EVAN R. WARD
The Irrigated Oasis: Transformation of the Colorado River Delta, 1940-1975
(Under the Direction of LESTER D. LANGLEY)

This study chronicles Mexican and U.S. efforts to develop a capital-intensive agricultural oasis in the Colorado River Delta between 1940 and 1975. It is divided into three thematic sections that deal with the different stages of development of the region. Section I, "Creating the Irrigated Oasis, 1850-1940" (chapters 1-2), illustrates not only how conquest of land and water has been a central theme in the delta since the mid-nineteenth century, but also how these interactions have shaped regional aspects of U.S.-Mexican relations during the twentieth century.

Section II, "Florescence of the Irrigated Oasis, 1940-1975" (chapters 3-7), examines the most intensive phase of water resource development in the region, as well as the recognition by regional and national officials that unmanaged growth on both sides of the border could not continue without severely damaging the environment that sustained the irrigated oasis. Nevertheless, while the salinity crisis of the 1960s and 1970s compelled the United States and Mexico to reach a diplomatic solution – which involved building a desalination plant in Yuma, Arizona – it did not fundamentally change the developmental mindset of regional or national leaders.

Section III, "Beyond the Irrigated Oasis" (chapters 8-9), moves geographically beyond the irrigated oasis in order to illustrate the fundamental unity of water use throughout the Lower Colorado River Basin. This section discusses ways in which water users throughout the basin, particularly in the urban oases of Los Angeles, Phoenix, and Las Vegas, have inadvertently contributed to the decline of the delta. This section also explores how ecological studies at Kesterson Wildlife Refuge in California moved scientific investigation of contamination in the delta beyond an exclusive emphasis on salinity. Finally, this final section explores the mechanisms through which change might be affected in the region, and compares water problems in the delta to similar situations around the globe.

INDEX WORDS: Colorado River Delta, Environmental Politics, Border Studies, Salinity, U.S.-Mexican Relations, Colorado River Basin.

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# TRANSFORMATION OF THE COLORADO RIVER DELTA, 1940-1975

by

EVAN R. WARD

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EVAN R. WARD

Approved:

Major Professor: Lester D. Langley

Committee: James Cobb
William Stueck
Thomas Whigham
Catherine Pringle

Electronic Version Approved:

Gordhan L. Patel
Dean of the Graduate School
The University of Georgia
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## Archives and Research Libraries Consulted

**México D.F.**

Archivo Histórico del Agua, México D.F.

Archivo General de la Nación, México D.F.

Archivo del Secretaria de Relaciones Exteriores, México D.F.

Library, Secretaria de Relaciones Exteriores, México D.F.

**Washington D.C.**

National Archives II, College Park, Maryland

Library of Congress, Washington D.C.

Department of the Interior Research Library, Washington D.C.

**Mexicali, Baja California Norte, México**

Archivo Histórico del Estado de Baja California, Mexicali, B.C., México

Archives of the Museo Universitario de UABC, Mexicali, B.C., México

**Imperial Valley, California**

Imperial Irrigation District Research Library, Imperial, California

**Phoenix, Arizona**

Hayden Arizona Archives, Hayden Library, Arizona State University, Tempe, Arizona

Arizona State Archives, Phoenix, Arizona

**Yuma County, Arizona**

Yuma County Water Users Association Historical Papers, Yuma, Arizona

## Acronyms

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| USDS | United States Department of State |
| DOI | United States Department of the Interior |
| USRS | United States Reclamation Service |
| USBR | United States Bureau of Reclamation |
| IID | Imperial Irrigation District |
| YCWUA | Yuma County Water Users Association |
| WMIDD | Wellton-Mohawk Irrigation and Drainage District |
| SRE | Mexican Secretary of Foreign Relations |
| SRH | Mexican Secretary of Hydraulic Resources |
| CCI | Independent Confederation of Peasants |
| CNC | National Confederation of Peasants |
| LAE | State Agrarian League of Baja California |
| PRI | Institutional Revolutionary Party |

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## Introduction

*". . . It is evident that the ecological problem [of the borderlands region] is a question that involves a great diversity of sources of tension, but is also a subject that, for the interest and the convenience of [the] two communities that share in great measure the same habitat, should hope for a growing sense of collaboration and understanding."*[1]

During the past decade, a growing stream of magazine and newspaper articles has drawn attention to severe ecological problems that threaten the Colorado River Delta. The Colorado and New River flow in opposite directions yet reveal equally disturbing transformations in the region's ecosystem. One journalist lamented that the once vibrant delta was now "a barren wedge of desert and salt flats where, some days, the only people to be seen for miles are military patrols on the lookout for drug smugglers." Cut off from the river's replenishing waters by the grasp of large Western cities, power companies, and agricultural interests, the delta's biologically rich wetlands quickly deteriorated. Numerous major dams upriver endanger at least 102 plant and animal species and also threatened the existence of the Cocopah Indians, who have relied on the Colorado River for sustenance and as a foundation for their cultural and religious traditions. One journalist succinctly noted that the river's water was "diverted to leaky irrigation channels, pipelines, swimming pools in Los Angeles, golf courses in Palm Springs; to cities like Denver, Salt Lake City, Albuquerque, San Diego, Tucson, Phoenix, and Las Vegas." Similarly, a Mexican author lamented, "In exchange for all these swimming pools, dams, and lakes, the [Cocopah] people are dying."[2]

Ninety miles to the northwest of the confluence of the Colorado River and the Sea of Cortez, the New River dumps "a swirling, olive green soup of chemicals and bacteria,

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[1] Antonio González de Leon, "Factores de tensión internacional en la frontera," in *La Frontera del norte: integración y desarrollo*, Roque González Salazar, editor, (México City: Colegio de México, 1981) 24.

[2] Frank Clifford, "Plotting a Revival in a Delta Gone to Dust," *Los Angeles Times*, March 24, 1997, A-1;Steve Yozwiak, "Two Waterways 'Endangered'; Pinto on Roster Third Year, Colorado's Delta is Added," *The Arizona Republic*, April 6, 1998, B-1;Stan Grossfeld, "A River Runs Dry; A People Wither; Their Water Taken, Mexico's Cocopah Cling to Arid Homeland," *The Boston Globe*, September 21, 1997, A-1.

. . . dead animals, industrial waste, and human excrement" into the Salton Sea.[3] The New River and the Salton Sea were rejuvenated in 1905 when engineers for the California Development Company attempted to open a new intake from the Colorado River to transport water to the Imperial Valley. Enticed by gravity, the entire course of the Colorado River raged through Northern Baja California and then returned to the United States at Calexico, California, eventually filling the ancient Cahuilla Basin, now known as the Salton Sea. Intensive farming, *maquila* factories, and local sewage systems continued to renew the river with wastewater during the rest of the twentieth century. By the 1990s, environmental groups considered the New River to be the most polluted river in the United States. Americans of all ideological stripes (farmers, environmentalists, and residents in the Imperial Valley) pushed for the clean up of the New River, beginning with a call for greater regulation of Mexicali's sewage system.[4]

The outpouring of attention by the press over these problems has raised awareness of the linkages that exist between intensive agricultural and urban development and the ecological transformation of arid landscapes. Unfortunately, the plight of the New River and the lower Colorado River has largely been treated as a series of separate problems. There are several factors that account for this reductionist tendency. Save for the All-American Canal (which transports water from the Colorado River to the Imperial Valley) there are few geographic connections that link the Colorado and New Rivers. Second, special interest groups and local residents are most likely to focus on the river that affects their own well being. Those interested in solving the plight of the Salton Sea generally are not the same people that are fighting to preserve the Cienega de Santa Clara in the Colorado River Delta. Press coverage of the two disasters has largely mimicked this

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[3] The New River is not the only river that feeds the Salton Sea. In fact, the Alamo River contributes 600,000 acre feet of water per year to the Salton Sea while the New River only contributes 475,000. The Whitewater River and various other minor streams contribute in excess of 250,000 acre-feet of water per year. This paper looks specifically at the role of the New River in the region's ecosystem because of its extreme levels of pollution and its direct threat to sizeable human, animal, and plant communities in the Delta. See "Alternative Futures for the Salton Sea," UC MEXUS Border Water Project, Issue Paper Number 1, (Riverside, CA: The University of California Institute for Mexico and the United States, 1999), 8-9.

[4] John Dillin, "Pollution Seeps From Mexico to U.S.," *The Christian Science Monitor*, December 28, 1989, 6; *U.S. Newswire*, "New River Named One of Nation's Most Threatened Rivers," April 16, 1997; *Newsweek*, "In Health There are No Borders," August 1, 1988, 47; Steve LaRue, "Taking the Initiative: The

compartmentalization of private, political, and diplomatic interests. Unless the two rivers are understood as part of a unified ecological system, however, there is little reason to link the various forms of degradation to a common historical source.

Historiographically, the delta has suffered from distortions due to the broader geographical interests of scholars that have included the region in their analyses of environmental issues in the Western United States and Northern Mexico.[5] The attention that historians have given to the salinity crisis in the Wellton-Mohawk Valley is the best example. In 1961 the U.S. Bureau of Reclamation (USBR) constructed a pipeline that dumped saline water from poorly drained lands in the Wellton-Mohawk Valley into the Colorado River at a point near the U.S.-Mexican border. The contaminated water immediately threatened cotton crops in Mexicali Valley, which received water from Morelos Dam. Scholars on both sides of the river condemned the unwillingness of the United States to remedy the problem, which dragged out over fourteen years. Much of the scholarly writing reflected a desire to challenge – and curb – the power of the USBR. These representations of U.S. dominance have a good deal of merit. Unfortunately, some scholars have unintentionally masked the agency of Mexican and U.S. residents in the

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New River Cleanup," *The San Diego Union Tribune*, December 26, 1992, A-1.

[5]Nevertheless, a good number of Mexican historians, as well as a smaller group of American scholars, have produced impressive regional histories of the Delta that chronicle intensive regional development and ecological change. María Eugenia Anguiano Téllez's *Agricultura y migración en el valle de Mexicali* (Tijuana: COLEF, 1995), offers the most conclusive study of the growth of agribusiness in Mexicali Valley and its strong ties to American capital. Other studies that discuss the development of Mexicali Valley include Adalberto Walther Meade, *El valle de Mexicali* (Mexicali, B.C..: Universidad Autónoma de Baja California, 1996); Pablo Herrera Carrillo, *Colonización del valle de Mexicali* (Mexicali, B.C.: Universidad Autónoma de Baja California, 1976) Pablo L. Martínez, *Historia de Baja California* (México: Consejo Editorial del Gobierno del Estado de B.C.S., 1991); Fernando Jordan, *El otro México: biografía de Baja California* (México D.F.: Secretaria de Educación Pública, Frontera, 1976); *Mexicali: una historia*, tomos 1-2 (Mexicali, B.C.: Universidad Autónoma de Baja California, 1991); William deBuys and Joan Meyers discuss the Imperial Valley and Salton Sea region in Salt Dreams: Land and Water in Low-Down California (Albuquerque: University of New Mexico Press, 1999); Donald Worster discusses developments in the Imperial Valley, California, in Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon, 1985), 194-212; Norris Hundley, also traces the development of the Imperial Valley within the context of California water issues in *Great Thirst : Californians and Water, 1770s-1990s* (Berkeley: University of California Press, 1992); The creation of water policy and the growth of agribusiness in Yuma County, Arizona, are treated in Evan Ward, "Crossroads on the Periphery: Yuma County Water Relations, 1922-1928," unpublished M.A. thesis, University of Georgia, Athens, 1997.

delta who also played a critical role in the ecological strains created through intensive regional development.[6]

Once the historical lens is focused primarily -- and not peripherally -- on the Colorado River Delta and the people that live there, a clearer picture of how regional development contributed to ecological degradation will emerge. Methodologically this is most effectively accomplished by employing a diplomatic analysis of the international aspects of regional development and an environmental examination of the effects of that development on a local level. In one sense, diplomatic and environmental history are fundamentally at odds with each other. While diplomatic history defines its areas of interest by political boundaries, environmental historians tend to look at space on a landscape scale, regardless of the political borders that might intersect a politically defined region. Development along the Mexican-United States border during the past century and a half, however, has encouraged historians to make connections between the two seemingly disparate fields. Social, economic, and political spheres of influence do not stop at the border between the two nations. In essence, borderlands historians have attempted to measure the impact of human communities on the land and people of both nations within (and sometimes beyond) the border region. In this sense, the disciplines of ecology and diplomatic history find their confluence in their respective search for greater understanding of complex issues.

As mentioned above, the division between the Colorado and New Rivers confounds the inter-related nature of the Delta's ecosystem. The delta extends from the Cauhilla Mountains south to the Sea of Cortez, and west from the edge of Imperial and

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[6] Norris Hundley discusses the salinity crisis as an extension of the Mexican Water Treaty of 1944 in *Dividing the Waters: A Century of Controversy between the United States and Mexico* (Berkeley: University of California Press, 1966), 173-181. Philip Fradkin focuses on the environmental and international ramifications of the crisis in *A River No More: The Colorado River and the West* (New York: Knopf, 1981), 291-318. Fradkin provides an excellent analysis of the political importance of the crisis in Mexico. Leon Metz deals with the environmental aspects of the crisis and underscores Carl Hayden's reluctance to help Mexico in *Border: The U.S.-Mexican Line* (El Paso: Magnan Books, 1989), 272-290. Dale Furnish and Jerry Landam provide the best study of the Mexicali area prior to and during the crisis in "El Convenio de 1973 sobre la salinidad del río Colorado y el Valle de Mexicali," in *Revista de la Facultad*, Tomo xxv, January 1975, Universidad Nacional Autónoma de México, 103-129. They trace the agricultural development of the region and the ecological impact of salinity on the fields. Maximiliano Cervantes Ramírez and Francisco A. Bernal Rodriguez provide a broad scientific overview of the salinity crisis in "Comportamiento de la salinidad en el agua del río Colorado," *Manejo ambientalmente adecuado del agua: La frontera México-Estados Unidos*, José Trava Manzanilla, Jesús Román Calleros y Francisco

Mexicali Valley to the Wellton-Mohawk Valley. The widespread use of water from the Colorado River has transformed the disparate communities in the region into a coherent and inter-dependent ecosystem. Yuma, Arizona, and the Mexicali Valley are linked by the diversion point at Morelos Dam. The salinity crisis provided ample evidence of that relationship. Similarly, Yuma County and the Imperial Valley are linked by the All-American Canal. Finally, the New and Alamo Rivers, among others, carry irrigation run-off and wastewater from Mexicali Valley and the Imperial Valley, north to the Salton Sea. Groundwater aquifers that lie beneath the international boundary mock the divisions that human societies impose upon the land. In sum, the well being of the entire delta is largely dependent on the responsible use and disposal of waters from the Colorado River and the aquifers that it feeds in the delta region. As an open ecological system, social, political, economic, and environmental events outside of the region also influence the nature and pace of natural resource use in the Colorado River Delta.

A model of the Colorado River Delta that examines current problems within the context of the region's history during the nineteenth and twentieth century also sheds light on the integrated nature of regional development and environmental distress in the delta. From a presentist perspective, sewage and refuse from Mexicali *have* been the most immediate source of pollution to humans in the New River. Similarly, American interests bear most of the burden for over-exploitation of the Colorado River. Therefore, journalists and scholars writing about the *immediate* cause of salinity problems in the delta during the 1960s and 1970s are correct in pointing to the Wellton-Mohawk Valley as the offending party. Within a broader temporal framework, however, all these problems share a common source rooted in long-term competition between the United States and Mexico for water. [7]

This dissertation argues that Mexican and U.S. efforts to develop the delta encouraged a frenzied frontier mentality on both sides of the border that in turn drastically strained the environment. U.S. development of the region began around the turn of the century as private interests and governmental agencies linked the Imperial

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A. Bernal Rodriguez, compiladores (Tijuana:COLEF, 1991), 129-134.

[7] I have emphasized the word "immediate" because from a broader perspective, intensified use of the Colorado River throughout the entire river basin during the 1950s and 60s contributed to the river's

Valley and Yuma Valley to global markets and federal assistance. U.S. economic hegemony in Mexicali Valley encouraged Mexican President Lázaro Cárdenas to build upon the efforts of his predecessors to integrate Baja California in the national economy and polity, beginning in 1937 with the expropriation of farm lands of the Colorado River and Land Company. Agribusiness interests on both sides of the border encouraged emigration especially from the interior of Mexico. The *bracero* program (1942-1964) created a second incentive for Mexicans to migrate to Mexicali. With the program's demise in the 1960s, the rise of *maquila* program in 1965 was intended to further fuel regional development and curb agricultural unemployment. Ultimately, overemphasis on development in both nations led to an ecological breaking point, beginning in the 1960s, as salinity, pollution, and water shortages strained current levels of agricultural and industrial growth. With remaining natural resources inadequate to sustain high levels of development, both nations appealed to nationalistic rhetoric in an effort to maintain the status quo. Over time, however, the reality that two nations and two rivers share the same living space has encouraged "good neighbors" to talk to one another about resolving water quality and allocation issues.

**Methodology**

This study is based on a discussion of the interaction between ecosystems and human societies presented in A. Terry Rambo's *Conceptual Approaches to Human Ecology*.[8] Rambo discusses the interactions between human communities and nature in "open" systems. An open system, in the case of the Colorado River Delta, is one in which a constant flow of energy or matter, such as water from the river and subterranean aquifers, allows for constructive and destructive entropy.[9] Closely related to this ecological approach are the mathematical concepts of complexity and chaos theory, which will be applied in examining the interactions between numerous human and environmental variables within the Colorado River Basin system. Robert Jervis discusses

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salinity by the time it reached the Delta region.

[8] A. Terry Rambo, *Conceptual Approaches to Human Ecology*, Research Report Number 14, East-West Environment and Policy Institute (Honolulu: East-West Center, 1983), 23-29.

[9] Physicist Fritojof Capra provides an excellent introduction to the dynamics of open-systems and closed systems in *The Web of Life: A New Scientific Understanding of Living Systems* (New York: Anchor Books, 1995), 17-111.

these phenomena in a social science context in *Complexity in Political and Social Life.*[10] Due to the numerous human and natural variables that affected the well being of those living in the delta, a non-linear approach offers the best approach in trying to understand the dynamism of contact between human civilizations and nature in the region. Furthermore, as the salinity crisis of the 1960s and 1970s illustrates, small changes within the system – i.e. the addition of excess salts from the Wellton-Mohawk Valley to the Colorado River – triggered disproportionately large environmental, economic, and diplomatic consequences.[11]

In terms of the bi-national aspects of the project, the author has followed the approach that Oscar J. Martínez employed in examining the borderlands region in his study, *Troublesome Border.* Martínez has examined how the international boundary has impacted the various communities on both sides of the border, including their use of natural resources. As Martínez notes, "Fundamentally it is the border itself that acts as the agent of friction, given that it obstructs the normal movement of people and products."[12] Diplomatically, Lester Langley's insights into twentieth-century Mexican-United States relations prove valuable in assessing the dynamics of environmental negotiations between the two nations. Langley notes, for example, "On a number of issues [the two nations] must and do cooperate, yet their respective leaders, it is sometimes said, not only speak different languages but attach different meanings and interpretations to the same thing."[13]

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[10] Robert Jervis, *Complexity in Political and Social Life* (Princeton, N.J.: Princeton University Press, 1997).

[11] Other significant influences in environmental history and ecology include Uruguayan social ecologist Eduardo Gudymas's study with Graciela Evia, *La praxis por la vida: introducción a las metodologías de la ecología social* (Montevideo, Uruguay: CIPFE, 1991); Evan Eisenberg, *The Ecology of Eden: An Inquiry Into the Dream of Paradise and a New Vision of our Role in Nature* (New York, Vintage, 1998); Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: Harper and Row, 1983); James B. Greenberg, "The Tragedy of Commoditization: Political Ecology of the Colorado River's Destruction," *Research in Economic Anthropology*, volume 19, 1998, 133-149; Thomas E. Sheridan, "Arizona: The Political Ecology of a Desert State," *Journal of Political Ecology*, volume 2, 1995.

[12] Oscar J. Martínez, *Troublesome Border* (Tucson: University of Arizona Press, 1988), 6. Other helpful border studies include Thomas D. Hall, *Social Change and the Southwest, 1350-1880* (Lawrence: University of Kansas Press, 1989); Raul A. Fernandez, *La frontera Mexico-Estados Unidos: un estudio socioeconomico* (Mexico D. F.: Terra Nova, 1980); Niles Hanson, *The Border Economy: Regional Development in the Southwest* (Austin: University of Texas Press, 1981).

[13] Lester D. Langley, *Mexico and the United States: The Fragile Relationship* (Boston: Twayne

This was exactly what happened in the wake of the salinity crisis. Mexican diplomats inferred that the Mexican Water Treaty of 1944 guaranteed them water of equal quality to that used by farmers in Yuma and the Imperial Valleys. On the other hand Western U.S. politicians, well aware that higher quality water could only be delivered by diluting saline water with additional quantities of water above and beyond the stipulations of the treaty, fervently held to the letter of the treaty. These misunderstandings, rooted in environmental, cultural, political, and legal differences between the two nations, played a critical role in the development of the delta. Finally, bi-national competition for resources in the Colorado River Delta offers an opportunity to test Lars Schoultz's concept of United States hegemony over Latin American nations that he delineates in *Beneath the United States*. He argues that domestic politics and historical perceptions of Latin Americans have influenced negotiations with those nations since the early republic. Thus, material interests attitudes towards water usage, the geographic orientation of the river and domestic politics, played a critical role in shaping U.S. water policy related to water resources in the delta.[14]

With these intellectual influences as theoretical guides, this study is based on a broad survey of archival materials from local, state, and national archives on both sides of the border. This study compares federal actions that created different frameworks for development of water resources in the delta with local responses to those initiatives. Similarly, the following chapters examine how local and federal groups responded -- often in contradictory ways -- to regional environmental crises. The study is particularly sensitive to the degree to which national policies and local development accelerated ecological change in the delta. Additionally, the study sheds light on the ways in which bureaucrats, farmers, and scientists on both sides of the border during this period – a time marked by faith in technology and the ability of humanity to shape nature -- viewed the land and water that sustained them.

In terms of regional history, *The Irrigated Oasis* represents a geographical, chronological, and thematic departure from the preoccupation of historians on both sides

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Publishers, c1991), xv.

[14] Lars Schoultz, *Beneath the United States: A History of U.S. Policy Toward Latin America* (Cambridge, Mass: Harvard University Press, 1998).

of the border with the expropriation of the Colorado River and Land Company by the Cárdenas administration in 1937. The author has chosen instead to focus his attention on the post-1940 period because competition between the United States and Mexico for water in the region manifest the dilemmas of bi-national rivalry for scarce resources. While some of these events, such as competition for groundwater or the sale of Mexicali's water system from the IID to the Mexican government may not have been as dramatic as the expropriation, they had important implications for the type of development that evolved in this section of the borderlands region. Transfer of control of the Mexicali water system, for example, symbolized a significant shift of power over natural resources in the delta region, as Mexicans finally controlled water distribution in Mexicali Valley. Ultimately, water served as the necessary ingredient for human civilization in the region. It remains the most compelling symbol of regional identity. While amateur historians have reveled in the romantic memory of territorial jails, rip-roaring mining camps, and steamboats as the defining elements of the region's past, the more mundane, yet no less important, acquisition and development of water has defined the region for more than a century.

The study also makes important conceptual shifts on a regional level. Historical fascination with the Imperial Valley and Mexicali Valley has overshadowed linkages between Yuma, Wellton-Mohawk, and the rest of the delta. To be sure, struggles for power over water between the Imperial Irrigation District and the Mexican government played a significant role in delta water relations, particularly during the first half of the twentieth century. Yet once Mexico completed Morelos Dam in 1950 and purchased the distribution system a decade later, Mexicali Valley no longer relied on the IID for its water and took water directly from the Colorado River. Accordingly, events related to water deliveries in Yuma County (which borders the Colorado River) directly affected residents in Mexico to a greater degree than did events in the Imperial Valley. These ecological and geographic realities reinforce the importance of including Yuma Valley and Wellton-Mohawk Valley in the geographic definition of the Colorado River Delta.

**Overview**

The study is broken up into three thematic sections that deal with the different stages of development of the region. Section I, "Creating the Irrigated Oasis, 1850-1940"

(chapters 1-2), illustrates not only how conquest of land and water has been a central theme in the delta since the mid-nineteenth century, but also how these interactions have shaped regional aspects of US-Mexican relations during the twentieth century. The first section also notes the distinctive patterns of development employed by the two federal governments in the region in creating an irrigated oasis. The Yuma Valley and the Imperial Valley (after 1930) enjoyed extensive government assistance in transforming the desert. In contrast, development of the Mexicali Valley and the Imperial Valley prior to 1930 was largely funded by private initiatives with American capital.

Section II, "Florescence of the Irrigated Oasis, 1940-1975" (chapters 3-7), examines the most intensive phase of development of water resources in the region and the reluctant recognition by regional and national officials that unmanaged growth on both sides of the border could not continue without severely damaging the regional environment. The salinity crisis of the 1960s and 1970s compelled the United States and Mexico to reach a diplomatic solution – which involved building a desalination plant in Yuma, Arizona – but it did not fundamentally change the developmental mindset of regional or national leaders. Even after resolving the crisis, many officials on the regional level continued to view the delta as an irrigated oasis and not as an area where civilization and nature could symbiotically exist.

Section III, "Beyond the Irrigated Oasis" (chapters 8-9), moves spatially beyond the irrigated oasis. This section discusses ways in which water users throughout the Colorado River Basin, particularly in the urban oases of Los Angeles, Phoenix, and Las Vegas, have contributed to the decline of the delta. This section brings together ecology, the history of science and technology, and cultural history in an inter-disciplinary investigation of the ways in which industrial and post-industrial societies impersonally wreak havoc on nature while disassociating their behavior from the far-reaching consequences of their actions. This section will also explore how ecological studies at Kesterson Wildlife Refuge in California moved scientific investigation of contamination in the Delta past an beyond an exclusive emphasis on salinity. Scientists, particularly from the United States Geological Service and non-governmental organizations recognized the ways in which numerous metallic compounds from pesticides and naturally occurring elements in the river basin, including selenium, affected the health of

the bi-national delta. In the wake of NAFTA and water crises around the world, this section explores the mechanisms through which change might be affected in the region, and it compares problems in the delta to other arid regions around the globe.

## Chapter 1

## The Twentieth Century Ghosts of William Walker[1]

*"There are thousands of natural riches in Baja California, prevent them from being carried away to foreign countries, so that their production is fully taken advantage of by Mexico." Commission in Charge of the Integral Development of Mexico's Federal Territories, 1936*[2]

On October 28, 1853, after a long voyage from San Francisco, Tennessee-native William Walker and a crew of adventurers disembarked from their ship, the *Caroline,* at Cabo San Lucas and quickly moved to establish the Republic of Baja California as an "American" colony where Southerners could ranch, mine, and farm with their slaves. What the diminutive Walker lacked in physical stature, he ably compensated for in ambition, if not wisdom. He recognized the economic potential of the arid landscape he coveted. "The mineral and ranching richness of Baja California is very great," Walker noted. He also felt justified in annexing the region since the Mexican government had not developed the region's natural resources or protected it from Indian depredations. "Therefore," he trumpeted, "upon abandoning the peninsula, as an orphan in the sea, Mexico cannot complain if others take it and make good use of it."[3] Ironically, a fledgling Mexican militia near the border and the swift currents of the Colorado River, which claimed his supplies, ended Walker's dreams of establishing a republic in northern Mexico. In May 1854 Walker returned to San Diego defeated, but not disheartened. Soon thereafter he embarked upon his conquest of Nicaragua.

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[2] Comisión Encargada del Desarrollo de los Territorios Federales, "Cincuenta Pensamientos," November 11, 1936, Archivo General de la Nación (AGN), México D.F., RG Lázaro Cárdenas, 437.1/413, 2.

[3] Angela Moyano, "William Walker en la Peninsula," in *Baja California, texto de su historia*, volume 2, Miguel Mathes, editor (México D.F.: Instituto de Investigaciones, 1988), 217-218; also see Robert E. May, "Manifest Destiny's Filibusters," in *Manifest Destiny and Empire: American Antebellum Expansionism*, Sam W. Haynes and Christopher Morris, eds., (Arlington: University of Texas at Arlington, 1997), 146-179.

Antonio Meléndez, leader of the Mexican militia, feared that the infamous Walker was not the last American who would challenge Mexican sovereignty along the northwest frontier. "As the notices that they [the Americans] will return multiply," he frantically observed, " I am desperately waiting for the help of the Supreme Government, because the country is in a frightful misery and we do not have the weapons nor the people to resist a strong coup."[4]

In fact, Walker's actions in Baja California--particularly in the wake of the United States' war with Mexico (1846-48)--foreshadowed the dynamics of conquest and intrigue that would characterize Mexican-U.S. contests over land and water resources in the Colorado River Delta for the next century and a half. Like Walker, a handful of U.S. citizens and politicians concocted schemes to wrest resources from Baja California and Sonora in an attempt to aggrandize agricultural empires in Imperial (California) and Yuma (Arizona) counties. While methods of conquest changed from physical force to legal and engineering maneuvers, the temptation to take or hold back natural resources from Mexican interests persisted into the twentieth century.

Motivated by economic ambition, American farmers and politicians insisted that the United States should be allowed to develop as much of the Colorado River waters as possible during the twentieth century. Many Mexicans, however, could not forget the realignment of its borders in 1848 or the threat of filibusters during the second half of the nineteenth century.[5] Twentieth-century Mexican leaders, in turn, viewed *Mexican* colonization and development of the region as the appropriate response to American economic ambitions in Baja California. Thus, although William Walker's scheme for colonization met an early end, his "ghosts" reappeared in the form of new plans – on both sides of the border – to initiate different national models of regional development. Walker's legacy reveals a theme that unifies the history of the Colorado River Delta: the conquest of land and water.

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[4] See Alejandra Salas-Porras Soule, "Baja California: Vanguardia del Movimiento Popular en la Frontera," in *Nuestra Frontera Norte (. . . tan cerca de los EUA)*, (México D.F.: Editorial Nuestro Tiempo, S.A., 1989), 45.

[5] See Manuel Ceballos-Ramirez and Oscar J. Martínez, "Conflict and Accommodation on the Border, 1848-1911," in *Myths, Misdeeds and Misunderstandings: The Roots of Conflict in U.S.-Mexican Relations*, Jaime E. Rodriguez and Kathryn Vincent, eds., (Wilmington: Scholarly Resources, 1997), 135-

Like Walker's failed revolution, most of these schemes met with resistance on the part of Mexican citizens and leaders. Attempts at conquest were often countered with measures to simultaneously stimulate development in Baja California and reinforce Mexican national identity. The most important example of Mexican resistance to American domination of natural resources in the region occurred during the presidency of Lázaro Cárdenas (1934-1940). Building on the efforts of his presidential predecessor, Abelardo L. Rodriguez (who had also been general/governor of the northern district of Baja California territory, 1923-29), Cárdenas made colonization and development of Baja California a priority of the Mexican state. His policies set the stage for federal initiatives in the region over the next forty years. The most dramatic of his reforms was the 1937 expropriation of land around Mexicali owned by the American consortium, The Colorado River and Land Company.[6]

**Water Diplomacy and the Porfiriato**

Political changes in Mexico during the late nineteenth and early twentieth century altered the dynamics of natural resource allocation in the Colorado River Delta. Following the Gadsden Purchase (1853), Mexican president Benito Juárez refused to sell the Baja California peninsula to the United States government, although Mexico badly needed the money. Yet, it would be willing Mexican nationals – namely President Porfirio Díaz (1876-1880, 1884-1911) – and not gun-brandishing American filibusters, who facilitated the rise of an American agricultural empire in Mexicali Valley during the first third of the twentieth century. Díaz, an adherent of liberal economic theory, believed that construction of Mexico's "path to modernity" required massive foreign investment.[7]

In Baja California, and throughout Mexico, the Porfirian regime allowed foreigners to purchase land, water, and mineral rights.[8] Prior to Díaz's rise to power,

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[6] See Eugene Keith Chamberlin, "Mexican Colonization versus American Interests in Lower California," *Pacific Historical Review (PHR)*, volume 20 (1951), 43-55; Pablo Martinez explores the efforts of Abelardo L. Rodriguez to stimulate Mexican development of the northern peninsula *in Historia de Baja California* (México: Consejo Editorial del Gobierno del Estado de B.C.S, 1991), 540-544.

[7] John Hart discusses American investment in Mexico during the Porfiriato in *Revolutionary Mexico* (Berkeley: University of California Press, 1987), 129-162.

[8] See Pablo Herrera Carrillo, *Colonización del Valle de Mexicali* (Mexicali, B.C.: Universidad Autónoma de Baja California, Departamento de Extensión Universitaria, 1976).

Guillermo Andrade, an ambitious developer who had worked in San Francisco as a banker and an official for the Mexican government, obtained massive land grants in Baja California and Sonora from President Sebastian Lerdo de Tejada. Andrade subsequently initiated colonization of the Mexican delta. In 1888, during the Díaz regime, Andrade received the titles to the earlier concession.[9] This practically gave him ownership of all land susceptible to irrigation in the Mexican delta. However, between 1902 and 1905 (when Andrade died), the Mexican developer sold approximately 800,000 acres of that land to the newly incorporated Colorado River Land Company (CRLC), headed by Harrison Otis and his son-in-law Harry Chandler, owners of the *Los Angeles Times*.[10]

In the arid Sonoran Desert, however, the availability of water largely determines the fecundity of the land. For hundreds of years the Cocopah and Yuman natives waited on the annual spring floods of the Colorado River to irrigate their crops. By the end of the nineteenth century, a small group of U.S. capitalists, known collectively as the Colorado Development Company (CDC), believed that water could be transported through a natural canal, the Alamo Canal, across the sand dunes from the Colorado River near the international boundary to the Imperial Valley. In 1893 the CDC began preparing the canal for modern use. Unfortunately, the gravity-powered canal crossed the international boundary into Mexico, passing through Mexicali and then returning to the United States at present-day Calexico, California. In exchange for a concession to use the canal (which the corporation bought from Andrade), the Mexican government stipulated that fifty percent of the water be used on Mexican soil. In 1904 the CRLC acquired those rights from Guillermo Andrade, who had served as the Mexican intermediary for the CDC.

Chandler and Otis took capital integration to a new level in Mexicali Valley. Through their vast array of interests the Los Angeles magnates dominated the region's agribusiness. As their constitution stated, the CRLC's associates not only wanted to acquire as much land as possible in the region, but also:

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[9]David Pinera Ramerez, "Guillermo Andrade, Pionero del Valle de Mexicali," in Mathes, ed., 228-229.

[10] Edna Aide Grijalva Larranaga, "Colonización del Valle de Mexicali, 1902," in Mathes, ed., 234-248.

> To have control and superintendence of roads, land and sea communication, bridges, warehouses, waterways, aqueducts, loading docks, furnaces, mills, hydraulic works, factories, storehouses . . . [and also to control] all mercantile, mining, agricultural and industrial exploitation in all its branches . . . whatever may be its object, duration and denomination without restrictions as principals, agents, associates, representatives or of any other way and have rights, faculties and intervention in the expressed businesses.[11]

In order to accomplish this ambitious goal of regional domination, Chandler and Otis subleased land to Mexican brokers, who in turn rented land to tenant farmers over a period of ten years. They preferred that Chinese immigrants receive contracts, since they were easier to transport (by ship) to the region than Mexicans and less likely to demand outright ownership of land. Contracts included a mandatory fifty-percent fee of each crop to the CRLC and an agreement to ship and process cotton at CRLC-controlled subsidiaries. While this process greatly enriched Chandler and his associates, it raised questions among Mexico's leaders regarding the degree of U.S. influence in Mexicali. Ironically, the *Pax Porfiriana* and Baja California's remoteness from central Mexico shielded the valley from the turmoil that rent the rest of the nation during the Mexican Revolution. This shield from the revolution only strengthened ties between Mexicali Valley and the United States.[12]

Díaz's willingness to open land to foreigners and encourage linkages with the U.S. economy seemed more benign than imperialistic military assaults from the north, but portended much stronger connections to the U.S. economy. Some who witnessed the Mexican War believed that massive concessions to foreigners boded poorly for Mexican development of the region. As early as 1878, General Manuel Marqués de León called for "the reorganization of the local system of government [in Baja California] and the increased economic ties between the peninsula and the rest of the nation." Marqués de León directed his concerns to Trinidad García, Minister of the Interior. Remembering the

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[11] Grijalva Larranaga, 235.

[12] David Allen Henderson discusses the impact of the Revolution on the Delta in "Agriculture and Livestock Raising in the Evolution of the Economy and Culture of the State of Baja California, Mexico," unpublished Ph.D. dissertation, UCLA, 1964, 254.

loss of Alta California during the Mexican-American War, Marqués de León reminded García that "Baja California . . . should not produce less than ten percent of the precious metals, wheat, or cattle [than Alta California]."

Continuing in this vein, De León recommended that the Mexican government invest 80,000 pesos annually for three years in the region, a sum he believed would be sufficient to encourage Mexican development of the peninsula. "A country that has abundant riches and a delicious climate will not always be a desert;" he warned, "it will progress under whichever flag flies over it, and we, in the present case, should prefer that the new population that will be raised up in this region flourish underneath the shadow of the Mexican eagle instead of beneath the fateful glory of the stars of the north, whose voracious fire, sooner or later, will convert us into ashes if we are not more cautious." Marqués de León's prescient words illustrate one of the earliest rationales for defending the peninsula from U.S. economic domination during the *Porfiriato.* Furthermore, he not only advocated development of the region's resources, but also suggested that those who lived there "identify themselves with the Mexican nationality."[13]

The Mexican government also knew of the delta's agricultural potential by way of exploratory missions. Engineer Jacobo Blanco made the first Mexican survey of the region between 1871 and 1873. During that trip, one scholar has noted, "He saw the [native] people living in poverty and suggested that if agriculture were developed in the Delta area the Cucupa [Indians] could serve as a labor force."[14] Twenty-one years later Colonel Don Rafael García Martínez commissioned Daniel Sandez to go to the delta and "see if [those] lands could be used for agriculture and study them carefully, to the end that you can provide a detailed report about them." Refusing the help of ten gendarmes, Sandez spent ninety days canvassing the region with his mule. "The Valley was a paradise," he later noted. "The Colorado River in that time overran the shores producing great floods." Sandez also observed that wild horses, donkeys, pigs, and goats ran free. Additionally, nearly 10,000 natives inhabited the region, but almost no whites. Reflecting on the region's fecundity, Sandez mused, "The Danube may consider itself equal to the

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[13] Ignacio del Río, "Inquietud de Marquez de Leon, 1878," in Mathes, ed., 18-23.

[14] Anita de Williams, ed., "Jacobo Blanco," in *Travelers Among the Cucupa* (Los Angeles:

Colorado River, but never superior. They are eminent lands for agriculture for all crops such as grapes, cotton . . . [and] tobacco . . ."[15] Whether or not the Porfirian administration consulted Sandez or De León's records is unclear. However, their reports illustrate that alternative visions of development in the Mexican delta existed, visions that were realized during the 1930s as presidents Abelardo L. Rodríguez and Lázaro Cárdenas countered U.S. development in the region.

Before the 1930s, however, and despite dissident voices such as Sandez and De León's, Mexicali Valley epitomized liberal patterns of Porfirian development as well as any other region along the border. By 1910 a railroad extension linked Mexicali to the Southern Pacific line that ran between Los Angeles, El Paso, and New Orleans. A large Chinese population and U.S. investors refused to accommodate Marqués de León's desires to "identify [themselves] with the Mexican nationality."[16] The Alamo Canal linked the region's water supply to that of the Imperial Valley and the CDC administered the sale of water in Mexicali Valley. U.S. banks supplied capital for Baja California farmers. And, while Mexicali gins sent their cotton to Los Angeles and New Orleans for sale, American corporations supplied Mexican consumers, farmers, and industries with finished goods. Finally, during Prohibition, American capital poured into Mexicali, stimulating a notorious tradition of casinos and bars just across the border from Calexico.[17] As one historian aptly noted, "Mexicali had become so Americanized as to be the equivalent of United States-South."[18]

**Land, Water, and the Mexican Revolution**

For the most part, the massive destruction wrought in the Mexican interior during the Mexican Revolution bypassed the delta. However, when Díaz allowed himself to be reelected in 1910, claiming the nation was not prepared for democracy, intellectuals, politicians, and anarchists opposed to Díaz seriously contemplated how Mexico should

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Dawson's Book Shop, 1975), 93.

[15] "Los Primeros Pobladores del Valle de Mexicali, Daniel Sandez," in Mathes, ed., 231-233.

[16] Ibid.

[17] See Robert Buffington, "Prohibition in the Borderlands, National Government-Border Community Relations," *PHR*, Winter 1993, 19-38.

[18] Leon C. Metz, *Border: The U.S.-Mexico Line* (El Paso: Mangan Books, 1989), 265.

address its social, political, and economic inequalities. Some went far beyond the critique of Díaz's opponent during the 1910 elections, Francisco Madero, who believed that Mexico needed a more democratic political system that faithfully adhered to Don Porfirio's original slogan, "Effective Suffrage, No Reelection." One Ricardo Flores Magón, soon to be a key figure in the border region, insisted that Mexico needed to embrace a utopian plan where each citizen would be given "Land and Liberty." Flores Magón believed that a better Mexico could be created only after Díaz's regime had been destroyed. He fled to Laredo, Texas, in early 1904. Two years later, Flores Magón founded the *Partido Liberal Mexicano* (PLM) in St. Louis, Missouri. The following year Flores Magón and the party moved to Los Angeles -- the perfect location from which to launch an insurrection into Mexico against Díaz. While in the United States he also became closely allied with the radical Industrial Workers of the World (IWW) and embraced anarchism as a means of inducing social change in Mexico.[19]

During the first decade of the twentieth century, Flores Magón's contact with radical labor movements in the United States and his memory of the repressive hand of foreign capital in Mexico shaped his plan for revolution. Although he participated in several skirmishes in Chihuahua, Mexico, in 1910, Flores Magón decided to launch his radical revolution from Baja California. The peninsula was sparsely populated, and given the disjointed nature of his organization throughout Mexico, the movement needed to build momentum before reaching the more heavily populated portions of the country. Baja California was also an ideal place for his attack since U.S. citizens owned most of its productive land and resources. In fact, an attack on Mexicali would pit Mexico's most outspoken anarchist, Flores Magón, against one of the most efficient capitalist organizations in Mexico, the CRLC. As one scholar observed, "To go to Baja California [with Flores Magón] was not to merely participate in a military campaign, but [to participate] fundamentally in a work of social reconstruction." Accordingly, and in harmony with his theme, "Land and Liberty," Flores Magón encouraged natives and

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[19] Flores Magón and the PLM are discussed in W. Dirk Raat, *Revoltosos: Mexico's Rebels in the United States, 1903-1923* (College Station: Texas A&M Press, 1981), 14-62, and John Hart, *Anarchism and the Mexican Working Class, 1860-1931* (Austin: University of Texas Press, 1978), 87-103.

workers to "take the lands and work them in your own behalf without recognizing the rights of the rich."[20]

In the wake of PLM attacks on Mexicali and Tijuana in January and February 1911, Maderistas and anti-Magonistas denounced Flores Magón on the grounds that his so-called "revolution" was nothing other than a pretense for U.S.-based filibusterers to initiate their own takeover of Baja California.[21] In response to the charge that his goal was to sever the peninsula from Mexico for the benefit of the United States, Flores Magón argued that Baja California *already* belonged to U.S., British, and French interests, and not to Mexico. More specifically, he charged that "The North of Baja California is in the power of Cudahy, Otis and other multimillionaire North Americans."[22]

Flores Magón clearly intended to take control of the waterworks that supplied water to Mexicali Valley and the Imperial Valley. On April 23, 1911, he directed filibusterer Dick Pryce and a small band of men to attack the levees that were under the protection of guards near Mexicali. Pryce did not receive the letter, marching instead to Tijuana, its content illuminates Flores Magón's plans. "If the complete possession of Mayol [the Mexican Colonel in charge of protecting the Colorado River water works] is realized," Flores Magón wrote, "the Junta will be in possession of a considerable quantity of funds with which to prosecute the campaign of Baja California under very favorable conditions." Furthermore, according to one historian, Flores Magón intended to extort tribute from farmers in the Imperial Valley in order to finance his movement.[23] In sum, Flores Magón attacked Baja California not only because the region was isolated, but also because he wanted to undermine the capitalists who controlled the region's resources. Ideally, he would have apportioned the land among the workers and natives, but in May 1911 Mexican troops put down the PLM insurrection.[24]

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[20] Eduardo Blanquel, "Pensamiento Filosófico de Flores Magón," in Mathes, ed., 356.

[21] Peter Gerhard, "The Socialist Invasion of Baja California, 1911," *PHR*, volume 15 (1946), 295-304; Lowell L. Blaisdell, *The Desert Revolution, Baja California, 1911* (Westport, CT: Greenwood Press, 1986).

[22] Mario Gill, "Flores Magón y Los Filibusteros," in Mathes, ed., 306-307.

[23] Lowell L. Blaisdell, "Was It Revolution or Filibustering? The Mystery of the Flores Magón Revolt in Baja California," *PHR*, volume 23 (1954), 147-164.

The PLM assault on Mexicali did not go unnoticed by U.S. officials. But not until 1905-1907, when a series of floods caused by the mistakes of CDC engineers, inundated parts of Mexicali and Imperial Valley, did the U.S. government involve itself directly in delta water diplomacy. On January 12, 1907, President Theodore Roosevelt expressed keen federal interest in development of the region, even if it meant paying the CRLC to construct levees on Mexican territory to protect the Imperial Valley from future floods. In a message to Congress, Roosevelt chided the CDC for financial and engineering mismanagement. He noted that the "entire irrigable area which will be submerged or deprived of water in the Imperial Valley and along the Colorado River is capable of adding to the permanent population of Arizona and California at least 350,000 people, and probably 500,000." The land would soon "be worth from $500 to $1,500 per acre to individual owners, or a total of from $350,000,000 to $700,000,000." Furthermore, once Laguna Dam (near Yuma) was finished, Imperial Valley farmers would have a more reliable intake point from the Colorado River. Accordingly, Roosevelt pledged federal support to protect development in the region.[25]

In the fall of 1910 the Department of Interior initiated construction of a twenty-five mile levee below the shoddy intake which had caused floods beginning in 1905.[26] The Mexican government denied an U.S. request to take control of CRLC-owned land below the border where the levees would be constructed, but the Department of Interior subsequently subsidized construction of levees that became the property of the CRLC.[27] Fortuitously for Chandler and Otis, these levees not only protected the Imperial Valley,

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[24] Nevertheless, Flores Magón's men had effectively gained control of Northern Baja California from the Colorado River to Tijuana for nearly six months. In the aftermath, Flores Magón, who had organized and directed the attacks from Los Angeles, was imprisoned for violating U.S. neutrality laws. He eventually died while incarcerated at Fort Leavenworth, Kansas. Colin M. MacLaclan, *Anarchism and the Mexican Revolution: The Political Trials of Ricardo Flores Magon in the United States* (Berkeley: University of California Press, 1991), 97-109.

[25] Theodore Roosevelt, "Message from the President of the United States," January 12, 1907, *Papers Relating to the Foreign Relations of the United States* (FRUS), 1911 (Washington: GPO, 1918), 528-534.

[26] Edwin A. Meserve, "Synopsis Statement of the History of the California Development Company and of the Diversion of the Colorado River into What is now Known as the Imperial Valley," in *Senate Document #212*, 59th Congress, Second Session, volume 4 (Washington: GPO, 1907), 30-37.

[27] Secretary of the Interior Ballinger to Secretary of State Knox, October 17, 1910, in *FRUS, 1911*, 543-544.

but also provided greater security for their investments south of the border.[28] By the time of Flores Magón's attack, the United States had invested several million dollars into levees built on Mexican soil.

After PLM attacks on Mexicali began in January 1911, the State Department sent Mexico an implicit warning that unless protection of the levees could be guaranteed, "the Government of the United States would be prepared to cooperate with the Government of Mexico by using its own military forces for the common purpose." The same report noted that as of February 12, 1911, the PLM rebels had retaken Mexicali and that they intended to "entice the Mexican workmen to join them, to drive off the work animals, and to destroy the property."[29] The Mexican Embassy declined U.S. military support, but offered instead the services of Colonel Celso Vega, President Díaz's military governor on the peninsula, and two hundred men to protect the levee works. When Vega and his troops were defeated during a skirmish en route to Mexicali, the Mexican government ordered the Eighth Division, under the direction of Colonel Mayol, to travel from Manzanillo to Mexicali to protect the works. In the interim, the Department of Interior received authorization from the Mexican government for the CRLC to employ "as many ununiformed guards as may be necessary to afford adequate protection of the works." In the end, PLM revolutionaries inflicted only minor damage. Ironically, their attacks only heightened American interest in development of the delta.[30]

**Prosperity and Conquest in the Delta**

Ultimately, the U.S. and Mexico showed restraint in handling the delicate issue of protecting American waterworks in Northern Baja California during the PLM attacks. President Taft wisely decided not to send American military forces to the region, which probably would have thrown Mexico into even greater turmoil.[31] Following the

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[28] Ibid., 543.

[29] "The Department of State to the Mexican Embassy," February 12, 1911, in Ibid., 556.

[30] Ibid., 557-560; Daniel Cosio Villegas, *Historia moderna de México*, volume 6, (México D.F.: Editorial Hermes, 1963), 383-386, 429-431.

[31] See William H. Taft, "Message of the President," in *FRUS, 1911*, xi-xvi; also see Berta Ulloa, "The U.S. Government versus the Mexican Revolution, 1910-1917," in Rodriquez and Vincent, eds., 159-168.

Revolution and World War I, then, logic suggests that the return of relative political calm in Mexico would have led to even greater cooperation between the two nations regarding the utilization of natural resources in the delta. To the contrary, however, a strong sense of nationalism emerged in Mexico after the Revolution. There, President Alvaro Obregón emphasized linking the economy of Baja California to the rest of Mexico. Simultaneously, in the United States, wartime prosperity for farmers and Western cities encouraged politicians and businessmen throughout the Colorado River Basin to seek a division of the river's water among themselves in anticipation of future development.

Beginning in 1920, representatives from Colorado, Utah, Wyoming, New Mexico, Arizona, California, and Nevada met to legally apportion water between the seven Colorado River basin states. Mexico was not invited to participate in the discussions on the grounds (at least in part) of a 1906 legal ruling involving the division of water from the Upper Rio Grande River between the United States and Mexico. At that time Attorney General Judson Harmon ruled that the country of origin, in cases involving international rivers, retained the right to use as much water as it desired from the stream in question. Accordingly, the State Department informed Mexico:

> This Commission presumably will meet at some date in the future to consider the distribution of the mutual interests of each of such States in the waters of the Colorado River, but . . . it is believed the result of any such consideration will not affect Mexico in any way. [32]

Nevertheless, at least one newspaper, *El Universal*, a leading Mexico City daily, noted that "cotton-growers of Arizona and California are seeking by means of dams and impoundings altogether to deprive Mexicans of the waters of the Colorado River to which they are justly entitled pursuant to the Guadalupe Treaty signed in 1848."[33]

Not surprisingly, some of the strongest proponents of the Colorado River Compact and the Boulder Canyon Dam Project were residents in the Imperial Valley and Yuma County. Farmers in the Imperial County wanted to construct an expensive canal, the All-American Canal, that would transport water from the Colorado River to the

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[32] "The Acting Chief of the Division of Mexican Affairs, Hanna, to the First Secretary of the Mexican Embassy, Tellez," November 9, 1921, Washington, in *FRUS*, 1921, volume 2, 521.

Imperial Valley without leaving the United States. Throughout the entire basin anti-Mexican sentiment also encouraged Western politicians to appropriate as much water as possible for their own states. Ironically, much of this xenophobia was directed at the U.S.-owned CRLC, which received its water at a lower cost than U.S. water users and benefited from U.S. flood control devices without having to contribute to their maintenance. Regardless, these exclusionary tactics were not lost on the Mexican media or Mexico's diplomats. [34]

Continual reminders of U.S. influence in the delta compounded differences over apportionment of the Colorado River. Following the Mexican Revolution, the insurgency movement of Flores Magón's PLM became a shifting symbol of national betrayal and patriotism. On the one hand, some Mexicans believed that the PLM had not attempted to deliver the peninsula to the United States. Filibustering soldiers of fortune had merely taken advantage of the PLM insurrection to stage their own assault on Mexico. On the other hand, however, many residents in Baja California maintained that Flores Magón and his party presented a major threat to Mexican sovereignty. On December 3, 1930, for example, José María Dávila, Baja California's representative to the National House of Deputies, introduced a resolution to honoring those who fought against the anarchists and filibusters. Dávila's resolution, tying Flores Magón to the United States, offered delta residents one of a number of opportunities to remember that U.S. corporations still controlled the vast majority of the territory's natural resources. Dávila prefaced his resolution by recounting to the House the long legacy of "North American imperialism" on the peninsula. He deplored William Walker's filibuster which "provoked the death of numerous aborigines that populate those regions." He then noted that during the early

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[33] "Message from Charge in Mexico, Summerlin, to the Secretary of State," Dec. 5, 1921, in Ibid.

[34] Norris Hundley Jr. discusses the legal division of the Colorado River amongst seven states in the United States in *Water and the West: The Colorado River Compact and the Politics of Water in the American West* (Berkeley: University of California Press, 1975); In an earlier monograph, *Dividing the Waters* (Berkeley: University of California Press, 1966), Hundley examines the Mexican Water Treaty (1945), which provided Mexico with 1.5 million acre-feet of water per year from the Colorado River. Marco Antonio de la Fuente discusses the legal ramifications of these treaties within the broader context of Mexican-American relations in "Examen jurídico de algunos problemas de aguas y límites entre México y los E.U.," *Análisis de algunos problemas fronterizos y bilaterales entre México y Estados Unidos*, Víctor Carlos García Moreno, compilador (México D.F.: Universidad Nacional Autónoma de México, 1982), 59-102.

twentieth-century, representatives from California and Arizona tendered numerous propositions to acquire the peninsula or a port on the Gulf of California from Mexico.[35]

After denouncing the United States' imperialist intentions, Dávila, like General Marqués de León fifty years earlier, addressed the question of "Mexicanizing" Northern Baja California. "We have talked about *mexicanización* [of the peninsula], but we have not worried about resolving [the issue] how we properly should;" Dávila argued, "what we need to do is mexicanize the lands, those lands of which I have spoken of earlier in this tribute, but that are in the power of the American talons." The proposed tribute to the veterans, Dávila explained, served as "a balm for the wounds that we have caused them by doubting their Mexicanness, that is far above anything that any of us can imagine." Ultimately, Dávila's discussion of regional sentiments towards U.S. control of Baja California illustrated a growing desire among territorial and national leaders to reassess the role of the Mexican state on the peninsula.[36]

Coincidentally, in the United States Arizona Senator Henry Ashurst brought the delta, and its capacity to generate controversy, to the fore in both Mexico and the U.S. In January 1931, Ashurst placed a proposal before the U.S. Senate to purchase the Baja California peninsula and 10,000 square miles of Sonora along the Colorado River Delta from Mexico "peaceably and honorably." While Ashurst had made a similar proposal in 1919, ostensibly as a measure of protection against the United States' wartime enemies, the political context of resource allocation in the Delta had markedly changed during the intervening twelve years. Most importantly, the institutionalization of the Mexican Revolution in national politics placed sovereignty over natural resources at the top of the nation's agenda. Graciously, Mexican President Pascual Ortíz Rubio treated Ashurst's proposal as a joke. Indeed, a number of Mexican deputies suggested that the peninsula be sold only after Mexico opened "negotiations to buy Arizona, California, New Mexico, Texas, and New Orleans."[37]

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[35] Pablo L. Martínez, "Polémica Contra los Sentimientos Nacionales," in Mathes, ed., 395-396.

[36] Ibid., 397.

[37] "Mexico Registers 'No Sale' of Lower California," *The Literary Digest*, January,21, 1931, 13.

Apparently, however, Ashurst failed to grasp the gravity of his request and the nationalist fervor that it awakened south of the border. From his perspective, he observed, "There is no thought of aggression or of a purpose of taking away by force. It is simply a plan to purchase land similar to transactions effected by the United States in the past." Nevertheless, for many Mexicans even an *offer* to purchase the peninsula smacked of *Walkeresque* aggression. Ashurst, like Walker, argued that "Lower California is practically useless to Mexico, but would be of value to the United States from a commercial and strategical point of view . . ."[38] *Literary Digest* linked the proposal to a plan to avoid negotiating a water treaty, similar to the Colorado River Compact, with Mexico. "No great stretch of the imagination is needed," the article observed, "to see a link between the purchase and the Boulder Dam development which involves Mexico's rights in the distribution of the Colorado River waters." Another magazine, *Outlook and Independent,* noted that the purchase of land in both Baja California and Sonora would give the U.S. "complete control of the river and [obviate] all difficulties over the distribution of water."

While some Mexican officials treated the proposal with levity, a writer for *Outlook and Independent* noted presciently that, "If it is pressed, there will be little laughing in nationalistic Mexico." Such was the case with Mexico's highly nationalistic Secretary of Public Works, Juan Almazán. Almazán linked the recurring threat of American annexation of Baja California to "the lack of communication between that region and the rest of Mexico." Adequate infrastructure was a national necessity, he reasoned, because, "To oppose such works, arguing that these are hard times, and that it is a poor commercial investment because trade does not justify it, shows in my opinion, an utter disregard of the very real and immediate danger of a new mutilation of the Fatherland." Almazán played an important role in preparing for increased Mexican control of land and water resources in Baja California that eventually began during the Lázaro Cardenas presidency (1934-1940).

More than likely, Senator Ashurst made his proposal in the spirit of historical ignorance, and not as an attempt to insult Mexicans. However, his plan illustrates that the

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[38] Ibid.

ghosts of William Walker still roamed the region, though in different forms than filibusterers. Control of natural resources had become more legalistic, assuming the form of treaties instead of militaristic attacks. Nevertheless, no matter how much the forms of conquest changed, proximity to the United States kept the memory of nineteenth century incursions alive in the minds of many Mexicans.

**Lázaro Cardenas and the "Mexicanización" of the Delta**

In 1934 Lázaro Cárdenas assumed the presidency of Mexico. Just as Franklin Delano Roosevelt served as a paragon of optimism for a depressed United States, Cárdenas rekindled the flames of the Mexican Revolution and brought hope to a highly stratified society still largely dominated by foreign capital. Prior to his first year in office Cárdenas made an exhaustive trip throughout Mexico to assess the needs of the nation. His itinerary included a stop in Mexicali. It was the first presidential visit to the peninsula by a Mexican president or presidential candidate. After his trip Cárdenas outlined an ambitious program of social reform and economic nationalization to be carried out during his presidency. One of his goals was to: "distribute among Mexicans the enormous latifundia of the Colorado River and Land Company that occupies Mexicali Valley."[39] At the same time he also hoped to colonize the expropriated land with migrant Mexican workers currently working in the U.S. At the end of his reflections on his visit to Mexicali, Cárdenas expressed high hopes for the city's future as an economic juggernaut on the border. By building on its agricultural foundations, he observed, "Mexicali should make itself into an industrial city."[40]

Cárdenas's close associates also apprised him of the potential for development in Mexicali. On November 3, 1935, General Ernesto Aguirre Colorado expressed the need for immediate action to counteract U.S. influences there. Baja California, he announced, was in a "grandiose dilemma." He enjoined Cárdenas, "either attend to that piece of your country's land immediately, or before ten years the nation will have lost it." He contrasted U.S. roads to Baja California with the lack of Mexican access to the region. Aguirre also noted that for Mexican immigrants to Baja California, "the sacrifices are so enormous on

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[39] Lázaro Cárdenas, *Obras: I-Apuntes, 1913-1940*, volume 1 (México D.F.: Universidad Nacional Autónoma de Mexico, Dirección General de Publicaciones, 1972, 293.

these trips -- many Mexican lives have been lost while crossing the desert and many vehicles have never arrived at their destination." Isolation from Mexico's center also meant that the region's inhabitants would continue to rely on U.S. markets for consumer products.

Aguirre also focused on the potential for agricultural development in the region. He informed Cárdenas that *now* was the time to act. U.S. interests were exhausting the water resources of the Colorado River. The United States Bureau of Reclamation was diverting water to Los Angeles "to irrigate lands that today are unproductive, converting them later on into fecund lands." If Cárdenas did not act quickly, Aguirre calculated, "a problem will present itself for the very fertile cotton fields of the Mexicali region." He recommended a railway to Sonora from Baja California, highways, federal promotion of state development, recovery of CRLC lands, and increased irrigation from the Colorado River.

Whether Aguirre's letter compelled Cárdenas to act is not known, yet his suggestions mirror the plan that the president subsequently announced to the nation.[41] In 1936, Cárdenas unveiled a sweeping plan for the integration of Baja California and Quintana Roo, two peripheral federal territories, to the Mexican interior. The president emphasized the importance of racial, ethnic, and cultural unity in those two regions.[42] Cárdenas also stressed the need to develop the resources of Baja California. Finally, Cárdenas wanted to increase the population in Baja California and construct highways and railways between the peninsula and central Mexico to stimulate domestic trade and migration. Cárdenas also hoped to attract many Mexicans that were working in the United States to Baja California with the promise of free land. A memo circulating through the Executive office stated the objectives of the plan even more succinctly: "three factors are necessary to achieve re-population and integral resurgence of these zones:

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[40] Ibid.

[41] Ernesto Aguirre Colorado to Cárdenas, November 3, 1935, AGN, RG Lázaro Cárdenas, 437.1/413.

[42] To that end, the federal government curtailed Chinese, Southern European, Indian, and Japanese immigration and many foreigners were forced to leave the country. See Robert H. Duncan, "The Chinese and the Economic Development of Northern Baja California, 1889-1929," *Hispanic American Historical Review*, November 1994, 616-647.

cheap land, cheap water, and cheap labor."[43] The unparalleled success of these objectives contributed to the rapid depletion of water resources in the Mexican Delta and the concomitant decline of ecological conditions in the region throughout the balance of the century.[44]

In order to stimulate migration to and investment in the region, a federal commission was appointed with the express purpose of promoting the development of Baja California. The commission drew up a list of "Fifty Thoughts," many of which reflect a conscious effort by the Cárdenas administration to protect the northern frontier from foreign influences. One statement linked regional integration to national duty: "To Mexicanize the territories is to strengthen the Fatherland." Another appealed to the changing role of the peninsula in Mexican memory: "Our grandparents had the luxury of forgetting Baja California and Quintana Roo; today, the imperatives of life require that we remember them always." The lure of irrigated farms and economic prosperity – Baja California was one of Mexico's wealthiest regions, largely because of its links to the U.S. economy – were also employed by the commission to "mexicanize" the Colorado River Delta. The official propaganda downplayed the harshness of the region's sweltering climate by emphasizing the opportunities for economic advancement: "The malignity of the climate of Baja California is a fable, in reality there are not endemic or regional sicknesses. The inconveniences of the climate are recompensed by the fruits of labor in this rich region." Other slogans re-emphasized the theme of prosperity on the frontier: "If you like, you can not only make yourself independent, but also turn a fortune, as you go to a place [Baja California] where you can do it. The Mexican territories offer everything that you need." The commission also reiterated the prospect of irrigated fields for those willing to migrate northward: "The territories need irrigation so that fruits can break the earth; but irrigation requires colonists." Finally, in an effort to recruit colonists and laborers the committee appealed to Mexican nationalism vis-à-vis continued foreign domination of Baja California. Perhaps in response to repeated U.S. requests (originating

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[43] "Memorandum," AGN, RG Lázaro Cárdenas, 437.1/413,n..d.

[44] Cárdenas, "A la Nación," AGN, RG Lázaro Cárdenas, 437.1/413, 1-3; The long-term ecological impact of delta development in the 1930s and 40s is discussed in Evan R. Ward, "Two Rivers, Two Nations, One History: The Transformation of the Colorado River Delta since 1940," *Frontera Norte*,

at the local and state, not national, levels) to purchase Baja California, the committee penned, “Decrease foreign covetousness of the territories of Baja California and Quintana Roo, cooperating to achieve their true national integration.”[45]

Implementation of Cárdenas's plan occurred through federal and local initiatives. In 1936 the Mexican government signed an agreement with the CRLC, requiring them to gradually liquidate their lands to Mexican nationals.[46] On January 27, 1937 (now a state holiday in Baja California), a ground-swell of local dissatisfaction with the CRLC's unwillingness to execute that accord compelled numerous factions of land-hungry *campesinos* to take over control of leased plots from the company. Shortly thereafter Cárdenas authorized the accelerated occupation and purchase of lands from the CRLC in Mexicali Valley. Initially, fields were broken up into 20-hectare plots of land, known as *ejidos*. *Ejidatarios*, or Mexicans who received *ejido* lands, were granted usufructary rights to the land by the Mexican government, but not awarded outright ownership of the plots. Better quality lands were slowly broken up and sold as private property in areas known as *colonias*. Owners of these plots were known as *colonos*. By 1956, 157, 781 hectares of land formerly owned by the CRLC had been sold to *colonos* and 116,546 hectares had been distributed among *ejidatarios*.[47] The rapid growth that occurred between 1937 and 1956 stretched local water resources to the limit and often caused tension between *colonos* and *ejidatarios*.

The exploitation of water for both domestic and agricultural applications played a central role in Cárdenas's plan. At the time of his address to the nation, Cárdenas directed the Secretary of Agriculture and Development to find out which lands could be settled and to assure that those lands could "be sufficiently irrigated."[48] He also enjoined the

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number 22, julio-diciembre 1999, 113-140.

[45] Comisión Encargada del Desarrollo de Los Territorios Federales, “Cincuenta Pensamientos,” November 11, 1936, 1-3.

[46] María Eugénio Anguiano Tellez, *Agricultura y migración en el Valle de Mexicali* (Tijuana, B.C.: COLEF, 1995), 90-94; Anguiano Tellez’s book provides the most authoritative investigation of early twentieth-century development of Mexicali Valley, including the expropriation of CRLC lands.

[47] Ibid., 113.

[48] Cárdenas, "Memorandum," "A La Secretaria de Agricultura y Fomento," AGN, RG Lázaro Cárdenas, 437.1/413, 10.

Secretary of Exterior Relations to obtain from U.S. officials a definite statement on Mexico's water rights to the Colorado River.[49] Given the ambivalence of U.S. officials towards Cárdenas's request for a treaty guaranteeing Mexico water from the Colorado River, it is not surprising that the Mexican president encouraged extensive development of the Delta. Cárdenas could only hope that if a treaty ever were drawn up, the United States would have to provide Mexico with enough water to irrigate lands presently in use. While the principles of water law were still ill-defined with regards to apportionment of international rivers, prior-use guarantees could largely be counted on in the event of arbitration. In a letter to Baja California Governor Rafael Navarro Cortina, Cárdenas elaborated further on his plans to utilize water in the delta: "It is important to take into consideration that the greater the land that we place under cultivation, we will be in conditions to assure for Mexico a greater volume of water from the storage that the United States is making with waters from the Colorado River."[50]

Local leaders in Mexicali and San Luís also influenced Mexican claims to water resources in the delta. On December 24, 1935, Bernardo Batiz of the Department of Public Health in Baja California, and Antonio Basich, Secretary of Agriculture and Development for the state, expressed their frustrations with the United States' unwillingness to spell-out Mexico's water rights to the river. Batiz and Basich also emphasized the importance of that resource in regional development, noting that Colorado River waters "[were] the only and irreplaceable source of wealth and even of subsistence [in the region]." One year later, the same pair of officials suggested to federal officials that a rapid increase in water appropriation would provide Mexico with leverage against the United States in case a treaty were drawn up. They observed that "Mexico is in better conditions than the United States to utilize the maximum amount of [Colorado River water] for agricultural purposes in the shortest amount of time . . . "[51]

It is doubtful whether local and federal officials were prepared for the response of Mexicans throughout the country and in the United States to Cárdenas's call to occupy

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[49] Ibid., "A La Secretaria de Relaciones Exteriores," 15.

[50] Cárdenas to Navarro Cortina, January 20, 1937, AGN, RG Lázaro Cárdenas, 437.1/413.

[51] Basich and Batiz to the Comisión Mixta Intersecretaria del Territorio Norte de Baja California,

and purchase CRLC lands in Baja California. Controversies raged throughout the late thirties and forties over the propriety of making intake cuts along the sides of the Colorado River for irrigation canals. *Ejidatarios* and *colonos*, divided by the amount and quality of their lands, squabbled about the apportionment of water from the Colorado River.[52] Anxious *ejidatarios* proposed to their leaders that they were willing to work for half salary in order that they could complete a state-funded canal that would bring water from the river to their lands.[53] This enthusiasm often turned to disillusionment once the river (or the local canal system) ran dry.

In terms of its effects on the ecosystem, the *"mexicanización"* of the southern delta intensified a revolutionary process of natural resource exploitation that had been initiated by farmers and speculators in Arizona and California during the late nineteenth century.[54] While various U.S. interests were already competing fiercely for Colorado River water, the addition of Mexican pressures on water resources brought about unprecedented bi-national competition in the region-- abetted by mutual mistrust -- that has endured at various levels until the present. The depletion of natural resources reached its highest level after this period as demographic and agricultural growth placed even greater demands on water and labor resources on both sides of the border. Government officials and residents from both nations shared responsibility for this precipitous increase in water use. Cárdenas may have encouraged residents to bring as many hectares as possible under cultivation to establish additional water rights, yet the unwillingness of U.S. officials to provide a reasonable guarantee of water from the Colorado River for Mexico only fueled his efforts to secure prior-use rights. That reticence on the part of the U.S. officials was principally generated by Arizona and California interests that wanted to maximize the usage of water in the United States before dealing with the "Mexican question." Finally, Mexican expropriation of previously American-owned lands in

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"Aguas Internacionales," AGN, RG Lázaro Cárdenas, 437.1/413, 1.

[52] Juan G. Delgado to Cárdenas, October 1940, AGN, RG Lázaro Cárdenas, 508.1/167.

[53] Governor Yocupicio to Cárdenas, October 31, 1938, AGN, RG Lázaro Cárdenas, 508.1/167.

