

# THE U.S.-MEXICAN BORDER ENVIRONMENT

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Lining the All-American Canal:  
Competition or Cooperation for the  
Water in the U.S.-Mexican Border?



**El Colegio  
de la Frontera  
Norte**



**CONSORCIO DE INVESTIGACION Y POLITICA AMBIENTAL DEL SUROESTE  
SOUTHWEST CONSORTIUM FOR ENVIRONMENTAL RESEARCH & POLICY**

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*Edited by Vicente Sánchez Munguía*

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## Foreword

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### THE ALL-AMERICAN CANAL: AN ISSUE OF CONTEXTS

Water and environment recognize no political boundaries. That's a maxim of environmentalism that preaches to erase borders so to properly manage natural resources. In the changing landscape of US-Mexico relations, water disagreements have consistently made life difficult for diplomats in Washington and Mexico City; the current debate over the proposed lining of the All-American Canal (AAC) represents the latest and one of the most complex controversies. Borders are foreign to natural systems; they demarcate views and management regimes, and impede the free flow of information from one side of the line to the other. By most measures, the Colorado River Delta Region is one of the most studied environments in the US-Mexico Border region. Yet, thorough knowledge of the system by both countries has not translated into a more relaxed, less apprehensive mode of diplomacy. (See page 24 for map.)

*The Lining of the All-American Canal* constitutes a comprehensive review of one more natural resource management issue on an international border. It is, however, by no means, a typical bilateral environmental issue on a typical international boundary. The US-Mexico Border is perhaps the only area in the world where a highly industrialized nation co-exists with a developing nation, jointly addressing the effects of their associated differences in income, culture, language, and religion. Moreover, the All-American Canal (AAC) issue is an atypical disagreement within an otherwise agreeable relationship between the two countries, one which has become increasingly cooperative in areas such as management of air quality, hazardous waste, and chemical emergency response and preparedness.

## Lining the All-American Canal: Competition or Cooperation for the Water in the U.S.-Mexican Border?

Since the book's first publishing in Spanish (August 2004), negotiations between both governments have intensified, confirming that the collision of water and borders is neither new nor unfounded. Several authors in this book describe the tension over the AAC brewing since the late-1970s/early-1980s when the U.S. Department of the Interior decided that the State of California needed to cut its use of Colorado River water down to its legal apportionment of 4.4 million acre-feet per year (MAF/yr). The thirsty and thriving West and the historically over-apportioned Colorado River left the State of California and the U.S. Federal Government with apparently no alternative but to recapture the waters seeping under the All-American Canal. On October 18, 1983, the U.S. Government formally notified Mexico that those waters seeping underground and across the border were surface waters from the Colorado River apportioned to the U.S. under the 1944 U.S.-Mexico International Water Treaty.

But the debate over the All-American Canal seems not only to linger but deepen. A multitude of complex circumstances exacerbate the longstanding impasse in this negotiation between the two countries. At the top of the list is the growing recognition of just how politically intertwined water and environment issues have become. Additional complexity is added as new agencies from both governments have been brought to the table, raising the question whether age-old institutions and processes that were once considered dogma are still adequate. No longer can the purview of an institution like the International Boundary and Water Commission (IBWC) be considered all-encompassing when dealing with U.S.-Mexican water issues, nor can the 1944 U.S.-Mexico International Water Treaty be relied upon to resolve matters arising from increasing development and the shortage of water in the region.

In addition, as time passes, the list of stakeholders willing to take action appears to be growing. Along with both federal governments and their growing list of involved agencies, the State of California and Baja California have begun dialogues with each other as well as with their respective national governments. Civil groups North and South of the border have begun to collaborate on the issue, and environmental non-government groups continue to voice their concern over the effects of the piecemeal management that has taken

hold of the Colorado River Delta region. Potential socio-economic impacts on both sides of the border have prompted still more groups to seek out-of-the-box alternatives for solving the conflict.

### *The water-environment conundrum*

Water is a part of nature. But not all water issues are dealt with as part of the international environmental agenda. Historically, water issues between Mexico and the United States have been resolved under the jurisdiction of the International Boundary and Water Commission. But the agency needed a shift in culture to adapt to the changing times. Minute 306 of the IBWC recognized a growing sense that environmental issues could not be avoided when managing the Colorado River and was signed on December 12, 2000. Minute 306 reflected the emergent collaboration between environmental agencies across the border as well as scientific, academic and non-governmental organizations interested in preserving the “ecology affected by decreases in Colorado River flows in this reach and potential impacts to the habitat of fish, marine and wildlife species of concern to each country.” Concurrently, Bi-National Technical Work Group IV was formed and charged with carrying out the intentions stated in Minute 306.

