

SÉANCES, CIÉNEGAS, AND SLOP: CAN COLLABORATION SAVE THE DELTA?

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Issues of transboundary allocation of water resources and its environmental effects are, virtually by their very nature, ones that require collaborative solutions. In the absence of international law norms and institutions to resolve sovereign claims to the waters of international rivers, much of the decisionmaking is left to the collaborative, or negotiated, arrangements between the countries involved and their respective domestic stakeholders. This Article examines collaborative efforts to allocate waters in the Colorado River basin as they relate to the lowest reaches of that great river, the ecologically important but very fragile Colorado River Delta in Mexico. Collaboration¹ is sometimes promoted as preferable to environmental decisionmaking through formal legalistic mechanisms and institutions. Its purported advantages include the flexibility to include stakeholders who might be disempowered in a formal legal context, the ability to develop a widely agreed upon information basis for resolving factually complex questions, and the potential for elevating shared values over contested ones.² This review does not seek to contest any of those points, but it does sound a cautionary note—namely, that solutions reached by collaborative processes are not necessarily beneficial for the environment or for those constituencies that promote or benefit from its protection. Collaboration alone, without structuring the legal and economic framework for policymaking to provide specifically for the goal of protecting the delta, is unlikely to move much water downstream to where it's needed to save the imperiled delta.

The Article unfolds in two main parts. After a brief introduction to the ecological perils facing the Colorado River Delta in Part I, it will recount in Part II past experience, both distant and recent, of collaborative efforts to allocate the river among its sovereign interests and their constituents. These stories demonstrate that decisions forged by collaboration have contributed to the

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¹ A word or two is warranted at the outset about my use of the term “collaboration.” Throughout this Article, I use the word broadly to mean processes in which policy and resource allocation decisions are made through bargaining between interested entities, whether governmental, private, or nonprofit. Collaboration in this perspective stands in contrast to formal decisionmaking processes such as adjudication or informal rulemaking, in which procedures are set forth by applicable law. Collaboration, in this sense, is not meant to embrace any particular method or form of decisionmaking by bargaining.

² See, e.g., Lawrence Susskind & Alan Weinstein, *Towards a Theory of Environmental Dispute Resolution*, 9 B.C. ENVTL. AFF. L. REV. 311, 320 (1980) (“By limiting the access of interested parties, restricting the information available for consideration, restricting the range of concerns to legally recognizable causes of action, and ‘segmenting’ complex and interrelated problems into discrete legal actions, the courts make it practically impossible to reach a judgment that acknowledges the real concerns of all interested parties.”).

delta's decline and missed opportunities to restore it. These decisions include the Colorado River Compact, the 1944 U.S.-Mexico Treaty, and the Lower Colorado Multispecies Conservation Plan. In addition, collaborative decisions in the works, including the lining of the All-American Canal, and the Drop-2 Dam, by focusing on reducing "slop," further threaten to harm the delta and its prospects for restoration. In sum, there is no shortage of "collaboration" going on up and down the river that directly affects the interests of the delta. The problem, in my view, is that the collaborations are yielding decisions that merely reflect the priorities of entrenched economic interests and legal frameworks that value those economic interests. If collaborations are to solve the problem of the delta, then they must be structured in some way to give ecological interests a voice that has heretofore largely been silenced by a combination of exclusion from the collaborative process and exclusion from the legal framework in which the collaborative processes take place.

Part III of this Article will examine the future possibilities that collaboration can find a way to bring the delta back from moribundity. Whatever the contribution of recent and far past Colorado River collaborative arrangements to the delta's present plight, it seems clear that any future recovery of the delta will depend on one or more collaborative solutions. Even if domestic law within the United States or Mexico provided for some enforceable legal mandate to provide water to the delta, the present law of the river, combined with the lack of physical storage capabilities in Mexico, makes the problem inescapably international in scope. Part III argues that the best chance for a successful collaboration to provide for the ecological needs of the delta would be the extension to Mexico of the concept of Intentionally Created Surplus ("ICS"), an innovation recently agreed upon by the seven basin states within the United States.³

I. BIG PROBLEMS, SMALL PROBLEMS, AND THE BASIS FOR HOPE

The Colorado River Delta, before the construction of the great dams of the Colorado River, was a vast and productive desert estuary. Created by a silt laden and highly variable river, it stretched out over some 3000 square miles. The river cut numerous, shifting channels through the unstable lands that had been deposited by the river and were continually flushed by unusually large tidal flows in the Gulf of California. Recounting a canoe trip to the delta in 1922, Aldo Leopold noted: "On the map the Delta was bisected by the river, but in fact the river was nowhere and everywhere, for he could not decide which of a hundred green lagoons offered the most pleasant and least speedy path to the Gulf."⁴

Beginning with the completion of Hoover Dam in 1935, the Colorado River was transformed into an almost fully controlled water delivery system supplying water to more than thirty million people and irrigating more than 3.5 million acres of cropland in the U.S. and Mexico. For six years during the

³ ICS is described in helpful detail by Professor Grant in a separate article in this Symposium. See Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964 (2008).

⁴ ALDO LEOPOLD, *A SAND COUNTY ALMANAC* 150 (1949).

filling of Lake Mead behind Hoover Dam and for nearly twenty years during the filling of Lake Powell behind Glen Canyon Dam, the delta received almost no freshwater flows. River flows into the delta today are scarcely a quarter of their average at the turn of the twentieth century. The shifting silt flats of the delta have been reduced to a tiny fragment of their historic size and are now surrounded by nearly half a million acres of irrigated farmland. Expansive wetlands covering as much as 1.8 million acres were reduced to as few as 40,000 acres.⁵

Yet despite its precipitous crash, proclamations of the delta's death were premature. The El Niño years of the early 1980s brought freshwater back to the delta when the great dams of the Colorado proved insufficient to store massive spring runoff from melting snowpacks for short periods. The El Niño of the mid-1990s offered an encore performance. To the surprise of many, the delta ecosystem responded with resilience. Its riparian habitat grew to more than 150,000 acres,⁶ still just a remnant of its pre-dams glory, but more than is found on the Colorado River between the Grand Canyon and the Mexican border.⁷ And despite its much reduced size, the delta offers impressive ecological values. More than 350 bird species use habitat in the area, as do several endangered species, including the Yuma clapper rail, the southwestern willow flycatcher, and the precarious vaquita porpoise.⁸

Given the scale of the water deprivation and the severity of the impacts—the delta today is only ten percent of its pre-development size—one might think that restoration would be an impossibility because the water required could never be wrested from users who have come to depend on it. But recent studies suggest that water supply requirements of restoration are modest. Environmental advocates suggest that annual flows of about 32,000 acre-feet and pulse flows of 260,000 acre-feet every four years on average would restore and protect substantial ecological functioning and habitat in the delta.⁹ Providing for this flow regime would require less than one percent of the river's flow.¹⁰

There is certainly hope in the modesty of these restoration requirements, but there is presently no water dedicated to the delta for habitat maintenance and restoration. Rather, in light of recent climate change and long-term climate research, it appears that the Colorado River is approaching full appropriation, if it has not already surpassed it.