[54] For early developments in the U.S. delta see Donald J. Pisani, *From Family Farm to Agribusiness* (Berkeley: University of California Press, 1984), 89-92, 309-319.

Mexicali Valley prompted local leaders in the United States to increase their appropriations from the Colorado River.

On December 1, 1940, Cárdenas relinquished his hold on the Mexican presidency and passed the tri-colored presidential sash to his more conservative successor, Manuel Avila Camacho. After Avila Camacho delivered his acceptance speech before the Mexican Senate, he accompanied Cárdenas to the president's office in the National Palace. There, Cárdenas gave the incoming executive several notes. In his journal Cárdenas discussed three of the messages that he passed on. Each reflected Cárdenas's concern that the United States respect Mexican sovereignty. In the first letter, which he had written to his successor on January 1, 1940, Cárdenas recommended that the nation's chancellor "continue working until obtaining the absolute respect of the sovereignty of the [Mexican] nation." Cárdenas also believed that this principle of national sovereignty, which he had defended throughout his presidency, was an invaluable legacy of the revolutionary tradition. "[I]f the citizen who follows me is in agreement with this principle," the out-going president observed, "it will serve him well to transmit it to his immediate successor [as well]."[55]

At the same time, Cárdenas left Avila Camacho with more specific issues to address to the end of defending Mexico's national integrity. "The marked interest that exists on the part of our neighbors to the north concerning the territories of Baja California," Cárdenas noted, "has been demonstrated on various occasions, trying to acquire them with distinct pretexts." He noted that the duty-free zones established around the border regions facilitated not only trade, but also "the growth of the [Mexican] population." Cárdenas advocated further development in the Mexican delta and programs to encourage immigration to the territory. Economic growth and immigration, he held, would eventually lead to a population of over one million Mexicans on the peninsula. "Human growth runs like the rivers," he metaphorically noted, "It runs toward the low or uninhabited lands."[56] Despite the ideological shifts of Cárdenas's successors, his encouragement of development in and immigration to the Colorado River Delta remained

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[55] Cárdenas, *Obras*, 441-442.

[56] Ibid.

a firm part of the presidential agenda during the next thirty-five years. Ultimately, Cárdenas's efforts to promote the "mexicanizacion" of Baja California answered Antonio Melendez's 1854 plea for federal help following William Walker's attempted annexation of the Mexican Delta.

**Historical Legacies of Conquest: The Case of the Colorado River Delta**

In spite of William Walker's ultimate failure as a filibusterer, he endures for many Mexicans as a symbol of the aggressive tendencies of their neighbors to the north. While on both sides of the border historians characterize Walker as an adventurer disillusioned by grandiose ambitions, there are those who still express admiration for Walker's exploits. Much of the romantic allure associated with filibusters stems from the idea that private military incursions into Latin America seemingly *ended* during the nineteenth century. While in a literal sense this is true, figuratively, Walker's incursion into northwestern Mexico offers an appropriate *starting* point for understanding what, in a different context, Patricia Limerick has called an "unbroken legacy" connecting the history of the West in the nineteenth and twentieth centuries.[57] This is especially true in the case of the Mexico-U.S. borderlands generally, and the Colorado River delta specifically. The region's historiography is sparse and too focused on outlaws, filibusters, prison life at Arizona's territorial jail in Yuma, stagecoach schemes, the Southern Pacific Railroad, Indian encounters, and enchanting tales from ephemeral mining camps. Clifford Trafzer has put it well: "Too often historians and writers have overemphasized outlaws and lawmen in the making of modern Yuma [and the delta region]. These people played a part in Yuma's history, but only a small part."[58]

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[57] See Patricia Limerick, *Legacy of Conquest: The Unbroken Past of the American Wes*t (New York: Norton, 1984).

[58] Clifford Trafzer, *Yuma: Frontier Crossing of the Far Southwest* (Wichita, KS: Western Heritage Books, 1980), 134-135. All too often the delta has been neglected in Mexican history as well. Historian María Eugénia Anguiano Tellez argues that the limited geographic scope of agriculture along the border contributes to this oversight, although farming remains an important part of the economies of Baja California, Sonora, Chihuahua, Coahuila, and Tamaulipas. She also attributes the lack of attention to Mexicali Valley to the importance of capitalist versus collective farming in the region's history. The allure of growing cotton for cash instead of corn for the table contributed to a regional economy intimately linked to international markets. In contrast, most studies of rural Mexico focus on localities where the Mexican Revolution provided collective lands for natives and *mestizos* who concentrated primarily on subsistence production. See Anguiano Tellez, 12-15.

As this chapter's look at the Colorado River delta has shown, the conquest of land and water links events in the region to larger themes in the history of Mexico and Mexican-U.S. relations. The enduring legacy of agribusiness in Mexicali, however, reflects the lingering effects of the *Porfiriato* in the region as well as the community's proximity to the United States. That legacy was further enhanced by the period of peace the area enjoyed, notwithstanding the turmoil of 1911 during the Mexican Revolution. As Anguiano Tellez reminds: "This region finds itself [overlooked] by studies and discussions that address capitalism in Mexico, *even though it is an example of the diversity of situations created and reproduced by the own impulse of capitalist development* (emphasis added)."[59]

Contests over land and water in the delta region during the extended revolutionary period (1910-1940) also reflect broader national debates concerning the type of development that the Mexican state should pursue in the region. While some historians have concluded that the Flores Magón assault on Baja California was merely a peripheral event during the early Revolution, his attempt to take control of the Colorado River and Land Company's operations in Mexicali Valley pitted the most radical revolutionary voices against one of the most efficient U.S. interests in Northern Mexico. This foreshadowed a central theme of the twentieth-century Mexico, how wealth and power should be distributed among the nation's people. Cárdenas's expropriation of land and broad federal initiatives in Baja California represented a less radical, although more successful, approach to preserving the state's resources from American interests than Flores Magón's insurrection.

The efforts of the federal government to "mexicanize" the region also provides a new perspective on the Cárdenas regime. For both U.S and Mexican citizens living in the delta during the late 1930s, Cárdenas's expropriation of land, distribution of plots among *campesinos*, and the comprehensive plan for economic integration to the Mexican state, was revolutionary. Yet, Cárdenas's plan for regional nationalization was more of a "halfway revolution," for, due to a lack of federal and private funds he was unable to achieve to achieve the type of development occurring north of the border.

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[59] Ibid., 15.

In fact, U.S. interests continued to dominate financing, cotton-processing, and water distribution through the 1960s, when Mexican cooperatives finally were able to amass the capital necessary to take them over from their U.S. counterparts.[60] Federal financing only amounted to five percent of new farm operations in Mexicali Valley after Cárdenas's redistribution of land. U.S. banks financed the majority of the projects in Mexicali Valley. Ginning and fertilizing services were also owned predominantly by U.S. corporations, chief among them Anderson-Clayton.[61] Finally, the realities of Mexican-U.S. relations demanded that Cárdenas maintain cordial relations with the United States even as he warred against transnational corporate influences over the Mexican economy and politics.[62]

In terms of binational relations perhaps no region better exemplifies some of the tensions and complexities of diplomacy between the two nations. Through the lens of environmental politics we witness the greatest paradox of Mexican-U.S. relations up-close: a bilateral pursuit for economic independence within the context of asymmetrical interdependence. Despite the tensions generated by filibusters and sometimes abetted by mutual ignorance of each other, neither nation achieved the type of development it desired without some help from the neighboring country. For farmers in Baja California, the quest for politico-economic "independence" could not overcome reliance on private and public organizations in the United States for capital, technology, and protection from floods by dams upstream. For farmers in the United States, capital intensive agriculture in the region would have been impossible without a cheap migrant labor force from across the border. And, although United States interests and agencies had an economic advantage over their Mexican counterparts, Mexico aggressively developed the region to the extent that its resources allowed. This approach was not only a reaction to the

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[60] See Scott Whiteford, "Troubled Waters: The Regional Impact of Foreign Investment and State Capital in the Mexicali Valley," in *Regional Impacts of U.S.-Mexican Relations*, Ina Rosenthal-Urey, ed., (San Diego: Center for U.S.-Mexican Studies, University of California, San Diego, 1986) 17-36.

[61] Anguiano Tellez, 105-107.

[62] Alan Knight assesses the Cárdenas legacy in "Cardenismo: Juggernaut or Jalopy?," *Journal of Latin American Studies*, volume 26, part 1, February 1994, 73-107; Alicica Hernández Chávez also examines the Cárdenas era in *La mecánica cardenista*, volume 16, *Historia de la Revolución Mexicana* (México: Colegio de México, 1980).

murmur of U.S. annexation that Walker's "ghosts" circulated throughout the Mexico in the early 1930s, but also reflected the government's encouragement of agribusiness following the violent phase of the Mexican Revolution.[63] Unfortunately, geography and lack of capital placed farmers in Mexicali Valley at a disadvantage to exploit natural resources. Ultimately, however, the two nations were more apt to cooperate than resort to armed conflict when resolving differences following the Mexican Revolution.[64]

While the mission of William Walker and that of U.S. and Mexican citizens in the twentieth century delta were not identical, their intent to maximize control over the region's resources provides a window through which to visualize the delta's economic development and environmental challenges during the past century and a half. This trend is reinforced by the symbolic importance attributed to Walker by scholars and residents of the region. In the minds of many Mexican historians and politicians, Walker's intention to dominate Sonora and Baja California personified an idea that was expressed in actions and words throughout the balance of the region's history. Those images were resurrected during the Flores Magón insurrection and Cárdenas's extended plan to "mexicanize" the peninsula. Yet, as we have seen, political change altered the dynamics of resource utilization after the turn of the century. By the early twentieth century, Walker and "Manifest Destiny" were dead, but scarcity of water in the Colorado River Delta continued to fuel heated -- if at times mundane, legalistic, and technical -- discussions between citizens of the two nations over resource allocation. Indeed, the "ghosts" of William Walker appeared in different forms, and they continually reinforced the region's historical linkages to the region's most precious commodities: land and water. Similar trends characterized the balance of the twentieth century in the delta. After surface-water rights were apportioned between the two nations in 1944, sub-surface wells became the new frontier where the two neighbors competed for water, increased development, and national honor.

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[63] See John J. Dwyer, "The End of U.S. Intervention in Mexico: Franklin Roosevelt and the Expropriation of American-owned Agricultural Property," *Presidential Studies Quarterly*, volume 28, number 3, Summer 1998, 495-509.

[64] Ceballos-Ramirez and Martinez observe: "Despite the environment of alienation and recurrent estrangements at the governmental level, cooperative transnational relationships continued to grow. In the struggle between alienation and accommodation, it was the latter that proved to be more enduring" (157).

## Chapter 2

## Loosening the Cotton Belt

On March 7, 1850, Senator Daniel Webster, an ardent opponent of slavery, stood before the United States Senate to explain his support for the Compromise of 1850. He believed that environmental conditions, mainly the lack of rainfall, would not permit the Cotton Kingdom to flourish across the Far Southwestern tier of the continental United States. "[The] law of nature, of physical geography," he observed, "settles forever . . . that slavery [and the cotton kingdom] cannot exist in California or New Mexico."[1] Historian Walter Prescott later Webb echoed Webster's sentiments about the decline of the cotton culture in the Southwest during the late nineteenth century. While the cultivation of cotton and the practice of slavery quickly spread from Georgia to eastern Texas between 1811-1839, Webb demonstrated that after passing the 98th meridian, the Cotton Belt virtually stopped in West Texas by 1915. He noted, "We find that east of the ninety-eighth meridian the expansive force of cotton and slavery was so strong that they outran the territory; west of the ninety eighth meridian they could not go, even into territory which had been definitely assigned to slavery."[2] The cotton kingdom only expanded three degrees west of the 98th meridian between 1849 and 1889.[3]

By 1910, however, improved irrigation technologies, new hybrid strains of cotton, federal assistance, abundant capital from California banks, and the emergence of links to the global market, hastened the rise of a new cotton kingdom far west of the ninety eighth meridian. Government leaders and agronomists exulted at the prospect of extending the Cotton Belt. O.F. Cook, USDA bionomist, predicted, "Instead of extending, as formerly supposed, only to the middle of Texas, cotton culture now seems likely to become one of the chief agricultural resources of the region from the Rio Grande Valley . . . to the

[1] Daniel Webster as quoted in Walter Prescott Webb, *The Great Plains* (Lincoln: University of Nebraska Press, 1981), 190.

[2] Ibid., 189.

[3] Ibid., 188.

Imperial Valley of Southern California."[4] By 1902 Cook and his colleagues were conducting tests of long- fiber cotton in the Imperial and Yuma Valleys of the Colorado River Delta in search of an alternative source of long-staple cotton similar to that grown in Egypt. By 1912 extensive irrigation projects fed the thirsty Sonoran desert floor in both valleys with water from the Colorado River. During World War I, the Colorado River Delta served as the capital of the Far Western cotton kingdom, giving way in post-war years to the dominance of lettuce, cantaloupe, and watermelon cultivation. Ultimately, selection of the delta as a location suitable for the cultivation of cotton and later truck crops reflected the integrated method of regional development that the Department of Agriculture and the United States Reclamation Service (USRS) coordinated in developing the Southwestern periphery of the nation. Even before Arizona's statehood (1912), national agricultural objectives and USRS preferences to develop the delta combined to encourage large-scale public and private development of the irrigated oasis.

Contrary to the mythical ideals of the independent farmer, agribusiness in the delta was tightly linked to global markets and governmental assistance of various kinds. In general Western farmers depended more on federal help than farmers in other regions. The idea of complete independence was, as Thomas Sheridan has written, "[An] economic and ecological impossibility in an industry lashed by fluctuating markets and addicted to enormous investments in water control."[5] Federal bureaus had as much interest in the success of such projects as did the farmers. Developing the western periphery of the United States was as important in supplying domestic markets with such products as cotton, that had been imported from Egypt during the nineteenth century. What made extensive government assistance in the region unique was the early date at which it was extended to settlers. The critical federal projects that would establish the basis for the region's economy throughout the century were largely in place by 1910.

At the turn of the century, USDA officials were alarmed by the number of bales of Egyptian cotton imported from the Middle East and from Britain. In a report outlining

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[4] O.F. Cook, "Cotton Farming in the Southwest," *USDA Circular #132-B,* (Washington D.C.: GPO, 1913), 9.

the need to develop a domestic culture of Egyptian cotton, B. T. Galloway, Chief of the Bureau of Plant Industry (BPI), observed that the United States imported 60,000,000 pounds of it each year.[6] Its shiny appearance made it a natural choice for combining with silk in the production of clothing articles "in which a high finish and luster is required."[7] It was also desirable for manufacturing sewing thread, umbrellas, insulating fabrics, and automobile tires.[8] In fact, the use of Egyptian cotton in tire production brought the largest surge in production of Egyptian cotton in Arizona during World War I. Accordingly, BPI scientists worked "to develop Egyptian cotton culture in the United States in order to supply our own market with a homegrown product."[9]

The BPI was also intent on not taking away business from Southern farmers in opening up another region for cotton cultivation. They reminded farmers of the differences between the Southwest and the rest of the United States. O. F. Cook wrote:

> An irrigated district in a desert is an oasis and . . . the plants that have thriven in the Southwest, the cotton, alfalfa, date palms, olives, pomegranates, etc., are those that have come from other dry countries where irrigation is practiced, in Africa and Asia, instead of from other parts of the United States or from Europe.[10]

In reality delta farmers grew more short- than long-staple cotton, yet production levels never seriously challenged the Southern Cotton Belt. Trial and error led the USDA to the delta. Tests were initially conducted "throughout the [traditional] Cotton Belt."[11] However, several factors prompted BPI officials to look elsewhere to establish a new cotton culture. First, the humidity and precipitation in the Southeast greatly exceeded the conditions necessary to successfully grow Egyptian cotton. Second, the haphazard nature

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[5] Thomas Sheridan, *Arizona: A History*, (Tucson: University of Arizona Press, 1994), 258.

[6] Thomas H. Kearney and William A. Peterson, "Egyptian Cotton in the Southwestern United States," *Bureau of Plant Industry Bulletin 128* (Washington D.C.: GPO, 1908), 3.

[7] Ibid., 7.

[8] Ibid., 26-27.

[9] Ibid., 7.

[10] O. F. Cook, "Cotton Farming in the Southwest," 16.

[11] Scofield, Kearney, Brand, O. F. Cook, and W. T. Swingle, "Community Production of Egyptian Cotton," *United States Department of Agriculture Bulletin 332* (Washington D.C.: GPO, 1916).

of production in the South, where every farmer planted his field with whatever seed he could find, also discouraged USDA officials. The scientists stressed that if long-staple cotton growers were to be successful, their product would have to be uniform in quality.[12] They believed that it would be extremely difficult to reorient complete communities towards the cultivation of long-staple Egyptian cotton that were traditionally accustomed to growing short-staple cotton. Likewise, short-staple cotton fields would quickly contaminate fields of long-staple cotton. Finally, the novelty of long-staple cotton – in comparison to short-staple Upland cotton, which Southerners had grown for years – presented marketing and labor challenges. Egyptian cotton bolls were smaller and more difficult to pick than the Upland varieties. Naturally, this made harvesting more difficult and expensive.[13] The processing of Egyptian cotton also required a different king of gin and rollers than Upland cotton, an investment many Southerners would be unwilling to make. BPI officials also found that "Marketing small lots of a new type of fiber, with which [Southern] buyers are unfamiliar, was found to be extremely difficult."[14] Ultimately, cultivation of Egyptian cotton required new techniques that radically differed from accepted practices of the Southern cotton culture.

The arid environment, prevalence of irrigated agriculture, and lack of an established cotton culture attracted USDA officials to the Colorado River Delta. The BPI commenced testing in Yuma, Arizona and Calexico, California (the Imperial Valley) in 1902. Subsequently, the BPI selected Yuma as the site where further cultivation and breeding of long staple cotton for production in the Delta would be concentrated. In 1909 the Bureau of Plant Industry opened a 160-acre experiment station seven miles north of Yuma. The Reclamation Service built a farmhouse and on office building next to the farm, and the USDA provided a tool house and machine shed.[15] The BPI tested cotton and other crops that demonstrated a potential for intensive cultivation in the delta region. An acclimatized strain of Egyptian cotton known as the "Yuma" variety had been

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[12] Ibid., 10-11.

[13] Ibid., 10.

[14] Ibid.

[15] W. A. Peterson, "The Work of the Yuma Experiment Farm in 1912," *Bureau of Plant Industries*

prepared for commercial testing by 1912.[16] Scientists at the farm, in conjunction with the scientists at the Experiment Farm in Sacaton, Arizona (near Phoenix), created the Pima strain of long-staple cotton.

The farm not only tested promising strains of cotton, but also assisted local farmers interested in cultivating cotton. Assistance came in the form of technical expertise, sample cottonseed, and in 1912 two stands of roller gins were acquired and subsequently "placed at the disposal of the local farmers in ginning the 1912 crop."[17] Governmental agencies also assisted local farmers in exterminating rodents and noxious weeds that threatened the farms. For example, the Experiment Farm tested the efficiency of sheep as deterrents of weeds in irrigation ditches. Experiments proved that the sheep not only kept the ditches clean, but also produced "additional revenue from wool and mutton."[18] In sum, the government offered comprehensive support in creating a viable cotton culture in the delta.

USDA efforts to encourage cotton cultivation in the delta also reflected the increasingly scientific and bureaucratic spirit of the age. In 1910 the BPI created a "Committee on Southwestern Cotton Culture," which was composed of five scientists who had been involved with the project of acclimatizing Egyptian cotton to the Southwest. C. S. Scofield, chairman of the committee, acted as a liaison with the USRS, no doubt coordinating efforts between officials at the Yuma Experiment Farm and the USDA scientists in the area. Physiologist W. T. Swingle oversaw breeding activities at the Sacaton experiment station and investigated labor shortages in the region. O.F. Cook and T. H. Kearney focused on breeding and acclimatizing Egyptian strains to conditions in the delta. Finally, C. J. Brand was in charge of marketing and transportation issues in the Southwest. The high level of interaction between governmental agencies and offices underscored the bureaucratic boom of the early twentieth century. W. A. Peterson noted that during 1912, the following offices collaborated on the farm:

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*Circular Number 126*, May 10, 1913 (Washington D.C.: GPO, 1913), 21.

[16] Ibid.

[17] Ibid., 21.

[18] E. G. Noble, "The Work of the Yuma Reclamation Project Experiment Farm in 1919 and 1920," *United States Department of Agriculture Circular 221*, June 1922 (Washington D.C.: GPO, 1922), 37.

> The Office of Crop Physiology and Breeding Investigations cooperates in the work with figs and dates; the Office of Foreign Seed and Plant Introduction in the work with bamboo, carobs, etc., the Office of Acclimatization and Adaptation of Crop Plants and Cotton-Breeding Investigations in cotton acclimatization; the Office of Alkali and Drought Resistant Plant Investigations in breeding Egyptian cotton; [and]the Office of Cooperative Cotton Handling and Marketing and Paper-Plant Investigations working with ramie.[19]

Even in Yuma, far removed from political centers of power, the bureaucratic expansion that characterized the progressive era influenced the development of the nation's periphery.

Committee members marveled at the environmental similarities between the Colorado River Delta and Nile Delta. Bright prospects awaited cultivators of long-staple cotton "where the very long, hot, almost rainless summers, deep alluvial soils, and irrigated agriculture approximates the conditions obtaining in Egypt."[20] Thomas Kearney and William Peterson compiled a detailed study of similarities and differences between cotton cultivation in the two regions. They included an extensive comparison of the climactic conditions, demonstrating that the aridity and high temperatures of the Colorado River Delta boded well for the success of cotton in the Pacific Southwest.[21] Temperatures remained sufficiently high during the fall (the harvest period) to justify further testing of long-staple varieties.[22] The minimal amount of rainfall at Yuma, averaging less than three inches per year, suggested that farmers could control of soil moisture and expect little precipitation during harvest.[23] Finally, the soils of the region, especially those of the Imperial Valley, "[resembled] much of the soil of the Nile

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[19] W. A. Peterson, "The Work of the Yuma Experiment Farm in 1912," *United States Department of Agriculture Circular 126B*, May 10, 1913, (Washington D.C.: GPO, 1913) 15-16.

[20] Thomas H. Kearney and William A. Peterson, "Egyptian Cotton in the Southwestern United States," 8.

[21] Ibid., 11-13.

[22] Ibid., 28.

[23] Ibid., 29.

Delta."[24] The climatic similarities between the regions evoked images of creating an "Occidental Egypt" in the Far West.[25]

The lack of harmful diseases and pests that plagued the Southeast also attracted committee to the region. Most all of the circulars written by the BPI members that participating in the experiments favored the Pacific Southwest over other areas because the boll weevil had not yet surfaced there. O. F. Cook attributed this to the arid climate of the delta. He also observed that the lack of humidity would protect cotton fields from the ravages of other diseases that plagued farmers in the Southeast.[26] Furthermore, Cook suggested that the arid conditions placed farmers in the Southwest at a comparative advantage to their Southeastern counterparts. He noted that "[wet] weather during the harvest season damages the eastern cotton crop to the extent of many millions of dollars."[27] This observation may have refered to the hurricanes that had devastated the Sea Islands during the late nineteenth and early twentieth centuries. While Egyptian cotton could not substitute for Sea Island Cotton in the fashion industry, the Pacific Southwest varieties provided a steady supply of long-staple cotton for industrial uses during World War I.

Finally, O. F. Cook observed that the region's aridity demanded that farmers adapt to the cultural and environmental parameters of the region. "Farming [in the Pacific Southwest] is attended by unusual difficulties," Cook noted, "because the conditions are so unlike those of other parts of the United States. The environment is a new one, not only for the cotton plant but for the farmer, and period of adaptation may be necessary for

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[24] Ibid., 31.

[25] The use of references to Egypt and the Nile when describing Yuma abounded during the early twentieth century, especially when cotton was the county's main agricultural product. See Jay Dexter Pierson, *The Growth of a Western Town: A Case Study of Yuma, Arizona, 1915-1950*, Unpublished M.A. These, Arizona State University, August 1987, 8.

[26] Cook notes, "The wilt and anthracnose diseases are often serious, and there are other insect enemies, such as the bollworm, the leaf worm, and the red spider, which sometimes destroy the crop quite as effectively as the boll weevil." At the same time, Bureau officials were well aware that new problems – unique to the environment of the Colorado River Delta – would become manifest over time. See Cook, "Cotton Farming in the Southwest," 9.

[27] Ibid.

both."[28] He also stressed that summers in the delta "[involved] a strain that some are unable to withstand."[29] He also cautioned prospective planters to be sensitive to their animals' well being, since even they "have to be spared from labor and protected from overheating when the weather gets too hot."[30] Farmers would have to show vigilence in protecting their families from the torrid heat in the delta. He observed:

> In the eastern part of the Cotton Belt efforts are being made to induce the farmer to give better housing to his cotton bales, instead of leaving them out to be damaged by wet weather. But in the Southwest it is the farmer and his family who need better housing to afford protection against the hot weather that otherwise interferes too much with agricultural activity.[31]

Cook suggested that farmers protect their families from the elements by building adobe homes with thick walls. With an air of superiority, Cook noted, "It does not occur to a progressive American farmer to imitate his . . . Mexican neighbors or suppose that the Mexican methods of building can be superior in any way to his own."[32] The bionomist argued, however, that adobe homes absorbed much of the searing desert heat during the day. Farmers might further adapt their working patterns to the desert rhythms by taking a siesta at midday within the cooler confines of their Spanish-style home. While such an activity might conflict with "Taylorized" methods of production, Cook conjectured that the respite from the heat was "a reasonable means of preserving bodily strength and mental activity."[33] Finally, if the farmer and his family found the adobe domicile too hot during the night, they could "follow the custom of Bible times still in use in oriental countries," and sleep on the roof.[34] While Cook's discussion of the cultural adaptations cotton farmers would have to make in the region deviated drastically from the scientific

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[28] Ibid., 10.

[29] Ibid., 13.

[30] Ibid.

[31] Ibid.

[32] Ibid., 14.

[33] Ibid., 15.

tenor of his paper, it reiterated that the new environment demanded radical adaptations by newcomers to the extreme conditions that prevailed in the delta.

The Cotton Committee also believed that the irrigation systems of the delta would facilitate cotton production. Fortuitously, at the same time that the BPI made their initial tests in Yuma (1902), the Newlands Reclamation Act was approved. On June 27, 1902, only ten days after the bill's approval, all the public lands in Yuma Valley and the Bard Region (on the opposing bank of the Colorado River in California) were withdrawn from public entry. The USRS completed surveys for construction of a diversion dam above Yuma on the Colorado River. Laguna Dam and a series of canal systems would distribute water from the Colorado River to farmers in Bard and the Yuma Valley was subsequently approved.[35] Local farmers could approve these plans and enter into a contract, collectively, with the USRS. The USRS awarded the contract for construction of the project to a private company and then carried out the operations of the Yuma Project for a yearly fee that farmers paid through the water user's association.

Mulford Winsor, Sr., a transplanted farmer and newspaper editor from Missouri, organized valley farmers into the Yuma County Water User's Association (YCWUA). Due to the reliance of the Yuma County economy on agriculture, it is little surprise that the YCWUA became the most powerful political body in Yuma County through the end of the 1920s. Even in its nascent state, federal officials recognized the swift organizational abilities of Yuma farmers. USRS officials bypassed construction of two projects in Central and Northern California because of "the ease with which agreement could be entered into with [Yuma Valley] irrigators in dealing with land and water questions."[36] The Yuma Project, made possible by recent engineering technology and governmental largesse, served as the foundation on top of which farmers were able to create an extensive and lucrative agricultural oasis unlike any other in the United States.

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[34] Ibid.

[35] Author unknown, "Exhibit C: History of the Yuma Project," in "*Information for 'Committee on Federal Reclamation Policy, Appointed by Secretary of the Interior, Harold L. Ickes, Yuma County Water User's Association, Yuma, Arizona, October 1934*, n. p.

[36] Donald J. Pisani, *From Family Farm to Agribusiness* (Berkeley: University of California Press, 1984), 302-303.

The Cotton Committee insisted that the proper use of irrigation, and not only its mere availability, would enhance the quality of Egyptian cotton in the region. As evidence of the triumph of science over nature in arid regions, the committee observed:

> It is characteristic of the Egyptian varieties to give better results when grown in regions of small rainfall where artificial watering is necessary. An expert on the subject in Egypt told one of the writers in 1902 that Egyptian varieties, when tested in Sudan, deteriorated fifteen to twenty per cent in localities where the rainfall was sufficient to produce cotton, but only two to three per cent where irrigation had been practiced.[37]

Committee members stressed that farmers who followed successful watering patterns would be assured the best crops. Artificial irrigation systems not only allowed the farmer to regulate watering habits, but also to control the level of soil moisture. The committee encouraged farmers to water fields liberally during and after planting and then taper off throughout the season. This tended to stimulate strong growth in the spring and ripen bolls quicker in the fall.[38] Finally, the Cotton Committee foresaw some of the difficulties farmers would have in adapting to irrigation systems. O. F. Cook urged farmers to line their canals with cement. As mentioned above, earth-lined ditches served as fecund breeding grounds for pesky weeds and grasses that impeded the rate of water delivery. Cook noted that a cement system, despite its high cost, would reduce the "immense waste of water as well as of land in the present system of earth ditches."[39]

Third, the Cotton Committee believed that a long-staple cotton culture in the Pacific Southwest would only be competitive with Egyptian cotton on the domestic market if potential buyers recognized it as a consistently superior product. Government agencies took the first step towards insuring a high-quality product through their extensive breeding programs. Instead of creating a single hybrid that could be planted throughout the region, the committee worked to develop strains of long-staple cotton adapted to each community in the region. Thomas Kearney and W. A. Peterson found, for

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[37] Kearney and Peterson, "Egyptian Cotton in the Southwestern United States," 31.

[38] Ibid.

[39] O. F. Cook, "Cotton Farming in the Southwest," 16.

example, that "considerable diversity in the growth of the plants and the quality of fiber . . . [indicated] a need of adjustment to local differences of soil and climate inside the region."[40] During the next decade farmers and the BPI carried out extensive tests to isolate the optimal strains of Egyptian cotton for the region.[41]

Additional production and marketing precautions required observation in order to ensure a superior product. Planting seeds that had not been contaminated by other strains of cotton represented the first step towards reaching that end. Farmers would also need to police their fields more closely and "remove most of the 'off-type' plants at a sufficiently early stage of their development to prevent their crossing with the typical plants."[42] Restriction of cotton production to long-staple varieties would also prevent labor problems. Kearney and Peterson observed that if short-staple cotton were introduced to the region, workers "would be more reluctant to pick the small[er] Egyptian bolls."[43] Finally, the committee believed that in order to compete with Egyptian cotton, Southwestern farmers needed to mimic the "standardization" of product quality adhered to by producers and expected by buyers in the markets of Alexandria.[44] The committee believed that if each community could consistently produce high-quality cotton, unadulterated by other strains of cotton, a long-term source of Egyptian cotton could be established in the Southwest. Consistent production of a high quality product would help "avoid confusion in the minds of cotton buyers with reference to the class of cotton produced in each section."[45] These suggestions contributed to the rise of organizations in

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[40] Thomas Kearney and William A. Peterson, "Experiments with Egyptian Cotton in 1908," *Bureau of Plant Industry Circular 29* (Washington D.C.: GPO, 1909), 4.

[41] Kearney and Peterson observed that in the future, "Intensive breeding by careful selection of the very best plants will probably have to be carried on by governmental institutions or by a few of the best farmers in each locality who make a specialty of the production of superior seed. But every farmer can practice selection to a certain extent, and by doing so can probably avoid going off his own farm for seed for several years at a time." Ibid., 13.

[42] Scofield, et. al., "Community Production of Egyptian Cotton," 13.

[43] Kearney and Peterson, "Egyptian Cotton in the Southwestern United States," 9.

[44] Scofield, et. al., "Community Production of Egyptian Cotton," 9.

[45] Carl Scofield, "Egpytian Cotton Culture in the Southwest," *Bureau of Plant Industry Circular 123C*, April 26, 1913 (Wahington D.C.: GPO, 1913), 28.

the Imperial Valley and Yuma that endeavored to regulate the quality of cotton produced there.

The idea of homogeneous production was developed most extensively in the San Joaquin Valley after 1920. However, government reports suggest that the community approach was successful in the Imperial Valley before World War I. Private cultivation of cotton probably began in the Imperial Valley in 1901, with the first delivery of water to the valley via the Alamo Canal. By 1902 the USDA began planting Egyptian cotton near Calexico, California. Texans and immigrants from the Southeast also brought short-staple Upland cotton with them to the region. In 1910 the USDA introduced Durango long-staple cotton to the Imperial Valley. Egyptian cotton had been tested in the region, yet labor constraints and cultivation of Upland varieties militated against large-scale cultivation of the Egyptian cotton in the valley. Four years later only twenty-five percent of the cotton growers in the Imperial Valley were growing Durango cotton. During that year, valley farmers produced approximately 43,000 bales of cotton on 66,000 acres.[46]

USDA officials recognized the transnational component of cotton farming in the Imperial Valley and Mexicali Valley. "Cotton-growing, like other agricultural enterprises," Argyle McLachlan, Scientific Assistant for the Office of Western Irrigation Agriculture, noted, "is practically continuous across the boundary. The irrigation system carrying water into California comes through Lower California, and the irrigation water for both sections is taken from the same main canal." While USDA officials feared that insects such as the boll weevil might cross the border from Mexico and destroy the incipient cotton culture, they praised the efforts of federal officials and California

[46] Argyle McLachlan, "Community Production of Durango Cotton in the Imperial Valley," *USDA Bulletin 324*, December 22, 1915 (Washington D.C.: GPO, 1915), 2-4.

*Cotton Production in Imperial Valley, 1909-1914, inclusive in bails* Source: McLachlan, 6.

| Year | Short staple | Long staple Upland | Egyptian | Total Crop |
|---|---|---|---|---|
| 1909 | 350 | 0 | 0 | 350 |
| Year | Short staple | Long staple Upland | Egyptian | Total Crop |
| 1910 | 4,000 | 0 | 0 | 4,000 |
| 1911 | 8,997 | 3 | 0 | 9,000 |
| 1912 | 6,950 | 150 | 100 | 7,200 |
| 1913 | 15,500 | 6,000 | 0 | 21,500 |
| 1914 | 34,900 | 8,000 | 100 | 43,000 |

authorities to impose quarantine measures against such a threat. Not only did cotton farmers on both sides of the border (which were mainly U.S. citizens) share similar agricultural interests, but also had their cotton ginned and marketed in California towns.

USDA officials worked with the Imperial Valley Cotton-Growers' Exchange (IVCGE) in an effort to make long-staple cotton from the delta competitive on the national market. As early as 1910 farmers formed cooperatives to gin, market, and store Durango cotton until competitive prices were obtained from prospective buyers. The non-profit IVCGE stored compressed cotton for growers of Durango cotton for a small fee that was assessed on each bale. The association arranged the bales into groups according to quality and attempted to market them in bulk. Two samples from each bale were presented to potential buyers. They eventually shipped bales to cotton mills via Los Angeles, Galveston, or New Orleans.[47] A bumper crop of cotton on the world market in 1920, however, numbered the days of the cotton culture in the Imperial Valley. Future cotton moguls would travel northward to the Central Valley of California where large-scale cotton farms would reach their apex.[48]

While the Cotton Committee believed that measures could be taken to facilitate community production of Egyptian cotton in the delta, it also recognized that the scarcity of water and the speculative nature of farming in the region presented challenges to their plan. Much of their concern stemmed from the transient nature of society in the Pacific Southwest. O. F. Cook emphasized that proper cultivation of Egyptian cotton required "the presence of an intelligent, efficient agricultural population."[49] The recent advent of capital-intensive agribusiness in the Colorado River Delta accounted for the growth of towns, roads, and economic infrastructures. Precisely because of the profitability of capital-intensive agriculture and rapid shifts in the global market, the value of property and crops rose and fell at a dizzying pace. O. F. Cook feared that many of the farmers in the region did not "think of themselves as permanent settlers" and hoped to make their

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[47] J.G. Martin and G.C. White, "Handling and Marketing Durango Cotton in the Imperial Valley," *USDA Bulletin 458*, March 31, 1917 (Washington D.C.: GPO, 1917).

[48] Devra Weber, *Dark Sweat, White Gold: California Farm Workers, Cotton, and the New Deal* (Berkeley: University of California Press, 1994), 19-21.

[49] Cook, 17.

profits by selling their land at the right time instead of farming it.[50] Likewise, during his survey of social conditions in the Imperial Valley, Paul Taylor, the famous sociologist of Mexican immigrants, observed:

> The idea of making a stake and moving out seems to dominate not only growers and farmers and white farm laborers, but also much of the rest of the community. Financially the valley is drained by the growers who, though they bear their losses, take their profits out of the valley, [and] by the absentee owners who take their rentals away.[51]

Precisely because of this ambiance, Cook feared that a community cotton culture would not succeed in a region where "the people are too little interested to learn how to live and work under the new conditions in which they have placed themselves."[52]

Despite the explosion in regional development, tenancy, recruitment of migrant labor, and residential transience continued to challenge the establishment of a stable socioeconomic community. When author Frank Waters toured the Imperial Valley in 1925, the numerous small towns in the region were still "clumps of wooden shacks and shipping sheds."[53] Paul Taylor also emphasized how social segregation between Mexicans, Mexican-Americans and Anglo-Americans citizens presented challenges to creating a greater sense of community in the Imperial Valley.[54] Taylor noted, "It [is] evident . . . that the Mexicans and Americans in Imperial Valley live socially in two worlds. Lines of cleavage based in varying degree on language, class, personal hygiene, color, and innumerable cultural differences divide the two groups sharply."[55] Residential pockets of African-Americans, Indians, Native Americans, Japanese, Filipino, Hindu, Chinese and Southern European immigrants further complicated the community building

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[50] Ibid., 12.

[51] Paul S. Taylor, *Mexican Labor in the United States: Imperial Valley*, Volume VI, University of California Publications in Economics in Taylor, *Mexican labor in the United States* (New York: Arno Press, 1970), 31.

[52] Cook, 12.

[53] Frank Waters, *The Colorado* (New York: Rinehart and Company, 1961), 303.

[54] Taylor, 83-93.

process. Furthermore, many of the local planters abandoned the summer heat to live in the more Mediterranean climate of San Diego.[56]

Absentee ownership and farm tenancy were common, even on Bureau of Reclamation (USBR) Projects. Despite the efforts of the USBR to curb large-scale land owning, speculators found ways around the 160-acre land limits, employing tenants to farm individual tracts. J. C. Power, Secretary of the YCWUA informed B. F. Fly, the organization's Washington lobbyist, that the high costs associated with farming were also turning independent farmers into tenants for large-landholders. Powers queried:

> Was not the Reclamation law passed specifically for the purposes of making homes for contented farmers on small tracts to the exclusion of speculators, and holders of large tracts of land like the large land holders of the south who had his Negro tenants while himself rode around on a horse and leisurely viewed the work being done that would give him more than the man who toiled to make the crop?[57]

Powers informed Fly that in the Valley Division of the Yuma Project over 80% of the farmers were tenants. Accurate or exaggerated, Powers's claim suggests a significant amount of tenant farming on the irrigation project. Companies often obtained tracts of land exceeding the 160-acre limit by using false names for the owners of the land. Power noted that one company owned "more than thirty different tracts" with a combined acreage of over 2,000 acres.[58] Ultimately, the prevalence of tenancy reinforced the transient nature of local social relations.

From their earliest experiences in the delta, the Cotton Committee recognized the difficulties in attracting a steady labor supply to pick cotton. Some members of the

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[55] Taylor, 87.

[56] Personal Correspondence, Carol L. Brooks, Curator, Arizona Historical Society, Yuma, Arizona to Evan Ward, December 19, 1996.

[57] J. C. Powers, Letter to B. F. Fly, Dec. 5, 1927, page 2, YCWUA Files. Powers also wrote: "The facts are here that the small holder in many instances are faring as well as anyone, but the trend is toward large holdings which are sold on contract to some sucker and then when his cash . . . is gone, he is squeezed out and another one is found to start on the same long trail that leads to the same end. And in many instances men who were landowners a few years ago are now tenants for the reason of the abuse of the reclamation law." J.C. Power to B.F. Fly, December 5, 1927, YCWUA, 2.

[58] Ibid.

committee believed that irrigation would allow individual families to wrest a living from the earth on limited acreage. O. F. Cook suggested that a farmer, his wife, and their children could pick a small field of cotton thanks to the three-four month harvesting period.[59] Similarly, Peterson and Kearney hoped that the nascent industry would not consist of "large, individual acreage, requiring much hired labor, but on the basis of 2 to 5 acres to each farm, the farmer's family supplying most of the labor needed."[60] In reality, however, serious cotton farmers in the delta preferred large-scale development to the family farm paradigm. Accordingly, farmers had to look beyond their families. Furthermore, the high cost of irrigated agriculture prompted them to look to the cheapest possible source for seasonal help. Committee members believed that native Americans would serve as the logical response to the hired-labor problem. They observed:

> There are several thousands of these Indians [near Phoenix], and as they lead a rather nomadic existence because of the uncertainty of the desert water supply, they find a season of cotton picking a congenial method of employment and have taken to it readily.[61]

Many farmers in the Imperial Valley, however, who had hired natives from the Quechan Reservation, were disappointed that the natives worked only enough time to earn what they needed to survive, and not according to the market-driven expectations of the boss.

Anglo-American newcomers failed to realize that construction of irrigation systems, including Laguna Dam above Yuma on the Colorado River, symbolized the transfer in control over the region's most precious resource – water – from the natives to Anglo-Americans. Before the twentieth century, the Quechan and Cocopah farmed a rich variety of crops on the banks of the river. Annual floods naturally irrigated the crops. Anglo-American dominance over economic and natural resources in the region, however, relegated many of the natives to wage labor constructing the irrigation systems. One hundred and fifty Quechan natives helped construct Laguna Dam. As Robert Bee observed:

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[59] Cook, 11.

[60] Kearney and Peterson, "Egyptian Cotton in the Southwestern United States," 56.

[61] Scofield, et. al., "Community Production of Egyptian Cotton," 17.

> The Quechans were giving up the only natural source of fertility for their farmlands in exchange for perhaps a year's wages as common laborers, because when the dam was completed, it reduced the incidence of flooding and thus reduced the deposit of rich river silt on the Quechans' land.[62]

Thereafter levees and dams of the Yuma Project were seen as salvation to the fields of U.S. residents in Yuma Valley, yet the severely reduced overflow significantly undercut the native's yearly harvest. While Quechan natives found their land and water rights swindled away by government officials in charge of the reservation or ambitious farmers, many attempted to farm acreage around the reservation and were reluctant to work for wages. Accordingly, Anglo-Americans in the delta recognized that they would have to look elsewhere to find a sufficient labor force.

Southern attitudes towards labor and actual expertise with cotton cultivation dramatically shaped the development of agribusiness in the delta. This involved planters, ranch-hands, and sharecroppers looking for higher profits and better wages than those available in the South. Delia Fuquay Hansberger, the child of one of the early families in Yuma Valley observed that prior to the introduction of cotton to the valley, most of the settlers had come from California. The rise of irrigation and cotton attracted a different group. Hansberger observed:

> This included a great many Texas with experience in growing cotton, very often with large families of children useful for the hand labor which growing cotton in those days required. I have seen it suggested that the date of arrival in the Valley often provides some clue as to whether an early family came from the West or the East.[63]

In her recent study of the cotton industry in the Central Valley, which replaced the delta as the top cotton producing region in California, historian Devra Weber, also notes that

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[62] Robert L. Bee, *Crossroads on the Colorado: The Impact of Government Policy on the Quechan Indians* (Tucson: University of Arizona Press, 1981), 65-66.

[63] Edwin L. Hansberger, Delia Fuquay Hansberger, and James LeRoy Hansberger, *Dates, Pecans, and Ostriches: Some Memories of Life in the Yuma Valley*, (Yuma, AZ: Yuma County Historical Society, 1970), 46.

Southern planters, such as Georgian J. G. Boswell, headed to the Southwest to participate in capital intensive agribusiness.[64]

The attitudes of Southern planters, particularly those from Texas, towards Mexicans played a pivotal role in the move towards recruiting Mexicans as the primary source of wage-labor. In 1908, one year before the first commercial crop was produced in Imperial Valley, Texan-transplant Ira Aten argued, "The picking of cotton is held to be a drawback to the valley, but that is not true. We mean to get Mexicans for the work and get all we need. Mexicans are the best pickers we know of. They come from Mexico City to do the work and make good pay at it in Texas."[65] Recent scholarship corroborates that the cotton culture of West and Southern Texas represented a departure from the labor-relations and production patterns of the Deep South. Instead of relying primarily on black sharecroppers and wage earners to produce and harvest cotton, farmers hired Mexicans to work for seasonal shifts for wages.[66] The Western edges of Texas's cotton culture, in effect, "represented the cultural and economic 'borderlands' between the plantation South and the semi-arid Southwest with its history of cattle ranching and Mexican communities."[67]

However, as Paul Taylor illustrated, the preference for Mexican laborers, particularly after the decline of cotton production in the delta during the 1920s was not pre-ordained. Taylor stressed a multi-causal model to explain the preference of Imperial Valley farmers for Mexican farmers by the late 1920s. Mexican laborers filled the growing void of farm workers that had previously been occupied by Chinese immigrants to California and Baja California. In 1916 acting governor of Northern Baja California, Esteban Cantu, eventually outlawed the continued immigration of Chinese laborers to the region, particularly in Mexicali Valley. As a result, more Mexicans began to migrate to the peninsula from the interior of Mexico. Finally, Taylor noted that industrial

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[64] Weber, 24.

[65] *Imperial Daily Standard* , September 19, 1908, as quoted in Taylor.

[66] See Neil Foley, "Mexicans, Mechanization, and the Growth of Corporate Cotton Culture in South Texas: The Taft Ranch, 1900-1930, in *The Journal of Southern History*, Volume LXII, No. 2, May 1996.

[67] Ibid., 276.

opportunities in the Midwestern and Northeastern U.S. slowed the influx of African-Americans to the region. Only at that point did an influx of Mexican immigrants into the Baja peninsula clearly indicate that workers from south of the border would fulfill the valley's labor needs.[68]

By the end of World War I, the delta became the primary entry point for migrant laborers from Mexico who wished to enter Arizona or California to work in the emergent "factories in the fields." In 1930, Imperial Valley had the largest population of Mexicans in Cotton-Growing Counties of California, save Los Angeles County.[69] Due to the proximity of Mexico, Imperial Valley farmers rarely needed to advertise outside of the region for farm labor. By the 1920s, moreover, migrant patterns had been established between the valley's emerging truck crop industry and the cotton kingdom rising to the north in the San Joaquin Valley.[70]

Finally, members of the Committee and at the Experiment Farm in Yuma also recognized the unique role of cotton in the agricultural development of the Pacific Southwest. In the Deep South, cotton cultivation was an end in itself. Tradition and the lack of capital (or attractive credit rates) encouraged sharecroppers, cotton planters, and cotton factors predominately championed the mono-crop system that prevailed until the end of World War II.[71] In contrast, a tropical climate, year-round growing season, available capital, and controlled irrigation meant that farmers in the delta could look beyond cotton to produce additional revenue. O. F. Cook conjectured "cotton will be recognized eventually as the chief agricultural resource of many enterprises that have been promoted on the basis of more speculative truck and fruit crops."[72] Cook believed that cotton would create capital for these more lucrative ventures and ensure a steady yearly income. He insisted that "such crops are much more likely to be established on a

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[68] Taylor, 5-18.

[69] Weber, 219.

[70] Taylor, 40.

[71] Gilbert Fite examines the protracted diversification of Southern agriculture in *Cotton Fields No More: Southern Agriculture, 1865-1980* (Lexington, KY: University of Kentucky Press, 1984).

[72] Cook, 11.

permanent basis by farmers who can assure themselves an ordinary living from cotton or other staple products, than by farmers entirely dependent on the sale of cantaloupes . . .or other precarious specialties."[73]

The push towards greater diversification reflected greater sensitivity of farmers and government officials to the vicissitudes of the global market, and the realities of living in a desolate desert environment. Unless farmers cultivated some truck crops or vegetables, they would have to "fall back upon canned goods, with a few high-priced vegetables brought in from the coast."[74] Moreover, BPI officials argued that planting alfalfa or green manure at regular intervals would maintain the fitness of the land for intensive cotton cultivation. Not only did alfalfa restore nitrogen to the soil, but cotton also allowed the farmer to kill Bermuda grass, Johnson grass "and other weeds which invade the alfalfa fields and after a time greatly reduce their productivity."[75]

Finally, the legion of projects at the Yuma Experiment Farm underscored the emphasis on crop diversification. Scientists tested nearly every type of grain, fruit, vegetable, and fiber, between 1910 and 1920. Descriptions of the region's potential for success rivaled those of a garden oasis. In 1920, for example, farm officials perfunctorily recorded:

> The list of the truck crops which have been grown and upon which reports have been made are asparagus, beans, beets, cabbage, carrots, casaba melon, cantaloupe, cauliflower, chick-peas, popcorn, sweet corn, cucumbers, eggplant, fenugreek, garlic, kohl-rabi, lettuce, muskmelon, okra, onions, parsley, parsnips, peas, peanuts, peppers, potatoes, radishes, roselle, spinach, squash, sweet potatoes, tomatoes, turnips, and watermelons.[76]

In addition to traditional crops USDA experts recognized the potential for crops such as Bermuda seed and ornamental tropical plants.

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[73] Ibid.

[74] Ibid., 15.

[75] Carl S. Scofield, "Egyptian Cotton Culture in the Southwest," Bureau of Plant Industries, Circular No. 123C, April 26, 1913.

[76] Yuma Experiment Farm in 1919 and 1920, 31.

By 1920, federal agencies laid a blueprint for the specialized and diversified nature of capital-intensive agribusiness in the delta. While they hoped cotton would gain a major foothold in the region, federal officials recognized that the volatility of global markets, advantages of irrigation resources, and capital-intensive nature of Western agriculture would give rise to a more variegate landscape than other farming regions in the U.S.. World War I stimulated cotton planting in Yuma and Imperial Counties. The Goodyear Tire Company, for example, paid to have cotton planted in Yuma County for use in the assembly of tires. In 1920, however, 450,000 bales of Egyptian cotton flooded the world market. This prompted farmers in the delta to diversify crop production.[77] The glut of long-staple cotton led some to cultivate short-staple cotton. Others turned their "Cotton Kingdom" into a "Cantaloupe Capital" by cultivating truck crops, such as cantaloupe, watermelon, grapes and lettuce.[78] The refrigerated railroad car extended the geographic scope of markets to the East.[79] By the Great Depression, production of cantaloupe, lettuce, citrus, and watermelon accounted for a substantial portion of the region's wealth.[80]

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[77] Thomas E. Sheridan, *Arizona: A History* (Tucson: University of Arizona Press, 1994), 214.

[78] *In Arizona Pageant: A Short History of the 48th State*, (Phoenix: Arizona Historical Foundation, 1965), Madeline Ferrin Pare sums up the dynamics of Arizona agriculture during the 1920s: "The failure of the cotton market in 1921 forced farmers to turn to other crops. There was a revival in the dairy industry. Production of grain sorghums for stock increased. Cantaloupe and lettuce took on new importance. By the end of the decade Arizona had planted nearly 15,000 acres in cantaloupes and substantially the same in lettuce . . . Cotton gradually came back to regain most of the post-war loss" (307). Census records for Yuma County corroborate Pare's claims.

[79] Ibid. 216. Because of railroad connections and climactic conditions in Yuma, Valley farmers had an advantage over other producers of truck crops in the nation. Porter Preston, USBR Superintendent, wrote in the 1925 *Annual Report*, "All things point to a greater activity in this class of farm products owing to their wonderful quality and the early period it is possible to place them upon Eastern markets (84)."

[80] From 1919-1925, acres under cotton production increased from 56,938 to 73,967 acres. Gains in bales produced were more modest, increasing from 26,343 to 26,732 during the same period. By 1929 cotton production in the Imperial Valley fell to 11,601 bales produced from 22,165 bales. Production of "truck crops" and citrus compensated for the decline in cotton production. Cantaloupe production increased from 10,449 acres in 1919 to 30,935 acres in 1929. Lettuce production experienced the most precipitous rise, increasing from 1,386 acres in 1919 to 25,194 acres in 1929. Pea production increased from 326 acres in 1919 to 6,396 acres in 1929. For more information on farm production statistics from the Imperial Valley see *Agricultural Census*, *1920* (360-361), *1925* (446-447, 456-457, 472-474), *1930* (472-473, 538-539, 544), (Washington D. C.: Government Printing Office).

Farmers in Mexicali Valley primarily grew cotton throughout the first six decades of the twentieth century, due to the demands placed on them by financiers, including the Colorado River and Land

Extensive federal help in development of the U.S. section of the delta played a critical role in the subsequent domination of irrigation, financial, and marketing networks in the bi-national region by Arizonans, Californians, and absentee landlords. In contrast, Mexican President Porfirio Diaz allowed private U.S. investors to develop Mexicali Valley and San Luis Río Colorado during the early twentieth century. As a result, Diaz's successors spent much of their energy attempting to link the valley to Mexican markets, roads, railways, and political institutions. Ultimately, the lack or abundance of federal help on either side of the border reflected the priorities and capabilities of the respective political economies. The coordinated efforts of the USRS and the USDA in the region not only extended the Cotton Belt farther to the West, but also aided private citizens and businesses in transforming the ecology and economy of the Delta.

Finally, the propensity of government officials, as well as private citizens in later years, to view the delta as an "occidental Egypt" reflected the early complexity of the political ecology of the region. While native cultivation of crops close at river's edge declined, visions of retaking cotton markets from merchants in far-off Egypt motivated U.S. politicians, citizens, and bureaucrats to create the irrigated oasis – a landscape-scale facsimile of the very lands in Egypt that policy makers hoped to supplant in long-staple cotton production. This tendency to ecologically transform a given locality remained a trademark of Western U.S. culture. It obscured and often erased, however, the socioeconomic consequences of large-scale technologic, economic, and scientific transformation of the Sonoran Desert.

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Company. In 1912-1913, fifteen bales of cotton were produced in Mexicali Valley. By 1927, the number of bales produced had skyrocketed to 86,285 bales. Production decreased during the 1930s and then passed the 100,000-bale mark in 1941-42. Wheat and Alfalfa were also grown in Mexicali Valley, but on a much smaller scale. See Maria Anguiano Tellez, *Agricultura y migracion en el valle de Mexicali* (Tijuana: Colegio de la Frontera Norte, 1995), 116-121.

## Chapter 3

## "Our 'Good Neighbors'"[1]

By 1938 two dynamic economic revolutions were under way in the Mexicali, Imperial, and Yuma Valleys. While Mexicans and Americans shared the same creditors, links to the global market, and crop production patterns, the enduring question of water allocation drove the deepest wedge between them between 1935 and 1974. Mexican leaders were most concerned about the lack of a treaty specifying the amount of water Mexicali and San Luís Río Colorado would receive from the river. Although the United States ignored Mexico's requests to participate in the negotiation of the Colorado River Compact (1928), which apportioned the river's water between the seven U.S. states in the basin, Mexican leaders still believed that at some point the United States would have to recognize their rights to the river. As a result, President Cárdenas encouraged massive development of the Mexican portion of the Delta, culminating in the signing of the Mexican Water Treaty (1945), construction of Morelos Dam (1950), and purchase of the waterworks infrastructure for Mexicali Valley from the Imperial Irrigation District (1960).

### Development of Mexicali Valley

During January and February 1938, Arizona state legislator Hugo Farmer made four trips to Mexicali to assess agricultural development. He reported that over 400,000 acres were either developed or being prepared for cultivation. He also observed that the Mexican government had initiated construction of a railroad across the Gulf of California and a harbor on the gulf "to ship the produce of Mexicali into Mexico for use by the Mexican people." Farmer's observations later fueled efforts in Arizona to win approval for two irrigation projects, including one in the Wellton-Mohawk Valley. Ironically, a climate of mistrust -- spurred by the recognition of possible water shortages in the future -- only stimulated efforts to increase arable lands in the delta. [2]

[1] Letter from E. Aguirre Camacho to President Manuel Ávila Camacho, no date, AGN, RG Ávila Camacho, 561.3/11-2.

Increased development throughout the Colorado River Basin in the United States, as well as in the delta region, also affected Mexican efforts to develop Mexicali Valley. The construction and operation of the All-American Canal and Boulder, Parker, and Imperial Dams during the 1930's and 40s greatly disrupted the river's flow regimes downstream. Instead of being controlled primarily by precipitation and natural run-off, the river was regulated by U.S. dams upstream. USBR engineers controlled releases from dams upstream depending on the needs of the U.S. states comprising the Colorado River Basin.

This method of control profoundly affected Mexican residents in the Delta. When residents in Mexicali and San Luís Río Colorado anticipated high flow regimes, local organizations built defensive structures to protect riverside fields from the threat of floods. Conversely, when the river was too shallow to enter Mexicali Valley's intake at Alamo Canal, local leaders turned to national officials, hoping that they could convince the United States to increase water flows south of the border. Over time this stop-and-go process increased tensions between residents of the two nations and compelled Mexican officials to secure an adequate water supply without having to turn to the United States for help so frequently. E. Aguirre Camacho, a relative of Mexican president Manuel Avila Camacho, expressed this guarded mistrust towards *norteamericanos* best when he wrote: " The cotton will be lost if our 'good neighbors' don't loosen water from the Colorado River. These gentlemen are our 'good neighbors' since 1847 and they either make war on us or drag us into it according to their desires. Be concerned for us, Manuel, and save the region . . ."[3]

The erratic flow patterns set in motion by U.S. dams adversely impacted recent developments in the Mexican delta. In 1941 the Colorado River flooded 1,500 hectares of land adjacent to the river and destroyed an estimated 400,000 pesos worth of cotton. The flood also immobilized the new bridge that linked Mexicali to Puerto Peñasco. Baja California governor Sánchez Taboada reported that the floods resulted from releases from

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[2] Farmer, "Testimony," Arizona Commission of the Colorado River Basin States, June 22-23, 1938, Phoenix, Arizona, 42-43, Arizona Department of Libraries, Archives, and Public Records (ADLAPR), Research Library, Phoenix, Arizona.

[3] Letter from E. Aguirre Camacho to Ávila Camacho, no date, AGN, RG Ávila Camacho, 561.3/11-2.

Boulder Canyon Dam of 850,000 cubic meters per second. Local residents frantically attempted to build levees to guard against the impetuous flow of the river. [4]

Floods returned in February 1942, followed by water shortages during the summer. United States officials expressed skepticism towards Mexico's request for greater releases from Parker Dam. The U.S. State Department blamed the water shortage on a "breakdown in the control structure of the Alamo Canal," defective installation of inefficient pumps, and the rapid growth that had taken place in Mexicali Valley. To be sure, these criticisms had merit. Mexican Minister of Foreign Relations Ezequiel Padilla noted that between 1938 and 1941, irrigated land in the valley had increased from 69,702 hectares to 122,105 hectares. Furthermore, the pumps and the Alamo Canal were inefficient. Nevertheless, discussions between leaders on the U.S. side of the border suggest that fears of losing more water to Mexico also influenced their analysis of Mexicali's water woes during the 1940s. For example, when the Mexican Water Treaty (which would provide Mexico with a modest 1.5 million acre feet of water from the Colorado River) was being debated, Imperial Irrigation District (IID) officials attempted to dampen support for the treaty in Yuma County, citing the loss of water as the principal reason to oppose it. [5]

Periodic U.S. projections for decreased flow levels in Mexico also affected bi-national water negotiation. At the end of 1942 U.S. officials warned Mexicans in the delta not to expect additional releases in 1943 because they would be storing as much water as possible behind the dams upriver. The State Department also continued to discourage rapid development of Mexicali Valley, ostensibly to help the Mexicans store enough water to irrigate arable lands. U.S. officials were especially wary of releasing water "when these farmers increase the cultivated acreage with speculative purposes without any security that there will be water available for them and even with the knowledge that under the foreseeable conditions there will not be water." [6]

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[4] Telegram from Governor Crel R. Sánchez Taboada to J. Jesus González Gallo, October 29, 1941, AGN, RG Ávila Camacho, 561.3/11.

[5] Ezequiel Padilla, "Condiciones en que se encuentran las plantas de bombeo para regar las tierras ribereñas del río Colorado, B.C.," Departamento Jurídico y Consultativo, Oficina de Límites y Aguas, August 24, 1942, AGN, RG Ávila Camacho, 561.3/11-1; Letter from Henry Frauenfelder to Lawrence M. Lawson, June 22, 1944, Yuma County Water Users Association Archives, Yuma, Arizona.

Despite U.S. warnings that water releases from the dams upstream would be limited, telegrams from Mexicali farmers and politicians requesting diplomatic intervention in order to secure additional water flooded President Manuel Ávila Camacho's office in the spring 1943. "This problem [is the] agricultural life or death of Mexicali," Armando Lizarraga of the Mixed Council of the Regional Economy announced to Ávila Camacho. Governor Sánchez Taboada requested that a federal official who "knows [the] problem [of a] lack of water" be sent to the valley. Three days later the governor informed the president that the problem was only getting worse because planting season was approaching and farmers needed water to irrigate their crops. Distributors of farm implements complained that the lack of water "would seriously curtail regional economic interests and especially the situation [of] thousands [of] men from the countryside." In order to resolve the problem, *Distribuidora del Pacífico* encouraged President Ávila Camacho to "place your valuable influence before authorities in Washington, who now [are] treating the subject [of] providing water [for this] valley." By late April local and national leaders petitioned IID leaders to transfer water from the All-American Canal to the Alamo Canal in time for the planting season.[7]

IID leaders were reluctant to sell additional water to Mexicali Valley farmers. They rejected the requests of Mexicali representatives to build a temporary dam that would divert water into the Alamo Canal, since the structure might unleash a flood on the Imperial Valley. However, American diplomats reported that the lack of water in the Colorado River “had aggravated the water situation and that the people living on these 36,000 hectares and their lands were in immediate danger of catastrophe.” While Imperial Valley farmers did not want to set a precedent with this dispensation, Ávila Camacho successfully presented the pleas of Mexicali farmers to President Roosevelt and G. S. Messersmith, the Ambassador to Mexico, on May 14, 1943. At the request of the State Department, the IID increased the amount of water delivered to the Alamo Canal.[8]

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[6] See Padilla.

[7] Telegram from Armando Lizarraga to Ávila Camacho, April 8, 1943; Telegram from Sanchez Taboada to Ávila Camacho, April 12, 1943; Telegram from Sanchez Taboada to Ávila Camacho, April 15, 1943; Telegram from Distribuidora del Pacífico, S. A. to Ávila Camacho, April 30, 1943; Telegram from Sánchez Taboada to Ávila Camacho, April 30, 1943. All of these telegrams are located at the AGN in RG Ávila Camacho, 561.3/11-2.

Nevertheless, three days later U.S. Under Secretary of State Sumner Welles reported that more water than Mexico could use was passing into their canals. Irritated, Welles warned Messersmith that if such a situation developed again, the ambassador should “recommend to the Mexican authorities that first of all they check with their own people along the border to ascertain the true facts.” “Had they done so,” Welles continued, “they would have found that there was no shortage of water." Despite Welles's suspicions Mexicali farmers continued to send telegrams, full of complaints related to a lack of water, through June 1943. To add insult to injury, by November floods from the Colorado smashed through levee works in Mexicali Valley and threatened cotton fields that were ready for harvest. Whether this was due to increased releases from dams upriver or not, but it surely added to the frustrations of Mexicans downriver. [9]

Welles’s assessment was important for the impression it gave U.S. politicians involved with Mexican – U.S. relations. As a general rule, state and local leaders in the United States were more leery than federal officials of Mexico's motives for requesting water and avoided any situations that would threaten the water allotments of their own projects. Likewise, Mexicans developed a strong distaste for working through the bureaucratic hoops of U.S. institutions. Leaders in Mexicali displayed an increased desire to secure water works that would free them -- as much as possible -- from continual dependence on waterworks in the United States. This was important, as Governor Sánchez Taboada astutely observed, because "the *norteamericanos* feel that [because of Mexican requests] they are in some sort of danger, and [our own connection to Alamo Canal from the river] would resolve this problem."[10]

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[8] U.S. Department of State, *Foreign Relations of the United States: Diplomatic Papers, 1943*, volume 6, (Washington: GPO, 1965), 611-613.

[9] Ibid., 614-615; Telegram from Sánchez Taboada to Ávila Camacho, June 16, 1943, AGN, RG Ávila Camacho, 561.3/11-2; Telegram from Sánchez Taboada to Ávila Camacho, November 17, 1943, AGN, RG Ávila Camacho, 561.3/11-2.

[10] Despite the Cárdenas revolution that expropriated hundreds of thousands of hectares in Mexicali valley, land was useless without the water to irrigate it. As mentioned above, control of the water works remained in U.S. hands (the Imperial Irrigation District's subsidiary company, *La Compañía de Terrenos y Aguas*). Governor Sánchez Taboada recognized that this meant, "the farmers of Mexicali Valley are users of the irrigation system of the Imperial Valley." Sánchez Taboada to J. Jesus Gallo, July 11, 1944, AGN, RG Ávila Camacho, 561.3/11-2; Ibid.; On July 4, 1944, Sánchez Taboada informed Ávila Camacho that the releases from Boulder and Parker Dam had been decreased considerably. Mexicans were again prohibited from building a temporary dam below Alamo Canal. See AGN, RG Ávila Camacho, 561.3/11-2.

Farm labor issues in the bi-national delta also impacted regional water use, particularly with the implementation of the *bracero* program (1942-1964). During the Great Depression large numbers of Mexican migrants were bussed back to the border, yet with the onset of World War II agricultural interests in the U.S. lobbied Congress for a labor program to bring Mexicans to the United States as temporary workers. Mexicans primarily harvested crops in the Imperial and Yuma Valleys. For the Mexican government, the *bracero* program provided many landless *campesinos* with employment during and after the war and represented a significant contribution to the allied cause. As a result of large-scale labor and industrial cooperation during World War II, the Mexican and U.S. economies were increasingly integrated after 1945.[11]

Ultimately, the *bracero* program further encouraged migration to the Mexicali area. During the 1940s the U.S. Border Patrol deemed Mexicali to be the location where the greatest number of undocumented workers crossed into the delta.[12] By 1944, however, the Mexican deportation center at Mexicali closed it doors to undocumented Mexicans apprehended in the United States, unless they had lived in Baja California for at least six months before crossing the border. The Mexican government requested that undocumented Mexicans that did not fulfill these requirements be delivered to Nogales, Arizona, or El Paso, Texas, where trains could return them to the Mexican interior. This reflected the territory's inability to care for the deluge of workers, as well as the absence of a railroad that connected Baja California to the rest of the nation. Ugo Carusi, Commissioner of the Immigration and Naturalization Service, further noted, "Detention facilities are not available for the prolonged detention of such a large number of aliens, and to return them through other points along the Mexican border would only create problems in those communities similar to the ones being faced in Mexicali." [13]

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[11] See Lester D. Langley, "Two Economies: The Postwar Relationship," in *Mexico and the United States: The Fragile Relationship* (Boston: Twayne Publishers, 1991), 21-36.

[12] Spruille Braden, Acting Secretary of State, to Ambassador Thurston in Mexico, Washington, August 16, 1946, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers, 1946*, volume 11 (Washington: GPO, 1969), 1030-1033.

[13] Ugo Carusi, Commissioner of the Immigration and Naturalization Service to the Secretary of State, Philadelphia, January 11, 1954, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers, 1945*, Volume 9 (Washington: GPO, 1969) 1140.

Communities in the U.S. delta also felt the impact of increased Mexican migration. A 1945 U.S. State Department report noted that efforts to return undocumented Mexican nationals to the border yielded a daily average of 100 to 150 workers per day in the Imperial Valley. The same report suggested that "approximately 6,000 more illegal residents [remained] in the vicinity."[14] Local officials were hard pressed to house and detain the flood of farm workers.[15] A year later, the situation had intensified. S. E. O'Donoghue, First Secretary of the Mexican Embassy, informed the Mexican Under-Secretary of Foreign Relations that "more than 10,000 [undocumented] Mexicans [were] now estimated to be in the Imperial Valley in California where they were creating quite a civic problem."[16]

The economic incentives in the region often overpowered the official pronouncements of both nations concerning immigration restrictions. After the Baja California and Mexican governments closed off the port of entry at Mexicali, U.S. State Department and Immigration Service officials suggested that Mexico allow the undocumented workers to work during the current season in the United States. Mexican officials responded to the offer unfavorably, noting that such a move would "immediately result in a wide-spread movement of workers to the border in the hopes of being recruited and that this movement would cause many additional problems."[17] This official pronouncement was offset by the chronic inability/unwillingness of Mexico to patrol its own borders.[18]

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[14] Ibid., 1139.

[15] Ibid., 1140.

[16] Memorandum of Conversation by the First Secretary of the Mexican Embassy, S.E. O'Donoghue, Mexico D.F., January 31, 1946, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers, 1946*, volume 11, (Washington: GPO, 1969), 1018.

[17] Memorandum of Telephone Conversation, by Mr. William G. MacLean of the Division of Mexican Affairs, Washington, December 11, 1944, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers, 1944*,volume 7, (Washington: GPO, 1967), 1333.

[18] See Carusi, 1140, and Letter from Ambassador White to the Secretary of State, Mexico City, August 14, 1953, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers , 1952-1954*, volume 4, (Washington: GPO, 1983), 1341-1346. Ambassador White notes, "It has been suggested that the Mexicans have used troops to patrol their side of the border. The Embassy can find no confirmation of this whatsoever except once under the Presidency of [Miguel] Áleman when troops were

In the U.S. delta a similar ambivalence, fueled by the economic interests of the region's farmers, also contributed to increased Mexican immigration after 1940. Farmers in Yuma Valley -- especially during World War II -- often complained about the Immigration Service's rigid standards for procuring Mexican laborers. Yuma's powerful farming and retail magnate, E.F. Sanguenetti, lamented the fact that willing and able Mexicans in San Luís Río Colorado could not cross the border to harvest truck crops.[19] Due to the unstable nature of the labor supply and the bureaucratic red-tape that local farmers encountered in obtaining workers from Mexico, farmers employed Papago, Cocopah, and Quechan Indians, as well as German and Italian prisoners of war during World War II.[20] With the decline of the *bracero* program in the 1960s, Arizona farmers scrambled to supplement their labor supply with high school and college students.[21]

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used to make the peons harvest the cotton crop on his ranch . . . When this was done, the troops were withdrawn and the wetbacks allowed to come over. It is even reported that some of the soldiers discarded their rifles and uniforms and crossed the Border also as wetbacks, lured by the two-dollar a day wage as contrasted with their pay of thirty cents a day."