But the inertia of bureaucracies is hard to break. Water and environment quickly became two separate issues again for the IBWC as political pressures over the lining of the AAC heightened. This, in spite of studies describing how ending seepage from the All-American Canal would result in loss of wetland habitat in the Andrade Mesa that would impact the endangered Yuma Clapper Rail (*Rallus longirostis yumanensis*) along with about one hundred migratory species in the Pacific Flyway (Hinojosa-Huerta et al, 2002). The U.S.-Mexico bureaucratic milieu formed a fifth work group to discuss the AAC, rather than assigning the discussions to the already environmentally chartered Group IV. The U.S. Bureau of Reclamation (USBOR), the lead water agency for the U.S. within the group, drafted a Scope of Work (SOW) which called for two subgroups, one to discuss hydraulic issues pertaining to the lining of the AAC and another to discuss groundwater issues. Through the IBWC, Mexico requested that the impact on the Andrade Mesa wet-

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lands be part of the SOW for Group V, but progress stalled as the U.S.-Section refused to include environmental issues as part of the AAC discussions. Water issues continued to be negotiated within a narrow political perspective, as if the environmental consequences could be placed on hold or wished away.

Since then, discussions on the AAC have again spilled over into the environmental arena. On September 1st 2004, Mexico's Secretary of the Environment and Natural Resources addressed a letter to the U.S. Interior Secretary, marking the first time that environmental agencies outside the Foreign Office (Department of State and Secretaría de Relaciones Exteriores) had raised an issue concerning waters along the boundary with its international counterpart. The letter has forced bureaucracies to acknowledge the interconnectedness of nature, leaving agency jurisdiction as the hindrance next in line.

### *Nature parceled as agency purviews*

In both countries, water agencies only address water issues without concern for environmental impact, and agencies that address the environment may only tend to environmental matters, leaving water issues to the water agencies. Wetlands and wildlife in the U.S. are the responsibility of the U.S. Fish and Wildlife Service (USFWS), which enjoys a vigorous working relationship with Mexico's National Institute of Ecology (INE). But the USFWS will not discuss mitigation and cooperation in the Andrade Mesa Wetlands with INE given the area's association with the All-American Canal. In order for USFWS to address possible restoration in the Andrade wetlands or any part of the Colorado River Delta, conversations must be concurrent with the U.S. Bureau of Reclamation, given BOR's lead on water management issues. But the USBOR has to date only held discussions on Colorado River water infrastructure with the Mexican National Water Commission (CNA) and has rejected meeting with administrative and policy level representatives from SEMARNAT proposed as members for Work Group V.

Ultimately, all U.S. agencies placed AAC discussions on hiatus, as legal action against the U.S. Government was filed in July 2005 by civil groups in Mexicali and Imperial Valley over the procedures fol-

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lowed in the environmental impact studies. The Department of Justice (DOJ) is in charge of responding to legal suits against the government, and subsequently became the lead agency on all AAC talks.

SEMARNAT has altogether addressed three letters to its counterpart DOI Secretary Gale Norton to propose a bilateral task force to discuss the lining of the AAC and its environmental impacts. The thinking behind this Mexican initiative was that raising the discussion to cabinet level members would enable a comprehensive view of the problem and spark a coordinated effort from both bureaucracies involving technical experts as well as policy level personnel, all for the benefit of the border environment. The DOI, however, responded that the issue should be taken up with the IBWC, given that this agency had the lead in consulting Mexico on bilateral water issues. Bureaucratic purview prevailed, and all negotiations stalled.

For all of SEMARNAT's efforts to engage its counterpart DOI in bilateral discussions on the AAC, at the end of the day, Mexico's Foreign Affairs Secretariat (SRE) is the agency in charge of bilateral relations for Mexico. The same holds true in the U.S., where the Department Of State takes the lead. The formal role of environmental agencies in a diplomatic context is to advise the Foreign Office on environmental matters. SEMARNAT, DOI, and EPA, for that matter, are the technical/scientific agencies that provide substance on international issues, not policy.