⁵ See 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, 906 (2002).

⁶ *Id.* at 907.

⁷ *Id.*

⁸ FRANCISCO ZAMORA-ARROYO ET AL., CONSERVATION PRIORITIES IN THE COLORADO RIVER DELTA: MEXICO AND THE UNITED STATES 2 (2005), available at http://sonoran.org/index.php?option=com_content&task=view&id=157&Itemid=27.

⁹ DANIEL F. LUECKE ET AL., A DELTA ONCE MORE: RESTORING RIPARIAN AND WETLAND HABITAT IN THE COLORADO RIVER DELTA 32 (1999), available at http://www.edf.org/documents/425_delta.pdf.

¹⁰ *Id.*

II. COLLABORATION STORIES: THE COLORADO RIVER COLLABORATIONS AND THE PLIGHT OF THE DELTA

In considering the role of collaborative solutions and the future of the Colorado River Delta, it is instructive to engage first in an exercise of forensics. How the delta got to its present precarious state is a story in which collaboration plays a leading role. The initial development of the domestic law of the river, and later, the series of binational agreements between the U.S. and Mexico, demonstrate how collaborations between the sovereign powers on behalf of their represented resource users left the delta with insufficient water to maintain its ecological functions.

A. *The Framework Collaborations*

1. *The Colorado River Compact of 1922*

The story of collaboration on the Colorado begins, as do many of the ecological tragedies of western water law, with the foundational tenets of modern water law. First is the rule that the prior “beneficial use” of water will be protected against interference by later appropriators. Second is the consequential corollary of the notion of “beneficial use” on arid lands: Water not put to beneficial use—say, because it is left in the channel to flow to the sea (or across the border)—is “wasted.” These notions, well ensconced in western water law and lore by the late nineteenth century, formed the impetus and the backdrop for the Colorado River Compact in 1922.

As in many river basins, water resources development in the lower Colorado River basin preceded upper basin development. Shortly after the turn of the twentieth century, a new canal brought Colorado River water, after dipping into Mexico, to farms in the Imperial Valley in California. Severe flooding and ongoing disagreements with Mexico over the use and maintenance of the canal spurred Imperial Valley farmers to demand an All-American Canal and a large dam and storage reservoir (Hoover Dam and Lake Mead) on the Colorado River, to be federally funded and operated. The upstream states were understandably fearful that such a project would spawn already-burgeoning California to use even more Colorado River water before it could be put to beneficial use upstream, possibly foreclosing later upstream development and growth. The upstream states’ opposition ripened into intransigence when the Supreme Court’s decision in *Wyoming v. Colorado*¹¹ indicated that allocation of the Colorado River among the states would be governed by a “first in time, first in right” rule.¹²

In the intersection of lower basin demands and upper basin insecurities was born the first great collaboration on the Colorado River. The Colorado River Compact¹³ famously divided the Colorado River into two sub-basins and

¹¹ *Wyoming v. Colorado*, 259 U.S. 419 (1922) (holding that the doctrine of prior appropriation would apply to disputes between states sharing a source of water if the party states recognized the doctrine).

¹² NORRIS HUNDLEY, JR., *THE GREAT THIRST: CALIFORNIANS AND WATER: A HISTORY* 212-13 (rev. ed. 2001).

¹³ Colorado River Compact of 1922, 70 CONG. REC. 324 (1928).

apportioned both the upper basin states and lower basin states the “exclusive beneficial consumptive use” of 7.5 million acre-feet (“maf”) per year.¹⁴ In addition, the Colorado River Compact grants the lower basin states the “beneficial consumptive use” of one maf.¹⁵ Thus, while requiring the upper basin states to deliver to the lower basin, at Lee Ferry, a total of seventy-five maf over any ten year period,¹⁶ the Colorado River Compact effectively protected future upper basin development up to 7.5 maf per year.

As concerns the Colorado River Delta, there are three notable aspects of the Colorado River Compact. First, the Compact gave scant attention to Mexico, including preexisting agricultural development south of the border. The Compact did allow, “as a matter of international comity,” that the U.S. might later recognize Mexican water rights, and it provided that any such entitlement would be satisfied first from river flow in excess of the sixteen maf apportioned between the upper and lower basins and, in the event of shortage, that the deficiency be borne equally by the two basins.¹⁷ Although the negotiators had discussed whether to quantify Mexico’s share of the river, the State Department had urged them not to, asserting that the U.S. had the legal right to use the entire river within its border while acknowledging precedent for resolving water disputes with Mexico with an eye toward international comity.¹⁸

Second, the Colorado River Compact embraced the view, prevalent at the time, that states could demand Colorado River water only for utilitarian purposes, not for environmental use either instream or out of channel. This came in the form of a prohibition against the upper basin withholding and the lower basin requiring delivery of water “which can not reasonably be applied to domestic and agricultural uses.”¹⁹

The third important aspect regarding the delta is the faulty and overly optimistic understanding of Colorado River streamflow on which the Compact’s apportionment was based, and it is this aspect that places the first two in sharper focus. The negotiators considered streamflow data from 1905 to 1922 and accepted a mean annual flow at Yuma, Arizona, of 16.4 maf.²⁰ It is now known from stream gage data that the period from 1905 to 1922 demonstrated the highest long-term annual flow volume in the twentieth century.²¹ Moreover, tree ring studies analyzing several hundred years of data confirm that the early years of the twentieth century were among the wettest in history.²²

¹⁴ *Id.* art. III(a). Hereafter, million acre-feet will be maf. An acre-foot of water is the amount of water that covers an acre to the depth of one foot, or approximately 326,000 gallons.