[19] See Telegram from E.F. Sanguenetti to Carl Hayden, October 7, 1942; Letter from A. O. Broussard (employee of Sanguenetti) to Hayden, November 28, 1942; Also see Telegram, L.M. McLaren Produce Company, from Don Gustin, Secretary to Senator Hayden. All these correspondences are located in the Carl Hayden Collection, Division of Archives and Manuscripts, Arizona State University, MS 1, Box 548, Folder 15.

[20] Unfortunately, many of the Cocopah Indians, whose traditional band area crossed the Mexican-U.S. border, which by 1917 divided the group into a Mexican and American band, were often the victims of international politics while trying to work on farms in the United States. On March 5, 1937, Henry Fraunfelder, President of the Yuma County Water Users Association, appealed to Carl Hayden for the Cocopah natives, one of whom had been detained while crossing the border and subject to deportation.

Fraunfelder noted: "the Cocopah's have always lived in the river bottom lands along the Colorado even though they did roam at times below the border of our country. They are, at least, as much American as they are Mexican, Indians. Living on the crops raised on overflow lands, they moved from one favored spot to another up and down the river . . . Radical changes in our United States Immigration Laws made about the time of our entry and participation in the World War made the entry of such Indians thereafter illegal." As a result, many Cocopah had been deported to Mexico "and consequently were forced to live in a condition of semi-starvation thereafter." While some Cocopah provided a labor force for the Water Users Association, Fraunfelder also hoped that "aid to the whole Cocopah tribe" in the United States could be provided. See Yuma County Water Users Association (YCWUA) historical files.

In terms of prisoner of war assistance, The YCWUA readily hired Italian and German prisoners from the Florence Internment Camp to help maintain irrigation facilities in Yuma Valley and harvest crops. YCWUA president Henry Frauenfelder noted that the additional help was necessary because "Normal operation of the draft and migration of workers to the Pacific coast war industries [had] seriously affected [their] farm labor supply." See Letter from Henry Frauenfelder to Carl Hayden, "Re: Farm Labor on Yuma Project," October 9, 1942, Box 548, Folder 15, Carl Hayden Papers.

U.S. officials recognized that the delta's farming frontier encouraged massive immigration to the region.[22] The inability of government agencies to "enforce" legal immigration stemmed from several factors. Understandably, the sheer number of undocumented immigrants forced the U.S. Border Patrol to "discontinue its action looking to the arrest and return to Mexico of Mexican nationals" from time to time.[23] Yet labor shortages often caused the Border Patrol to wink at undocumented immigration. For example, farmers in the Yuma Valley faced a labor shortage during the fall harvest of 1944. General Philip Bruton, Director of Labor for the U.S. Army, assured U.S. Senator Carl Hayden that his people were doing "everything possible to facilitate the handling of this problem on a practical basis." "Handling" problems often meant taking a hands-off approach. This is clearly reflected in the telegram of Albert Del Guercio, District Director of the Immigration and Naturalization Service, to Bruton regarding the resolution of the Delta's labor woes in 1944. He reported, "Personnel Adequate[,] prevent all illegal entries or to apprehend those residing illegally [in] border areas. Ranches [in] Yuma and Imperial Counties not being checked while perishable crops being harvested." Such a policy, while helpful to local farmers, revealed the ambivalent approach U.S. officials took to undocumented entry to the delta region. This only encouraged Mexican immigration to the delta and placed greater demands on existing water supplies.[24]

**The Mexican Water Treaty**

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[21] With the termination of the *bracero* program in 1964, farmers in the Arizona delta frantically turned to state leaders to supplement the depleted labor supply. "A-Teams," composed of high school and college aged teens throughout the state, were recruited by the Arizona Employment Service to harvest the cantaloupe crop in 1965. While the State Employment Service and the Arizona AFL-CIO trumpeted the success of the A-Teams in bringing in the harvest, some Yuma County farmers complained that the youth were not able to do the work *Bracero* workers had done (see Box 284, Folder 27, Carl Hayden Papers).

[22] Ambassador White to Mexico to Secretary of State, Mexico D.F., December 31, 1946, in U.S. State Department, *Foreign Relations of the United States: Diplomatic Papers, 1946*, volume 11, (Washington: GPO, 1969). Thurston noted, "It may be argued too that the importation by the United States of several hundred thousand agricultural workers from Mexico during the last few years has contributed to the zeal of those now seeking continually to cross the border and find work in the agricultural sections of California. In other words, the need of the United States for additional agricultural labor has contributed much to creating the problem that now exists."

[23] Carusi, 1140.

[24] Letter from Phillip G. Bruton to Carl Hayden, October 21, 1944, Telegram from Albert Del Guercio, September 23, 1944, Los Angeles, both located in Carl Hayden Collection, MS 1.

During 1944 and 1945 the lack of water in the Mexican Delta continued to strain bi-national relations. Demand for an international treaty began as early as discussions for the Colorado River Compact (CRC) during the 1920s. In 1929 President Herbert Hoover signed into law the CRC, which apportioned the water from the Colorado River among the seven basin states in the United States. While the CRC had established a framework within which Western states pursued economic development after 1930, it failed to guarantee Mexico any water from the Colorado River. Many Western and national leaders, trusting in the 1906 legal opinion of Attorney General Judson Harmon, believed that a nation had no obligation to share the waters of an international stream with an adjoining country, if the headwaters rested completely within its boundaries.[25] After 1928, however, Mexican officials continued to press U.S. diplomats to recognize their claims for water from the Colorado River. Agricultural development in Sonora and Baja California depended on the availability of Mexican water. Mexican officials feared that once the CRC allocated the river's water to the seven U.S. states, none would be left for valuable cotton fields in Mexicali Valley.

A wide spectrum of motivations for supporting or opposing the Mexican Water Treaty of 1944 existed on local, state, and national levels. President Franklin D. Roosevelt and top officials at the U.S. State Department supported the treaty because they wanted to create a hemispheric alliance during World War II.[26] Furthermore, guaranteeing Mexico water from the Colorado River would lend credibility to the Good Neighbor Policy. Senators from the upper basin and outside of the Colorado River region also supported the treaty based on the need for strong relations with Mexico, and also to maintain the United States's positive image during World War II. In contrast, California's senators opposed the treaty because it would limit the amount of surplus water they could divert from the Colorado River. Due to the rigid apportionment of the Colorado River

[25] In 1906, Harmon's opinion was elicited during a dispute between the United States and Mexico on the Upper Rio Grande River. Since very little international law existed on the subject of water apportionment from a common river, the Attorney General provided this opinion prior to settlement of the treaty. In the end the United States exercised a modicum of mercy, granted Mexico 60,000 acre-feet of water a year, or enough to sustain what urban and agricultural enterprises had been initiated in Chihuahua at the time of the dispute. For a fuller treatment of international water law and the Harmon opinion, see Norris Hundley, *Dividing the Waters*, (Berkeley: University of California Press, 1966).

[26] Metz, 269.

Compact, the lower basin states would have less excess water at their disposal once the Mexican Treaty were in effect.

The motivations of Arizona's senators and state leaders reflected changes in state water politics during the 1940s. During the 1920's, Arizona's governors and congressional contingents protested the CRC, primarily because of the large share of water awarded to California. After 1940, however, Governor Sidney Osborn and other state officials realized that forging a solution with Mexico, instead of ignoring its requests, was necessary in bringing about economic development in Phoenix with water from the Colorado River. A water treaty with Mexico would set a limit on the amount of water Mexico could receive and allow Arizona to calculate how much water it would have available for future water projects. Osborn led a successful legislative effort to ratify the CRC, which would guarantee the state 2.8 million-acre feet of water each year.[27] As a result, Arizona leaders signed the CRC and fervently supported the Mexican Water Treaty in an effort to continue economic development in the state's heartland and in Yuma County.

State Attorney Charles Carson elaborated on the state's motivations for supporting the treaty.[28]At a State Department meeting where the treaty with Mexico was discussed, Carson notified those present that "Arizona must now proceed to get a contract [referring to Arizona's need to sign CRC], as we wanted it in advance of the Mexican Treaty; because we did not want this group of California men to continue to block developments in Arizona."[29] Two years earlier Carson also explained that Arizona approved of the treaty not necessarily because its leaders wanted to give more water to Mexico, but because they wanted to limit the amount of water its southern neighbor could use.[30] Limiting Mexico to 1.5 million-acre feet would impinge on the amount of surplus

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[27] Mann, 86-88.

[28] House Committee on Irrigation and Reclamation, *Hearings Before the Committee of Irrigation and Reclamation*, 79th Congress, 2nd sess., H. R. 5434, "Reauthorizing Gila Project" (Washington D. C. : GPO, 1947), 387. These hearings are referred to hereafter as "Reauthorizing Gila Project."

[29] Ibid.

[30] During Senate Hearings on the Mexican Water Treaty Charles Carson stated, "Criticism has . . .been made of this treaty because it is a permanent treaty. This is the only kind of a treaty that we would agree to for Arizona. It must be permanent. We must know that there will not in the future be an increase

water available to Arizona, but still allow for development of the Central Arizona and Gila Projects. [31]

Similarly, Ernest William McFarland, the junior senator from Arizona, revealed the motivations of state leaders in pushing for approval of the Mexican Water Treaty when he addressed the Senate at length on April 12, 1945. After recounting impressive numbers concerning Arizona's success in winning federal funds for reclamation projects during the first half of the twentieth century, McFarland emphasized the state's precarious situation:

> It is plain that in Arizona we shall be forced to reduce the number of acre-feet of water pumped each year. This simply means that acreage already cultivated and prosperous will have to become a part of the desert unless we in Arizona can supplement our water supply from another source -- and the only remaining source is the Colorado River.[32]

In other words, much of the land developed during the previous fifty years would be lost to the desert unless Congress approved the CAP. Not only would lands already under production be rejuvenated, but also thousands of new acres could be developed. Therefore, continued growth in Arizona required that Mexican consumption be limited to

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in Mexico's claim. Our engineers and the Bureau of Reclamation are now making surveys and investigations in Arizona for the utilization of Arizona's share of this water, and *it is very important to us to know the extent of Mexican requirements in order that we may plan sound projects and run no risk of overexpansion, later to be reduced by the Mexican demands.* That is one of the reasons that Arizona is taking the position she is here.(emphasis mine)" See Senate Committee on Foreign Relations, Hearings Before the Committee on Foreign Relations, United States Senate, 79th Congress, 1st Session, 271. These transcripts of these hearings are hereafter referred to as "Water Treaty with Mexico."

[31] At Senate hearings state attorney Charles Carson noted: "I would like to say . . . that Arizona has always been fearful of this Mexican question of the Mexican [water] burden, and I think it was 1925, it might have been 1927, when the Arizona Legislature passed a memorial requesting the Department of State to notify Mexico that the United States would never recognize any greater right. That notification was not made, and I have personal knowledge – I appeared for the Colorado River commission of Arizona – and I was then their attorney in 1933 when we tried again to get the state department that the United States would never recognize any greater right [than 750,000 acre feet, the amount believed by U. S. officials to have been delivered to Mexico prior to the construction of Hoover Dam]; and that notification was not given."

"Then when this Inter-American Treaty of Arbitration comes, and we see that the United States, in our judgment, in its position in the world, would arbitrate with Mexico at its request, and that Mexico is now using 1,800,000 acre-feet of water per year and rapidly can increase that use, why then we think it is very material to all of us that want to use the water in the United States from the Colorado River that a limit be put on Mexico at the lower possible quantity, good for all time; and that is our position." See "Water Treaty with Mexico," 262.

1.5 million-acre feet of water. Ultimately, McFarland hoped that the treaty would successfully limit further agricultural development in Mexicali Valley.[33]

One of the most controversial topics raised during the Senate hearings concerned the quality of water Mexico would receive under the treaty. McFarland's adherence to the letter of the treaty -- which did not specify what type of water (return-flow water versus higher quality river water held in a reservoir) -- reflected the insistence of state leaders that Mexico's 1.5 million acre feet be composed primarily of drainage water from the Yuma County area. Cleaner water held upstream could then be used for development in Arizona.

Coincidentally, Senator McFarland was the only person in the U.S. Senate who had judicial experience dealing with the saline rivers and agricultural production. He had previously served as a state judge in Arizona. In a landmark case involving farmers in the Salt River Project, he ruled that water for users downstream had to be of a quality suitable for irrigation by farmers upstream. Senator McCarran of Nevada, who opposed the Mexican Water Treaty, joined with California Senator Downey in alerting McFarland to the incongruent nature of his actions in this situation involving international parties. McFarland held fast to his contention that Mexican officials understood the wording of the treaty, which stipulated that any water "regardless of quality" could be counted towards the United States' obligation to its southern neighbor. McFarland's position reinforced the developmental motives behind Arizona's approval of the treaty. Senator Johnson from Colorado questioned the wisdom of McFarland's course of action. Johnson observed that he had once "sustained a considerable loss in connection with irrigated lands because of the saline content of the water."[34] Despite the treaty's tacit discussion of water quality, Johnson feared -- prophetically -- that if the Senate failed to append an

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[32] *Congressional Record*, Senate, April 12, 1945, 3298.

[33] McFarland went on to state, "Personally I want to see Mexico held to the lowest possible amount of water. I feel that it is my duty and the duty of United States Senate to see that such a policy is adopted for the protection of the rights of the people -- not only of the State of Arizona, but of the entire Colorado River Basin" (Ibid., 3301).

[34] Ibid., April 12, 1945, 3308.

amendment guaranteeing Mexico high quality water, "the whole matter [would] be thrown into an international controversy."[35]

Nevertheless, McFarland believed that the application of large amounts of water to saline fields would "wash the salt on down and carry it off."[36] Furthermore, McFarland stressed that mixing higher quality water from Imperial Dam with Yuma County's return flow waters would dilute toxic levels of salinity, making Mexico's apportionment "much improved and more desirable".[37] McFarland also based his belief that farmers in Mexico and the United States could sustain profitable farms using saline water on his interaction with farmers in the Wellton-Mohawk Valley in Yuma County. In 1944 he traveled with USBR officials throughout Arizona assessing the water needs of its citizens. While in Yuma, farmers lamented their decreasing production due to the toxic groundwater. Since the completion of Coolidge Dam in 1935, the river flow in the Gila River, located parallel to the Wellton- Mohawk region, did not carry enough water for farmers to divert water directly from the river onto their fields. As a consequence, they increasingly resorted to pumping water from the ground. Without sufficient rainfall to dilute the water that these farmers continuously recycled, the high quantity of salts and minerals made the waters increasingly harmful to the cotton and vegetables cultivated in the region. Yet, Yuman farmers noted that in 1941 a flood barreled down the Gila River, replenishing the groundwater of farmers in the region. They were able to grow a bumper crop of alfalfa in 1942. Accordingly McFarland boasted that some farmers in Arizona could irrigate their fields with "very saline water" and still produce "some of the best alfalfa in the United States."[38]

Ultimately, Arizona's executive leaders and congressional contingent championed the Mexican Water Treaty as part of a concerted plan to encourage further development in Central Arizona. They also recognized the plight of farmers in the Wellton-Mohawk

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[35] Ibid.

[36] Ibid. Later on in his speech McFarland noted that "one of the witnesses testified in the case that he used pump water with a very high salt content to wash out the salt in the ground, and the reclaimed ground which had already had a high degree of salt, so high that it could not have been cultivated before. So water with a high degree of salinity can be used, if a sufficient quantity of it is used (Ibid., 3310). "

[37] Ibid.

[38] Ibid.

area by supporting reauthorization of the Gila Project. Ultimately their motives were influenced by a long-standing fear of large-scale farming in Mexicali Valley. Previously, state leaders, such as Governor Hunt during the 1920s, encouraged Arizonans to appropriate as much water as possible, so as to limit the growth of farming in Mexico. State leaders in the 1940s, however, realized that "turning off the spigot" in Mexico could be achieved by offering them a limited amount of water. The actions of Arizona's leaders, though clothed with the language of the Good Neighbor policy, perpetuated a historically strained relationship with Mexico.[39]

While a national border separated Yuma County residents and Mexicans to the south in San Luís Río Colorado, cooperation characterized water relations between the border communities during the first half of the twentieth century.[40] In 1922 lobbyist and community booster Benjamin Franklin Fly brought a proposal from Mexican investors in

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[39] Charles Carson, for example, expressed America's goodwill towards Mexico during the same speech in which he revealed Arizona's politico-economic motives for supporting the treaty. He observed, "Our relations with Latin America, based on the good-neighbor policy, have improved, and in our view this treaty is one of the foundations of that policy. . . We have to proceed, and, as we see it, put our plans and our rights in harmony with the best interests of the United States as a whole. Our interest then, is to get that over-all, all-time limit as soon as possible" ("Water Treaty with Mexico," 271).

Similarly, in the speech Ernest McFarland delivered to the Senate on April 12, 1945, he noted Arizona's developmental ambitions and diplomatic objectives in the same breath. "We cannot and must not assume the role of being a powerful nation which expects to maintain by force anything that is not equitable and just . . . On the other hand, none of us wants to give away a single right belonging to our people (*Congressional Record*, 3301)."

[40] Ironically, as the Mexican Water Treaty became a reality, the ability of those living on the border to interact with one another directly grew increasingly problematic. In 1943, the YCWUA Board of Governors learned that the State Department would have to approve of their yearly sale of water to farmers in San Luis. President Frauenfelder "advised that the U.S. State Department has tried to hold up execution of the 1943 Mexican Water Contract covering delivery of surplus irrigation and drain waters across the international boundary. This attempt was made after the contract had been signed and accepted." The Board gloomily concluded that they should "start negotiations for the 1944 contract at a date earlier than usual in order to comply with additional red tape" (*Minutes*, YCWUA Board of Governors, June 7, 1943).

Leaders in the two communities attempted to adapt to these changing conditions and retain some of the intimacy that characterized their proximity to each other – despite the presence of the international border and the growing federal presence on either side of the boundary. A letter from Enrique Fontaine to the YCWUA regarding the sale of waste water in 1944 noted: " We understand of course that any exchange of proposition between your Assn. and ourselves is only preliminary to a contract that shall be resolved and approved by our respective federal governments*; but if we come to a complete understanding between ourselves, it shall be easier for our reclamation agencies to give the O.K. and to terminate a problem that has been discussed too many times, and so assist our respective countries to ascertain better relations for the future*. (emphasis mine, YCWUA historical files)" Thus, the dynamics of bi-national community relations within a peripheral region were highly influenced by greater attention from their cores.

Sonora to buy wastewater from Yuma Project before the YCWUA Board of Governors. The YCWUA's drainage pipes extended to the Mexican border and were thereafter used to transport wastewater to Sonora. The wastewater helped transform the desert sands adjacent to the U.S-Mexican border south of Yuma into productive farmland.[41]

In 1944, the YCWUA did not so much object to the amount of water that Mexico would receive under the Mexican Water Treaty, as it did to the method in which the water would be delivered to Mexico. One of the provisions in the treaty gave Mexico the right to build a dam near the international border. The dam, however, would be located near the site of Hanlon's Heading. The IID had previously built a diversion structure there to divert water into the Alamo Canal, which passed through Mexico on its way to the Imperial Valley. With the completion of the All-American Canal in 1942, the IID no longer relied on the controversial Alamo Canal to carry water from the Colorado River to the Imperial Valley. However, Alamo Canal no longer diverted ample water to Mexicali Valley for irrigation purposes. Therefore, Mexico proposed the new dam as a part of the treaty.

YCWUA leaders feared that the dam would threaten the city of Yuma and allow water to infiltrate Yuma Valley's water table, leaving the lands waterlogged and alkaline. At a March 6, 1944, meeting of the YCWUA Board of Governors, however, President Henry Frauenfelder reported that L. M. Lawson, Chairman of the International Boundary and Water Commission, believed "the cost of a Mexican diversion dam and protective works which would meet American requirements would be so great that it would not be built."[42] Lawson suggested that an alternative source of delivery might be made through the All-American Canal into the Alamo Canal.

Thereafter YCWUA officials pressed Arizona's U.S. senators to lobby for delivery of water to Mexico through the All-American Canal instead of agreeing to construction of a diversion dam near Yuma. In a letter to Senator McFarland, Frauenfelder reiterated the organization's approval of the amount of water conceded to Mexico. He also emphasized that the proposed dam, if located at Hanlon's Heading,

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[41] *Minutes*, YCWUA Board of Governors, February 6, 1922, and March 6, 1922.

[42] *Ibid.*, YCWUA Board of Governors, March 6, 1944.

might allow lands to become "seeped in a relatively short time." Such problems, however, could require "years to reclaim and restore them to former productive capacity."[43] Not only could diversion through the All-American Canal avert such seepage problems, but it might also check the IID's arbitrary control of Imperial Dam. Yuma's main canal received water from the All-American Canal and Arizona farmers feared that the IID, granted authority over the dam in 1931, could limit Yuma's water apportionment. Federal control could surely check this "avariciousness."[44] Frauenfelder concluded by suggesting that the treaty be amended to "obviate Mexico's need for a diversion dam." If such a measure could not be secured, "it might be well to defer ratification of the Treaty pending further study of the effects dams are having on the lower Colorado and adjacent lands."[45] Subsequent letters to congressional leaders also stressed the imperative nature of striking the proposed dam from the treaty.[46]

While Senators Hayden and McFarland sympathized with the concerns of Yuma Valley farmers, the political urgency of obtaining sufficient water to supply the CAP (and to a lesser extent the Gila Project) restrained them from objecting to the dam. Arizona's senators knew that the dam would catch drainage water from the United States and divert it to Mexicali Valley through the Alamo Canal. They also realized that if the majority of the water destined for Mexico was comprised of this return flow water, larger amounts of cleaner water could be used upstream in developing other projects. During the Senate

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[43] Letter from Henry Frauenfelder to Ernest W. McFarland, March 27, 1944, YCWUA historical files.

[44] Ibid.

[45] Ibid., 2.

[46] In a carefully worded letter to Carl Hayden, dated January 12, 1945, Frauenfelder presented a resolution recently adopted by the YCWUA Board of Governors concerning the Mexican Water Treaty to the venerable Senator. One of the reservations stated "That no permanent dam be built in the Colorado River for the purposes of diverting water into Mexico."

As Yuma's leaders realized that Arizona's senators would not press for exclusion of the dam, they asked instead that "No such dam shall be built until the floods of the Gila [River] are fully controlled, and no dam shall be built in the limitrophe section [the border region, including Yuma]. Mexico shall build no diversion dam on her own soil which floods or damages American lands (Letter from Henry Freuenfelder to Senator Ernest McFarland, April 4, 1945, YCWUA historical files)." Engineers, however, had already convinced Hayden and McFarland that Reservation K of the treaty, added by Carl Hayden, would sufficiently protect the lands around Yuma should the dam be built at Hanlon's Heading.

hearings on the treaty in 1945, Senator Hayden pressed C. M. Ainsworth, engineer for the International Boundary and Water Commission (IBWC), for assurances that the dam would not harm Yuma County farms. Ainsworth observed that the dam would not accelerate seepage or flooding in Southwestern Arizona, and that it would "assure credit to the United States for the return flow and other flows that will appear in the river."[47] Ainsworth further reminded Hayden that U.S. officials had suggested construction of the dam so that the United States could reduce the amount of stored water destined for Mexico.[48]

Hayden's detailed interrogation of Ainsworth alleviated the Senator's fears as to the threat posed to Yuma County lands by the dam. Subsequently, during Senate deliberations over the accord, Hayden added an amendment to the treaty that required Mexico to pay for the construction of levees to protect lands in Yuma County and Imperial County from any damage the dam might occasion.[49] This decision left Yuma Valley farmers unsatisfied yet assured that wastewater would largely fulfill U.S. obligations to Mexico under the new treaty. Likewise, Senator McFarland assured his colleagues that Hayden's "Reservation K" would sufficiently protect Yuma County residents.[50]

On April 18, 1945, Senators Hayden and McFarland, along with 74 other senators voted in favor of the Mexican Water Treaty. Ostensibly the 76-10 vote sent an overwhelming message of goodwill to Mexico. With the approval of the treaty secure, the Mexican government began planning for construction of the dam that Yuma County farmers feared. The structure, named Morelos Dam, was built at Hanlon's Heading on the

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[47] "Water Treaty with Mexico," 234-235.

[48] Ibid., 226.

[49] See *Congressional Record*, April 18, 1945, 3492. The reservation stated "The United States recognizes a duty to require that the protective structures to be constructed under Article 12 . . . of this treaty, are so constructed, operated, and maintained as to adequately prevent damage to property and lands within the United States from the construction and operation of the diversion structure referred to in said paragraph."

[50] In his speech McFarland observed, "By this reservation the Mexican government is given notice of the dangers to property and lands in the United States from these structures. I feel the Yuma people can rely on our Government's seeing that no damage will occur (*Congressional Record*, April 12, 1945, 3312)."

Arizona-Mexico boundary. Construction commenced in 1948 and was completed in 1950.

**Construction of Morelos Dam and the Purchase of Alamo Canal**

Just as the All-American Canal symbolized Imperial Valley's "freedom" from reliance on a bi-national canal for water, Morelos Dam symbolized Mexican independence asking the United States for water in times of drought. At the dam's inauguration on September 23, 1950, Engineer Adolfo Orive Alba, Mexican Secretary of Hydraulic Resources, linked the dam's symbolic purposes with its practical benefits for the valley. With completion of the dam, he noted, the region would support up to 200,000 hectares of agriculture. While Orive Alba lauded U.S. and Mexican efforts to construct the dam, he extolled the structure as a symbol of Mexican independence. He observed, "[Jose María] Morelos and the no less great [Miguel] Hidalgo are symbols of our independence, and this dam is also a symbol of our country's independence in one of its most remote and distant corners; a symbol of political and economic independence." Orive Alba also recognized that the traditional goals of the Mexican Revolution (namely free land widely distributed) had slightly changed in a highly arid corner of the nation. The dam was necessary, he believed, because "the land without water[,] even in the hands of our farmers, does not mean for them 'liberty or personal benefit or benefit for the country' as Morelos wanted."[51]

Despite the construction of Morelos Dam and the security of the Mexican Water Treaty, increased cultivation and immigration continued to deplete water and land resources in and around Mexicali Valley. From 1940 to 1950, population increased in the region from 45,569 to 137,200 inhabitants. By 1957, the population had increased by fifty-percent over the 1950 figure to 192,500. At the dawn of the Cárdenas revolution, 54,190 hectares of land were irrigated in the Colorado River Irrigation District (CRID). By 1940 that figure had increased to 113,190 hectares. With the completion of Morelos Dam and the initiation of irrigation from deep wells in the region, 145,382 hectares were being farmed. By the end of the 1950's, the amount of acreage irrigated from the Colorado River peaked at 192,612 hectares. Thereafter, dwindling water supplies from

[51] Adolfo Orive Alba, "Address of Engineer Adolfo Orive Alba, Secretary of Hydraulic Resources upon the Inauguration of the 'Morelos Dam,' September 23,1950," RG Governor's Office, Box 45, ADLAPR, Archives Division.

the river forced farmers and the Mexican government to pump water from aquifers located beneath the Delta's soil.[52]

1954 was a critical year in terms of water availability in the Mexican delta. Operation of the Gila Project in Yuma County and plans for construction of Glen Canyon Dam drastically reduced the amount of water that would reach Alamo Canal thereafter. While the Mexican Water Treaty stipulated that Mexico would receive 1.5 million acre-feet, over two million acre-feet had reached Morelos Dam on an annual basis before 1954. The following year regional irrigation and farming interests convened to discuss plans to offset the reduction in river water. Engineers suggested that deep wells might provide enough water to irrigate a substantial portion of Mexicali fields.[53]

Following the meeting, a coalition of farmers, bankers, workers, and politicians came together to voice their concerns about the decreased water supplies. They were also concerned because the level of cotton production in Mexicali Valley, stimulated by the Korean War, had increased nearly 400 percent since 1948-49. They informed the Mexican president that a decrease in water supplies would substantially affect the *ad valorem* taxes that the government collected as cotton left Baja California, destined for world markets through ports in the United States. They proposed the construction of a new siphon and canal to better service farms in Mexicali and San Luís Río Colorado. In order to compensate for over-development of the valley and the reduction in water supplies, they also suggested that the local irrigation district and private interests provide funding for 400 deep wells in order to sustain present levels of cultivation. This measure would support 60,000 hectares of arable land and "lead to the complete salvation of the Mexicali and San Luís Río Colorado valleys." The CRID decreed a twenty-hectare irrigation rule, effectively limiting the amount of land that could be irrigated on an annual

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[52] M. Pérez Espinoza, "Estudio Agrológico Preliminar del Distrito de Riego del río Colorado," *Ingenería hidráulica en México*, October-November-December 1958, 89; Federico Ibarra Muñóz, "Rehabilitación del Distrito de Riego No. 14 Río Colorado, B.C.," publisher unknown, n.d., 9, Archivo Histórico del Agua (AHA), México D.F., México.

[53] Minutes from 20 April 1955 Meeting between General Government Secretary and Mexicali Interest Groups, AGN, RG Ruiz Cortines, 404.2/296.

basis with river water. *Campesinos* loudly complained to President Adolfo Ruiz Cortines, however, that large farms received water ahead of *ejido* lands.[54]

Construction of Morelos Dam did not extricate Mexicali farmers from dependence on U.S. facilities to provide water for the valley. It only raised water into the Alamo Canal. The roots of dependence on U.S. structures had strong linkages to development initiated at the turn of the century. In 1916 the IID purchased the Alamo Canal and appurtenant water works in Mexicali Valley from the Southern Pacific Railroad Corporation. The IID-owned *Compañía de Terrenos y Aguas de la Baja California, S.A.*, which had operated the works since 1904, continued to deliver water from the Colorado River to the Alamo Canal and into the lateral canals in Mexicali Valley.[55] The board of directors of the *Compañía,* largely comprised of U.S. citizens, received a limited fifty-year concession that would end in 1960 to deliver water from the Colorado River to Mexicali Valley.

Despite the push to *mexicanize* the agricultural infrastructure in the valley during the Cárdenas administration, the Secretary of Agriculture and Development during the Ávila Camacho administration reaffirmed the *Compañía's* right to deliver water to Mexicali in 1941.[56] Nevertheless, despite connections to the most powerful irrigation district in the United States, the *Companía* suffered numerous challenges attempting to retain control over Mexicali's water delivery system. As early as 1942, the *Companía* discussed selling Alamo Canal and the rest of its holdings to the Mexican government.

Long-term disputes over water tariffs between the *Compañía* and the Mexican government also complicated administration of Alamo Canal. During the 1920s, the Mexican government largely took a hands-off approach to controlling water tariffs of the *Compañía* in Mexicali. With the onset of the Great Depression, however, the federal

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[54] Letter from Mexicali and San Luis Valley representatives to President Adolfo Ruiz Cortines, April 22, 1955, AGN, RG López Mateos, 404.1/502, 6.

[55] "Notes on the Irrigation District and Mexican Subsidiary Company," June 13, 1935, *Compañía de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957,* v-26, IID Archives, Imperial, California.

[56] "Presidential Decree regarding coordination of works for entire use of Colorado River water, under supervision of National Irrigation Commission," July 21, 1941, *Compañía de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957,* v-23, IID Research Library.

government cut water rates by thirty-percent in 1931 to one-peso per cubic meter of water over a twenty-four hour period. The January 27, 1931 decree stipulated that the lower fee would be in effect for twelve months. Further cuts, however, were made later in the year, including an agreement between the Mexican government and the *Compañía* that froze the rate per cubic meter at one peso. The rate was finally raised to $1.20 pesos on August 1, 1942.[57] In 1947 the rate increased to $1.24 (pesos). Devaluation of the peso in 1954 prompted an increase to $1.60. The tight governmental controls on water tariffs translated into heavy losses for the *Compañía*. Company budgets submitted to the Mexican government each year generally included requests for tariff increases, and outlined losses from previous years, largely as a result of rising water bills from the IID (with payments required in dollars) and labor costs.[58]

With the federally mandated rate cuts, the *Compañía* increased pressure on the Mexican government to pay for fifty percent of its capital investments (Alamo Canal, the levees, and other associated works), as well as five per cent interest for deferred payments. The Mexican government, pressed by financially strapped farmers in Mexicali Valley and a perception that the *Compañía* was turning a profit, refused to let the *Compañía* use the water tariff as a vehicle to recoup capital investments, promising instead to make payments directly to the organization and its creditors (mainly the IID).

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[57] M.J. Dowd, "Notes on negotiations between *Compañía* and Mexican government relative to Rates, Return of Investments, Etc. – Mr. M. J. Dowd," February 15, 1959, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence Water Tariff, volume 1, 1942-1959*, t-1.

[58] The following chart traces *Compañía* losses from 1942 to 1948:

| Year | Losses (pesos) |
|---|---|
| 1942 | 207,377.68 |
| 1943 | 210,388.38 |
| 1944 | 220,575.13 |
| 1945 | 1,078,701.43 |
| 1946 | 206,215.20 |
| 1947 | 162,424.53 |
| 1948 | 420,928.83 |

source: "Letter to Secretary of Agriculture and Livestock from Atty. Orcí," July 27, 1949, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence Water Tariff, volume 1, 1942-1959*, t-22.

In response, the government set up a special Valuation Commission composed of two members of the Mexican government and a representative of the *Compañía* to determine Mexico's share of the capital investments. However, as Engineer M.J. Dowd observed in 1959, the commission "had only one or two meetings [between 1941-1959] and failed to reach any conclusion by reason of the withdrawal of the representatives of the Mexican government." To make matters worse, Dowd continued, the Mexican government removed the railroad system from the levees and "converted the levees into highways, which are main arteries leading from Algodones down through the farming areas into the delta." "Thus, by using the investment of the *Compañía* in the levees," Dowd noted, "the Mexican government has provided highways at a tremendous saving over the cost if the levees had not been used. This hardly seems fair to the *Compañía*."[59]

*Compañía* officials felt further frustration when the Mexican government argued that since the levee was a bi-national system, the IBWC would have to decide how much of the investment Mexico needed to repay. The *Compañía* valued the levee at five million dollars and the US government paid three million to the IID for the system. Although the *Compañía* asked that Mexico pay an annual fee for use of the levee, the government was reluctant to do so. As M.J. Dowd noted in 1959, "The *Compañía* has never received from the Mexican government any payment representing rental for the levee system."[60]

Decreased revenue not only left the *Compañía* perpetually in debt to the IID, but also exacerbated its labor problems. Despite the fact that the *Compañía* paid its employees better than workers for the Colorado River Irrigation District, strikes and demands for raises plagued the organization from the 1940s until its purchase by the Mexican government in 1960.[61] In 1948, for example, the Water Workers and

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[59] Ibid.; Also see "Bowker to Manager Colorado River Irrigation District – Protesting removal of tracks from Ockerson Levee," January 28, 1953, *Compañía de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957*, v-9, IID Research Library.

[60] M. J. Dowd.

[61] With regard to relative wages paid by the *Compañía*, Mexicali attorney Jesus Barcenas, local counsel for the *Companía*, noted in a letter to Orcí, "Please point out to Eng. Gomez that he may take it into consideration . . . that besides the economic incapacity of the Company for seceding to the petitions of the Union, the latter are in every light unjust since the wages that the workers of this Company receive are almost twice the wages received by the workers of the Colorado River Irrigation District, that is, the minimum wage of the company is $16.05 pesos daily and the minimum of the Colorado River Irrigation

Distributors Union, encouraged by professor Cirilo Calderón (who was director of the company-supported school), demanded a raise of four pesos daily and a fifty per cent increase in transportation allowances for *Compañía* workers. The union requested an additional raise in 1954, noting that "with respect to the products imported within the sphere of the Dollar, on devaluating our money said products become more dear for all of us who receive our wages in Mexican money." Furthermore, its representatives noted, "With respect to products of regional origin or from other parts of the our republic, in some cases the increase [in prices] has been greater than .445%." While the border economy offered two economic worlds to Baja residents, devaluation of the peso made participating in either more difficult.[62]

Not only was the *Compañía* losing hundreds of thousands of pesos annually because of strict controls on water tariffs by the Mexican government, but a declining peso made business matters even more difficult. As a company representative observed:

> Although it is true that an unbalanced economic condition has arisen due to the devaluation of the Mexican peso, it is also true that this Company receives its revenues in National currency and has to make heavy disbursements in order to obtain not only the water which is paid for in American currency, but also other materials which are acquired in the United States for the operation and maintenance of its system.[63]

Ultimately, *Compañía* officials contended that they could not afford to increase wages unless water tariffs were allowed to rise.[64]

*Compañía* officials grew weary of the inefficacy of its demands for higher tariffs and payment for capital investments. In fact, *Compañía* lawyers even discussed the

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District is $8.50." "Letter to Attny. Orcí from Atty. Barcenas," March 15, 1950, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence on Water Tariff, volume 1, 1942-1959,* t-11.

[62] "Letter to Department of Hydraulic Resources from Mr. Bowker," May 27, 1954, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence on Water Tariff, volume 1, 1942-1959*, t-7.

[63]"Bowker to Barcenas – Regarding request for increase in wages of Cia. Workers," September 18, 1948, *Compañía de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957*, v-17, IID Research Library.

[64] "Letter to Department of Hydraulic Resources from Mr. Bowker," June 15, 1954, t-6, and "Letter to *Compañía* from Eng. Esquivel Méndez, Colorado River Irrigation District," both in *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence on Water Tariff, volume 1, 1942-1959*, t-8.

propriety of stopping water delivery to Mexicali due to lack of funds and outstanding debts to the IID. In July 1950, attorney Arturo Orcí noted that the company would not be able to continue service for long due to low water prices. The Board of Directors had even approved a telegram to send to President Miguel Áleman if the Mexican Department of Agriculture and Livestock would not increase tariffs. On numerous occasions Orcí presented his claims to Ortíz García, Secretary of Agriculture and Livestock, but received no substantive response. Orcí held off on sending the telegram, citing the damage it would not only cause for the *Compañía*, but also for the Mexican government and Mexicali farmers. Ortíz García, however, noted his reluctance to act because of "the threat of the users of suspending planting if the price of water should be increased, above all for the irrigation of wheat, because as a result costs absolutely could not be met." This politico-economic issue remained a constant concern for Mexican officials and was cited on a number of occasions as the reason for not raising water prices.[65]

Perhaps the Mexican proposal to build Morelos Dam, as well as the fear of losing additional surplus waters that California had appropriated, motivated the IID to encourage California's officials in Congress to oppose the Mexican Water Treaty. Morelos Dam largely preempted the need for Alamo Canal as a water intake from the Colorado River. In addition to Morelos Dam, the Mexican government also built Matamoros Check, a structure that guided water from the dam into the Alamo Canal. Quite simply, Mexico appropriated Alamo Canal by engineering artifice.[66] Ever since the early 1940s, Mexican officials were frustrated by the inability of the canal to provide the volume of water needed by Mexicali farmers to irrigate their crops. Furthermore, valley

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[65] "Letter to Attny. Barcenas from Attny. Orcí," July 4, 1950, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence on Water Tariff, volume 1, 1942-1959*, t-10; In a November 18, 1949, letter, for example, Narario S. Ortíz García, Secretary of the Department of Agriculture and Livestock, noted, "With respect to the losses that your Company has suffered, I can only tell you that we regret them and, as you have seen, we have tried to get the users to consent to the increase in the tariff, without having up to this time obtained their acceptance, as they consider, according to what they have declared, that already with what they are paying it is not worth while for them to continue working the land because the rates which have been imposed on them are the highest that are paid in the country." "Letter to Atty. Orci from Nazario S. Ortiz Garcia," November 18, 1949, *Compañía de Terrenos y Aguas de la B.C., S.A., Correspondence on Water Tariff, volume 1, 1942-1959*, t-15.

[66] "Mr. Bowker to Dept. Hyd. Resources – Use of Matamoros Check at Morelos Dam," *Compañía*

officials were put off by the IID's unwillingness to allow the CRID to build a temporary dam in the river to lift sufficient water into the canal for delivery to Mexicali farms.[67] Eligio Esquivel Méndez, CRID manager, stated that the new structures were adapted to Alamo Canal because "your Company was not able to comply with the demands requested by the CRID in order to satisfy its farmers users." Furthermore, "As this is considered a public service, this Management found itself obliged to operate the canal above mentioned, constructing the works that it considered necessary in order to be able to satisfy the demands of the Mexican farmers for irrigation."[68]

With completion of Morelos Dam, the *Compañía's* dissolution was practically a *fait accompli*. The *Compañía's* attorney in Mexico City, José Barcenas, informed Orcí that with the new dam, "the company considers that the most appropriate and convenient settlement for both parties would be the purchase by the Government of all the properties of the Company. . ." Barcenas noted that operation of Morelos Dam infringed on the rights of the *Compañía*. Furthermore, in tandem with Matamoros Check, the dam reduced the revenues of delivery by "approximately 25 to 30 per cent." Barcenas also observed that while the company continued to collect a tariff of $1.24 pesos per thousand cubic meters, the Department of Hydraulic Resources was charging users only $.41934 per thousand cubic meters in the summer (when ninety-percent of the water was used) and $.26113 during winter months and at low flow periods. [69] Barcenas also informed Orci that the company would push for an increase in tariffs while negotiating the sale of the organization in order to recoup some of its capital losses.[70] In September 1951, Manager Bowker met with the Secretary of Hydraulic Resources Orive Alba to inform him that they wished to sell the company's interests. He also suggested that the Mexican

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*de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957*, v-2, IID Research Library.

[67] IID officials feared that if the dam caused a flood it would take the path of least resistance, down into El Centro and the Imperial Valley.

[68] "Eng. Méndez to Cia. De T. y A. – Regarding use and ownership of Alamo Canal," July 14, 1953, *Compañía de Terrenos y Aguas de la B.C., S.A., Various Subjects – 1911-1957*, v-5, IID Research Library.

[69] "Letter to Atty. Orcí from Atty. Barcenas," July 5, 1951, *Compañía de Terrenos y Aguas de la B.C., S.A., Negotiations with Mexico re: Water Service to All American Canal and Sale of Assets*, m-21.

[70] "Letter from Atty. Orci to Atty. Barcenas," August 3, 1951, *Compañía de Terrenos y Aguas de*

government raise the water tariff so that the *Compañía* could recoup a portion of its administrative expenses and capital investments. Orive Alba accepted the notion that Mexico pay for twenty percent of the levees.[71]

In accordance with the move to liquidate the *Compañía* and its assets, the IID took stock of its losses associated with the transnational organization. M.J. Dowd noted that devaluation of the peso since purchase of the company in 1917 further complicated the process of obtaining an equitable settlement for its investments. During most of the period between 1917 and 1957, the dollar equaled two pesos. By 1957, however, the peso had fallen to $12.50 pesos per dollar. Dowd noted that the Mexican government had only made one payment for water delivery after 1942, and still owed the district $3,823,771 pesos. The IID had offered to sell the *Compañía* to the Mexican government as early as 1941 for fifty percent of the cost of its capital holdings. That offer would have yielded $1,707,000 dollars in 1941, but had fallen to $662,000 in 1957 by virtue of devaluation of the peso. IID officials felt it should present another offer that accounted for devaluation of the peso into account. In all, Dowd calculated that the IID had invested $5,092,370 in the company, equivalent to $17,793,494 pesos. Adjusted to the value of the peso in 1957, the amount skyrocketed to $63,654,625 pesos. This omitted payment for use of the levee.[72]

Legal and political considerations also spelled the end of the *Companía's* operations in Mexicali Valley. In 1910, the *Compañía* received a fifty-year concession to deliver water to Mexicali Valley. By 1960, as the date for dissolution grew closer, the Board of Directors appealed for a five-year extension, fearing that if they did not, they could not complete the sale to Mexico. The Mexican government denied their request, but informed the company that the expiration would not affect the liquidation.[73] The

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*la B.C., S.A., Negotiations with Mexico re: Water Service to All American Canal and Sale of Assets,* m-20.

[71] "Memorandum Relative to interview with Secretary of Hydraulic Resources, in order to define situation of *Compañía* in relation to inauguration of the Morelos Dam," September 21, 1951, *Compañía de Terrenos y Aguas de la B.C., S.A., Negotiations with Mexico re: Water Service to All American Canal and Sale of Assets, m-19.*

[72] "Letter to the Board of Directors from Mr. Dowd," November 24, 1957, *Compañía de Terrenos y Aguas de la B.C., S.A., Negotiations with Mexico re: Water Service to All American Canal and Sale of Assets*.

[73] "Memo re Arturo Orcí's petition to the Secretary of Foreign Relations for 5-year extension of

terms of the company's concession expired on August 25, 1960, and its interests passed to the hands of Richard B. Brissenden, Robert García Martínez, and W.K. Bowker (who had been manager of the *Compañía* in Mexicali). [74]

The Mexican government made the most of the fact that they practically owned Alamo Canal by virtue of its location between Morelos Dam and the lateral canals of the farmers. Secretary of Hydraulic Resources Del Mazo informed Attorney Orcí that "in private and as a friend he would state that he was not in favor of buying the said assets, advising me that that opinion was not to be taken as that of the Government, nor as final, adding that with a 'much' smaller amount the canals and other works which the Company is selling could be built, all more modern and adaptable to the present, reducing the width of the canals and avoiding the great loss of water by evaporation." While Del Mazo's statements had the air of political *ledgermain*, the CRID was already considering rehabilitation of the irrigation system. Those plans also included many of the propositions set for by del Mazo. Del Mazo also stressed that the government felt no obligation to buy the works "if the price did not suit it." [75]

The Secretary of Hydraulic Resources reiterated this ambivalent position in February of 1961, citing the opinion of the department's Legal and Advisory Board that the *Compañía* "had become liable to the loss of all the rights, assets, and properties related to the concession, because of its expiration." Later on in the conversation with Orcí and Bowker, Del Mazo stressed that the lowest possible price should be assigned to the *Compañía's* holdings to decide "whether the Government would buy the assets of the Company and in order to be able to take something concrete for the decision of the President of the Republic." He noted that the federal government was presently strapped

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duration of *Compañía*," June 23, 1960, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-6*2, 2; "Letter from Dept. of Foreign Relations to Atty. Orcí denying petition for 5-year extension of duration of cia." August 16, 1960, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-6*2, 3.

[74] "Official Registration of Minutes of August 22, 1960," August 25, 1960, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-6*2, 5.

[75] Letter from Orcí to Bowker, November 19, 1960, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-6*2.

for funds and that "it would have to be for a very low price (mentioning seven million pesos) . . ."[76]

In March 1961, Orcí presented the Department of Hydraulic Resources with an offer of fifteen million pesos for company property valued at $49,461,640 pesos.[77] On May 8, 1961, Del Mazo made a counter-proposal for $4.5 million pesos in three payments. The offer made to Orcí a second time on June 21, 1961. The contract of sale was completed on August 9, 1961. The payments were used to a) reimburse the IID for part of its losses in the venture, b) pay workers three months wages and seniority rights, and c) reimburse stockholders for their shares in the company.[78] On September 29, 1961, the transfer of administration of the Alamo Canal passed from the company to Mexico's Department of Hydraulic Resources.[79]

Curiously, members of the Water Workers and Distributors Union of Baja California (CROC) bid adieu to the *Compañía* by comparing the parting to "that of the moment of the GREAT CAPTAIN and his LOYAL OFFICERS who bring the BELOVED SHIP to the dock to leave it there, and its crew bids farewell to all." Such an expression of affection was ironic, particularly in light of the company's labor troubles during the previous two decades. Nevertheless, this parting expression marked an important juncture in US-Mexican relations on a regional level. Finally, Mexico had taken control of the infrastructure needed to conduct water to Mexicali farms. While they would still be dependent on US dams upstream to prevent floods and deliver water to the

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[76] "Memo re interviews which Messrs. Bowker and Orcí had with Secretary of Hydraulic Resources. . ." February 8, 1961, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-62*, 7.

[77] "Letter from *Compañía* to Orcí. . .," February 17, 1961, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-62*, 8.

[78] "Revised Offer made by Secretary of Hydraulic Resources to representatives of *Compañía*," June 21, 1961, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-62*, 12; "Letter from Liquidators to IID Board of Directors transmitting two notes issued by Treasury Department of Mexico Government . . ." August 22, 1961, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-62*,14.

[79] Letter from W.K. Bowker to Arturo Orcí, September 30, 1961, *Compañía de Terrenos y Aguas de la B.C. Negotiations with Mexico re Water Service Subsequent to AAC Sale of Assets of Compañía, volume 2, 1960-62.*

border, Mexico gained an important advantage in controlling the future of agribusiness in the region.

At a time which historians consider one of increased dependence of the Mexican economy on the United States, Mexican policy in the delta continued to stress the move towards economic independence.[80] Reaching that goal meant that Mexico exert greater control over natural resources, particularly water. The Mexican Water Treaty provided Mexicali farmers with a firm baseline of how much water they could expect on an annual basis. Morelos Dam and the Alamo Canal provided as a wholly Mexican conduit for channeling that water onto the Valley floor. To be sure, independence was a stated goal, however some interdependence was inevitable in reaching developmental goals. For example, Morelos Dam, named for the father of Mexican independence, was contracted out to an U.S. transnational, Morrison Knudsen of Sonora. Conversely, the expansion of *latifundias* in the Imperial Valley and Yuma Valley was impossible without *bracero* workers.

Ecologically, delta water relations during the forties and fifties masked the growing dependence of both economies on water from the Colorado River. That dependence became doubly apparent in Mexicali Valley as hundreds of wells were drilled in order to compensate for decreased volumes of water from the river in order to continue rapid expansion south of the international border. The border and the bi-national aspect of water relations in the delta also encouraged fear in the minds of farmers, developers, and politicians. Ultimately, the unknown – in terms of what type of water development was happening on the opposing side of the border -- further encouraged efforts to stake a claim to water and land resources in the delta. To be sure, however, a guarded sense of cooperation undergirded this quest for economic growth throughout the period. Despite tensions between the IID and Mexican officials, periodic emergency arrangements for delivery of water to Mexico were negotiated and the *Compañía* never made good on its threat to stop delivery of water to Mexicali Valley. Additionally, although Mexico exercised some sleight of hand to obtain the holdings of the *Compañía,* it ultimately an

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[80] Scott Whiteford provides an excellent overview of this process, as well as the relationship between labor, capital, and development of water resources in "Troubled Waters: The Regional Impact of Foreign Investment and State Capital in the Mexicali Valley," in *Regional Impacts of U.S.-Mexican*

agreement with its liquidators, even though the concessionary period had expired. Ultimately, even if good neighbors were not always the best of neighbors, they did not let their misunderstandings descend into violence. However, the joint push to develop the region economically, foreshadowed a period of ecological crisis and a regional realization that the well being of humans, plants, and animals throughout the delta required restraint and respect for the resources that had made the region so prosperous.

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*Relations,* Ina Rosenthal-Urey, ed., (San Diego: Center for U.S.-Mexican Studies, 1986), 17-36.

## Chapter 4

### Saline Solutions[1]

*"It is one of the great tragedies of the Southwest. If you want to see what happens when an area goes dry in the desert, just go to the Wellton Mohawk Valley." William E. Warne*[2]

During the fall of 1961, the U.S. Bureau of Reclamation (USBR) began draining salt-saturated irrigation water from the Wellton-Mohawk Valley in eastern Yuma County, Arizona. It was carried through a drainage channel that emptied into the Gila River. The Gila River then emptied the contaminated water into the Colorado River near Yuma, where the USBR believed that the river would dilute the high level of salinity before reaching the U.S.-Mexican border. Instead, the contaminated water immediately touched off an ecological crisis, killing crops and damaging farmlands in the Mexicali and San Luis valleys in Mexico and polluting domestic water supplies on both sides of the border.[3] Several Mexicali leaders threatened to boycott California businesses if the U.S. farmers in Arizona did not curtail their harmful drainage practices. On December 14, 1961, 8,000 Mexicans protested the dumping of toxic waters by marching in front of the American consulate in Mexicali, protesting the dumping of toxic waters. Two weeks later, 35,000 people protested in front of the same building. Some participants noted the disparity between the pollution of the Colorado River and the ideals of the *Alliance for Progress*, observing that "polluting the river was not the way to get a partner in an alliance and certainly was not progress." Others assigned blame for the debacle closer to home. One of the protestors' signs simply stated, "Arizona – Tiene la Palabra," or

[1] The *Journal of Arizona History* granted permission to reprint this chapter, which appears as "Saline Solutions: Arizona Water Politics, Mexican-American Relations, and the Wellton Mohawk Valley," in the Autumn 1999 edition, pages 267-292.

[2] At the time, Warne was assistant commissioner of the Bureau of Reclamation. House Committee on Irrigation and Reclamation, *Hearings Reauthorizing Gila Project, H.R. 5435*, 79th Congress, 2nd sess., (Washington: GPO, 1947), 14.

[3] Engineer Luis Cabrera explained the intimate geographic relationship between the various valleys in the delta:. "[The] Mexicali Valley, [San Luis Valley], the Imperial Valley, and the Yuma Valley are really all one valley and . . .all of the irrigation districts in this one big valley are, taken together, the last user on the river." In "Use of the Waters of the Colorado River in Mexico: Pertinent Technical

"Arizona, you have the word."[4] Journalist Lenora Werley observed that "Arizona causes the protests and the Mexican demonstrators are not unaware of this."[5]

That the Mexicali demonstrators protested against the United States *and* Arizona not only reveals the marchers' political astuteness, but also identifies an important omission in the historiography of U.S.-Mexican disputes during the 1960s and 1970s over salinity in the Colorado River. The placard, "Arizona, You have the word," implies that Arizona officials played a leading role in the environmental imbroglio that eventually soured international relations. Scholars have written extensively about the environmental and diplomatic ramifications of the crisis, but they have not analyzed adequately how Arizona politics made the disaster possible.[6] Although Arizonans did not intend to damage U.S. – Mexican relations, political expediency compelled them to push for authorization of the Wellton - Mohawk division of the Gila Valley Project. Ultimately, the vision of growth through federal largesse set in motion a series of actions that drastically increased the salinity levels of water from the Colorado River destined for Mexico.

**Genesis of the Wellton-Mohawk Project**

The Mohawk Valley lies in the desolate Sonoran desert thirty miles east of Yuma. Alkali-green creosote bushes and snarled mesquite trees carpet the floor of this forbidding landscape. Mexican and U.S. farmers, hoping to utilize Gila River water,

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Commentaries," *Natural Resources Journal*, Jan. 1975, vol. 15, 30-33.

[4] Lenora Werley, "U.S. Takes Sudden Interest in Mexicali Water," *The Arizona Daily Star*, Sunday, December 17,1961, in Box 253:8, Carl Hayden Papers (MS 1), Department of Archives and Manuscripts, Hayden Library, Arizona State University, Tempe.

[5] Ibid.

[6] Norris Hundley discusses the salinity crisis as an extension of the Mexican Water Treaty of 1944 in *Dividing the Waters*, (Berkeley: University of California Press, 1966), 173-181. He gives an excellent assessment of how drainage water damaged Mexicali fields. Philip Fradkin focuses on the environmental and international ramifications of the crisis in *A River No More: The Colorado River and the West* (New York: Knopf, 1981), 291-318. Fradkin provides an excellent analysis of the political importance of the crisis in Mexico. Leon Metz deals with the environmental aspects of the crisis and underscores Carl Hayden's reluctance to help Mexico in *Border: The U.S.-Mexican Line* (El Paso: Magnan Books, 1989), 272-290. Dale Furnish and Jerry Landam, "El Convenio de 1973 sobre la salinidad del Rio Colorado y el Valle de Mexicali," in *Revista de la Facultad* (UNAM), Tomo 25, January 1975, 103-129, provide the best study of the Mexicali area prior to and during the crisis, tracing the agricultural development of the region and the ecological impact of salinity on the fields.

moved to the region during the late nineteenth century. Irrigation and the cultivation of alfalfa began by 1875, and before long the region resembled an agricultural atoll in an arid sea of land. [7] In 1923 farmers organized the Gila Valley Power District and the Mohawk Municipal Water Conservation District, which allowed farmers to contract for the electrical power they needed to pump water from underground wells onto valley fields. [8] Initially, farmers raised alfalfa, cotton and vegetables, placing, 6,200 acres of land were under cultivation on eighty-one farms by 1931. After the 1935 completion of Coolidge Dam 250 miles upstream, however, the Gila River failed to carry enough water to replenish wells in the area, causing local farmers to reuse groundwater for irrigation. Without adequate drainage or sufficient rainfall, the increasing level of toxic salts eventually made the recycled groundwater harmful to crops.[9]

To relieve the situation, Hugo Farmer, a tireless Yuma County booster and state senator, launched a campaign in 1941 to incorporate the irrigation needs of Mohawk Valley farmers into the Gila Project, an undertaking originally approved in 1935 to develop 150,000 acres of land on the Yuma Mesa. Farmer wanted to rescue farms that had been damaged by saline water and then expand the region's arable acreage. He frequently reminded U.S. Senator Carl Hayden of families who were losing their farms in the valley and complained about the paltry appropriation of $500,000 the project received each year. Farmer warned that if the appropriation were not substantially increased, "part of the country will have gone back to the desert, and the people will have had to vacate their homes long before water would reach them."[10] Although many individual families did farm in the Mohawk Valley, evidence suggests that corporate absentee landowners controlled significant portions of the valley. [11] Ultimately, financial difficulties in the

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[7] See Thadd Baker, "History of Irrigation in Yuma County," *in Colorado River Water: Yuma County Lifeline*, (Yuma: Yuma County Chamber of Commerce, 1977).

[8] Refnes, Ely, Beck, and Co., "Mohawk Municipal Water Conservation District and Gila Valley Power District," unpublished report, Box 652:1, Hayden Papers.

[9] The Gila Project Association, *A Small Appropriation for the Gila Project This Year Will Start Canal Work to take Colorado River Water to the Thirsty Lands of the Mohawk Valley*, 1940, Arizona Department of Library, Archives, and Public Records (ADLAPR), Phoenix.

[10] Hugo Farmer to Hayden, Jan. 25, 1941, Box 120:25, Hayden Papers.

[11] William Warne to Hayden, Sept. 9, 1944, Box 652: 21, Hayden Papers.

form of delinquent taxes and bonded indebtedness on valley farms delayed approval for expanding the Gila Project. The USBR refused to contract with the Gila Valley Irrigation District for improvements until the land could be financed completely by the federal government.[12]

Farmer and other prominent valley officials also promoted the Gila Project as a potential provider of homesteads for WWII veterans. In a 1944 letter outlining the Gila Project Association's plans, Farmer informed USBR commissioner H. W. Bashore that the project's unredeemed acreage represented, " a very substantial area of very excellent land for settlement by our returning soldiers."[13] Leon Jacobs, a Yuma attorney representing the primary bondholder on the project, expressed disbelief that Mexico was able to commit federal funds "to recondition its railroads" while "poor little Arizona [could] not even get a few hundred thousand dollars" to bail out the indebted farmers on a project that would ultimately benefit many American veterans.[14] Incidentally, government buy-out of the blighted land would also relieve Jacobs's client of their cumbersome investment. In the end, the promotion of land for veterans played an integral part in securing approval for improvements in Mohawk Valley. In 1947, USBR commissioner William Warne observed that "a principal reason" for funding the Mohawk Valley project was to "preserve an existing settlement and enable it to expand through the infiltration of war veterans who are desirous of taking advantage of settlement opportunities in Arizona."[15]

The threat of increased Mexican water was another factor that prompted Farmer to push the Mohawk Valley irrigation project. During January and February 1938, Farmer made four trips to assess the pace of Mexican agricultural development in and around Mexicali. He reported that over 400,000 acres were either developed or being prepared for cultivation. He also observed that the Mexican government had begun building a railroad across the Gulf of California and a harbor "to ship the produce of Mexicali into

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[12] For a brief explanation of these financial problems see "Reauthorizing Gila Project," 12-13.

[13] Farmer to H.W. Bashore, Sept. 23, 1944, Box 652: 21, Hayden Papers.

[14] Leon Jacobs to Farmer, August 18, 1944, Box 652: 21, Hayden Papers.

[15] House Committee, *Reauthorizing Gila Project*, 10, 12-13.

Mexico for use by the Mexican people."[16] Although Farmer based most of his conclusions on questionable secondhand information, the prospect of agricultural expansion alarmed Arizona officials, who feared Mexico would demand permanent rights to large quantities of Colorado River water. Prior to 1928, many U.S. politicians in the western states believed that as long as the headwaters of an international stream rested completely within the boundaries of a country, that nation had no obligation to share the waters.[17] After 1928, however, Mexican officials pressured U.S. diplomats to recognize their claims for water from the Colorado River. Few precedents for international water law had been established by 1940, and many U.S. officials feared that Mexico might take the United States to the World Court, where it would insist upon enough water to meet its growing needs.

Farmer voiced his concerns throughout the 1940s. "Substantial development is still going forward in the Mexican Delta of the Colorado River," he informed Senator Hayden in 1941. "During the past year some ten thousand acres of new land has been cleared and additional canals have been constructed."[18] If the federal government failed to appropriate money immediately for the Gila Project, he warned, Mexico might "make use of available Colorado River water [and] . . . establish a recognizable prior right therein."[19]

Competition with central Arizona for water projects also influenced Farmer's strategy. Antagonism between Yuma County and the Salt River Valley (metropolitan Phoenix) dated back to the 1920s' debates over the Colorado River Compact (CRC).[20] At

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[16] Arizona Commission of the Colorado River Basin States, *Farmer Testimony, June 22-23, 1938*, 42-43, ADLPR.

[17] In 1906, Attorney General Judson Harmon's opinion was elicited during a dispute between the United States and Mexico over the Upper Rio Grande River. For a broad treatment of the Harmon opinion, see Hundley, *Dividing the Waters,* 17-18, 23.

[18] Farmer to Hayden, Jan. 14, 1941, Box 120: 25, Hayden Papers.

[19] Farmer, *The Gila Project, Statement of Hugo B. Farmer, April 17, 1945*, Box 120: 25, Hayden Papers.

[20] The Colorado River Compact was proposed in 1921 by Colorado politicians who feared that the lower basin states, particularly Arizona and California, would appropriate all of the river's water. The compact apportioned each state in the basin a pre-determined quantity of water. It was signed without Arizona's approval in 1921. See Hundley, *Water and the West: The Colorado River Compact and the*

that time Yuma officials championed construction of Boulder Canyon Dam (present-day Hoover Dam) to protect local farmland from yearly flooding of the Colorado and Gila rivers. Phoenix leaders, on the other hand, argued that the CRC limited the amount of water Arizona could divert from the river, and that Boulder Canyon Dam undercut the state's own plans to develop the river's hydroelectric potential and to transport water to central Arizona. When the CRC was passed, over Arizona's objection, intrastate competition for water from the Colorado River became even keener. Fearing that not enough water would be available to develop all of Arizona's arable land, groups in Yuma County and central Arizona carefully monitored each other's actions. According to political scientist N. D. Houghton, noted that "Central Arizona farmers . . . resented prospects for bringing more Yuma County (Arizona) land under competitive cultivation by use of Colorado River water."[21]In 1935, the president of the Salt River Valley Water Users Association, located in the Phoenix area, stated, "I don't want to see another . . . acre of land brought under cultivation in Arizona."[22]

Hugo Farmer feared losing prospective irrigation projects to the state's more populous Salt River Valley. Disgruntled that little headway had been made in obtaining funds to build a canal from the Colorado River to the Wellton-Mohawk Valley, in January of 1941 Farmer vented his frustration to Hayden. "While I am sympathetic to any need that may exist for taking some water from the Colorado River to Central Arizona, I do feel that the agricultural future of our state demands lands close to the River which can be irrigated at a reasonable cost per acre." These "should be developed as rapidly as possible."[23] Farmer doubted that central Arizona interests would be able to finance the Central Arizona Project (CAP) to carry water across the desert to Phoenix.[24]Meanwhile, Gila Project farmers were cut off from mountain run-off stored in central Arizona reservoirs, "as the dams in Central Arizona prevent any substantial amount of water from

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*Politics of Water in the American West (*University of California, 1975).

[21] N. D. Houghton, "Problems of the Colorado River as Reflected in Arizona Politics," *The Western Political Quarterly*, 1951, 634-643.

[22] Ibid., 639.

[23] Farmer to Hayden, Jan. 15, 1941, Box 120: 25, Hayden Papers.

[24] Farmer to Hayden, Jan. 25, 1941, Box 120: 25, Hayden Papers.

coming down the Gila."[25] Finally, at the 1947 hearings over reauthorization of the Gila Project, Farmer lost his patience with committee members who believed that approval should be contingent on meeting the needs of the CAP. "The [CAP] and the Gila Project are not the same thing," Farmer insisted, "but they are separate projects. I do not see why they throw the two of them in here. The bill [under consideration] is the Gila Project bill. We are particularly sympathetic with the Central Arizona situation, but it does not properly belong in this bill."[26]

Farmer did all he could to check the power of water officials in the Salt River Valley. Without the support of Senators Hayden and McFarland, however, his effectiveness probably would have been limited. Eager to garner votes in Yuma County, both Hayden and McFarland championed the Gila Valley Project as part of Arizona's water policy.[27] Hayden had taken an active interest in securing government assistance for Yuma County farmers since he was elected Arizona's first congressman in 1912. Serving as the consummate steward over Yuma County water interests, he worked closely during the 1920s with officials from the Yuma County Water Users Association (YCWUA) to win federal appropriations for flood protection. Crafting a comprehensive water policy meant more than winning projects and protecting the land from the river's ravages. It also entailed watching over the Siamese twin of water projects: cheap farm labor. When domestic labor was at a premium during World War I, Hayden had lobbied for temporary admission of Mexican laborers to harvest Yuma County crops.[28] As a staunch advocate of the *bracero* program during and after World War II, he continued to assist Yuma County farmers in obtaining Mexican labor. In sum, Hayden energetically served the agricultural community in Yuma during his years in the Senate.

In the 1940s, the USBR commissioned several studies of the Wellton-Mohawk area to ascertain whether assumption of farm debts and construction of a gravity canal from the Colorado River were feasible. Dr. Harlan H. Barrows from the University of

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[25] Farmer to Hayden, Jan. 15, 1941, Box 120: 25, Hayden Papers.

[26] House Committee, *Reauthorizing Gila Project*, 534-535.

[27] Farmer to Hayden, Box 610: 7, Hayden Papers.

[28] Ross Rice, *Carl Hayden: Builder of the American West*, (Lanham, MD: Univ. Press of America,

Chicago conducted one of the earliest assessments of the problems in eastern Yuma County. Barrows identified key environmental hurdles that faced farmers, suggested solutions, and predicted political attitudes among valley residents over the next forty years. Observing that high levels of salinity affected other areas in Yuma County besides the Mohawk Valley, he offered three solutions to the problem: water could be imported from the Colorado River; farmers could be moved "to the first block of the Yuma Mesa;" or the USBR could simply "leave the Mohawk-Roll area to the inevitable conclusion of present trends."[29]

Barrows viewed the second option as a viable alternative in the event that local farmers could not procure water from the Colorado River.[30] His proposal to move the farmers to new lands, however, generated numerous objections. Local officials resolutely dismissed the plan's feasibility, while a University of Arizona official declared his belief "that the settlers would, under no conditions, move to the Yuma Mesa lands from the Mohawk-Roll area." Hugo Farmer concurred, observing that "it would have a very injurious effect upon the whole Gila Project." No one expressed the farm rights argument better than Wellton Mohawk Irrigation and Drainage District (WMIDD) president Wayne Wright. In a letter to Barrows, Wright wrote, "I believe the farmers of this area would prefer to risk their destiny to their present plight than to the Yuma Mesa . . .A community that has been able to survive with extremely salty water [at a reasonable cost]. . . certainly should prosper with a good water supply."[31]

Despite the intransigent optimism, Barrows recognized that simply providing better water for salty lands might not resolve their problems. The professor noted that although "some of the farmers feel that it would be simple matter to reclaim the lands if fresh water were obtainable, . . . it does not follow that it would be simple in all cases."[32] Barrow's report nonetheless vividly captured the indomitable spirit of officials and farmers in the Mohawk Valley. For them, there was no alternative to salvaging their

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1994), 71.

[29] John Page to Hayden, Feb. 13, 1941, Box 120:1-2,25 Hayden Papers.

[30] Ibid.

[31] Ibid.

lands. While Barrows's study apparently had little impact on policy makers, it accurately gauged the political mindset of the region.

The Mexican Water Treaty (1944) played a significant role in Arizona's push for development of the Gila Project. The need for Mexican support during World War II compelled the Roosevelt administration to honor Mexican requests for apportionment of the waters of the Colorado and Rio Grande river basins. To the chagrin of many farmers, politicians, and developers in the Colorado River basin, the U.S. Senate approved the treaty, which included a guarantee to deliver 1.5 million acre-feet of water from the Colorado River at the international boundary below Yuma each year. Arizona senators' support of the treaty flew in the face of decades of opposition to Mexican petitions for Colorado River water. Their political about-face was carefully linked to plans for development of the river in Arizona.

At the project reauthorization hearings, State Attorney Charles Carson elaborated on the state's motivations for supporting the treaty with Mexico. State leaders had watched with trepidation during the 1920s and 1930s as Mexico diverted more and more water from the Colorado River. Prior to signing the CRC prior to 1944, Arizona had no legal guarantee of Colorado River water. Carson feared that if Arizona failed to ratify the CRC before a treaty was signed with Mexico, Californians would insist that Mexico be furnished part of the 2.8 million-acre feet of water that the CRC had set aside for Arizona.[33] Essentially, Arizona approved the CRC and supported the Mexican Water Treaty because its leaders wanted to limit the amount of water its southern neighbor could use.[34] While the Mexican Water Treaty did not explicitly involve the Gila Project, many of Arizona's leaders believed that if Mexico's appropriation of water from the river were not legally limited, sufficient resources would not be available to develop the Gila and Central Arizona projects. Once Arizona Governor Sidney Osborn signed the CRC, Senators Hayden and McFarland rallied supporters behind ratification of the Mexican

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[32] Ibid.