This is a fact of diplomatic life and a context shaping the negotiations on the AAC that cannot be overstated. The U.S. and Mexico are simply too interdependent in commercial, political, and social terms to allow loose ends to get in the way of their bilateral agenda. At the center of the complex relations between the U.S. and Mexico lies immigration, border security, and trade, not the All-American Canal. In that sense, it is to be expected that the intensity of talks reflect the mood and disposition of the relations stemming from other topics in the bilateral agenda. One example of this might be the case of Mexico's water debt in the Texas-Chihuahua border, finally covered in 2005, thus awarding Mexico with enough moral capital to once more state its objections over the AAC and raise the issue repeatedly before numerous officials in the U.S. Government.

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In the course of the last year, conversations on the AAC between officials from both countries have multiplied considerably. The list is long and includes the Commissioners at the IBWC, SEMARNAT and DOI officials, SEMARNAT and EPA officials to consult agency purview, the Mexican Ambassador in Washington with numerous officials at the DOS, and Mexican Secretary of Foreign Affairs, Luis Ernesto Derbez, with U.S. Secretary of State, Condoleezza Rice. Even Presidents Bush and Fox engaged in a conversation on the All-American Canal at Crawford Ranch in March 2005, a dialogue which sparked a series of meetings in a multi-agency setting in Washington that provided hope but as of yet, no progress.

This diplomatic context, however, does not preclude existing contacts and ongoing cooperation between environmental agencies that result from history and thematic proximity. In that sense, the environmental agencies play a dual role carefully balancing their duties within their own government with the relations they hold with their international counterparts.

This is explicitly the case of the *Agreement between U.S.-Mexico on Cooperation for the Protection and Improvement of the Environment in the Border Area*, a.k.a. The La Paz Agreement, signed in 1983 “to establish the basis for cooperation between the Parties for protection, improvement and conservation of the environment” in the border area (Article 1), framing the parties’ commitment to assess, within their legal framework, “projects that have significant impacts on the environment of the border area [so] that appropriate measures be considered to avoid or mitigate adverse environmental effects” (Article 7).

The Environmental Protection Agency (EPA) was entrusted with the task of administering the agreement on behalf of the U.S. and the Secretaría de Desarrollo Urbano y Ecología, a predecessor to SEMARNAT, for Mexico. This designation formalized a direct cross-border relationship between the agencies, which enabled a string of border environment cooperation programs, Border 2012 being the latest. EPA and SEMARNAT have also become main players in evolving NAFTA environment institutions, namely the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBANK).

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But, The La Paz Agreement, signed by Presidents Reagan and De la Madrid, was never submitted to Congress for ratification. So, implementing the agreement itself to its full extent, let alone enforcing a specific article in it for the purpose of resolving a bilateral conflict, remains a complicated undertaking within the national bureaucracies. Even though EPA and SEMARNAT are in charge of its compliance, agency turf is a sensitive issue in government circles, and agency officials transgress this rule at the risk of waging political battles within their administrations. Be it historical priorities or a reality born of practice, the La Paz Agreement has contributed little to improving conditions for greater cooperation in cross-border negotiations.

### *The AAC: not **just** a federal issue*

The most significant action of late by a non-federal stakeholder to the AAC is the lawsuit filed by three civil society groups: the Council on Economic Development of Mexicali (CDEM), the Citizens United for Resources and the Environment (CURE), a group based in the Imperial Valley and Desert Citizens Against Pollution. A petition and notice letter was first filed in mid-May and a lawsuit in July 2005 questioning DOI's compliance of National Environmental Policy Act (NEPA) procedures regarding the Environmental Impact Statement/ Environmental Impact Review on the AAC lining project. It essentially brought discussions between U.S. and Mexican federal agencies to a halt, as the U.S. Government decided that only DOJ lawyers could speak on the subject. Other U.S. non-governmental organizations, the Sonoran Institute, Defenders of Wildlife and Environmental Defense among others, have addressed several written communications to Secretaries Rice and Norton and other top officials in the federal Government to bring their attention to studies showing significant impacts to critical wetland habitat in the U.S. and Mexico. The main concerns outlined by these groups include not only the environmental impact of the canal lining, per se, but also complications to settlement obligations to the San Luis Rey tribe, causing a possible disruption of Colorado River-related operations. Several tribes from the Colorado River Indian Tribes and the Ten Tribes Partnership, notably the

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Cocopah and the Quechan Indians, have joined the chorus of non-federal players, voicing concerns over several aspects of the Colorado River Water Delivery Agreement, ranging from omissions by the BOR's Environmental Impact process to the relegation of the seniority of their water rights.

