

# Two Rivers, Two Nations, One History: The Transformation of the Colorado River Delta since 1940<sup>1</sup>

Evan Ward\*

## ABSTRACT

This current paper focuses on the transformation of the Colorado River Delta since 1940. Instead of just considering the ecological problems of the region as an exclusive domain of the two countries that share it, the author seeks to maintain a more holistic approach to the situation, which involves not only the governments of the United States and Mexico, but also takes into account the historical role of the Native groups in the Delta, especially on issues of mistrust and blame. The author followed different sources to fully develop its vision of the history of the two rivers involve, from journalism and different documents to other scholarly works related to the region.

## RESUMEN

El presente texto se centra en la transformación del delta del río Colorado desde 1940. No sólo considera los problemas ecológicos de la región como un asunto exclusivo de los países que la comparten, sino que busca llegar a una perspectiva más holística de la situación, la cual involucra no sólo a los gobiernos de Estados Unidos y México, sino también toma en cuenta el rol histórico de los grupos indígenas en el delta, especialmente en los temas de desconfianza y responsabilidad. El autor indagó en diferentes fuentes para así desarrollar enteramente su visión de la historia de los dos ríos involucrados, desde el periodismo y diferentes documentos hasta obras académicas relacionadas con la región.

\*Professor, Department of History, LeConte Hall, University of Georgia, Athens, GA. E-mail: erward@arches.uga.edu.

<sup>1</sup> Mr. Ward would like to thank the Center for Latin American Studies at the University of Georgia, Athens, for generous support that allowed him to carry out research for this paper. Dra. María Eugenia Anguiano Téllez (El Colef), Drs. Lester Langley, Catherine Pringle, and Emory Thomas (all from the University of Georgia, Athens), Dr. Stuart Hurlbert (San Diego State University), and the *dictaminadores* offered encouragement and helpful critiques. The paper contains several paragraphs from Evan Ward, "Saline Solutions: Arizona Water Politics, Mexican-American Relations, and the Wellton-Mohawk Valley," *Journal of Arizona History*, Autumn 1999, pp. 267-292.

... 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.<sup>2</sup>

During the past decade, a growing stream of magazine and newspaper articles has drawn attention to severe ecological problems that threaten the well-being of flora, fauna, and humans in the Colorado River Delta. Two rivers, the New and the Colorado, 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." Most of the authors assigned blame for the problem to U.S. interests located upstream. 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 not only endangered 102 plant and animal species, but 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 Cocopa people are dying."<sup>3</sup>

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, . . . dead animals, industrial waste, and human excrement into the Salton Sea.<sup>4</sup> The New River and the Salton Sea were crea-

<sup>2</sup> Antonio González de León, "Factores de tensión internacional en la frontera," in *La Frontera del norte: integración y desarrollo*, Roque González Salazar, editor, (Mexico City: Colegio de México, 1981) 24. Evan Ward has made all translations in this paper.

<sup>3</sup> 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.

<sup>4</sup> 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

ted in 1905 when engineers 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 Cauhilla Basin, now known as the Salton Sea. Intensive farming, *maquiladora* factories, and inadequate sewage systems served as the "source" for the river following the 1920s. By the 1990s, the New River was considered to be the most polluted river in the United States. *Estadounidenses* 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.<sup>5</sup>

The outpouring of attention by the public and press over these problems has raised regional awareness of the linkages that exist between intensive development and the ecological transformation of arid landscapes. Unfortunately, the plight of the New River and the lower Colorado River have largely been treated as separate problems. There are several factors that account for this reductionist tendency. First, there are few geographic connections, excepting the All-American Canal (which transports water from the Colorado River to the Imperial Valley), that link the Colorado and New Rivers. However, unless the two rivers are understood as part of a unified ecological system, there is little reason to link the various forms of degradation to a common historical source. 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 compartmentalization of private, political, and diplomatic interests.

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.

<sup>5</sup> John Dillin, "Pollution Seeps From Mexico to U.S.," *The Christian Science Monitor*, December 28, 1989, 6; *U.S. Newsweek*, "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 New River Cleanup," *The San Diego Union Tribune*, December 26, 1992, A-1.