[33] House Committee, *Reauthorizing Gila Project*, 387.

[34] Senate Committee on Foreign Relations, *Water Treaty with Mexico, Hearings Before the Committee on Foreign Relations*, United States Senate, 79th Congress, 1st Session, 271.

Water Treaty in the U.S. Senate. Hugo Farmer, in anticipation of congressional approval for the Gila Project, also voiced support for the international accord.[35]

Two sets of hearings were held, in Phoenix and Yuma, to determine Arizona's water needs and the feasibility of the Gila Project. At the 1944 Arizona Water Resources Hearings and the 1947 Reauthorizing Gila Project Hearings, local leaders greeted congressmen, senators, and USBR officials with a well-coordinated campaign on behalf of the Gila Project. Testimony revealed the severity of salinity problems in Mohawk Valley. Farmer informed committee members that nearly 9,000 acres of land had been cultivated, but that "primarily [because of] the increasing salt content of water more than 3,000 acres have gone back to brush." The salt content of water in the valley ranged from 820 parts of salt parts per million (ppm) to 10,000 ppm. Overall, the water averaged 4,500 ppm. Farmer pointed out that 4,500 ppm was equivalent to 265 grains of salt per gallon, whereas in Southern California, "water with a salt content of 10 grains per gallon is considered unfit for irrigation of citrus trees."[36]

Mohawk Valley farmers described their plight to Senator McFarland USBR Commissioner Bashore. Phillip Dunn noted that by 1933 "the supply of water available [from the Gila River] began to decrease and the salt content of the wells began to increase." As a result, Dunn was able to irrigate only sixty acres of his lands. L. A. Hicks observed that as the water table decreased, "the salt content has increased until our production is very low." Not only did the salty water limit the number of acres Hicks could farm, but it also dictated the types of crops he could plant. Whereas in the 1920s Hicks had cultivated cotton and vegetables, the high salt content of the water in the 1940s restricted him to growing alfalfa and Bermuda seed. Charles M. Hindman testified that 30 to 40 percent of the land that had been under cultivation in 1930 had been abandoned by 1944. Finally, R. H. McElhaney noted that most Roll area residents had to import water

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[35] Farmer to Hayden, April 3, 1944, Box 652: 23, Hayden Papers.

[36] Senate Committee on Irrigation and Reclamation, *Hearings Arizona Water Resources S Res. 304*, 78 Congress, 2nd sess., August 4, 1944, 200. Norris Hundley has noted that 450 ppm was the desired level of salt for water delivered to Mexico. See *Dividing the Waters*, 173.

for domestic use. Apart from people who bought water in Yuma, "[practically] all the drinking water is hauled from three or four wells in the community."[37]

The rationale for bringing water into Mohawk Valley from the Colorado River was based on recent experience. Ample rains provided the Gila River with sufficient run-off water to recharge the wells in eastern Yuma County. When Commissioner Bashore questioned valley farmers about the practicality of mixing fresh water with the brackish well water, Charles Hindman responded that the additional fresh water had significantly raised production levels during 1942.[38] He predicted that within a year the farmland in Wellton-Mohawk Valley could be rehabilitated.[39] Madeline Spain, owner of three Yuma area ranches, testified that fresh water from the floods in 1941 "sweetened up the land tremendously."[40] Additionally, Harold Woodhouse noted that "the quality of water in the wells improved in 1941 and 1942, especially in '42."[41] William A. Seale recalled :

> [I irrigated] out of the river from the flood on 25 acres of my own [land], and I had quite a bit of salt, and those 25 acres, I think I irrigated three times while the river was up and running, and I got a pretty good fair stand on all of those 25 acres from the river water and I had never been able to do it otherwise from the pumps.[42]

Finally, Hugo Farmer contended that "the salvation [of] these two magnificent valleys . . . lies in the prompt delivery of Colorado River water, and haste in the development of the Gila Project."[43] This testimony, though largely unscientific in nature, most likely influenced the USBR decision to construct a canal to transport water from the Colorado River.

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[37] Senate Committee, *Hearings Arizona Water Resources*, 204, 205, 208, 213.

[38] Ibid., 209.

[39] Ibid.

[40] Ibid.

[41] Ibid., 210.

[42] Ibid., 211.

[43] Ibid., 201.

Perhaps the most devastating problem in rehabilitating the Mohawk region involved poor drainage. Unfortunately, the push for development and the preservation of existing property rights obscured more critical questions about the capacity of the land in Wellton - Mohawk Valley to sustain large-scale agricultural production. Testimony from the 1944 and 1947 hearings reveals little concern about the drainage system. Instead, Farmer focused on the importance of developing the Gila bottomlands, which contained soils of "exceptional quality."[44] L. A. Hicks predicted that, without Colorado River water, he would have to "abandon [his] home and an extremely fertile, well developed farm" in eastern Yuma County.

Yuma County residents hardly seemed concerned about the valley's drainage. Ike Proebstel, self-professed "oldest man on the Gila River," stated, "drainage is something that we have nothing to fear from. We have one of the few projects in the United States that don't [have problems]."[45] Farmer noted at the 1947 hearings that "there is an excellent drainage condition under all of that land," regardless of the high salt content of the water table.[46] Recalling the rains of 1941, and the miraculous crop production in 1942, Farmer confidently affirmed that "there [was] no question that the lands are excellently drained."[47] In retrospect, committee members in either hearing devoted little time to the complex issue of drainage capabilities of the valley. Most of the discussion focused on the economic feasibility of lining canals with concrete, rehabilitating damaged farms, and water shortages in the lower Colorado River Basin.

Although Hayden and McFarland failed to marshal congressional support for approval of the CAP, they arranged compromises that enabled Arizonans to accommodate both the CAP and the Gila Project under the state's water allotment from the Colorado River.[48] Central Arizona politicians, meanwhile, recognized that the Gila

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[44] Ibid., 202.

[45] Ibid., 212.

[46] House Committee, *Reauthorizing Gila Project*, 46.

[47] Ibid.

[48] Charles A. Carson, "Arizona's Interest in the Colorado River," *Rocky Mountain Law Review*, volume 19, 352-357. The project was rearranged to "eliminate from development part of the land in the

Project (S. 1698, H. 5434) allowed for future use in central Arizona of greater amounts of Colorado River water. Even CAP proponents graciously endorsed the Gila Project. Arizona Congressman John Murdock, Chairman of the House Committee on Irrigation and Reclamation, observed that "with the enactment of H. R. 5434, a large part of the Mexican water burden can be met by return flow from Arizona land."[49] Arizona politicians were not alone in their exuberance for the project, as USBR officials also endorsed the Gila Project. Journalist Marc Reisner links Arizona's ambitious plans for water projects with the USBR's agenda for development. He writes, "With the Central Arizona Project deadlocked in Congress, the Bureau of Reclamation was anxious to build something in that state, not only to mollify its citizenry and the increasingly powerful Carl Hayden but also to give its regional office, suffering existential malaise after the completion of Hoover Dam, something new to do." [50]

Following the passage of the Senate and House bills, the federal government purchased indebted land and refinanced tracts for old and new settlers in the Wellton-Mohawk Valley. Once money was appropriated for the Gila Project, the USBR began construction of a gravity canal between the Colorado River and the Wellton-Mohawk Valley, which was completed in 1957.[51] Still, poor drainage hampered comprehensive rehabilitation of the lands even after the completion of the gravity canal in 1957.[52] February of 1957, USBR commissioner W. A. Dexheimer lamented to Hayden that "with the irrigation of the land under the Gila Project have come drainage problems. In nearly all cases these problems were expected, *but the rapidity with which they developed was not expected*." Mixing diplomacy and bureaucracy with dynamic environmental conditions made the emerging crisis even more difficult to predict. Dexheimer noted that, "the drainage problem in the Yuma area is but one of a group of water management

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Yuma Mesa Division of that project and to include instead lands in the Wellton Mohawk Division of that project. The net result will be a reduction in the acreage . . . and a considerable saving in the use of water" (355).

[49] House Committee, *Reauthorizing Gila Project*, 770-771.

[50] Marc Reisner, *Cadillac Desert: The American West and its Disappearing Water*, (New York: Viking Penguin, 1986), 479-483.

[51] Baker.

problems [that include] delivery of water to Mexico to meet treaty requirements, *maintenance of salinity balances,* movement of sediment load . . . and others." The commissioner admitted that "nothing more than a general knowledge of local conditions exists with respect to the Wellton Mohawk Valley."[53]

Despite the completion of the canal, conditions in the Mohawk Valley continued to decline. Although comprehensive studies of valley farms do not exist, small-scale crop histories provide vignettes of the struggles of local farmers.[54] William Wooten planted 110 acres of land in Bermuda grass in 1958 and harvested 800 pounds of seed. The following year, he gathered only 310 pounds of seed from the same land. In 1960, the total amount harvested dropped to eighty-five pounds. By that time, the land was "out of production for all purposes."[55] Salt also damaged the cotton farms. In 1958 Melvin Taylor reaped one- and-one-third bales of cotton per acre from his 160-acre homestead. Two years later, the yield dropped to one half bale per acre. Eighty acres of hegari and maize failed completely. By 1960, "70 acres [were] out of production and grown up in salt cedar." Even persistent Sam Jones could not overcome the laws of nature. In 1958, he harvested one-and-one-half bales of cotton per acre and six tons of alfalfa per acre. By 1960, his cotton production had dropped to one-third of a bale per acre and alfalfa production was down to three-quarters of a ton per acre. Determined not to be defeated by the toxic groundwater, Jones replanted forty damaged acres in alfalfa, which "did not come up." By February of 1961, "sixty acres, over 50 percent of the farm, [was] out of production."[56]

A 1959 USBR report on Gila Project drainage facilities provides a broader overview of valley conditions. The report noted that 50,000 of 75,000 acres were under development. This rapid increase in cultivation – coupled with the valley's poor drainage features -- triggered a sharp rise in the water table as water was pumped in from the

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[52] Hundley, 173.

[53] W. A. Dexheimer to Hayden, Feb. 4, 1957, Box 479: 7, Hayden Papers, emphasis mine.

[54] "Exhibit E, "1958, 1959, and 1960 Crop Histories of 13 Farms Selected at Random Through the District," Box 300: 27, Hayden Papers.

[55] Ibid.

[56] Ibid., 5.

Colorado River. While a level of four feet of water in the water table was generally acceptable for growing most crops, 15,000 acres of the project had "ground water between 6 and 10 feet from the surface." This was expected to rise during the coming year.[57] Bureau officials suggested that $14 million dollars in excess of what was already financed by valley farmers was needed immediately to build the fifty-eight-mile conveyance channel to empty run-off water into the Colorado River. If construction of a drainage channel were delayed, it would hurt area farmers and "jeopard[ize] the repayment of the Government's large investment in irrigation works."[58] Completed in 1960, the channel set in motion the salinity crisis in Mexicali the following year.

Ecological problems also aggravated the plight of valley farmers. Each poor crop pushed them deeper into debt. Yuma County Supervisor Wilburn J. Brown observed, "it will be very difficult under present curtailed production and economic conditions for lenders to work out sound loans to cover the cost of farm operations." Not only were farmers defaulting on loans, but each year of cultivation meant additional water costs and taxes. Furthermore, farming land with poor drainage caused significant ecological "damage which [would] be expensive to correct." Accordingly, Brown observed that it was in the best interest of the banks and farmers not to "encumber land which would have limited productivity due to ground water damage."[59] The promise of the post-war frontier turned into a trail of salty tears for many Wellton-Mohawk's farmers. J. D. Mansfield, a local attorney associated with valley farmers, summed up the feelings of the entire community in a letter to Carl Hayden's assistant Paul Eaton: "In all the years I've been knocking on your door asking for help," Mansfield observed, "I don't believe I have ever had a tougher one than our drainage problem."[60]

Farmers in Mohawk Valley farmers, who had looked to the federal government to redeem the project during the 1940s, turned to the government to extricate them from the economic and ecological crises of the late 1950s and 1960s. Hayden remained a conduit

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[57] USBR – Gila Project, "Wellton-Mohawk Drainage Facilities," Box 330: 27, Hayden Papers.

[58] Ibid.

[59] Wilburn J. Brown to Frank Batley, Feb. 24, 1961, Box 330:27, Hayden Papers.

[60] J. D. Mansfield to Paul Eaton, June 23, 1959, Box 330: 27, Hayden Papers.

for Arizonans to all levels of federal government. Farmer Rollie Keller pleaded with Senator Hayden in 1959:

> I have lost 25 acres to seepage. This whole area will be ruined within a short time. Is there any way we farmers can get this area declared a Disaster Area? So we can get some money for the Reclamation here to put in the seep drains. They are surveying and have plans for this now, but say it will take three years to get it done. By this time most of this land will be ruined.[61]

Government bureaucracy exacerbated Keller's sense of victimization.[62] Hayden communicated Keller's complaint to Acting Secretary of the Interior Fred G. Aandahl. Aandahl informed Hayden that he was aware of the valley's drainage problems and that a by-pass channel was being constructed to further alleviate the damage. Nevertheless, the Acting Secretary offered little solace in terms of monetary relief for farmers like Keller. He explained that Mohawk Valley could not be designated a disaster area, because "a major disaster [as defined by Act of President on Sept. 30, 1950] means a flood, drought, fire, hurricane, earthquake, storm or other catastrophe of great severity or magnitude. *We do not believe that a local drainage problem falls in that category*."[63] Ultimately, many Mohawk Valley farmers felt that the national government was out of touch with their local concerns.

While national officials in Washington were preoccupied with the diplomatic consequences of the emerging salinity crisis, leaders in Arizona addressed its impact on the state's water resources. John Haugh, assistant majority leader in the Arizona House of Representatives, expressed the local view to Governor Paul Fannin:

> My own concern is not only that of international relations between our country and Mexico, but the possibilities that in the interests of these international relations our own government may take some action which is prejudicial to the

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[61] Rollie Hoyt Keller to Hayden, Jan. 23, 1959, Box 330: 27, Hayden Papers.

[62] I have adapted my discussion of Western perceptions of victimization from Patricia Limerick, *The Legacy of Conquest*, (New York: W.W. Norton, 1987), 35-54.

[63] Fred G. Aandahl to Hayden, Box 330: 27, Hayden Papers.

position of the state of Arizona. I know that you and the members of our Congressional Delegation do share this concern.[64]

Sam Dick, president of the YCWUA reiterated this position to Hayden, advising the senator that "any attempted revision of Mexican treaty to eliminate credit for return flows [or waters such as those from Wellton Mohawk] will adversely affect [the] entire state of Arizona."[65]

These concerns were not lost on Hayden, who wielded powerful influence in Congress. Mexican officials also recognized Hayden's authority. While Mexican diplomats opened up dialogue with State Department officials in Washington, Gustavo Vildosola Almada, senator from Baja California, attempted to influence the diplomatic process by communicating directly with Hayden. He urged the Arizona senator to "consider postponing the [Wellton-Mohawk] project until together we can find solution which will not jeopardize either valley." Although Vildosola's principal concern was for the long-term welfare of Mexicali Valley, yet he also worried about the fast-approaching cotton-planting season. Vildosola's telegram is important because it demonstrates that Baja California and Arizona officials were trying to deal with the salinity problem in the Wellton-Mohawk Valley at the same time that the U.S. and Mexican governments were transforming the regional issue into an international crisis. Vildosola ended his plea by expressing to Hayden his desire that "the spirit of cooperation" would prevail.[66]

Despite these attempts at regional cooperation, Hayden lobbied to safeguard Arizona's water resources. In addition to protecting the Gila Project, he also wanted to assure that Arizona would have enough water to bring the CAP to fruition. Hayden emphasized that the United States was not responsible for the "quality of water delivered to Mexico under the Treaty," and reminded his fellow lawmakers that the Mexican Water Treaty of 1944 stipulated only the quantity, not the quality, of water Mexico received from the United States. [67]

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[64] John Haugh to Paul Fannin, May 8, 1964, Box 330: 31, Hayden Papers.

[65] Sam Dick to Hayden, March 13, 1962, Hayden Papers.

[66] Gustavo Vildosola Almada to Hayden, Feb. 9, 1962, Box 253: 8, Hayden Papers.

[67] Hayden, "Remarks by Senator Carl Hayden, April 26, 1962, Concerning Complaints by Mexico

In December of 1961, Hayden warned Secretary of State Dean Rusk that granting Mexico any additional water to compensate for the saline run-off dumped into the river by Wellton-Mohawk would establish "a dangerous precedent" which might "diminish the total water supply available to the basin and to Arizona." Hayden argued that farmers in Arizona had used water of a similar quality during previous years, and that a decrease in pumping would threaten farmland in the Mohawk Valley. He balked at Mexico's claims of an impending ecological crisis, insisting "Mexico can solve her own problem if it is in fact a problem."[68] Nevertheless, Hayden extended a tenuous olive branch to Mexican officials. In keeping with his insistence that Mexicali's problems stemmed from a poorly a developed agribusiness infrastructure and irrigation system, he offered to "help our sister nation to the South [through the World Bank or Alliance for Progress] to develop its agricultural potential on a sound basis."[69] In sum, he vigorously defended the status quo in an effort to safeguard Arizona's present and future interests in the Colorado River.

Locally, WMIDD administrators felt victimized by the tendency of national leaders to give precedence to cordial relations with Mexico over the resolution of the valley's environmental and economic problems. In late July 1964, Pete Fishbein, a White House official, toured the Mexicali and Mohawk valleys with representatives from the International Boundary and Water Commission. William A. Couple, counsel for the WMIDD, lamented the results of the tour. "I gather the impression that he was more sympathetic with the 'poor Mexicans' than with the 'rich Americans,'" he sardonically wrote to Senator Hayden. Couple also despaired that federal money might be used to build a by-pass channel, which would carry water to a point beyond where Mexico diverted water from the Colorado River, rather than using it to increase the amount of tile drainage in the Mohawk Valley. He argued that any effort to complete the by-pass should protect the "full entitlement of water from the mainstream of the Colorado [for Mohawk farmers] undiminished by the settlement of any international problems." Finally, Couple suggested that Arizona launch a public relations campaign against Mexicali Valley farmers who he had learned from various newspaper reports were planning to increase

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on Quality of Colorado River Water," Box 293:1,4, Hayden Papers.

[68] Hayden to Dean Rusk, Dec. 20, 1961, Hayden Papers.

their wheat production. Depending on where the wheat would be marketed, Couple argued, it was quite possible that "better water for Mexico, at the expense of the United States, provides more wheat for Red China."[70]

In 1965, the United States agreed to the conditions of Minute 218, an arrangement drawn up to resolve the salinity crisis. According to the agreement, the United States agreed to construct a thirteen-mile drainage bypass to carry toxic run-off water to a location below Morelos Dam, where Mexicali diverted water from the Colorado River.[71] An alternative solution would have required the United States to install tile drains to improve the recovery fate of saline waters from Wellton Mohawk farms. Mexican officials opted for the by-pass drain because it allowed them to either accept or reject waters from the affected valley.[72]

The actions of President Johnson and the State Department in support of Minute 218 angered officials close to the WMIDD. Exasperated by suggestions that the project curtail its pumping of saline waters, the district's legal counsel lamented, "as always, the Wellton-Mohawk seems to be the goat that everyone picks on because we are the last ones to deliver return flows to the river."[73] The lawyers reminded Hayden that water users throughout the entire Colorado River Basin were to blame for the increase in river salinity. Was not the drainage by-pass enough to satisfy the Mexicans? They feared Mexico would push the United States for additional measures to decrease the salinity of Colorado River water. The WMIDD lawyers suspected that President Johnson did not comprehend "some of the problems which we face on the Colorado." If Johnson did understand their plight, they argued, he would be able to "meet the question more forcibly." Ultimately, they feared that the president would be more receptive to Mexico's complaints than to *their* domestic concerns in future negotiations with Mexico. In an attempt to curry favor with Mexico, they suggested, Johnson very well might "work a

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[69] "Remarks by Senator Carl Hayden, April 26, 1962," Box 293:4, Hayden Papers.

[70] William A. Couple to Hayden, July 28, 1964, Box 352, Hayden Papers.

[71] Metz, 280.

[72] Hundley, *Dividing the Waters*, 179.

[73] Westover, Keddie & Choules, to Hayden, Sept. 21, 1967, Box 352, Hayden Papers.

great restriction upon the district." The attorneys implored Hayden to do "anything that would stiffen President Johnson's position" in dealing with the Mexican executive.[74] The complaints arising from Yuma County and Arizona lawyers, farmers, and politicians reveal different priorities in dealing with the Mexicans. These differences further exacerbated the sense of political alienation that afflicted Mohawk farmers throughout construction of the project.

Even after construction of the drainage by-pass, high salinity levels continued to pollute the Colorado River. As a consequence, political relations between the United States and Mexico remained strained.[75] Candidate Luis Echeverría used inflammatory anti-American rhetoric to kindle nationalist fervor and enhance his 1970 campaign for the Mexican presidency in 1970.[76] During a speech to the U.S. Congress in 1972, Echeverría contrasted United States actions in Vietnam and in Mexico. "It is impossible to understand," he commented, "why the United States does not use the same boldness and imagination that it applies to solving complex problems with its enemies to the solution of simple problems with its friends."[77] Echeverría successfully transformed a regional issue into an international platform for Mexican nationalism.[78]

Eventually, U.S. President Richard Nixon and Secretary of State Henry Kissinger opened talks with Echeverría. By 1971, salt content in the river had been lowered to 1,240 parts per million, yet Mexican leaders pressed for even lower levels. Minute 242,

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[74] Ibid.

[75] William Bowdler, Deputy Assistant Secretary of State for Inter-American Affairs, observed, "Whenever an issue arose in our relations with Mexico, whenever opportunities appeared for cooperation between the two governments . . . the salinity problem invariably confronted our spokesmen." See *Hearings Before the Subcommittee on Water and Power Resources of the Committee on Interior and Insular Affairs, House of Representatives, 93rd Congress, 2nd Session, HR 12165 and Related Bills,* (Washington: GPO, 1974), 95.

[76] Fradkin notes, "It was Echeverria's task, as one writer commented, to 'restore the revolutionary mask,' which had slipped badly in recent years . . . The trick is to avoid inciting a new revolution by using the political rhetoric that recalls the past one. What Echeverria had to do was bring the ruling [PRI] . . . closer to the center from where it had strayed to the right (305)."

[77] Ibid., 308.

[78] Fradkin observes that "While subject to 'real domestic pressures,' the Mexican President 'had consciously agitated the problem and lent official support to exaggerated claims apparently in an effort to arouse the country and make it a national issue . . .' according to a confidential Department of State memorandum sent to Kissinger from the White House" (307-308).

signed in 1973, stipulated that the United States would provide Mexico with 118,000-acre feet of clean water annually from Imperial Dam. The accord also included provisions for constructing, at U.S. expense, a desalination plant near Yuma to purify toxic run-off water.[79] Overwhelming congressional approval of Minute 242 on June 11, 1974 ended diplomatic wrangling over the salinity crisis.[80] What began as a minor diplomatic nuisance for U.S. leaders had gradually given Mexican presidents a powerful bargaining tool in dealing with the United States. But Minute 242 did not blot out the memories of how irrigated agribusiness in the Mohawk Valley had gone awry during the 1950s. In fact, historians, environmentalists, and politicians are quick to point to the valley's misfortunes whenever they choose to explain the metamorphosis of water projects into pork barrels.[81]

**Conclusion**

Since the beginning of the salinity problem in 1961, protesters in Mexicali recognized its regional origin, as well the international platform upon which the crisis was resolved. Historiographically, scholars have emphasized the actors on the diplomatic/international platform. Nevertheless, the dynamics of Arizona water politics, together with the plans of the USBR, also played a significant role in inadvertently creating the heated environmental and political crisis along the U.S.-Mexican border. In addition, the sundry motives of the principal actors contributed to the complexity of the political process leading to the approval of the Gila Project. Hugo Farmer was simultaneously motivated by political pressures within and outside of Arizona -- a desire to rescue embattled farmers and a hope to enhance Yuma County's development through settlement of veterans on the project. But if Carl Hayden had not been amenable to the project, local agendas probably would not have had international consequences. The subsequent actions of politicians and attorneys only exacerbated local, national, and international tensions.

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[79] Metz, 281-283.

[80] Fradkin., 315.

[81] Reisner ,309.

Ultimately, the catastrophe reflects the complexity of environmental issues in the Colorado River Delta. Ecology and politics often responded to each other in disconcerting ways.[82] Because the Colorado River is so intimately tied to every facet of life in the region, the consequences of controlling its water spilled over into the political, social, and economic lives of Mexicans, Americans, Quechans, and Cocopahs who called the delta home. And as Yuma County illustrates, local environmental politics could be as complicated as relations between the two nations involved in the crisis.

Moreover, the salinity crisis reveals the dichotomy of regional and national politics in the Colorado River Delta. On the one hand, both Americans and Mexicans recognized that a river linked their distinctive and collective fortunes. The "Arizona – tiene la palabra" placard served as a reminder of the localized context of critical environmental issues in the region. Yet increased federal control over natural resources on both sides of the border over natural resources precluded the possibility of a truly regional solution to the problem. As the water supply dwindled throughout the twentieth century, Mexicali Valley and Yuma County farmers were forced to look to their respective national capitals for relief. Even if "la sal no debe separar a dos pueblos amigos" (salt should not separate two friendly peoples), sprawling bureaucracies made regional understanding difficult.[83] Many Mexicali residents felt just as isolated from their national capital as did American farmers in Yuma. Historian Celso Aguirre Bernal argues that Mexico's leaders began to aggressively defend their water resources only after extensive protests in Mexicali, a hundred-car caravan to Mexico City to raise national awareness of the situation, and mass mailings of informational materials throughout the country.[84]

In the end, intimate relationship of the environment, politics and culture on the lower Colorado River assured that any single solution – however well intentioned --

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[82] For an excellent discussion related to the interaction between political systems and the environment, see Thomas E. Sheridan, *Arizona: A History* (Tucson: University of Arizona Press, 1995). Donald Worster investigates interactions between man and nature in *An Unsettled Country: Changing Landscapes of the American West* (Albuquerque: University of New Mexico Press, 1994).

[83] Celso Bernal Aguire, *Compendio Historico-Biograpfico de Mexicali 1531-1966*, (Mexicali: published by author, 1966).

[84] Ibid.

could scarcely remedy environmental conflicts that riddled regional relations since the early 1900s. On the other hand, the crisis was not inevitable. Arizona politicians, the USBR, and farmers throughout the basin (including Mexicali) made certain choices about development that inadvertently created conditions ripe for disaster.

## Chapter 5

## Salt of the River, Salt of the Earth (1961-1965)

Throughout the twentieth century Mexicali Valley played a critical role in the struggle between Mexican and U.S. interests for control of land and water in the Colorado River Delta. During the first four decades of the century the Colorado River and Land Company exerted a firm hold over virtually every acre of productive land in the valley. Historians have focused extensive attention on the expropriation of those lands by *campesinos* and the Cárdenas administration in the late 1930s and early 1940s. The expropriations, however, did not end the struggle for water resources between diverse interests in the delta. In fact, as the salinity of Colorado River water entering Mexicali Valley increased in the fall of 1961, the valley once again became an embattled territory.

Several factors set the stage for the salinity crisis. As water use increased throughout the Colorado River basin after World War II, water supply above and beyond the 1.5 million-acre feet of water designated for Mexico by the Mexican Water Treaty (1944) declined. These excess waters were also diminished as new storage dams, such as Glen Canyon Dam, were built in the United States. As a result, Mexican officials noted a "sharp increase in the saline content of the Colorado River water reaching the Morelos Dam" at the end of 1960.[1] By 1961 the amount of water reaching the international boundary dropped to an all-time low. The USBR planned to send only the minimum amount of water specified by the 1944 treaty. [2]

This chapter examines the salinity crisis in Mexicali Valley from two different perspectives. First, national and state officials from both countries saw Mexicali Valley as a testing ground where their theories on the causation of the crisis would be vindicated by scientific testing of water and land conditions there. The questions that were asked by

[1] Letter from the Antonio Carrillo to Dean Rusk, November 9, 1961, National Archives at College Park, Maryland (hereafter cited as NACP), RG 59, Decimal File (hereafter cited as DF 1960-63),611.12322/11-961.

[2] Memo from Coerr to Vallon, "Delivery of Colorado River Water to Mexico," NACP, RG 59, DF, 1960-63, 611.12322/3-2361; Letter from Thomas Mann to Stewart Udall, March 23, 1961, NACP, RG

policy makers and scientists from each nation throughout the crisis were often conditioned by their perceptions of how and why the crisis had arisen. For the most part, those that viewed Mexicali Valley as an *international* political landscape did not live there, but recognized the importance of the region in resolving the crisis. On the other hand, those who lived in Mexicali Valley viewed their home as a *local* political landscape. For them the salinity crisis was not an abstract issue that could be reduced to statistics or policy positions, but instead represented a profound ecological transformation that affected the taste of drinking water, the fertility of land, and the bounty of the harvest. The concerns of local political organizers, such as Alfonzo Garzón, often worked at cross-purposes to those of national officials. In fact, one of the turning points in the salinity crisis occurred around 1964, when the diplomacy-driven perspective subsumed the agenda of many local officials in Mexicali Valley.

**Mexicali Valley as an *International* Political Landscape**

During the fall of 1961, as water deliveries to Mexico from the Colorado River declined after summer irrigation, the Wellton-Mohawk Irrigation and Drainage District (WMIDD) began intensive pumping of their highly saline aquifers in order to create storage space for better quality water from the Colorado River. These drainage waters contained an average salinity of nearly 6,000-ppm as they entered the Gila River (which quickly joined the Colorado River). As early as November 14, 1961, Assistant Secretary of State Robert F. Woodward noted that "the water now being delivered may not be useable in the condition in which it arrives at the Mexican diversion dam."[3] At the same time the U.S. Department of State (USDS) urged the Secretary of Interior to "take any practical measures which it may to reduce the saline content of the water being delivered to Mexico."[4]

Bill Blackledge, an employee of the *Compañía Industrial Jabonera del Pacífico* (a subsidiary of U.S. agribusiness transnational Anderson-Clayton) in Mexicali, noted that since 1956, salinity levels had steadily increased at its local experiment station. The

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59, DF, 1960-63, 611.12322/3-2361.

[3] Memo from Woodward to Chayes, "Delivery of Colorado River Water to Mexico," November 14, 1961," NACP, RG 59, DF, 1960-63, 611.12322/11-1461.

[4] Letter from Woodward to Udall, November 17, 1961, NACP, RG 59, DF, 1960-63,

increased emission of drainage waters throughout the Colorado River basin, and particularly from the WMIDD, occurred at a time when river flows were particularly low. Therefore, drainage waters comprised a greater percentage of the river's water than normal. This posed a risk to domestic, agricultural, and industrial users downstream. By October 17, 1961, Blackledge found that the salinity of water deliveries at Morelos Dam averaged 2,690 ppm. "This water is not only too salty to use for irrigation but is also unsatisfactory for domestic and industrial purposes," he noted. "Practically everyone in the Mexicali Valley drinks water originating from the river and are now complaining that it is no longer potable." Blackledge further observed, "It does not seem normally right that the Mexican farmers should be expected to risk crop failures and ruin their lands by irrigating with the salty water now being delivered at the boundary."[5] Finally, Blackledge noted, "The use of water with such a high content of that coming down the river late September and October will not only render the soil useless for agriculture, but will result in failure of crops irrigated with this water."[6]

Blackledge also assessed the political implications of the increased salinity in the delta. He conceded that with so much competition for water in the U.S. portion of the Colorado River Basin, Mexican concerns would not be sufficiently addressed. Ultimately, Blackledge hoped that US policy makers could improve its relationship with Mexico by expeditiously resolving the crisis. "If not," he prophetically augured, "it will not only cause dissention among the Mexican farmers and public, but will also be exploited by subversives to further create animosity towards the United States."[7]

On November 9, 1961, the Mexican Ambassador, Antonio Carrillo, lodged a formal complaint with US Secretary of State Dean Rusk regarding the saline water. His arguments foreshadowed the juridical approach that the Mexican government would take with reference to the crisis. Although the Mexican Water Treaty did not explicitly guarantee a certain level of water quality to Mexico, Carrillo argued that such poor quality water could not be used for "domestic and municipal uses [and] agriculture and

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611.12322/11-1761.

[5] Ibid.

[6] Ibid.

stockraising" as stipulated by the treaty. Carrillo expressed frustration that the US was not willing to remedy the problem since such actions might "[prejudice] the farmers of . . . [The United States], who in such an event would have a legal right of action against the Government of the United States of America." As a result, he noted, Mexican farmers refused the "noxious waters . . . and the waters are allowed to flow into the sea without being used. The Ambassador stated that if the problem were not remedied, Mexico would be forced to take its case to the World Court.[8]

In December 1961, the Department of Interior (DOI) provided responses to Secretary Rusk concerning its role in the salinity crisis. DOI Undersecretary James K. Carr observed that the DOI had approached the Imperial Irrigation District (IID) about providing Mexicali Valley farmers access to cleaner water through the All-American Canal. However, the IID placed stipulations of their own on such a request. Since the 1940s, residents in Calexico, California had complained about growing quantities of sewage emitted from the Mexicali sanitation plant into the New River. The river passed from Mexicali through Imperial County on its way to the Salton Sea. IID officials proposed that Mexico could use the All-American Canal in order to obtain cleaner water as long as it fulfilled promises to construct adequate facilities to keep sewage from flowing across the border. Carr also noted that it would be difficult for the WMIDD to substantially decrease the pumping of drainage water from underground aquifers without "jeopardizing a United States investment of approximately $50,000,000 that the project users have contracted to repay." He also pointed out that the option of releasing additional water to dilute deliveries to Mexicali Valley was not feasible. Snow run-off had been minimal during the fall of 1961, contributing to low levels of water at Lakes Mead and Mojave. Carr noted that "releases of additional stored water cannot be made without the risk of seriously damaging United States interest."

Carr concluded by suggesting actions that *Mexico* could take to remedy the problem. These included adjusting the "frequency and amount of irrigations to the available water supply," using additional groundwater to supplement the winter water

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[7] Ibid.

[8] Letter from Carrillo to Rusk, November 9, 1961, NACP, RG 59, 1960-63, DF, 611.12322/11-961.

supply, changing the delivery schedule, and "[adjusting] its cropping pattern to more nearly fit the quality and quantities of water available in various seasons." Carr's response reflected the general feeling that Mexico needed to deal with a problem of its own making. He finished by noting that Mexico could expect the same quality and quantity of water from the Colorado River "for a number of years." Accordingly, he observed, "we believe that Mexico's greatest relief can be obtained by expediting the actions listed immediately above."[9]

In spite of Carr's letter, the USDS continued to apply pressure to one of the more regionally-defined branches of the federal government: the DOI. The DOI continued to insist that it could not release more water from Hoover Dam to dilute deliveries to Mexicali Valley. However, delay only increased opposition to the United States in the Mexican delta. Woodward enjoined Rusk to call DOI Secretary Stewart Udall and remind him of "the political importance of out not being held responsible for the loss of the Mexican crops and of our avoiding in Baja California the communist charge of forcing Mexico to accept unusable water."[10]

The United States found itself in a defensive posture during the crisis, a condition that did not bode well for a decision-making process chronically inhibited by intra-departmental wrangling. On December 20, 1961, the USDS replied to the Mexican protest filed on November 9, 1961. Undersecretary of State Barall presented the reply in person to Ambassador Carrillo. The note exonerated the US from any juridical malfeasance related to the Mexican Water Treaty. In fact, the note contended: "The drainage from the Wellton-Mohawk Irrigation Division cannot be regarded as a contamination or pollution of the stream. That drainage is a natural and normal constituent of the Colorado River waters, and is a consequence of and necessary to irrigation development of the area." No response was provided as to the usability of water for domestic and agricultural purposes as specified in Carrillo's complaint of November 9, 1961.[11]

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[9] Letter from Carr to Rusk, December 11, 1961, NACP, RG 59, 1960-63, DF, 611.12322/12-1161.

[10] Discussion, Woodward to Acting Secretary, December 14, 1961, NACP, RG 59, Box 1199, 1960-63, DF, 611.12322/12-1461.

In response, Carrillo expressed dismay that any treaty that guaranteed water for domestic and agricultural use would allow the delivery of water unfit for those very purposes, regardless of the legal interpretation of the treaty by the United States. Barall countered, noting that "there is strong opposition by users in the United States to action to alleviate the problem." Finally, Carrillo rejected the DOI's assertion that the federal government could not "compel the Wellton Mohawk District to cease pumping salty water into the Gila [River] under the Treaty." Barall conceded that such an action could be taken if necessary for fulfillment of the Mexican Water Treaty.[12]

By the end of December the USDS and DOI were taking steps to defend their positions on the salinity issue. Secretary Rusk outlined his views in a letter to Ambassador Carrillo in early January of 1962. Rusk reminded Carrillo that Mexico had opted not to receive domestic water through the All-American Canal in exchange for completion of the sanitation plant in Mexicali. Furthermore, he noted that USDS and DOI scientists had visited Mexicali Valley and subsequently reported that the saline waters had not adversely affected crops there. In fact, the scientists recommended "that a reduction in the pumping of drainage waters in the Wellton-Mohawk Division under existing circumstance, as the Ambassador [Carrillo] proposed, would result in substantial injury to that irrigation district." Rusk further exacerbated tension between the two diplomats by suggesting that Mexicali farmers "should have used the water of which complaint was made." Recognizing that Mexico might periodically receive highly saline waters, Rusk forwarded the scientists' suggestion that "certain drainage and other measures should be undertaken in Mexicali Valley" to prevent the possibility of further damage. Rusk went on to assert that "the saline condition of the waters of the Colorado River may not improve materially during the present decade." In an effort to ease the pains of US conscience as much as the anger of the Mexicans, Secretary Rusk frankly stated, "Water users on the river in the United States are also experiencing the effects of this situation."[13] Nevertheless, Ambassador Carrillo continued to insist that releases from

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[11] Note, Rusk to Carrillo, December 20, 1961, NACP, RG 59, 1960-63, DF, 611.12322/11-961.

[12] Memorandum of Conversation, USDS, "Salinity of Colorado River Water," December 20, 1961, NACP, RG 59, 1960-63, DF, 611.12322/12-2061.

[13] Note from Rusk to Carrillo, January 16, 1962, NACP, RG 59, DF, 1960-63, 611.12322/11-961.

dams -- for example, 700,000 acre-feet (af) from Lake Mead -- upstream would completely resolve the salinity crisis.[14]

In the winter of 1962, the USDS, DOI, and the IBWC mulled over options that could be implemented to resolve the crisis quickly. Their choices included pumping Wellton-Mohawk water upstream to the Imperial Dam, where water from the Colorado River would dilute the toxic drainage. The diluted water would then be delivered to all water users -- in Mexico and the United States -- on the lower stem of the river. A second option included constructing a desalination plant near Wellton-Mohawk. Another proposal called for additional pumps in Wellton-Mohawk Valley that would be used during the summer months to extract even more saline drainage. The DOI contended that re-routing water to the Imperial Dam would arouse the opposition of US farmers in the Imperial and Yuma valleys (who would not want the water Mexico was receiving, even in a diluted form). DOI officials also downplayed the effectiveness of a desalination plant, due to cost restraints. They felt, however, that the proposal to increase pumping in the WMIDD might be the most economical solution to the problem.[15]

The USDS and DOI also decided to issue a press release to Mexican newspapers in early 1962 to counteract the public relations disaster created by their previous reluctance to resolve the crisis. The statement included substantial quotes from DOI Secretary Udall, who insisted that the two nations work together to resolve the problem. It also pointed out that Mexico could have scheduled additional water to be delivered during the fall of 1961, but did not do so "possibly because the degree of salinity was not anticipated by Mexico." The statement also made explicit comparisons between what had been done in US irrigation districts to combat salinity and what Mexico might also do to improve drainage in its own fields. Suggestions included classifying lands, improving drainage systems, and selecting crops that matched the salt tolerance of available water supplies. Finally, the release cited Secretary Udall, who observed that the water delivered

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[14] Memorandum of Conversation, "Salinity of Water in the Colorado," December 22, 1961,NACP, RG 59, DF, 1960-63, 611.12322/12-2261.

[15] Letter from Kenneth Hale, Assistant Secretary of the Interior, to Woodward, February 8, 1962, NACP, RG 59, DF, 611.12322/2-862.

to Mexicali in 1961 was "usable on a short term basis for irrigation of crops such as wheat, alfalfa, and cotton under the proper drainage practices."[16]

Response to the press release in Mexicali Valley was swift and hard. Rafael Martinez Retes, representative of the *Comité General de la Defensa del Valle de Mexicali*, took issue with the tone and content of the release. He singled out Secretary Udall, whose ties to Arizona made him an easy, although sometimes illogical choice, for such a remonstrance. Retes statement contained few particulars, but largely focused on the unwillingness of the United States to resolve a crisis of its own making, as well as its audacity to suggest that Mexico was responsible for the problem.[17]

Pressure to resolve the crisis also came from the academic community in the United States. Sidney L. Gulick, Dean of Arts and Sciences at San Diego State College, informed Secretary Rusk, "With our interest in Latin-American affairs, we know that what happens here can ruin every billion spent on the Alliance for Progress." He also expressed perhaps the most horrific fear: that radical groups in Mexicali Valley might resort to terrorism because of the unwillingness of the United States to resolve the problem. Gulick conjured up imagined images of an "embittered and ruined Mexican hothead" using a tractor to cut through the dikes in Mexican territory that protected Imperial Valley from the waters of the Colorado River. "By morning the salt torrents would bear down on El Centro," he warned, "the Salton Sea would no longer lie 287 feet below sea level. With reference to the 1906 flood, the dean queried, "When these waters last came in, U.S. Army engineers helped the Mexican government plug the holes; would we be invited in again? If not, would we go in by force? That would be an act of war, from which we could not recover in a century." The macabre Gulick closed his letter with a more practical consideration. He observed that the interests of the United States would be best served by not adding additional farming acres in the U.S. portion of the Colorado River Basin. This would at least stabilize water quality in the delta.[18]

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[16] USDS, "Joint Action Being Considered to Alleviate Salinity on Lower Colorado River," February 9, 1962, NACP, RG 59, DF, 1960-63, 611.12322/2-962.

[17] Dispatch from Boyd to USDS, February 13, 1962, NACP, RG 59, DF, 1960-63, 611.12322/2-1362.

[18] Letter from Gulick to Rusk, March 6, 1962, NACP, RG 59, DF, 1960-63, 611.12322/3-662.

On March 9, 1962, an important meeting took place between Senator Carl Hayden, DOI leaders and USDS officials. US Ambassador to Mexico Dean Mann opened the meeting, noting that the Mexican government was willing to improve drainage works in Mexicali Valley. However, with the onset of the salinity crisis Mexican officials were reluctant to make an investment that might be rendered worthless with continued deliveries of undesirable water. He also reaffirmed his conviction that the US would lose any case adjudicated at The Hague.

In response, USBR officials dug in their heels, contending that conditions at Wellton-Mohawk were "normal" in terms of return flow on southwestern rivers. Maurice Langley, Chief of the Irrigation Division of the USBR, observed that the salinity of deliveries during the past winter (averaging about 1700ppm) were "usable." Furthermore, he insisted, no concrete definition of "usability" existed. He also noted that farmers in the Imperial Valley faced a similar scenario and as a result elected to install expensive tile drains on their farms. Finally, he stressed that the salt causing problems in the Mexicali Valley was "the accumulation of previous years and not the result of the use of salt this year."

A. B. West, Regional Director for the USBR at Boulder City, Nevada, also confirmed the "normality" of operations at Wellton-Mohawk. In addition, he reiterated that the project must continue pumping drainage water from its wells. He also expressed concern that any proposal that would give Mexico additional water would prejudice the Central Arizona Project (which still had not been approved by Congress). West revealed that the WMIDD was unwilling to install tile drains because it wanted to "create an underground reservoir of better water for future use." Once the saline water, up to 18,000 ppm was removed from the wells, pristine Colorado River water would be pumped into the wells for storage and use. Langley also objected to this option, noting that it would "take four or five years to get an appropriation and install them, i.e., about half the period during which it was expected there would be a salinity problem."

The meeting reflected a general trend during the salinity crisis: the USDS and the IBWC tended to stress the responsibility of the U.S. for the problem, while the USBR tended to stress what Mexico needed to do in order to alleviate the salinity issue. Ambassador Mann elaborated on Mexican development of the Mexicali Valley, including

the billion peso/five-year rehabilitation program. Charge de Affairs Robert Sayre pointed out that this was "equal to 10 percent of Mexico's annual budget." In response, West expressed how important it was for Mexico to install the drainage system, for without it "Mexicali Valley was doomed." He further noted that "Mexico must put in drainage pumps, drain tile, and open drains, and maintain and manage them properly." West refused to speak for the WMIDD when Mann asked if it would install drains if the Mexican government installed them in Mexicali Valley.

Mann was also concerned that the two nations were working from different facts and premises. He suggested that a joint study be carried out, through the IBWC, in order to arrive at a single set of facts from which both nations could work towards resolving the issue. Mann thought that the principal concerns of the study should focus on adequate drainage and the quality of water Mexico could use. The ambassador was not naive, however. He pointed out that even if the technicians were not able to agree on everything, "it might remove some of the misunderstanding." Dominy suggested that WMIDD would be willing to participate "and would agree to a corrective plan that would cost them nothing."[19]

Science and international politics lay at the center of the salinity crisis and helped define the positions taken by each nation between 1961 and 1974. Scientific studies in Mexicali Valley served as fodder for legitimizing positions on both sides of the border. While cynics might contend that the contradictory *conclusions* reached by scientists on both sides of the border were merely the result of political calculation, one must look at the *questions* they asked to find the differentiating factor in the results they obtained. The numerous studies contained in USDS records illustrated the focus of US policy makers and scientists on the quality of *land* in Mexicali Valley. Scientists for the USBR were heavily influenced by experiences with saline farmlands in the Wellton-Mohawk Valley. As a result, they focused on the poor drainage qualities evident in Mexicali Valley. Through this approach, many U.S. policy makers, particularly those from the USBR, insisted that Mexico was responsible for the saline quality of the soils in Mexicali Valley.

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[19] Memorandum of Conversation, "Colorado River Salinity Problem," March 9, 1962, NACP, RG 59, DF, 1960-63, 611.12322/3-962.

In contrast, Mexican scientists and policy makers focused on the quality of *water* being delivered to Mexicali Valley at Morelos Dam. In spite of the misperceptions of US policy makers, the Mexican government had done a great deal of research on the drainage problems of soils in Mexicali Valley, beginning as early as 1954. In fact, on the eve of the salinity crisis, plans had been outlined to improve the drainage capacity of lands that were part of the Colorado River Irrigation District (CRID). The saline waters that were introduced in 1961 added an additional variable that further harmed fields already tottering on the verge of infertility. Accordingly, it is not surprising that Mexican diplomats, scientists, and politicians stressed the poor quality of the water delivered to the valley in establishing the cause of the crisis.

As early as November of 1961, various agencies on both sides of the border issued studies related to the crisis. On November 13-14, 1961, Dr. Leon Bernstein, from the US Salinity Lab in Riverside, California, and IBWC engineer Joseph Friedkin, toured the Wellton-Mohawk and Mexicali Valleys. They noted a sharp increase in salinity in 1961. Beginning in November of that year, the average salinity of water delivered to Mexico rose to 2,500 ppm. Drainage from Wellton-Mohawk, meanwhile, averaged 6,200 ppm. They also noted that these levels would continue until March 1962, when increased releases from dams upstream would dilute the salinity of deliveries to between 1,200 and 1,600ppm during peak irrigating season.

The IBWC report also provided several standards for measuring acceptable water quality. They noted for example, that in 1958 the World Health Organization (WHO) set 1,500 ppm as the level of “excessive” salinity for potable water. In the US, however, the WHO study continued “chemical substances should not be present in a water supply in excess of 500 ppm of total dissolved solids . . .where in the judgement of the reporting agency, other or more suitable supplies are or can be made available.” Bernstein and Friedkin noted: “The current waters having 2,500 ppm total solids and 850 ppm chlorides from the taps in Mexicali taste of salts but thousands are using such waters in the city and in the rural areas with not yet any apparent indication of deleterious or ill effects.”

After examining the fields, Bernstein noted that irrigation practices, as well as the saline waters, contributed to the poor harvests in Mexicali Valley. He also observed that wheat seedlings that had been irrigated with saline waters “were about two inches high

and the stand then appeared good." Furthermore, crops such as wheat and alfalfa were able to withstand water with an average salinity of 2500 ppm because of their resistance to salt toxicity. Nevertheless, he noted that the failure of crops during the current year could be compared with "the good crop production on the same lands in 1960-61 with the better waters then delivered." "This evidence," he averred, "cannot be denied." Bernstein suggested that salinity be limited to 1800 ppm, additional water be added to crops (6 inches) for leaching out toxic elements, and intensive soil testing be conducted (something the CRID had already undertaken).[20]

In February 1962, the Mexican Ministry of Agriculture and Livestock issued its own study of the Mexicali Valley salinity problem. It suggested that salinity levels had remained acceptable until November 1961, when they increased to 2900 ppm. The report further insisted that drainage pumped from the wells in Wellton Mohawk Valley was not natural run-off, as specified by the 1944 Treaty, but instead an artificial substitution for natural drainage. In an effort to emphasize this critical point, the Ministry report noted, "This is not return flow, any more than if the U.S. government was to decide to divert water from the Salton Sea into the Colorado River to substitute it for natural Colorado River water to be delivered to Mexico." Finally, the report contended that since the US government had authorized the dumping of drainage waters into the Colorado River without consulting Mexico, it must find a solution to the problem.[21]

In February 1962 Bill Blackledge of the Anderson-Clayton experiment station in Mexicali reviewed current conditions in the valley. He noted that while the CRID was in the process of improving irrigation techniques on local farms, the potential for crop and soil damage with the use of hyper-saline water remained probable. He noted that during 1961, "the amount of salt deposited per acre was nearly double that which would have been applied with natural Colorado River water." He attributed the failure of cotton grown on marginal lands to saline irrigation water. While he believed it was too soon to know how much damage the saline water would inflict on the current wheat crop,

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[20] Leon Bernstein and Joseph Friedkin, "Salinity of Colorado River Waters," November 21, 1961, NACP, RG 59, DF, 1960-63, 611.12322.

[21] Mexican Ministry of Agriculture and Livestock, "The Salt Water Problem of the Mexicali and San Luis Valleys," in Letter from Julian Rodriguez Adame to Mann, February 12, 1962, NACP, RG 59, DF, 1960-63, 611.12322.

Blackledge provided vignettes of farmers in the valley who were uneasy about using the water. For example, Federico Rioseco planted 125 acres of wheat, a portion of which was irrigated with good water and another section with "relatively high" saline waters. The section irrigated with high-quality water produced a healthy stand of wheat while the latter section had to be replanted. From these results Rioseco concluded that "the part irrigated with the uncontaminated Colorado River water looks good, while that irrigated with water containing the salts from Wellton-Mohawk looks bad." Blackledge later noted that his interaction with Rioseco was "representative of various experiences with other thinking farmers in this Valley."[22]

In March 1962 a joint panel of IBWC and CILA scientists were given forty-five days to conduct studies in the Wellton-Mohawk Valley and in Mexicali Valley. Their mission was to obtain uniform numbers that the two nations could use during bi-national talks in order to resolve the salinity crisis. During the early stages of the study, the U.S. panel of scientists arrived at some startling preliminary conclusions. While these preliminary findings did not necessarily find their way into the final report, they offered a glimpse into the severity of the problem. They noted that salinity levels in water delivered to Mexicali Valley farmers during the fall of 1961, "seriously aggravated the problem and created an emergency." The scientists also observed that the valley possessed an adequate drainage system. However "the salt content of water delivery by the US since October 1961 [was] so high . . . that agricultural production in the Valley [would] probably have to be largely abandoned unless there is a reduction in salts." The panel estimated that at current levels, salinity during the winter months (February-October) would average 3510ppm and 1550 ppm during the summer months. In terms of Wellton-Mohawk, the same scientists noted that the well water contained between 2,500 and 18,000ppm of salt and the average salinity of discharges to the Gila River was about 6,000ppm. In terms of salt balance, the WMIDD received about one ton of salt per acre-foot and emitted between eight and nine tons of salt per acre-foot of water into the Gila

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[22] Bill Blackledge, Report, February 1962, contained in Letter from J.F. Friedkin, to Robert M. Sayre, March 6, 1962, NACP, RG 59, DF, 1960-63, 611.12322/3-662.

and Colorado Rivers.[23] Despite the fact that many of the conclusions of U.S. scientists bolstered the Mexican position, the Mexican government roundly refused to let their scientists sign off on the studies, primarily because of the connection that American policy makers affixed between water and soil quality in the Mexicali Valley.[24]

As the crisis in Mexicali Valley dragged on, the USDS continued to question the USBR's efforts to resolve the problem. In May of 1962, not only did the Mexican government protest the scientific report issued by the U.S. government, but Western politicians and USBR officials objected as well. While Mexico had foreseen the need for rehabilitation measures in Mexicali Valley and had begun to implement those improvements, national officials viewed the coupling of the issues as an effort by the United States to forego the responsibility it bore for delivering saline waters to Mexicali.[25] Thereafter, DOI Secretary Udall and the USBR questioned whether the U.S. government should do anything to relieve the quality of water problem "unless [they had] a commitment from the Mexican government that it plans to undertake a complementary program in the Mexicali Valley."[26] Politicians from the Colorado River basin states in the United States later placed a condition on further investigations of the problem, demanding that no money be used to study construction of a by-pass drain or any proposal that would grant additional water to Mexico without charge.[27] Furthermore, Arizona officials continued to insist that no action be taken until the Wellton-Mohawk project could be assured that it would receive credit for all water pumped out of its wells.

The slow response of the USBR to Mexican requests for water deliveries in the fall of 1962 further dampened efforts to resolve the salinity crisis. In fact, the new IBWC

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[23] Letter from Martin to McGhee, "Study of Colorado River Salinity Problem," NACP, RG 59, DF, 1960-63, 611.12322/4-2562.

[24] A draft of the study is included in "Joint Report of United States and Mexican Expert Panels on Colorado River Salinity Problems," May 8, 1962, NACP, RG 59, DF, 1960-63, 611.12322/5-2862; Also see Letter from Martin to Rusk, "Letter to Foreign Minister Tello of Mexico on Salinity Problem," June 8, 1962, NACP, RG 59, DF, 1960-63, 611.12322/6-862.

[25] Letter from Goodwin to Rusk, May 28, 1962, NACP, RG 59, DF, 1960-63, 611.12322/5-2862.

[26] Letter from McGhee to Martin, "Mexican Program for Rehabilitation of Mexicali Valley," June 5, 1962, NACP, RG 59, DF, 1960-63, 611.12322/6-562.

[27] Memo from John Hugh Crimmins to Martin, "Colorado River Salinity Problem," July 19, 1962, NACP, RG 59, DF, 1960-63, 611.12322/7-1962.

Commissioner, Joseph Friedkin, could not obtain a satisfactory water delivery schedule for water destined for Mexico from the USBR. USBR officials feared that the USDS was "acceding to Mexican pressures and not giving due consideration to the interest of the United States and the problems of the Bureau of Reclamation." Maurice Langley went on to assure Robert Sayre that the Mexicans would receive good water (his definition including all waters with a salinity concentration of up to 2,000ppm). Friedkin observed that the unwillingness of the USBR to cooperate had caused the CILA commissioner to doubt the commitment of the United States to resolve the problem. The USDS also worried that further DOI delay would only increase the chances that communist organizations would use the crisis as propaganda fodder in protests against the United States.[28]

Other federal organizations brought their experience to bear in sorting out the severity of the salinity crisis. After reviewing the results of the Joint Study by the United States and Mexico in 1962, the Department of Health, Education, and Welfare (DHEW) concluded that the saline waters dumped into the Colorado River could be considered "pollution," contrary to the official ruling of the IBWC's advisory panel. As a result, the organization concluded: "Such correction might require withdrawal of all or a part of the Wellton-Mohawk Division from irrigated production if found to be economically or politically advantageous to the United States . . . in solving the pollution of international waters." The memo also advised against a plan to increase pumping during the summer because such an action "would be an increase of about 50 percent in mineral solids content of water delivered to Mexico over that prior to the pumping program in the Wellton-Mohawk Division." Furthermore, increased pumping would make it practically impossible, in the estimation of the DHEW, to maintain an annual average of 1400 ppm. These high levels of salinity would be exacerbated even more with increased development throughout the Colorado River Basin. The memo ended by suggesting that the WMIDD install a sub-surface drainage system.[29]

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[28] Memo from Martin to Crimmins, "Winter Deliveries of Water to Mexico," RG 59, October 18, 1962, NACP, RG 59, DF, 1960-63, 611.19-1862.

[29] "Comments of Department of Health, Education, and Welfare on Report of United States Advisory Panel International Boundary and Water Commission," in Letter from Secretary of Health,

In February 1963, the USBR, unsatisfied with the findings of the IBWC's bi-national study, released a more detailed examination of the salinity issue. The USBR contended that the salinity problem was the result of poor farmlands, not recent applications of highly saline water. The report placed the burden on Mexico for resolving its poor drainage system while including measures to hasten drainage of the Wellton-Mohawk Valley with additional wells. "If Mexico carries out accepted irrigation and leaching procedures," the study stated, "the salt concentrations will not be detrimental to the crops that are presently being grown."[30] The USBR relied on an engineering solution to the problem, hoping that such an approach would not increase water deliveries to Mexico or affect "the future of the irrigation districts of the United States . . ."[31] This approach kept in tact the USBR's plan to create an aquifer beneath the Wellton-Mohawk Valley. The report stated that salinity levels would be decreased from somewhere in the range 2000ppm range to 1700ppm "as refreshing of the Wellton-Mohawk aquifer took place."[32]

The release of the USBR report provoked a strong reaction from Ambassador Carrillo. He objected to the fact that the USBR would introduce deep well waters into the river under the guise of return flow, as well as not notify Mexico prior to doing so. As he had in the past, Carrillo reiterated that while the 1944 Treaty did not stipulate an exact quality of water that the United States must deliver to Mexico, it explicitly stated that such water would be fit for domestic and agricultural use. Furthermore, Carrillo took the study to task for exonerating the USBR and involved parties in the Wellton-Mohawk Valley with regards to the salinity crisis. Such an attitude of hubris, the ambassador noted, "departs from all rules of international law, which in no way and under no circumstances can conceive of a State's not being responsible for its own acts which may in any way affect another State of the international community." In terms of water quality, Carrillo took umbrage with the report's suggestion that Mexico would have to

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Education, and Welfare to Rusk, October 30, 1962, NACP, RG 59, DF, 1960-63, 611.12322/10-2462.

[30] DOI/USBR, *Special Studies: Delivery of Water to Mexico*, February 1963, Natural Resources Library, DOI, Washington D.C., vii.

[31] Ibid., 3.

[32] Ibid., 77.

adapt its agricultural production to waters with salinity between 1800 and 2000 ppm. Carrillo pointed out that the US would not accept water of a similar quality to that delivered with Wellton-Mohawk drainage. Observing that the solutions set forth by the report only entailed salvaging the Wellton-Mohawk Valley though additional drainage wells, Carrillo noted that the USBR "[had] no compunction in recommending works that would render permanent and constant the danger and loss which the deliveries of saline waters inflict upon Mexico."[33]

On the other side of the diplomatic table, Carrillo's counterpart, Ambassador Mann, continued to press for US projects, particularly the WMIDD, to achieve salt balance. Mann also stressed that that issue remained the most important immediate problem in bi-national relations. With the United States yet to take any action, Mann noted, "we should expect Mexico to move toward actions which can only be harmful to our national interests." Further inaction, in Mann's estimation, would probably lead the Mexican government to take its controls off of the press. At that point, the ambassador observed, "communists and opportunists will take every advantage of this opportunity to attack us on legal and moral grounds, raising issues on which they will be joined by many other Mexicans, even those who are anti-Communist and normally friendly to us." Mann summed up his thoughts on the matter stressing that "the Wellton-Mohawk salinity problem was not created by an act of God." Instead, he noted, "It was deliberately created by us on the theory that because the 1944 Colorado Water Treaty is silent on the issues of salinity." As a result, Mann asserted that USBR officials fallaciously reasoned that they were "free to dump [salty drainage water] on the Mexicali Valley . . . and gradually replace those underground waters with water of a better quality from the Imperial Dam so that the Wellton-Mohawk could have a useable underground reserve supply available for its crops in addition to its allotted share of water."[34]

In 1964 the salinity crisis dragged on into its third year. Mexicans were disheartened by the assassination of John F. Kennedy, whom they believed would have resolved the issue. Ambassador Carrillo continued to protest salinity levels that

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[33] Letter from Carrillo to Rusk, May 17, 1963, NACP, RG 59, POL 33-1 MEX-US, 1963.

[34] Telegram from Mann to Rusk, August 21, 1963, NACP, RG 59, POL 33-1, MEX-US, 1963.

approached 2000 ppm during the winter of 1964.[35] Salinity levels surged above the 1500ppm mark, considered to be the ceiling for acceptable waters by Mexican officials, reaching 1650ppm between March fifth and ninth of 1964. The credibility of the U.S. government was further called into question because it had assured Mexico that salinity levels would remain below 1500ppm.[36] Carrillo continued to inform USDS officials of the deteriorating condition of fields in Mexicali Valley, as well as the growing strength of radical groups, such as the *Central Campesino Independiente* (CCI).[37]

Nevertheless, the USBR continued to stall. In March of 1964, a USBR official noted that he was well aware of the increased salinity and "expected it to go higher as Wellton-Mohawk pumps the higher saline wells on which pumping was reduced in the winter, and increases overall pumping to compensate for overall reductions during the winter." The USDS had already expressed its disapproval of this plan. Robert Sayre noted that "Reclamation takes the position that it has no commitment to do anything," including to fulfill President Kennedy's 1963 commitment that the problem would not recur.[38] A month later, IBWC Commissioner Friedkin similarly noted that delay tactics undermined the adoption of a permanent resolution. He also sensed a lack of concern on the part of the USBR for upholding the good faith of the United States in maintaining salinity levels below 1,500ppm. Friedkin additionally feared that the lack of a solution would only exacerbate matters later in April when salinity levels were expected to average between 1700ppm and 2000ppm.[39]

Although the number of scientific studies decreased after 1963, they became even more important in assessing the amount of damage caused by the saline water. In 1964,

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[35] Memorandum of Conversation, "Colorado River Salinity Problem," Carrillo and Sayre, January 6, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 1-1-64.

[36] Memo from Sayre to Mann, "Salinity Problem on Lower Colorado," March 13, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 3-1-64.

[37] Memo of Conversation, "Joint Communiqué on Meeting of Presidents of United States and Mexico," February 21, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 1-1-64.

[38] Memo from Sayre to Mann, "Salinity Problem on Lower Colorado," March 13, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 3-1-64.

[39] Letter from Friedkin to Sayre, April 18, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 4-1-64.

Bill Blackledge completed another study of Mexicali Valley lands and crop yields. Blackledge reported that Anderson-Clayton had temporarily stopped financing the farmlands of many valley farmers because they could no longer meet their financial obligations growing crops with saline water. While the affected fields only represented a small portion of valley lands, Blackledge believed that "a much larger percentage of the farm lands will be lost this coming season as salts continue to accumulate at an increasing rate." He contended that Mexican farmers had been making advances in drainage and agricultural techniques, and would have achieved close to the same production levels as farmers in the Imperial Valley if only they had received water of a similar quality to that of their neighbors to the north. Finally, Blackledge observed that the deterioration of lands would accelerate if water quality did not improve. "Even if the contamination were discontinued this very instant," he opined, "the reclamation of the damaged soils will be a major problem for years to come."[40]

**Mexicali Valley as a *Local* Political Landscape**

Differences in the political structures of the two nations played a critical role in the effectiveness of local politics on ecological diplomacy in the bi-national delta. Farmers in the WMIDD and surrounding irrigation districts enjoyed the benefits of a legislative process that was responsive to the most effective organizers. In the western United States, where water and power were closely linked, local farmers found their interests well represented at the highest levels of government. In April 1962, IBWC Commissioner Friedkin requested that the seven states of the Colorado River basin select two representatives for the "Committee of Fourteen," an organization that would advise the USDS on its position on the salinity crisis. While such a committee was helpful to the interests of the individual states, it approached the type of non-elected power described by political scientist Karl Wittfogel in his treatise, *Oriental Despotism*, and more recently by historian Donald Worster in his critique of U.S. water policy in the American West, *Rivers of Empire*.[41] In effect, the committee served as a third bargaining entity throughout

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[40] Letter from Blackledge to Robert Allen, February 7, 1964, enclosed with telegram from Allen to USDS, "Evidence of Effects Suffered Due to Increase in Salinity Colorado River Waters Delivered to Mexico," February 13, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 1-1-64.

[41] Karl Wittfogel, *Oriental Despotism* (New York: Penguin, 1981); Donald Worster, *Rivers of*

the crisis. Its initial concerns were to protect the water rights of the basin states, not surrender additional water to Mexico, and protect the WMIDD from dissolution. In fact, in May 1963, the Committee announced that any solution to the crisis "must be without detriment to the joint and separate interest of the concerned entities within the seven Colorado River Basin States." Such an attitude presaged a policy of retrenchment, particularly because requests for additional water in the arid Southwestern United States had not abated during the 1960s.[42]

In contrast, the Mexican government did not provide an official place at the bargaining table for local groups in the Mexican delta. Nevertheless, grass-roots organizations manifest their discontent with inaction on the part of the U.S. and Mexican governments through letter-writing campaigns, an auto caravan from Mexicali to México D.F., and organized marches. During the early period of the crisis (1961-1965), there were several groups that mobilized political support in Mexicali Valley. The first, supported by the Mexicali Chamber of Commerce, was the *Comité Coordinador de la Iniciativa Privada de Mexicali*. The group was comprised of industrial, agricultural, and commercial organizations in the valley. They organized protests in front of the U.S. consulate in Mexicali, encouraged Mexicans not to shop in Calexico or El Centro, California, and lobbied government officials (of both nations) to remedy the problems occasioned by the excess salt.[43] Public protesting ebbed and flowed with the increase and decrease of salinity in water deliveries from the Colorado River. On December 14, 1961, James Boyd, American consul in Mexicali, estimated that between eight and ten thousand protestors marched in the rain. The following day Ambassador Mann informed Secretary Rusk that an estimated 20,000 people had protested in front of the US consulate in

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*Empire*, (New York: Pantheon, 1985).

[42] "Report by Committee of 14 on Mexican Salinity Problem," May 9, 1963, NACP, RG 59, POL 33-1, US-MEX, 1963.

[43] James Boyd, Dispatch, "Salinity of Colorado River Waters – Mexicali Reaction," NACP, RG 59, DF, 1960-63, 611.12322/12-761.

Mexicali the same day.[44] Mann feared that "Communist and Nationalist elements may now be seizing upon [the] problem for purposes . . . against us."[45]

The manifestations of December 14th and 15th vividly display the impressive manner of political mobilization attained by local groups. Businesses were requested to close at noon and approximately six thousand soggy *Mexicalicenses* marched in the rain past the U.S. consulate, bearing banners with slogans such as "World Peace will only be possible when the weak receive from the strong just and equitable treatment." Later on, during a speech before the governor of Northern Baja California, Aurelio Flores Valenzuela, local president of the *Unión Agrícola Regional,* asked the governor to petition federal officials to resolve the crisis. While these events could be counted as a success by local organizers, earlier arrangements for members of the Northern Baja California legislature to talk with the American consul were not as fruitful. Consul Boyd noted that only one member of the legislature, Alfredo Andrede, stopped by to talk with him. Furthermore, Andrede expressed the sentiment that "the problem would eventually be satisfactorily solved, but desired to stress the necessity for quick action if the winter wheat and alfalfa crops are to be saved." Like those in the USDS, Andrede feared that inaction would only heighten the chances of Communist exploitation of the issue. [46]

Until 1958, *ejidatarios* and agricultural workers in Mexicali Valley associated themselves with the government sponsored *Liga de Comunidades Agraria y Sindicatos Campesinos*, a local branch of the *Confederación Nacional Campesina*. However several of the members of the existing organization, including Alfonso Garzón, were not satisfied with the leadership and decisions of the organization. As a result they created the *Liga Agraria Estatal de Baja California* (LAE) in 1958. Their initial efforts included protesting before the governor over the low prices paid for cotton commodities. The LAE also encouraged independent political organization in Mexicali Valley during the early 1960s, achieving renown not only on the local level, but also on the national stage.

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[44] Journalist Lenora Werley estimated that there were as many as 35,000 protestors on December 14, 1961. See chapter 4.

[45] Telegram from Mann to Secretary of State, December 15, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-1561.

[46] Dispatch from Boyd to USDS, December 15, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-

Finally, immediately preceding the onset of the salinity crisis, the LAE helped farmers to trade their private property for *ejido* lands. President Adolfo López Mateos created the *Ejido Sombrete* for these new *campesinos* in May 1961.[47]

Garzón was a fervent nationalist who hoped to defend the rights of the *campesinos* not only against the transgressions of their neighbors in Wellton-Mohawk Valley, but also against the wealthier *colonos* in Mexicali Valley. Garzón believed that the *colonos*, in league with officials from the CRID, were habitually undermining the promises of land and water that the Constitution of 1917 had promised to the landless and oppressed. For *ejidatarios* who felt powerless, protests and organized manifestations before Mexican and US officials offered at least the semblance of recognition of their demands. Garzón noted that outside of the manifestations, "the farmers of the Mexicali Valley had no other way of expressing their feelings for urgency in a solution of the problem."[48]

Consul Boyd observed that on December 13, 1961, Garzón and the LAE held their own manifestation in front of his office with approximately four hundred protesters.[49] On December 18, 1961, Boyd reported that three- to four-hundred members of the LAE again protested in front of his office, intent on remaining "until assurance [of receiving a favorable response] from U.S. Ambassador [related to resolution of the] saline water problem." Ambassador Mann suggested that Boyd avert problems in the local area by working with local leaders to assure them of "efforts being made by [the] U.S. to resolve [the] problem." Boyd later reported that he had spoken with leaders of the movement. While the protestors remained friendly, they refused to disband.[50] The protesters were still in front of the consulate on December 20, 1961.[51]

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[47] Celso Aguirre Bernal, *Compendio Historico-biografico de Mexicali, 1539-1966*, sixth edition, (Mexicali: publisher unnamed, 1989), 382-385.