### *Breaking the impasse*

If there's ever been a natural resource management issue where government and diplomatic institutions along the U.S.-Mexico Border must rise to a place of leadership it's the AAC. The livelihood of economic players and of indigenous groups that have straddled the border since time immemorial is at stake, not to mention the future of an ecosystem with unique characteristics. Given the great effort invested on cooperation by both federal governments, the state governments along the border, the academic community, the NGO community, and society in general, the matter at hand now is how Mexico and the United States will employ their cooperative outlook on border environment issues to solve this spiny topic.

A major adjustment to the current terms of exchange between both countries is needed in order to break the impasse on the AAC. Bureaucracies must conform their approach to the goals staked; the ends should justify the means, and not the opposite. Nature requires a joint not a parceled perspective. Therefore, a system of discussion must take hold erasing the artificial boundaries of agency purview, so that proper management of a system as complex as nature can be successful.

Two notable tools of U.S.-Mexican diplomacy hold promise. First and foremost is the La Paz Agreement, which has been grossly underutilized. This twenty-plus-year old document once enshrined a basic set of rules by which both countries could envision a cordial and respectful co-existence along their common border and a sustainable future for their communities. The essentials of the La Paz Agreement boil down to two factors: communication and bilateralism. Communication requires the free exchange of information and a congruent dialogue that leads to solutions of problems. Bilateralism implies the conviction that the border area is a shared responsibility and that solutions to problems of mutual concern

must be determined jointly. Reciprocity is a prime tenet of the accord, and a value to which both countries committed to in the agreement.

The Transboundary Environmental Impact Assessment (TEIA) was mechanism specifically devised by the environmental agencies of Canada, the United States and Mexico to streamline solutions to cross-border environmental problems. The TEIA has hit a dead end for now, as differences in the legal frameworks of Mexico and the U.S. have prevented its implementation. Both mechanisms, the La Paz Agreement and the TEIA will cease to exist as tools for diplomacy unless both countries exhibit a renewed determination and a political will to revive them.

### *Can't fool Mother Nature*

The Colorado River Delta region and the human infrastructure created for its use may be the poster child of hybrid natural-manipulated systems. For over a century, the Colorado River system has witnessed a continual action-reaction mechanism, and the results to the natural ecology have been significant. Manipulation of the Colorado is responsible today for the creation of systems perceived as natural, like the Salton Sea, and for the demise of others, most notably a rich and highly productive estuary in the Gulf of Santa Clara. Many species, such as the totoaba (*Cynoscion macdonaldi*), have been driven to virtual extinction, and others, currently listed under the Endangered Species Act, are further impacted by the river's management.

It's a repeated truism that nothing goes unnoticed within a system: when one element is altered, another must adjust. John Muir once said that "When we try to pick out anything by itself, we find it hitched to everything else in the Universe." Hence, the lining of the All-American Canal will undoubtedly fail in fooling Mother Nature. If the lining of the Canal does occur, impacts will accrue to the already altered Colorado River Delta Region.

Though all stakeholders involved appear to realize this inexorable truth, two questions are left for future debate. First, how does this fact of nature play itself out in the diplomatic and political realm, given the multiplicity of stakeholders and stakeholder interests

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involved in the Delta? And second, assuming that further aggressions are tolled on the natural system, how long will the system stand without collapse?

Carlos A. de la Parra Rentería

# Preface

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This volume on the All-American Canal is a most welcome addition to the literature on transboundary water resources, U.S.-Mexican relations, and the role of laws, institutions, and diplomacy in contemporary international affairs.

Appearances aside, this volume is about much more than one instance of binational conflict. The All-American Canal story speaks directly to the often-troubled history of relations concerning shared water resources and the present strain on U.S.-Mexican relations. While the accounts of events, failures in negotiation, and present inertia pertaining to the problem are frustrating and even discouraging, this book highlights some reasons for hope and even optimism.

