imperial Valley Press (April 29, 2010), [*http://articles.ivpressonline.com/2010-04-29/desalinated-water\_24805781*](http://articles.ivpressonline.com/2010-04-29/desalinated-water_24805781). [↑](#footnote-ref-362)
362. 362 Yuma Desalting Plant, U.S. Bureau of Reclamation, [*http://www.usbr.gov/lc/yuma/facilities/ydp/yao\_ydp.html*](http://www.usbr.gov/lc/yuma/facilities/ydp/yao_ydp.html) (last updated Apr. 4, 2014). [↑](#footnote-ref-363)
363. 363 See Researchers Study Effect of Yuma Desalting Plant on Cienega de Santa Clara, Redorbit (Apr. 28, 2010), [*http://www.redorbit.com/news/science/1856537/researchers\_study\_effect\_of\_yuma\_desalting\_plant\_on\_cienega\_de/*](http://www.redorbit.com/news/science/1856537/researchers_study_effect_of_yuma_desalting_plant_on_cienega_de/); see Balancing Water Needs on the Lower ***Colorado*** ***River***: Recommendations of the Yuma Desalting Plant/Cienega de Santa Clara Workshop 7 (Apr. 22, 2005), available at [*http://cwcbweblink.state.****co****.us/WebLink/DocView.aspx?id=114241&page=6&dbid=0*](http://cwcbweblink.state.co.us/WebLink/DocView.aspx?id=114241&page=6&dbid=0); but see Yuma Desalting Plant Demonstration Run Report, Bureau of Reclamation, U.S. Dep't of the Interior, 27 (Dec. 2008), available at [*http://www.usbr.gov/lc/yuma/facilities/ydp/YDPdemrun07.pdf*](http://www.usbr.gov/lc/yuma/facilities/ydp/YDPdemrun07.pdf). [↑](#footnote-ref-364)
364. 364 See David S. Wilson et al., Sw. Hydrology, YDP/Cienega Conflict: A Proposed Solution 24 (Sept./Oct. 2005), available at [*http://www.swhydro.arizona.edu/archive/V4\_N5/feature6.pdf*](http://www.swhydro.arizona.edu/archive/V4_N5/feature6.pdf). [↑](#footnote-ref-365)
365. 365 Osvel Hinojosa-Huerta et al., Andrade Mesa Wetlands of the All-American Canal, 42 Nat. Res. J. 899, 909-10 (2002) [hereinafter Andrade Mesa Wetlands]; Letter from Peter W. Culp et al., to Gale Norton, Sec'y of the Interior, U.S. Dep't of the Interior, et al. (June 14, 2005) (on file with author); Follow-up Letter from Kara Gillon, Defenders of Wildlife, et al., to Gale Norton, Sec'y of the Interior, U.S. Dep't of the Interior, et al. (Aug. 9, 2005) (on file with author). [↑](#footnote-ref-366)
366. 366 Bureau of Reclamation, U.S. Dep't of Interior, All-American Canal Lining Project Final Environmental Impact Statement/Final Environmental Impact Report, at S-5 (1994), available at [*http://www.iid.com/Modules/ShowDocument.aspx?documentid=2272*](http://www.iid.com/Modules/ShowDocument.aspx?documentid=2272) [hereinafter AAC FEIS]; Francisco Zamora Arroyo et al., Sonoran Inst., Pronatura Sonora, Assessment of Environmental Impacts and Mitigation Alternatives in Mexico of the Lining of the All-American Canal, Summary Report (2005); Francisco Zamora Arroyo, Peter Culp & Osvel Hinojosa-Huerta, Looking Beyond the Border: Environmental Consequences of the All-American Canal Project in Mexico and Potential Binational Solutions, in Frontera Norte, The All-American Canal Lining Dispute: An American Resolution over Mexican Groundwater Rights? 21, 32 (2009). [↑](#footnote-ref-367)
367. 367 San Luis Rey Indian Water Rights Settlement Act of 1988, Pub. L. No. 100-675, ***102 Stat. 4000, 40006.*** [↑](#footnote-ref-368)
368. 368 See AAC FEIS, supra note 366. [↑](#footnote-ref-369)
369. 369 See id. [↑](#footnote-ref-370)
370. 370 See id. [↑](#footnote-ref-371)
371. 371 See id. [↑](#footnote-ref-372)
372. 372 Andrade Mesa Wetlands, supra note 365, at 907-10. [↑](#footnote-ref-373)
373. 373 Carter et al., supra note 47, at 4-6 (2013). [↑](#footnote-ref-374)
374. 374 Lochhead, supra note 261, at 384. [↑](#footnote-ref-375)
375. 375 Sandra Dibble, Calderon Stands Firm against Lining the All-American Canal, Union-Tribune San Diego (May 5, 2007), [*http://legacy.utsandiego.com/news/mexico/tijuana/20070505-9999-6m5calderon.html*](http://legacy.utsandiego.com/news/mexico/tijuana/20070505-9999-6m5calderon.html). [↑](#footnote-ref-376)
376. 376 See Lochhead, supra note 261, at 384-85. [↑](#footnote-ref-377)
377. 377 Dibble, supra note 375. [↑](#footnote-ref-378)
378. 378 [*Defenders of Wildlife v. Norton, 257 F. Supp. 2d 53, 67-68 (D.D.C. 2003).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:488R-4RT0-0038-Y0GF-00000-00&context=1516831) [↑](#footnote-ref-379)
379. 379 See [*Consejo de Desarollo Economico de Mexicali, A.C. v. United States, 482 F.3d 1157, 1167 (9th Cir. 2007).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4NFR-D820-0038-X3XF-00000-00&context=1516831) [↑](#footnote-ref-380)
380. 380 It's Official: All-American Canal Lining Completed, Water Educ. Found. (May 1, 2009), [*http://www.watereducation.org/aquafornia-news/its-official-all-american-canal-lining-completed*](http://www.watereducation.org/aquafornia-news/its-official-all-american-canal-lining-completed); Boulder Canyon Project Act - All-American Canal System, Bureau of Reclamation, Dep't of the Interior, [*http://www.usbr.gov/projects/Project.jsp?proj\_Name=Boulder+Canyon+Project++-+All-American+Canal+System*](http://www.usbr.gov/projects/Project.jsp?proj_Name=Boulder+Canyon+Project++-+All-American+Canal+System) (last visited Nov. 23, 2014). [↑](#footnote-ref-381)
381. 381 See Dear, supra note 109, at 78. [↑](#footnote-ref-382)
382. 382 See id. [↑](#footnote-ref-383)
383. 383 Carly Jerla & Jim Prairie, ***Colorado*** ***River*** Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead & Efforts Addressing Climate Change and Variability, Intermountain West Climate Survey (Jan. 2009), available at [*http://wwa.****colorado****.edu/climate/iwcs/archive/IWCS\_2009\_Jan\_feature2.pdf*](http://wwa.colorado.edu/climate/iwcs/archive/IWCS_2009_Jan_feature2.pdf). [↑](#footnote-ref-384)