¹⁵ *Id.* art. III(b).

¹⁶ *Id.* art. III(d).

¹⁷ *Id.* art. III(c). The Compact did not indicate the manner of determining whether any deficiency exists or specify the manner of delivery of the upper basin’s share of any deficiency to satisfy Mexico’s claim.

¹⁸ See NORRIS HUNDLEY, JR., *DIVIDING THE WATERS: A CENTURY OF CONTROVERSY BETWEEN THE UNITED STATES AND MEXICO* 51 (1966).

¹⁹ Colorado River Compact art. III(e).

²⁰ NAT’L RESEARCH COUNCIL OF THE NAT’L ACADEMIES, *COLORADO RIVER BASIN WATER MANAGEMENT: EVALUATING AND ADJUSTING TO HYDROCLIMATIC VARIABILITY* 97 (2007).

²¹ *Id.* The mean annual flow during the 1905-1922 period was 16.1 maf at Lee Ferry. Stream gage data from 1905-2006 indicate a mean annual flow of roughly 15 maf. *Id.* at 94.

²² *Id.* at 99, 103.

Indeed, multiple tree ring studies indicate that periods of extended drought are integral to the Colorado River basin and that the natural variability of the system is considerably greater, particularly with respect to drought, than reflected in the stream gage data.²³ In short, the river's bounty, whether it be allocated entirely among the states, or shared with Mexico and environmental systems, is almost certainly less than was believed by the original collaborators.²⁴

2. *The U.S.-Mexico Treaty of 1944*

As envisioned by the Colorado River Compact, the U.S. and Mexico eventually entered into a treaty to recognize Mexico's right to Colorado River water. Like the earlier Compact, the 1944 treaty between the United States of America and Mexico on the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande²⁵ reflects the utilitarian legal norms prevailing at the time and unrealistic expectations of the river's flow. The second great collaboration on the Colorado River thus, like the first, helped to cement a law of the river that would choke the delta of its water.

The treaty, as adopted, provided for the guaranteed delivery of 1.5 maf annually to Mexico at the international border. In the event of a surplus of flow beyond that necessary to supply U.S. uses and the guaranteed 1.5 maf—the determination of which is given to the U.S.—the treaty provides that the U.S. will “undertake” to deliver an additional 200,000 acre-feet.²⁶ The treaty also provides for the possibility of shortage, but not without considerable ambiguity. In the event of an “extraordinary drought or serious accident to the irrigation system in the United States,” which makes it “difficult” for the U.S. to meet its obligation to Mexico, the Mexican allotment “will be reduced in the same proportion as consumptive uses in the United States are reduced.”²⁷ The treaty does not address what amounts to an “extraordinary drought” or “difficulty,” who is responsible for making those determinations, or the manner of the proportional reduction of use.²⁸

Negotiations over Mexico's share of the Colorado began shortly after the Compact. The talks initially focused on the amounts needed to provide for existing, and eventually expanded to include consideration of future, uses. In 1929, the United States offered what it considered a “just and generous” 750,000 acre-feet for Mexican lands, based solely on the amount delivered for

²³ *Id.* at 110.

²⁴ It would be unfair, of course, to blame the compact negotiators for what they could not know. In the early twentieth century, the science of dendroclimatology had not yet been developed and the stream gage data was incomplete. But there is some unsettling evidence that the Colorado River Commission's negotiators knew their data was not waterproof. *Id.* at 97 (“Transcripts of Colorado River Compact negotiations describe occasions when Colorado River Commission representatives expressed concern about potentially overly optimistic estimates of annual flow . . . , perhaps in recognition of some of the low flows prior to 1905 [which had been excluded].”).

²⁵ Treaty on the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., Feb. 3, 1944, 59 Stat. 1219.

²⁶ *Id.* art. 10(b).

²⁷ *Id.*

²⁸ For an extensive discussion of these ambiguities, see Charles J. Meyers & Richard L. Noble, *The Colorado River: The Treaty with Mexico*, 19 STAN. L. REV. 367, 411-15 (1967).

irrigation and domestic use in Mexico in 1928.²⁹ Mexico flatly rejected the proposal, insisting on 3.6 maf, and negotiations stalled for a decade.³⁰ What eventually broke the impasse was the expression of willingness on the part of the U.S. to swap Colorado River water for Rio Grande water, but this willingness, too, was predicated on the understanding that existing uses claimed by Mexico on the Colorado could be offset by existing uses in the U.S. satisfied by Mexican delivery of water on the Rio Grande. Mexico pressed the U.S. to consider existing and future Mexican uses of Colorado River water, but it still tied its demands to utilitarian notions of water usage.³¹ Thus, the value of the delta's ecological systems played no role in consideration of the amount of water allocated to Mexico.

Any sense on behalf of the U.S. that its offer of 750,000 acre-feet was "just and generous" was supported by the doctrine of international law known as the "Harmon Doctrine." The Harmon Doctrine held that an upstream nation may exercise complete control over the waters within its territorial boundaries incident to its "absolute sovereignty . . . as against all others, within its own territory."³² Under the doctrine, the U.S. could claim the right to the entire flow of the Colorado River with no obligation to Mexico. Although the U.S. negotiators demurred from asserting the Harmon Doctrine directly in negotiations with Mexico,³³ representatives of the Colorado River states empanelled to advise U.S. treaty negotiators enthusiastically embraced the doctrine and accepted any concession to Mexico, even for existing uses, only as a practical necessity beyond the requirements of law.³⁴

By the time the treaty was forged in 1944, it had become apparent that the river flow data from 1905 to 1922 on which the Colorado River Compact was based gave an unrealistic picture of the amount of available water.³⁵ Additional stream gages and the Dust Bowl drought of the 1930s revealed that the river would produce less water than earlier assumed over significant periods of time.³⁶ Yet both parties still believed that the river produced more water than later records and studies would reveal. To the extent, then, that the final agreement envisioned meeting the obligation to Mexico in most years without reduction of U.S. uses, and that Mexico could put that water to beneficial use, there would be little flow left for the delta.³⁷

²⁹ *Id.* at 368.