Embedded in the very name "All-American Canal" is a clue to the basic issue at stake. Unilateralism is at odds with geographical and hydrological reality in the river basins and aquifers that straddle international boundaries. To behave as if water were ice cubes that can be separated and dumped into different glasses held individually by the parties involved leads to problems all around. In dozens of locations on the very long U.S.-Mexican border, how one nation handles water on its side of the border very much affects the welfare of the other. Saline discharges from irrigation in Arizona degrades the quality of Colorado River water flowing into Mexico and even precipitated an international crisis in the early 1970s. Present day pumping by the Chihuahuan municipio of Ciudad Juárez from an aquifer shared with the Texas city of El Paso threatens the economies of the binational region.

From the very beginning the All-American Canal was an inappropriate answer to a misconceived problem. Action was precipitated by a breach in the engineering works related to the irrigation diversions and canals partly in Mexican territory, but largely serving U.S. investors. For nearly two years the Colorado River poured into low lying areas, flooding farms and cities including Mexicali, Baja California, and filling what is now known as the Salton Sea in

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California. Poorly constructed works and inadequate and short-sighted private investment were mainly to blame. But, in authorizing and funding the project, federal agency officials and members of the U.S. Congress argued that it served national security. Rather than framing the issue appropriately as a joint management problem, the fault was placed on the location of the Alamos canal running through Mexico but serving irrigators in both the Mexicali and Imperial Valleys, in Baja California and California, respectively. Sovereign national power was portrayed as essential to security in an area where limited national territorial sovereignty would have been more appropriate. Unilateralism and “going it alone” in relation to the All-American Canal set an unfortunate precedent, which has been a strategy followed by the United States far too frequently with its friends and allies.

Progress toward binational, joint water management has occurred in fits and starts and is far from sufficient. The International Boundary and Water Commission-Comisión Internacional de Límites y Aguas (IBWC-CILA) has more than 60 years of experience in managing border water and is sometimes celebrated as a model international institution. However, in practice, the institution operates to protect sovereignty when separate national interests are in conflict with open collaboration. Each section is organized separately with its own engineers and sources of data that are not always shared or available to the public. The La Paz Agreement, signed in 1983, requires the United States and Mexico to cooperate in resolving environmental problems of mutual concern and led to the establishment of a number of task forces and working groups with membership from federal, state, and local authorities from both nations. The La Paz Agreement has been more a symbol and a framework than a blueprint for action. The Border Environmental Cooperation Commission (BECC), established as part of the North American Free Trade Agreement (NAFTA), is laudably inclusive in terms of membership embracing the environmental agencies in both countries as well as state and public members. However, its portfolio is limited to certifying planning and construction of infrastructure projects. The behavior of the United States in failing to consult with Mexican authorities prior to the decision to alter the All-American Canal is not helpful in advancing holistic, integrated transboundary water management.

## Preface

One of the contributions promised in the publication of this book is to raise the visibility of this terribly important problem and to inform the discourse. While the plan to line the All-American Canal in 2006 gives this story immediacy, it is anything but new. It has been part of regional and state agency planning for nearly 25 years. Both in conference speeches and in his writing, the late Albert E. Utton raised a red flag about the topic among members of the water resources legal and academic communities. However, in the halls of power in Washington D.C., this issue has, until very recently, generally been ignored. Lack of attention can be partly explained by crises such as illegal drug trafficking and undocumented immigration, which tend to eclipse all else. More is involved however, and it is generally the case that Mexico takes its relationship with the United States much more seriously than the United States takes Mexico. Matters of great importance to Mexico in the bilateral relationship seldom make the U.S. national agenda unless Mexico somehow gains some leverage through appeals to the international community or holds out, until its issues are addressed, on some arrangement the United States badly wants. It must be remembered that the United States avoided water allocation treaties related to either the Colorado River or the Río Grande until the Roosevelt Administration made such a treaty part of the concession to Mexico for joining allied forces in World War II. It is not naive to believe that really good books such as this one have some power to create an attentive audience.

The story of the All-American Canal presented here highlights the failure of existing bilateral institutions to resolve water problems between the United States and Mexico. While IBWC-CILA has very broad authority, it has not used its authority to provide joint consideration of groundwater apportionment. Ultimately the two nations must agree on a groundwater treaty, but each year the numbers of groundwater users increase, the levels of shared aquifers decline, and local interests using groundwater become more recalcitrant, making the negotiation of fair and equitable apportionment more difficult. While a disappointment to some, the new international environmental institutions created by NAFTA present new forums and provide some new bargaining resources, including new

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infrastructure and funding to mitigate and compensate Mexico for harm that may be suffered from lining the new All-American Canal. Even so, the responsiveness of these institutions is very limited.