384. 384 See David M. Meko et al., Medieval Drought in the Upper ***Colorado*** ***River*** Basin, 34 Geophys. Res. Lett. 1, 4 (May 2007); Connie A. Woodhouse et al., Updated Streamflow Reconstructions for the Upper ***Colorado*** ***River*** Basin, 42 Water Res. Research, 1, 13-14; Charles Stockton & Gordon C. Jacoby, Jr., Long Term Surface-Water Supply and Streamflow Trends in the Upper ***Colorado*** ***River*** Basin, in Lake Powell Research Project Bulletin 39 (Mar. 1976); see Powell, supra note 8, ch. 13 (for a good discussion on tree rings studies). [↑](#footnote-ref-385)
385. 385 Jerla & Prairie, supra note 383, at 1. [↑](#footnote-ref-386)
386. 386 2007 Interim Shortage Guidelines, supra note 23, at 1-2. [↑](#footnote-ref-387)
387. 387 Id.; Press Release, U.S. Dep't of Interior, Secretary Kempthorne Signs Historic Decision for New ***Colorado*** ***River*** Management Strategies (Dec. 13, 2007), available at [*http://www.doi.gov/news/archive/07\_News\_Releases/071213.html*](http://www.doi.gov/news/archive/07_News_Releases/071213.html) [hereinafter Kempthorne Press Release]. [↑](#footnote-ref-388)
388. 388 2007 Interim Shortage Guidelines, supra note 23, at 12. [↑](#footnote-ref-389)
389. 389 Kempthorne Press Release, supra note 387. [↑](#footnote-ref-390)
390. 390 Id. [↑](#footnote-ref-391)
391. 391 Francisco Zamora-Arroyo et al., Collaboration in Mexico: Renewed Hope for the ***Colorado*** ***River*** Delta, [*8 Nev. L. J. 871, 880 (2008)*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:4W0Y-MGK0-0198-G0XY-00000-00&context=1516831) [hereinafter Collaboration in Mexico]. [↑](#footnote-ref-392)
392. 392 2007 Interim Shortage Guidelines, supra note 23, at 36-37. [↑](#footnote-ref-393)
393. 393 Id. [↑](#footnote-ref-394)
394. 394 ***Colorado*** ***River*** Operating Criteria, ***35 Fed. Reg. 8,951, 8,951*** (June 10, 1970). [↑](#footnote-ref-395)
395. 395 Last Green Lagoon, supra note 73, at 918 (citing David J. Guy, When The Law Dulls the Edge of Chance: Transferring Upper Basin Water to the Lower ***Colorado*** ***River*** Basin, 1991 Utah L. Rev. 25, 43 (1991) ("First, the active storage in Lake Mead must be less than the amount of active storage in Lake Powell. Second, the Lower Basin must have a beneficial consumptive use for the excess water. Finally, the Secretary must find that the release will not impair Upper Basin uses and that Lake Powell storage is not "reasonably necessary' to meet the delivery requirements under the ***Colorado*** ***River*** Compact [and the 1944 Water Treaty].")). [↑](#footnote-ref-396)
396. 396 2007 Interim Shortage Guidelines, supra note 23, § V, at 11-12. [↑](#footnote-ref-397)
397. 397 Bureau of Reclamation, U.S. Dep't of the Interior, Taking ICS to Mexico: International Opportunities in the Seven States Agreement, in Draft EIS: ***Colorado*** ***River*** Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Vol. II), app. K, at K-27 (Feb. 28, 2007) [hereinafter Taking ICS to Mexico]; John Entsminger & Peter Culp, Water Law at the U.S.-Mexico Border: Minute 319 to the 1944 U.S.-Mexico Treaty, ABA Annual Water Law Conference, (2013). [↑](#footnote-ref-398)
398. 398Extraordinary conservation measures" refers to various activities including agricultural fallowing, canal lining projects, and desalinization projects. Lower ***Colorado*** ***River*** Basin Intentionally Created Surplus Forbearance Agreement, art. 2.1, Dec. 13, 2007 [hereinafter ICF Agreement]. [↑](#footnote-ref-399)
399. 399 2007 Interim Shortage Guidelines, supra note 23, § XI(d)(1), at 27. [↑](#footnote-ref-400)
400. 400 Essentially, this mechanism takes advantage of Articles II(B)(2) and (6) of the Arizona v. California Consolidated Decree. Article II(B)(2) allocates any surplus above 7.5 maf as follows: fifty percent to CA, forty-six percent to AZ, four percent to NV, while Article II(B)(6) allows the Interior Secretary to allocate water unused in one state to another state. See [*Arizona v. California, 547 U.S. 150, 155 (2006).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:4JKB-4T40-004B-Y037-00000-00&context=1516831) To enable the mechanism, the Lower Basin states and water suppliers agreed to waive their usual surplus rights under Article II(B)(2) of the Decree in order to allow the Secretary to manage conserved water as ICS. See ICF Agreement, supra note 398, art. 3. [↑](#footnote-ref-401)
401. 401 Kempthorne Press Release, supra note 387; Basin States' Letter, supra note 230, at 1. [↑](#footnote-ref-402)
402. 402 Kempthorne Press Release, supra note 387. [↑](#footnote-ref-403)
403. 403 Collaboration in [*Mexico, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) note 391, at 880-81. [↑](#footnote-ref-404)
404. 404 Taking ICS to Mexico, supra note 397, at K-29; Collaboration in [*Mexico, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) note 391, at 881. [↑](#footnote-ref-405)
405. 405 Basin States' Letter, supra note 230, at 3-4. [↑](#footnote-ref-406)
406. 406 Id. at 3. [↑](#footnote-ref-407)
407. 407 Id.; 1944 Water Treaty, supra note 29, art. 9(f). [↑](#footnote-ref-408)
408. 408 Personal knowledge of the authors. [↑](#footnote-ref-409)
409. 409 Id. [↑](#footnote-ref-410)