[48] Telegram from Boyd to Rusk, January 29, 1962, NACP, RG 59, DF, 1960-63, 611.12322/1-2962.

[49] Ibid.

[50] Telegram from Mann to Rusk, December 18, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-1861; Telegram from Boyd to Rusk, NACP, RG 59, DF, 1960-63, 611.12322/12-1861.

Boyd remained somewhat dubious concerning the intentions of the protesters that continued their manifestations in front of the Consulate in late 1961. Around 2,500 people, many attracted by the new *Comité de Defensa de Mexicali y San Luis Río Colorado Sonora*, protested in front of the Consulate on December 22, while Alfonso Garzón and the LAE continued their encampment in front of the same building. Boyd believed that the December 22 march was a calculated effort to keep people from shopping across the border in Calexico and El Centro before Christmas. The Mexicali Chamber of Commerce had organized the boycott and many of its merchants used the boycott to promote their own businesses. Boyd was also informed that a more radical, communist-led, group had formed to protest the heavy-handed efforts of the Chamber of Commerce to profit from the voluntary ban on shopping in the United States. Boyd observed that on December 27, 1961, the two formal protest groups, one run by communists and the other by the Chamber of Commerce had disbanded and a *Comité de Defensa del Pueblo de Baja California* had been organized in its place. On December 31, 1961, approximately 10,000 protestors marched to the Governor's Palace to present their grievances.[52]

The traffic in front of the consulate also amused Consul Boyd. At the end of his December 28th dispatch, for example, he noted, "As of 3:00pm local time, Alfonso Garzón is still camped out in front of the Consulate with the women making tortillas and cooking various concoctions in large kettles. He told me he is just as well off here as on the farm; that without water and credit a farmer can do nothing."[53]

The "communist" infiltration of the local leadership seems to have been very limited. Not only were the more conservative groups able to use leverage within the *Comité General* (such as Anderson-Clayton, a member of the local cotton producers association) to prevent radical acts, but the US enjoyed the unintended assistance of the police force in Mexicali in combating the "red" menace. For example, on December 20,

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[51] Memorandum of Conversation, "Salinity of Colorado River Water," Mann and Sayre, December 20, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-2061.

[52] Telegram from Boyd to USDS, December 31, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-3161.

[53] Foreign Post Dispatch, Boyd to USDS, "Salinity of Colorado River Water – Mexicali Reaction," NACP, RG 59, DF 1960-63, 611.12322/12-2861.

1961, it was learned by Consul Boyd that communist leaflets had been distributed in Mexicali. He also reported, however, that the leaflets were "confiscated by police who [are] searching for [the] printing press." In reality, while communist exploitation of the issue may have been a threat, Mexican authorities were as vigilant as U.S. officials in suppressing radical propaganda that might have continued to turn public sentiment against the United States.[54]

Garzón eventually abandoned the manifestations in front of the U.S. consulate. He did not, however, end his efforts to publicize the salinity issue. Garzón turned his attention to the national stage by leading a caravan of forty automobiles and two buses from Mexicali to México D.F. as a plea for help from the federal government.[55] By mid-February the caravan arrived in México D.F. with some 220 protestors. Garzón met with Secretary of Hydraulic Resources Del Mazo, Foreign Minister Manuel Tello, and CILA Commissioner Herrera Jordan. Despite Garzón's energy, the federal government continued to preach patience in reaching a tenable solution. However, del Mazo promised that the federal government would begin the rehabilitation project in Mexicali Valley, pending approval from the World Bank.[56] The same day, in an interview with a prominent Mexican magazine, *Hoy*, President López Mateos affirmed that the government was moving ahead with a billion-peso plan to rehabilitate the drainage system in Mexicali Valley. "In short," he noted, "we can state that results depend in a large part on what we can do ourselves to achieve a better utilization of the flow which [sic] corresponds to us."[57]

Garzón, more than any other local leader, encouraged regional discord when the federal government appeared unwilling to press the United States for improvements in

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[54] Telegram from Boyd to USDS, December 20, 1961, NACP, RG 59, DF, 1960-63, 611.12322/12-2061.

[55] Dispatch from Boyd to USDS, February 6, 1962, NACP, RG 59, DF, 1960-63, 611.12322/2-662.

[56] Telegram from Mann to USDS, "Salinity of Colorado River Waters," February 16, 1962, NACP, RG 59, 1960-63, 611.12322/2-1662.

[57] Telegram from American Embassy, México, D.F., to USDS, "President López Comments on Colorado River Salinity Problem," February 16, 1962, NACP, RG 59, DF, 1960-63, 611.12322/2-1662.

water quality. In February 1962, he complained, "our government is not doing everything possible . . . to help people of Mexicali."[58] Despite Garzón's enthusiasm, it was evident that his methods were not effective in attracting the attention of federal officials to his particular points of protest. Despite leading the caravan of cars to Mexico City, he unsuccessfully attempted to enter into talks with President López Mateos and U.S. Ambassador Mann. Notwithstanding his appeal to the *ejidatarios* that followed him, Garzón's brash demands that reparations be paid to farmers in Mexicali Valley fell on deaf ears.[59]

On March 6, 1962, Garzón turned his attention to matters related to the limited water supply in Mexicali Valley. The crisis placed further wedges between *ejidatarios* and *colonos* in the CRID. Because the irrigation district had not accepted large amounts of saline water in 1961, shortages forced cutbacks in the spring of 1962. While irrigated acreage had been cut back to fourteen hectares per farmer, *colonos* were permitted to use their private wells to irrigate land above the fourteen-hectare limit. Garzón and representatives from fifty-seven *ejidos* set up a permanent protest in front of the CRID headquarters, demanding equality in the repartition of waters among valley farmers.

Unlike his failed attempts to meet with federal officials during the "salt caravan" to Mexico City, Garzón's actions quickly gained the attention of the Subsecretary of Agriculture, Jorge Patino Navarette, who came to Mexicali to hear the LAE's complaints. Garzón successfully lobbied for the revocation of the *colonos'* right to use their private wells for acreage above the fourteen-hectare limit (water would instead be used for the benefit of all the valley's farmers). Garzón cited article seventy-five of the Agrarian Code from the Mexican Constitution of 1917, which stipulated that *ejido* lands were those which should be provided with water before private lands. If such lands were not protected, Garzón contended that the *ejidatarios* legally held the right to take over the irrigation district.

The dispute over lack of water illustrated how the salinity crisis exacerbated pre-existing social tensions in Mexicali Valley. The shortage brought to a point of

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[58] Telegram from Mann to USDS, "Salinity of Colorado River Waters," February 21, 1962, NACP, RG 59, DF, 1960-63, 611.12322/2-2-2162.

[59] Foreign Post Dispatch, Robert W. Adams to USDS, "Ejido Leader Garzon of Mexicali

confrontation the long-suspected notion that *colonos* in Mexicali Valley had long been given preferential treatment in terms of irrigation practices. Garzón's efforts to enforce the legal legacy of the Mexican Revolution demonstrated the distance between the legal rights and historic treatment of *ejidatarios* in general throughout Mexico. However, the efforts by the federal government to enforce a semblance of equity in water distribution, at least in the short run, demonstrated more than a token commitment (particularly in a time of crisis when social unrest was less than desirable) to the ideals of the Mexican Revolution. As a result of three days of meetings, the rights of *cólonos* to use their wells were restricted in order that uniform amounts of water would be made available to all farmers. However, the LAE did not receive much relief in their petition that marginal land, which was already being abandoned in order to make the irrigable acreage of Mexicali Valley more compact, receive water for irrigation.[60] Later that year Garzón mailed a list of 292 farmers that had allegedly not been complying with the agreements reached in March of 1962.[61]

In 1963, Garzón's LAE took the lead in combating increases in the price of irrigation water. Garzón pled with Northern Baja California governor Esquivel Méndez to act in behalf of *ejidatarios* with federal officials in Mexico D.F.. Garzón warned that not only would the price of water be raised, but also all users would be required to pay for the water in advance (a requirement that did not bode well for *ejidatarios* who were strapped for cash). By February 18, 1963, the LAE contingent was again camped in front of the CRID office. The *ejidatarios* focused their frustrations on district manager Oscar González Lugo, who had allegedly refused to speak with the *ejidatarios* about their concerns. As a result, requests for lower water prices were also accompanied by calls for

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Approaches Embassy on Claim Against the U.S.," June 6, 1962, NACP, RG 59, DF, 611.12322/6-662.

[60] Memorandum, Liga Agraria Estatal de Baja California, March 6, 1962, Archivo Histórico del Estado, Mexicali, Baja California (hereafter cited as AHE), Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368; Moises Maislin Leal, "Informa situacion prevalenciente en el Distrito de Riego," March 8, 1962, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368; Memorandum, no date, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368; Dirreción de Agricultura y Ganaderia del Estado, "Informes de labores correspondiente a los meses de marzo y abril de 1962," AHE.

[61] Letter from Alfonso Garzón to Oscar González Lugo, December 13, 1962, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368.

a reorganization of the *Comité Directivo Agrícola* of the CRID, including removal of Lugo from the position of district manager.[62]

On March 9, 1963, Garzón reached his zenith of power. At that time, Undersecretary of Government Luís Echeverría (the future president who took significant interest in the plight of Mexicali Valley in the 1970s) and Alfredo Colin Varela, Undersecretary of Hydraulic Resources, met with Garzón and other *ejido* leaders to hear their complaints. In exchange for an agreement to stop protests in front of CRID headquarters, federal and state officials agreed to allow greater *ejidatario* representation on the *Comité Directivo Agrícola*. Mexicali Valley farmers also received a guarantee that water prices would not be raised until after a committee (that included *ejidatario* representatives) had studied the issue.[63] Furthermore, Juan Muñoz Martínez replaced González Lugo as CRID manager.[64]

Garzón's peasant group received coverage in the *Los Angeles Times* towards the end of 1963. One article examined the political organization of *ejidatarios* in Mexicali Valley. There were three peasant unions, two of which were allied with the entrenched *Partido Revolucionario Institucional* (PRI) and the third, Garzón's *Central Campesina Independiente* (CCI), which was not. The CCI was linked with communism in the minds of US officials because of its ties to the nationalist *Movimiento de Liberación Nacional (NLN).* The party also had strong connections to Lázaro Cárdenas and ex-Baja California governor (and noted anti-U.S. protestor) Praulio Maldonado. The *Times* reported that Garzón had used the salinity crisis as leverage to try and "bring the other two peasant and farmer unions under the wing of the CCI." Despite his efforts, the *Times* reported, Mexicali Chamber of Commerce employed a counter-attack by providing *ejidatarios*

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[62] Letter from Garzón to Eligio Esquivel Méndez, February 13, 1963, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 366; Letter from Comisionado Ejidal del Ejido Xochilmilco, Municipio de Mexicali, Estado de Baja California, to Alfredo del Mazo, February 18, 1963, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 366; Garzón to Adolfo López Mateos, no date, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 366.

[63] Minutes, March 9, 1963, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 366.

[64] Letter from Garzón to Juan Muñoz Martinez, March 23, 1963, 671.12/571, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 366

with provisions in order to win their allegiance away from Garzón. Playing on the anti-US theme, however, had helped the CCI. As one supporter noted, "The CCI has a good plan and the other peasant and farmer groups will soon realize they'll have to join us or become slaves to the imperialists."[65]

Two weeks later the *Los Angeles Times* featured an article about Garzón and Vicente L. Toledano, long-time Mexican labor organizer. Toledano headed the *Partido Populista Socialista* (PPS), an anti-U.S. and pro-Castro organization. Because the salinity crisis had not been resolved, Toledano planned to travel to Baja California and stir up animosity towards the United States. Employing a play on words, journalist Ruben Salazar noted, "The Colorado -- which means reddish -- River has brought a flow of left-wing extremists and Communists to Baja California in recent months." Garzón was riding high on the crest of a substantial base of public support during the salinity crisis, Salazar reported, for just four months previous he was "thrown in jail as an enemy of the people" and written off as "just another Communist agitator" by the press. By March 1963, however, Garzón had become the national spokesperson for the CCI. Apparently, his defense of low water prices together with the consternation caused by the salinity crisis won public sympathies, despite the leftist leanings of the CCI. Salazar also attributed the rise of the left in Baja not just to the salinity crisis and Garzón, but also to ex-governor Maldonado, who had cultivated the idea in his book, *Baja California -- Political Commentaries*, that the government had abandoned the state shortly after it had been founded in 1951. Maldonado wrote, "The [Mexican] federal government gave us little help . . . It committed the error of thinking of us as a 'rich' state government and practically let us struggle for ourselves."[66]

Other valley residents who were fiercely nationalist often found their ideas related to the crisis discounted because of their socialist leanings. In 1963, for example, the "communist subsidized" magazine *Política*, carried an extensive study of Colorado River water quality written by Emilio López Zamora, Director for Agriculture for the State of

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[65] Ruben Salazar, "River Water Prices, Salt Content Protested by Mexico's Peasants," contained in letter from Sayre to Spence McIntyre, April 1, 1963, NACP, RG 59, POL 33-1, MEX-US, 1963.

[66] Salazar, "River Row Makes Reds Flood Baja California, Unrest Among Peasants and anti-American Feeling are Fertile Ground for Propaganda," Los Angeles Times, March 17, 1963, in letter from

Baja California. Ambassador Mann warned, "[It] is unclear if article is solely communist propaganda effort or if [the] Government of Mexico has cooperated in its preparation, probably the former." While Zamora's article did carry an anti-US tone, the science contained within it did not appear to be overly affected by his socialist predilections, particularly since some of the statistics emanated from U.S. agencies. Ultimately, Zamora outlined domestic plans for rehabilitation of the Mexicali Valley in his article. Zamora also objectively noted that the lack of water in Mexicali Valley was not only the result of the salinity crisis, but also because Mexicans "opened up almost twice as much farmland than could efficiently be irrigated with water from the United States." The most inflammatory of his remarks concerned the potential of the salinity crisis to bring all social classes in Mexicali together, making them "conscious that their collective interests and the sovereignty of the [Mexican] nation were in jeopardy." Such a development tended to happen on either side of the border whenever water quality significantly declined.[67]

During 1964, Alfonso Garzón continued to ride a wave of popularity in Mexicali Valley. Mexican Ambassador Freeman noted, for example, that during a survey in Mexicali, those polled expressed "overwhelming support for far-leftist CCI leader Alfonso Garzón, among both rural and urban residents of the area." In addition to participating in protests throughout the year, the organization mounted a vigorous letter writing campaign that resorted to extreme measures to gain the attention of private and public officials throughout Mexico and the globe. The letter was sent to "make known to all the unmerciful aggression that Mexico is suffering at the hands of the US." Copies of the letter were intended for all members of the United Nations, Mexican governors, national deputies, chambers of commerce, labor organizations, peasant unions, industrial groups and banking groups. Often given to bombast and shock, the letters compared the salinity crisis to the United States building a nuclear plant and shipping its waste into Mexican waters. A stamp which read "Genocide. The USA contaminates the waters of

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Sayre to McIntyre, April 1, 1963, NACP, RG 59, POL 33-1, MEX-US, 1963.

[67] Telegram from Mann to Rusk, March 14, 1963, NACP, RG 59, POL 33-1, MEX-US, 1963; Emilio López Zamora's , "La comtaminación de las aguas del río Colorado: un conflicto internacional," *Política*, March 1, 1963, 3-13, is included with the telegram. A compilation of Lopez's writings, including several articles on water issues and development in the delta can be found in *El agua, la tierra: los*

the Colorado River, Annihilates 300,000 human beings in the Mexicali Valley" was printed on each letter.[68] Equally as dramatic, the CCI- affiliated *Federación Estatal Campesina de Sonora* petitioned President Johnson on the salinity issue, comparing the damage in Mexicali Valley to the atomic destruction of Hiroshima and Nagasaki. They appealed to Johnson to "avoid the misery and exodus of all of the people of a region always promising of great agricultural production and of the men and women forged in that work."[69]

Yet hope for imminent resolution of the salinity crisis prompted national officials to turn their support towards a rejuvenated *Comité General de la Defensa de la Valle de Mexicali*. By March of 1964 it was rumored that CILA Commissioner David Jordan Herrera had worked through the Mexicali Valley Cotton Association in an effort to revive the *Comité General* and take control of the local political organization away from Garzón and the CCI.[70] The *Comité* reorganized itself on March 22, 1964. This measure toned down the tenor of protest in the valley, providing the federal government with greater assurances that public protests would not adversely impact international negotiations. Despite the changing of the guard, federal officials remained leery of the impact of public manifestations on negotiations, except when it was in the strategic interest of the Mexican government to use public protest as a bargaining tool.[71]

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*hombres de México* (Mexico D.F.: Fondo de Cultura Económica, 1977).

[68] Telegram from Freeman to Rusk, May 21, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 5-1-64.

[69] Letter from *Federación Estatal Campesina* de Sonora to President Johnson, November 7, 1964, AHE.

[70] Telegram from Boyd to USDS, "Salinity of the Colorado River Waters: Committee for Defense of Mexicali Valley Reactivated," March 17, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 3-1-64.

[71] The Mexican Chief of Immigration in Mexicali, for example, reported to the American Consulate that "the protest demonstrations . . . were interfering with the current political contest [in reference to the presidential election]." See Telegram from Boyd to USDS, May 15, 1964, "Salinity of Colorado River Waters – Demonstrations Against," May 15, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 5-1-64; An example of Mexican officials using radical protest (something they generally detested) to their advantage can be seen in an exchange between Mexican Senator Vildosola and Ambassador Freeman. Vildosola warned Freeman of an upcoming "mammoth" demonstration on July 12, 1964, and suggested that the United States find a resolution to the problem before then. As Freeman explained the complications of finding a resolution because of domestic concerns with the Colorado River Basin states in the United States, Vildosola warned that he might not be able to guarantee that these demonstrations would be peaceful like those in the past. "He expressed his full understanding of the dangers of communists and

In May 1964 some of the more creative manifestations during the crisis took place in Mexicali. The *Comité General* used a large flatbed truck accompanied by about four hundred protestors and marched from the Chamber of Commerce to the US Consulate. The trailer carried a coffin filled with salt, figuratively representing Northern Baja California. Consul Boyd noted that "representatives of each group took turns standing honor guard over the coffin." Each group carried signs with slogans. The CCI-LAE mounted a banner that stated, "Mr. Johnson your ranch is irrigated with virgin waters from Mexico. We demand virgin water from the Colorado." Another read "Salt Us First – Talk to Us Later." The *Comité General* also hung a sign across a hotel across the street from the Consulate which read "Enough Salinity Already (Basta ya de Salinidad)." Organizers intended to leave it there for Consul Boyd to see until the problem was resolved.[72]

Ordered protests continued during the summer. By August, however, the federal government requested that the *Comité General* call off its demonstration on August 6, 1964, as they believed a solution to the problem was imminent. The *Comité General* immediately communicated the request to its members.[73] The sudden announcement came as a shock to the CCI. Garzón notified Aurelio Flores Valenzuela, General Coordinator of the *Comité General* that his group had organized protests in approximately thirty cities throughout Mexico. By pressing for immediate action, Garzón illustrated why national officials had tapped out the *Comité General* as its local coordinating body of choice.[74] By the fall, continued whisperings of resolution weakened

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other extremists in seeking to turn the demonstrations to their own ends," Freeman noted, "but he in no way accepted the inference of the desirability of postponing the scheduled nation-wide demonstrations on July 12." Telegram from Freeman to Rusk, June 19, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 6-6-64.

[72] Telegram from Boyd to USDS, "Salinity of Colorado River Waters – Demonstrations Against," May 15, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 5-1-64.

[73] Telegram from Freeman to Rusk, August 6, 1964, NACP, RG 59, POL 33-1, MEX-US, Folder 8-1-64; Also see Comite de Defensa del Valle de Mexicali Letter to Centrales Obreras y Campesinas, Organizaciones de la Initiativa Privada, y La Opinión Pública Nacional," August 5, 1964, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368.

[74] Letter from Garzón to Aurelio Flores Valenzuela, August 9, 1964, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368.

the ability of the *Comité* to mobilize popular support in Mexicali and largely did away with large-scale demonstrations.[75]

Anticipation of a solution to the salinity problem increased throughout 1964 and early 1965, as protests in Mexicali were discouraged and forthcoming settlements periodically rumored to be imminent. For that reason, the announcement of Minute 218 in 1965 received a lukewarm reception in Mexicali Valley. The agreement required the United States to build a drainage channel from Wellton-Mohawk to Morelos Dam. Mexico could then decide whether or not it wanted to use the effluent to mix with better water from the river. In either case, Mexico would still be charged for water that was either used or wasted to the Gulf of California. The agreement would be effective for five years beginning on January 1, 1966. At the end of five years it would be reviewed by both nations to assess its efficacy. A PRI-sponsored manifestation of appreciation to President Ordaz only attracted 500 participants. The incoming U.S. consul in Mexicali, Arthur Feldman, attributed the reaction to "the long awaited and frequently promised solution which took over a year to become a fact." Additionally, many Mexicans felt that the solution was not just because Mexico would still be charged for the saline water it chose not to accept. Furthermore, continued efforts to rehabilitate farmlands in Mexicali Valley reinforced the idea that Minute 218 was only a temporary solution.[76]

**Conclusion**

In 1964, an upset (and extremely articulate) Mexicali resident, Humberto Hernández, fired off a four-page letter to Senator William Fulbright, Chairman of the Foreign Relations Committee. Quoting a Fulbright speech, Hernández wrote, "We are confronted with a complex and fluid world situation -- and we are not adapting ourselves to it. We are clinging to old myths in the face of new realities." Hernández then noted the plodding nature of resolution of the salinity crisis, observing that Mexicali's problems were "buried under the lengthy, slow and deliberate proceedings of a rigid and prejudiced international policy, influenced by the selfishness and arrogance of a few."[77]

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[75] Telegram from Feldman to USDS, November 19, 1964, "Salinity Demonstration Postponed," NACP, RG 59, POL 33-1, MEX-US, Folder 10-1-64.

[76] Telegram from Feldman to USDS, "Round-up of Mexicali Reaction to the solution of the salinity problem," April 5, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 4-1-65.

Hernández's remarks spoke for thousands of Mexicali residents. His insight and the evidence from the salinity crisis suggest the need to reassess the nature of the dilemma and its resolution. The tangled approach of the USDS and the DOI suggests that there were at four political entities dealing with each other: The United States government, the American West (comprised of a linkage between Western legislators and the USBR), the Mexican government, and local organizers in Mexicali Valley. Personalities played a tremendous role in the dynamics of the crisis. Conflicts of interest within the DOI, as well as the constraints of checks and balances (for example, all executive treaties had to be approved by the Senate, where the West exercised great power on water issues) presented as much of a challenge to the USDS as did complaints from Mexico. It cannot be claimed that the West, the Sagebrush Rebellion notwithstanding, was a powerless "colony." Its leaders possessed the leverage to hold international treaties captive.

For the most part, USDS officials were sympathetic to Mexican claims, yet the existing water rights of Western farmers and the plans of the USBR limited their authority to act. Ambassador Mann privately pushed for salt balance on irrigation districts in the U.S. portion of the Colorado River Basin, although in official statements he was constrained to pull back. The U.S. consuls in Mexicali also had an interest in seeing the issue resolved judiciously. Inaction was the very condition that facilitated the rise of organizer Alfonso Garzón. Once a solution to the crisis was close at hand, however, official support for a revamped *Comité General* diminished Garzón's influence. By 1964, Garzón had been co-opted by the ruling party and eventually became a federal deputy.

Even the Secretary of the Interior, Stewart Udall, who was often upstaged on issues related to Mexico and the Colorado River by his subordinate, USBR Commissioner Floyd Dominy, quietly attempted to ameliorate conditions in Mexico within the limited constraints of Western water politics. It will be remembered that Udall also broke with the Hayden-Dominy juggernaut when he decided against building dams in the Grand Canyon. His commitment to environmental issues and sympathy for

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[77] Letter from Humberto Hernández to J. William Fulbright, May 23, 1964, Archives, Museo Universitario, Universidad Autónoma de Baja California, Mexicali, Baja California, Rafael Martinez Retes Papers, Folder 10 (1964).

suffering humans, then, at least partially counteracted the actions of those officials whose primary interest was U.S. development of the Colorado River basin.

The first four years of the salinity crisis also illuminated distinctive attitudes towards ownership of natural resources. Farmers in Wellton-Mohawk Valley dug in their heels and used an accessible legislative apparatus, via influential congressman and senators, to protect their interests. On the other hand, the legacy of the Mexican Revolution and uncertain circumstances demanded that *ejidatarios* and *colonos* share water resources during the salinity episode. Even if such efforts at sharing resources failed or were subverted, the fact that such mechanisms existed for times of crisis reflected differing attitudes towards resolution of environmental crises.

As scientific data from both sides of the border attested, the salinity crisis was neither an act of genocide nor a figment of the "communist" imagination. In truth, the salinity crisis was a legitimate problem with various solutions. There are several incidents that corroborate this assertion. Most telling, perhaps, were the complaints from people in the U.S. delta who noticed a decline in water quality for domestic and agricultural uses. For example, Thomas Allt, a representative for the city of Yuma, Arizona, testified at the Colorado River Salinity Control Act (1974) hearings that prior to the fall of 1961 the city took its drinking water directly from the Colorado River. After the release of toxic drainage from Wellton-Mohawk, however, the city reached an agreement with the Yuma County Water Users Association to receive water from the Yuma Canal, which was connected to the Imperial Dam.[78] Second, a study completed after the salinity crisis between the United States and Mexico had been diplomatically resolved, calculated that Colorado River water with salts totaling 1400 ppm in the Imperial Valley could cause $74,568 worth of damage. While these statistics were not calculated for Mexicali Valley, the contiguous nature of the two regions and similar geological properties makes a rough comparison possible.[79]

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[78] See chapter seven.

[79] Alan P. Kleinman and F. Bruce Brown, *Colorado River Salinity: Economic Impacts on Agricultural, Municipal, and Industrial Users*, US Dept. of the Interior, Colorado River Water Quality Office, Engineering and Research Division (Government Printing Office, 1980), 8.

Furthermore, agricultural economists estimated that the salinity of "pristine" waters in the Colorado River at Imperial Dam nearly tripled between 1926-1965 (383 ppm to 839 ppm).[80] IBWC data related to salinity differentials of Colorado River water between the Imperial Dam and the Mexican border also shed light on the extent of the problem. In 1960, water at the international boundary contained only an average of 33ppm of salt more than water at the Imperial Dam. The following year, however, salinity differentials at the border increased 1636% percent over the previous year, to 540 ppm. Most riveting, however, are the statistics related to the salt differential at the border and Imperial Dam in raw tonnage between 1961 and 1965. In 1960, for example, the 33ppm differential for 1.36 million acre feet of water (the amount specified to be delivered at the *international boundary* – the rest was delivered from Yuma Valley drains to San Luis Rio Colorado farmers -- by the 1944 Treaty) created a salt tonnage differential of 61,036.8 tons. In 1961 the tonnage differential at the two points for the specified treaty delivery rose to 998,784 tons. In 1964 it reached the zenith for the entire crisis (1961-1974) at 1,241,081.6 tons. In 1965 the tonnage differential fell below the one million-ton figure.[81]

Ultimately, the first four years of the salinity crisis witnessed a profound transformation in the ecology of the lower delta. The uncertainty of increased volumes of salinity -- on both the national and local level -- not only increased tensions between the United States and Mexico, but also made it possible for local tensions to elicit national and international attention between 1961-1965. The desire on the part of both national governments to minimize uncertainty during the negotiation process contributed to the decline of local political flame-throwers like Alfonzo Garzón. By 1965, the policy

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[80] B. Delworth Gardner and Clyde E. Stewart, "Agriculture and Salinity Control in the Colorado River Basin," *Natural Resources Journal*, volume 15, January 1975, 65.

[81] John M. Bernal, *A Report on Salinity Operations on the Colorado River under Minute No. 242, Januray 1-December 31, 1997*, International Boundary and Water Commission, United States Section; For other helpful references on water quality see L.A. Richards, editor, *Diagnosis and Improvement of Saline and Alkali Soils, USDA* (Washington: GPO, 1954) for conversion formulas for computing salt tonnage from ppm salt, 157; I. Shainberg and J. D. Oster, *Quality of Irrigation Water* (Bet Dagan, Israel: International Irrigation Information Center, 1978), 31-43; Ranbir Chhabra, *Soil Salinity and Water Quality* (Rotterdam: A.A. Balkema, 1996); Alexandra Poljakoff-Mayber, *Plants in Saline Environemnts Environments, Ecological Studies*, volume 15 (New York: Springer-Verlag, 1975).

makers largely examined the political terrain of Mexicali Valley from afar -- in Washington D.C., México D.F., Ciudad Juárez, and El Paso.

## Chapter 6

## Salt of the River, Salt of the Earth (1966-1972)

Since the Cárdenas administration, the development of land and water resources in the lower Colorado River Delta played a unique role in Mexico's domestic and foreign policy. Like Quintana Roo and Chiapas, Northern Baja California had long existed beyond the effective politico-economic reach of the federal government. Unlike those two southern states, however, Northern Baja California enjoyed economic prosperity. This disparity could largely be attributed to links to the global economy through U.S. markets. Subsequent efforts to tie the region to central Mexico further encouraged the development of agribusiness and a high standard of living among valley residents.

While the actions of each Mexican administration after 1934 were not inspired by similar political agendas, their acts in regard to Northern Baja California contributed to increased Mexican ownership of land and water rights. Cárdenas's expropriation of lands from the Colorado River and Land Company and encouragement of agricultural development with water from the Colorado River represented the first step towards the effective *mexicanización* of the valley. Cárdenas's successor, Manuel Ávila Camacho, subsequently oversaw the negotiation of the Mexican Water Treaty (1944), which guaranteed Mexicali and San Luís Río Colorado 1.5 million-acre feet of water from the Colorado River. In 1950, Miguel Alemán dedicated Morelos Dam, whose namesake symbolized the independence of Mexico and the sovereign control of its resources. Ten years later Adolfo López Mateos acquired the Mexicali's water distribution system from the IID.

The sudden rise of the salinity crisis in 1961 presented an unexpected challenge to Mexicali residents and federal officials in their quest to control their water resources. Past challenges to the *mexicanización* of natural resources in the region had largely been related to water quantity, not quality. However, as Mexicali residents well knew, geography largely dictated that the success or failure of agribusiness in their valley was closely linked to conditions throughout the rest of the river basin. While the salinity crisis

hampered the desire of national officials to make Mexicali Valley as independent from the decisions of USBR officials in the United States as possible, it did not overpower their efforts to reach that end. However, elevated salinity levels, demands from local groups, stubborn USBR and regional officials in the United States, and anxiety over future deterioration of conditions in the region temporarily sidetracked Mexican officials from continuing to improve water resources in Mexicali Valley.

Despite the dissatisfaction of many Mexicali locals with Minute 218, the measure offered the Mexican government greater control over the quality of water delivered to Mexicali. According to the treaty a by-pass canal would carry drainage from the deep wells in Wellton-Mohawk Valley to a point at Morelos Dam. At that point the CRID could decide whether or not it wanted to mix the effluent with better water from the Colorado River. If not, they could send it downstream to the Gulf of California. In either case, however, Mexico would have to accept the questionable water as part of their annual quota under the Mexican Water Treaty.

At times, however, diplomatic solutions are most important not so much for what they accomplish but because of the way they impact events that follow. While Minute 218 offered a temporary fix that did not fully satisfy local or federal officials, attendant events on both sides of the border further escalated the anxiety associated with water quality and quantity in the region. At the same time the DOI announced that it would drill new wells on Yuma Mesa, close to the Mexican border. Whether or not U.S. officials knew it, Mexican officials believed that the success of the rehabilitation plan was contingent on the availability of ample well water in Mexicali Valley.

**Rehabilitation of Mexicali Valley**

At the same time that Mexico and the United States announced Minute 218, Foreign Secretary Carrillo Flores announced that Mexico would seek funding to carry out the Rehabilitation Plan for Mexicali Valley.[1] Plans for improving Mexicali Valley's farmlands, particularly the drainage and delivery systems, began as early as 1954, the same year that the CRID installed its first open drains. DRH (Department of Hydraulic Resources) engineers based their conclusions of samples of river water, well water,

[1] Telegram from Freeman to Rusk, NACL, RG 59, POL 33-1, MEX-US, Box 2486, Folder 2/10/65.

drainage water, and soil samples from the valley. They also observed that drainage in the valley was insufficient for current run-off levels. Soil salinity of valley lands also varied greatly, ranging between .04 and 17%. The following year, however, salinity appeared to be on the decline in the valley. In 1956, 83,525 of the 260,154 hectares in Mexicali Valley were useless for agricultural cultivation. In some areas, the engineers noted, "The salinization of the grounds [increased] at a frightening rate." "If it continues at this velocity for five years," one expert observed, "all the lands that are cultivated now will be sterile." In 1958-59 soil salinity continued to increase.[2] Two scientists recommended that the DRH improve drainage above and below ground throughout the CRID, encourage cultivation of salt-tolerant crops, such as alfalfa, instead of relying exclusively on cotton, and increase the amount of water applied to the crops for proper leaching of the soils.[3]

In September 1961, Antonio Coria, DHR Chief of Technical Consultation, offered his own assessment of conditions in Mexicali Valley. He suggested that engineers look to the Imperial Valley for an example of what might be done in Mexicali Valley to improve drainage. Coria suggested that the rehabilitation plan should take place in a series of steps, in order to assure that each phase functioned properly. Ultimately, he noted, "The recommendation is clear, increase to the maximum degree the [quantity of] irrigation water, open drains that facilitate the rapid passage of the water through the ground and always attend to the salinity of the river water to suspend its application in case of abnormal [salt] content."[4] In his final recommendations, he further reiterated, "You should study the possibility of lowering the salinity of the waters that you use for irrigation." Coria also stressed the importance of maintaining a salt balance, installing adequate drains, and maintaining an overall plan of efforts to carry out the rehabilitation program.[5] These recommendations came only a month before tons of extra salts were dumped on the valley.

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[2] Antonio Coria, "Comentarios sobre los informes de los Ings. Luis Zierold R. y Miguel Brambila R. relativos al ensalitramiento de los suelos del Valle de Mexicali, B.C.," September 1961, Secretaria de Recursos Hidraulicos (SRH), Memo. 13.1-84., AHA, Consultativo Técnico, Caja 1146, Exp. 11100.

[3] Ibid., 59-60.

[4] Ibid., 37.

[5] Ibid., 63-64.

The following year Miguel Brambila conducted the eighth annual salinity study of the CRID. In his report Brambila observed that water from the river during the 1961-62 period was not fit for agricultural uses. Nevertheless, thirty-seven percent of valley lands were "very affected" by salinity. He also noted that while drainage works installed to date were functioning properly, CRID engineers had not been able improve soil salinity on the aggregate level. The balance of salts, he also observed, was not encouraging. Brambila noted that those lands on the right side of the river (in the Baja California portion of Mexicali Valley) retained 1,719,184 tons of salt. The report suggested that additional wells be drilled along side the canals in order to take advantage of the higher quality waters there. It also urged the CRID to reduce the total farmland in Mexicali Valley by eliminating marginal quality lands in the southern part of the district. Accordingly, the study called for a moratorium on adding additional lands to district. In Brambila's opinion, these measures offered the best approach to rehabilitating the valley's farmlands in the face of increased salinity.[6]

The Rehabilitation Plan was officially initiated on June 29, 1970. The Mexican government obtained financing through the International Bank of Reconstruction.[7] The plan incorporated measures to increase the efficiency of irrigation systems in Mexicali, diversify crop production, and decrease salinity on valley farms. The CRID actually planned to increase irrigable acreage from approximately 170,000 to 203,000 hectares by shrinking the total area of valley farmland from 330,000 to 260,000 hectares. Plans for diversification were intended to increase the use of lands for different crops. Following the model of farmers in the Imperial Valley, Mexican officials hoped valley farmers could earn higher returns as a result of diversification.[8]

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[6] Miguel Brambila R., Humbert J. Villareal, and Raul Aberto S., "Octavo informe annual del estudio de las condiciones de salinidad del Distrito de Riego del Río Colorado, B.C., Periodo 1961-62," SRH, Residencia de Agrologia del Río Colorado, B.C., AHA, Consultativo Técnico, Caja 17, Exp. 101.

[7] Telegram from Feldman to USDS, "Rehabilitation Project for Colorado River 14th Irrigation District, Baja California and Sonora," February 15, 1968, including enclosure from Jose Hernández Teran, "SRH, Convocotoria para la rehabilitación del distrito de riego num. 14 Río Colorado, B.C., y Son.," January 16, 1968, NACL, RG 59, POL 33-1, MEX-US, Folder 1/1/68.

[8] Benjamin Granados Dominguez, "Distrito de Riego No. 14, Rio Colorado, B.C. y Son. – Generalidades," in *Memoria de la primera reunion nacional de residentes de zonas de riego*, (Mexico City: SRH, 1971), 47-55

Local leaders watched with anticipation as scheduled improvements were carried out. On August 4, 1970, for example, local officials visited *Ejido Hermosillo*, where improved water conservation practices with irrigation were being carried out. They then inspected the lining of the principal canal at Matamoros Dam.[9] Two months later the five hundred meters of lining near Matamoros Dam had extended to three kilometers.[10] Additionally, in June 1971, Rafael Martínez Retes reported that forty wells had been repaired and eighty had been reconstructed and repaired.[11]

Rehabilitation of the CRID was completed by 1978. During the previous decade, 2,902 kilometers of canals were lined with concrete. 285 deep wells were repaired and 122 new wells were placed in the north east section of the district. Sixty-seven additional wells were dropped in the sandy mesa near San Luís Río Colorado. Water from these wells was eventually sent to Tijuana, which was in need of additional water supplies. Furthermore, sixty-five levelers provided by the government allowed farmers to level 180,000 hectares of land.

One of the social problems associated with the rehabilitation of the lands involved the movement of farmers on marginal lands to lands within the compacted farmland of the valley. In response the government expropriated 18,906 hectares within the district and placed 1,812 farmers on the new lands. They were allowed to keep the title to their marginal lands. Furthermore, the federal government agreed to pay for half of the costs of rehabilitating the CRID. By 1975, 205, 834 hectares were under cultivation. This

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[9] Rafael Martínez Retes, "Informe que rinde el representante de las empresas algodoneras de iniciativa privada ante el comite directivo agricola del distrito de riego," July 27, 1970-August 5, 1970, Universidad Autónoma de Baja California, Museo Universitario, Mexicali, Baja California (hereafter cited as UABC), Archives, Manuel Martinez Retes Papers, Folder 14, "Informes de la Empresa Algodonera." For more information on the meetings of the *Comité Directivo Agrícola del Distrito de Riego* see Martinez Retes Papers, "Informes de la Empresa Algodonera," March 1970-September 1971, Folder 14; For Mexican incentives in the early 1970s to promote falling cotton production see letter from Engineer Roberto Valdes Osuna to C. Carlos Maltos, November 16, 1970, Martinez Retes Papers, Folder 14, "Salinidad: Gasos de Agua, Oficios y Documentos."

[10] Martinez Retes, "Informe que rinde el represntante de las . . .," September 7-October 6, 1970, UABC, Martinez Retes Papers, Folder 14.

[11] Martinez Retes "Informe que rinde el representante . . . .," June 2-June 8, 1971, Folder 14, UABC, Martinez Retes Papers, Folder 14.

represented the greatest number of hectares that had been cultivated in Mexicali Valley since the onset of the salinity crisis.[12]

**Wells**

The salinity crisis significantly increased the reliance of Mexicali Valley farmers on well water. The premium quality waters provided forty percent of the valley's water and irrigated fifty percent of its crops.[13] Well water was mixed with water from the Colorado River in order to reach an acceptable salinity level for irrigating cotton, alfalfa, and wheat. Announcement of the new wells in Yuma County only intensified interest in developing subterranean water resources in Mexicali Valley and San Luis Río Colorado, Sonora. In October the *Comité de Defensa del Valle De Mexicali* petitioned President Diaz to study the geohydrological tendencies of the aquifers that lay beneath the bi-national Delta. Stressing the demographic explosion occurring in the Southwestern United States, the *Comité* noted that the population of the region would likely increase from 10.5 million to thirty million by the year 2000. If implemented, schemes such as the Pacific Southwest Water Plan would utilize drainage wells in Yuma Valley to fulfill its obligations under the Mexican Water Treaty, while more pristine waters upstream would be used for the anticipated growth in the U.S. The *Comité* feared that such actions would prejudice the agricultural industry of Mexicali Valley. They disputed IBWC claims that the new pumps on Yuma Mesa would not affect the subterranean flow of water to Mexicali Valley wells. Changes in pressure from the new wells, the *Comité* believed, might alter the direction of existing flows.[14] In December the *Comité Directivo Agrícola* of the CRID encouraged President Díaz to complete geohydrological studies of the aquifers below Mexicali in order that those resources could be further developed.[15]

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[12] Adalberto Walther Meade, *El valle de Mexicali* (Mexicali: Universidad Autónoma de Baja California, 1996), 155-165.

[13] Letter from Martinez Retes to Manuel J. Tello, November 19, 1963, UABC, Martinez Retes Papers, Folder 8, "Plan Udall, Estados Unidos."

[14] Letter from *El Comité de Defensa del Valle de Mexicali* to Gustavo Diaz Ordaz, October 28, 1965, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie Agricultura y Ganaderia, Box 368.

[15] Letter from El *Comité Directivo Agrícola del Distrito de Riego del Río Colorado* to Gustavo Diaz Ordaz, December 8, 1965, AHE, Fondo Territorio Norte, Sección Agricultura y Fomento, Serie

Foreign Secretary Carrillo continued to question U.S. officials as to the impact that the Yuma wells would have on Mexican agriculture. C.A. Boonstra, U.S. Charge d'Affaires ad interim, noted that the wells were private and would be used to drain excess waters below Yuma Mesa lands. Carrillo reported, however, that a Mexican engineering team had visited the wells and believed that two of them might adversely impact the flow of water to Mexico. Carrillo closed by suggesting that the two nations discuss the plausibility of making a treaty on the division of underground waters.[16]

The new wells introduced an additional component to the bi-national water disputes. Mexicali newspapers featured the well issue on their front pages. *El Mexicano* noted that fifty wells had been drilled on Yuma Mesa and commented on the negative effect decreased amounts of well water could have on the valley's economy. The newspaper also reported that the wells would be used to extract 271 million cubic meters of water each year, "so as to obtain what it considers to be its full share of the water." *El Mexicano* also noted that the wells would alter geohydrological studies that the DRH had to conduct prior to initiating the rehabilitation program. The paper also reflected regional fears of an imminent well pumping war, "[advising] that the proposition to reduce the exploitation of the Mexicali aquifer should be reconsidered since no one really knows what the situation is." Subsequently, local papers pressed for the Mexican federal government to put an end to the use of the Arizona wells. They also called for an underground water treaty.

The U.S. consul in Mexicali, Arthur Feldman, also noticed an increased flurry of political organization. The Baja California *Confederación Revolucionaria Obrero Campesina* (CROC) had proposed collaboration with organized labor in the United States in order to protest against the Southwest Water Plan and its appropriations for wells that would adversely impact the aquifers beneath the delta. *Campesinos* manifest a renewed willingness to protest. However, government officials effectively contained any unrest. Feldman noted, "The agriculturists of this area do not seem to have any dull moments. If it isn't salinity, or rehabilitation with enforced relocation of farms which will not be

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Agricultura y Gandaderia, Box 368.

[16] Telegram from C.A. Boonstra to USDS, "Comments of Foreign Secretary Carrillo Flores regarding Irrigation Wells on U.S. Side of Mexican-U.S. Border," October 30, 1965, NACP, RG 59, POL

serviced with irrigation under the proposed plans, then it is the Yuma wells and the pink boll weevil." "Unfortunately," he concluded, "in all these issues the U.S. seems to be involved either directly or indirectly and the temptation to take pot shots at the neighbor to the north is rarely overlooked."[17]

Ostensibly, the new wells in Yuma County were installed to maintain a proper water level beneath Yuma Valley and Mesa farms, land that would eventually have been waterlogged without the additional wells. Domestic policy dictated additional motives for installing the wells. Senator Hayden pushed for approval of the wells in Yuma Valley as a "vital source of water for the Central Arizona Project during periods of low runoff unless the supply of the Colorado is augmented from sources outside the basin." Hayden hoped that as much as 200,000-acre feet of water could be salvaged in this way and delivered to Mexico at the border in fulfillment of the U.S.'s obligations under the 1944 treaty. In the final analysis, Hayden believed, operation of seventeen new wells in Yuma Valley would only create a "slight diminution of present ground water flow to Mexico."[18]

Mexico, however, protested the right of the United States to substitute drainage water from wells for better water from the Colorado River. While the USDS agreed with the DOI that drainage water was a natural part of irrigation, it counseled the USBR to drill wells where water would have the least affect on aquifer flows to Mexico. By making this compromise, Robert Sayre believed, the USDS could "minimize the possibility of a quarrel with Mexico on the quality issue." However the USDS disagreed with the DOI's plans to install wells for groundwater recovery in locations where irrigation was not taking place. Sayre noted, "We doubt that the United States has the right to pump waters which are not clearly 'waters of the Colorado River' and deliver them to Mexico." Furthermore, Sayre believed that the Secretary of the Interior had a responsibility to "treat equally all water users in the same relative geographic location on

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33-1, MEX-US, Folder 1/1/64.

[17] Telegram from Feldman to USDS, "Local Reaction to Drilling of Yuma Mesa Wells," November 12, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/65.

[18] Letter from Hayden to Rusk, December 13, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 12/13/65.

the river." "Any other policy," he observed, "will keep us in perpetual difficulty with Mexico."[19]

In June of 1966, the IBWC took an inventory of wells in Yuma Mesa. At the time there were a total of sixty-one private and federal wells there. Yet only twenty-nine were in operation, ten for irrigation and nineteen for domestic and industrial purposes. It was also estimated that together the operating wells extracted 8,000 acre-feet (af) of water per year. IBWC Commissioner Friedkin observed that such a level of pumping "would not have any significant effect upon the groundwater basin underlying the Mexicali Valley . . ." He calculated that only 2,000 acre feet of this total would have moved "westward towards Mexico." If all of the wells were operating, he believed, they would only extract about 26,000 af per year from the delta aquifer. He did note, however, that if all plans to irrigate 40,000 new acres of the Mesa were carried out, "which is entirely possible, the total net withdrawal would amount to about 145,000 acre feet, including present domestic and industrial uses." Friedkin believed that this would diminish Mexicali groundwater flows by approximately 30,000 af per year. In contrast, Friedkin noted that Mexico pumped 600,000-acre feet per year. He further noted that the private wells in the US did not return water to the river, but re-used the salvaged resources in Arizona.[20]

On May 26, 1967, Secretary Udall met with Mexican Secretary of Hydraulic Resources Hernández to assure him that the new drainage wells on Yuma Mesa would not significantly affect the quality of waters delivered at San Luis or flowing into the Delta aquifer. Despite the assurances that sophisticated analog models of simulated water flow in the aquifers provided, Hernández was not satisfied with the Udall's proposition. Hernández was not only troubled by wells in Yuma Valley, but also by drainage wells in South Gila Valley, which he believed had augmented salinity levels of the Colorado River. In response Hernández requested that all of Mexico's water be delivered in the summer. Such a request, however, would have meant a substantial loss of water for U.S. users. Udall reassured Hernández that the new wells would not affect the Mexican aquifer

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[19] Memo from Sayre to Rusk, "Lower Colorado River Groundwater and Salinity Problem with Mexico," March 22, 1966, NACP, RG 59, POL 33-1, MEX-US, Folder 3/18/66.

[20] Letter from Friedkin to Terry Leonhardy, June 16, 1966, NACP, RG 59, POL 33-1, MEX-US, Folder 5/4/66.

or the salinity of surface deliveries at the border. Throughout the meeting Udall tried to reassure Hernández that a practical, instead of legal, solution to the crisis would be in the best interest of both countries.[21]

The Mexicali press continued to discuss the issue of additional wells being drilled in Arizona. *La Voz de la Frontera* consulted lawyers to assess how a groundwater treaty might be drawn up between the two nations. It was suggested that "at such time as an agreement was reached, the number of wells drilled in each country would be accepted as a fact and the country having the most wells at the time would be favored in the distribution of subterranean water." This would have disproportionately favored Mexico who had about 600 wells in Mexicali Valley versus the sixty-one wells near Yuma. The *Unión Agrícola Regional* suggested that Secretary Hernández revoke the prohibition against drilling wells in Mexicali Valley "so that should an agreement be reached between the U.S. and Mexico on the use of the subterranean waters, Mexico will continue to have the advantage in the number of wells." Furthermore, if geohydrologic studies proved that the U.S. wells were having an adverse affect on the aquifer, "then Mexico could opt to stop them after the treaty is made." Arthur Feldman astutely noted that Mexicali residents were concerned about the well situation for several reasons. First, the best crop yields came from farms irrigated with well water. Second, farmers with wells were, for the most part, exempt from irrigation limitations imposed by the CRID. Third, cotton production was down due to bad weather, the pink bollworm, and repayment of an emergency water loan to the U.S.[22]

On September 30, 1968, President Lyndon Baines Johnson signed into law the Colorado River Basin Project Act, which among other things, authorized construction of the Central Arizona Project. The act also gave the DOI permission to "undertake programs for water salvage and ground water recovery along and adjacent to the main stream of the Colorado River." However, the USDS had urged Congress that the water salvage act be "subject to a report from the Secretary and the President on consultations

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[21] Telegram from Sayre/Friedkin to U.S. Embassy, México D.F., May 27, 1967, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/67.

[22] Telegram from Feldman to USDS, "An International Treaty on the Use of Subterranean Water is Still an Issue," December 12, 1967, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/67.

with the Mexican Government" in order to "reassure . . . Mexico that this Government intends to comply fully with its commitment to consult concerning groundwater salvage plans" outlined during meetings between Johnson and Díaz in 1966. However, the House Committee on Interior and Insular Affairs believed that the stipulation was "unnecessary [since] the President has the power and authority to consult with Mexico and carry out the agreements already reached with the Government of Mexico."

USDS officials were further concerned that the new program violated commitments that Secretary Udall had made to Hernández in 1966, namely that additional water salvage programs would probably not be needed until 1982. Furthermore, the USDS had assured Mexico that such a program would only be implemented after careful evaluation of the eighteen wells recently drilled near Yuma and that "such development would not cause any significant reduction in ground-water flows to Mexico and that the salinity of water delivered to Mexico would continue to maintain a downward trend." Katzenbach pointed out that the USDS needed to notify Mexico that the new legislation would not signify the nullification of previous agreements on the development of water resources in the delta.[23]

As early as 1960, Mexican engineers saw the potential for a pumping war on San Luís Mesa. Antonio Coria, Chief of Technical Consultation for the SRH, warned that the 1944 Treaty needed to be renegotiated so as to define Mexico's rights to groundwater in light of a Mexican ban on new wells in the region. Coria felt the need to renegotiate the treaty because "in the neighboring state of Arizona exist numerous wells that drain almost in their totality aquifers of the Colorado River." Coria felt that the ban on new wells was a good thing, particularly in light of massive overdraft from pumping on the Mexican side of the border, but feared that uncontrolled pumping in the United States might prejudice users in Mexico.[24] The ban on new wells in San Luís became a relic of

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[23] Telegram from Katzenbach to U.S. Embassy, México D.F., "Authorization of Water Salvage in Colorado River Basin Project Act," October 2, 1968, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/68.

[24] Letter from Antonio Coria to Antonio Rodriguez L., "Aguas del subsuelo en la region de Sonoita a S. Luis Rio Colorado, Son.," AHA, Fondo Consultativo Técnico, Caja 871, Exp. 8231. The ban on additional wells was in place as early as 1960. See letter from Roberto Barrios to C. Secretario de Recursos Hidraulicos, "Se solicita se considera proposicion para poder aprovechar los terrenos comprendidos en la region de Sonoita a San Luis Rio Colorado," November 1, 1960, AHA, Fondo Consultativo Técnico, Caja 871, Exp. 8231.

the past by 1968. DRH engineers planned for pumping from the new wells to compensate for overdraft pumping taking place in the district.[25] Mexican officials felt that too much water was flowing past Mexican wells without being used. Engineers suggested that 220 million cubic meters of water be extracted from the San Luís wells, a quantity greater than natural flow into the aquifer, "with the object that the overexploitation increment the gradients towards Mexico."[26]

In February of 1970, the IBWC and USBR presented their findings on groundwater flow near the border region of the Delta. They stressed that water flows across the border did not occur naturally. Instead, operation of wells in Mexico drew percolating irrigation water across the border. The IBWC study calculated that 60,000-acre feet per year crossed into the Mexicali Valley region, and 27,000-acre feet per year went across the Arizona border. Friedkin stressed that any pumping in the United States had a sound legal foundation, since the waters being pumped originated on U.S. farms. Accordingly, he noted that pumps planned for the future would "reduce the flows across the Arizona boundary to 5,000 acre feet or less." Friedkin hoped that this study would avert serious conflict with Mexico over the groundwater issue. He also had no reservations with US farmers exercising their right to "increase pumping in the Yuma Mesa to recover its own irrigation percolating waters for use in the country, rather than let them be drawn westward by Mexican pumping."[27]

In February 1972, President Echeverría agreed to double the amount of water pumped from the wells on the San Luís Mesa.[28] These measures were taken as a temporary strategy to compensate for saline water from the Colorado River until the

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[25] Letter from Heinz Lessert Jones, Eduardo Paredes Arellano, and Luis Hernandez Torrens, to Aurelio Benassini V., Chief of Technical Consultation, July 9, 1968, AHA Fondo Consultativo Técnico, Caja 871, Exp. 8231.

[26] "Conclusiones y recomendaciones de la junta celebrada el dia 2 de marzo en relacion con la explotacion de aguas subterraneas en la Mesa de San Luis, Sonora," author unknown, no date, AHA, Fondo Consultativo Técnico, Caja 871, Exp. 8231.

[27] Letter from J.F. Friedkin to Chris G. Petrow, February 6, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70.

[28] Telegram from McBride to Rogers, February 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 1/25/72.

rehabilitation program was finished.[29] In July 1972, Echeverría approved the construction of 100 additional wells near San Luís.[30] Thereafter, U.S. officials grew increasingly concerned with Mexican plans to pump approximately 320,000-acre feet of water per year from the San Luís Mesa. Engineers from both nations met in Phoenix on December 12, 1972 to discuss those plans. While the Mexican engineers informed IBWC officials that the U.S. could pump as much water as it wanted to offset Mexican diversions, U.S. officials hoped to preempt a pumping war. The U.S. team stressed that flows in the aquifer were man-made. Mexican pumping at a rate of 160,000 af per year would draw 465,000 af from the U.S. between 1972 and 1982. If Mexico increased pumping to 320,000 af per year the ten year draw down from the aquifers would approach 720,000 af. Friedkin noted that "all such waters are needed and can be used by the United States interests, and their withdrawal by Mexico will create a serious political problem for the United States." Ultimately, Friedkin hoped that the exchange of demands between the two countries would not lead to a pumping war. "There should be a better way," he observed, " and we should seek one, but it may be too late." Friedkin then observed that the groundwater issue should be tied in with the salinity agreement in order to limit Mexican pumping in the San Luis area and conduct joint studies on the issue of groundwater pumping.[31]

**Towards a Solution**

The salinity problem continued despite Minute 218. While Minute 218 made a modest improvement in water quality during the five-year period of the agreement, salt-related problems continued. Mexicali soft-drink bottlers, as well as farmers, protested poor water quality in June 1966.[32] In December 1966, the Secretary of Hydraulic Resources returned from talks with Secretary Udall, pessimistic about the possibility for

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[29] Telegram from Feldman to State, "Steps to Protect Mexicali Valley Water Table," May 26, 1972, RG 59, Box 2482, Folder 1/25/1972.

[30] Telegram from McBride to Rogers, RG 59, Box 2482, Folder 6/1/72.

[31] Letter from Commissioner Friedkin to Country Director Robert A. Stevenson, "Groundwaters -- Lower Colorado River Basin, Technical Joint Meeting -- United States and Mexican Engineers, Phoenix -- December 12, 1972," RG 59, Box 2482, Folder 10/3/72.

[32] Telegram from Feldman to State, "Salinity Still in the News," June 7, 1966, NACP, RG 59, POL 33-1, MEX-US, Folder 5/4/66.

better water from the Colorado River, noting that during the previous year deliveries had been "unusable."[33]

Official and unofficial threats of pursuing claims for damages hung like a thick cloud over the heads of US officials during the crisis. Some of the threats came from unofficial sources, such as the *LAE (Liga Agraria Estatal de Baja California)*. The threat of litigation for damages appeared most frequently when Mexico desired additional action from the U.S. government. The CCI demanded reparations for damages after the announcement of Minute 218. The CNC threatened to "demand [that the] US pay for damages done by salinity."[34] Additionally, *Comité de Defensa* president Aurelio Flores Valenzuela contended that 11,000 Mexicali farmers were losing 75,000,000 pesos each year "as a result of increasing infertility of land."[35] Often these demands were made on impressionistic evidence. For example, wheat growers demanded reparations for wheat that failed to mature due to the salinity of irrigation water. Francisco Diaz Echerivel, General Secretary of the LAE, later observed that the wheat "appeared to be premature and that the crop was developing normally."[36]

The Mexican government generally did not use exact figures for damages, but retained the threat of presenting claims as a bargaining tool during negotiations. After the announcement of Minute 218 Foreign Secretary Carrillo asserted, "The rights of the affected farmers remain for them to assert in the manner they consider appropriate." He also noted that his office would study their claims if asked. U.S. officials in México D.F. viewed the revival of damage claims as a result of the poor reception of Minute 218.

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[33] Memorandum of Conversation, "Colorado River Salinity, Meeting between President Johnson and President Diaz Ordaz," December 3, 1966, NACP, RG 59, POL 33-1, MEX-US, Folder 11/22/66.

[34] Telegram from Freeman to U.S. Embassy, México D.F., April 3, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 4/1/65.

[35] Telegram from U.S. Embassy, México D.F., to Rogers, August 8, 1969, NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/69.

[36] Telegram from Feldman to USDS, "Wheat Producers claim damage caused by salinity," April 7, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 4/1/65.

Ambassador Freeman also noted that candidates in state and local elections in Northern Baja California brought such issues to the forefront. [37]

As early as 1965, the Mexican desk at the USDS and Ambassador Freeman contemplated providing Mexico with a favorably financed loan for the rehabilitation of Mexicali Valley in exchange for an agreement to drop the damage claims.[38] Freeman continued to push the idea, noting that the loan would have to come from U.S. sources, and not from the World Bank, to which Mexico already enjoyed access. Senator Hayden, often at odds with USDS policies related to the salinity crisis, also desired to obtain attractive financing for the Mexicali Rehabilitation Plan. He stated he would be willing to sponsor it in Congress.[39] Furthermore, Secretary Rusk stated that the United States would cast a positive vote for Mexico if it needed financing from the International Development Bank to carry out a feasibility study for the program.[40]

On March 11, 1969, Consul Feldman sensed that Mexicali residents were dissatisfied with Minute 218. At the time, the Mexican government's opinion of Minute 218 was favorable. This was most evident when Secretary Hernández visited Mexicali to implement the rehabilitation plan. He spoke favorably of the agreement, noting that it had alleviated the salinity problem. A local journalist took issue with the secretary, noting that large amounts of water had been wasted through the drainage canal from Wellton-Mohawk. Feldman believed that the latter position best represented conventional wisdom amongst technicians and officials in the valley. Whether or not the federal government listened to the local authorities, Feldman noted, "the consideration of Act 218 will encounter some rough sledding when the U.S. and Mexican officials meet at the appropriate time to evaluate the results and to make plans for the future."[41]

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[37] Ibid.

[38] Memo from Sayre to Terrance Leonardy, June 3, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 6/1/65.

[39] Telegram from Freeman to Rusk, June 8, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 6/1/65.

[40] Telegram from Rusk to U.S. Embassy, México D.F., June 17, 1965, NACP, RG 59, POL 33-1, MEX-US, Folder 6/17/65.

[41] Telegram from Feldman to USDS, "Comments of the Secretary of Hydraulic Resources on

Local reaction against Minute 218 continued when the *Comité de Defensa del Valle de Mexicali* resumed their meetings in 1969. *El Mexicano* newspaper reported that the Comité stood patently against renewal of the agreement when it expired in 1970. Engineer Martínez del Campo suggested that Mexico receive water equal in quality to that enjoyed by U.S. farmers in the Imperial Valley. The chemistry department of UABC also proposed studies of the salinity crisis in hopes of identifying the extent of damage to valley fields and proposing methods to resolve it favorably for Mexican interests. Feldman noted, however, that participation in the Comité had waned "since at its last meeting the attendance was so poor that the meeting had to be called off." "Some elements of the community will continue to beat the drums," he noted "and the more need for a diversionary tactic, the louder the drums will beat."[42]

By summer, public sentiment against extending Minute 218 as a permanent solution continued to mount. Perhaps Mexicali Valley's biggest ally, though at times an edgy adversary, the IID, provided support for the claims of salinity damage from Colorado River water. Its officials had protested that "the increasing salinity of the Colorado River irrigation water is damaging the agricultural productivity of the region." The IID complained that water from Imperial Dam had an average salinity of 838 ppm in 1968, but in 1969 the salinity had risen to 908 ppm. The IID's public information officer noted, "when water with this high a salinity count is used in land like the [Imperial] Valley's, there's a good chance crops won't grow at all." The statement did not arouse much sympathy from Mexicali officials, but did raise questions related to the complaints of Mexicans regarding the poor quality of water they received from the Colorado River. One farmer noted that "evidently what is considered to be good for the Mexicans is not as acceptable by the Americans even to a lesser degree."[43]

At the same time, federal opinions on Minute 218's effectiveness continued to emanate from Ciudad Juárez and México D.F. As the end of Díaz Ordaz's administration approached, many officials, including Secretary Hernández, suggested that Mexico's

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Salinity and a Columnist's Reaction," March 11, 1969, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/69.

[42] Telegram from Feldman to USDS, "Salinity Still an Issue," NACP, April 3, 1969, RG 59, POL 33-1, MEX-US, Folder 1/1/67.

[43] Telegram from Feldman to USDS, "Salinity Still an Issue," July 11, 1969, NACP, RG 59, POL

diplomats approve a temporary extension of Minute 218 and allow the new president to negotiate a permanent settlement the following year. CILA commissioner Herrera Jordan also remained open to the idea of extending Minute 218.[44]

While Mexicali farmers and officials demanded a more effective resolution to the salinity crisis than that offered by Minute 218, the IBWC and USBR swallowed difficult conclusions of their own about the 1965 accord. In October 1969, Commissioner Friedkin somberly reported to the USDS's Office of Mexican Affairs, "I regret to report to you that the Bureau of Reclamation now advises that it cannot effect the reductions in salinity of Colorado River waters delivered to Mexico for 1969." Friedkin further observed, "Instead of the stated reduction of 12 to 15 ppm, the reduction may now be only 10 ppm or less under the average for 1968." Once again, dynamic situations made it difficult for the USBR to deal with "conditions not anticipated." Friedkin somberly noted that little else could be done to ameliorate the situation during 1969. Friedkin also noted that the IBWC and USBR were reaching a point where increases would be difficult to assure. While Friedkin noted that a change of only 5-10ppm would not inflict any physical harm on Mexicali fields, its timing was not provident. With the end of the five-year agreement approaching, such incremental improvements would not help renegotiations. Friedkin feared that the current result "adds to an already serious question [in such a way] that we may not be able to negotiate a satisfactory new agreement with Mexico . . ."

Friedkin also noted that between 1962 and 1969, annual average salinity had dropped nearly three hundred-ppm, a significant amount. He noted that salinity could have been decreased perhaps seventeen ppm per year more if salinity from the South Gila Valley could have been disposed of in the manner of the Wellton-Mohawk waters. Friedkin attributed the decline in cotton yields as much to the pink bollworm as to the saline waters. Similar changes had ravaged Yuma and the Imperial Valley. Friedkin also noted that the Mexican commissioner of CILA expressed his general approval with Minute 218 and noted that "the uneasiness of the farmers [in Mexicali Valley] is due to their not being informed of how the Government has dealt with the matter." Tellingly,

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33-1, MEX-US, Folder 1/1/69.

[44] Telegram from Feldman to USDS, "Conflicting Mexican Opinions on Salinity," July 11, 1969, NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/69; Telegram from McBride to Rogers, August 8, 1969,

however, Friedkin noted that the South Gila issue remained a concern since "the increased delivery of pumped water was due to United States interests stopping use of pumped waters in the South Gila area for irrigation because they were too saline. . . ." Instead, he observed, "Our United States users are instead using the much better river waters for irrigation."

Friedkin hoped that when Minute 218 was renegotiated, that South Gila waters would be disposed of through a channel that fed into the Wellton-Mohawk discharge canal. While Friedkin sensed local U.S. opposition to such a plan, which would necessitate another USBR project for the benefit of Mexico, he believed it "necessary if we are to reach a new agreement with Mexico." Friedkin also entertained other solutions, including the release of fresh water each year to sweeten poorer quality deliveries to Mexico. Another option was the of reduction of farm acreage in the United States, which, he noted, "I believe to be politically impractical of attainment."[45]

Other USDS officials were also concerned about the prospects for decreasing salinity on the Colorado River and the renewal of Minute 218. As Charles A. Meyer, Assistant Secretary of State, bluntly noted in a letter to DOI Assistant Secretary for Water and Power Development James Smith, "our current performance in reducing the salinity of waters delivered to Mexico raises doubts about the likelihood of our eventual success in obtaining Mexican agreement to its extension." Not only did the USDS want to renew Minute 218, but it also felt that agreement offered the best basis for a *permanent* solution to the salinity crisis. Meyer observed that prospects did not appear bright for the US if Mexico decided to take the case to World Court. "In our judgement," he observed, "the possibility that in an international adjudication the United States would be found liable for past damages and would be required to prevent future injury to Mexico is sufficiently strong to cause us to take whatever steps we can to avoid such an adjudication." Accordingly, he stressed the importance of making substantial gains under Minute 218 during the next two years. Meyer noted that such a prospect was not encouraging, since

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NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/69.

[45] Letter from Friedkin to Chris G. Petrow, Country Director, Office of Mexican Affairs, October 1969, NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/69.

water delivered to Mexico was "still almost 300 ppm greater than that of the water utilized by the United States users on the same latitude."[46]

The Mexican Commission of Salinity Studies was composed of DHR, SRE, and SRH scientists, engineers, and lawyers. According to their official study, Mexican engineers noted that salinity of Colorado River water between November 1965 and November 1969 averaged 1,050 ppm. In brief, the commission concluded, "it can be concluded that the levels of salinity of the waters of the [Colorado] river have increased, . . . [but] during the period of Act 218, the average level has remained stationary."[47] Subsequently, the study noted the complexity of agricultural production in Mexicali Valley, suggesting that one factor did not account for all the hardships suffered by valley farmers. Instead, "All agricultural production is exposed to diverse factors that can affect it, technological, ecological, entomological, financial, mercantile, social, political, etc." However, they did rank salinity as the primary factor affecting agricultural production in the valley. This had forced the irrigation district to increase the amount of water applied to each acre, while at the same time decreasing total acreage to compensate for water not accepted from the Wellton-Mohawk drain.[48] They additionally concluded that the CRID had wasted approximately three percent of its water each year to the Gulf of California because it contained too much salt to mix with water from the Colorado River.

Foreseeing the impact of U.S. wells near the border, the commission suggested to the DRH that it "initiate exploration of the underground waters in the Mesa of San Luis, Sonora, with the object of taking advantage of the flow of water that still crosses towards Mexico and create rights of usage." The report also encouraged the SRH to pump "an annual volume greater than that which actually flows, with the object of exploiting the underground storage . . . in case on the other side increased pumping moves the aquifer's

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[46] Letter from Charles A. Meyer to James R. Smith, December 1969, NACP, RG 57, POL 33-1, MEX-US, Folder 11/1/69.

[47] *Problema de la salinidad creado por la calidad de las aguas, que Estados Unidos entrega a México conforme al Trataado de 1944,* AHA, RG Consultativo Técnico, 13/61, 2-3.

[48] Ibid., 5.

divide towards to Mexican side in detriment of the zone." They also pushed to continue use of wells in Mexicali Valley.[49]

The commission felt that enough water could be saved through the rehabilitation program to "cover the needs of the District." In fact, "at the end of 1970, we will save a sufficient amount of water to send to the sea all the drainage from the WMIDD, without greatly affecting the established perspectives in the study of facts." Furthermore, the commission felt that Mexico could "take advantage of water from the Wellton-Mohawk Canal to raise shrimp in the marsh close to the mouth of the Colorado River."[50] Optimistically, they believed that if the salinity of Wellton-Mohawk drainage water continued to decline during the rehabilitation, "[Mexicans] will be able to . . .utilize some of the volumes from this Canal for mixing them, and obtain greater availability of water."[51] In conclusion, the commission stated that it would not have a complete study of the impact of Minute 218 until June 1974. Signing a shorter extension of Minute 218 would allow the commission to carry out another study "in virtue [of the fact] that we do not have sufficient data to reach a new agreement."[52]

During the last few months of the Diaz administration, the future of the salinity crisis, from a diplomatic perspective, appeared uncertain. Initially, Carrillo hoped that an extension of Minute 218 could be worked out. This was contingent on the US providing Mexico with a full allotment of usable water, perhaps by using well water from the Yuma Mesa to replace the discarded water from Wellton-Mohawk.[53] Friedkin hoped that this would provide the basis for an extension of Minute 218.[54] Carrillo and Hernández were in agreement that the offer to replace sixty million cubic meters of Wellton-Mohawk

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[49] Ibid., 18.

[50] Ibid., 19.

[51] Ibid., 20.

[52] Ibid., 20-21.

[53] Telegram from McBride to Rogers, March 16, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70.