The real issue raised here is whether the enormous population growth experienced on both sides of the border is sustainable in the face of the physical limitations of the regions' rivers and aquifers. The All-American Canal is as much about the issue of growth as it is about international allocation of water. Urban users, particularly the City of San Diego, California, will win a greater share of the Colorado River at the expense of agricultural interests in the Imperial Valley. To many this reflects a movement of water to higher and more efficient uses through markets. It must be remembered, however, that unlike alfalfa and cotton fields that can be fallowed in times of drought, municipal and industrial users cannot simply turn off the faucets. It may well be that the collision between the imperative of drier climate predicted for the border region and the actuality of unabated population growth (which is facilitated by the new All-American Canal) will be greater than any previous challenge.

Finally, this volume is laudable for demonstrating the great strides made in scholarship on the shared natural resources among the United States and Mexico. The norm of the past has been a thin literature coming from mainly U.S. scholars in border-state universities with only a trickle of academic writing from Mexicans presenting a Mexican perspective. Over the past several decades, academic and research institutions located near the Mexican border have improved dramatically in quality, and there is an outpouring of books and articles on a whole range of common resource issues. While there is great asymmetry in the national power relationship between the two nations, there is something approaching parity in relevant policy scholarship. This book will inform relevant policymakers and citizens in Mexico and the United States, and to the extent that knowledge is power, it will forge a powerful negotiation force for both.

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# Introduction

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The evolution, growth, and transformation of human societies could not be explained but for access to water. As such, the control of water as a resource and the economic development achieved throughout the 20th century are inseparable and interrelated elements.

Control of water resources has become a source of discord and has increased the possibility of conflicts between nations. Peter Gleick recounted the conflicts between 1503 and 2000 that centered on water and found they have occurred with greater frequency since the 1940s. In his study, it was clear that the U.S.-Mexican border region has seen the least amount of conflict over water throughout history.<sup>1</sup> But now there is an increased risk of conflict over water access due to greater demand in the face of scarcity, which is a consequence of global climate change as well as the overexploitation of traditional supply sources.

In the U.S.-Mexican border region, where supply is low and demand high, the risk of a conflict over water is great. Yet, there have been no significant conflicts in the past over its distribution. This makes the region an excellent case study for evaluating the strategies the two countries have used to settle their disputes over access and control of water—that is, a case study on the political will to reach rational and peaceful agreements on the distribution of a scarce resource.

Although scholars have found inefficiencies in the law that regulates the distribution of water, the law itself is not a rigid, static, or unchanging one. Rather, its design allows for subsequent agreements, called Minutes, to be incorporated into the law to resolve specific issues. This makes it possible to adapt to the changes in management of water on either side of the border. As well, new agreements have been forged between the United States and Mexico that broaden understanding and cooperation in the care and management of the resources located on the shared border. In 1983, the

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United States and Mexico signed the Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area. Referred to as the La Paz Agreement, it calls for binational cooperation to reduce pollution and restore the environment throughout the border region, defined as the area situated 100 kilometers on either side of the U.S.-Mexican boundary. As part of the North American Free Trade Agreement between the United States, Mexico, and Canada, the North American Agreement on Environmental Cooperation was signed in response to public calls in the United States and Canada for environmental protection. New institutions were created and charged with enforcing the agreement and administering the programs supporting environmental projects.

There are, though, important challenges for water use and management in the region. Growing demand for the resource and its limited availability are the factors determining new water policy. Until recently, the only concern of water-management agencies had been to obtain greater volumes of water to satisfy the projections of future demand. Although, generally speaking, this pattern continues, different potential policies are now being discussed, such as savings, conservation, treatment, and reuse, which taken together represent an important qualitative change and create hope that water culture will evolve in terms of water-use practices and institutional management models.

Concerns abound on both sides of the border about environmental risks from exploitation of water sources as well as the need to restore the ecosystems in the watersheds from which water resources are obtained. These ecosystems have been or currently are being negatively impacted by the lack of minimum, good quality water flow. They are the natural environment upon which a vast array of species depends.