410. 410 See Bureau of Reclamation, U.S. Dep't of the Interior, Draft EIS: ***Colorado*** ***River*** Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Vol. IV), at F-47 to F-53(Feb. 28, 2007), available at [*http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html*](http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html) (click "Comments Submitted by Federal Agencies" for CILA's comments regarding the Guidelines). [↑](#footnote-ref-411)
411. 411 Id. (Vol. I), § 4.2.7. [↑](#footnote-ref-412)
412. 412 Id. (Vol. IV), at F-47 (Letter from Gilbert Anaya of the IBWC to Bureau of Reclamation). [↑](#footnote-ref-413)
413. 413 Id. at F-47 to F-53. [↑](#footnote-ref-414)
414. 414 Personal knowledge of the authors. [↑](#footnote-ref-415)
415. 415 Id. [↑](#footnote-ref-416)
416. 416 Id. [↑](#footnote-ref-417)
417. 417 ***Colorado*** Interim Surplus Guidelines, Bureau of Reclamation, U.S. Dep't of Interior (2001); Drop 2, supra note 155, at ES-2. [↑](#footnote-ref-418)
418. 418 Personal knowledge of the authors. [↑](#footnote-ref-419)
419. 419 Id. [↑](#footnote-ref-420)
420. 420 Id. [↑](#footnote-ref-421)
421. 421 Id. [↑](#footnote-ref-422)
422. 422 Id. [↑](#footnote-ref-423)
423. 423 Id. [↑](#footnote-ref-424)
424. 424 Id. [↑](#footnote-ref-425)
425. 425 Id. [↑](#footnote-ref-426)
426. 426 See Carter et al., supra note 47, at 9-10. [↑](#footnote-ref-427)
427. 427 News Release, Office of the Sec'y, U.S. Dep't of the Interior, Secretary Kempthorne, Mexican Ambassador Sarukhan Sign Declaration Commending On-Going Partnership in the Management of the ***Colorado*** ***River*** (Jan. 15, 2009) (describing the 2007 Joint Declaration), available at [*http://www.doi.gov/news/pressreleases/2009\_01\_15\_release.cfm?renderforprint=1&*](http://www.doi.gov/news/pressreleases/2009_01_15_release.cfm?renderforprint=1&) [hereinafter January 2009 Joint Declaration]. [↑](#footnote-ref-428)
428. 428 Press Release, Office of the Sec'y, U.S. Dep't of the Interior, Secretary Kempthorne Announces Joint U.S.-Mexico Statement on Lower ***Colorado*** ***River*** Issues (Aug. 13, 2007) (describing the August 2007 Joint Statement and attaching it in full), available at [*http://www.nrel.gov/extranet/ngs/pdfs/11\_2007jointus\_mexicostatement\_august13.pdf*](http://www.nrel.gov/extranet/ngs/pdfs/11_2007jointus_mexicostatement_august13.pdf) [hereinafter August 2007 Joint Statement]. [↑](#footnote-ref-429)
429. 429 Id. [↑](#footnote-ref-430)
430. 430 Press Release, Int'l Boundary and Water Comm'n, U.S. and Mexico Meet in Phoenix, Arizona to Address Cooperative Actions for the ***Colorado*** ***River*** Basin (Mar. 13, 2008), available at [*http://ibwc.state.gov/Files/PressRelease\_031308.pdf*](http://ibwc.state.gov/Files/PressRelease_031308.pdf) [hereinafter IBWC Press Release]. [↑](#footnote-ref-431)
431. 431 Collaboration in [*Mexico, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) note 391, at 881. [↑](#footnote-ref-432)
432. 432 IBWC Press Release, supra note 430. [↑](#footnote-ref-433)
433. 433 Id. [↑](#footnote-ref-434)
434. 434 Id. [↑](#footnote-ref-435)
435. 435 Press Release, Int'l Boundary and Water Comm'n, U.S. Section, IBWC Strengthens ***Colorado*** ***River*** Cooperation (Mar. 13, 2008), available at [*http://ibwc.state.gov/Files/PressRelease\_031308.pdf*](http://ibwc.state.gov/Files/PressRelease_031308.pdf). [↑](#footnote-ref-436)
436. 436 Personal knowledge, observations, and impressions of the authors. [↑](#footnote-ref-437)
437. 437 Id. [↑](#footnote-ref-438)
438. 438 January 2009 Joint Declaration, supra note 427. [↑](#footnote-ref-439)
439. 439 Id. [↑](#footnote-ref-440)
440. 440 See supra Part IV.B.1. [↑](#footnote-ref-441)
441. 441 Bureau of Reclamation, U.S. Dep't of the Interior, Yuma Desalting Plant Pilot Run Final Report 6 (2012), available at [*http://www.usbr.gov/lc/yuma/facilities/ydp/YDPPilotRunFinal072712.pdf*](http://www.usbr.gov/lc/yuma/facilities/ydp/YDPPilotRunFinal072712.pdf) [hereinafter YDP Final Report]. [↑](#footnote-ref-442)
442. 442 Id. [↑](#footnote-ref-443)
443. 443 Minute 316, supra note 25. [↑](#footnote-ref-444)
444. 444 Id. [↑](#footnote-ref-445)
445. 445 Agreement Among the United States of America, Through the Dep't of the Interior, Bureau of Reclamation, the Metro. Water Dist. of Southern California, the ***Colo.*** ***River*** Comm'n of Nevada, the Southern Nevada Water Auth., and the Central Arizona Water Conservation Dist. for a Pilot Project for Operation of the Yuma Desalting Plant, Oct. 29, 2009, at 2-3. [↑](#footnote-ref-446)
446. 446 See ***Delta Water Trust, supra*** note 319. [↑](#footnote-ref-447)
447. 447 See Sonoran Institute, ***Colorado*** ***River*** Delta Research, La Cienega de Santa Clara, [*http://www.sonoraninstitute.org/component/docman/doc\_view/1304-****colorado****-****river****-del*](http://www.sonoraninstitute.org/component/docman/doc_view/1304-colorado-river-del) ta-research-la-cienega-de-santa-clara-06152011.html (last visited Nov 23, 2014). [↑](#footnote-ref-448)
448. 448 See Collaboration in [*Mexico, supra*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-3DB0-003B-S3CH-00000-00&context=1516831) note 391, at 875-77. [↑](#footnote-ref-449)
449. 449 YDP Final Report, supra note 441, at iii. [↑](#footnote-ref-450)
450. 450 Id. at iii-iv. [↑](#footnote-ref-451)
451. 451 Id. at iv. [↑](#footnote-ref-452)
452. 452 Minute 317, supra note 25, at 2. [↑](#footnote-ref-453)
453. 453 Press Release, Int'l Boundary and Water Comm'n, U.S. and Mexican IBWC Commissioners Perish in Plane Crash (Sept. 17, 2008), available at [*http://www.ibwc.gov/Files/PressRelease\_091708.pdf*](http://www.ibwc.gov/Files/PressRelease_091708.pdf). [↑](#footnote-ref-454)