³⁰ *Id.* at 368-69.

³¹ *Id.* at 369-70.

³² Treaty of Guadalupe Hidalgo, 21 Op. Att'y Gen. 274, 281 (1895). The doctrine is named for the Attorney General who had issued the opinion in a dispute with Mexico over U.S. diversions of the Rio Grande.

³³ See Meyers & Noble, *supra* note 28, at 370.

³⁴ *Id.* at 381-82.

³⁵ *Id.* at 377, 379.

³⁶ *Id.* at 380.

³⁷ Of course, this is largely the legacy of the 1922 Compact, which envisioned the eventual consumptive use of sixteen maf, and guaranteed an average of only 7.5 maf of flow past Lee Ferry.

3. *The Salinity Agreement and the Ciénega de Santa Clara*³⁸

The salinity of the Colorado River in its lower reaches has long posed a problem for agricultural and municipal water users and for Mexico in particular.³⁹ Water applied to irrigated lands seeps into the soil, absorbing salt and other minerals from the soil, and then returns to the river via groundwater and drains. In as heavily a utilized system as the Colorado River, water becomes more saline as it moves downstream because it is applied to the land many times over. By the time it reaches the lowest reaches within the United States, it carries more than twice the salt that would naturally occur in the river, at a substantial cost to U.S. and Mexican water users whose agricultural yields decline or who must shift production to lower value salt tolerant crops.⁴⁰

The salinity issue became an international crisis in 1961 when the Wellton-Mohawk Irrigation and Drainage District (“WMIDD”) completed a drainage canal and began discharging extremely saline agricultural wastewater into the Colorado River near Yuma, Arizona.⁴¹ This spiked the salinity level of the water delivered to Mexico and diverted at Morelos Dam.⁴² The consequences for Mexican agriculture were dire, including crop loss on some 100,000 acres.⁴³ Over time, the situation only grew worse, as the application of saline water to Mexican lands created alkaline soils unsuitable for agricultural production.

American officials met Mexico’s protest of outrage with a cool assertion that the Harmon Doctrine and the 1944 treaty did not require the U.S. to maintain any particular water quality at the point of delivery to Mexico.⁴⁴ Even against this territorialist legal backdrop, however, the U.S. began working with Mexico on both physical and legal fixes to the salinity problem. First, as a stopgap measure, the U.S. constructed a bypass channel to enable Mexico to elect for WMIDD drainage water to enter the river below Mexican diversion at Morelos Dam. The bypass allowed saline water unfit for irrigation to flow to the delta without harming agricultural interests. Then, in 1973, the countries entered into an amendment to the 1944 treaty (Minute 242) requiring the U.S. to deliver treaty water to Mexico essentially equal in quality to that diverted at Imperial Dam into the All-American Canal and to U.S. users in the limitrophe section of the river.⁴⁵

The extraordinary measures the U.S. has taken to comply with its obligations under Minute 242 have led to a new conundrum for the delta. The conun-

³⁸ “Ciénega” is a Spanish term meaning marsh.

³⁹ For an excellent overview of the salinity issues in the lower Colorado River, see ROBERT W. ADLER, RESTORING COLORADO RIVER ECOSYSTEMS: A TROUBLED SENSE OF IMMENSITY 214-23 (2007).

⁴⁰ *Id.* at 215-16.

⁴¹ *Id.* at 216.

⁴² HUNDLEY, *supra* note 18, at 173.

⁴³ *Id.* at 175.

⁴⁴ *Id.*; ADLER, *supra* note 39, at 217. The U.S. maintained that the treaty’s reference to water from “any and all sources” envisioned the delivery of irrigation return flow and negated Mexico’s claim to good quality water.

⁴⁵ Minute 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River, International Boundary and Water Commission, U.S.-Mex., Aug. 30, 1973, 24 U.S.T. 1968.

drum is the Ciénega de Santa Clara, a remnant wetland near the Gulf of California that has grown to nearly 40,000 acres as a result of saline drainage discharged from WMIDD. The Ciénega has become the largest and one of the most important perennial wetlands in the delta. As the possibility of shortage looms ever greater, however, so does the probability that the Ciénega de Santa Clara will lose its main source of water. In addition to implementing a basin-wide program to reduce salt inputs to the river from agriculture, the U.S. authorized the construction of the Yuma Desalination Plant (“YDP”) to treat WMIDD water so that it can be used to fulfill the Mexican entitlement of 1.5 maf.⁴⁶ For a variety of reasons, however, the YDP has never become operational, except for short periods of testing. Instead, WMIDD wastewater that would otherwise be treated by the YDP has been diverted into the Main Outlet Drain Extension (“MODE”) canal. In order to bypass the Colorado River, the MODE canal delivers more than 100,000 acre-feet of water per year to the Ciénega de Santa Clara in Mexico. Increasing risk of shortage in the Colorado River, combined with increased usage and efficiency of system water, makes it likely that the YDP will soon be brought back online, greatly reducing flows to the Ciénega.

The Ciénega de Santa Clara is a bit of a ghost of Christmas future. It is a story of an ecologically valuable wetland, which owes its viability to mistakes of past while still bearing the risk that the mistakes will be cured. Though it is itself a legacy of collaboration, its precarious future rests in the hands of future collaborators. Indeed, a recent collaborative effort convened by the director of the Central Arizona Project has worked to explore ways to protect the interests of Arizona irrigators while also preserving the viability of the Ciénega de Santa Clara.⁴⁷

B. The Lower Colorado Multispecies Conservation Plan: The Collaboration That Got Away

One of the supposed benefits of collaborative decisionmaking processes is that they can provide an opportunity to fold issues into the mix that would not be taken into consideration in formal, legalistic decisionmaking processes. One of the largest and most significant collaborative efforts on the Colorado River system—the Lower Colorado Multispecies Habitat Conservation Plan—represents something of a missed opportunity to rectify this hope for the benefit of the delta.