The U.S.-Mexican border faces a bleak future in terms of the distribution of water from shared watersheds. No additional water is available, and what one side somehow obtains will be at the expense of the other or of the environment itself, which could translate into a severe or even irreversible conflict or environmental catastrophe. Nevertheless, there is the historical precedent of the United States and Mexico working together to resolve their controversies and conflicts. The institutional framework they have created to deal with

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potential conflicts focuses on cooperation.<sup>2</sup> Logic dictates that this attitude will continue, given the growing integration of the economic interests of both countries and the dynamic that the border region itself represents.

This context is the framework within which this volume analyzes the conflict over the lining of the All-American Canal. This canal runs parallel to the international border and delivers Colorado River water from the Imperial Dam to the agricultural areas of the Imperial Valley in California. Because it is not lined with concrete and instead is dug from porous sand, for decades it has fed the Mexicali aquifer with the water that seeps from it, and in turn has provided Mexicali Valley growers with water to irrigate their lands.

In 1988, the U.S. government approved the canal-lining project over the manifest opposition of the Mexican government, which balked because of the negative impact it would have on the Mexicali Valley growers. Although the project has been postponed several times for various reasons by the United States, in recent years resources have been approved for both the lining and the conveyance of the recovered water to the urban region of San Diego, California.<sup>3</sup> California's governor at the end of September 2003 granted an extension for the project from 2006 to 2008. But, once the All-American and Coachella Canals are lined, the water will be sent to San Diego for the next 110 years, per an agreement reached between the water authorities of Los Angeles and San Diego.

In 2005, at a trilateral meeting on security between the governments of the partner countries to the North American Free Trade Agreement, the Mexican government raised the issue of lining the AAC, but only after the government of Texas raised the issue of the historic water debt from the Rio Grande watershed. Since that meeting, both governments have been negotiating a solution to their differences over the AAC lining project.

The objective of this volume is to provide a broad vision of the context within which the decision to line the canal was made and the implications the lining has on the Mexicali Valley and the state of Baja California, both of which are experiencing accelerated growth in water demand and whose only stable supply is Colorado River water. Possibilities for a solution to the controversy and conflict surrounding the lining of the AAC are presented and explored.

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They offer a different direction than proposals floated by the governments and take advantage of the existing institutional framework of cooperation. They incorporate new visions and models for water resource management in a crossborder context. In this sense, this volume is a compilation of works from different disciplinary perspectives that provide and analyze the region's biophysical and ecological information, quantify and address the quality of the water, and outline the probable impacts on the Mexicali Valley and, to a lesser degree, Baja California.

This volume is a collective project resulting from the academic collaboration of experts concerned about one of the issues that will surely play an ever more important role in the binational agenda—water management. The multidisciplinary approach to the issue is one of the enduring benefits of this work and will result in a more integrated vision of the problem and the binational management of the resource.

The lining of the AAC is a microcosm of other problems with shared natural resource management along the border between the United States and Mexico. Here, the optimum advantage and conservation of resources demand, above all, imagination. They will engender cooperation and the participation of the neighboring communities in an effort to overcome the asymmetries and points of view anchored in unilateralism, as is the status quo.

Some of these works have their roots in projects sponsored and completed by investigators at El Colegio de la Frontera Norte (COLEF) and the Centro de Investigación Científica y Estudios Superiores de Ensenada (CICESE). Others are the result of work carried out in other institutions of the region, such as Universidad Autónoma de Baja California (UABC) and Instituto Politécnico Nacional in Northwest Mexico. Still others are the result of long histories of study of the institutional problems in crossborder water management, as is the case for Stephen P. Mumme and Donna Lybecker of Colorado State University; María Rosa García Acevedo of California State University, Northridge; and Francisco Zamora and Peter Culp of the Sonoran Institute. Zamora and Culp, along with Osvel Hinojosa of Pronatura, kindly accepted the invitation to contribute the chapter on the environmental impact of lining the AAC, which greatly enriches this English edition.

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This volume seeks to contribute, inasmuch as possible, to the understanding of the issue and to help find a satisfactory solution to it. The authors explore everything from classically state-centric solutions to the role of non-traditional stakeholders, such as Congress, local governments, and even the possible links between crossborder stakeholders.

This volume is organized into three sections. The first deals with aspects related to the biophysical and environmental characteristics of the region. Here, Francisco Raúl Venegas summarizes the most notable biophysical characteristics of the region, where the Colorado River and its delta come together yet are fragmented by their belonging to different political units. Francisco Zamora, Peter Culp, and Osvel Hinojosa list the biodiversity that characterizes the area where the AAC is located, quantifying and typifying the damage the environment is expected to sustain upon the project's implementation. They also establish the limitations of the environmental impact statements performed by the United States government to gain approval of the project.