454. 454 See Minute 317, supra note 25, at 3. [↑](#footnote-ref-455)
455. 455 Id. at 1-2. [↑](#footnote-ref-456)
456. 456 Minute 317, supra note 25, at Resolutions, 1, 3. [↑](#footnote-ref-457)
457. 457 Id., at 2-3. [↑](#footnote-ref-458)
458. 458 Personal knowledge of the authors. [↑](#footnote-ref-459)
459. 459 Entsminger & Culp, supra note 397, at 2. [↑](#footnote-ref-460)
460. 460 Id.; Alan D. Gracia, Charles M. Burt & Mario Parades Vallejo, Irrigation Engineering in Seismic Zones - Mexicali Valley, Mexico USCID, Sixth International Conference on Irrigation and Drainage 1-2 (2011), available at [*http://www.itrc.org/papers/pdf/seismiczones.pdf*](http://www.itrc.org/papers/pdf/seismiczones.pdf). [↑](#footnote-ref-461)
461. 461 See Earthquake Engineering Research Inst., Learning From Earthquakes: The M<w> 7.2 El Mayor Cucapah (Baja California) Earthquake of April 4, 2010, EERI Special Earthquake Rep. 1, 4 (2010). [↑](#footnote-ref-462)
462. 462 See Gracia, Burt & Vallejo, supra note 460, at 2. [↑](#footnote-ref-463)
463. 463 Entsminger & Culp, supra note 397, at 2. [↑](#footnote-ref-464)
464. 464 Id. at 5-6. ICMA was originally coined as "Intentionally Conserved Mexican Allocation." [↑](#footnote-ref-465)
465. 465 Id. at 2. [↑](#footnote-ref-466)
466. 466 Minute 318, supra note 25, at 2-4. [↑](#footnote-ref-467)
467. 467 Personal knowledge of the authors. [↑](#footnote-ref-468)
468. 468 Id. [↑](#footnote-ref-469)
469. 469 Id. [↑](#footnote-ref-470)
470. 470 Id. [↑](#footnote-ref-471)
471. 471 Id. [↑](#footnote-ref-472)
472. 472 Id. [↑](#footnote-ref-473)
473. 473 Id. [↑](#footnote-ref-474)
474. 474 Id. [↑](#footnote-ref-475)
475. 475 Id. [↑](#footnote-ref-476)
476. 476 Id. [↑](#footnote-ref-477)
477. 477 Id. In the United States, this included representatives from IBWC, Reclamation, a few key individuals from the Basin States and major water providers, and an NGO representative; Mexico's representative group consisted of CILA, CONAGUA, and NGOs. [↑](#footnote-ref-478)
478. 478 Id. [↑](#footnote-ref-479)
479. 479 Id. [↑](#footnote-ref-480)
480. 480 The composition of this group varied somewhat over time but remained essentially consistent with the group that had put together the initial comprehensive proposals. However, while US NGOs participated in the majority of the sessions and many of the small technical committees, US NGOs were not permitted to directly participate in the final negotiating sessions on the basis that only "sovereign" entities should participate in those negotiations. Mexico agreed to the US-proposed set of rules, although both sides saw a dynamic exchange of ideas between government officials and NGOs to preserve the proper balance and the desired emphasis on certain issues. [↑](#footnote-ref-481)
481. 481 For example, small technical committees were formed to work through modeling results on shortage triggers, to develop a final proposal for investments in canal lining in Mexico to generate water for environmental flows, binational exchange, and similar issues. Id. [↑](#footnote-ref-482)
482. 482 Id. [↑](#footnote-ref-483)
483. 483 Memorandum of Agreement on the Implementation of Minute No. 319 (Nov. 20, 2012), available at [*http://www.state.gov/documents/organization/211966.pdf*](http://www.state.gov/documents/organization/211966.pdf). [↑](#footnote-ref-484)
484. 484 Id. [↑](#footnote-ref-485)
485. 485 Id. [↑](#footnote-ref-486)
486. 486 IID was subsequently written out of key supporting agreements. Farmers and officials in the Imperial Valley took particular issue with the new proposed emergency interconnection on the All-American Canal, fearful that influential outside interests were prioritizing favorable relations with the Mexican government at the expense of their hard-earned water rights. Tony Perry, The All-American Canal May Deliver Across the Border, L.A. Times (Nov. 27, 2012), [*http://articles.latimes.com/2012/nov/26/local/la-me-canal-water-20121127*](http://articles.latimes.com/2012/nov/26/local/la-me-canal-water-20121127). However, this posture may be changing as a result of ongoing discussions between IID and other U.S. parties. [↑](#footnote-ref-487)
487. 487 Minute 319, supra note 25; IBWC Newsline, Press Release, International Boundary and Water Commission signs Minute 319, Jan. 2013, at 3 (on file with author). [↑](#footnote-ref-488)
488. 488 See 1944 Water Treaty, supra note 29. [↑](#footnote-ref-489)
489. 489 Minute 319, supra note 25,§§I, III. [↑](#footnote-ref-490)
490. 490 Id. § I. [↑](#footnote-ref-491)
491. 491 Id. § I. [↑](#footnote-ref-492)
492. 492 Id. § II. [↑](#footnote-ref-493)
493. 493 1944 Water Treaty, supra note 29, art. 10(b); Basin States' Letter, supra note 230, at 3. [↑](#footnote-ref-494)
494. 494 Minute 319, supra note 25, § I. [↑](#footnote-ref-495)
495. 495 Id. § III; 2007 Interim Shortage Guidelines, supra note 23, at 27. [↑](#footnote-ref-496)
496. 496 Minute 319, supra note 25, § III(3). [↑](#footnote-ref-497)
497. 497 Id. § III(2)-(3). [↑](#footnote-ref-498)
498. 498 Id. [↑](#footnote-ref-499)
499. 499 Id. § III(1), (4). [↑](#footnote-ref-500)
500. 500 Id. § III(4). [↑](#footnote-ref-501)
501. 501 Id. § III(4)(e). [↑](#footnote-ref-502)
502. 502 Id. § III(4)(f). [↑](#footnote-ref-503)
503. 503 Id. § III(5). [↑](#footnote-ref-504)
504. 504 Id. [↑](#footnote-ref-505)
505. 505 Id. § III(4). [↑](#footnote-ref-506)
506. 506 Id. § III(4)(d). [↑](#footnote-ref-507)