The Colorado River from Lake Mead and Hoover Dam to the delta is almost wholly a manipulated river. Absent extraordinary floods, the series of dams operated in the U.S. by the Bureau of Reclamation (“Bureau”) determines how much water flows in the river, and the series of diversions for domestic and agricultural uses determines how much water stays in the river. Under the Endangered Species Act (“ESA”),⁴⁸ however, federal agencies must ensure, in

⁴⁶ ADLER, *supra* note 39, at 218.

⁴⁷ See BALANCING WATER NEEDS ON THE LOWER COLORADO RIVER: RECOMMENDATIONS OF THE YUMA DESALTING PLANT/CIENEGA DE SANTA CLARA WORKGROUP (2005), available at <http://ag.arizona.edu/AZWATER/publications/YDP%20report%20042205.pdf>.

⁴⁸ Endangered Species Act, 16 U.S.C. §§ 1531-1544 (2000).

consultation with the appropriate wildlife agency (either the Fish and Wildlife Service (“FWS”) or the National Marine Fisheries Service (“NMFS”)), that their activities will not jeopardize the continued existence of any threatened or endangered species.⁴⁹ The ESA also prohibits any entity—private or governmental—from causing the “take” of an endangered species⁵⁰ unless authorized by an “incidental take permit” issued by the Secretary of the Interior upon submission of a habitat conservation plan.⁵¹

In view of its responsibilities under sections 7 and 9 of the ESA as well as other river stakeholders’ obligations under section 9, the Bureau decided in the mid-1990s to convene a large multiparty collaboration to formulate a Multispecies Conservation Plan for the Lower Colorado River (“LCRMSCP”).⁵² In a narrow legal sense, the LCRMSCP aimed to develop a plan for river management in the lower Colorado River that would avoid jeopardy to any species as required by section 7 and, by operation of a permit issued under section 10, protect Colorado River users from liability for any incidental takes of species that would otherwise violate section 9. But its aims were actually more ambitious and extended beyond navigating the near-term perils of the ESA. By incorporating a broad array of interests—federal agencies, states, irrigation districts, power generators, and environmentalists—it sought, in a sense, to bring peace to the valley by forging an agreed upon operational scheme for the manipulated river. Further, by establishing a habitat conservation framework for the next fifty years—with a concomitant promise that nothing more onerous would be required of the participants during that time—it sought to create certainty in the face of the uncertain future of the species that depend on the river for habitat. So, though perhaps motivated by the strict legal framework of the ESA, the LCRMSCP potentially offered something more than mere regulatory compliance.

At the beginning of the collaborative process, the Bureau invited national environmental groups—notably Defenders of Wildlife—to join the steering committee of the LCRMSCP.⁵³ On the steering committee, Defenders and others advocated that the scope of the collaboration should include consideration of habitat for endangered species in Mexico. If the collaboration was to yield any substantial improvement to the operation of the river, the environmental interests urged, then it should consider the Mexican habitat that had suffered the greatest harm and whose restoration would provide the greatest

⁴⁹ Endangered Species Act § 7, 16 U.S.C. § 1536(a)(2).

⁵⁰ Endangered Species Act § 9, 16 U.S.C. § 1538(a)(1). The ESA defines “take” broadly as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” 16 U.S.C. § 1532(19). Regulations interpreting the word “harm” in the statute extend the definition to include any act that actually kills or injures protected wildlife, including significant modification or destruction of habitat “significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” 50 C.F.R. § 17.3 (2007). See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687 (1995) (upholding the regulatory interpretation of “harm”).

⁵¹ 16 U.S.C. § 1539(a).

⁵² The final plan adopted by the U.S. Bureau of Reclamation can be found at 2 LOWER COLO. RIVER MULTI-SPECIES CONSERVATION PROGRAM, FINAL HABITAT CONSERVATION PLAN (2004), available at www.lcrmscp.gov/publications/VolumeII.pdf.

⁵³ *Defenders of Wildlife v. Norton*, 257 F. Supp. 2d 53, 61 (D.D.C. 2003).

benefit. Indeed, given the extensive development of the floodplain in the United States, it seems likely that habitat restoration efforts in Mexico would yield greater “bang for the buck” than restoration efforts north of the border. In addition, even if U.S. environmental laws like the ESA do not apply extraterritorially,⁵⁴ strong arguments support the view that the ESA and the National Environmental Policy Act (“NEPA”) require agencies to consider the transboundary effects of actions taken within the U.S., such as management of the facilities on the lower Colorado River, particularly when those effects are on endangered species that migrate across the border.⁵⁵

When other steering committee participants objected and the Bureau decided not to consider Mexican species and habitat as part of the LCRMSCP, the environmental groups quit the collaborative process and opted for the courts.⁵⁶ Their lawsuit alleged that the Bureau’s failure to consider Mexican species and habitat violated its obligations under the ESA. Without considering the contention that the ESA requires consideration of transboundary effects and habitat, the district court granted summary judgment in favor of the Bureau because it lacked discretion to provide more water for habitat restoration in the delta.⁵⁷ Defenders of Wildlife did not appeal.

The story of the LCRMSCP might fairly be called the collaboration that got away. Even if the formal legal structure of the ESA did not compel consideration of Mexican species and habitat, it is not at all clear that it prohibited it. At the beginning of the ESA consultation process, FWS directed the Bureau to assess the impacts of its lower Colorado River operations on Mexican populations of the southwestern willow flycatcher and the Yuma clapper rail and to consult NMFS formally regarding impacts to the totoaba bass and the vaquita harbor porpoise, two species in the delta and upper Gulf of California.⁵⁸ The Bureau complied, finding that the totoaba bass and the southwestern willow flycatcher might be affected by its discretionary activities but also that the other species would be affected only by its nondiscretionary actions.⁵⁹ Aside from the past practice, the Council on Environmental Quality has issued guidance urging the consideration of transboundary impacts under NEPA, noting its consistency with the international law norm that a nation may not undertake actions in its territory that will harm another nation.⁶⁰ Further, even if the impacts on such species cannot be addressed by actions within the discretion of federal agencies, the information provided about the nature of the impacts can

⁵⁴ This is an issue, however, that remains unresolved. See ADLER, *supra* note 39, at 224.

⁵⁵ See, e.g., *Envtl. Def. Fund v. Massey*, 986 F.2d 528, 531 (D.C. Cir. 1993); see also Glennon & Culp, *supra* note 5, at 959.