Jaime Herrera Barrientos, with a team of colleagues, compares the Mexicali aquifer characteristics with the hydrology of the AAC to establish the relationship between them and then determine what affect losing the seepage from the AAC will have on water quantity and quality. In the third work in this section, Gerardo García Saillé, along with Ángel López and José Antonio Navarro Urbina, study the existing relationship between the AAC and the Mexicali aquifer's geohydrology to determine how the loss of recharge from the canal's seepage will affect on the aquifer's water quality.

The second section covers the sociopolitical problems in the environment in which the AAC's lining decisions have been made. Fernando Medina applies an historical perspective to the visions that have governed water-related decisions in the American Southwest, and in particular in the border region, pointing out the adjustments that have taken place between the river-bordering states as a central element in understanding the water-policy context of the region. María Rosa García Acevedo addresses the vision with which the political discourse surrounding water has taken place in the United States, and the fact that the resource management policy actions are geared toward making the countries either winners or

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losers of a shared resource. José Luis Castro analyzes the most likely scenarios in water availability and management in Baja California cities in the long run, concluding that it is the region's urban environment that will feel the effects of lining the AAC, and that the responsible authorities face considerable challenges that require timely decisions to satisfy a growing demand, now and in the future.

Chapters in the third section address the alternatives that both the U.S. and Mexican governments could follow to find a mutually agreeable solution, building on a spirit of cooperation rather than competition, thus avoiding conflict over lining the canal and the damage it will cause to Mexicali's economy. Instead, these chapters suggest, the governments could set an enduring precedent that could be the basis for the resolution of other binational conflicts over water.

Stephen Mumme and Donna Lybecker focus their analysis of the differences between the United States and Mexico on lining the AAC and its negative impact on Mexico using the theoretical perspectives of international law as a starting point. They also use the theory of common resources and game theory to establish the possibility that the parties can arrive at an agreement based on cooperation and exchange, overcoming the zero-sum position under which they have been operating until now. These authors suggest that recent developments in international law theory open the door to considering that this case is a matter of that nature. In this regard, Mexico would have to avail itself of international tribunals to pressure the United States and force a bilateral agreement based on the principles of exchange and mutual concessions.

Vicente Sánchez analyzes the position Mexico has maintained and the negotiations between the two governments. He presents the possibility that the two countries could reach a cooperative agreement, considering that historically they have built an institutional framework to do so in the past. However, this will require that the Mexican government abandon the low profile it has maintained on this issue and assume a defined position and a negotiating strategy with an integral vision that goes beyond the issue of lining the AAC and considers other environmental elements that are part of the geographical unit where the canal is located.

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Finally, Alfonso Cortez Lara deals with water availability in the Mexicali Valley and the impact of lining the AAC. The author posits that arriving at a mutually advantageous solution requires a change in the principles upon which the negotiation has been established. Until now a market equilibrium criterium has prevailed, while criterium of equilibrium between the parties in the game has been absent. This demands greater involvement of various agents on both sides in building a solution, as well as the establishment of an information base for both sides of the border with the same criteria and methodology.

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## ENDNOTES

<sup>1</sup> According to Gleick, the only conflict recorded in the region occurred between California and Arizona in 1935, when Arizona mobilized National Guard units to its border with California in protest of the construction of Parker Dam, which would divert water from the Colorado River to California.

<sup>2</sup> The International Boundary and Water Commission (IBWC) is the binational agency charged with implementing the agreements between the United States and Mexico related to territorial limits and ordering the water assignments agreed to in the 1944 Water Treaty, which apportioned the volumes of water from the Rio Grande (Río Bravo), Colorado River and Tijuana River. IBWC also has remediation attributions along the border. In recent years the institutional framework for environmental protection has been strengthened. In 1983, the La Paz Agreement was signed relative to cooperation for environmental remediation on the border. Later, as

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part of the North American Free Trade Agreement (NAFTA), the Border Environmental Cooperation Commission (BECC) was established, as were the North American Development Bank (NADBank) and the Border XXI and Border 2012 programs, through which binational cooperative efforts on environmental objectives are funneled.

<sup>3</sup> This is according to articles in the *Los Angeles Times* and *San Diego Union Tribune*.