507. 507 See id. § III(6)(f). [↑](#footnote-ref-508)
508. 508 Id. § III(6). [↑](#footnote-ref-509)
509. 509 Id. § III(6)(a)-(c). [↑](#footnote-ref-510)
510. 510 Id. § III(6)(e)(ii). [↑](#footnote-ref-511)
511. 511 See id. [↑](#footnote-ref-512)
512. 512 Personal knowledge of the authors. [↑](#footnote-ref-513)
513. 513 Minute 319, supra note 25, § III(6)(e). [↑](#footnote-ref-514)
514. 514 Personal knowledge of the authors. [↑](#footnote-ref-515)
515. 515 Id. [↑](#footnote-ref-516)
516. 516 Id.; see also ***Colorado*** ***River***: Explaining the Pulse Flow, The Nature Conservancy, [*http://www.nature.org/ourinitiatives/regions/northamerica/areas/coloradoriver/****colorado****-****river****-pulse-flow-qa-with-eloise-kendy.xml*](http://www.nature.org/ourinitiatives/regions/northamerica/areas/coloradoriver/colorado-river-pulse-flow-qa-with-eloise-kendy.xml) (last visited Nov. 12, 2014). [↑](#footnote-ref-517)
517. 517 Minute 319, supra note 25, § III(6)(e)(ii). [↑](#footnote-ref-518)
518. 518 ***Delta Water Trust, supra*** note 319. [↑](#footnote-ref-519)
519. 519 Id. [↑](#footnote-ref-520)
520. 520 Id. [↑](#footnote-ref-521)
521. 521 Personal knowledge of the authors. [↑](#footnote-ref-522)
522. 522 Id.; see also Memorandum of Agreement on the Implementation of Minute No. 319, supra note 483, § 10. [↑](#footnote-ref-523)
523. 523 Personal knowledge of the authors. [↑](#footnote-ref-524)
524. 524 Minute 319, supra note 25, § III(6)(f)-(g). [↑](#footnote-ref-525)
525. 525 Personal knowledge of the authors. [↑](#footnote-ref-526)
526. 526 Id. [↑](#footnote-ref-527)
527. 527 Minute 319, supra note 25, § III(7). [↑](#footnote-ref-528)
528. 528 Id. § III(6)(d); Agreement Among the United States of America Through the Department of the Interior, Bureau of Reclamation, The Metropolitan Water District of Southern California the ***Colorado*** ***River*** Commission of Nevada, the Southern Nevada Water Authority, and the Central Arizona Water Conservation District, for a Pilot Program for the Conservation of Intentionally Created Mexican Allocation to Intentionally Created Surplus, Nov. 20, 2012, Agreement No. 12-XX-30-W0565, Ex. A at 19 [hereinafter 2012 Contributed Funds Agreement]. [↑](#footnote-ref-529)
529. 529 2012 Contributed Funds Agreement, supra note 528. [↑](#footnote-ref-530)
530. 530 See Minute 319, supra note 25, § III(7)(b)(iii). [↑](#footnote-ref-531)
531. 531 Id. § III(6)(e)(i)-(ii). [↑](#footnote-ref-532)
532. 532 Id. § III(6)(e)(iii); see also 2012 Contributed Funds Agreement, supra note 528, Ex. A at 19. [↑](#footnote-ref-533)
533. 533 2012 Contributed Funds Agreement, supra note 528, Ex. A at 19. [↑](#footnote-ref-534)
534. 534 See Interim Operating Agreement for Implementation of Minute No. 319 (Nov. 20, 2012); see also 2012 Lower ***Colorado*** ***River*** Basin Forbearance Agreement for Binational Intentionally Created Surplus (Nov. 20, 2012). [↑](#footnote-ref-535)
535. 535 Minute 319, supra note 25, § III(6)(e). [↑](#footnote-ref-536)
536. 536 Id. § III.7(c)(i). [↑](#footnote-ref-537)
537. 537 Id. § III.7(b), (d). [↑](#footnote-ref-538)
538. 538 Wallace Stegner, The Sound of Mountain Water 38 (1969). [↑](#footnote-ref-539)
539. 539 See McCaffrey, supra note 1, at 58. [↑](#footnote-ref-540)
540. 540 See id. at 60-61. [↑](#footnote-ref-541)
541. 541 International Decade for Action "Water for Life' 2005-2015: Transboundary Waters, United Nations, [*http://www.un.org/waterforlifedecade/transboundary\_waters.shtml*](http://www.un.org/waterforlifedecade/transboundary_waters.shtml) (last visited Dec. 2, 2013) (dating the agreement to 2500 BCE); McCaffrey, supra note 1, at 59-60 (citing the date of the treaty as 3100 BCE). [↑](#footnote-ref-542)
542. 542 Marwa Daoudy, Getting Beyond the Environment-Conflict Trap: Benefit Sharing in International ***River*** Basins, in Transboundary Water Management: Principals and Practice 43 (Anton Earle et al. eds., 2010). [↑](#footnote-ref-543)
543. 543 The Transboundary Freshwater Dispute Database, Inst. for Water and Watersheds, Or. St. Univ., [*http://www.transboundarywaters.orst.edu/database/DatabaseIntro.html*](http://www.transboundarywaters.orst.edu/database/DatabaseIntro.html) (last visited, Oct. 13, 2014). [↑](#footnote-ref-544)
544. 544 McCaffrey, supra note 1, at 58. [↑](#footnote-ref-545)
545. 545 Id. at 62-63. [↑](#footnote-ref-546)
546. 546 Id. at 63-64. [↑](#footnote-ref-547)
547. 547 See id. at 336-37. [↑](#footnote-ref-548)
548. 548 See supra Part I. [↑](#footnote-ref-549)
549. 549 See McCaffrey, supra note 1, at 64-65. [↑](#footnote-ref-550)
550. 550 See 8 Mighty ***Rivers*** Run Dry From Overuse, Nat'l Geographic, [*http://environment.nationalgeographic.com/environment/photos/****rivers****-run-dry/*](http://environment.nationalgeographic.com/environment/photos/rivers-run-dry/) (last visited Oct. 13, 2014) [hereinafter 8 Mighty ***Rivers***]; Fred Pearce, A Global Treaty on ***Rivers***: Key to True Water Security, Yale Env't 360 (Nov. 19, 2012), [*http://e360.yale.edu/feature/a\_global\_treaty\_on\_****rivers****\_key\_to\_true\_water\_security/2594/*](http://e360.yale.edu/feature/a_global_treaty_on_rivers_key_to_true_water_security/2594/). [↑](#footnote-ref-551)
551. 551 Pearce, supra note 550; see also 8 Mighty ***Rivers***, supra note 558. [↑](#footnote-ref-552)
552. 552 See Powell, supra note 8, at 179-81. [↑](#footnote-ref-553)
553. 553 Matthew Zentner, Design and Impact of Water Treaties: Managing Climate Change 1 (2012). [↑](#footnote-ref-554)