⁵⁶ *Defenders of Wildlife*, 257 F. Supp. 2d at 61.

⁵⁷ *Id.* at 69 (accepting the Bureau’s contention that “it cannot interpret the Law of the River in a way that will divert or somehow ‘indirectly result’ in excess flows to Mexico”).

⁵⁸ *Id.* at 59.

⁵⁹ *Id.* at 59-60. The importance of the discretionary-nondiscretionary distinction is that courts have held section 7 inapplicable to nondiscretionary actions by federal agencies. See *Sierra Club v. Babbitt*, 65 F.3d 1502, 1509 (9th Cir. 1995). If an agency is required by law to take some action and has no discretion to refrain from taking that action, then the ESA imposes no obligation under section 7.

⁶⁰ Council on Environmental Quality Guidance on NEPA Analyses for Transboundary Impacts (July 1, 1997), available at <http://www.nepa.gov/nepa/regs/transguide.html>.

inform choices about actions in Mexico that may aid those species or changes in national or binational law to address the impacts.

In sum, the result of the LCRMSCP collaboration, shaped by a U.S. legal context that accords no value to Mexican habitat, was, if not bad for the delta, at least not a positive step toward restoration. In terms of the propounded benefits of collaborative management, it was a missed opportunity to leverage the flexibility of a collaborative decisionmaking process to address the concerns of significant stakeholders.

C. The Collaborations That Might Further Drain the Delta: The Campaign Against Slop

Much of the water that reaches the delta does so by accident. For the most part, it is water that cannot be captured for storage and delivery for consumptive uses in the U.S. or Mexico. It is water that, because of operational inefficiencies of the storage and delivery systems in the lower Colorado River, slips through the cracks. It is slop, and from the perspective of consumptive water users, it amounts to waste. Increasing demands for water, particularly in the fast growing urban areas of southern California and Las Vegas, are increasing the likelihood that efficiency improvements will be implemented in order to devote conserved water to new uses. These collaborations, by depriving the river environment of the “waste” water it now enjoys, pose additional threats to efforts to restore the Colorado River Delta.

1. The Lining of the All-American Canal

Colorado River water is conveyed to California users, particularly in the Imperial Irrigation District, primarily through the All-American Canal. The canal diverts water near the border with Mexico and carries it westward. The canal—whose mere proposal gave rise to the Colorado River Compact—was authorized by Congress in 1928 and completed in 1942. It is an unlined canal dug through permeable sand. As a result about two percent of the canal’s flow seeps into the ground and migrates southwest to recharge the Mexicali Aquifer underlying the Mexicali Valley in Mexico, where it supports groundwater supplied agriculture and wetland habitat considered part of the delta ecosystem.⁶¹ This is water that is not part of Mexico’s entitlement under the 1944 treaty, but which supports both agriculture and the delta environment, including the Andrade Mesa wetlands.

California water users have long recognized the potential to enhance the amount of usable water available to them by conserving water seeping from the All-American Canal. In 1988 Congress authorized the Bureau of Reclamation to consider options for recovering water lost to canal seepage and using the water to meet growing demands and to settle Indian water rights claims. The Bureau proposed lining the canal in 1994, but the proposal lay dormant because Congress required the project to be paid for by beneficiaries of the lining, not the U.S. government. When pressure began to mount for California to reduce its historic reliance on a greater draft of Colorado River water than its 4.4 maf

⁶¹ Osvel Hinojosa-Huerta et al., *Andrade Mesa Wetlands of the All-American Canal*, 42 NAT. RESOURCES J. 899, 900-01 (2002).

entitlement, California water users forged an agreement with the Bureau to finance the lining and allocate the water savings.⁶² The project will line twenty-three miles of the canal with concrete and save more than 90,000 acre-feet of water annually. The bulk of the water saved (77,700 acre-feet per year) will be allocated to San Diego for a period of 110 years.

U.S.-based environmentalists and a Mexican community group sued to enjoin the project, alleging the failure to adequately consider environmental impacts in Mexico and other statutory violations, but their suit was dismissed as moot after a rider to an unrelated tax bill mandated that the project be carried out “without delay” “[n]otwithstanding any other provision of law.”⁶³

2. *The Drop-2 Reservoir*

Another proposal to improve the efficiency of water deliveries in the lower Colorado River would deprive water directly from the river’s main stem. The existing plumbing of the river requires the Bureau to release water from Lake Mead and/or Parker Dam near Parker, AZ, in order to fulfill water orders by downstream users, including farmers served by the All-American Canal and its Coachella branch. About three days time is required for the river to move the water from Parker Dam to Imperial Dam where it is diverted into the All-American Canal, so farmers must place final orders for water at least three days before they seek to apply it to their irrigated fields. Between the time of the order and the actual delivery, however, unforeseen changes in circumstances—such as weather conditions, evaporation rates, transpiration by vegetation, unscheduled pumping from the river by floodplain farms, changes to water orders, and variations of return flow—can result in water released from Parker Dam not being needed or delivered for “beneficial use.”⁶⁴

Because of very limited storage capability within the U.S. downstream of Parker Dam, under usual operating conditions, water released at Parker Dam but not used generally flows to Mexico and, if not consumptively used there, to the delta. Such water is known as “non-storable” water. It is considered by Colorado River water users to be undesirable waste because it generally cannot be delivered to Mexico as part of scheduled deliveries under the 1944 treaty and thus flows across the border without credit against Mexico’s 1.5 maf allocation.

The construction of additional storage within the U.S. downstream of Parker Dam would enhance the Bureau’s ability to ensure that any non-storable water could be captured and later delivered to users to fulfill future water orders. The Bureau has proposed construction of the Drop-2 Reservoir, an 8000 acre-foot reservoir just off the All-American Canal, to provide better regulation against loss of non-storable water. The proposed Drop-2 Reservoir

⁶² Consejo de Desarrollo Economico de Mexicali v. United States, 482 F.3d 1157, 1165 (9th Cir. 2007).

⁶³ *Id.* at 1167 (quoting section 395 of the Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, 120 Stat. 2922).