In academic circles, particularly in the discipline of history, the Colorado River 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.<sup>6</sup> 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 Mexican-American border. The contaminated water immediately threatened cotton crops in Mexicali Valley, which received water from Morelos Dam. Historians, journalists, and engineers on both sides of the river have condemned the unwillingness of the United States to remedy the problem, which dragged out over fourteen years. Much of the writing reflects a desire to challenge – and curb – the power of the USBR. These representations of American dominance have a good deal of merit. Unfortunately, some scholars have unintentionally masked the agency of Mexican and American residents in the Delta who also played a critical role in the ecological strains created through intensive regional development.<sup>7</sup>

Logic dictates that 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. History and ecology find their confluence in their search for meaningful solutions to diverse, yet inter-related, problems.

As mentioned above, the division between the Colorado and New Ri-

<sup>6</sup> Nevertheless, a good number of Mexican historians, as well as a smaller group of American scholars, have produced impressive histories of the Delta, written from the regional perspective, that chronicle intensive regional developments and ecological change. These studies are enumerated in footnote 10.

<sup>7</sup> 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), pp. 173-181. Philip Fradkin focuses on the environmental and international ramification of the crisis in *A River No More: The Colorado River and the West* (New York: Knopf, 1981), pp. 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), pp. 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, pp. 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 Rodríguez provide a broad scientific overview of the salinity crisis in "Comportamiento de la salinidad en el agua del río Colorado", in *Manejo ambientalmente adecuado del agua: la frontera México-Estados Unidos*, José Trava Manzanilla, Jesús Román Calleros and Francisco A. Bernal Rodríguez (Tijuana: El Colef, 1991), pp. 129-134.

vers contradicts 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 Mexicali Valley to the Wellton-Mohawk Valley. The widespread use of water from the Colorado River transforms the disparate communities in the region into a coherent and inter-dependent ecosystem. Yuma, Arizona, and Mexicali Valley are palpably linked through the diversion point at Morelos Dam. The salinity crisis serves as 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 originally diverted from the Colorado River and then used in 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. 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.<sup>8</sup>

A more temporally inclusive model of the Colorado River Delta — one that examines current problems within the context of the entire 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

<sup>8</sup> This study is theoretically based on a discussion of the interaction between ecosystems and human societies presented in 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. The mathematical concepts of complexity and chaos theory have also been applied in examining the interactions between numerous human and environmental variables within the Colorado River Basin system. Robert Jervis discusses these phenomena in a social science context in *Complexity in Political and Social Life* (Princeton, N.J.: Princeton University Press, 1997). As the salinity crisis of the 1960s and 70s illustrates, apparently small changes within the system — i.e. the addition of excess salts from the Wellton-Mohawk Valley to the Colorado River — can trigger disproportionately larger environmental, economic, and diplomatic changes in the system.

In terms of methodology, the author has followed the wisdom of Oscar J. Martínez's *Troublesome Border* (Tucson: University of Arizona Press, 1988), and examined how the international boundary has impacted the various communities on both sides of the border, particularly in terms of their use of the Colorado River. As Martínez notes in *Troublesome Border*, "Fundamentally it is the border itself that acts as the agent of friction, given that it obstructs the normal movement of people and products" (6). State and national archives, water user's organizations, and diplomatic documents from both sides of the border provided the evidence necessary to construct the model presented here.

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 of these problems share a common source rooted in long-term competition between the United States and Mexico for scarce natural resources, namely water.<sup>9</sup>

This paper suggests that Mexican and American efforts (both national and local) to develop the Delta during the second half of the twentieth century encouraged a frenzied frontier mentality on both sides of the border that not only created a climate of guarded mistrust, but also inadvertently set in motion demographic, economic, and social patterns that strained the ecosystem. United States development of the region began around the turn of the century as private interests and governmental agencies linked the Imperial Valley and Yuma Valley to global markets and federal assistance. U.S. economic hegemony in Mexicali Valley encouraged Mexican President Lázaro Cárdenas to implement a plan of his own to integrate Baja California to the national economy and policy, beginning in 1937 with the expropriation of the Colorado River and Land Company. Agribusiness interests on both sides of the border encouraged immigration, especially from 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 the *maquiladora* program 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 a vastly depleted supply of natural resources left 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 one habitat has encouraged "good neighbors" to talk to one another about resolving water quality and allocation issues.