554. 554 Falkenmark & Jagerskog, supra note 262, at 162-63. [↑](#footnote-ref-555)
555. 555 See Owen McIntyre, Gabcikovo-Nagymaros Project: a test case for international water law?, in Transboundary Water Management: Principles and Practices 228, 229-30 (Anton Earle et al. eds., 2010). [↑](#footnote-ref-556)
556. 556 Pearce, supra note 550. [↑](#footnote-ref-557)
557. 557 Zentner, supra note 553, at 1. [↑](#footnote-ref-558)
558. 558 The doctrine of equitable utilization essentially acknowledges the needs of both downstream and upstream interests in a basin, recognizing that "freshwater resources cannot be protected and conserved solely by countries acting alone." See McCaffrey, supra note 1, at 17. Equitable utilization takes into account a number of different factors, including the relative geographic extent of drainage area in each territory; the relative contributions of water by each territory; climate; past utilization; economic and social needs; the population dependent on the water of the basin; alternatives to avoid conflicts and the availability of other resources; the avoidance of unnecessary waste; and other factors. Equitable utilization considers these as part of a balancing test designed to allocate water resources as equitably as possible based on existing basin conditions and development. See [*Kansas v.* ***Colorado****, 206 U.S. 46 (1907).*](https://advance.lexis.com/api/document?collection=cases&id=urn:contentItem:3S4X-B060-003B-H2B5-00000-00&context=1516831) The Helsinki Rules first set forth the principles of equitable utilization in the international sphere; the 1997 United Nations Convention on the Law of Non-navigable Uses of International Watercourses later adopted these same principles. See Helsinki Rules on the Uses of the Waters of International ***Rivers***, supra note 10; Stephen C. McCaffrey, United Nations Convention on the Law of Non-navigable Uses of International Watercourses, United Nations, [*http://legal.un.org/avl/ha/clnuiw/clnuiw.html*](http://legal.un.org/avl/ha/clnuiw/clnuiw.html) (last visited Nov. 22, 2014). The 1997 Convention primarily serves to provide guidance for nations in how they modify existing or construct new water sharing agreements. Four key principles in the 1997 Convention are: (i) Equitable and reasonable utilization; (ii) no significant harm; (iii) notification; and (iv) protection, preservation, and management of ecosystems. Zentner, supra note 553, at 14. [↑](#footnote-ref-559)
559. 559 Press Release, Pacific Inst., Climate Change Will Worsen Water Conflict Across Borders (Jan. 11, 2010); see also Zentner, supra note 553, at 1. [↑](#footnote-ref-560)
560. 560 Transboundary Waters, United Nations, [*http://www.un.org/waterforlifedecade/transboundary\_waters.shtml*](http://www.un.org/waterforlifedecade/transboundary_waters.shtml) (last visited Dec. 2, 2013). [↑](#footnote-ref-561)
561. 561 Falkenmark & Jagerskog, supra note 262, at 168. [↑](#footnote-ref-562)
562. 562 See Festa & Entsminger, supra note 38. [↑](#footnote-ref-563)
563. 563 Id. [↑](#footnote-ref-564)
564. 564 See supra Parts II.B.1 2, IV.B.2. [↑](#footnote-ref-565)
565. 565 See Festa & Entsminger, supra note 38. [↑](#footnote-ref-566)
566. 566 Id. [↑](#footnote-ref-567)
567. 567 A. Dan Tarlock, Changing Currents: Perspectives on the State of Water Law and Policy in the 21st Century: Four Challenges for International Water Law, [*23 Tul. Envtl. L.J. 369, 372 (2010).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:50BC-1H30-00CV-S092-00000-00&context=1516831) [↑](#footnote-ref-568)
568. 568 [*Id. at 374.*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:50BC-1H30-00CV-S092-00000-00&context=1516831) [↑](#footnote-ref-569)
569. 569 See Falkenmark & Jagerskog, supra note 262, at 164. [↑](#footnote-ref-570)
570. 570 Daoudy, supra note 542, at 45 (emphasis in original). [↑](#footnote-ref-571)
571. 571 Id. at 46. [↑](#footnote-ref-572)
572. 572 See id. at 45; see also supra Part V.A. [↑](#footnote-ref-573)
573. 573 Minute 319, supra note 25, § III. [↑](#footnote-ref-574)
574. 574 See id. § III(5)-(7). [↑](#footnote-ref-575)
575. 575 Daoudy, supra note 542, at 45. [↑](#footnote-ref-576)
576. 576 See Tarlock, supra note 567, at 388. [↑](#footnote-ref-577)
577. 577 Falkenmark & Jagerskog, supra note 262, at 167. [↑](#footnote-ref-578)
578. 578 See Tarlock, supra note 567, at 371, 386. [↑](#footnote-ref-579)
579. 579 See, e.g., Convention on the Protection and Use of Transboundary Watercourses and International Lakes, preamble, Mar. 17, 1992 [hereinafter Transboundary Watercourses Convention]. [↑](#footnote-ref-580)
580. 580 See Chandler Clay, U.S. and Mexico to Send Water into Parched ***Colorado*** ***River*** Delta, Envtl. Def. Fund (Mar. 3, 2014), [*http://www.edf.org/media/us-and-mexico-send-water-parched-****colorado****-****river****-delta*](http://www.edf.org/media/us-and-mexico-send-water-parched-colorado-river-delta). [↑](#footnote-ref-581)
581. 581 See Transboundary Watercourses Convention, supra note 579. [↑](#footnote-ref-582)
582. 582 Id. arts. 4-6, 10, 14-16. [↑](#footnote-ref-583)