⁶⁴ U.S. DEP’T OF THE INTERIOR, BUREAU OF RECLAMATION, LOWER COLORADO RIVER DROP 2 STORAGE RESERVOIR PROJECT, FINAL ENVIRONMENTAL ASSESSMENT 1-6 (2007), available at http://www.usbr.gov/lc/yuma/environmental_docs/Drop_2/finalea/fea1.pdf.

would enable the Bureau to conserve an average of 70,000 acre-feet annually that flows uncredited to Mexico.

Nevada stands to be the primary beneficiary of the Drop-2 project. Under a regime recently approved as part of the ongoing negotiations regarding management of the river during times of shortage, the Drop-2 would result in "Intentionally Created Surplus" in the lower Colorado system. The preferred alternative being considered by the Bureau would allow Colorado River water contractors to bank ICS water in existing main stem facilities, effectively augmenting their allocation of water. To this end, the Southern Nevada Water Authority has agreed to fund the Drop-2 project in return for sharing in the bounty of the saved "slop."

The loser of this collaboration, again, is the Colorado River Delta. Because Mexico lacks storage facilities to capture the "non-storable" water flowing across the border, much of the "slop" that will be prevented by the Drop-2 project presently flows to the delta. As with the All-American Canal, the ecological systems of the delta have developed a reliance on the accidental "waste" of a system designed to serve consumptive uses. Eliminating the waste will eliminate the accidental benefit to the delta.

III. PROSPECTS AND IMPERATIVES FOR FUTURE COLLABORATIVE RESTORATION OF THE DELTA

Standing alone, the history of collaboration on the Colorado River, as it relates to the problems of the delta, could lead one to the conclusion that collaboration offers no hope. But that conclusion would be too hasty. After all, until fairly recently, the ecological values of the delta were not a significant concern of the major players in bargained agreements over Colorado River water, and the legal regimes against which those negotiations took place did nothing to elevate the delta's importance. To say that the collaborations led to the delta's decline because the process of decisionmaking was collaborative rather than legalistic or formally adversarial goes too far. Indeed, supporters of collaborative governance would likely point out that the framework collaborations led to harmful impacts on the delta because they were not properly structured to address the delta and its ecosystem. Had the collaborations included environmental stakeholders and focused all stakeholders' attention on the goal of minimizing harm to the delta, such supporters might argue, perhaps the result of the collaborations would not be so dire.

That might be true, but a conclusion that the process of decisionmaking on the Colorado River to some extent predetermined harm to the delta still cannot be dismissed. Anthropologist Laura Nader, reviewing nations' choice of negotiation over adjudication in international water disputes (including the Colorado River), concludes that powerful nations historically have preferred the mode of negotiation while weaker states favor adjudication.⁶⁵ The reason, she concludes, is that "without the possibility of third-party decision-makers, the more powerful disputant can use ADR negotiation to greater advantage" because

⁶⁵ Laura Nader, *Civilization and Its Negotiations*, in UNDERSTANDING DISPUTES: THE POLITICS OF ARGUMENT 39, 50-60 (Pat Caplan ed., 1995) (reviewing disputes on the Colorado, Danube, Jordan, Ganges, and Douro/Douro Rivers and Lake Lanoux).

power dynamics, rather than principles of justice or rule of law, determine the outcomes of disputes.⁶⁶ Nader's work suggests that, even had there been adjudicable legal principles favoring the delta's protection (at the cost of upstream uses within the United States), such ends were prejudiced by the choice of a dispute resolution mechanism likely to mirror existing power relationships. In other words, water users in the powerful United States would ensure their entitlement all the more easily through negotiation than through adjudication. That such legal principles were not firmly in place during the framework adjudications served only to further weaken Mexico's ability to secure enough water to protect the delta.

In light of this mottled past experience with collaboration, it might be profitable to consider the possibilities for future Colorado River collaborative efforts meaningfully to address the issues of the delta.

A. *Restructuring the Legal and Economic Framework of the Colorado River*

If the future of the Colorado River Delta could be written on a tabula rasa, wiped clean of the residue of history and existing legal frameworks, then perhaps the plight of the delta could be easily remedied. By changing the overall legal and economic framework of the river, water could be directed to the delta by force of the law, the market, or some combination of the two. It is certainly possible to imagine a radical change to the existing regime that would force the abandonment of the present law of the river and its replacement by some new regime more attuned to the conditions prevailing today, whether they be natural—such as climate change—or political and economic—such as the increasing population along the lower Colorado River or the rise in the twentieth century of environmental values.

In a separate article in this Symposium, Bradley Karkkainen theorizes that such a radical reformation of the existing regime might happen.⁶⁷ Drawing on the work of Professors Simon and Sable on destabilization rights in institutional reform, Professor Karkkainen argues that legal or natural events might lead stakeholders on the river to conclude it would be preferable to craft wholesale a new collaborative arrangement than to rely on the existing framework to address unforeseen circumstances. Most probable among the catalysts, it seems, would be global climate change, which is likely to stress the river's supply on the one hand, and continued population growth in the southwestern United States and northwestern Mexico, which will increase demand for water resources for urban use.

Such a destabilization catalyst to collaboration seems possible, even if events to date have led only to tinkering with the existing legal regime. No stakeholders, at least within the United States, yet seem willing to cede any vested rights under the existing regime.⁶⁸ But even if the theory plays out as

⁶⁶ *Id.* at 50 (citing John G. Laylin & Rinaldo L. Bianchi, *The Rôle of Adjudication in International River Disputes: The Lake Lanoux Case*, 53 AM. J. INT'L L. 30, 49 (1959)).

⁶⁷ Bradley C. Karkkainen, *Getting to "Let's Talk": Legal and Natural Destabilizations and the Future of Regional Collaboration*, 8 NEV. L.J. 811 (2008).

⁶⁸ *See, e.g.*, Grant, *supra* note 3, at 971-73 (discussing the trade-offs in the seven states' agreement on shortage).

Karkkainen envisions, the theory is only good as far as it goes, and it does not go all the way to the delta. Even if the existing legal regime becomes destabilized, making room for a collaborative effort to fill its void, the likelihood of the ascension of environmental values in such an effort seems limited. Legal norms, both international and domestic, have shifted since the framework agreements cemented for the Colorado River utilitarian principles, as evidenced by the decline of the Harmon Doctrine and the rise of the United Nations Convention on the Uses of International Watercourses.⁶⁹ Still, it seems more likely that any regime that rises from the ashes of the destabilized law of the river will be shaped by powerful economic interests seeking to enhance or protect their share of an increasingly scarce resource more than by environmental values or concern for the delta.