<sup>9</sup> 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 salinity by the time it reached the Delta region.

*THE COLORADO RIVER, NATIONALISM,  
AND WATER SHORTAGE*

By 1938 two dynamic economic revolutions were well under way on both sides of the border, in Mexicali and the Imperial-Yuma Valleys.<sup>10</sup> While Mexicans and Americans largely shared the same creditors, links to the global market, and crop production patterns (focusing heavily on cotton and truck crops), the enduring question of water apportionment 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 Luis Rio Colorado would receive from the river. Although Mexico had been ignored during the negotiation of the Colorado River Compact (1928), which apportioned the river's water between the seven American states in the basin, Mexican leaders still believed that at some point the United States would have to recognize their rights to the river.<sup>11</sup> As a result, President Cárdenas encouraged massive development of the Mexican portion of the Delta.<sup>12</sup>

<sup>10</sup>Historians on both sides of the border have analyzed and recounted the development of the Delta prior to 1940. 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 Jordán, *El otro México: biografía de Baja California* (México D.F.: Secretaría de Educación Pública, Frontera, 1976); *Mexicali: una historia*, tomos 1-2 (Mexicali, B.C.: Universidad Autónoma de Baja California, 1991); 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.

<sup>11</sup>Norris Hundley 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* (1966), Hundley examines the background and diplomatic efforts behind the Mexican Water Treaty (1945), which provided Mexico with 1.5 million acre-feet of water per year from the Colorado River. Together, these two treaties comprise the most important facets of the "Law of the River," or the legal divisions of the Colorado River amongst its political constituents. 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 (Mexico D.F.: Universidad Nacional Autónoma de México, 1982), 59-102; Also see Albert E. Utton, "Ley de aguas superficiales en los Estados Unidos," in Trava Manzanilla, et. al., 35-52.

<sup>12</sup>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

During January and February 1938, Arizona state legislator Hugo Farmer made four trips to Mexicali to assess the pace of Mexican 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 "to ship the produce of Mexicali into Mexico for use by the Mexican people." Farmer's observations subsequently fueled efforts in Arizona to win approval for two irrigation projects, including one in the Wellton-Mohawk Valley (Yuma County), which would maximize American usage of Colorado River water. Ironically, a climate of mistrust — spurred by the recognition of possible water shortages in the future — only stimulated efforts to increase arable lands throughout the Delta.<sup>13</sup>

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 natural flow regimes of the Colorado River downstream. Instead of being controlled primarily by precipitation and natural run-off, the river was regulated by American dams upstream. Depending on the needs of users and power companies throughout the American West, USBR engineers either increased or decreased releases from these dams.

This erratic method of control profoundly affected Mexican residents in the Delta. When residents in Mexicali and San Luis Rio 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

United States is making with waters from the Colorado River." See Cárdenas to Navarro Cortina, January 20, 1937, AGN, RG Lázaro Cárdenas, 437.1/413.

<sup>13</sup>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.



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 Ávila 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 . . ." <sup>14</sup>

The erratic flow patterns set in motion by American 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 Penasco. Baja California governor Sánchez Taboada reported that the floods were the result of releases from Boulder Dam of 850,000 cubic meters per second. Local residents frantically attempted to build levees that would guard against the impetuous incursions of the river. <sup>15</sup>

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 critiques did have some merit. Mexican Minister of Foreign Relations Ezequiel Padilla noted that between 1938 and 1941, irrigated land 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 American 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 throughout the Southwest,

<sup>14</sup>Letter from E. Aguirre Camacho to President Avila Camacho, no date, AGN, RG Avila Camacho, 561.3/11-2.

<sup>15</sup>Telegram from Governor Crel r. Sánchez Taboada to J. Jesús González Gallo, October 29, 1941, AAGN, RG Avila Camacho, 561.3/11.

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.<sup>16</sup>

Periodic U.S. projections for decreased flow levels in Mexico also affected the process of 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."<sup>17</sup>

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 Avila Camacho's office in the spring of 1943. "This problem [is the] agricultural life or death of Mexicali," Armando Lizarraga of the Mixed Council of the Regional Economy announced to Avila Camacho. Governor Sanchez Taboada of Baja California 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 Avila Camacho to "place your valuable influence before authorities in Washington, who now [are] treating the subject [of] providing water [for this] valley." By the end of April local and national leaders petitioned IID leaders

<sup>16</sup>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 Avila Camacho, 561.3/11-1; Letter from Henry Frauenfelder to Lawrence M. Lawson, June 22, 1944, Yuma County Water Users Association Archives, Yuma, Arizona.