583. 583 See generally id.; Convention on the Protection of the Rhine, Apr. 12, 1999 (framework for "sustainable development of the Rhine ecosystem," including many significant environmental goals, like maintaining and improving the Rhine's water quality, protecting species diversity, reducing contamination, and conserving natural habitat); Convention on Cooperation for the Protection and Sustainable Use of the Danube ***River***, June 29, 1994 (intended to "at least maintain and [where possible] improve the current environmental and water quality conditions of the Danube ***River***."); Convention Concerning the Protection of Italo-Swiss Waters Against Pollution, Switz.-It., Apr. 20, 1972 (intended to protect various shared freshwater lakes and waterways from pollution); Convention Concerning Protection of the Waters of Lake Geneva Against Pollution, Fr.-Switz., Nov. 16, 1962 (established a Commission authorized to investigate pollution of Lake Geneva and draft regulations governing water quality issues). [↑](#footnote-ref-584)
584. 584 Treaty Between The United States And Great Britain Relating to Boundary Waters, and Questions Arising Between The United States and Canada, U.S.-Can., art.1, May 5, 1910. [↑](#footnote-ref-585)
585. 585 See generally id. (the word environment is not used once). [↑](#footnote-ref-586)
586. 586 Treaty for Amazonian Cooperation, Annex 1, July 3, 1978. [↑](#footnote-ref-587)
587. 587 Id. art. 1. [↑](#footnote-ref-588)
588. 588 Id. at Annex 2 (the OTCA was created on December 14, 1998, and is an international body empowered to contract with non-member states and organizations regarding activities on the Amazon and is charged with "improving and strengthening the cooperation process"). [↑](#footnote-ref-589)
589. 589 In 1979 the governments of Argentina, Brazil, and Paraguay formally agreed to begin a series of hydroelectric dam projects on the Panara ***River*** chiefly concerned with the construction of a large dam and hydroelectric power plant at Itaipu. The Panara Agreement set flow parameters for the ***river*** leaving the Itaipu dam, as well as committing its signatories to "preserve the environment" by avoiding contamination of the Panara ***River***. The agreement also called for "creation of new national parks and the improvement of existing parks" as part of the broader strategy for environmental preservation. Argentina-Brazil-Paraguay: Agreement on Parana ***River*** Projects, Oct. 19, 1979. [↑](#footnote-ref-590)
590. 590 The Statute of the ***River*** Uruguay is a bilateral agreement that establishes joint management between Argentina and Uruguay. The agreement obliges its signatories to "protect and preserve the aquatic environment and, in particular, to prevent its pollution, by prescribing appropriate rulesFalse" Statute of the ***River*** Uruguay, Uru.-Arg., art. 41(a), Feb. 26, 1975. [↑](#footnote-ref-591)
591. 591 Treaty between The Government of The People's Republic of Bangladesh and The Government of The Republic of India on Sharing of The Ganga/Ganges Waters, Bangl.-India, Dec. 12, 1996 (the treaty seeks to promote "the optimum utilization" of the Ganges' water resources but makes no reference to environmental or other ecological goals or requirements). [↑](#footnote-ref-592)
592. 592 Agreement on the Cooperation for the Sustainable Development of the Mekong ***River*** Basin, Apr. 5, 1995. In 1995 Cambodia, Laos, Thailand, and Vietnam joined to form the Mekong ***River*** Commission in order to ensure the "sustainable development, utilization, [and] conservation" of the Mekong ***river*** system. Id. at 1. They agreed to "protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong ***River*** Basin from pollution or other harmful effects" and to make every effort to "avoid, minimize and mitigate harmful effects that might occur to the environment, especially the water quantity and quality, the aquatic (eco-system) conditions, and ecological balance of the ***river*** system." Id. arts. 3, 7. However, there is no freshwater allocation. [↑](#footnote-ref-593)
593. 593 United Arab Republic and Sudan Agreement For The Full Utilization of the Nile Waters, Egypt-Sudan, Dec. 8, 1959 (in 1959, Egypt (then known as the United Arab Republic) and Sudan signed an agreement defining the quantities of Nile ***river*** water each would receive and outlining cooperative measures for the construction of dams at various points along the Nile and its tributaries). [↑](#footnote-ref-594)
594. 594 Ethiopia ratifies ***River*** Nile treaty amid Egypt tension, BBC News Africa (June 13, 2013), [*http://www.bbc.****co****.uk/news/world-africa-22894294*](http://www.bbc.co.uk/news/world-africa-22894294) (as of June 13, 2013, Ethiopia, Kenya, Uganda, Rwanda and Tanzania, and Burundi have signed the framework agreement). [↑](#footnote-ref-595)
595. 595 See Abadir M. Ibrahim, The Nile Basin Cooperative Framework Agreement: The Beginning of the End of Egyptian Hydro-Political Hegemony, ***18 Mo. Envtl. L. & Pol'y Rev. 282, 285 (2011).*** [↑](#footnote-ref-596)
596. 596 Agreement on the Nile ***River*** Basin Cooperative Framework, art. 6, 2009. [↑](#footnote-ref-597)
597. 597 David Festa & Martin Gutierrez, Op-Ed., International Diplomacy Sets New Course for the ***Colorado*** ***River***, Las Vegas Sun (Nov. 21, 2012), [*http://www.lasvegassun.com/community/press-releases/1419/*](http://www.lasvegassun.com/community/press-releases/1419/). [↑](#footnote-ref-598)
598. 598 Id. [↑](#footnote-ref-599)
599. 599 Id. [↑](#footnote-ref-600)
600. 600 See, e.g., Minute 319, supra note 25, § I (describing the need for adjusted water delivery schedules after the April 2010 earthquake). [↑](#footnote-ref-601)
601. 601 ***Delta Water Trust, supra*** note 319, at 11. [↑](#footnote-ref-602)
602. 602 Id. [↑](#footnote-ref-603)