[54] Memo of Conversation, "Means of Improving U.S. Performance under 1965 Salinity Agreement with Mexico," February 13, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70; Memorandum of Conversation, "Lower Colorado River Salinity Problem with Mexico," NACP, April 16, 1970, RG 59, POL

drainage water with better water from the Yuma Mesa was a great advance. Furthermore, they were finally convinced that pumping on Yuma Mesa would not damage the flow of water to Mexicali Valley. They even went on to suggest that water from the WMIDD area might be kept in an underground aquifer below San Luís Mesa, and mixed with better water in order to supplement water supplies in Mexicali Valley.[55] However, President Diaz only approved an interim extension of Minute 218, leaving the matter in the hands of the new president, Luis Echeverría.[56]

Continued pressure from Mexicali interest groups probably also influenced President Díaz's decision not to renew the five-year agreement on Minute 218. An official from the U.S. Embassy in México D.F. attested to local hostility to Minute 218 during a trip to Mexicali. "I can only concur with Carrillo's view that inhabitants of Mexicali Valley are totally irrational on this subject," McBride noted, "and they were extremely discourteous to me personally because obviously I could not solve their problem." Looking into the future, McBride continued, "I feel sorry for anyone who has to deal with these people on any sort of regular basis."[57] In June Díaz continued to express displeasure at the slow rate of progress on a permanent solution, in part because of continued pressure from Mexicali groups. The *Comité de Defensa*, for example, sent Díaz a letter demanding three things from the Mexican government: 1) that Minute 218 not be renewed, 2) that the Mexican government take the case before the World Court, and 3) that Mexico's rights to underground waters be protected in any agreement.[58] Additionally, in September 1970, fifty-one *ejidal* commissioners, under the banner of the CNC, requested of Díaz that any permanent solution require that "Wellton Mohawk

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33-1, MEX-US, Folder 1/1/70.

[55] Carrillo Flores and Hernandez Teran, "Conclusions de la reunion celebrada en la SRE . . ." July 24, 1969[?], AHA, Caja 13, Exp. 61.

[56] Telegram from McBride to Rogers, June 2, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70; Telegram from Kubish to Rogers, NACP, RG 59, October 23, 1970, POL 33-1, MEX-US, Folder 7/1/70.

[57] Telegram from McBride to Rogers, May 5, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70.

[58] Telegram from McBride to Rogers, June 2, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/70.

Canal be finished so that salt waters are discharged to sea canal and not to Mexicali Valley."[59]

With the changing of the Mexican president imminent, new individuals entered the stage of international politics in the delta. A friend of PRI candidate Luís Echeverría Álvarez, Milton Castellanos, gained influence with Mexicali's *campesinos* and students with his radical position on the salinity issue. Castellanos had been a justice on the Baja California Supreme Court and was the manager of the Baja California branch of the National Bank for Agricultural Credit. Ultimately, Castellanos feared that continued use of water from the United States would serve as an admission of usability. He contended that Mexico should refuse water from the Colorado River in order to strengthen its claims of hardship, should the case be carried before the World Court. Such a position would also bode well, he believed, for farmers seeking damages from saline water. To compensate for water losses, he advocated the drilling of additional wells in Mexicali Valley and/or San Luís Mesa (adjacent to Yuma Mesa). He also pressed the federal government to complete the rehabilitation program in three, instead of seven years. Furthermore, he advocated government acquisition of all irrigation rights in the valley in order to decrease the amount of acreage under cultivation.[60]

During a pre-presidential visit, Luís Echeverría held a twelve-hour meeting with farmers in Mexicali on issues related to cotton cultivation. The meeting pitted two opposing points of view regarding water policy against each other. First, CILA Commissioner Herrera defended the effectiveness of Minute 218 and argued that the drop in crop productivity could not solely be attributed to saline water from the Colorado River. Alfonso Garzón and CNC officials took issue with Herrera's statements. Promoting the ideas of Milton Castellanos, CNC officials argued that Mexico should only accept virgin water from the Imperial Dam and that water should be taken through the All-American Canal. CHC officials also blamed the DRH for not informing Mexicali farmers that the salinity issue was a permanent one, and not merely a temporary hurdle.

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[59] Telegram from Kubish to Rogers, September 25, 1970, NACP, RG 59, POL 33-1, MEX-US, Folder 7/1/70.

[60] Telegram from Feldman to State November 25, 1969, NACP, RG 59, POL 33-1, MEX-US, Folder 11/1/69.

Ultimately, these differences of opinion reflected growing tensions between exasperated local farmers and scientifically informed national officials. While Herrera was armed with scientific data to demonstrate the various factors associated with decreased yields, such explanations could not sufficiently persuade farmers who had spent nearly a decade wondering when the issue would be resolved.

During Echeverría's visit, he also spent time at the Baja California Popular Assembly of State Development, where he heard comments from his close friend (and later governor of Baja California), Milton Castellanos on December 28, 1969. Castellanos reinforced his belief that the saline waters from the United States should not be used, but instead should be drained to the Gulf of California. Castellanos emphasized the historical aspects of water politics in the delta as well as immediate suggestions to Echeverría for Mexican policy. He contended that with the construction of the All-American Canal and Hoover Dam, the fate of the Valley was set. Together, both structures provided the United States with nearly total control of the river. Castellanos argued that the pollution dumped into the river by the WMIDD did not qualify as a natural source of water for the Colorado River, and hence, represented a violation of the 1944 Treaty. He praised President Díaz for signing Minute 218, but also stressed the need to push for better water, even if it meant going to the World Court. Castellanos cited historian Norris Hundley, Jr., who had written," it is almost assured that no Tribunal of Arbitration will support the United States as long as it looks to fulfill the treaty giving Mexico unusable water." For Castellanos, the provenance of the Wellton Mohawk waters remained the central issue. He also feared that the new wells in Yuma County would further contaminate water, as they were delivered to Mexico as "run-off." Therefore, he urged Mexican officials to push their claims with the United States and as a last resort carry their issues before the World Court.[61]

During 1970, salinity levels of Colorado River water near the the border only improved from 1289 to 1278 ppm. The IBWC attributed the decreased rate of improvement to the increased salinization of waters at Imperial Dam. During 1970, the Mexicans "wasted" 76,000 af of water to the Gulf of California "in order to further

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[61] CEPES Estado de Baja California, Asamblea Popular de Desarrollo Estatal, ""Estado de Baja California, Salinidad," Luis Catellanos, December 28, 1969, AHA, Caja 13, Exp. 61.

reduce the salinity of waters diverted for its use to an average of 1139ppm." Local groups in Mexicali, however, protested the wasting of this water while US scientists told Mexico it did not need to waste the waters. Friedkin believed that the greatest problem in the future would not be Wellton-Mohawk drainage, but increased use upstream from Imperial Dam in the United States. "As I recently reported . . . present estimates by the Federal Water Quality Office, indicate that unless corrective measures are taken, the salinity of Colorado River waters at Imperial Dam is expected to increase to the extent that by the year 2010, the salinity there will have reached 1230 ppm. The resulting salinity of deliveries to Mexico would be about 1700." Friedkin believed that the U.S. needed to take action above Imperial Dam not only to protect Mexico, but also farms in the U.S.[62]

Luís Echeverría's ascendancy to the Mexican presidency changed the dynamics of the salinity problem. As Consul Feldman noted:

> It is interesting to note that whereas in the past, officials, organization, and farmers in Baja California mainly complained about salinity and limited their activity to passing resolutions, a new note has been struck in that concrete proposals concerning the issue are being offered for consideration by the US and the [government of Mexico]. This would seem to reflect the policy of President Echeverría in setting up dialogues with his people and stimulating them to give voice to their problems and possible solutions thereto.[63]

Part of this new momentum could also be attributed to the new foreign secretary, Oscar Rabasa, who was much more confrontational than his predecessor, Antonio Flores Carrillo. As soon as Echeverría took office, the US's negotiating team continued to press for the extension of Minute 218. One of the features of the revamped Minute 218 was a pledge by the United States to attain "salt balance [of U.S.] operations within three years." However, the Mexicans rejected the offer of salt balance, hoping instead to gain parity with users who enjoyed water from the Imperial Dam. As Chris Petrow, Country

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[62] Letter from J.F. Friedkin to William P. Rogers, January 9, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 1/1/71.

[63] Telegram from Feldman to USDS, "New Positions Being Advocated on Salinity Problem," April 21, 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 1/25/72.

Director for Mexico noted, "If this increase [in salt] continued at the recent rate, the water delivered to Mexico would in a few decades be unusable by almost any standard, and salt balance would be almost meaningless." Feldman also pointed out that offering salt balance "tended to emphasize the fact of our non-compliance with the concept at Wellton-Mohawk for some ten years." He warned that little improvement would be made without prohibitions on new projects in the river basin. At the same time, new USBR Commissioner Armstrong noted a growing *domestic* interest in salinity issues.[64]

Concurrently, Mexico's new Secretary of Hydraulic Resources, Leandro Rovirosa Wade, outlined measures to counteract water shortages incurred by the salinity crisis. He announced that Mexico would drill ten wells on the San Luis Mesa, beginning in 1971. These waters would be used to dilute the highly saline drainage deliveries from Yuma Valley at the international border "to some 1450 ppm, with consequent benefit for Sonoran farmers in the District irrigated from Colorado River." U.S. officials were somewhat perplexed, since Mexico had never before complained about waters of 1550-ppm salinity in the past. Furthermore, McBride noted that "Admission of usability of 1450 ppm water for irrigation purposes could be useful in further discussions with [Mexico]." IBWC Commissioner Friedkin noted that such actions would "essentially draw on U.S. Yuma Mesa Reservoir," but he did not know how long such reserves would last, particularly if they were "subject to US pumping its Mesa waters at source."[65]

By the summer of 1971, the use of a desalination plant had moved into the realm of solutions for the Colorado River salinity crisis. However, it was not initially met with approval. On July 16, 1971, DOI Secretary Morton responded to Secretary of State Rogers's request for solutions to the crisis. Morton suggested several long-term solutions, including "augmentation of Colorado River flows through desalting sea water, saline groundwater, and geothermal brines; weather modification; and waste water reclamation." Morton noted that the USBR, Office of Saline Water, and USGS were "exploring the possibility of augmenting the Colorado River with several million acre-

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[64] Memo of Conversation, "Colorado River Salinity Problem with Mexico: Reply to Mexican Counter-Proposal of February 2, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 2/1/71.

[65] Telegram from McBride to Rogers, May 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 5/1/71.

feet of fresh water annually through the desalting of geothermal brines in the Imperial Valley of California." Morton observed that construction of a desalination plant could reduce the impact of the Wellton Mohawk problem as well as have "immediate high visibility." Finally, he outlined construction of a multi-stage desalination plant that would eventually be 150MGD (million gallons per day) in capacity and completed by March 1975 if authorized by Congress by November 1, 1971.[66]

In response to Morton's recommendations, Friedkin advised against conducting studies for a desalinization plant at Wellton-Mohawk. First, such a measure would complicate the negotiation process, especially the US plan to extend Minute 218 and improve water quality to 1190 ppm by 1976. A desalination plant would provide water of 1000ppm, which would be of a superior quality to standards proposed by Mexico. Furthermore, Friedkin pointed out, "it would directly support Mexico's contention that it does not have to accept any drainage flows as a part of the Treaty deliveries, which, if sustained, would result in doubling the desalination works or require other measures by the United States to further improve the salinity of waters to Mexico."

Well aware of the calculus of water politics in the West, Friedkin noted that a desalination plant would create a loss of 50,000 acre feet of water per year (concentrated brine) to water users on the lower river. Additionally, the cost would be prohibitive with existing technology. Friedkin did not believe the $400,000,000 investment would attract the interest of Western politicians "to do more for Mexico than they believe we are required to do, and with practically no benefit to US users." Instead, he observed, US politicians would rather clean up other sources of salinity along the course of the Colorado River. Friedkin suggested that the desalination plant be shelved "at least for the present" and that they "guard carefully against Mexico receiving any indication that it has even been proposed." Friedkin also told USBR officials in Denver to wait until Mexico had rejected or accepted the modified treaty before pressing ahead with desalinization projects. Finally, Friedkin expressed his hope that a desalination plant would eventually

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[66] Letter from Roger Morton to Rogers, July 16, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 6/29/71.

be built "below Imperial Dam to maintain normal deliveries to Mexico, in lieu of substitution waters, and to assist in the control of salinity at Imperial Dam."[67]

By September 1971, prospects for resolution of the crisis outside of a legal tribunal dimmed further. Foreign Secretary Rabasa informed McBride that Echeverría had rejected Minute 218 and instead wanted legal advisors from both nations to look over the issue. If an understanding between them could not be reached, then it might be submitted to the Organization for American States or World Court. [68]

The USDS expressed concern about Mexico's latest maneuver and saw it as a crucial turning point in U.S.-Mexican relations. T.R. Martin stressed that in the past problems between the U.S. and Mexico had largely been resolved through bilateral talks, and not adjudication. The gains made through agreements over such issues as *El Chamizal*, for example, could be tossed to the wind, he believed, if the water issue were thrown into court. Martin emphasized how the bi-lateral negotiation process had worked in the past, but perhaps failed to recognize the impact of ten years of anxiety on the part of residents in Mexicali and their leaders in México D.F. Martin suggested that the two nations reach an operational agreement before the case went to court. If not, he warned, the Basin States would probably be very reluctant to "agree to a continuation of the present agreement."[69]

Environmental groups from the United States also took up the cause of Mexicali farmers. Groups such as the Natural Resource Defense Fund pressed local officials to take action against U.S. courts. "They seem to be showing little interest in withholding their fire," Feldman noted "until both governments have a chance to resolve the issue in a case which is of deep concern to both the U.S. and Mexican governments could cause embarrassment to both government." These groups had enlisted the help of James Stone, a U.S. expatriate who settled in Mexicali and had headed the Anderson-Clayton interests in the region. Even after some prodding, Stone was reluctant to aid their cause. Attorney

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[67] Letter from Friedkin, August 5, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 6/29/71.

[68] Telegram from McBride to Rogers, September 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 6/29/71.

[69] Telegram from Rogers to U.S. Embassy, México D.F., NACP, August 14, 1971, RG 59, POL 33-1, MEX-US, Folder 6/29/71.

Ignacio Guajardo had an equally difficult time finding Mexicali farmers who would serve as test cases. Guajardo doubted if any of the farmers affected "would have the temerity to do so without the encouragement of the [Mexican government]." Feldman believed that the impact of the environmental groups would be negative: "The advocacy of action and intervention by volatile U.S. groups interested in ecology will not serve as a mollifying influence on the Mexican position," he noted, "and we can expect more fireworks in the future if an agreement between the U.S. and Mexico is not quickly reached in the resolution of the salinity problem." Feldman believed that they were more interested in promoting their own agenda and had "little or no consideration of the international repercussions involved which may only result in hindering U.S. abroad in bring about an improved ecology for the world."[70]

In terms of vocal interest groups in Mexicali, DRH Secretary Rovirosa noted that they were comprised of a "small by well-organized group of campesinos." The CCI, an organization to which many of the campesinos belonged, he noted, "had been vociferously pushing the salinity problem for political reasons of its own." Rovirosa also downplayed the importance of the issue throughout Mexico, noting that "it was not one of international importance to Mexico in the mind of the public, although it was a serious problem that both the US and Mexico should continue to try and resolve for their mutual best interests."[71]

In 1971 the United States negotiating team felt that conditions were ripe for a long-term agreement on Minute 218, yet they remained leery of the unpredictability of Rabasa and Echeverría. At talks in November 1971 in México D.F., Rabasa continued to insist on leaving a juridical door open for Mexico lest the bilateral negotiations did not provide an agreeable solution. With characteristic cleverness, Rabasa cited a U.S.-Canadian trans-boundary water dispute in which the U.S. had pressed not only for a redrafting of the 1909 Treaty between the two nations regarding bi-national waters, but

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[70] Telegram from Feldman to USDS, "The Interest of U.S. Ecological Activist Groups in the Salinity Problem," September 21, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

[71] Telegram from McBride to Rogers, "Salinity -- Views of Secretary of Hydraulic Resources, Rovirosa Wade," October 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

also for the payment of indemnities for damages. Negotiations ended in a renewal of Minute 218 for another year.[72]

Two weeks later Cervantes del Río, Secretary General of the Presidency, met with USDS officials in México D.F. to discuss the salinity issue. U.S. officials asked Cervantes del Rio to explain the difference in positions between Echeverría and Rabasa, the former speaking little on the issue and the latter taking a very confrontational approach. Cervantes del Río pointed out that it was hard for Mexicans to understand "how a country which can put a man on the moon can fail to find the means to reduce effectively the salinity of waters in a given river basin." Similarly, he suggested that with the wealth and power the United States commanded, "this was really a minor problem." In sum, "he questioned the wisdom of paying the political costs to our foreign policy which arise from letting it drag on year after year." Counselor Finch provided an honest, though perhaps not comforting response, noting that the Colorado River Basin states "had taken more than 20 years to reach any kind of agreement on riparian rights."[73]

As tensions sharpened between the U.S. and Mexico, politicians and labor leaders increased their calls for reparation from the United States. Baja California Governor Milton Castellanos Everardo led the charge on the state level, suggesting that any reparations be used for the rehabilitation program in the valley. Federal deputy Alfonso Garzón hoped that the indemnification would be shared amongst the affected farmers. He suggested that the United States owed Valley farmers approximately one billion dollars.[74] Finally, scholars at the *Universidad Nacional Autónoma de México* Center for International Relations discussed the Wellton-Mohawk case with McBride and informed him that Mexico would easily win a case against the U.S. in the World Court for the damages incurred during the salinity crisis. McBride found it ironic that these

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[72] Telegram from U.S. Embassy, México D.F. to USDS, "Meetings on Salinity, November 8-11, 1971," RG 59, Box 2482, Folder 9/25/71.

[73] Memorandum of Conversation, "US-Mexican Relations: Colorado River Salinity, Wednesday, November 24, 1971; Mexico City," December 10, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

[74] Telegram from Feldman to USDS, "New Positions Being Advocated on Salinity Problem," April 21, 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 1/25/72.

intellectuals supported the Mexican government so vigorously, noting that "intellectuals in Mexico . . . are not noted for their support of their own government's position."[75]

Despite additional promises to maintain salt balance within U.S. projects, Mexico again rejected a long-term extension of Minute 218 in November 1971, opting instead for another twelve-month extension.[76] The USDS remained baffled by the chameleon-like position on Mexican officials on the issue, especially since Rabasa had hinted at acceptance of a six-year deal that included well water in place of Wellton-Mohawk drainage. USDS authorities on Mexico also noted that it would be even more difficult for Mexico to obtain better quality during 1972, which was an election year in the U.S. Western politicians would be highly unlikely to make concessions to Mexico.[77] Hopeful federal and local officials in Mexicali were under the impression that the crisis would be successfully resolved by November 15, 1971, yet were disheartened when the extension was announced.[78]

**Conclusion**

In September 1972, McBride reflected at length on the impact of the salinity crisis on U.S.-Mexican relations. He observed that failure to resolve the issue would seriously impact bi-national relations, but also noted:

> The adverse or favorable repercussions would primarily affect the climate of our relations and the large amount of mutual daily cooperation, particularly along the border. We do not see how success or failure in these negotiations would have much effect on the other major problems between our two countries largely

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[75] Telegram from McBride to Rogers, March 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 1/25/72.

[76] David A. Gantz, "Meeting with Committee of Fourteen on October 29, 1971," November 1, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71. The Committee of Fourteen even expressed a willingness to part with additional water if necessary to meet salt balance under the new treaty, but wanted in return a guarantee of no-suits brought against the United States (which might ultimately impair US water rights or the continued existence of the Wellton-Mohawk district).; Rabasa explained the Mexican government's rationale for accepting twelve month extension in Telegram from McBride to Rogers, November 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

[77] Telegram from Meyer to Hurwitch, "Salinity, November 19, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

[78] Telegram from Feldman to USDS, "Reaction to Prolongation of Minute 218 (Salinity Problem of Colorado River," November 22, 1971, NACP, RG 59, POL 33-1, MEX-US, Folder 9/25/71.

> because these problems are to a considerable extent beyond the control of the two governments.

McBride then noted that the salinity crisis would have little impact on illegal immigrants and border crossings. Negotiations related to bi-national trade also depended on completely different factors. At the same time as the salinity crisis, he also observed, President Echeverría was assisting with the anti-drug campaigns of the United States. McBride observed, however, that the salinity crisis could set important precedents for water disputes between the two nations, including those in the Rio Grande watershed.[79] McBride's insights illustrate the potential impact that the salinity crisis posed for those living in the border region. For them, it was a daily issue. For diplomatic negotiators, however, water disputes might impact other issues along the border region, but would not derail relations between the two nations.

Mexican officials welcomed President Nixon's appointment of former Attorney General Herbert Brownell as special ambassador to resolve the salinity crisis. Rabasa and Echeverría temporarily tabled their legal reservations and waited to see what solution Brownell would present. Brownell began by making visits to Wellton-Mohawk Valley, Mexicali Valley, and México D.F. Brownell visited Mexicali in November 1972, where he met with Governor Castellanos, other officials, and local farmers. Brownell followed that trip with a visit to México D.F., where he attended a special breakfast with leading Mexican journalists. Brownell discussed the complexities of U.S. federalism, as well as his resolve to find a practical, in place of a legalistic, solution to the crisis.[80]

Ultimately, the appointment of Brownell vindicated the dichotomous regional/international model of Mexican-US relations elaborated by McBride in his 1972 telegram to Secretary Rogers. From a political perspective, Brownell's interactions with local and national officials on both sides of the border allowed him to craft a quasi-regional solution to a problem that had been approached primarily from a nation-to-

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[79] Telegram from McBride to Rogers, September 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 6/1/72.

[80] Telegram from U.S. Embassy, México D.F., to Rogers, "Brownell Visit to Mexicali," NACP, RG 59, POL 33-1, MEX-US, Folder 10/3/72;Telegram from U.S. Embassy, México D.F. to USDS, "Brownell Meeting with Mexican Media Leaders," December 4, 1972, NACP, RG 59, POL 33-1, MEX-US, Folder 10/3/72.

nation perspective. His visits to Mexicali Valley allowed him to see the damage that the excess salt had caused during the previous eleven years. Likewise, the unwillingness of Western politicians, as voiced through the Committee of Fourteen, to part with water in order to solve the problem, encouraged Brownell to turn to a desalinization plant in order to resolve the crisis. While Brownell's choice of solutions largely reflected the faith of his generation in the ability of technology to solve environmental problems, the autonomy he enjoyed from President Nixon's directive to find a quasi-regional solution to the problem ultimately brought the diplomatic crisis to an end. For Mexicali Valley, the solution, known as Minute 242, delivered nearly immediate benefits as salinity dropped off markedly during the following years. By the 1980s, the salinity ppm differential between water at Imperial Dam and the border had dropped to double digits. While environmental values did not triumph over the push to attain continued growth in the delta, a quasi-regional solution to the salinity problem eased tensions and turned the minds of a few to question the wisdom of regional development without constraints.

## Chapter 7

## "The Politics of Place"[1]

*"The tragedy . . .[of the Colorado River Delta] is not just that local populations with the greatest stake in local ecosystems are politically marginalized in process of globalization, but that natural resources are managed not as constituent parts of an ecosystem but as so many separate assets by a host of agencies [, distant communities, and interests]. . ."* [2]

In August 1973, Special Ambassador Herbert Brownell and Mexican Foreign Secretary Emilio Rabasa brought a sense of closure to twelve years of contentious bi-national disputes over salinity levels in the Colorado River by drawing up Minute 242 of the Mexican Water Treaty. Since 1961, saline runoff from the Wellton-Mohawk Irrigation District in Yuma County contributed to the deterioration of 80,000 acres of farmlands in Mexicali Valley. Minute 242 called for a "permanent solution" to the salinity problem. It also promised U.S. technical and financial assistance during the rehabilitation of farms in Mexicali Valley. Brownell guaranteed that the United States would take steps to purify the drainage water through the construction of a desalination plant in Yuma County, Arizona. The United States also agreed to build a drainage channel to carry water from the Wellton-Mohawk Valley to the Gulf of California, where it would not be able to contaminate Mexican diversions from the Colorado River.

During the ensuing year, the Nixon administration, the State Department, Ambassador Brownell, and a legion of local interests in the Colorado River Basin expressed differing priorities in drafting legislation to carry out the salinity control program. This chapter analyzes those priorities on international, regional (Colorado River Basin), and local (Yuma County) levels. While President Nixon and the State Department simply wanted appropriations to build the desalination plant, Western leaders used the opportunity to press for additional salinity control measures that would help conserve the

[1] *The Journal of Political Ecology* granted permission to reprint this chapter which appears in the aforementioned journal under the title of "'The Politics of Place':Diplomatic and Domestic Priorities of the Colorado River Salinity Control Act (1974)," in volume six (1999), pages 31-56.

[2] James B. Greenberg, "The Tragedy of Commoditization: Political Ecology of the Colorado River's Destruction," in *Research in Economic Anthropology*, volume 19, 133-149.

Colorado River Basin's ever-shrinking water supply. Closer to the border, farmers, municipal leaders, and Native Americans had more precise reasons for supporting or opposing the desalination plant.

These various geo-political perspectives were represented by two sets of bills discussed in the House and Senate. The solution promoted by the Nixon administration and the State Department was set forth in House of Representatives bill 12384 and Senate bill 3094. These bills only made provisions for those measures that would solve the immediate problems in Mexicali. Supporters of these bills wanted to construct the desalination plant near Yuma, extend the wastewater drainage channel to the Gulf of California, provide financial and technical assistance for Mexicali farmers, and provide clean water while the plant was under construction. H.R. 12384 and S.3094 also included appropriations for the lining of the Coachella Canal (above the Imperial Valley in California) with concrete in order to conserve the water that would be needed to fulfill the United States' responsibilities under the Mexican Water Treaty.

In contrast, H.R. 12165 and S. 2940 (drawn up by Congressman Johnson [CA] and Senator Fannin [AZ]), included everything mentioned in the administration-sponsored bills, plus an ambitious plan known as "Title II." Title II provided for the construction of a $34 million groundwater pumping well field near Yuma, in order to combat Mexican pumping of a bi-national aquifer. Additionally, Title II included millions of dollars for the removal of natural salt sources throughout the basin. Henry Brownell played a critical role in helping national leaders realize that Western leaders would roadblock international interests unless their local interests were satisfied. When the administration initially objected to Brownell's suggestion that the federal government pay for the desalination plant, he reminded them that "without their support [the Basin states] one does not have a solution to the problem with Mexico."[3]

Ultimately, the complexity manifest during deliberations over the Colorado River Salinity Control Act illustrates that as one moves from the international to the local level, priorities, and concerns become more precise and complicated to negotiate on the international level. Furthermore, local and international priorities are often more at odds

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[3] Philip Fradkin, *A River No More: The Colorado River and the West* (New York: Knopf, 1981), 313.

with each other than the priorities on any other two levels of government. Daniel Kemmis summarized this political reality best when he wrote, "[The] political culture of a place is not something apart from the place itself."[4]

**The "Western" Diplomat: Herbert Brownell and Minute 242**

In hindsight, Richard M. Nixon's appointee, Herbert Brownell, proved to be an appropriate choice for the job of Special Ambassador to resolve the salinity problem with Mexico. A successful lawyer in international business, Brownell was appointed by Dwight D. Eisenhower to serve as Attorney General in 1953. His experience in natural resource litigation as Attorney General allowed him to work closely with Western leaders. He observed that during the Eisenhower administration "states rights were giving way to the assumption by the federal government of preeminence in [the] field" of natural resources.[5] Brownell noted that this was most evident in water law, as "Congress had not yet enacted comprehensive federal environmental laws, and the states in the Western part of the country still fought for exclusive control of water rights."[6] Brownell gained most of his knowledge of western water politics while he worked on the *Arizona vs. California* case. This landmark case determined the apportionment of water from the Colorado River for Arizona, California, and the native tribes along the river. Given this experience, Nixon assigned the difficult task of drafting Minute 242 with Mexican officials to Brownell. This required a balance of shrewdness and deference, given Mexico's historic approach to Mexican-American relations. While the salinity crisis did not represent a major event in American diplomacy, Mexican leaders, particularly President Luis Echeverría, utilized the problem to reinforce Mexican nationality.[7]

Brownell's legal background provided him with immeasurable experience, yet his Western roots, fascination with technology, and faith in progress, help explain the

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[4] Daniel Kemmis, *Community and the Politics of Place* (Norman: University of Oklahoma Press, 1990), 7.

[5] Herbert Brownell with John P. Burke, *Advising Ike: The Memoirs of Attorney General Herbert Brownell* (Lawrence: University of Kansas Press, 1993), 155.

[6] Ibid.

[7] Journalist Alan Riding, in *Distant Neighbors*, (New York: Vintage Books, 1989), has written, "It is as if Mexican politicians and journalists need some relatively simple issue on which to focus their infinitely more complex sentiments about the United States," 336.

course he pursued in dealing with Western leaders and with the Mexican government. Brownell grew up in rural Nebraska. His exposure to a modern agricultural society attuned him to the mentality that prevailed among Western farmers. At the House hearings Brownell confessed:

> It is a temptation, of course, for me, being interested as I always have since my early days in the development of the West, the Middle West, where I came from, to urge the most prompt action in any area that will assist development of the natural resources there.[8]

This mentality not only benefited Brownell in dealing with Western politicians, but it ultimately benefited the Westerners and Mexicans. In sum, they were dealing with a man who believed in large-scale agricultural development.

Brownell's interest in using science to promote natural resource development also played a critical role in the scope of the agreement reached between the two countries. While he consulted with an expert "task force" throughout the negotiations, Brownell's personal fascination with technology likely played a notable role in crafting the solution envisioned in Minute 242. In his memoirs he remembered the scientific perspective that his father instilled in him from an early age. He observed: "Through my high school and college years, my father taught me at home and in the class room the importance of respecting 'the scientific method' when pursuing the mysteries of life and of the universe in the laboratory and observatory."[9] The desalination plant proposed for construction in Yuma subtly blended Brownell's love of technology with his understanding of Western water politics. He took pride in the fact that he helped "find innovative ways to resolve bilateral problems in our relation with Latin America."[10] Furthermore, since the plant would purify wastewater without the use of large volumes of additional water, farmers and communities throughout the West would not have to worry about curtailing diversions from the river. Representatives from the desalination industry also received a

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[8] House Subcommittee on Water and Power Resources, *Hearings Before the Subcommittee on Water and Power Resources of the Committee of Interior and Insular Affairs, House of Representatives, 93rd Congress, 2nd session, HR 12165 and Related Bills, Colorado River Basin Salinity Control Act* (Washington D.C.: GPO, 1974), 128. Hereafter cited as "House hearings."

[9] Brownell, 3.

financial boost from Brownell's faith in technology. The cost of the plant would escalate from an estimated $120 million in 1974 to $260 million (not including operation costs) by the time of its completion in 1993.[11]

**The River before Watergate: Nixon, The State Department and Minute 242**

Given the level of U.S. involvement in Southeast Asia, it is not surprising that President Nixon and the State Department adopted a minimalist approach in resolving the salinity crisis. Nevertheless, by 1974 American leaders began to feel pressure to end the embarrassing debacle. William Bowdler, Deputy Assistant Secretary of State for Inter-American Affairs, reflected on his uncomfortable excursions to Mexico on official business. "Whenever an issue arose in our relations with Mexico, whenever opportunities appeared for cooperation between the two governments, when our parliamentarians met in joint meetings," Bowdler remembered, "the salinity problem invariably confronted our spokesmen."[12] Arizona Congressman Morris Udall marveled at the general knowledge of the problem throughout Mexico. "I was amazed when I first got there," he recalled, "I thought this was probably a grievance in Baja California, and Sonora, perhaps; but you talk to some fellow from Guadalajara or Yucatán and this is the first thing they bring up."[13] Udall also noted the abundance of complaints concerning the quality of water that the United States delivered to Mexico during the three previous decades. Mexicans complained that the United States had allowed "raw sewage, industrial wastes, hydrochloric acid and whatever" to be included as part of the 1.5 million acre-feet contract. As these statements illustrate, the crisis transformed "good neighbors" into reticent strangers. "There has been, over the years, some insensitivity," Udall observed, "in the way we have handled this with our neighbors."[14] The administration and the State Department advocated H. R. 12384 and S. 3094 in order to keep the cost as economical as possible. The Department of the Interior and the EPA also endorsed the

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[10] House hearings, 116.

[11] Martin Van Der Werf, "Desalting Plant: White Elephant in the Desert," *Arizona Republic*, November 14, 1993, A8.

[12] Ibid., 95.

[13] Ibid., 213-124.

[14] Ibid.

administration's bills, yet for different reasons. Neither organization had completed their own full-scale study of salinity in the West and did not want to apply for appropriations until those investigations had been completed.[15]

**"Total Shutdown": Environmental Response to Colorado River Salinity Problems**

Perhaps no event better represented the monumental transitions in Western water politics than the debate over the Colorado River Salinity Control Act. From the early twentieth century until the 1960s, congressional hearings dealing with water projects in the Lower Colorado River Delta mainly attracted the attention of those who had the most to gain from them, namely Western farmers, municipal leaders, their congressional representatives, and well-paid lobbyists. In addition to these groups, environmental organizations participated in the Colorado River Salinity Control Act hearings. Eschewing the tactics of radical environmental groups, the Sierra Club and national think tanks sent representatives to Washington to deal *within* the political system to bring about change [Note 3].[16] It is not surprising, however, that the environmentalists elicited little attention from the House Committee.

The two environmental groups represented had little interest in seeing either set of bills passed. In contrast to the pragmatic approach of Western leaders and the administration, Brent Blackwelder (Environmental Policy Center) and John McComb (Sierra Club) objected to the developmental nature of the Control Act and the lack of Western responsibility required by either of the bills. Blackwelder contended that those who would benefits from the project should "shoulder a major share of the costs of cleanup."[17] Blackwelder and McComb also advocated the dissolution of the Wellton-Mohawk project. Not only would this be the most environmentally sound method to solve the problem, it would apply the brakes to run-away federal spending meant to prime the

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[15] Ibid., 88-89; Senate Subcommittee on Water and Power Resources, *Hearings Before the Subcommittee on Water and Power Resources of the Committee of Interior and Insular Affairs, United States Senate, 93rd Congress, 2nd session, S. 1807, S2950, S.3094, Salinity Control Measures on the Colorado River* (Washington D.C.: GPO, 1974), 46-50. Hereafter cited as "Senate hearings."

[16] For a discussion of transformations in the approaches of the environmental movement to pursuing change in the American political system see Kirkpatrick Sale, *The Green Revolution: The American Environmental Movement, 1962-1992* (New York: Hill and Wang, 1993).

[17] House hearings, 306.

pump of commercial agriculture. Blackwelder claimed that only one million of the fifty million dollars owed by the farmers in the Wellton-Mohawk region had been repaid to the government. “It seems incredible that the taxpayers of the Nation are now being asked to spend many millions more, possibly as much as $200 million in the long run,” Blackwelder observed, “to remedy the problems occasioned by this district.”[18]

Blackwelder and McComb also urged House leaders to reflect on the project’s track record. In suggesting the partial or total shutdown of the Wellton-Mohawk District, McComb appealed to the past performance of the district. “The irrigation project has been plagued by problems from its very inception,” he observed, “and we seriously question the wisdom of any further unnecessary expenditures of federal funds in order to keep it in operation.” McComb objected to the wasteful amount of energy that would be necessary to run the salinity plant. They suggested that the USBR utilize more prudent methods of reducing salinity, such as "limiting further water resource development.”[19]

Environmentalists and Western officials did agree on one crucial aspect: the need for increased salinity control throughout the basin. They were divided, however, on which sources should be eliminated. Western farmers wanted to remove natural salt sources. In contrast, The Sierra Club wanted to cut back on “man caused increases in salt load.”[20] This would include farms operating in locations such as the Wellton-Mohawk Valley, where poor drainage conditions exacerbated salinity levels in the Colorado River. McComb also posited the aesthetic value of several locations targeted for containment under Title II. Blue Spring, Colorado, was “an integral part of the Grand Canyon in addition to being spectacular in its own right.”[21] He also reminded the committee that the area served as a religious site for Indian tribes along the river. The concept of environmental and cultural preservation stood as one of the trademark purposes for the existence of the Sierra Club. Two decades earlier the Sierra Club scored a major victory in their quest to preserve Echo Park, in Utah’s Dinosaur National Monument Park. When

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[18] Ibid., 306.

[19] Ibid., 311.

[20] Ibid.

[21] Ibid.

it was announced that the USBR would build a dam there, Sierra Club president David Brower creatively galvanized public support against the project. In the 1960s a relentless ad campaign sponsored by the Sierra Club in *The New York Times* not only prevented construction of a dam that would have inundated part of the Grand Canyon, but also invoked the wrath of the federal government against the organization. Thereafter, the IRS threatened to revoke the club's status as a non-profit organization.[22] The idea of natural preservation for the sake of beauty reflected a growing desire for the preservation of natural settings as an escape from an industrial society.[23]

McComb believed that members of the general public would be open to cuts in water usage throughout the Colorado River Basin, yet such changes were not politically feasible. He was much more realistic in his assumption that any limitations of Western water consumption would be considered "heresy or a denial of some absolute right by the water resource development agencies."[24] The bi-national nature of the current diplomatic predicament gave Western interests political leverage that the USBR never had in fighting against the Sierra Club over Echo Park Dam. First, Brownell and the administration were working under a time limit. The legislation had to be approved by July 1, 1974. Furthermore, the Western states could easily block passage of Title I until their demands for comprehensive salinity control were met.

**"We Can Make Money From It": The Desalination Industry and Minute 242**

Numerous avenues for reaching a permanent solution to the salinity crisis were explored. Possibilities included building a desalination plant, seeding clouds, buying out the land of farmers in the Wellton-Mohawk District, or substituting better water from the Imperial Dam.[25] So, why the decision for the most costly solution? As the Cold War heated up in the early 1950s, Congress passed the Saline Water Act (1952) "to provide for the development of practicable low cost means of producing from sea-water, or from

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[22] Marc Reisner, *Cadillac Desert: The American West and its Disappearing Water* (New York: Viking, 1986), 297.

[23] Samuel P. Hayes, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge: Cambridge University Press, 1987), 2-5.

[24] House hearings, 311.

[25] Ibid., 81-82.

other saline waters, water of a quality suitable for agriculture, industrial, municipal, and other beneficial consumptive uses . . .."[26] While the Office of Saline Waters (OSW) would function as a part of the Department of Interior, the 1952 act also called for cooperation with the Department of Defense. After 1952, corporations and labs traditionally associated with the "military-industrial complex" received contracts to develop desalination techniques and oversee construction of plants domestically and throughout the world. Spiraling energy costs, however, constantly plagued the OSW's quest to achieve aquatic alchemy. Most importantly, the tantalizing promise of virtually free power from nuclear desalination plants never materialized. After plans for several plants in the Pacific Southwest failed to materialize, the OSW considered the Colorado River Salinity Crisis as an appropriate case to test the merits of their new "reverse osmosis" filtration system. In sum, expediency and extensive investments over the course of two decades explain much of the decision to build a desalination plant in the middle of the Sonoran Desert.

In May 1975, Editor Ken Lucas wrote a scathing article about the proposed desalting plant for the *Arizona Farmer-Ranchman*. He argued that little planning went into the decision to build the plant. In support of his assumption, Lucas alleged that USBR officials only realized that Yuma and the Imperial Valley lay near the San Andreas Fault line *after* appropriations for the plant had been approved. In reality, however, policy makers knew that the plant lay near the San Andreas prior to the siting announcement. A joint Mexican-United States commission had previously explored the possibility of constructing a bi-national nuclear desalination plant near the Gulf de Santa Clara (near San Luis Rio Colorado, Sonora, Mexico) in the late 1960s only to discover its proximity to the fault.[27] Subsequently, the Yuma sight was selected by the USBR and the OSW as a safer site for construction of a non-nuclear desalination plant.

Lucas also claimed that the plant was an unnecessary project conceived to assist the fledgling desalination industry. If the plant was successful, American firms could tap

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[26] Office of Saline Water, *Saline Water Conversion Summary Report, 1971-1972* (Washington D.C.: GPO, 1972), 51.

[27] Atomic Energy Commission, *Nuclear Power and Water Desalting Plants for Southwest Uunited States and Northwest Mexico, Preliminary Assessment Conducted by the Joint United States-Mexico-*

into water-starved Arab markets. Yet immediate economic considerations, he noted, also motivated the desalination industry. Companies like Universal Oil Products Co. stood to gain a great deal through government contracts on the Yuma plant.[28] Brownell concurred with this interpretation when he observed: "[The] construction of the world's largest desalting plant, provides a decided boost to desalting technology which cannot but have significant effect elsewhere in the United States and, indeed, in the world."[29] These linkages between private industry and the government were not lost on developers of desalination technology. William Warne, former Assistant Commissioner of the Bureau of Reclamation, represented the National Water Supply Improvement Association at the House hearings. Warne gave the association's definitive stamp of approval for the plant during his presentation to the committee.[30] Ultimately, The desalination companies were the biggest economic winners from the Colorado River Salinity Control Act.

**"Charity Begins at Home": Western Interests and Mexican Diplomacy**

If 1890 marked the end of the territorial frontier of the United States, then 1968 signaled the close of a more fluid frontier in the Colorado River Basin. In the same year Richard Nixon was elected to the presidency, Congress approved the Central Arizona Project, which would utilize Arizona's remaining surface water from the Colorado River. With that project approved, all of the surface-water in the lower basin of the river was legally apportioned to interests within the different states and Mexico. The growing threat of high levels of salinity in the river forced officials to devise a program that would ensure a sufficient water supply to meet those needs without having to sacrifice water to dilute highly saline river flows. The Colorado River Salinity Control Act provided a new approach to maximizing the annual water supply throughout the basin. Cleaning up natural salinity sources throughout the upper basin would not only appease Mexican interests at the river's "drain," but also protect the needs of water users throughout the basin. A representative from the Imperial Irrigation District summed up this political transformation when he observed, "Environmental concerns impel us toward greater

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*International Atomic Energy Agency Study Team, Executive Summary (*Washington D.C.: GPO, 1968).

[28] Ken Lucas, *Arizona Farmer-Ranchman*, May 1975, 1-4.

[29] House hearings, 116.

efficiencies in the use of our water supplies, toward reclamation reuse of water in order to extend the supplies, and toward conjunctive management of surface and ground waters."[31]

The new sensitivity of Westerners to environmental issues had less to do with a new-found enthusiasm for environmentalism than with the need to preserve large-scale agribusiness and municipal growth in the arid Pacific Southwest. Nothing attests to the developmental nature of these proposed "environmental" measures better than the plans made for curtailing salt diffusion from the Crystal Geyser near Green River, Utah. Instead of capping the geyser, Western officials proposed that a dike be constructed to contain the effluent. Officials assured the Senate Committee that the dike would "blend with the exposed sandstone for esthetic purposes." Always sensitive to the demands of tourism, officials boasted: "Because of the return of a portion of the erupted water to the geyser, the interval between eruptions would be reduced from 5-6 hours and to 2-3 hours, increasing its value as a tourist attraction."[32] Thus, manipulating nature in an effort to "purify" the river ultimately served more than one economic interest.

With a wide spectrum of developmental priorities throughout the basin, almost all of the Western interests involved in the debate over the Salinity Control Act recognized that maximizing river resources demanded greater unity amongst regional officials than had prevailed in the past. California Senator John Tunney acknowledged the linkages between greater cooperation and the altered dynamics of regional water politics. "There has been an unprecedented era of cooperation and mutual effort among the seven states," he noted, "following more than half a century of controversy and bitterness. This bill represents one more step in this new approach along the Colorado, and I am delighted to be able to cooperate in that effort."[33] Tunney's remarks are even more remarkable, considering that only ten years earlier Arizona and California ended a bitter battle over apportionment of water in the lower basin. California lost a significant amount of surplus water to Arizona in that decision. Western leaders, however, adjusted to shifting

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[30] Ibid., 268-287.

[31] Senate hearings, 291.

[32] Ibid., 227.

circumstances in an effort to protect their existing (and future) interests within the context of regional, national, and international relations.

In addition to adapting their political approach to the constraints of shrinking natural resources in the basin, Western politicians also abandoned their traditionally antagonistic attitude towards Mexico's water rights in the Colorado River basin. Neil M. Cline of the Orange County Water District, for example, expressed "sympathy with our good neighbors in the Mexicali Valley." Noting a precipitous rise in salinity in over-tapped water resources in his own district, Cline observed, "we know what they have been suffering because our situation is much the same as theirs."[34] A similar tenor marked the rhetoric of Governor Williams (Arizona). Traditionally, Arizona cast an imperious shadow over Sonora and Baja California. On this occasion, however, Williams implied that geographic proximity encouraged a close relationship with Mexico. "I lived right next to the great nation of Mexico as a neighbor," he intoned, "and the solution of course, is very pleasing to our neighbor."[35] Finally, the San Diego Water authority cited "our continuing and close relations with the Republic of Mexico" as the reason why Title's I and II should be approved.[36]

Context, however, further illuminates the multi-dimensional motives of Western leaders for championing the act. Cline's water district relied on the Colorado River for seventy percent of their municipal supply. He observed that "our district serves about 1,500,000 people in the rapidly urbanizing Orange County." The salinity project would offset the expenses that consumers were currently paying to control salinity in the water supply.[37] In Williams's case, reference to the "neighborly" nature of border relations was couched within a request for greater federal help for the Western states. With the Mexican issue solved by Title I, it was "up to those who created the solution to find some relief for the seven states that are threatened."[38] Likewise, the City of San Diego pushed

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[33] Ibid., 111.

[34] House hearings, 289.

[35] House hearings, 167.

[36] Senate hearings, 313-315.

[37] House hearings, 289-290.

for passage of Title II as part of a "permanent solution to the salinity problem with Mexico." Ironically, their letter in favor of the bill dealt almost entirely with the benefits that the proposed legislation would provide for the City of San Diego.[39]

Finally, whether they would admit it or not, Western leaders had much in common with Mexican officials in terms of their relationship with Washington. They were all largely dependent on federal assistance for development of reclamation projects in the Colorado River Basin that would ameliorate water quality throughout the watershed. Western politicians exploited their self-imposed identity as "second-class" Americans in seeking approval for Title II salt control. California Congressman Craig Hosmer, for example, cited the government's treatment of the Colorado River Basin during negotiation of the Mexican Water Treaty in the 1940s as an example of federal neglect. Hosmer claimed that President Franklin Roosevelt "got a big concession on the Rio Grande out of the Mexicans and he gave away the Colorado River water to the Mexicans in quantity." "There was not really much attention paid to the Colorado River at that time," he complained, "It was in a peripheral way." Past presidents, he argued, did not understand the value of water in the West. Hosmer particularly despised: "The high-handed way in which Presidents seem to go down and get an 'embracio' and then come back and give away some of the West's water to somebody. That is not exactly something that to my mind is a bargaining chip."[40]

Hosmer's testimony reflected the feelings of many Westerners towards Mexico and the federal government. Senator Bible from Nevada also felt there was a critical need for federal help in the West. "I think it is our responsibility to take care of those people in the West that have the same salinity problem that is inherent in the international phase of it," he opined, "I have always felt that that charity begins at home."[41] Arizona Senator Paul Fannin expressed similar ideas. Taking care of Mexico only alleviated half of the problem. "I don't see that we should have irreparable damage come about for U.S.

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[38] Ibid., 167.

[39] Senate hearings, 313-315.

[40] House hearings, 215.

[41] Senate hearings, 181-182.

citizens," he observed, "just to allow the citizens of Mexico to benefit by it."[42] Congressman Towell from Nevada encouraged the Committee to "live up to [their] obligations of our own individual states," as well as satisfy the various treaties with Mexico.[43] Some Westerners pledged their support for the salinity plant only if "something is done on behalf of our own water users."[44] Evoking memories of an old-fashioned stagecoach hold-up, Congressman Johnson (California), took issue with the State Department's objections to Title II: "It is not our intention to try to hold up anything or hold anybody at gunpoint. We would, however, like to have consideration and recognition given to our problems. We will try and perfect you a good Title I to take care of the international problem, and we would like to have a title II in the bill that would help give us a little boost on the problems of the American side of the border . . ."[45]

Finally, some Western leaders cited the interdependent nature of relations between Mexico and the Western United States in their arguments for the Salinity Control Act. Western leaders insisted that if Title II were not adopted, the impact could be "as injurious to Mexican as it is to United States water users."[46] Wesley Steiner, chairman of the powerful Committee of Fourteen, a group of Western leaders that advised Brownell during the crisis, linked the fortunes of Mexico to both the Lower and Upper Basin in the United States. Steiner warned the committee of the impending costs of a narrow approach to the salinity crisis: "Without the control of upstream salinity, the U.S. will be faced with a new salinity problem in Mexico as salinity levels increase with continued development; and water users in the United States will suffer significant economic impacts, with impacts estimated to reach $80 million annually by the year 2000."[47]

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[42] Ibid., 185.

[43] House hearings, 116.

[44] Ibid., 75.

[45] Ibid., 133.

[46] Ibid., 96, 192.

[47] Ibid., 189.

Western leaders also continued their historic pattern of federal dependence by insisting that the government pay for seventy-five percent of the Title II program. This strategy, in reality, was an effort to turn recent legal decisions concerning jurisdiction over waters of the Colorado River to the advantage of the Western states. Through a series of court decisions during the mid-twentieth century, the states failed to gain control of the riverbed.[48] While this served as a blow to the cause of Western "independence," it proved to be a powerful tool in arguing for federal funding of the Act. Steiner argued that the federal government was the only organization involved "in all major aspects of the salinity problem." Therefore, he reasoned, it should "finance the salinity control project and . . .bear a major share of the repayment responsibility."[49] Other organizations felt that the federal government should shoulder a major portion of the project since many Western organizations had already spent millions of dollars combating river salinity. For example, Northcutt Ely, attorney for the IID, stated, "we feel it is appropriate, as well as timely, for the United States to do its part to reduce salinity of the waters reaching us."[50]

Numerous interests throughout the basin clamored for federally - funded salinity control projects. The Committee of Fourteen warned that the initiation of large-scale oil shale projects would further exacerbate the salinity crisis. Chairman Steiner pointed to the environmental impact statement drawn up for the shale operations as a precedent for federal help in controlling salinity levels.[51] Other organizations testified of the harmful effects of saline water that could occur in their localities. Farmers in San Diego County cultivated crops that were highly sensitive to saline water. "If the salinity in the Colorado River water rises significantly," officials noted, "the Authority's farmers will find it difficult to continue in production." Saline water from the Colorado River was already beginning to take its toll on homes and the sewer system in San Diego. "Current estimates of the cost due to excessive levels of corrosion in water heaters and other

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[48] Donald J. Pisani, "The Irrigation District and the Federal Relationship: Neglected Aspects of Water History," in *The Twentieth-Century West: Historical Interpretations*, Gerald D. Nash and Richard Etulain, editors (Albuquerque: University of New Mexico Press, 1989), 257-292.

[49] Senate Hearings, 231.

[50] House hearings, 292.

[51] Ibid., 180.

plumbing facilities," The SDWA estimated, "range from $10 million to $20 million per year for San Diego water users."[52] In sum, numerous Western interests viewed Minute 242 as an opportunity to win approval for a comprehensive plan that would provide greater protection for further development in the Southwest.

**Life on the River**

Understanding the nature of water politics in the Colorado River Basin is best accomplished by tossing a stone into a placid body of water. The stone enters the water, creating a concentric ripple that moves away from the point of contact. Each new ripple is generated with a different level of force and velocity. While the point of contact and the series of ripples are related, they are unique in that specific properties generate each new impression. In water politics, a problem, such as the salinity crisis, serves as the stone. Its impact on the local level (Yuma County), throughout the Colorado River basin, and in international relations, generates unique – yet inter-related -- problems. Yet the crisis, like the splash of the stone, creates its most jarring effects closest to the point of contact. Ironically, the complexity of Yuma County water relations made the process of finding a simple solution to basin-wide concerns more difficult. What would be best for Mexico or for the State Department was not necessarily the ideal arrangement for Yuma County farmers or the Cocopah natives. Within Yuma County organizations such as the Wellton - Mohawk District, the Yuma County Water Users Association, the City of Yuma, and the Cocopah Indian Tribe, members expressed their support or disapproval of the bills based on their individual priorities. Ultimately, their numerous approaches to development of the Delta region demonstrated the complexity of local relations in coming to terms with an international problem.

**Reconstructing Wellton - Mohawk**

Farmers and officials in the Wellton-Mohawk Valley felt they had the most to lose through the Colorado River Salinity Control Act. While environmentalists urged the House and Senate committees to completely dismantle the Wellton-Mohawk District, more conservative voices prevailed. Headed by the Committee of Fourteen, which included Tom Choules, a member of the WMIDD, Western farm interests rallied to

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[52] Senate hearings, 313-314.

protect the embattled project. The words of Henry Brownell encouraged Western politicos. He assured the Committee that "water users in the U.S. would not suffer from the results of this legislation."[53] Nevertheless, the bill provided for the retirement of 10,000 acres of unproductive land on the project. Recognizing the necessity for compromise, WMIDD leaders worked to preserve the water rights they had been granted for 75,000 acres of land, even though the project would only include 65,000 acres after passage of the bill. Choules noted, "We are using about 300,000 acre-feet of water . . .at the present time to irrigate less than 65,000 acres."[54] Choules suggested that the language of the bill protect the water rights of the district. C. C. Tabor, WMIDD Manager also presented this request to the Senate Subcommittee on Water and Power Resources.[55]

The long-term effects of the crisis took their toll on the leaders of the WMIDD. Intense international, domestic, and state scrutiny contributed to a feeling of victimization. Choules feared that the Salinity Control Act would ultimately endanger his district. "We could end up not only at the tail-end of the ditch," he observed, "but getting worse water and worse treatment as a result." Skeptical about the effectiveness of the desalination plant, Choules quipped, "We are going to be the guinea pig under the act through the means of sizing the desalting plant."[56] Choules completed his testimony by suggesting that if WMIDD drainage water had not been dumped into the Colorado River about the same time water delivery to Mexico had been reduced in the 1950s, responsibility for the crisis would have been more evenly distributed throughout the basin. "It just happened that those two coincided, and we, being at the tail-end of the ditch, and near as well having been there at that particular time, the finger is pointed at us."[57]

WMIDD Manager C. C. Tabor expressed similar feelings the following year as liquidation of the 10,000 designated acres took place. Tabor continued to believe that the

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[53] House hearings, 262.

[54] Ibid., 261.

[55] Senate hearings, 284-285.

[56] House hearings, 262.

[57] Ibid., 267.

solution for the problem lay in rehabilitating run-down fields and irrigation systems in Mexicali Valley, not building a desalination plant near Yuma. Although the WMIDD retained the rights to 300,000 acre-feet of water, Tabor complained that the new Central Arizona Project would demand that they not exceed that total, as they had in previous years. Finally, Tabor lamented the continued presence of government employees on the project. "No pleasure is derived from being swarmed over by federal employees," he lamented. Even though the district lobbied for negotiated liquidation of the retired lands by the USBR, "purchase of the 6,000 acres of private ownership by the [USBR]" proceeded at a snail's pace.[58]

**"Domestic Use and Human Consumption": Yuma City Water Woes**

What had been a time of frustration for some, was a time of opportunity for others. Even in the staid confines of a congressional hearing room, something of a "boom-town" mentality prevailed amongst its Western participants. Except for a few organizations, namely the WMIDD, most Westerners and Mexicans stood to gain from construction of the desalination plant and implementation of the comprehensive control project. Not the least of these groups was the City of Yuma. Its struggles during the crisis have generally been overlooked as historians have focused almost exclusively on the impact of the salinity crisis in Mexicali. Yuma's domestic water supply, like that of Mexicali, had been contaminated by saline water from the Wellton – Mohawk Valley in 1961. Journalist Lenora Werley observed that Yuma residents "found that the water [was] not pleasant to drink, that it [was] harmful to lawns and garden and that it [damaged] air conditioning pumps and industrial machinery." Werley perspicuously noted that the city's water woes pre-dated the salinity crisis in 1961. Due to the increased use of water throughout the entire Colorado River Basin, the river only carried "a small amount of water when it [got] to the most southwestern city in Arizona." The contaminated run-off from Wellton Mohawk aggravated the poor quality of the water supply. Werley emphasized the irony of the situation. Yumans, like residents of Mexicali, were incensed by the increased salinity. Geographic isolation, however, made it more difficult for Yumans to vent their complaints. Werley observed, "Some Yumans have thought of

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[58] Letter from C.C. Tabor to Ken Lucas, May 1975, Hayden Library, Arizona State University, Tempe, Arizona, John J. Rhodes Papers, MS 2, Box 130, Folder 19.

marching on somebody like their suffering Mexican counterparts. But who do you march on? The nearest U.S. Consulate is 54 miles away in salty Mexicali."[59]

Yuma's domestic water crisis developed as the result of a plan hatched by city leaders during the late 1950s to gain control of enough water from the Colorado River to assure the communities' continued growth until the end of the century. City leaders convinced the Secretary of the Interior in 1959 to award the City of Yuma an additional of 50,000 acre-feet of water per year from the Colorado River. City Manager Mulford Winsor III based his conclusions on a recent study that the state had conducted regarding domestic water use. According to the results, by the year 2000, Yuma would have a population of 180,000 and consume a little over 50,000 acre-feet of water per year. Winsor also argued that the extreme heat of the Sonoran desert necessitated additional water supplies. "The City of Yuma probably has the highest per capita use of air conditioners of any city in the United States," Winsor averred, " [and] Most of these air conditioners require water in their operation. This is in addition to the domestic requirements experienced in most other areas of the United States."[60] Growth forecasts suggested that construction trends in Yuma favored suburban-style, single-family homes. Accordingly, new lawns would also demand a drink from the Colorado River. The proposal for 50,000 acre-feet of water from the Secretary of the Interior was approved in 1959, over vigorous protest from proponents of the Central Arizona Project. They feared that any further allotments of water from the river by the federal government would ultimately jeopardize the Central Arizona Project Central Arizona Project Association.[61]

Thomas Allt, a representative from Yuma, appeared before the House Committee. He noted that Yuma had taken its water directly from the river from 1892 until 1961. During 1961, the USBR released drainage water from the Wellton Mohawk district into the Gila River. At the confluence with the Colorado River, the water infiltrated the city's

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[59] Lenora Werley, "U.S. Takes Sudden Interest in Mexicali Water," *Arizona Daily Star*, December 17, 1961, copy found in Hayden Library, Arizona State University, Tempe, Arizona, Carl Hayden Papers, MS 1, Box 253, Folder 8.

[60] Mulford Winsor, III, Statement of Mulford Winsor, Jr., City of Yuma, Arizona," November 23, 1959, Winsor Family Papers (private collection), Yuma, Arizona.

[61] A good number of documents related to CAPA opposition to the Yuma water acquisition are located in MS 100, Box 29, Folder 6, at the Hayden Library, Arizona State University.

intake system and contaminated the water "to the point where it could not be used for domestic purposes and human consumption."[62] In an effort to find a better source for water, the city contracted with the YCWUA to purchase cleaner water that was released from Imperial Dam and then transported to Yuma Valley via an underground siphon that ran beneath the river bed of the Colorado River from California to Arizona. Nevertheless, the cost of obtaining water from the siphon vis-à-vis the original intake system was prohibitive. Faced with few options, Allt quipped, "We right now are in a position where they own the taxi and we want a ride, we've got to pay the bill." The city's predicament illustrated how a regional crisis, though international in its implications, produced peculiar problems and tensions on the local level.[63]

The argument posed by Allt as to the source of the problem followed a pattern similar to that employed by other state and regional leaders at the time. Allt contended that the City of Yuma was not responsible for the recent crisis which had been "imposed on them by circumstances beyond their control." He expressed resentment towards the USBR for their failed attempts to extricate farmers in Wellton-Mohawk from their salt-stricken fields and wells. Nevertheless, "What was of great benefit to the Wellton Mohawk area," Allt observed, "was economically detrimental to the city of Yuma, in the added cost to acquire raw water."[64] He also contrasted federal treatment of Yuma and Mexico while explaining the plight of Americans in the Delta. Allt argued that while little had been done to alleviate the domestic water situation in Yuma, the State Department was feverishly attempting to assuage similar complaints by Mexicans in Mexicali.[65] Pleading for domestic equity, Allt asserted, "we are disturbed that the people of Yuma should bear a disproportionate part of the burden when the very cause which creates a problem for Mexico also caused an economic problem for the city of Yuma." In compensation, Allt believed that the City of Yuma should receive priority rights to buy excess water purified by the desalination plant. He suggested that the bill be amended to

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[62] House hearings, 252.

[63] Ibid.

[64] Ibid.

[65] Ibid.

allow the city the first possible opportunity to purchase excess water purified by the desalination plant.[66]

**YCWUA and the Bi-National Aquifer**

YCWUA leaders developed an interest in the Salinity Control Act because of chronic drainage problems that had threatened Yuma Valley since the second decade of the twentieth century. A rising water table underneath the valley floor, due to poor drainage conditions and intensive irrigation, periodically threatened local agricultural production. As early as 1912 drainage pipes and wells were installed in the valley. Wastewater was sold to Mexican interests at the international boundary near San Luis Rio Colorado. The Mexican Water Treaty of 1944, however, raised the prospect of increased drainage problems. The Mexican government successfully petitioned to build a diversion dam – Morelos Dam -- at the international border adjacent to Yuma Valley. President Henry Freuenfelder and other members of the YCWUA Board of Governors vigorously protested construction of the dam because they felt it would contribute to their drainage problem.[67]

YCWUA leaders miscalculated the impact of Morelos Dam. Great care was taken by the International Boundary and Water Commission to protect Yuma Valley from any problems Morelos Dam might have caused. Nevertheless, similar precautions were not taken with the constructed the Gila Irrigation Project, which linked the Colorado River to Yuma Mesa and the Wellton-Mohawk region. Irrigation of the Yuma Mesa began in the early 1950s and excess water seeped into the aquifer beneath Yuma Valley. At a special hearing on Yuma's drainage problems in 1956, Ernest Johannsen, President of the YCWUA, argued that the valley's drainage problems did not begin until water delivery began on the Yuma Mesa. The Mesa overlooked the eastern side of Yuma Valley. A special report prepared to assess Yuma Valley's drainage situation concluded that:

> The problem cannot be confined to a limited area. It has a regional aspect. The hydrological region now involved and to be involved to a greater extent in the future includes the Wellton Mohawk area to the east, the South Gila area, the

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[66] Ibid., 253.

[67] Henry Fruenfelder, Letter to Senator Ernest McFarland, April 4, 1945, YCWUA Papers, Yuma,

> Yuma Mesa, the Yuma Valley, and Mexico . . . Most of this region is underlain by a highly transmissive coarse-gravel aquifer, the top of which is about at sea level. It is believed that this aquifer is a controlling factor in the underground hydrology of the region.[68]

Ironically, Yuma's greatest problems could largely be attributed to developments in the United States portion of the Colorado River Delta and not to the Mexican dam.

From the 1950s until passage of the Colorado Salinity Control Act, leaders from the YCWUA argued that the federal government was responsible for drainage problems in the valley. Johannsen testified at the 1956 hearings that local farmers refused to take out loans to alleviate the groundwater problem, because "it [was] not caused by irrigation operations in this district."[69] He dramatized the severity of the problem, claiming that groundwater was "boiling up under our feet." YWCUA leaders expressed their belief that the government should pay for the installation of drainage wells in the eastern section of the valley to prevent further infiltration of the valley aquifer by seepage from farms on the Yuma Mesa. At the time, neither the USBR nor members of the committee believed that the drainage problems merited federal help. Engineer C. E. Jacobs contended that more studies were needed prior to approving federal aid to bail out farmers. Charles Maierhofer, USBR Chief Drainage and Ground Water Engineer, conceded that water was affecting certain areas of the valley, yet "the evidence does not indicate that there has been significant net aggravation of the overall drainage problems not impaired productivity of lands."[70] Although salt-levels in valley waters – a sign of groundwater augmentation – increased after the 1930s, Maierhoffer pointed out that the number of acres taken out of production had "decreased to zero in 1953."[71]

YCWUA leaders viewed the salinity crisis of 1961 as an opportunity to obtain federal help. Initially, however, Sam Dick, YCWUA president, believed that the

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[68] Senate Committee on Interior and Insular Affairs, *Yuma, Arizona Groundwater Problems, Hearings* (Washington D.C.: GPO, 1956), 25. Hereafter cited as "Senate Committee."

[69] Ibid., 5.

[70] Ibid., 42-43.

[71] Ibid., 46-49.

"international" problem would retard resolution of the Yuma Valley situation. Furthermore, USBR officials wanted to propose "a permanent solution" to Yuma's drainage problems only after the *Arizona vs. California* case had been settled by the Supreme Court. Nevertheless, Dick believed that "the permanent solution to that problem, involving so many complex factors, may not be found for some time." He lamented the exorbitant costs incurred by the existing drainage system, which had been paid for by the farmers. Dick also enumerated the benefits Mexico reaped from Valley efforts to regulate the water table. In 1961, for example, the YCWUA delivered 133,000 acre-feet of water to Mexico, which also required the use of millions of kilowatts of electricity to operate the system. The Mexican government paid a paltry $4,000 for these benefits. "The Association thus finds itself in the position of having, at its own cost and expense," he noted, "delivered to Mexico in 1961 as a credit to the Mexican Treaty almost 10% of the amount required to be delivered to Mexico under the terms of that Treaty." To add insult to injury, collection of drainage and groundwater resources provided Mexico with "a large proportion of the water which comes from outside sources." Dick felt that the Association should be reimbursed for past expenses related to services rendered in fulfillment of the treaty. He argued that the expenses qualified for reimbursement under the Colorado River Front Work and Levee Systems Act, which provided for "constructing, improving, extending, operating and maintaining protection and drainage works and systems along the Colorado River."[72] In a February 6, 1963 meeting with USBR Commissioner Floyd Dominy, Dick discussed two plans for alleviating the drainage problems. The more extensive plan called for 60 additional wells at a cost of $22,000,000. The "reduced" plan called for eighteen wells and was projected to cost between eight and nine million dollars. Commissioner Dominy preferred the more modest plan, noting however, that it "could be expanded later."[73]

Despite the loud approval of YCWUA leaders for the drainage wells and pumps, some local residents questioned the high capital outlay required for such an undertaking and the environmental propriety of the project. Local resident H. M. Corey refuted the

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[72] Sam Dick to A.B. West, October 12, 1962, John J. Rhodes Papers, Box 88:35, Folder 3.

[73] Department of Interior, Minutes of Meeting, re: Yuma Valley Drainage Problem, February 6,

need for "the big eight and a half million dollar boondoggle drainage plan." Corey believed that the YCWUA Board of Governors was merely holding out on completing immediate drainage projects in the Valley in order that federal government would pay for a much grander project. "It is the opinion of our board of governors and the president," Corey noted, "that they would rather wait on this eight and one half million of non-reimbursable money which would cause us not to spend our own sixty-one thousand."[74]

In contrast, Corey felt that if the association would expend $60,000 to drain one specific portion of the valley, the association's problems would be solved "for a long time to come." Corey also felt that the drainage system endangered the agricultural viability of valley lands because most of the valley already had too little water in the water table. Nevertheless, Corey astutely perceived the political forces at play in proposing a massive drainage project. "The [USBR] is overstaffed," he wryly noted, "and they have to find projects to work on." The local Chamber of Commerce would also be delighted with the influx of contracts and construction teams that would pump money into the local economy. Corey found it ironic that despite nearly twenty years of lobbying for relief from the water table, Yuma farmers "[seemed] to be farming . . . regardless."[75]

Rumors of intensive groundwater pumping on the Mexican side of the international boundary provided Yuma leaders with an argument that helped them obtain the needed drainage system. Geographically, the underground aquifer extended across the international border. As water seeped from the Yuma Mesa down to Yuma Valley, gravity enticed it across the border into Mexico. Even in the 1950s, when Congressman Anderson of New Mexico did not believe the YCWUA merited federal assistance for the drainage problems, he did feel that pumping water to prevent the Mexicans from using it provided "just cause" for governmental help. Merely mentioning possible benefits for Mexico from natural resources originating in the United States increased the willingness of some United States politicians to approve a given bill they would have originally opposed. At the Yuma Groundwater Hearings Congressman Anderson asked Engineer Maierhoffer:

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John J. Rhodes Papers, Box 88:35, Folder 2.

[74] H.M. Corey to John J. Rhodes, May 24, 1963, John J. Rhodes Papers, Box 88:35, Folder 3.

> If you do not pump these large quantities of water from the lower gravel strata, which is about at sea level, would there not be a tendency that that water, if not intercepted, would just naturally flow into Mexico and you would get no credit for it under the treaty?

Maierhoffer responded, "Very definitely."[76] Anderson believed that in such a situation, "the United States government might be able to pick up some of this excess water" to satisfy the Mexican Water Treaty.[77] In the West, water was not simply a resource. It was the fundamental expression of civilization during the twentieth century. Symbolically and economically, it was a tool of power. Withholding water from Mexico, either in the form of surface or groundwater, was the goal of not a few politicians throughout the basin who believed those resources belonged solely to the United States.

By 1963, local, state, and national leaders emphasized the magnitude and importance of Yuma's drainage problems. The attention of the state's congressional delegation brought federal assistance a step closer to reality. In a confidential memo to Arizona's congressional representatives, W.S. Gookin, Arizona State Water Engineer, apprised state leaders of the need to support funding measures for a drainage project similar to that discussed by Dominy a year earlier in Yuma. Mexican farmers, he noted, "[were] rapidly and aggressively increasing their pumping through the drilling of new wells and subjugation of new land." If nothing were done to combat the new pumping, he feared that Mexican farmers might pump up to 1.5 million acre-feet of water per year.

Gookin feared that such events would affect underground resources in Yuma Valley. "The water underlying the Yuma area will be drawn into Mexico," he observed. Instead of allowing Mexico to proceed unchallenged, the state water engineer believed that this water should be "pumped by the U.S. and delivered to Mexico as surface water in satisfaction of the Mexican [treaty]." Finally, he warned that state and national interests would probably clash in the process of seeking approval for additional drainage wells. "It is my understanding," Gookin wrote, "that the State Department is unsympathetic with western water problems and seeks to assist agricultural interest in

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[75] Ibid.