<sup>17</sup>See Padilla.

to transfer water from the All-American Canal to the Alamo Canal in time for the planting season.<sup>18</sup>

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, Avila Camacho successfully presented the pleas of Mexicali farmers to President Franklin D. 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.<sup>19</sup>

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 is not known, but it surely added to the frustrations of Mexicans at the end of the river.<sup>20</sup>

Whether or not Welles' assessment was correct is not as important as the

<sup>18</sup>Telegram from Armando Lizarraga to Avila Camacho, April 8, 1943; Telegram from Sanchez Taboada to Avila Camacho, April 12, 1943; Telegram from Sanchez Taboada to Avila Camacho, April 15, 1943; Telegram from Distribuidora del Pacifico, S. A. to Avila Camacho, April 30, 1943; Telegram from Sanchez Taboada to Avila Camacho, April 30, 1943. All of these telegrams are located at the AGN in RG Avila Camacho, 561.3/11-2.

<sup>19</sup>U.S. Department of State, *Foreign Relations of the United States: Diplomatic Papers, 1943*, volume 6, (Washington: GPO, 1965), 611-613.

<sup>20</sup>*Ibid.*, 614-615; Telegram from Taboada to President Avila Camacho, June 16, 1943, AGN, RG Avila Camacho, 561.3/11-2; Telegram from Governor Rodolfo Taboada to President Avila Camacho, November 17, 1943, AGN, RG Avila Camacho, 561.3/11-2.

impression it might have given U.S. politicians who were involved with Mexican - American relations in the Delta. As a general rule, regional officials in the United States were more leery than federal officials of Mexico's motives for requesting water and avoided any situations that would further threaten the water requirements of their own projects. Likewise, Mexicans developed a strong distaste for working through the bureaucratic and political hoops of America's politico-economic institutions. Leaders in Mexicali displayed an increased desire to secure water works that would free them — as much as possible — from continual dependence on the United States. This was important, as Governor Sanchez 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.”<sup>21</sup>

During 1944 and 1945 the lack of water in the Mexican Delta continued to strain bi-national relations. President Roosevelt's desire to win Mexican loyalty to the Allies, however, tipped the scale in Mexicali Valley's favor. The Mexican Water Treaty was approved in 1944, providing Mexicali Valley with 1.5 million-acre feet of water from the Colorado River each year. The newly approved treaty was supposed to solve Mexico's water problems, and, as some local U.S. leaders hoped, place a cap on the amount of water Mexicans could use.<sup>22</sup>

At the same time, Mexican officials proposed that a dam be built at the international border which would divert water into the Alamo Canal for immediate use and storage. The proposed dam was approved by both nations and included in the Mexican Water Treaty. Just as the All-American

<sup>21</sup>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 Sanchez Taboada recognized that this meant, “the farmers of Mexicali Valley are users of the irrigation system of the Imperial Valley.” Governor Sanchez Taboada to J. Jesus Gallo, July 11, 1944, AGN, RG Avila Camacho, 561.3/11-2; *Ibid.*; On July 4, 1944, Sanchez Taboada informed Avila 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 Avila Camacho, 561.3/11-2.

<sup>22</sup>See Hundley, *Dividing the Waters*; During Senate Hearings on the Mexican Water Treaty Arizona State Attorney Charles Carson stated, “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.

Canal symbolized Imperial Valley's "freedom" from reliance on a bi-national canal for water, Morelos Dam symbolized Mexican independence from the political vicissitudes of asking the United States for help 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 Alba lauded U.S. and Mexican efforts to construct the dam, he extolled the dam as a symbol of Mexican independence. He observed, "[Jose María] Morelos and the no less great [Manuel] 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." 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."<sup>23</sup>

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 and San Luis Rio Colorado. From 1940 to 1950, population increased in the region from 45,569 to 137,200 inhabitants. By 1957, the population had increased by 50% over the 1950 figure to 192,500. At the dawn of the Cardenas revolution, 54,190 hectares of land were irrigated in the Rio Colorado Irrigation District. 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. After that point, dwindling water supplies from the river forced farmers and the Mexican government to pump water from aquifers located beneath the Delta's soil.<sup>24</sup>

<sup>23</sup>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.