603. 603 See supra Part III; see also Ward, supra note 48, at 20. [↑](#footnote-ref-604)
604. 604 See generally Our Work, Raise the ***River***, raisetheriver.org/our-work/ (last visited Nov. 23, 2014). [↑](#footnote-ref-605)
605. 605 Personal knowledge of the authors. [↑](#footnote-ref-606)
606. 606 Falkenmark & Jagerskog, supra note 262, at 157. [↑](#footnote-ref-607)
607. 607 Id. at 158. [↑](#footnote-ref-608)
608. 608 See id. [↑](#footnote-ref-609)
609. 609 Zentner, supra note 553, at 33. [↑](#footnote-ref-610)
610. 610 See id. at 35. [↑](#footnote-ref-611)
611. 611 See generally Transboundary Waters, supra note 579. [↑](#footnote-ref-612)
612. 612 Zentner, supra note 553, at 34. [↑](#footnote-ref-613)
613. 613 See id. [↑](#footnote-ref-614)
614. 614 See 1944 Water Treaty, supra note 29, at 22; see also supra Part III.B.2. [↑](#footnote-ref-615)
615. 615 See Zentner, supra note 553, at 30. [↑](#footnote-ref-616)
616. 616 Id. [↑](#footnote-ref-617)
617. 617 Id. [↑](#footnote-ref-618)
618. 618 See id. [↑](#footnote-ref-619)
619. 619 Id. [↑](#footnote-ref-620)
620. 620 McIntyre, supra note 555, at 228; see also Zamora-Arroyo et al., supra note 391, at 888. [↑](#footnote-ref-621)
621. 621 See McIntyre, supra note 555, at 228. [↑](#footnote-ref-622)
622. 622 Falkenmark & Jagerskog, supra note 262, at 157, 168. [↑](#footnote-ref-623)
623. 623 What is Adaptive Management?, U.S. Dep't of the Interior [*http://www.doi.gov/initiatives/AdaptiveManagement/whatis.html*](http://www.doi.gov/initiatives/AdaptiveManagement/whatis.html) (last visited Oct. 26, 2014). [↑](#footnote-ref-624)
624. 624 See Zamora-Arroyo et al., supra note 391, at 888. [↑](#footnote-ref-625)
625. 625 See id. [↑](#footnote-ref-626)
626. 626 See supra Part V.C. [↑](#footnote-ref-627)
627. 627 See Zamora-Arroyo et al., supra note 391, at 888. [↑](#footnote-ref-628)
628. 628 See supra Part V.C. [↑](#footnote-ref-629)
629. 629 A. Dan Tarlock, The Recovery of the ***Colorado*** ***River*** Delta Ecosystem: A Role for International Law?, [*14* ***Colo.*** *J. Int'l. Envtl. L. & Pol'y 9, 12 (2003).*](https://advance.lexis.com/api/document?collection=analytical-materials&id=urn:contentItem:47X6-3C00-00CV-H03D-00000-00&context=1516831) [↑](#footnote-ref-630)
630. 630 See id.; see also Attila Tanzi & Cesare Pitea, Emerging Trends in the Role of Non-State Actors in International Water Disputes, in The Permanent Court of Arbitration/Peace Palace Papers; Resolution of International Water Disputes 259-60 (The Int'l Bureau of the Permanent Court of Arbitration ed., 2003). [↑](#footnote-ref-631)
631. 631 See supra, Part V.C. [↑](#footnote-ref-632)
632. 632 See supra, Part IV.A. [↑](#footnote-ref-633)
633. 633 Personal knowledge of the authors. [↑](#footnote-ref-634)
634. 634 Tarlock, supra note 567, at 390. [↑](#footnote-ref-635)
635. 635 Sandra Postel, A Sacred Reunion: The ***Colorado*** ***River*** Returns to the Sea, Nat'l Geographic (May 19, 2014), [*http://voices.nationalgeographic.com/2014/05/19/a-sacred-reunion-the-****colorado****-****river****-returns-to-the-sea/*](http://voices.nationalgeographic.com/2014/05/19/a-sacred-reunion-the-colorado-river-returns-to-the-sea/). [↑](#footnote-ref-636)
636. 636 See Rowan Jacobsen, The Day We Set the ***Colorado*** ***River*** Free, Outside, June 10, 2014, available at [*http://www.outsideonline.com/outdoor-adventure/nature/Open-the-Floodgates*](http://www.outsideonline.com/outdoor-adventure/nature/Open-the-Floodgates) -The-Day-We-Set-the-***Colorado***-***River***-Free.html. [↑](#footnote-ref-637)
637. 637 Clare R. Seelke, Cong. Research Serv. Mexico: Background and U.S. Relations 22-23 (2014), available at [*http://www.fas.org/sgp/crs/row/R42917.pdf*](http://www.fas.org/sgp/crs/row/R42917.pdf). [↑](#footnote-ref-638)
638. 638 Bureau of Reclamation Water Resources Group, Dep't of the Interior August 24-Month Study (Aug. 13, 2014), available at [*http://www.usbr.gov/uc/water/crsp/studies/24Month\_08.pdf*](http://www.usbr.gov/uc/water/crsp/studies/24Month_08.pdf). [↑](#footnote-ref-639)
639. 639 See id. [↑](#footnote-ref-640)
640. 640 See Entsminger & Culp, supra note 497. [↑](#footnote-ref-641)
641. 641 Tony Perry & Richard Marosi, U.S., Mexico Reach Pact on ***Colorado*** ***River*** Water Sale, L.A. Times, Nov. 20, 2012, [*http://articles.latimes.com/2012/nov/20/local/la-me-water-deal-20121120*](http://articles.latimes.com/2012/nov/20/local/la-me-water-deal-20121120). [↑](#footnote-ref-642)
642. 642 ***Colorado*** ***River*** Basin Water Supply, supra note 2, at 5. [↑](#footnote-ref-643)
643. 643 Id. at 5-7. [↑](#footnote-ref-644)
644. 644 Id. at 9. [↑](#footnote-ref-645)
645. 645 See id. at 9-10. [↑](#footnote-ref-646)
646. 646 Id. at 18. [↑](#footnote-ref-647)
647. 647 See id. at 26-27. [↑](#footnote-ref-648)
648. 648 See Tarlock, supra note 567, at 371. [↑](#footnote-ref-649)
649. 649 Id. at 377. [↑](#footnote-ref-650)
650. 650 Id. at 379. [↑](#footnote-ref-651)
651. 651 Nicole Kranz & Erik Mostert, Governance in Transboundary Basins - the Roles of Stakeholders; Concepts and Approaches in International ***River*** Basins, in Transboundary Water Management: Principals and Practice 91 (2010). [↑](#footnote-ref-652)
652. 652 Susan Lauer, Minute 319: Building on the Past to Provide for the Future, ***Colorado*** ***River*** Project: ***River*** Report 1 (Winter 2012-13), available at [*http://content.yudu.com/A217xf/RRwinter13/resources/index.htm*](http://content.yudu.com/A217xf/RRwinter13/resources/index.htm). [↑](#footnote-ref-653)