[76] Senate Committee, 50-51.

Mexico." He also feared that Secretary of State Dean Rusk and President Johnson would canvas support for "non-interference with Mexican agricultural interest." Ever mindful of how such developments might threaten Arizona, Gookin urged state representatives to fully support the project.[78]

Arizona's congressional representatives successfully pushed legislation through Congress that authorized funds for the installation of seventeen drainage wells. Winning approval of the funds, however, did not simplify the complexities of water politics in Yuma County. International diplomacy infringed on local prerogatives in implementing the groundwater program. A confidential memo noted that placing all the wells in the valley would increase the salinity level of the river to levels greater than they had been prior to installation of the wells.[79] The State Department had pledged to minimize salinity levels of water destined for Mexico. In light of that directive, USBR officials realized that it would be most effective to place eleven of the wells on Yuma Mesa and only six in Yuma Valley.

Senator Carl Hayden complained about the lethargic pace of installation of the wells. Hayden was deeply interested in the future of the Central Arizona Project (CAP), which was finally approved in 1968. Two weeks before Christmas in 1965, the powerful Senator expressed his plans to Stewart Udall, Secretary of the Interior. Water from the Yuma wells would not only help to fulfill the United States' obligations under the Mexican Water Treaty, Hayden believed, but it would ultimately free up higher quality water upstream for the CAP. Any further delay in placing the wells in Yuma Valley might allow Mexico to drain U.S. groundwater reserves. Hayden calculated that over 600 wells were currently being used south of the border to harvest over 800,000 acre- feet of water. He vigorously protested the notion that seventeen American wells could jeopardize Mexico's comparative advantage. Hayden lamented that "international politics rather than existing or incipient damage in Mexico" not only threatened Yuma County, but the state of Arizona at well.[80]

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[77] Senate Committee, 50-51.

[78] W.S. Gookin, Memo, December 1963, Carl Hayden Papers, Box 708, Folder 6.

[79] Author unknown, Confidential Memo, Carl Hayden Papers, Box 333, Folder 18.

Despite the successful acquisition of six deep-drainage wells in 1966, the Colorado River Salinity Control Act provided the YCWUA with another opportunity to obtain additional assistance. Henry Brownell included an article to Minute 242 that placed a non-binding limit of 160,000 acre-feet of water from the aquifer in the border region near Yuma. While this article was intended to place a limit on overdraft pumping, it actually had the reverse effect. As a part of Title II, Western leaders proposed that an extensive groundwater well field be constructed on a five-mile strip in Yuma County adjoining the Mexican border. Obtaining regional support was not difficult since every acre-foot of water pumped from below the ground freed up an equal amount of water somewhere in the Upper and Lower Basin for use elsewhere. Archie Mellon, President of the YCWUA, supplicated the Senate Committee to reimburse the YCWUA for their previous expenses in operating the Boundary Pumping Plant and drainage system. He reiterated that past drainage problems had been caused by adjoining reclamation projects in Yuma County.[81]

YCWUA's support for Title II developed over the course of three decades. During that time a domestic problem with drainage patterns metamorphosed into an international pumping war. While the organization did not receive compensation for past expenses, the well field was constructed on five miles of land in Southern Yuma County. Ironically, as pumping increased during the early 1970s, YCWUA leaders were concerned that *too much* water was being extracted from the bi-national aquifer. International concerns over excessive pumping continued until the early 1980s. Since the article of the treaty that was related to groundwater pumping was non-binding, it did nothing but send a tremor of fear through regional farmers as to the extent of the aquifer's water reserves. As a result, pumping continued. In retrospect, perhaps no other facet of the Colorado River Salinity Control Act illustrates how well local leaders adapted a recurring problem to a regional and national interest.

**First In Time, Last in Line: Water and Development on the Cocopah Reservation**

The proposed desalination plant also threatened developmental interests of Native Americans in Yuma County. The Cocopah Indians were the first known inhabitants of the

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[80] Letter from Carl Hayden to Stewart Udall, December 13, 1965, Box 333, Folder 18.

[81] Senate hearings, 341-342.

Colorado River Delta. They migrated to the area around 1000 AD and established settlements near the mouth of the Colorado River.[82] Although the Cocopah were organized as a tribe by the United States government in 1917, they continued to cross the Mexican-American border to interact with the Cocopah in the Mexican Delta. During the early 1900s, members of the Cocopah tribe provided much of the back breaking manual labor needed to construct irrigation ditches, canals, and dams, in the Imperial and Yuma Valleys. Unfortunately, they were not included in the rush to develop the land for their own benefit. The farming and irrigation bonanza of the early twentieth century left them nearly destitute of arable land. Even if they would have owned extensive holdings of land, it is doubtful whether or nor the Bureau of Indian Affairs (BIA) and the USBR would have administered their water rights in their best interests.[83]

By 1974, economic development on the Cocopah reservation lagged far behind even the most modest standards realized throughout the rest of Yuma County. In a letter to Stan Womer, Federal Co-Chairman of the Four Corners Regional Commission, Hawley Atkinson, Special Assistant to Tribal Chairman Robert S. Barley, pointed out that not only was the tribe "destitute," but that "[it] has been passed and forgotten for nearly a 100 years."[84] Atkinson claimed that unemployment levels of the reservation were as high as seventy-five percent. He went on to describe existing living conditions:

> The people live in substandard housing; have substandard water supplies; no adequate sanitation facilities; poor health; lack of educational facilities; and the epitome of substandard facilities. The only new facilities is [sic] the "Cry House" – at least their "wailing wall" is modern. Their evidence of deep abiding faith in God is reflected in this priority.[85]

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[82] William Kelly, *Cocopah Ethnography* (Tucson: University of Arizona Press, 1977), 2.

[83] See Robert Bee, *Crosscurrents Along the Colorado: The Impact of Government Policy on the Quechan Indians* (Tucson: University of Arizona Press, 1981). Bee discusses the corrupt methods used by the BIA officials, particularly during the early twentieth century, to take land and water benefits from the Quechan Indians and give it to Anglo farmers.

[84] Letter from Hawley Atkinson to Stan Womer, December 3, 1973, Arizona Department of Library, Archives, and Public Records (ADLAPR), Archives Division, Phoenix, Governor's Office Record Group, Box 726.

[85] Ibid.

To add insult to injury, prayer was about the only type of long-distance communication feasible on the reservation. The East Cocopah tribal community lacked telephone service. Chairman Barley lamented the fact that "there is only one payphone for all the families that live on the East reservation."[86]

Despite these shortcomings, Chairman Barley hoped to achieve new levels of economic development on the reservation. In addition to importuning Arizona's Governor Williams for assistance in obtaining essential services for tribal members, Barley hoped to develop recently acquired land for agricultural production. The tribe also planned to create a recreation site on tribal lands located directly on the Colorado River. However, the canal designated to transport rejected saline water from Wellton- Mohawk to the Gulf of California intersected the reservation "on a line roughly parallel to the Colorado River." Barley apprised the Senate Committee that the canal would not only "deprive the Tribe of desperately needed acreage, but it will pose a formidable barrier, dividing the main portion of the Reservation from the accreted lands that have just recently been won in court." Barley worried that the desalinization plant might deprive the main channel of the river of water throughout the year. He concluded that the proposed recreation site would be "diminished, and probably eliminated, if the river no longer flows by the Reservation."[87]

Barley's testimony illustrated the battle that Native Americans faced as they attempted to develop their communities in a high-specialized economy. He noted that the tribe fought for ten years to acquire an additional 800 acres. Barley recognized that the recent triumph was a Pyrrhic victory because the tract included "a railroad levy and a floodplain levy." Barley demanded that if the wastewater canal could not be moved, the tribe be compensated for the fragmentation of their land. He also argued that their land could not be used without their consent. Similar to arguments utilized by other organizations in Yuma County, Barley contended that "The United States government should not attempt to meet its treaty obligations to Mexico by ignoring its trusteeships to the Cocopah Tribe." Even if the Cocopah had not attained levels of socioeconomic

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[86] Letter from Robert S. Barley to Governor Jack Williams, ADLAPR, Governor's Office Records Group, Box 726.

development comparable to their Anglo neighbors, they were equally astute in legal matters related to water and land rights. In exchange for the land where the canal would intersect tribal lands, Barley suggested that 720 acres of federal land to the south of reservation be transferred to the tribe.[88] In addition to the land, the tribe asked that three bridges be built "over the portion of the reject stream [that] crosses the Reservation of the Cocopah Tribe of Indians." The Cocopah felt these measures would "constitute full and just payment . . . for the rights of way required for construction of the reject brine channel and appurtenant electrical transmission lines."[89] In sum, Barley's testimony epitomized the local complexity of the Salinity Control Act, as well as a new age in Native American efforts to achieve a self-determined destiny. Instead of being wards of Congress, some tribes threatened to use the courts as a way to defend and augment their resources. As a result of their protest, the Cocopah Tribe was given alternative government lands. The Department of the Interior also built the three bridges that the tribe requested. For once, their voices did not go unheard.

**Conclusion: International Decisions, Local Consequences**

Chaos theorists often cite the "butterfly effect" as an example of how small changes can exercise a disproportionate influence throughout an entire system. In the late 1950's, such an event took place in the Wellton-Mohawk Valley as a new canal transporting water to the salt-laden fields unexpectedly exacerbated drainage problems on the project. USBR Commissioner Dexheimer noted the deficiencies and complexities of the drainage system in Wellton Mohawk as early as 1957. "Correction of the drainage system is extremely complex," he confided to Senator Hayden, "[and] the drainage problem in the Yuma area is but one of a number of water management problems."[90] He recognized that a sense of ecological order existed, yet he pointed out that the USBR did not understand the ecological relationships well enough to combat the problems that were quickly multiplying. "With the irrigation of land under the Gila Project have come

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[87] Senate hearings, 263.

[88] Ibid., 265.

[89] Ibid., 267.

[90] Letter from W.A. Dexheimer to Carl Hayden, February 4, 1957, Carl Hayden Papesr, Box 479, Folder 7.

drainage problems. In nearly all cases these problems were expected," Dexheimer continued, "but the rapidity with which they developed was not expected."[91]

By 1961, salinity levels exercised palpable effects in Mexico and Southern Arizona, as saline water continued to drain from the Wellton-Mohawk project into the Colorado River. Ecologically, the drainage water exacerbated already increasing levels of salt pollution in the main channel of the Colorado River. The emissions not only damaged water quality in the United States, but they also endangered the well being of farmers and citizens in the Mexicali Valley. Politically, the event reverberated throughout the basin – on both sides of the border – and grabbed the attention of national leaders. Over time the issue played a significant role in the nature of Mexican-American relations.

Efforts to resolve the crisis also underscored the complexity of politico-ecological systems in the bi-national basin. Hundreds of dynamic political, economic, and ecological variables defined this non-linear system. Furthermore, human agency and deep historic relations between the United States and Mexico provided room for variation, creation, and conflict in the system. Slight changes in any variable could influence the nature of diplomatic relations between the two countries. For example, approval of the Central Arizona Project in 1968 altered the perspective of Western politicians towards Mexico and the rest of the basin. This accounted for the unprecedented sense of "harmony" displayed by community and state leaders from the basin. Personality also played a significant role. The uncanny ability of Herbert Brownell to deal with leaders from Mexico and the Western states fostered a sense of international and domestic rapprochement. Therefore, dynamic changes throughout the system prior to the hearings played a significant role in shaping the nature of the legislative and diplomatic solutions to the problem.

Overwhelming congressional approval of Minute 242 brought the salinity crises to a point of diplomatic closure on June 11, 1974.[92] Nevertheless, Minute 242 did not blot out the memories of how irrigated agribusiness went awry in the Wellton-Mohawk Valley during the 1950s. In fact, historians, environmentalists, and politicians are quick to

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[91] Ibid.

[92] Fradkin, 315.

point to the valley's misfortunes whenever they choose to explain the metamorphosis of water projects into pork barrels.[93] For many, the $260 million desalination plant embodied the cardinal defects of a growth-driven generation. With the added programs of the Salinity Control Act, the total cost approached a billion dollars. Ironically, at least one scientist noted that better water management in Yuma County alone might have dropped the salinity content of local return flows by at least forty percent. He also noted that buying out the lands in question would be more economical after a decade than operating the plant.[94]

Despite overwhelming approval by Congress for the Salinity Control Act, construction of the desalination plant faced numerous hurdles. While originally set to go on-line in 1981, rising costs, funding problems, and design reviews pushed the completion back more than a decade. The complex was finally completed in 1992. By that time, drainage waters from the Wellton-Mohawk Valley had unexpectedly rejuvenated the marshlands in the Ciénega de Santa Clara in the Mexican portion of the delta.[95] Environmentalists noted that operation of the desalination plant would replace those saline flows with brine waters, posing a possible threat to waterfowl migrating on the Pacific Flyway. The greatest irony of the interlude between passage of the Salinity Control Act and completion of the plant related to increases in precipitation and water flows in the Colorado River. Additional amounts of water decreased the salinity level of water reaching Mexico and diluted the run-off from Wellton-Mohawk. In the face of chronic budget restraints, the Bureau of Reclamation welcomed this natural solution to the salinity crisis. The plant has never operated at full capacity since its completion. Instead, improved desalination techniques are tested and limited quantities of treated water are offered for sale on the plant's Internet site.[96] Furthermore, excess flows in the

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[93] Reisner, 309.

[94] W.E. Martin, "Economic Magnitudes and Economic Alternatives in Lower Basin Use of Colorado River Water," *Natural Resources*, volume 15, number 1, 229-239.

[95] Edward P. Glenn, Richard S. Felger, Alberto Burquez, and Dale S. Turner, "Cienega de Santa Clara: Endangered Wetland in the Colorado River Delta, Sonora, Mexico," *Natural Resources Journal*, volume 32, 1992, 817-824.

[96] Van Der Werf; Steve LaRue, "Technology on Tap; New Treatments May Offer a Clearer Solution," *San Diego Union-Tribune*, April 22, 1998, E1.

delta also quelled the groundwater pumping wars in the region. Increased aridity, however, may at any time require further decisions to be made regarding the resolution of salinity problems in the region, as well as limits on groundwater extraction by Mexico and the United States.

Finally, the salinity crisis and Salinity Control Act reflect the inherent complexity found at each political level in the Colorado River Basin. Geopolitical specificity does not diminish the complex fabric of the model. In other words, local politics in the Colorado River Delta possessed just as many nuances and interested parties as the national and international levels. Furthermore, the "commoditization" of the Colorado River Delta has placed local communities and ecosystems at the mercy of distant interests that have less of an interest in the well-being of the region as they do in their continued use of the river for development.[97] Thus, the Salinity Control Act not only reflects the local complexity of the salinity crisis, but also ultimately underscores the challenges that face present-day policy makers who must create basin-wide initiatives that balance diplomatic, national, regional, and local priorities within the river basin. As local stakeholders are given a larger role in crafting decisions that affect their communities, there is a greater chance that the needs of all involved, including the river itself, will be equitably distributed.

[97] Greenberg, 133-149.

## Chapter 8

## Geo-Environmental Disconnection and the Colorado River Delta[1]

*"Every politician, every bureaucrat, every water lawyer, every judge who ruled on such matters, every editorial writer who opined on them – in fact the millions of people in the West who bathed, shaved, cooked, watered their lawns and irrigated their fields with Colorado River water – should be required to walk one mile across the burning sands of the delta to experience firsthand the true cost of living in an arid land and having to import water long distances." Philip L. Fradkin*[2]

In August 1884, scientist C.R. Orcutt explored the recently inundated Laguna Salada region, located in present day Baja California, Mexico, in the lower Colorado River Delta. Six years later he reported that flooding had again rejuvenated the desert wilderness of the delta. "The barren, but naturally fertile, desert plains had been transformed," he reported, "into a jungle of tropical luxuriance, a Paradise for manor beasts. The mesquite trees were loaded with their crisp bean pods, the grass was growing as high as a horse's back, and all the sloughs and lagoons were full of water and delicious fish." Orcutt returned to the delta in October 1890, appreciative of the delicate balance of desert and wetlands that comprised this paradisiacal setting.[3]

Some thirty-two years later conservationist Aldo Leopold visited the "Green Lagoons" of the delta. While steamboats had linked the region's modest mining industry to San Francisco and world markets beyond, Leopold stressed the limited impact that humankind exerted on the ecosystem. Canoeing through the region, Leopold noted the ubiquity of fresh and saltwater lagoons and an abundance of rivers that ran away from the main body of the Colorado River. "[T]he river was nowhere and everywhere," he observed, "for he could not decide which of a hundred green lagoons offered the most

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[1] *Environment and History* has granted permission to reprint this chapter. It is forthcoming in article form as "Geo-Environmental Disconnection and the Colorado River Delta: Technology, Culture, and the Political Ecology of Paradise," in that journal.

[2] Philip L. Fradkin, "The River Revisited," *Los Angeles Times,* October 29, 1995, Magazine Section, 16.

[3] C.R. Orcutt, "A Visit to Lake Maquata [Laguna Salada]," *The West American Scientist*, 7(59), 1891, 158-164.

pleasant and speedy path to the Gulf. . . he divided and rejoined, he twisted and turned, he meandered in awesome jungles, he all but ran in circles, he dallied with lovely groves, he got lost and was glad of it, and so were we." Leopold also noted the ever-present mesquite trees that flourished in the region, as well *cachanilla* brush, duck, quail, coyotes and deer, "all of incredible fatness."[4]

Like Orcutt's description of the region, Leopold's account also qualifies as a "paradise" narrative. The Old Persian word *pairidaeza* refers not only to a walled garden, but also to a piece of wilderness free from extensive human influence.[5] Similarly, lack of integration to the emerging world economy of the late nineteenth and early twentieth centuries isolated the Colorado River Delta from outside exploitation. Furthermore, native agricultural practices rarely modified the region's landscape to the point of disrupting its natural interactions.

Yet while the river brought life to the desert paradise, it also left open the possibility that intensive exploitation of the river upstream could destroy the walls of isolation that had made the "green lagoons" near the Gulf of California so ecologically diverse. Leopold recognized such a possibility as he reflected on what had happened in the region since his 1922 trip. "All this was far away and long ago," he noted, "I am told the green lagoons now raise cantaloupes. If so they should not lack flavor." Leopold ended his reflections on his memories in the delta with a more macabre observation. As the Colorado River linked the delta to the agricultural, municipal and recreational needs of the American West, its beauty and natural abundance declined. "Man always kills the things he loves, and so we the pioneers have killed our wilderness." Somberly, America's pioneering conservationist predicted the decay of this desert paradise.[6]

Construction of Hoover Dam, and other dams that followed on the Colorado, increasingly brought the wild river under control. However, with the construction of Glen Canyon Dam, which began in the late 1950s, and the mandate to begin storing water

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[4] Aldo Leopold, *A Sand County Almanac: With Essays on Conservation from Round River* (New York: Ballantine Books, 1970) 150-156.

[5] Evan Eisenberg, *The Ecology of Eden: An Inquiry Into the Dream of Paradise and a New Vision of Our Role in Nature* (New York: Vintage Books, 1998) 170-171.

[6] Leopold, 157-158.

behind the new dam in Lake Powell, water from upstream declined to a trickle and then evaporated, leaving a dry desert riverbed in the delta by 1961.[7] Onesimo González Saiz, a leader of the Cocopah community in the Mexican delta during the 1960s, remembered that the extensive mesquite and willow forests of the region disappeared in the 1950s. Noted Cocopah scholar Anita Alvarez Williams also recollected the onset of increased salinity in the region at about the same time as the water dried up. "When I discovered salt crust covering the ice cubes from our refrigerator," she noted, "we decided it was time to drink filtered water."[8] Ultimately, overuse of water upstream for communities, agriculture, and recreation wreaked real consequences not only for the flora and fauna in the delta paradise, but also for the extensive Cocopah and Mexican communities that depended on interactions between the river and sea to sustain fishing for subsistence and as a means of earning a livelihood.[9]

Viewing the delta as a paradise fed by -- but also linked to the rest of the American Southwest by – the Colorado River provides an effective lens for exploring the relationship between the delta and the rest of the Colorado River Basin. The question of how the delta declined from a series of green lagoons to a desiccated wasteland by the 1960s has been sufficiently explored elsewhere.[10] Yet why did it happen? This chapter contends that technology, geographic distance between users and the river, economic prosperity in the United States portion of the Colorado River basin, prevalent attitudes towards nature, and cultural expectations encouraged *geo-environmental disconnections* (or geo-environmental disengagement) between the river basin's inhabitants and the delta.

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[7] Philip L. Fradkin discusses the demise of water resources in the Delta in *A River No More: The Colorado River and the West* (New York: Knopf, 1981), 319-341.

[8] Personal correspondence, Anita Alvarez Williams to the author, June 14, 1999.

[9] Anita Alvarez Williams, "People and the River, *Journal of the Southwest*, volume 39, 1997, 331-351.

[10] Jim Carrier, "The Colorado: A River Drained Dry," *National Geographic*, June 1991, 4-32; Evan Ward, "Two Rivers, Two Nations, One History: The Transformation of the Colorado River Delta Since 1940," *Frontera Norte*, volume 22, forthcoming; William deBuys and Joan Meyers, *Salt Dreams*: *Land and Water in Low-Down California* (Albuquerque: University of New Mexico Press, 1999); Fradkin, 319-341.

Geo-environmental disconnection and the impulse to transform nature into civilized paradise were not unique to the twentieth-century American West. In colonial America, for example, European colonists not only forged pastoral and urban landscapes from the wilderness that they found when they arrived there, but also contributed to the wealth of European empires through trade with native groups and extraction of natural resources from the land. Thus, while European communities were culturally and economically enriched, its inhabitants knew little of the ecological and social costs associated with the transformation of the land.[11] Furthermore, during the nineteenth century, as the American impulse for growth and expansion reached its zenith, transformation of the Midwest and Far West into resource colonies of the Northeast further encouraged disconnection between consumers and the ecological and social degradation of the affected hinterlands. For example, destruction of the bison on the American plains contributed to the *haute couture* of fashion trends in the Eastern United States and Europe, but also accelerated the decline of the traditional ways of life of Native American groups. Furthermore, large scale exploitation of iron ore reserves and timber stands in the Northeast and Northwest, respectively, allowed new urban landscapes to dot the map, yet left unappealing pock marks on the extraction sites. Urban inhabitants often did not understand the consequences of creating their own civilized settings.[12] Nevertheless, geo-environmental disconnection and the creation of tropical landscapes in the arid Southwest during the twentieth century represented a marked departure from its antecedents. Technology made the manipulation and transportation of water resources less obvious to consuming populations and an increasing number of

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[11] Roderick Nash discusses the uniqueness of American attitudes towards wilderness and civilization in *Wilderness and the American Mind*, revised edition (New Haven: Yale University Press, 1973). He stresses the American impulse towards order and progress, which, he believes, strongly influenced most colonists and pioneers that came into contact with "uncivilized" landscapes to call for their rapid development. William Cronon provides a compelling contrast of the attitudes of colonists and natives in the New England area towards land and resources prior to the nineteenth century in *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983).

[12] William Cronon's *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991), provides one of the more compelling accounts of geo-environmental disconnection that occurred as a growing capitalist metropolis transformed the resources and landscapes of its extensive hinterlands into marketable products during the late nineteenth and early twentieth centuries.

paradisiacal settings were dedicated exclusively to leisure – as opposed to industrial or agricultural -- purposes.

Engineering expertise enabled communities to transport water over great distances, thus estranging its users from the natural landscapes they affected. Geo-environmental disengagement in the delta began during the early twentieth century in the *irrigated oases* of Yuma Valley, Mexicali Valley, and the Imperial Valley. Americans and Mexicans not only transformed the environment with their new technologies, but also displaced natives who had worked the lands adjacent to the rivers for centuries. Ultimately, technology made human interactions with nature and people more impersonal in an industrial and post-industrial society. Second, cultural values of affluence, collectively known as the *mirage culture*, spawned a proliferation of lawns, lavish fountains, man-made water-ski parks, and fabricated lakes after 1960. The artificial paradise was constructed at the expense of the river's natural paradise in the delta. These separations of civilization from its impact on nature largely determined the political ecology of paradise. In other words, the fate of the delta was not only influenced by regional political and economic factors related to the irrigated oases, but also by the actions of residents, tourists, developers, and politicians in the competing *urban oases* of Los Angeles, San Diego, Phoenix, and Las Vegas. Not surprisingly, the Colorado River is one of the only rivers in the world that does not support a major metropolitan area on its banks, yet sustains scores of communities inland whose collective population exceeds several million inhabitants.

***The Irrigated Oasis***

Throughout the early twentieth century, particularly after passage of the Newlands Reclamation Act in 1902, the way in which residents close to the river viewed the river underwent a profound transformation. This was due primarily to large-scale American and Mexican migration to the delta. In the process these immigrants displaced Cocopah and Quechan bands as the principal users of water from the Colorado River. The value system dominating river use underwent a similar transformation. While naturalists such as Aldo Leopold and C. R. Orcutt appreciated the desert and wetland paradise of the delta for its natural processes, others, including Theodore Roosevelt, viewed the region primarily as a location where an irrigated oasis could link the region to

the global economy. The days of strict subsistence production by the Quechan and Cocopah tribes were numbered. [13]

Technology enabled this transformation to take place. Dams served as the focal point of the transformation of the Colorado River basin. However, canals, pumps, and underground siphons also contributed to this ecological revolution. In the 1940s, for example, the Colorado River Aqueduct carried water hundreds of miles from the river to Los Angeles. Likewise, by the late 1980s the Central Arizona Canal carried water from the Colorado River to Phoenix and Tucson. These more mundane aspects of engineering (canals and pumps), perhaps more so than massive dams, allowed people to disassociate their behaviors in the urban and irrigated oases from the consequences of their actions on the Colorado River and its delta.

The vision of nature that the United States Reclamation Service (USRS), local developers, and contemporary scientists brought to the Colorado River Basin and the Delta also played a critical role in the gradual disconnection of the river's beneficiaries from the river itself.[14] As historian Donald A. Pisani noted:

> Residents along the river seemed eager to cooperate with the Reclamation Service, whose officials hoped that a new mining boom in Arizona would create ready markets for farm products raised on a federal project. [USRS Engineer] J. B. Lippincott crowed: "here is an opportunity to 'Build the State.' Here is a sleeping empire at our doors awaiting the touch of some Siegfried to awaken it."[15]

Theodore Roosevelt's advocacy of management and conservation dovetailed with the management revolution that took place in the early twentieth century in American government and business.[16] Influenced heavily by the growth and consolidation of the oil,

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[13] Theodore Roosevelt, "Message from the President of the United States, relative to the threatened destruction by the overflow of the Colorado River in the sink or depression known as the Imperial Valley or Salton Sink," January 12, 1907, *Papers Relating to the Foreign Relations of the United States, 1911* (Washington: GPO, 1918), 528-534.

[14] Marc Reisner's *Cadillac Desert: The American West and its Disappearing Water* (New York: Penguin, 1986) chronicles the growth of the USRS (the name was changed to the United States Bureau of Reclamation [USBR] in 1923) and its ambitious building program during the twentieth century.

[15] Donald J. Pisani, *From Family Farm to Agribusiness* (Berkeley: University of California Press, 1984), 308.

railroad, and steel industries, government bureaus began to compartmentalize offices, tasks, and duties, sparking a bureaucratic explosion that profoundly influenced the USRS's attitudes towards the ability of humanity to dominate nature.[17]

The bureaucratization of the USRS also reinforced a Newtonian view of nature in which maps and grids could be superimposed upon the landscape in an effort to rationally develop natural resources. Like chemists in a laboratory, engineers and city boosters alike believed that they could develop the resources of the Colorado River for their community without impacting those living downstream.[18] This perspective elided nicely with the furious competition of western communities for water resources, agricultural development, and municipal growth. This outlook encouraged geo-environmental disengagement throughout the region more than any other factor. Even as Westerners slowly acknowledged the inter-connected nature of the environment and civilization at the end of the twentieth century, community planners continued to compete for water resources, largely oblivious to the consequences downstream or in the hinterlands of their own oases.

The Yuma, Arizona, area provides an important example of what happens when technology, science, and the economic "commoditization" of a region facilitate the rapid exploitation of natural resources on largely untrammeled landscapes.[19] Prior to the introduction of large-scale irrigation in the twentieth century, a sharp contrast between the stormy Colorado River and the vacuous Sonoran Desert characterized the landscape of present-day Yuma County. In contrast to the abundance of water in the Colorado River and along its riparian floodplain, lack of water and unreliable wells plagued travelers in the desert region for centuries. Large sand dunes dominated the horizon west of Yuma.

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[16] See "Theodore Roosevelt on Conservation, December 3, 1907," in *The Progressive Movement, 1900-1915*, Richard Hofstadter, ed. (Englewood Cliffs, NJ: Prentice-Hall, 1963), 69-72.

[17] The mindset of the early conservationists and irrigation visionaries is discussed in Donald Worster, *Rivers of Empire* (New York, 1985), 19-61; Also see Samuel P. Hays, *Conservation and the Gospel of Efficiency, 1890-1920* (Cambridge, MA: Harvard University Press, 1959).

[18] Carolyn Merchant explores the transformation of Western attitudes towards nature in response to the rise of the machine and Newtonian physics in *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: Harper and Row, 1983), 216-235,275-295.

[19] James B. Greenberg, "The Tragedy of Commoditization: Political Ecology of the Colorado River Delta's Destruction," *Research in Economic Anthropology*, volume 19, 1998, 133-149.

Oceans of alkali-green creosote bushes, accented by intermittent clusters of saguaro cacti, covered the plateaus east of Yuma County.

In contrast to the deprivations of the Sonoran Desert, the Colorado River enlivened its banks and flood plain. Tall brush and verdant grasses sustained a vibrant ecosystem close to the river's edge. For centuries the Quechan and Cocopah natives relied on the overflow from the river to irrigate their crops, which included cotton, watermelons, beans, and Bermuda seed.[20] The native bands found that when they applied water from the Colorado to the desert sands, the dunes were transformed into rich alluvial soils.

In the 1880s and 1890s, ambitious but under-funded private companies tried to supply irrigation services in Yuma Valley for capital-intensive agricultural production. After numerous failures, Mulford Winsor, Sr. oversaw the incorporation of the Yuma County Water Users Association (YCWUA) in 1903. The Association signed a contract with the Secretary of the Interior in 1904 for the construction of Laguna Dam, several miles above Yuma on the Colorado River. Construction of Laguna Dam would raise the riverbed several feet so that water could be channeled into man-made canals. USRS officials believed that these canals could provide water for some 120,000 acres of land in the Bard District of California's Imperial County and Arizona's Yuma County. Construction of the new irrigation infrastructure also symbolized the transfer in control over the region's most precious resource – water – from the Natives to Anglo-Americans. Ironically, 150 Quechan Indians helped construct Laguna Dam. As scholar Robert Bee observed:

> [The] Quechans were giving up the only natural source of fertility for their farmlands in exchange for perhaps a year's wages as common laborers, because when the dam was completed, it reduced the incidence of flooding and thus reduced the deposit of rich river silt on the Quechans' land.[21]

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[20] Norris Hundley, Jr., *The Great Thirst*, (Berkeley: The University of California Press, 1992), 14-19. Also see Clifford E. Trafzer, *Yuma, Frontier Crossing of the Far Southwest* (Wichita: Western Heritage Books, 1980), 5-6.

[21] Robert L. Bee, *Crosscurrents on the Colorado: the Impact of Government Policy on the Quechan Indians* (Tucson: University of Arizona Press, 1981), 65-66.

Thereafter, levees, dams, canals, and siphons of the Yuma Project were viewed by Anglos as the means to redeem Yuma Valley, yet the reduced overflow significantly undercut the Quechan's yearly harvest close to the river, forcing them onto government reservations.

In November 1912, Arizona Governor George WP Hunt traveled across the blighted lands between Phoenix and Yuma for the Jubilee Celebration of the underground siphon that linked the USRS irrigation works at Laguna Dam to Yuma Valley lands. The siphon, placed beneath the Colorado River, made it possible to transfer water from the dam's main canal in California into the canals of Yuma Valley farmers.[22] For residents in Yuma the siphon symbolized profound economic and environmental changes that accelerated the transformation of their town from a community built on mining and transportation to one focused on capital-intensive agriculture. In his speech, Governor Hunt stressed the intended moral benefits the siphon set in motion. "The wonderful siphon is a home-builder, and the building of homes in the noblest work that can be performed by the greatest engineering skill in the country."[23]

In addition the siphon greatly accelerated environmental change in Yuma Valley. With reference to the region's landscape prior to operation of the siphon, William J. Westover, local attorney and farmer, wrote, "When I came to Yuma in 1909, there was little agriculture in the area. A little acreage west and south of Yuma was in cultivation, the water furnished by private canal companies. The balance of the valley was still rough, covered by mesquite and arrow weeds."[24] At the end of his speech, however, Governor Hunt predicted that by "harnessing of the Colorado River," Yuma's citizens would "soon

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[22] For a brief history of the Siphon, see Bob Steele's "Siphon: Our Water's Been Coming Under the River for 75 Years," *Yuma Daily Sun*, Destination A, October 25, 1987, 12-14. Mr. Steele is the USBR Public Affairs Officer in Yuma. For a historical account of the engineering aspects of the Siphon and its installation, see Francis L. Sellew, "The Colorado River Siphon at Yuma, Arizona," *Engineering News*, Vol. 68, No. 9, August 29, 1912, 377-385. Mr. Sellew was the Yuma Project Engineer in charge of installing the siphon.

[23] George W. P. Hunt, "Yuma – Siphon, " Hunt Collection, Hayden-Arizona Room, Hayden Library, Arizona State University, Box 1, Folder 17A, 1.

[24] William H. Westover *Yuma Footprints* (Tucson: Arizona Pioneers' Historical Society, 1966), 36.

make the Yuma valley blossom as the rose."[25] Mulford Winsor, Jr., a state senator from Yuma, later told a campaign audience, " I see my dreams of agricultural domain come true . . . as I witness the mesquite and the screw-bean, the chaparral, the catclaw and the grease-wood giving way to the sweet-scented purple alfalfa, the golden grain, [and] the whitening cotton."[26] Soon after irrigation began in Yuma County, local boosters began to speak of the irrigated oasis with paradisiacal language similar to that Leopold and Orcutt used to describe the delta's natural fecundity. With reference to the Mexican delta, for example, one publication noted, "Mexico on the south is an undiscovered country agriculturally. Naturally the eyes of land developers are turned to this region of unsurpassed climate, fertile soil, cheap labor, and low priced land. Here is the opportunity for men of capital and vision to take up a creative work similar to that which now nearing completion in our own West." [27]

Integration into the emerging global economy transformed the landscape of the desert floor. Market conditions dictated what would be planted. Crops not only included foodstuffs, but also ornamental plants, such as palm trees. R.E. Blair, former superintendent of the USDA-run Yuma Reclamation Farm, observed:

> As the greater part of the early development work of the Yuma Project has been accomplished, many residents of both towns and country are devoting more attention than during former years to establishing permanent plantings of ornamental trees and plants that may add comfort and beauty to the homes. Fertile soil, abundant water, long growing seasons, and mild winter temperatures afford great possibilities for the growth of many types of ornamental trees.[28]

Such developments linked the irrigated oasis to the mirage culture of the urban oases. As a result of this market-based growth, Yuma County, the Imperial Valley, and Mexicali Valley assumed a striking green façade. Subsequently, with the help of the urban oases

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[25] Hunt, 3.

[26] "Campaign Speech, 1921, Tucson," Arizona State Archives, Mulford Winsor Collection, 5.

[27] Yuma, Arizona Chamber of Commerce, *Yuma Project: The Land of Perpetual Sunshine*, 1922-23 edition (Yuma: publisher unknown, 1923), 63.

[28] R.E. Blair, "The Work of the Yuma Reclamation Project Experiment Farm in 1918," *USDA Department Circular 75* (Washington D.C.: GOP, 1920), 64.

upstream, the delta was gradually transformed from a series of salt and freshwater wetlands into one of nature's most notable ghostscapes.

Ultimately, the consequences of geo-environmental disconnection were social as well as ecological. Control over the river by dams and intakes upstream left native bands along the river without sufficient water to farm. They were soon dependent on the national governments that had transformed this paradise into an irrigated oasis. Juan Grant, president of the Quechan tribe, framed his complaints concerning the manner in which Indian land and water rights were taken in a brief statement that captured the impact of technological changes on his people. "The Colorado River has been flowing from the Rocky Mountains to the sea for many generations, long before the white man come," he noted, "We Indians were farming *along its shores*, raising corn, pumpkins, beans, and watermelons to support ourselves."[29]

Each of these factors – revolutions in government organization, economic and ecological values, and the persistence of Newtonian views of nature -- provided a powerful impetus for viewing the resources of the river apart from the landform that carried them to the region. Concern for the delta and its inhabitants waned as agricultural projects and urban areas drank the river dry by the time it reached the Gulf of California.

***Distant Empires* and *Urban Oases***

The rise of urban oases in the lower Colorado River Basin, including Los Angeles, San Diego, Phoenix, Tucson, and Las Vegas, provided additional examples of geo-environmental disengagement. These disconnections occurred not only because engineers were able to create structures capable of carrying water to communities hundreds of miles inland from the river, but also because of the political and legal dynamics of urban water acquisition that emerged over the course of the twentieth century. As population increased in these communities, growing political power provided enough clout in state and federal circles to marshal water from ever-distant sources.[30]

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[29] Senate Hearings, *Survey of Conditions of Indians in the United States* (Washington: GPO, 1931), 8054, italics mine.

[30] M. Milstein, "Water Woes," *National Parks* 66(5-6), May/June 1992, 39-45.

Private patterns of water use in the arid Southwest cannot be understood without recognizing the link between public policy and the ample supply of water to the urban and irrigated oases. Successful water policy in the American Southwest required two ingredients: (1) local and state politicians who could effectively push projects through the United States Congress that would bring water to a particular oasis and (2) assistance from the powerful U.S. Bureau of Reclamation (USBR). Particularly after World War II, Congressman and Senators from Western states dominated the Committees on Interior and Insular Affairs in the United States House of Representatives and the Senate. In return for concessions on bills of interest to officials from other states, powerful Western politicians steered massive projects, such as the Central Arizona Project, through Congress. No tandem better epitomized this process than Arizona Senator Carl Hayden (chairman of the Senate Appropriations and Interior and Insular Affairs Committees) and his close associate USBR Commissioner Floyd Dominy. Both men believed that the salvation of the Western United States involved maximizing the use of water from the Colorado River for agricultural, municipal, and domestic use. Dominy best illustrated this faith in the power of engineering to develop the river when he first laid eyes on the newly constructed Hoover Dam in 1937. Years later he reminisced, "There she was . . .The first major river plug in the world. Joseph of Egypt learned to store food against famine. So we in the West had learned to store water."[31] As the most powerful member of the Senate, Hayden enlisted the support of Dominy to convince members of Congress to support the Central Arizona Project, which would bring water to Phoenix and Tucson. Together they successfully spearheaded the passage of a project that had generated significant opposition, particularly from California, as well as other Basin states, and represented the largest USBR project to date (1968). Hayden and Dominy's synergistic relationship typified the way in which Western legislators and local politicians worked together with the USBR – which might have been renamed the USBW (United States Bureau of the West) – to bring abundant supplies of water to the urban and irrigated oases of the region throughout the twentieth century.[32]

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[31] Quoted in John McPhee, *Encounters with the Archdruid* (New York: Farrar, Straus and Giroux, 1971), 169.

[32] Marc Reisner discusses this linkage between Western politics and the USBR on a broader scale

The legal structure for surface water diversions throughout the Colorado River Basin also facilitated the alienation of water users from their environmental stewardship of the river. In humid states east of the hundredth meridian, riparian water law permitted owners of land adjacent to a river full use of the water, as long as their diversions did not hinder the flow of the stream down river. In most Western states, however, the doctrine of prior appropriation was applied in determining water rights. Priority was established not by proximity to the river, but according to whom held the earliest claim for diverting water from the river for beneficial purposes. The fact that such rights could be sold and enjoyed by people living at great distances from the river encouraged regional development. As engineers perfected dam and canal structures that allowed the owners of water rights to transport water over great distances, the incidence of geo-environmental disconnection increased. This linkage between water rights and technology allowed individuals such as William Mulholland and the Los Angeles Metropolitan Water District (MWD) to purchase water rights in the Owens River Valley and then divert the river's water several hundred miles to Los Angles where land developers hoped to build an empire.

Furthermore, domestic and international treaties, including the Colorado River Compact (1922), which divided the waters of the river between the seven basin states, and the Mexican Water Treaty (1944), which granted Mexico 1.5 million acre feet from the river, underscored the scarcity of water resources in the basin. These binding treaties inadvertently encouraged accelerated use of assigned water rights during the balance of the twentieth century. As a result, the emphasis on economic development of the river's water largely overshadowed the relationship of those living in the basin to the river itself. The treaties also indirectly led to the construction of structures such as the Glen Canyon Dam, whose purpose was to retain as much water as possible for users in the United States portion of the river basin.[33]

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in *Cadillac Desert: The American West and its Disappearing Water* (New York: Penguin, 1986). He explores the relationship between Dominy and Hayden in greater detail on page 256 of the same book.

[33] For a discussion of the Colorado River Compact see Norris J. Hundley, Jr., *Water and the West: The Colorado River Compact and The Politics of Water in the American West* (Berkeley: University of California Press, 1975); The complexity of Delta water politics related to the Compact are discussed in Evan Ward, "Crossroads on the Periphery: Yuma County Water Relations, 1922-1928," unpublished M.A. Thesis, University of Georgia, Athens, 1997; Hundley exhaustively explores the Mexican Water Treaty

Southern California offers the premiere example of an empire that conquered distant bodies of water for local growth. The metropolitan area not only severely depleted water resources from the Owens Valley and Mono Lake, but also dipped its hands into the Colorado River for a large portion of its water. Instead of possessing its own natural resources with which to lure investment to the region, the MWD amassed enough water from elsewhere to convince the rest of the nation to move to Southern California.[34] As the metropolis continued to grow after World War II, more fanciful schemes for maintaining the ocean-side oasis were set on the table by policy makers. Planners even considered bringing in water from as far away as Alaska, the Columbia River, and Canada to sustain the greatest empire in the twentieth century American West.[35]

The dream of developing the Colorado River for use in the Phoenix metropolitan area was born after World War I in the midst of discussions related to the Colorado River Compact. In large part, Arizona's push for an internal empire developed in response to California's ability to attract both tourists and new residents. Tension between the two empires was most evident in 1934 when Governor Mouer sent out the Arizona National Guard to try to prevent the City of Los Angeles and the USBR from building Parker Dam, which would divert water to Los Angeles. The interstate tension reached a litigious climax in 1962, when the Supreme Court ruled in favor of Arizona's contention that California did not have rights to water it had been using beyond the bounds set by the Colorado River Compact.[36]

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(1944) in *Dividing the Waters: A Century of Controversy Between the United States and Mexico* (Berkeley: University of California Press, 1966); Ernesto Enríquez Coyro, who worked for the Mexican Secretary of Foreign Relations on issues related to the division of waters on the Colorado and Rio Grande Rivers during negotiation of the Mexican Water Treaty provides a historical perspective to the treaty in *El Tratado entre México y los Estados Unidos de América sobre Ríos Internacionales*, volume 1 (Mexico D.F.: Universidad Nacional Autonoma de México, 1975).

[34] See Robert Gottlieb and Margaret Fitzsimmons, *Thirst for Growth: Water Agencies as Hidden Government in California* (Tucson: University of Arizona Press, 1991), 5-26.

[35] Clifford J. Villa, "Comment: California Dreaming: Water Transfers from the Pacific Northwest," *Environmental Law*, 1993, *Lexis-Nexis Academic Universe*.

[36] Bradford Luckingham, "Phoenix: The Desert Metropolis," in *Sunbelt Cities* (Austin: University of Texas, 1983), 309-327; For a discussion of Arizona water politics related to the Central Arizona Project and disputes with California, see Rich Johnson, *The Central Arizona Project*, 1918-1968 (Tucson: University of Arizona Press, 1977).

Las Vegas, or "the meadows," represented the third major urban oases in the lower Colorado River basin. From a humble population of approximately 30,000 in 1946, the town grew exponentially in the 1980s and 1990s, reaching a population in excess of 1.1 million by 1997. Attractive tax rates made the move even more enticing for those from the Rustbelt, Midwest, and California. Explosive growth quickly rendered the state's allotment of 300,000 acre-feet from the Colorado River insufficient to fuel additional development. As in Los Angeles and Phoenix, increased population in Las Vegas provided additional political power in commanding resources from areas with less representation. By the early 1990s, the Las Vegas Valley Water District had devised plans to import desalinated water via a pipeline from Santa Barbara, California. Another plan proposed draining the aquifers beneath Death Valley and rural Nevada. Political opposition to such plans demanded that Las Vegas focus on conservation. Nevertheless, creators of the artificial paradises of the Strip and residential areas fought back to preserve their oases in the desert.[37] Continued growth and maintenance of its claim as entertainment capital of the United States garnered Las Vegas the dubious distinction of being the most profligate urban consumer of water in the American Southwest. [38]

One of the true ironies of the lower Colorado River Basin involved the type of development that flourished there. In an effort to recreate paradise, the mirage culture represented the collective efforts of homeowners, resort owners, and tourists to create, sustain, and enjoy an artificial sense of the sublime with water from the Colorado River, even as the ecological viability of the river's delta remained in limbo. Manicured lawns, manmade lakes, golf courses and exotic flora all required large amounts of water to

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[37] *Landscape Management*, "NLA Fights Turk Restrictions in Las Vegas," November 1998, volume 37, number 11, 14.

[38] Lou Cannon, "When it Comes to Development, Las Vegas Plays Without Limits; City Warned to Slow Down or Let Chips Fall Where They May," *The Washington Post*, February 2, 1997, A3; Kevin Roderick, "Las Vegas' Thirst for Water Upsets Many in Arid West; Development: Boom Town Plans 1,000-mile Pipeline. Critics Say the City Should Live Within Its Means," *Los Angeles Times*, May 6, 1991, A1.; Cannon, "Desert City Looks to Sea for Water; Las Vegas Focusing on Desalination Plant," *Washington Post*, July 5, 1992, A3; Timothy Egan, "Las Vegas Stakes Claim in 90's Water War," *The New York Times*, April 10, 1994, Section 1, Page 1; Frank Graham, Jr., "Gambling on Water," *Audubon*, July 1992, volume 94, number 4, 64-69; Leslie Spencer, "Water: The West's Most Misallocated Resource," *Forbes*, April 27, 1992, volume 149, number 9, 68; Daniel B. Wood, "Pirate Ships, Fountains: Extravagant Water Use Hits Upper Limits," *The Christian Science Monitor*, February 1, 1995, *Points of Compass* Section, page 10.

sustain the myth of paradise. Ultimately, the way these venues promoted themselves raised questions as to which paradise deserved society's collective attention: a public one, represented by the delta, or a private paradise groomed to provide the mirage culture? As historian Thomas E. Sheridan aptly noted, "The dead rivers and sprawling metropolises are not the result of some conspiratorial power elite but the actions of a monstrous economic democracy of ordinary people who vote with their checkbooks and their feet, cars, and recreational vehicles." In essence, Sheridan argued that culture, as well as politics and diplomacy, helps explain the political ecology of the delta.[39]

***Mirage Culture***

The mirage culture diverged philosophically from the more utilitarian purposes of the urban oases. While the urban oases had grown in response to the attraction of military bases, industrial factories and technological corporations during and after 1940, the mirage culture fulfilled practically no useful purpose beyond sensory stimulation. Historian David Nye considered America's fascination with the technological and natural sublime as an outgrowth of a national tradition that esteemed technological stimulants of the senses as an extension of, and not apart from, nature's wonders. "Like the Jacksonians who mingled their awe for nature and man-made wonders," Nye wrote in reference to the massive influx of tourists to Las Vegas, "late twentieth-century Americans seem oblivious to the logical impasses [such as geo-environmental disconnections] posed by the technological sublime . . ."[40] Ultimately, the mirage culture was merely a regional extension of that larger national trend.

The mirage culture also fit another important characteristic of American culture: belief in the linear progression of society towards national and technological greatness. As Las Vegas epitomized best, "the logic of the [mirage culture] demanded that each object exceed its precursors." What one Las Vegas nightclub owner said about the tourist drawing capacity of atomic bomb blasts in the 1950s held true for the elaborate oases of

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[39] Thomas E. Sheridan, "Arizona: The Political Ecology of a Desert State," *Journal of Political Ecology*, volume 2, 1995, 49.

[40] David Nye, *American Technological Sublime* (Cambridge, Mass: MIT Press, 1994), 291.

the mirage culture: "'Bigger bombs, that's what we're waiting for, Americans have to have their kicks.'"[41]

Five elements defined the mirage culture: the swimming pool, the lawn, the golf course, man-made lakes, and fountains. Each of these constructions fulfilled a human longing to experience nature, or at least a representation of it. In the modern Southwest, nearly every upscale home built since the 1960s featured a lawn and a swimming pool. Man-made lakes served an aesthetic function on a landscape scale. Finally, fountains and advanced water technologies carried the worship of the mirage culture past functionality and into a pure form of aquatic acclamation.

The swimming pool has contradictory cultural meanings and purposes. As early as the thirteenth century, Muslim philosopher Obadiah Maimonides defined a "pool" as a receptacle where the sacred nature of water could be experienced. As historian Thomas A.P. van Leeuwen observed, "The cleanliness of the pool and the purity of the water led to a series of religious meditations on the ways to God." Later interpretations of the pool emphasized its emulation of nature and profane, as well as spiritual, purposes. A *piscine,* the French word from which "swimming pool" is derived, functioned as a fishpond in Roman and European gardens. Yet, much like Maimonides' interpretation of "pool," Christian doctrine viewed the *piscine* as a baptismal font, where nature, humanity, and the heavens merged to provide a sense of rebirth and renewal.

In the mirage culture of the twentieth century Southwest, the swimming pool and man-made lake retained a secularized sense of spirituality, reflecting the ability of humanity to redeem desert landscapes. Nevertheless, the *piscine* of the mirage culture also quenched a need for leisure in the desert. The proliferation of swimming pools and suburban subdivisions in the Pacific Southwest after the 1960s promised a pond of pleasure in many backyards. This "hydro-vulgarity," as Van Leeuwen termed it, not only represented the democratization of water supplies in the region, but also reinforced a regional preference for private versus public oases. No locality illustrated this trend better than Southern California, where "the swimming pool and its hydro-opportunistic attractions became the center of family life." The Los Angeles metropolitan area amassed

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[41] Ibid, 284.

the highest density of swimming pools in the world by the early 1960s. As one chronicler of sport noted, "The postwar increase in swimming pools alone had been fantastic. In 1947, there were 11,000 pools in the United States. Now [1962-1963] there are more than 310,000, of which 113,500 are in California." By that time, the mirage culture also defined an often elusive feature of the barren desert floor, the U.S.-Mexican border: "A passenger flying over the Mexican desert can tell when he has crossed the United States border by the swimming pools that suddenly appear below." The number of pools in Southern California increased throughout the balance of the century, as well as throughout the rest of the Pacific Southwest. By 1997 there were 280,000 swimming residential swimming pools in the Phoenix area alone.[42]

Secretary of the Interior Bruce Babbitt recently noted in a speech to the Natural Resource Law Center at the University of Colorado, Boulder, that "Conservation should begin by recognizing that western cities were not meant to resemble Brazilian rainforests or suburbs of Minneapolis."[43] Unfortunately, the use of manmade lakes and swimming pools as ponds became a fixture on the regional landscape.[44] The combined toll of insurance liabilities for diving boards, a fetish to recreate the natural in a domestic setting, and an economy that supported a highly sophisticated cadre of professional water artists, enticed suburbanites across the region to use their pools for aesthetic purposes instead of for recreation. As one journalist in Phoenix noted, "Here in the Valley we're 2,600 miles from the famous Walden Pond. But almost any backyard can have its own little Walden that will give the homeowner years of pleasure without the work of maintaining a pool."[45] Waterlilies and goldfish provided more window-dressing in this attempt to recreate nature. As the owner of Paradise Ponds in Scottsdale noted, "It's a

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[42] Van Leeuwen, 8-9; Julie Newberg, "Even in the Desert, Water's Everywhere; Piped In for Fun, Cooling, Sipping, Irrigating Fields," *Arizona Republic*, September 21, 1997, special section, 22.

[43] "Western Water Policy – From Reclamation to Restoration," Remarks of the Secretary of the Interior, Bruce Babbitt, University of Colorado, Boulder, June 8, 1999, Natural Resource Law Center's Program on Western Water Law and Policy, www.doi.gov/secretary/univ.htm, December 7, 1999.

[44] Joan Drake, "Man-Made Lakes: A Splash with Home Buyers," *Los Angeles Times*, August 20, 1989, part 8, page 1.

[45] Barbara Yost, "Imponderables; Water Features are Backyard Oases for the Soul," *Arizona Republic*, March 3, 1996, *Arizona Style* Section, page 22.

little oasis in your back yard."[46] Fountains and artificial waterfalls completed the landscape makeover. The importance of geographic mobility in the mirage culture was not lost on one marketer of waterfalls, who noted, "If you move, you can pick it up and move the waterfall."[47]

Fountains are also an important component of the mirage culture, serving as an artificial spring that soothed parched onlookers with an illusory reassurance of plenty. Like Roman emperors who transported large amounts of water across the empire via aqueducts and "dumped [them] into fountains with no holding capacity," modern day developers and homeowners displayed fountains as symbols of prosperity and power over nature.[48] The demand for fountains facilitated the emergence of sophisticated companies such as WET (Water Entertainment Technologies) Design Company. Since the early 1980s, WET transformed streams of water into cultural focal points in the Pacific Southwest and throughout the world. Less high profile corporations performed the same service in residential oases throughout the region. While most of these fountains used recycled water, they created the impression of plentiful water resources (a key characteristic of the mirage culture).[49]

While the pool, man-made lake, and high-tech fountain represented the unadulterated celebration of water in the mirage culture, the exotic landscaping of the urban oases in lush, verdant hues reinforced the illusion of a postmodern paradise in the arid West. Ironically, the use of water-hungry exotic flora in the urban oases inadvertently drew water away from the delta, where invasive species replaced natural ones and the welfare of those living there stood in stark contrast to the lifestyle enjoyed under the mirage culture.[50]

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[46] Ibid.

[47] Asra Nomani, "Backyard Works of Art; Pools Feature Waterfalls, Fountains," *Arizona Republic*, June 12, 1999, E1.

[48] Van Leeuwen, 224.

[49] Tom Post, "Splash," *Forbes*, April 19, 1999, volume 163, number 8, 126; Also see Jesus Sanchez, "Commercial Real Estate; Water Creations Spring from the Edge of the Desert," *Los Angeles Times*, July 6, 1999, C1.

[50] See Frank Clifford, "Plotting a Revival in a Delta Gone to Dust; Border: Decades of Colorado

The lawn emerged as a middle-class status symbol in the United States during the middle nineteenth century. Prior to that time, upper and middle class homes were largely situated on the street with little floral ornamentation. The desire for private lawns and gardens replaced the fascination with public gardens and parks during the late nineteenth and early twentieth century. Post World War II America witnessed the emergence of the front lawn as a suburban fixture. Much like a paradise garden, the lawn separated a family from the world. The grass-seed and chemical industries contributed to make lawn care a high art. In the American West this trend was reinforced by the lack of natural verdure and the desire of immigrating Midwesterners and easterners to transform the desert floor into a domestic microcosm of the natural landscapes they left behind.[51] Neighborhood covenants and peer pressure bound residents with formal and informal commitments to take care of their lawns. The ecological transformation was significant enough to garner attention from the popular press in the post World War II era. In 1962 The *Saturday Evening Post* noted that prosperity after the war brought on "the biggest lawn boom of all time – a phenomenon of this suburban age. With everything else exploding – population, culture, fashion – so has grass. It is literally spreading all over and has become, in fact, much more than a ground cover. It is an emotion that has blossomed into a status symbol."[52] Not surprisingly, golf courses and lawns remain one of the top consumers of water in the Pacific Southwest.[53]

Perhaps the most striking example of geo-environmental disconnection in the mirage culture was the movement to create "microclimates" from lawns, fountains, misting systems, and swimming pools. Misting systems promised to cool the air from ten to twenty five degrees per hour.[54] Swimming pools provided the potential for even

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River Diversions Have Left Mexico Area Dry," *Los Angeles Times*, March 24, 1997, A1.

[51] Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (New York: Oxford University Books, 1985), 54-60.

[52] James A. Skardon, "Grass Craze," *Saturday Evening Post*, March 17, 1963, 30, as quoted in Virginia Scott Jenkins, *The Lawn: A History of an American Obsession* (Washington D.C.: The Smithsonian Institution, 1994), 97.

[53] Michael Murphy, "The High Cost of Green; Conservation Takes a Back Seat to Lush Lawns," *The Phoenix Gazette*, October 28, 1993, A1.

[54] Betty Beard, "Be Cool, Mister, Dew Your Job," *Arizona Republic*, April 29, 1995, D1.

greater manipulation of residential environs. As one climatologist noted, "if the pool consumed half your back yard, you could lower the entire backyard temperature five degrees immediately."[55] Despite the beneficial impact of swimming pools, lakes and misters on local climates, the liabilities included greater humidity within the surrounding landscape. Unfortunately, the debate over microclimates focused mainly on whether they were economically – and not ecologically -- viable. The issue of saving money on energy versus the cost of the water needed to create a microclimate took precedence over issues related to the morality of the action.[56]

Like the swimming pool, golf courses were useful for recreation as well as for aesthetic pleasure. Additionally, golf course owners drastically reinforced the private nature of the mirage culture, demanding expensive greens fees often in excess of two hundred dollars. These fees not only paid for the privilege of playing on a lush landscape in the desert, but also for exorbitant water bills and maintenance fees. Developers emphasized their ability to sculpt nature by adding lakes, hills, and sand bunkers (perhaps the ultimate paradox of the mirage culture) to courses. One developer noted, "We are even very careful to save natural rock outcropping, drainage features, and vegetation. We really want the two (golf courses and desert habitat) to work very well together." Despite these efforts to retain natural features on golf courses, developers pushed ahead with plans to create even more golf courses in the Pacific Southwest. Demand from tourists for manicured greens and fairways reinforced the aspirations of developers. Arizona, for example, in 1993, derived close to one billion dollars from golf related activities alone. The efforts of conservationists and environmentalists to limit the number of golf courses throughout the region received little attention.[57]

Competition between golf resorts in Scottsdale, Las Vegas, and Southern California contributed to the proliferation of courses across the Pacific Southwest and inadvertently placed greater strain on available water resources. By 1999 the Scottsdale area assumed the title of "Golf Capital of the World." By 1998 the Phoenix area boasted

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[55] Thomas Ropp, "Add 'Green' to Landscaping," *Arizona Republic*, September 10,1999, B5.

[56] Ibid.

[57] Bob Golfen, "Golf Stuck in Trap Between Tourism, Nature Activists; Sport Generates Equal

187 golf courses, with officials from the Arizona Golf Association planning for as many as 400 by 2010. Despite measures taken in the early 1990s to require the use of reclaimed water instead of groundwater for use on golf courses, the number of courses increased by approximately seventy between 1990 and 1999. Las Vegas, ever anxious to add more high-profile attractions, lagged behind Phoenix in terms of golf courses, but remained the second most popular tourist spot in the world, thanks in part to many of the waterscapes featured in its hotels. San Diego and Palm Springs also competed with these urban oases for golfers during the late twentieth century.[58]

The growth of golfing in the mirage culture reflected the type of city-state intrigue that characterized the use of water as a developmental tool in the Lower Colorado River Basin. Once a suitable water supply was secured during the early part of the century, concern in these urban oases shifted from the river to the creation of plans to outdo competing communities for tourist dollars, industry and new residents. Ironically, greater environmental awareness during the late twentieth century did little beyond the local level to encourage a greater sense of regional ecological inter-dependence. The American penchant for political independence and continued economic prosperity prolonged the effects of geo-environmental disengagement.[59]

### *Mirage Culture* Redefined in the Late Twentieth-Century

While the mirage culture had its precedents in Los Angeles, Palm Springs, and Scottsdale, it was epitomized by the vision that developer Steve Wynn brought to the Las Vegas desert during the 1980s. In an effort to elevate the offerings of the Strip beyond darkly lit casinos, Wynn's Mirage Resort helped to re-define the mirage culture in the late twentieth century. Catering to tourists looking for the most appealing sensory stimulation, Wynn created a South Seas environment complete with dolphins (in a 1,500,000-gallon pool) and a rainforest-theme lobby with an exotic aquarium behind the registration desk. His architects perpetuated the mirage culture by making it "acceptable

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Amounts of Money, Resentment," *The Arizona Republic*, October 17, 1993, B1.

[58] Peter Corbett, "Vegas vs. Valley for Tourism Title; Gambling Adds Golf, Resorts," *Arizona Republic*, July 19, 1999, A1; Bill Huffman, "State Riding Crest as Public Demands More Courses," *Arizona Republic*, February 2, 1999, *Arizona Golf*, 8; T.R. Reinman, "Desert Bloom; Arizona leaves S.D. in Dust of Golf-Course Building Boom," *The San Diego Union-Tribune*, February 2, 1999, D1.

[59] Corbett, "Vegas vs. Valley for Tourism Title."

to completely ignore the natural setting." "The contrast with reality," they rightly believed, "[made] the fantasy stronger." Highly sophisticated water technology, subtle lighting that "accented" the beauty of exotic species, and extensive landscape architecture created an artificial paradise in strong contrast to the declining delta in the late 1980s.[60]

In order to maintain the illusionary culture of the South Seas at the Mirage, the hotel's extensive horticulture department sought to emulate the division's objective to "dispense with the guests' belief that they are in the middle of a desert." There were seven acres of outdoor landscapes, 17,000-square feet of interior plant space, and an extensive atrium covered with palm trees and exotic flowers. While plants were brought in from Hawaii and California, members of the staff hailed from as far as Costa Rica, the Philippines, and Mexico. In addition to the grounds, the staff maintained a "jungle" landscape for Siegfried and Roy's tigers. 25,000 visitors to the hotel each day transformed annual flowers into "weeklies." The signature volcano outside the hotel rested inside a 2,000,000-gallon pond, with a waterfall that used 47,000 gallons per minute. This marriage of technology and exotic flora remains one of the most striking examples of a paradise in the desert. [61]

Wynn's most recent venture, the Bellagio Hotel, not only boasted a collection of art worth three-hundred million dollars, but also one of the most technologically advanced fountain shows in the world. The hotel is fronted by an eight-acre artificial lake with hundreds of fountains which are choreographed to music and shoot streams of water as high as two hundred feet in the air. The $40,000,000 extravaganza mixed technology and ornamentation to a level only Las Vegas tourists and developers could appreciate. Computer programs determined how much water each stream would carry and how high each stream would go during the show. The large computer that ran the fountains filled several boxes in eight-foot tall containers behind the lake and underneath the hotel. The impact of this natural manifestation of water was not lost on spectators, who considered it to be the grandest water show in the city. As one onlooker noted, "Its very spiritual . . . it

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[60] Alan Hess, *Viva Las Vegas: After Hours Architecture* (San Francisco: Chronicle Books, 1993), 103-106.

[61] Eric Liskey, "The Mirage," *Grounds Maintenance*, volume 32, number 8, August 1997, C34, Lexis-Nexis.

puts me in a trance." However, the words of one journalist rang true for this version of paradise: "The city is built on simulation, quotation, weird unconvincing displacements, in which cultural [and natural] icons are endlessly but never convincingly quoted." [62]

Bellagio is also home to *Cirque de Soleil's* exclusive production, entitled "O" – an Americanized translation of the French word for water, *eau*. In short, the production and the stage are the zenith of water worship. The 1,400,000-gallon water stage permit the actors, dressed in anything from clown to penguin outfits, to perform death-defying feats in an aquatic setting. The soundtrack includes songs entitled, *"Terre Aride,"* "*Desert*," *"O"*, *"Jeux D'eau,"* and "*Mer Noire.*"[63]

As one writer wryly noted of these facets of the mirage culture: "The key to all this is water, whose conspicuous display and consumption is as important a sign of luxury, of control over Nature, to Vegas entrepreneurs as it was to Umayyad caliphs who began building the fountains of the Alhambra on a dry hillside near Granada 12 centuries ago . . . To install performing dolphins in huge saltwater tanks in a hotel in the Nevada desert seems, on the face of it, about as rational as filling a cruise ship with sand and camels, but it has its own value as spectacle."[64]

While Scottsdale lacked many of the garish electrical trappings of Las Vegas, its opulence met if not exceeded its neighbor to the north. Tropical pleasure islands cloaked the desert in deceptive, yet seductive, greens and azure blues. Described by one travel editor as "an incredible fantasy of a water playland that surely defies the gods of the desert," The Hyatt Regency at Gainey Ranch, for example, incorporated exotic flowers as accents to the natural landscape, intricate canal systems that were coordinated with fountains on a half-acre pool paradise, and a beach composed of 500,000 pounds of sand

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[62] Verne G. Kopytoff, "Computers are Balanchine Behind Those Dancing Fountains," *The New York Times*, October 21, 1999, G7; Robert Hughes, "Wynn Win," *Time*, October 26, 1998, volume 152, number 17, 76.

[63] Sandra Brooks-Dillard, "Cirque de Soliel Artistry Conjures Up Water Circus," *The Denver Post*, November 1, 1998, Section A, I-1; Ellen Lampert-Greaux, "The Wizardry of O," *Entertainment Design*, February 1999, volume 33, number 2, 36-41.

[64] Hughes, Ibid.

imported from Monterey, California. In all the resort housed twenty-eight fountains, forty-seven waterfalls, and used 857,000 gallons of water for these amenities.[65]

Like many landscapes of the mirage culture the Hyatt Regency blended natural features, including saguaro cactus and a red-rock backdrop, with appealing exotic features, such as the lavish swimming pools and waterfalls. Ironically, the main building was inspired by the work of Frank Lloyd Wright, who had worked in the Sonoran desert for some time. Wright taught his students at Taliesin West in Scottsdale the importance of "organic architecture," or "using the desert to dictate the design and materials." Before his death he observed, "Our new desert camp belonged to the Arizona desert as though it had stood there during creation." For Wright, Dr. Orcutt and Aldo Leopold, the desert was the paradise to be emulated by civilization.[66]

In contrast to the Hyatt's imagined tropical landscape, the Hilton at Tapatio Cliffs in Phoenix offered a resort-sized replica of Havasu Falls in the Grand Canyon. A 130-foot water slide descended twenty-four feet into a pool area and a tram carried visitors from the hotel to the falls. The Falls consisted of a 40-foot waterfall in a "natural mountain formation that cascades into twelve travertine pools and poolside terrace gardens." To dress the falls, over 10,000 flowers and plants were used to "create a feeling of tranquility." As one company executive noted, "The Falls is a project inspired by one of Mother Nature's most awesome creations." Despite imagined ties to nature, these representations of paradise revealed the high degree of geo-environmental disconnection with the landscape that made these playscapes possible.[67]

In the late 1990s the City of Tempe brought to fruition a thirty-year old dream to turn the dry riverbed of the Salt River near Tempe's upscale downtown tourist area into a lake. The city hoped that such a waterscape would fuel greater tourism, shopping, and economic development in the area. As one journalist noted, "Think of San Antonio's Riverwalk, the Boston Waterfront, or San Diego's Balboa Park, and you have just a

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[65] Evelyn Kieran, "Getaway,"*San Diego Union-Tribune*, February 19, 1987, C2.

[66] Cathy Stapells, "Praising Arizona Snowbirds Know What They Like – and its Scottsdale – for its Golf, Arts, Shopping, and Southwest Flavor," *Toronto Sun*, January 4, 1998, T10.

[67] Ken Western, "Legends of the Falls a new Lure at Pointe; Resort Creating Watery Shangri-La at Tapatio Cliffs," *Arizona Republic*, June 5, 1996, E1.

glimmer of an idea of the potential the Rio Salado brings to the East Valley." True to the mirage culture, this attempt to recreate a waterscape in the bed of a river previously emptied for municipal and agricultural growth in the early 1900s, illustrated how local empires looked elsewhere to conjure up local growth in a desert setting. Developments along the waterway included names such as "Ciudad del Lago," or "City of the Lake," and Rio Salado Landing," or "Salt River Landing." Despite the fact that much of the water being used to fill the two-mile river has been recycled, one report suggested that as much as 500,000,000-gallons of water would evaporate each year or 1,388 acre-feet of water annually. Questions remained as to whether the city would be willing, in a time of need, to buy water from the Central Arizona Project to fill the lake. Ultimately, these plans for development epitomized the ways in which water has been seen as a magical panacea for economic growth in the Pacific Southwest.[68]

While millions of residents throughout the region have adapted to the constraints of the desert landscape, the mirage culture continued to boom on the residential front, providing additional examples of geo-environmental disengagement. Perhaps the most striking manifestation was the creation of Lake Las Vegas, a massive residential and hotel complex in Henderson, Nevada, ten miles from Las Vegas. The two-mile long, 320-acre lake appeared to be yet another "natural" reservoir backed up behind dam on or near the Colorado River.[69] Filled with water procured from the City of Henderson (with options to use up to 7,000-acre feet per year for lake levels and grounds maintenance), the landscape underwent a powerful marketing and ecological transformation, becoming the "largest privately owned lake in Nevada." Lake Las Vegas promised a "Mediterranean" setting, with neighborhoods bearing the names of Monaco, Barcelona, Sorento, Portofino, Southshore, and MonteLago. Advertisements enjoined readers to "Look around this natural wonderland. Birds of all types that many people only see in

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[68] Marlene Pontrelli Maerowitz, "Town Lake Shows Dreams do Come True," *Arizona Republic*, May 29, 1999, Chandler Section, EV17; Bob Petrie, "Town Lake Water 'Scape; Half-Billion Gallons a Year Expected to Evaporate," *Arizona Republic*, March 30, 1999, Tempe/Ahwatukee Foothills Community, EV1; www.tempe.gov/rio/devlp.htm.