B. *Adjusting Domestic Law*

A second, less dramatic way in which the potential for future collaborations to aid the delta's recovery might be enhanced is by strengthening the hands of the environmental advocates who champion the delta's cause. This might be accomplished by amending domestic law on one or both sides of the border to provide for enforceable obligations to promote the recovery of the delta, to prevent its further decline, or even to study and consider the impacts of proposed changes to the physical system on the delta's ecosystem. The lesson of the LCRMSCP is particularly instructive. Having failed in the collaborative process to secure consideration of habitat values in the delta, environmental advocates resorted to the adjudicative alternative, a federal lawsuit. However, the limits of enforceable United States law, namely the ESA as applied in this particular international context, depressed the value of this alternative. As Professor Nader has suggested, if rights may be adjudicated, there is less a chance that the collaboration or negotiation taken as an alternative will merely reflect the raw power of the parties.⁷⁰ If environmental interests have some hard law mechanisms to employ through good, old-fashioned environmental enforcement efforts, then they will likely get more of what they need in collaborative processes.

As with Karkkainen's destabilization theory, this sounds good so far as it goes. But the likelihood of legislative or administrative adjustments to United States environmental law to embolden environmental advocates is uncertain at best. It is further uncertain whether any amendments would actually result in a collaborative solution. Emboldened environmental interests might well take their chances in adjudication.

C. *Tweaking the "Law of the River"*

A third, and probably the most probable, possibility for a successful collaborative approach to restoring the delta would be more minimal. The existing law of the river could be tweaked to enable environmental stakeholders and Mexico to participate in mechanisms intended to provide water users flexibility

⁶⁹ United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, May 21, 1997, 36 I.L.M. 700.

⁷⁰ See Nader, *supra* note 65, at 50.

to meet their changing needs with the existing physical and legal structures. In particular, as several environmental advocates have suggested,⁷¹ the recently-adopted Intentionally Created Surplus framework could be extended to permit cross-border participation.

As detailed in Professor Grant's paper in this Symposium,⁷² the ICS provisions of the shortage criteria are designed to allow water contractors to obtain more water by implementing or funding water conservation measures. ICS, in a sense, is a collaborative, market-based mechanism, designed to enable stakeholders within the Colorado River basin to obtain more water without harming other water users. It does this by eliminating impediments the law of the river presented to implementing conservation, augmentation, and water exchanges successfully. The most important way it promotes these mechanisms is by allowing "surplus" water created by conservation, augmentation, or exchange to be stored in existing Colorado River reservoirs for later use by the entity that created (or paid for) the surplus. The Drop-2 Dam project discussed above, for example, will allow the Southern Nevada Water Authority to pay for efficiency improvements in California and to reap the benefit of the water conserved. Similarly, entities that pay to fallow agricultural lands within a state will enjoy the benefit of the conserved water. The likely effect of ICS is that it will ease the way for agricultural to urban water transfers.

If water is to be found to replenish the delta, it is most likely to come from existing, low productivity agricultural lands either within Mexico or in the United States because that water has relatively low value in its present use, or from efficiency improvements within Mexico, including canal lining and other measures.⁷³ Extending the ICS system across the border will greatly improve the chances for such transfers. As noted above, there is no water storage capacity within Mexico. Any water conserved by efficiency projects or removing poor quality agricultural land from production cannot be used for any purpose other than feeding the delta because it cannot be stored after its delivery to Mexico. Water conserved by fallowing low productivity Mexican agricultural lands must be used within Mexico during the same year according to the delivery schedule under the 1944 treaty, or else it will flow unused to the delta. Allowing Mexican participation in ICS, however, could provide Mexican water users a virtual storage capacity that would break the rigidity of the annual delivery schedule under the 1944 treaty. Under an analogous system to ICS, water conserved from improvements in Mexico could be stored in Lake Mead or some other reservoir for delivery *in a later year*. Importantly, this would enable Mexican system improvements to contribute toward the 260,000 acre-foot pulse flows required every four years for the delta's restoration.

⁷¹ See Taking ICS to Mexico: International Opportunities in the Seven States Agreement (July 7, 2007), available at <http://www.usbr.gov/lc/region/programs/strategies/alternatives/CBS2B.pdf> (Appendix B to the Conservation Before Shortage II Proposal by Defenders of Wildlife, Environmental Defense, National Wildlife Federation, The Nature Conservancy, Pacific Institute, Sierra Club, and Sonoran Institute).

⁷² Grant, *supra* note 3, at 975-79.

⁷³ Glennon & Culp, *supra* note 5, at 967-68.

The states have indicated a willingness to consider at least some aspects of the proposal.⁷⁴ Doing so would enhance the possibility that adequate water for the delta could be obtained by water transfers from less productive agricultural uses in Mexico and possibly the U.S.

D. Keeping a Lid on Optimism

In conclusion, lest optimism runs amok that collaboration will reverse the delta's long decline, the delta remains poorly understood. The "one percent" solution pressed by environmental advocates is directed solely toward restoring riparian habitat in the delta region; it does not address other aspects of the ecosystem under strain, notably the upper Gulf. Fully adequate restoration of the entire delta ecosystem might require more water than is presently envisioned, but only further research will enlighten us. Collaborative research to gain a better understanding of the delta ecosystem is required to know whether future decisions bring the delta closer to life or death.

⁷⁴ Letter from the States of Ariz., Cal., Colo., Nev., N.M., Utah, and Wyo. Governors' Representatives on Colo. River Operations to Sec'y of the Interior Dirk Kempthorne 3-4 (Apr. 30, 2007), available at <http://www.usbr.gov/lc/region/programs/strategies/DEIScomments/State/BasinStates.pdf> ("The Basin States support the concept of Mexico participating in the ICS program at some time in the future, provided that its participation is addressed in the context of other river operation matters and is part of a comprehensive arrangement between the two nations that incorporates, at a minimum, the material terms of the Basin States' Proposal. The Basin States stand ready to discuss this comprehensive arrangement.").