[69] Kevin Brass, "High-End Mix on Manmade Lake Near Las Vegas," *New York Times*, December 28, 1997, Section 11, Page 5; Sam Walker, "Nevada Body of Water Set to Become Bone of Contention," *The Christian Science Monitor*, June 6, 1997, United States Section, page 1.

natural history magazines are there to be enjoyed and photographed." Nature and the mirage culture inter-mingled ever so subtly, as the developers promised "breathtaking views of lake and desert, as well as the spectacular Las Vegas skyline and majestic mountains beyond." Cybersurfers were introduced to the Lake Las Vegas Resort website with the simple affirmation, "The wonder of nature, the imagination of man."[70]

Residential developments in the Palm Springs area also illustrated the effects of geo-environmental disconnection. Indian Lakes Estates consisted of a series of man-made lakes suitable for water-skiing. Private lots surrounded the four lakes. Shadowlake Estates surrounded a forty-two acre lake, also designed for water-skiing. Advertisements invited readers: "Play in the Desert, Live at the Lake." Prospective residents were enticed: "Wake up to a mountain vista reflected in the crystal depths of the lake at your doorstep. Breathe the fresh morning air as you gaze across the glassy water from your private dock . . . You're a part of an oasis." Buyers were tempted with "unique and stellar surroundings," "verdant landscaping" and "panoramic views of the Coachella Valley." These residential projects provided ideal settings for upscale living, yet potential customers were rarely confronted with the social and environmental consequences of developing water-ski parks in the middle of the desert.[71]

To be sure, the urban oases have taken steps towards recognizing the fragility of the water supply that keeps these visions of paradise alive. By the late 1990s most water fountains and man-made lakes in California, Arizona and Nevada were required to use recycled water in order to conserve potable water and limit groundwater overdraft. These efforts, however, did not address the impact of images and impressions that the mirage culture projected throughout the world. Many who came to the desert after World War II not only recreated to recreate the environment they left behind, but also emulate the very culture that they found when they arrived in the Southwest.

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[70] www.lakelasvegas.com, December 9, 1999.

[71] http://indianlakes.net, January 7, 2000; www.shadowlakeestates.com, December 10, 1999; The mirage culture of Palm Springs has been analyzed in Diana Marcum, "California and the West; Turning Desert into an Aquatic Paradise; Water: Coachella Valley Projects Involve Creating Lakes and Even a River, Promising Water-Skiing Behind Powerful Speedboats. Some Question the Plans," *Los Angeles Times*, September 19, 1999, A28; also see Jennifer Warren, "Well-Made Plans Keep Palm Springs an Oasis in the Drought; Water: Officials Say Criticism is Unjustified Because They Take Care in Pumping from Underground Reserves," *Los Angeles Times*, April 28, 1991, A3.

Ultimately, legal and economic distinctions differentiated the private oases of the mirage culture from the paradise of the Colorado River Delta. In contrast to the delta, the mirage culture was built on the shoulders of an upsurge of affluence in the post World War II era, particularly after 1960. While the delta paradise remained a largely public space, almost all of the aquatic oases of the Pacific Southwest were private and either required money to build or use them – as well as lavish amounts of water to maintain them. Unfortunately, such attitudes remained congruent with the feelings of many politicians and developers towards protection of the needs of the delta ecosystem. Although the Mexican government designated the lower delta region as a protected Biosphere Reserve in December 1992, rehabilitation of the ecosystem cannot be accomplished without the cooperation of US interests upstream, including individual water users. And while unusually high amounts of precipitation reinvigorated the delta during the early 1980s, the lack of water reaching the Gulf of California between 1961 and 1982 suggest that human efforts upstream hold the key to further improvement of ecological conditions in the delta downstream.

**Conclusion**

The most troubling aspect of development in the Western United States goes far beyond how water has been used in the irrigated and urban oases. As federal spending in the Pacific Southwest encouraged urban growth in the region after 1940, private industry and tourism reinforced the appeal of these urban oases. With exponential immigration to the region, however, political power became concentrated in regions that were highly isolated from the sources of natural resources that fed the seemingly endless growth. While technology allowed millions to make the desert their home or playground, canals, wells, and dams, failed to reinforce connections between the inhabitants of these urban areas and the river basin. Politicians and civic boosters used their power to make the urban oases flourish, regardless of the consequences for those living throughout the rest of the river basin. Such manifestations of geo-environmental disengagement were not unique to the delta, but had also been the fate of places like Owens Valley and Mono Lake.[72]

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[72] John Hart, *Storm Over Mono Lake: The Mono Lake Battle and the California Water Future* (Berkeley: University of California, 1996).

While many of the problems threatening the delta throughout the century required a joint solution by peoples and governments in the United States and Mexico, others involved developments unique to one nation or the other. Economic prosperity, unparalleled geographic mobility, technological advances, public policy, and the artistic appeal of the mirage culture encouraged the emergence of the urban and irrigated oases in the Southwest. But the largely unregulated use of water in the profligate civilization of the arid West exercised a significant influence over those living in the delta. Private consumption contributed to this seemingly impersonal process of decline within a highly complex ecological system.

The American West and the bi-national delta face a similar dilemma. While numerous water conservation, measures have been taken in Los Angeles, Las Vegas, Phoenix, Tucson, and Palm Springs, many believe that these savings should be used to fuel additional growth. Accordingly, the political culture of the American West demands scrutiny. The policies and legal structures that have been favorable to the laissez-faire development of urban areas and natural resources are in need of reform. The mentality of "don't tell me what to do on my property" must be reconsidered not only because of the needs of our neighboring country, Mexico, but also because United States citizens have chosen to make the West the most urbanized region in the country.[73] Instead of asking how much more growth can be sustained by acting more responsibly, developers, tourists, residents, and politicians need to reconsider the ties of their "empires" to the rest of the river basin. Despite recent signs of ecological renewal in the delta, steps must be taken not only to educate communities of their linkages to the Colorado River Basin, but as well to assure sufficient water to meet the needs of all the communities and landscapes that rely on the river for sustenance.[74]

In 1895 United States Attorney General Judson Harmon, decreed that the United States did not have to give Mexico any of the water flowing in the Rio Grande River because the headwaters originated in the United States. In public, this doctrine was

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[73] Timothy Egan, "Urban Sprawl Strains Western States," *The New York Times*, December 29, 1996, Section 1, Page 1.

[74] Environmental Defense Fund, *A Delta Once More: Restoring Riparian and Wetland Habitat in*

soundly repudiated during the 1940s as Mexico and the United States celebrated a water treaty that divided the waters from the Colorado and Rio Grande Rivers between the two nations. While Harmon's view remains publicly reprehensible, some tourists, residents, farmers, politicians, and diplomats throughout the Colorado River Basin in the United States unknowingly carry on the spirit of the Harmon Doctrine by attempting to use as much water as possible for pleasure or economic gain. Until the basin states can agree that maintaining the integrity of the river, as well as the bi-national delta is important, the economic rationalization of the river and its attendant socioeconomic issues will continue. While many argue that the United States has no obligation to protect the lower delta since it lies outside of U.S. boundaries, it is equally true that the United States has enjoyed the lion's share of economic development associated with the river's use throughout the century.[75]

Only a shift in values amongst those living in the river basin will ensure that the river has the water it needs to renew itself as a natural paradise worthy of adulation by the distant empires.[76] An ecological rationale linking the responsibility of urban areas and agricultural oases throughout the Pacific Southwest with the needs of the river basin offers the surest solution for protecting the health of all involved. As Aldo Leopold observed, "Your true modern [person] is separated from the land by many middlemen,

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*the Colorado River Delta,* www.edf.org/pubs/reports/delta/pagetwo.html, January 7, 2000.

[75] Sandra Postel, *Pillar of Sand: Can the Irrigation Miracle Last?* (New York: Norton, 1999), 150.

[76] There are several educational and political solutions that could be applied in order to increase the consciousness of those living in the Southwest and borderlands region of their reliance on the Colorado River. Policy makers should create public service messages and school curriculum that emphasize the social -- as well as economic -- impact of profligate water use throughout the basin on the delta and its inhabitants. Policy makers might also look into graduated water pricing structures that charge greater rates per unit as water use exceeds certain levels. For a discussion of water pricing see Peter H. Gleick, *The World's Water 1998-1999: The Biennial Report on Fresh Water* (Washington D.C.: Island Press, 1998), 24-28. While such a plan would not abolish the mirage culture, it might be the first step towards transforming the way Westerners, particularly homeowners, think about water usage. The ultimate (although currently politically unfeasible) solution would be to add a diplomatic minute to The Mexican Water Treaty (1944) that increases the amount of water apportioned to Mexico in order to renew the Delta. See W. J. Snape, III, "Adding an Environmental Minute to the 1944 Water Treaty: Impossible or Inevitable?" http://sci.sdsu.edu/salton/Snape1998EnvironMinute.html. Politically, however, nearly any measure that threatens the autonomy of water users will face stiff opposition. Hopefully education – and not long droughts – will turn the minds of Westerners towards more responsible patterns of water use.

and by innumerable physical gadgets. He has no vital relation to it; to him it is the space between cities on which crops grow."[77] Transforming values and laws offers the surest formula for altering environmental ethics and turning public and private attention to the natural paradise of the delta.

[77] Leopold, 261.

## Chapter 9

## Beyond the Irrigated Oasis, 1974-1999

*"[The] river, while notoriously controlled, remains part of a larger natural system that is unconscious of human desires or designs, but is quite capable of shaking the ground beneath would-be pundits and prophets . . .. Our relationship with this river is in its infancy. Many lessons in water stewardship await, compliments of its channels and currents."*[1]

From 1935 until 1974, federal, state, and local officials on both sides of the border expended Herculean efforts in developing an irrigated oasis in the Colorado River Delta. Accordingly, the attention of policy makers during that period focused on maximizing water resources from the river and protecting the valuable farms and communities from the effects of saline waters. With the passage of the Colorado River Salinity Act (1974), regional leaders also recognized the collective damages that users upstream inflicted on water used for irrigation and domestic consumption in the delta. Nevertheless, most regional officials still had not moved beyond the developmental mentality, which espoused the belief that maximum control of the river's resources offered the only way to safely develop the American West and Mexicali Valley. The rise of the environmental movement and several disasters, however, shifted the focus of some scientists and politicians away from the paradigm of absolute resource rationalization. During the floods of 1983 and 1984, engineers upstream misjudged the amount of water that could be stored behind dams on the Colorado River for future use, resulting in the deaths of at least five Mexicans in the delta. At the same time, toxic levels of trace metals and pesticides from San Joaquin Valley irrigation drainage water at the Kesterson Wildlife Reserve in Northern California severely deformed wildlife. The discovery of high levels of selenium suggested that there were additional issues related to water quality that scientists and politicians would have to deal with in protecting the delta and using its resources. The lessons learned at Kesterson shifted the focus of ecologists interested in

[1] Gary D. Weatherford and F. Lee Brown, "Epilog: High Water, Carbon Dioxide, and Pig Feathers," in *New Courses for the Colorado River*, Gary D. Weatherford and F. Lee Brown, eds. (Albuquerque: University of New Mexico Press, 1986), 230.

the delta away from the farms themselves to the two major drainage areas of the region: the Lower Colorado River Delta and the Salton Sea.

This chapter argues that the dissemination of ecological ideas related to regional interdependence repudiated the narrow developmental focus that had dominated policy-making processes in the region from 1940-1975. In contrast, environmental scientists emphasized the impact of human communities on the surrounding landscapes. Additionally, the rise of *maquila* manufacturing in Mexicali and San Luis Río Colorado, Sonora, as well as intensive migration to those two cities further exacerbated the ecological degradation of regional water resources. The chapter concludes with a brief comparison of bi-national development in the Colorado River Delta with other river basins that have faced similar challenges during the twentieth century. Ultimately, comparing the Delta's challenges with those of other basins along the U.S.-Mexican border and throughout the world provides the proper context for understanding the magnitude of challenges faced in the region vis-à-vis other arid regions.

**The Floods of 1983**

Throughout the twentieth century, dams on the Colorado River stood as monuments to the economic value of water throughout the region. Captured water could be used for new projects, such as the Central Arizona Project (CAP). By 1973, as Mexico and the United States negotiated Minute 242, regional and national officials feared that not enough water would be available for existing and future uses (the CAP had been approved, but did not come on-line until 1988).

Nature, however, dealt a cruel blow to those living in the delta. The water hungry region was cursed with too much water during the early 1980s. During the winter of 1983, abnormally high levels of snowfall in the Rockies portended a spring of heavy run-off. In December 1982, for example, snowfall reached 112% of its historical norms. At the same time, releases from Hoover Dam increased, filling up the reservoir behind Davis Dam. Riverside residents complained about the damage caused by these excess waters and the USBR subsequently reduced release amounts below Hoover Dam. Mexican officials petitioned the IBWC to inform them of changes in water releases, particularly in light of the increased precipitation.[2]

As a result of meetings between CILA and the IBWC during the winter of 1983, the two nations improved communication regarding water release levels. In April, IBWC commissioner Joseph Friedkin noted that abnormally strong storms in March 1983 raised snow pack levels from 96% to 109% of the historical average for snowfall. He also observed that snow run-off exceeded earlier predictions and would remain heavy throughout the rest of the year. Friedkin also pointed out that "about 2,500,000 acre-feet of water needs to be released before January 1, 1984 in order to provide needed flood control space, in addition to the releases for scheduled water uses in the United States." At the same time, Mexican officials feared that as a result of the increased precipitation, there would be fewer requests for Colorado River water from farmers in the Imperial Valley. Subsequently, excess waters would be delivered to Mexico.[3]

Abnormal weather conditions continued through June of 1983. Snowstorms pummeled the Rockies at the end of May. Warm weather in mid-June quickly turned the frozen blanket of snow into mountain streams that filled the Upper Colorado River and its tributaries. The USBR subsequently released large amounts of water from the dams on the Colorado River during the first week of July, in fear that water might spill over the top of Hoover Dam or break through Glen Canyon Dam. By the time these "controlled" releases reached the delta, traveling at four hundred times their speed, they flooded farmlands in Yuma County and Mexicali Valley. Although water was diverted through the All-American Canal to the Salton Sea to alleviate pressure on the main channel of the river, John A. Bethel, a member of the Yuma County Sheriff's office, expected water levels to rise another one to two feet. As a result of the flood, five people were killed in Mexico. Later congressional hearings confirmed that 3,000 acres of Mexican farmland (inside the protective dikes) were also damaged in the floods. Groundwater that seeped beneath the protective dikes also threatened farms located on the river.[4]

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[2] "Minuta de la reunión celebrada en Yuma, Arizona, a las 13.00 hrs. del día 10 de enero de 1983," Fondo Consultativo Técnico, Caja 15, AHA.

[3] Letter from J.F. Friedkin to Joaquin Bustamante R., CILA Commissioner, April 5, 1983, Fondo Consultativo Técnico, Caja 15, AHA.

[4] "Colorado River flooding peaks," *Engineering News-Record*, July 7, 1983, 13; Comments on losses in Mexicali Valley are located in *Hearings on Colorado River Management*, Committee on Interior and Insular Affairs House of Representatives, 98th Congress, 1st Session, Serial No. 98-20 (Washington D.C.: Government Printing Office, 1983), 18. These hearings are cited hearafter as *Hearings*; Dr. Fernando

United States magazines focused on the causes of the flooding. An article in *Time* noted that the destruction of the floods in California, Mexico, and Arizona could not be termed a "natural disaster." As one victim noted to correspondent Steven Holmes, "This is a man-made disaster, and there's no excuse for it . . . It's just plain stupidity." Although the article in *Time* did not attribute the disaster explicitly to the USBR's failure to carry out its flood control responsibilities before protecting water storage capacity and maintaining optimal levels of electricity production, it did note the complexity of controlling the river. USBR Commissioner Robert Broadbent observed in retrospect, "Our estimates were wrong. The flows this year just didn't fit into that computer model. It was winter clear up to the 20th of May, and then all of the sudden in turned to summer." Contrasting the disaster on the Colorado River active to volcanoes in Hawaii and tornadoes in the Midwest that did not claim any lives, *Time* journalist Kurt Anderson noted that these latter events were, "Not good news, but not disasters either: if those were acts of God, at least he pulled his punches."[5]

In a *Newsweek* article, entitled "The Colorado Man-Made Flood," various correspondents noted that "for the first time in decades, nature took the upper-hand, filling the dams and reservoirs that regulate the river's flow . . . to the bursting point with a massive and largely unpredicted influx of late-spring rain and rapidly melting winter snow." As a result, the USBR was forced to release water, an event known as a "'controlled disaster.'" By the first week in July, they reported, additional water would have forced the Bureau to relinquish control of the river to nature. *Newsweek* correspondents also noted the political fall-out from the floods throughout the river basin. The long-standing love-hate relationship between delta residents and the USBR

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J. Gonzalez Villareal also discusses the impact of the summer floods in Mexicali Valley with Daniel Diaz Diaz, Subsecretary of Infrastructure for the Secretary of Communications and Transportation in his August 30, 1983 letter, Fondo Consultativo Técnico, Caja 15, AHA. He notes that Imperial Valley's lack of need for water deliveries during the summer sent increasingly large amounts of water to Mexicali Valley at an average rate of 950 cubic meters per second and a maximum rate of 1,110 cubic meters per second. These floodwaters had accelerated erosion near the Federal Railroad Bridge No. 2 in San Luis Rio Colorado. He also pointed out that mainly marginal lands had been affected.

[5] Kurt Anderson, "Somber Prelude to the Fourth; A faulty bridge and an untamable river claim eight lives," *Time*, July 11, 1983, 14.

continued. As one Arizona resident noted, "We trusted the bureau and their dams . . . We don't trust them anymore."[6]

The following year *Sports Illustrated* published an article by James Kirshenbaum, entitled "Rising Waters and Mismanagement on the Colorado," which accused the USBR and individual states in the Colorado River Basin of giving water storage and electricity production a higher priority than flood control. Furthermore, Kirshenbaum observed, such patterns of water use altered water levels below the dams as much as fifteen feet in twenty-four hours. "At times the Colorado is practically bone-dry downriver," he noted, "with harmful consequences for fish and other wildlife; at other times heavy flooding is the problem." Kirshenbaum also noted the political implications of these geo-environmental disconnections between those living in the delta and conditions upstream. Although Secretary of the Interior James Watts was justifiably ecstatic that flooding did not recur in the spring of 1984 close to the dams, the reporter noted, "people as far away as Yuma. . . . didn't join in the huzzahs. The bureau had dumped water on them with virtually no advance notice."[7]

Congressional hearings in Yuma followed on the heels of the 1983 floods. Various local groups, including the Quechan Indian Tribe and Yuma City and County officials petitioned the federal government for relief. Arizona Congressman Morris Udall wanted to hold the hearings in order to alleviate tensions between local farmers and the USBR. "Ever since the flood waters were released," he noted, "there have been charges and countercharges about the Bureau of Reclamation, that it waited too long, acted too soon. . . This will help clear the air . . . Some farmers along the river are very bitter. They say the Bureau of Reclamation deliberately did this trying to save electrical power (generated by higher flows). Its important to find out who's right or wrong." Additionally, public health officials used the hearings to express concern about the growing possibility of an encephalitis outbreak. Mosquitoes continued to multiply in the

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[6] Tom Morgantau, Darby Junkin, and Linda Prout, "The Colorado: Man-Made Flood," *Newsweek*, July 11, 1983, 28.

[7] James Kirshenbaum, "Rising Waters and Mismanagement on the Colorado," *Sports Illustrated*, June 11, 1984, 11.

stagnant pools of water near the river.[8] Local officials expressed frustration because many who had purchased flood insurance for their crop lands had been denied FEMA coverage because damage incurred through rising groundwater had not been designated as a type of disaster caused by floods. Residents and officials referred to the assistance given to victims of the Teton Dam break and appealed for relief under that precedent. Local residents also complained that they only received five minutes apiece to share their concerns, while the USBR commissioner received three hours.

During his extended testimony before the committee, USBR commissioner Robert Broadbent acknowledged that the bureau could have given more attention to keeping the river channels sufficiently dredged. He cited funding cutbacks as the principal cause for the omission. Furthermore, he reasserted that "data and expertise" had been ineffectual in anticipating such a calamity. Recognizing the tendency for public safety and economic priorities to work at cross purposes, Broadbent noted that "the flooding could have been prevented if the reservoirs had been kept at a minimum level . . . [but] the basin states . . . demanded enough water to be kept in the lakes to meet their needs." The USBR made changes that decreased flooding in the delta the following year. However, the political aspect of river basin water politics remained the most difficult element to alter in bringing economic and environmental goals into harmony.[9]

Arizona politicians also attested to the complexity of state water politics in relation to the delta. Congressman John McCain expressed his sympathy to the families

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[8] Dr. Counts, from the Arizona State Health Department testified, "Within the last 2 weeks we have confirmation from the Centers of Disease Control in Atlanta, our won studies as well as the California State Health Department, that in each one of these areas around Needles, Topock March area, Parker, and now in the Yuma area, that we have large numbers of mosquitos infected with St. Louis encephalitis virus. We have a documented case of St. Louis encephalitis in a 3-year-old boy outside the Yuma area. We do anticipate further cases of encephalitis unless we are can bring the mosquito problem under control . . . we do anticipate the mosquito problem could last up to at least 6 months, and if we do not get a freeze this winter it could last until next spring." *Hearings*, 62.

[9] Summations of the hearings were reported by Patricia Walsh, "Everybody's been passing the buck since the whole thing started," UPI, "Regional News," Arizona-Nevada, September 3, 1983; Walsh, "It's unhealthy having good people throwing rocks at each other," UPI, Regional News, Arizona-Nevada, September 6, 1983; Walsh, UPI, "Regional News," Arizona-Nevada, September 7, 1983, AM Cycle; CILA officials chronicled changes during the 1984 season in "Minuta de la reunion tecnica convocada por la CILA, entre Mexico y Estados Unidos de America; en relacion con las descargas de excedentes de agua del sistema de presas del Rio Colorado," January 17, 1984 and April 10, 1984, Fondo Consultativo Técnico, Caja 15, AHA. In the notes for January 17, 1984, the Mexican engineers noted that the USBR had increased storage space for the year from 5.35 million acre feet to 7.5 million acre feet.

that had lost property during the flood. He observed, nevertheless, that the flood was something that could not have been foreseen, nor was it likely to happen again. McCain took this approach in order to protect water supplies for the Central Arizona Project. If the amount of water stored behind dams on the Colorado River dropped, he believed, there would not be enough water for all of the users in the state. As a result, he resolutely told the committee, "I would oppose any change which in any way threatens the possible supplies of water for CAP . . ." McCain urged policy makers to use forbearance in prioritizing the various uses of the river. "Given the complexity of the river, and the nature of the many uses to which it is put," he noted, "this will inevitably be an arduous task."[10]

Senator Dennis DeConcini did not comment on the Central Arizona Project, but reaffirmed Congressman McCain's contention that any decision made with regard to the Colorado River had momentous ramifications throughout the basin. Instead of finding villains and victims, DeConcini observed, "we will probably find a tangled web of Federal agencies, a tangle of restrictions and permits, and conflicting priorities for the use of the water and the river channel. We will find a virtual combat zone of competing purposes that include irrigation, electric power, municipal water supplies, farmland preservation, recreations, and wildlife habitats."[11]

Ultimately, the floods brought two paradigms of river management into conflict. On the one hand, those in favor of existing water management policies, such as Tom Choules (representing the Southwest Arizona Flood Association), argued for additional dredging and channelization of the river to assure that future flows would not be obstructed in their path to the sea.[12] This approach would maximize storage space behind reservoirs and reduce the incidence of floods down river. However, it would also increase riparian erosion and threaten bio-diversity.

On the other hand, Cary Meister, President of the Yuma Audubon Society, expressed concern not only "about the potential of existing health hazards along the river

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[10] *Hearings*, 3-4.

[11] *Hearings*, 11.

[12] *Hearings*, 86.

but [also] . . .[for] the natural environment." Meister wanted the reservoirs drawn down during flood season in order to protect riparian vegetation (namely cottonwoods, willows, and mesquite) that lined the shores of the river. Meister also called for the government to restore cottonwoods, willows, and mesquite stands that had been destroyed by the floods and the attendant saline groundwater. He concluded his testimony by noting that the Lower Colorado could serve many purposes. "We believe that its natural character should be given equal consideration with human uses." Accordingly, he stated, "we should preserve and restore some of the natural environment for present and future wildlife and human generations who want to enjoy the natural beauty of this river which epitomizes the joys and sorrows and the problems and pleasures of living in an arid environment."[13] These two paradigms would be debated more vigorously as the twentieth century came to a close. As a result of the hearings, the USBR drilled additional wells to pump out excess water.[14]

The floods of 1983 and 1984, together with national press coverage and the congressional hearings, raised important issues related to water management in the Colorado River Basin that went beyond the principles that had sustained the irrigated oasis from 1940 to1975. Ultimately, the floods provided additional momentum for the environmental movement. In the wake of the Teton Dam break (1976), environmentalists wanted to emphasize not only the potential harm of dams to human communities, but also their deleterious effects on surrounding landscapes, flora, and fauna. Later scholars would link the effects of Colorado River dams to the socioeconomic challenges faced by the Cocopah natives in the lower delta. Ecologists also argued that dams upstream physically disconnected various segments of the riparian plane and riverbed from each other, ultimately increasing erosion and decreasing the diversity of organisms in the riparian plain.[15]

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[13] *Hearings*, 79-81.

[14] UPI, Washington News, California Distribution, AM cycle, October 20, 1983.

[15] Patrick McCully, *Silenced Rivers: The Ecology and Politics of Large Dams* (London: Zed Books, 1996), 29-31; Also see Sasha Nemecek, "Frankly, My Dear, I Don't Want a Dam: How Dams Affect Biodiversity," *Scientific American*, October 1997, get website.

**Kesterson, the New River, and the Lower Delta**

Changing paradigms of river management were accompanied by transformations in attitudes towards water quality. During the development of the irrigated oasis, for example, "water quality" largely referred to the impact of surface and groundwater on crops and human communities. By the end of the century, however, ecologists emphasized the impact of contaminated drainage water from the oasis not only on human communities, but also on the fragile ecosystems of the lower delta and the Salton Sea. These linkages between drainage areas and the irrigated oasis reinforced the holistic nature of the region and broke through some of the geo-environmental disconnections that occurred during the twentieth century. By forging these linkages ecologists tied agricultural and industrial uses of water in the region to issues such as public health and the impact of pesticides and chemicals on wildlife and plant mass in the ecosystem. Finally, USGS scientists at the Kesterson Wildlife Refuge in Central California discovered high levels of naturally occurring trace metals in drainage sumps that served as resting places for birds using the Pacific Flyway. The existence of wildlife deformities linked to elevated selenium levels rudely illustrated that salinity was merely one issue with which hydraulic societies in the American West and Northwestern Mexico would have to contend.[16]

Water quality issues in the delta, as previously mentioned, were initially related to the impact of drainage waters on human communities in the Delta. Subsequent to the signing of the Mexican Water Treaty of 1944, the IBWC not only regulated bi-national water deliveries, but also monitored whether or not sewage waters crossing the border were properly treated at sanitation plants before crossing the border. In 1946 the Mexican and U.S. governments approved studies of sanitation problems in the Mexicali-Calexico

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[16] For a discussion of Kesterson see journalist Tom Harris' *Death in the Marsh* (Washington, D.C. : Island Press, 1991); The USGS discusses their approach to tracking selenium in irrigated areas of the American West in "Methods to Identify Areas Susceptible to Irrigation-Induced Selenium Contamination in the Western United States," http //water.usgs.gov/pubs/FS/FS-038-97/. Also see Mary Kyle McCurdy, "Symposium on the Public Trust and the Waters of the American West: Yesterday, Today, and Tommorrow: Application of the Public Trust: Public Trust Protection for Wetlands," *Environmental Law*, Spring 1989, volume 19, 683-721; Felix E. Smith, "The Kesterson Effect: Reasonable Use of Water and the Public Trust," *San Joaquin Agricultural Law Review*, volume 6, 1996, 45-67; Harrison C. Dunning, "Confronting the Environmental Legacy of Irrigated Agriculture in The West: The Case of the Central Valley Project," *Environmental Law*, volume 23, 1993, 943-969.

region. Calexico residents had complained of the stench from sewage dumped into the New River in Mexico. At the time, Mexicali's population was about 40,000 and sewage flows from the two cities approached 1.5 million gallons per day. By 1951 combined sewage flows increased to 2.6 million gallons per day. By 1960, population in Mexicali shot up to 170,000 and combined sewage levels reached six million gallons per day.

Throughout this fifteen year period, the two nations attempted to negotiate construction of a bi-national sanitation plant, but talks broke down when Mexico announced that it wanted to build a facility to purify sewage waters could for reuse on Mexicali Valley farms. The salinity crisis reinforced Mexico's commitment to build a treatment plant. However, the Mexican government approved funds on a sporadic basis for the project. Construction of the plant began in 1964. It was completed in the early 1970s. By this time, however, rapid transformations in the regional economy overwhelmed the existing infrastructure for water sanitation. Exponential growth turned attention to the impact of development in the irrigated oasis on humans, landscapes, and other biota in the region.[17]

The demise of the *Bracero* program in 1964 did not signal a decline in agribusiness in the delta. Large farms specializing in truck crops continued to dominate the landscape of both Yuma County and the Imperial Valley. This fundamental continuity was accompanied by a significant change: the increased application of pesticides to eliminate virulent strains of pink bollworms and white flies. Federal programs, agribusiness, retired communities of "snowbirds," and tourism also fueled a growth-spurt during the 1980s and 90s.

In the Mexican delta, national leaders wanted to attract international corporations, mainly from the United States and Asia, to construct "twin plant" operations in border towns, including Mexicali and San Luis Rio Colorado. Inputs could be imported duty free to factories where Mexican labor would assemble the products. The assembled goods could then be returned to a "twin" plant on the American side of the border (in the delta they were located in Calexico, California, and San Luís, Arizona) for "finishing" and shipment -- as if they were "Made in the USA." Initiated in 1965, The

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[17] "Memo: Border Sanitation Problem at Calexico-Mexicali," in letter from J.F. Friedkin to Robert M. Esquire, September 23, 1963, RG 59, Box 3988, Central File, National Archives.

Border Industrialization Program (BIP) encouraged migration from the Mexican interior to the delta and enticed U.S. corporations to abandon union laborers in the "rustbelt" for unorganized labor south of the border.[18] As a result, population in the Delta region continued to soar, especially in Mexicali and San Luís Río Colorado. By 1995, Mexicali's population had reached 695,805 and 133,000 called San Luís home. By 1996, Yuma County boasted a population of 132, 869, and Imperial County's census rose to 138,072.[19]

Ultimately, industrial and agricultural activities placed a heavy strain on water resources in the delta. As Professor Antonio González de León has noted, "The industrialization program . . . terribly aggravated the problems of housing, health, food, education, and municipal services of the limitrophe populations, with indubitable effects on the communities on the other side of the border." In the delta, the ecological limits of sustainable development manifest themselves not only in increased salinity and pesticide contents in regional waters, but also in alarming levels of toxic sewage and waste that disturbed the New River and tainted the Salton Sea.

This was nowhere more apparent than along the New River.[20] Along its sixty-mile path to the Salton Sea, the New River reveals a sobering portrait of the bi-national nature of the ecological problems that plague the region. On the Mexican side of the international border, residential areas stand side by side with national and transnational manufacturing, chemical, and food-processing factories. Increased immigration placed added pressure on the sewage system, which chronically malfunctioned, dumping

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[18] For a broad overview of the *maquiladora* program see Leslie Sklair, *Assembling for Development: The Maquila Industry in Mexico and the United States* (Winchester, Mass.: Unwin Hyman, Inc., 1989); Susan Tiano offers a gender-based interpretation of the maquila complex in Mexicali in *Patriarchy on the Line: Labor, Gender, and Ideology in the Mexican Maquila Industry* (Philadelphia: Temple University Press, 1994); Raúl A. Fernández analyzes the maquila complex from a Marxist perpsective in *La frontera México-Estados Unidos: un estudio socioeconómico* (México D.F.: Terra Nova, 1980), 149-168.

[19] Paul Ganster, "Environmental Issues of the California-Baja California Border Region," *Border Environment Research Reports*, Number 1, June 1996, Southwest Center for Environmental Research and Policy, www scerp.org/scerp/docs/ berr1.html; Environmental Protection Agency, "U.S. Mexico Border XXI, Frontera XXI," www epa.gov/usmexicoborder/index.htm; Yuma County and Imperial County statistics from *U.S. Bureau of the Census, USA Counties, 1996, CD-ROM*.

[20] Antonio González de León, "Factores de tensión internacional en la frontera," in González Salazar, editor, 15.

millions of gallons of raw sewage into the river. Given the variety of historic inputs, it is not surprising that "about 100 toxic substances, including mercury and such known cancer-causing agents as PCBs, toxaphene and benzene have been identified at the border sampling site." Bacterial strains of typhoid, cholera, and hepatitis, as well as over 25 viruses, including "three known types of polio viruses" have also surfaced during sampling. Recent studies also indicate that fish in the New River "have dangerously high levels of DDT."[21]

When the "river" crosses the border at Calexico, it poses an immediate threat to all forms of life. Curiously, the fetid levels of pollution are about the only thing that has brought environmentalists, farmers, and community boosters to a fundamental agreement about the need to clean up the river. Carcasses of dead animals, sewage, and car tires, among other things, bob and sink on their way to the Salton Sea. During the 1980s, the river became a drop off point of dead bodies for criminals. Desperate immigrants have also considered the New River a waterway to opportunity, swimming across the border.[22]

On the U.S. side of the border, some Americans placed the blame for the New River's contamination primarily on Mexico. The attitudes of local residents in the face of new waves of pollution reflect these tensions. For example, in 1985 a sewage pipe in Mexicali broke, releasing millions of gallons of raw sewage into the river. The Imperial County Health officer snapped, "This spill really reminds us that they [the Mexicans] are not doing a . . . thing about the problem." To be sure, raw sewage inputs in Mexicali present an open testament to the hazards of over-development, an inexcusable challenge for residents on both sides of the border.[23]

Furthermore, agricultural inputs of run-off water in the Imperial Valley also contain pesticides whose effects on humans, plants, and animals are still not fully understood. One source estimates that farmers in the Imperial Valley have contributed up

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[21] Michael Riley, "Dead Cats, Toxins, and Typhoid: Clean-up Time for the New River, an International Irritant," *Time*, April 20, 1987, 68; Ibid.; Ted Pauw, "New River Pollution in Mexico (NEW)," *American University Case Study No. 142*, http://www.sci.sdsu.edu/salton/NEW_RIVER.htm.

[22] Steve LaRue, "Taking the Initiative: The New River Cleanup," *The San Diego Union-Tribune*, December 26, 1992, A-1.

[23] Larry B. Stammer, "Pipe Break Sends Raw Sewage Into Salton Sea," *Los Angeles Times*, April 19, 1985, Part 1, 3.

to 75 per cent of the waters that comprise the New River. That run-off also contains toxic chemicals that have been collecting in the Salton Sea since the initiation of pesticide use. Since those chemicals do not flow through communities in the United States on their way to the Salton Sea, they have not been protested as vehemently as the sewage from Mexicali by local interest groups. Ultimately, however, both Mexican and U.S. sources contribute to the New River's swirl of contamination.

The All-American Canal, which delivers water from the Colorado River to farms in the Imperial Valley, serves as a manmade link that effectively ties the problems of the two rivers together. During the past decade, traces of selenium have found their way from the Colorado River to the Salton Sea by way of the All-American Canal and the New River. Ironically, one of the reasons why the All-American Canal was constructed during the 1930s was to provide a fresh water supply that was not tainted by Mexicali's sewage (domestic water was previously diverted from the Colorado through the Alamo Canal). By the 1970s, however, the New River was an indistinguishable mix of Mexican and U.S. inputs that posed a threat to anyone in the region regardless of nationality.

An increase in pesticide inputs developed in the Valley during the 1960s with the onslaught of the pink bollworm. During the 1980s, the white fly complicated the problem in the Imperial Valley further. Faith in science and the exigencies of capital-intensive farming encouraged short-term solutions to complex problems. Local farmers sprayed their fields with powerful chemicals that promised to arrest the central nervous system of the pesky insects. Government agencies subsidized this war with imported and hybrid bugs calculated to arrest the development of the bollworm and the white fly. Like many of the problems that delta residents faced in taming the river, the boll worm and white fly often created new problems for local farmers as they genetically adapted to various pesticides.[24]

The drama played out between pesticide-packing farmers and chemical-tolerant insects was transformed into a full-fledged biological tragedy as pesticides (along with sewage from Mexicali) drained from the New River into the Salton Sea. After World War II, ambitious developers planned a vacation paradise along the shores of the Salton Sea.

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[24] See David DeVoss, "How the Bugs Finally Won," *Los Angeles Times*, September 20, 1987, Magazine, 18.

During the halcyon years of the 1950s, nearly 20,000 acres were sold for development and various resorts were planned. Flooding and increasingly saline waters beached those plans. Subsequently, the *maquila* factories and farmers upriver also contributed significant chemical inputs to the lake. Ironically, the lake continued to function as an important nesting spot for nearly 450,000 ducks and tens of thousands of geese each year. USBR studies noted that "at least 25 species of waterfowl have been identified in the area [and] winter shorebird counts have documented over 55,000 birds, including 38 shorebird species which feed in the natural mud flats or refuge ponds."[25]

The health of the sea, however, revealed a serious ecological imbalance to the senses. "Anyone heading north through the Imperial Valley is overpowered," one journalist noted, "by the smell of fertilizers and cattle feed lots." Signs near the sea warned children and pregnant women not to eat the fish from the sea. Another writer observed that at the confluence of the New River and Salton Sea, "The stench of rotting fish grew overwhelming. Thousands of dead tilapia, the Salton Sea's most ubiquitous fish, lay in . . . rows under a skim of mud in the shallows and all across the mudflats. Every one of them was eyeless, though most seemed otherwise intact."[26]

Many have noted the tragic irony of nature's abundance and humanity's waste coexisting in paradoxical harmony. Despite the fact that the Sea's "rotten-egg stench pervades its backwaters," one writer noted, "hundreds of thousands of birds . . . feed along the edges of the lake or bob on the open water." During the past decade, however, a bird and fish holocaust, fueled by increased salinity, phosphate and nitrate inputs from the New River, and absorbed by the lake's sediment, sent shock-waves throughout the environmental community. In 1992 alone, 150,000 grebes and ruddy ducks died. Millions of fish have also succumbed to digestion of toxic chemicals in the sediment, increased salinity levels, and eutrophication.[27]

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[25] Robert H. Boyle, "Life -- or death -- for the Salton Sea? Large Polluted California Lake has Increasing Salinity and Pollution," *Smithsonian*, June 1996, volume 27, number 3, 86; United States Bureau of Reclamation, "The Source, Transport, and Fate of Selenium and other Contaminants in Hydrological and Biological Cycles of the Salton Sea Area," *USBR Salton Sea Study*, February 1998; William deBuys and Joan Myers explore the history of the Salton Sea in *Salt Dreams: Land and Water In Low-Down California* (Albuquerque: University of New Mexico Press, 1999).

[26] Frank Graham Jr., "Midnight at the Oasis," *Audubon*, May 1998, volume 100, number 3, 82-89.

The lake's increased salinity occurred primarily because the sea has no drainage outlet and suffers from high evaporation rates in the blistering desert. As a result, water saltier than the Pacific Ocean has harmed rainbow trout and inhibited the growth of corvina and tilapia. The growth process of fish is often arrested due to high inputs of nitrate and phosphorus. These fertilizers stimulate the growth of algae, which rob the water of valuable oxygen as they decompose. This makes it difficult for fish to breathe properly. Finally, the U.S. Geological Survey concluded that high levels of DDT and selenium posed a possible risk not only to the ability of fish and birds to survive, but also their ability to reproduce. While none of the problems have been connected to human deaths, at least one physician in the region noted an impressionistic linkage between declining human health and toxin-laced waterways. Over an 18-month period in the mid-1990s, Dr. Minerva Kelada, a family practitioner in Calexico, observed "a higher incidence of gastrointestinal problems and bacterial infections than she did when she was practicing in Africa and the Middle East."[28]

The combination of bi-national aid to solve problems on both sides of the border and the sincere efforts of local officials working together to direct that outside assistance serves as a beacon of hope for future Mexican-American endeavors to purify the region's waterways. A wide spectrum of solutions to the problem breaks down according to political, national, and economic interests. Diking part of the Salton Sea, constructing sewage processing plants in Mexicali or a desalination plant near the sea, selling purified water to Southern California cities, or pumping low quality water to the Gulf of California only marginally address the central problems of exponential increases in regional development throughout the present century.[29] Other solutions merely

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[27] *Saving the Salton Sea: A Research Needs Assessment*, Appendix B, "Deterioration of the Salton Sea: (Ten Year Chronology of Events and Actions Taken)," http://www.sci.sdsu.edu/salton/deterioration_salton_sea.htm.

[28] Steve LaRue, "In But Not Out," *The San Diego Union-Tribune*, July 1, 1998, E-1; United States Bureau of Reclamation, *Salton Sea: Challenges and Opportunities*, Chapter 2, "Problem Definition," http://www.1c.usbr.gov/~g2000, October 15, 12-13; Boyle.

[29] For an assessment of current plans to rehabilitate the Salton Sea, see Pacific Institute for Studies in Development, Evnironment, and Security, "Salton Sea Assessment Scoping Comments," September 30, 1998, www sci sdsu edu/salton/PISalton SeaRestorationPlan.html; also see Michael J. Cohen, Jason I. Morrison, and Edward P. Glenn, *Haven or Hazard: The Ecology and Future of the Salton Sea: Executive Summary*, www sci sdsu edu/salton/EcoSaltonSeaPacInstExeSum.html.

reincarnate the speculative mentality that has reigned in the delta throughout the twentieth century, figuring as a primary cause for unbalanced regional growth. Unfortunately, the present-day conditions of the Salton Sea and New River represent the residue of that historic pursuit. The most effective solution would involve both nations and cast the broadest net in terms of those benefited by rehabilitation of the Delta, including the various Native tribes that make their home there. The search for a "good neighbor" policy takes on a completely different -- and less profit-driven-- meaning in light of the region's past and its collective attitudes towards development and the environment.

With the toxic revelations of Kesterson Wildlife Refuge and Lake Tulare in California during the 1980s, USGS scientists turned their attention to other intensively irrigated regions of the delta, including the lower delta. The lower delta was perhaps the most neglected landscape of the region. In essence, the needs of human and non-human communities that lived there had largely been ignored during development on the irrigated oases in Mexicali Valley and upriver in the Yuma, Imperial, and Wellton-Mohawk Valleys. USGS and academic studies at drainage spots near the international boundary, below Mexicali on the Rio Hardy, and in Wellton Mohawk Valley, revealed elevated concentrations of selenium and other trace metals in local fish, birds, and soils. More importantly, these studies revealed the complexity of interactions between pesticide components and naturally occurring trace metals. Scientists noted that they did not completely understand the impact of these elements with each other in varying concentrations. Such revelations illustrated the degree to which ecological impacts of new technologies generally lag behind the application of those advances. Scientists will spend much of the twenty-first century attempting to measure the impact of the irrigated oasis on the broader regional ecosystem.[30]

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[30] For studies on chemical and metal trace concentrations in the lower Delta see “Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Lower Colorado River Valley, Arizona, California, and Nevada,” “Abstract,” www.usbr.gov/niwqp/biblio/niwqp.abs/radtke.txt; Kirke A. King and Brenda J. Andrews, “Contaminants in Fish and Wildlife Collected from the Lower Colorado River and Irrigation Drains in the Yuma, Valley, Arizona,” May 1996, (Phoenix: USFWS, Arizona Ecological Services Field Office); Denise L. Baker, Kirke A. King, William G. Kepner, and Jeffrey D., “Pre-Reconnaissance Investigation of Water Quality of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in Yuma Valley, Arizona,” (Phoenix: USFWS: Fish and Wildlife Enhancement, November 1992).

**The Delta in the Comparative Lens**

Moving beyond the irrigated oasis not only means exploring issues related to water quality in the delta after 1975, but also comparing these issues with similar challenges throughout the world. The Rio Grande River basin offers the most logical point of comparison and contrast. One of the critical differences between the regions relates to the geographical orientation of the rivers and their tributaries. In the Colorado River Basin regulation of flows from tributaries occurs completely in the United States. Accordingly, delivery of water to Mexico takes place only at the border near Yuma, where the IBWC can regulate apportionment of the water. In contrast, numerous tributaries along both sides of the border in the Rio Grande basin, particularly below El Paso, make river regulation more difficult. Furthermore, water amounts awarded by the 1945 Treaty to each nation in the Lower and Middle Rio Grande regions were apportioned largely on percentage of river flows, versus set amounts as stipulated by the treaty for the Colorado River basin..[31]

The Upper Rio Grande basin, it is composed of several American states (Colorado, New Mexico and Texas) that signed a treaty similar to the Colorado River Compact (The Rio Grande River Compact of 1938). The 1938 treaty apportioned water from the Upper Colorado River between them. A 1906 agreement between the United States and Mexico also stipulated that the United States deliver 60,000-acre feet to Mexico near Ciudad Juárez from the Upper Rio Grande. Such an arrangement has often complicated bi-national relations, particularly when signatories to the Rio Grande Compact have not delivered water downstream, prompting Texas to shortchange Mexico.[32] At the same time, new water infrastructures in Mexico, such as El Cuchillo

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[31] John W. House, Frontier on the *Rio Grande: A Political Geography of Development and Social Deprivation* (Oxford: Clarendon Press, 1982), 123-127; The recent drought during the 1990s has increased the strain on goodwill in both nations in relation to water from the Rio Grande and its tributaries. Accusations of illegal pumping and failure to deliver water stipulated under the Mexican Water Treaty are several manifestations of such acrimony; The drought is treated in such articles as Robert Brye, "Environment: Troubled Waters," *The Guardian*, June 14, 1995, T6; James Pinkerton, "Mexico Holding Back Water, Farmers Claim; Angry South Texans Call for Trade Sanctions," *The Houston Chronicle*, February 18, 2000, Business Section, 2. Pinkerton's article illustrates that American farmers were just as frustrated with unilateral actions on the other side of the border related to water.

[32] House, 119-120; Patrick O'Driscoll investigates inter-state water intrigue similar to that in the Colorado River Basin in "Colorado Fights Texas for Rio Grande Flow; Wasted Water Would Have Wiped

Dam, a structure intended to supply Monterrey, Nuevo León, with water, have decreased flows to water users downstream on the San Juan and Rio Grande Rivers.[33]

In spite of these contrasts, there are political similarities between the two regions. Indeed, the Rio Grande and Colorado River basins were politically linked through by the Mexican Water Treaty of 1945. As in the Colorado River Delta, President Lázaro Cárdenas alarmed American farmers and politicians by calling for the cultivation on 400,000 hectares in the Rio Grande Delta. Unlike the Colorado River Delta, however, Mexico controlled approximately sixty per cent of the water that fed the Rio Grande. According to historian Norris J. Hundley, President Cárdenas threatened construction of El Azúcar dam, "to force the US to trade Colorado River water for Rio Grande water." Thereafter negotiations for the Mexican Water Treaty began. Texas politicians and state department officials believed that the only way to obtain additional water from Mexican tributaries on the Rio Grande River was to offer Mexico1.5 million acre-feet on the Colorado River. The strategy worked to Mexico's advantage, as well as for U.S. farmers in the Lower Rio Grande River Valley, but to the chagrin of California politicians who would no longer enjoy as much surplus water from the Colorado River.[34]

The Rio Grande River Basin has experienced some of the same challenges related to water management and water quality as the Lower Colorado River Basin. During the early late 1950s and 1960s, for example, Mexican irrigation above Mission, Texas, returned highly saline water to the Rio Grande, which harmed the fields of U.S. citrus farmers down river. Mexico agreed to waste saline water down the Rio Grande, but roundly refused to build a conveyance drain for the saline waters until the United States resolved the Colorado River salinity problem. When the tables were turned, U.S. officials voiced complaints similar to those expressed by Mexican leaders who were concerned with the salinity problem in the Colorado River basin. US officials complained, "We believe, under international law, that we have the right to object to the harmful salinity [allegedly three times the normal level] since it is more than that normally necessary for

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Out Debt, Official Says," *The Denver Post*, April 14, 1996, C1.

[33] Raul M Sanchez, "To the World Commission on Dams: Don't Forget the Law, and Don't Forget Human Rights – Lessons from the U.S.-Mexico Border," *The University of Miami Inter-American Law Review*, Winter/Spring 1999, volume 30, 629-657.

successful irrigation of areas reasonably susceptible of reclamation." With the passage of Minute 218 in 1965, the Mexican government agreed to construct Morrillo Drain on the Lower Rio Grande River (with each nation contributing fifty percent of the funds for construction of the drain). This episode not only illustrated the way that the two river basins had been politically and diplomatically linked, but also how both nations reacted in similar ways to unilateral actions taken by the other nation in the respective basins.[35]

Both regions have also experienced tremendous demographic and economic growth since World War II. With the implementation of PRONAF, Ciudad Juárez emerged in the 1970s as the largest industrial center on the border. Approval of NAFTA only intensified regional emphasis on manufacturing. Around 1960, there were approximately 600,000 people in the El Paso/Ciudad Juárez metropolitan area. By 1981 the figure had risen to 1.3 million. By the turn of the century the conurbation was home to nearly two million individuals. New Mexico State University demographers later predicted that by 2025, the El Paso/Ciudad Juárez/Las Cruces, NM, metropolitan area would be home to six million people. El Paso looked to resolve the problem by challenging New Mexico's water rights to Mesilla Bolson groundwater reserves in federal court, as well as by purchasing agricultural lands and utilizing the attendant water rights for domestic and industrial use.[36] Differing rates of water use on each side of the border have also contributed to the drastic depletion of water resources in the region. From 1930 to 1970, for example, U.S. per capita water consumption in the region increased from approximately 100 to 200 gallons per day (378 liters to 757 liters). In Ciudad Juárez, however, figures for 1960 and 1970 remained constant at about 50 gallons per capita per day. And, as one observer noted, "Half the total use of water in El Paso was for lawn or garden irrigation and in domestic appliances, while Mexicans were

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[34] House, 122-125.

[35] T.R. Martin, "Meeting of Presidents Johnson and Lopez Mateos in California, February 20-22, Background Paper, Salinity on the Lower Rio Grande," February 14, 1964, DDRS, CDROM ID# 1977010100401, Fiche # 1977-66G.

[36] Dan Balz, "Water Wars: Booming Town of El Paso Casts an Eye on New Mexico's Trove, *Washington Post*, February 13, 1981, A2; Thaddeus Herrick, "Water Woes," *The Houston Chronicle*, February 14, 1999, State Section, 1; IBWC, "Transboundary Aquifer and Binational Ground-Water Data Base," January 1998, www ibwc state gov/RIOGRAND/tranaqui.htm.

threatened with domestic and industrial water shortages, both in the city and on the land."[37]

In the wake of intensive industrial and agricultural expansion, water quality declined. As one scholar noted, "In bringing industrialization to the border, we are also in the process of creating the longest Love Canal and Superfund site on planet Earth."[38] Current conditions -- especially under the strain of drought conditions that prevailed in the region during the last decade of the twentieth century -- suggest the seriousness of environmental degradation in the face of demographic, industrial, and agricultural growth. Declining water quality and additional dams on tributaries for the Rio Grande have contributed to the decline of numerous species along the river as well. Together, these conditions suggest that the two watersheds on the U.S.-Mexican border face similar challenges, even if the severity of individual problems differs from place to place.[39]

Groundwater issues have been, perhaps, of even more importance along the Rio Grande, particularly in the El Paso/Juárez metropolitan area, than in the Colorado River Delta. Overdraft poses a greater problem in the Upper Rio Grande area (than in the Colorado River Delta) due to the rate of demographic growth in the Ciudad Juárez region. Furthermore, the El Paso/Ciudad Juárez metropolitan area is almost completely dependent on groundwater supplies, while inhabitants of other areas of the Rio Grande and Colorado River basins can at least count on some surface water to meet their needs. The Hueco Bolson, located beneath El Paso and Juárez, remains the most depleted groundwater source in the region. From 1903 to 1976, the aquifer dropped seventy-three feet below El Paso and eighty-five feet below Ciudad Juárez. Extensive overdraft of the aquifer has also compromised the quality of remaining reserves as saline water has been drawn into the aquifer by the intensive operation of ground wells. Differences in

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[37] House, 131-132; Howard LaFranchi, "U.S. Mexico Hear Drip, Drip, Drip of Water Draining from Border," *The Christian Science Monitor,* March 5, 1996, World Section, 1.

[38] Hector Fuentez, Associate Professor at UTEP, quoted in "Transboundary Pollution: Joint U.S., Mexican Manufacturing Program May Be Causing Pollution in Texas, Arizona," *International Environment Report* (BNA) volume 12, number 6, June 14, 1989, as quoted in Adrienne Paule, "Underground Water: A Fugitive at the Border," *Pace Environmental Law Review*, volume 13, 1129.

[39] David Berger, "Precious Resource: Water Issues in the Lower Rio Grande Basin," October 1995, www2 planeta com/mader/ecotravel/border/sabal.html.

groundwater rights have also hampered efforts to reach bi-national pumping accords. Mexican groundwater rights are vested in the federal government. Local U.S. officials have been averse to any type of groundwater regulation, arguing that such actions would infringe on their water rights, which were granted by the state of Texas.[40]

Outside of North America the Aral Sea region in the former Soviet Union provides the best cautionary tale for unchecked development of the Colorado River Delta. At about the same time that the USBR completed the canal for Wellton-Mohawk, the Soviet government placed stringent demands on Khazakstan, Uzbekestan, and Turkestan to increase cotton production. In the process, government engineers and farmers diverted most of the water from the Syr Darya and Uma Darya rivers (the two main tributaries to the Aral Sea) to farmlands far removed from the drainage basins of the respective rivers. While cotton cultivation had traditionally been a proud symbol of the region's agricultural community, heavy pressure to increase production reached the ecological tipping point, adversely affecting not only the lake's rich flora and fauna, but also the health of those who lived nearby. By 1993, the lake had shrunk by sixty percent. Twenty of the twenty-four species of the lake's indigenous fish were extinct. Throat cancer increased by five hundred percent. Typhoid and hepatitis increased dramatically. Fisherman in Muynak, a community on the sea's south shore, watched fishing catches drop from 26,000 tons to 3,000 tons in 1994.[41]

As journalist Otkir Hashimov lamented, "Why is the sea disappearing? Quite frankly, the cotton plan has been increased to the heavens, new lands have been brought under cultivation, reservoirs have been poorly constructed and many industrial enterprises have been erected on the banks of local rivers."[42] Ultimately, the Aral Sea debacle resulted from an ill-conceived plan to intensify production in a region that

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[40] J.C Clark, "International Aquifer Management: The Hueco Bolson on the Rio Grande River," *Natural Resources Journal*, volume 18, January 1978, 163-177.

[41] David H. Getches, "Essays from Askhabad, to Wellton-Mohawk, to Los Angeles: The Drought in Water Policy," *Colorado Law Review*, volume 64, 525-526; Don Hinrichsen, "Sea Change, *The Amicus Journal*, Spring 1995, www igc apc org/nrdc/nrdc/eamicus/clip01/dhsea.html; Rusi Nasar, "How the Soviets Murdered a Sea," *The Washington Post*, June 4, 1989, B3; Justin Burke, "Sea Change Threatens Aral Sea," *The Christian Science Monitor*, October 9, 1990, Habitat, 12; Bill Keller, "Developers Turn Aral Sea into a Catastrophe," *New York Times*, December 20, 1988, C1.

[42] Nasar, "How the Soviets Murdered a Sea."

Russian czars had exploited for cotton production. Soviet leaders were "obsessed with becoming independent of other nations in cotton production [and], political leaders in Moscow declared pursuit of that goal to be the 'patriotic duty' of all Central Asians." In the process, officials ignored the ecological realities of their designs. Large canals, including the Karakum (850 miles long), sucked water from the Amu Dayra outside of the river basin, negating the shrinking river of return flows. As a result, cotton production increased to the point where the USSR became a net exporter of cotton. However, the policy did not take into account the well being of those that lived at the mouth of the river. Choked dry by frenetic diversions, the mouth of the Syr Darya became a twisting wasteland of dust composed primarily of chemical residue from agricultural pesticides. Public health declined and the local fishing economy practically vanished. To solve the problem, Soviet engineers suggested that a canal to carry water from the Ob and Irtysh Rivers Siberia to the Aral Sea. Mikhail Gorbachev shelved the grandiose plan.[43]

Law professor David H. Getches has linked the tragedy at the Aral Sea with the Wellton-Mohawk project, noting, "Both Wellton-Mohawk and the Aral Sea are public policy disasters created by government officials determined to accomplish a single-minded goal. They pursued only the mission of making the desert bloom." Calling for more public participation and greater ecological sensitivity in the process of water policy formulation throughout the world, Getches argues that the largely closed decision making process in both nations during the height of the Cold War led to disasters that might have been prevented. Getches noted, however, that the prospects for change were better in the Colorado River Delta than in Central Asia.[44] "We know Central Asians are capable of violence against their neighbors," he observed, "[but there] is no prior history of cooperation, mutual problem-solving, and regional statesmanship that is needed to solve the Aral Sea problem."[45] However, the Aral Sea outlines a situation that very well could

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[43] Getches, 526-529.

[44] Ibid.,534.

[45] Ibid., 530; Central Asian countries reached a water-sharing accord in 1996. See Sander Thoenes, "News: International: Central Asians Reach Common Ground over Water," *Financial Times* (London), April 9, 1996, 3; Plans for rehabilitation of the Aral Sea are discussed in Daniel Williams, "The Sinking Sea: Dike Splitting Kazakstan's Aral Dims Hopes for its Salvation," *The Washington Post*, November 12, 1998, A23.

occur in the delta unless efforts are made to assure that developments throughout the basin do not trigger further ecological decline in the Delta.

Ideology also played a significant role in water conflict. In the Colorado River Delta nationalistic rhetoric periodically politicized bi-national water negotiations. However, it can be argued that water politics along the U.S-Mexican border was largely a materialistic and cultural -- as opposed to purely ideological -- conflict. In other words, tensions in the delta could be linked to the mutual desire to grow crops for capitalistic markets and differing attitudes towards water use and exploitation more than to purely ideological factors. True, the threat of communist infiltration of local political groups in Mexicali Valley during the salinity crisis kept the attention of US officials. However, U.S. domination of Mexicali Valley's water supply and agribusiness complex equally alarmed Mexican officials and influenced national policy in the region. Despite these differences, cooperation often replaced the nationalistic tensions experienced in the delta when unilateral water quality and quantities were acceptable to both nations.

This stands in contrast to the ideological undercurrent that has defined Arab and Israeli water conflict throughout history. In the modern era, however, the need for water, religious belief concerning the resources of the Middle East, and political nationalism have been subsumed into one. In the wake of the establishment of Israel in 1948, the new nation nationalized water resources in the region. Additionally, during the Arab-Israeli War in 1967, Israel targeted the source of the Jordan River and controlled its flow into the Sea of Galilee by taking the Golan Heights and the West Bank. These actions have not only aggravated tensions between Palestinians and Jews, but also tended to reinforce the ideological differences that provided the foundation for interactions between the two peoples. As in the Colorado River Basin, differences in the ways in which Israelis and Palestinians use water have further exacerbated these complex interactions. Fortunately, Jordan and Israel have made progress by signing a 1994 water-sharing accord for the Jordan and Yarmuk Rivers, as well as for attendant groundwater aquifers. The ability to overcome ideological differences suggests that almost any group of willing parties involved in water conflict can find at least minimal grounds for sharing a resource needed by all humankind. For the Colorado River Delta such developments should inspire people

on both sides of the border, who have generally learned to work together, to take further steps to mutually improve the region's ecosystem and maintain open lines of communication regarding water issues.[46]

[46] Rosina Hassoun offers a visceral critique of Israeli water politics and water use in the Jordan River region in "Water Between Arabs and Israelis: Researching Twice Promised Resources," in *Water, Culture, and Power: Local Struggles in a Global Context*, John M. Donohue and Barbara Rose Johnston, eds. (Washington D.C.: Island Press, 1998), 313-338. Hassoun examines how Muslim and Israeli attitudes towards water and land led to conflict in the new Israeli state. She traces Israel's zealous attitude towards water acquisition to the leaders of the Zionist movement who stressed the importance of acquiring the necessary water as well as land for national growth.

## Epilogue

While it is not the historian's task to prescribe solutions for complex ecological problems, it is within his purview to illuminate the origins of contemporary events that perplex us. This is especially critical when discussing events in the Colorado River Delta. There may not be another region in North America that has been so forward-looking and enamored by humanity's ability to harness nature through technology and willpower. This tendency has helped create an impressive desert breadbasket. That process, however, has also insulated the region from its recent past, and as this study suggests, obscured fundamental causes to seemingly separate problems. Bi-national and local initiatives to clean up the New River and restore the Colorado River Delta suggest that meaningful change is possible. We must still ask, however, if those solutions are only the means to another golden pot underneath the latest hydraulic rainbow, or if they are also sure avenues to lasting improvements that benefit both humanity and the region's ecosystem.[1]

While primarily individuals in the delta, México D.F., and Washington D.C. will determine the prospects for change, current ecological problems can be framed within a definite historical context. Two separate, yet inter-connected (financially, ecologically, socially, and diplomatically) economic revolutions competed and coexisted throughout the twentieth century in the Colorado River Delta. Strong governmental interest, abundant capital, and ample links to the world economy insured rapid development of Imperial and Yuma Valleys during the first third of the twentieth century. By 1935, Lázaro Cárdenas set in motion a semi-revolutionary economic program in Mexicali Valley intended to link the economy of Baja California with Mexico's interior and wean the peninsula from dependence on American capital. These revolutions sparked a flurry of immigration to the Delta and placed *mexicanos* and *estadounidenses* in competition for precious natural resources. Furthermore, continued levels of immigration served as a link between agribusiness and the *maquila* complex.

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[1] Tony Perry, "After 50 Years, New Hope for Detoxifying New River," *Los Angeles Times*, November 4, 1995, A-1.

In retrospect, while Mexican and U.S. federalism differed markedly in the distribution of power between national, state, and local governments, as well as in legal jurisdiction over water rights surface and groundwater rights, acute similarities in the actual administration of natural resources and immigration in the Delta region allowed for tremendous growth on both sides of the border. In short, federal control (both Mexican and U.S.) over water resources increased absolutely on both sides of the border while immigration policies generally left enough doors open to accommodate industrial and agricultural expansion in the region. Ultimately, dual economic development of the delta, exponential levels of migration throughout the century, the ambivalent posturing of both "neighbors", and the dynamics of the world economy threatened the very lifeline, the Colorado River, that had given birth to the region's legacy of abundance.

Development of water resources in the region offered a candid portrait of both nations' pursuits during the twentieth century, and particularly during the post World War II era. In Mexico, efforts to modernize encouraged Mexicali Valley farmers to produce crops destined for export or for the palates of Mexico's emerging middle class.[2] Yet amidst the domination of Mexicali Valley by capitalist forces of production, many sincere SRH officials demonstrated that -- at least to a certain degree -- the concepts of equity in terms of water distribution remained a goal of the state. The developmental angle of Mexicali Valley, however, was manifest by the large number of ejidatarios who primarily produced cotton for market sales. Ultimately, however, the push to develop the border region with the nation's greatest resource, its people, strained available water resources. Rehabilitation of Mexicali Valley served as official recognition that opportunities on the border were limited to a large degree by available resources.

From an institutional perspective, the presence of a bi-national water commission, the IBWC/CILA, has provided a degree of stability, despite complaints that it possessed little power, focused narrowly on technical issues, and did not allow sufficient public input into policy decisions that affected the well-being of those living in the region. Nevertheless, the IBWC at least offered a forum for interaction on water issues and

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[2] Rose J. Spalding offers a concise analysis of transformations in Mexican agriculture during the 1960s and 1970s in *The Mexican Food Crisis: An Analysis of SAM*, Research Report Series, 33 (San Diego: Center for U.S.-Mexican Studies, UCSD, 1984).

resolution of water conflict. Particularly during the years prior to 1975, it also served as a buffer against the ideas of individuals in the respective governments whose actions were not in the best interests of both nations. Executive organization of BECC and NADBank in the wake of NAFTA offers hope for greater levels of public involvement in border water issues, and perhaps an expansion into broader environmental issues that impact the region.[3]

Nevertheless, while strong laws and institutions are critical to effective water management, they are of little worth if they are winked at in times of critical shortage. What is needed is a commitment by regional and national officials in the border region to the growing reality of natural resource interdependence. The practical reality of such a commitment would be the recognition on the part of both nations that environmental degradation in the border region (particularly in the Delta and along the Rio Grande River) cannot take a back seat to development. In no other region of North America is this so important, given the magnetic pull of developmental policies in both nations towards the international boundary. Furthermore, it is imperative that the flow of information and communication regarding water issues remain open, regardless of which paradigm for institutional monitoring is adopted. On the same note, open communication must be accompanied by a commitment to avoid unilateral actions that impact the neighboring nation, states, or communities.[4]

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[3] For a discussion of the institutional framework for environmental decision-making see Robert G. Varady, Dovid Colnic, Robert Merideth, and Terry Sprouse, "The U.S.-Mexican Border Environment Commission: Collected Perspectives on the First Two Years," Udall Center for Studies in Public Policy, http //udallcenter arizona edu/publications/jbs_becc.html, April 27, 2000; Terry Sprouse and Stephen Mumme, "Beyond BECC: Envisioning Needed Institutional Reforms for Environmental Protection on the Mexico-U.S. Border," Udall Center for Studies in Public Policy, http //udallcenter arizona edu/publications/beyondbecc/html, May 1, 2000; Stephen Mumme, "In Focus: NAFTA and the Environement," *Foreign Policy in Focus*, volume 4, number 26, October 1999, www foreign policy-infocus org/briefs/vol4/v4n26nafta.html, April 27, 2000; Lenard Milich and Robert G. Varady, "Openness, Sustainability, and Public Participation in Transboundary River-Basin Institutions; Part III Adapting the US-Mexico Paradigm," *Arid Lands Newsletter*, number 44, fall/Winter 1998, http //ag arizona edu/OALS/ALN?aln44/varady-milich3 html, May 26, 1999.

[4] Unfortunately, historic patterns of mistrust still prevail on some issues related to water apportionment in the region. Control of water from the delta's aquifers currently represents the most controversial aspect of natural resource exploitation in regional relations. The plan to line the All-American Canal serves as the latest manifestation of that controversy. Jesús Román Calleros explores this issue within the context of diplomatic minute 242 (the agreement on the salinity crisis) in "El Acta 242: revestimiento del canal All-American. Una nueva diferencia international, México-Estados Unidos," in Trava Manzanilla, 97-128. It is hoped that participants on both sides of the border will recognize the bi-national consequences of their unilateral actions. Unfortunately, secrecy has frequently obscured (and

From a historical perspective, sewage, pesticides, and increased salinity are merely by-products of more fundamental issues related to regional development during the twentieth century. As one environmental group has observed, "Rampant human population, concomitant growing water use, and massive riparian habitat degradation have greatly harmed the Lower Colorado River Basin, the wetlands that feed into the Gulf of California and the broader Sonoran Desert Ecosystem." Other scholars concerned about water resources in the Delta have offered their insight concerning the region's problems. In a cogent assessment of the region's past and future prospects, Dr. Paul Ganster observed, "*Unmanaged growth* in the region has produced serious transborder environmental problems, including air and water pollution, contamination from improper disposal of hazardous and solid wastes, and urban and development impacts on plant and animal species and critical ecosystems." Similarly, Marco Antonio Alcázar Ávila, official at the Dirección General de Fronteras at the Mexican Department of Foreign Relations (SRE), has noted that all along the border "a planning effort that permits the anticipation of measures to decrease the negative impact of demographic expansion" is needed to counteract the willy-nilly depletion of water resources. He also suggests that if regional population continues to grow exponentially and the two economies become even more polarized, "it is possible to foresee . . . national and bi-national crises of greater proportion, with unforeseen effects, as a product of the different inequalities that could produce the abusive use and deterioration of existing natural resources."[5]

Ultimately, the ecological problems in the region are not the exclusive domain of the United States or Mexico. Instead they are a shared problem that demand equally

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discouraged) the process of negotiation and dialogue between regional and national leaders on issues affecting the entire region. For example, the USBR noted in its final decision on the lining project for the All-American Canal that the United States section of the International Boundary and Water Commission "counseled Reclamation regarding the diplomatic sensitivities of the issues involved, and advised Reclamation to limit dissemination of information regarding Project impacts to Mexico to avoid jeopardizing the consultation and diplomatic relations with Mexico." See USBR, "Record of Decision for Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR) for All-American Canal Lining Project (Project), Imperial Valley, Imperial County, California," May 1994, 8. While it is recognized that diplomatic dealings demand a certain degree of secrecy, an unwillingness to communicate openly on critical environmental issues in the Delta region may erase any other sense of goodwill developed between the region's inhabitants.

[5] Defenders of Wildlife, "Salton Sea Position Statement: 'The Ecological Realities of the Salton Sea,'" August 1998, http://www sci sdsu edu/salton/DOWPositionSaltonSea.html, October 15, 1998; Ganster, emphasis added; Marco Antonio Alcazar Avila, "El papel del agua como frontera entre México y

complex solutions. As the historic perspective illustrates, compartmentalizing responsibility for those problems only breeds fear and mistrust between Mexicans, Americans, and Native groups in the Delta. If we continue on with that reductionist outlook, the border relationship truly will remain "[an unhappy] marriage without possibility of divorce."[6] Viewing the region's development from a more holistic -- and hopeful -- point of view, however, suggests that despite international boundaries, differing models of federalism, and cultural differences, change can be brought about in a meaningful and cooperative way. Ultimately, the region's two rivers -- their problems and promise -- must be seen as components of an integrated and open ecological system. Hopefully, critical water issues that affect communities and lands on both sides of the border will also be discussed in a more open climate of cooperation. To approach the region in any other way denies the realities of a shared history, ecosystem, and regional identity.

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los Estados Unidos de Nórteamerica," in *Ingenieria hidráulica en México*, January-April 1989, 19-29.

[6] John Gavin as quoted in Patricia Nelson Limerick, *Legacy of Conquest*, (New York: W. W. Norton, 1987), 346.

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