<sup>24</sup>M. Pérez Espinoza, "Estudio Agrológico Preliminar del Distrito de Riego del río Colorado," *Ingeniería hidráulica en México*, October-November-December 1958, 89; Federico Ibarra Muñoz, "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.

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 the 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 2 million acre-feet had been reaching Morelos Dam prior to 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 would provide enough water to salvage a substantial portion of Mexicali fields.<sup>25</sup>

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 that a new siphon and canal be built to better service farms in Mexicali and San Luis Rio 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 Luis Rio Colorado valleys." A twenty-hectare irrigation rule was also placed in effect, limiting the amount of land that could be irrigated on an annual basis. *Campesinos* loudly complained to President Adolfo Ruiz Cortines, however, that large farms were being watered instead of *ejido* lands.<sup>26</sup>

At the same time, Hugo Farmer and Arizona's U.S. congressional delegation feverishly pushed ahead plans to maximize the state's use of Colorado River water. In 1947, the U.S. Congress approved plans to develop the Wellton-Mohawk Valley, located fifty miles inland from the Colorado Ri-

<sup>25</sup>Minutes from 20 April 1955 Meeting between General Government Secretary and Mexicali Interest Groups, AGN, RG Ruiz Cortines, 404.2/296.

<sup>26</sup>Letter from Mexicali and San Luis Valley representatives to President Adolfo Ruiz Cortines, April 22, 1955, AGN, RG Lopez Mateos, 404.1/502, 6.

ver east of Yuma, as a part of the Gila Project. With the completion of Coolidge Dam during the 1930s, river flow from the Gila River failed to fill the deep wells of farmers in the Wellton-Mohawk Valley. Fields deteriorated as farmers reused water from their wells. Poor drainage patterns impeded the return of irrigation water to the river, thus increasing the salinity of the water and killing many of the crops. With government funding, a fifty-mile canal was built which transported fresh water from the Colorado River to the Wellton-Mohawk Valley. While this diluted the saline well water, the lack of drainage merely increased the amount of saline water with which the USBR and local farmers would have to contend.

### *SALINE SOLUTIONS AND POLITICAL NATIONALISM*

By 1961, developments on both sides of the border reflected an unmitigated effort to push natural resource utilization to the very limits determined by the scarcity of water. The rhetoric of nationalism and "independence" obscured the reality that the region's well-being required collective efforts to avoid a collapse in the Delta's ecosystem. During the fall of 1961, the USBR began using drainage pumps to remove toxic waters saturated with salt from the Wellton-Mohawk Valley. Water was carried through the drains and dumped into the Colorado River above the Mexican-American border. While the USBR believed that these diversions were innocuous, they eventually touched off a regional ecological crisis that national leaders transformed into an international crisis. On a regional level, the toxic water killed crops and damaged farmlands in the Mexicali-San Luis Rio Colorado valleys. Several Mexicali leaders threatened to boycott California businesses if the harmful drainage practices were not curtailed. On Thursday, December 14, 1961, 8,000 Mexicans protested the contamination of Mexicali's water by marching in front of the American Consulate in Mexicali. Two weeks later, some 35,000 people protested in front of the same building. At both of the protests, many of the participants noted the disparity between pollution of the Colorado River and the ideals of the *Alliance for Progress*. They observed that "polluting the river was not the way to get a partner in an alliance and certainly was not progress." Others looked beyond the na-

tional entity of the United States in assigning culpability for the debacle. One of the signs that caught journalist Lenora Werley's attention read, "Arizona - Tiene la Palabra." Werley observed that "Arizona causes the protests and the Mexican demonstrators are not unaware of this."<sup>27</sup>

The salinity crisis took American leaders and residents in Mexicali by surprise. However, Arizona's U.S. Senator, Carl Hayden, emphasized that the United States was not responsible for the "quality of water delivered to Mexico under the Treaty." He reiterated that the Mexican Water Treaty of 1944 placed a stipulation only on the quantity, not the quality, of water Mexico received from the United States. The inclusion of return flow waters, which mainly emanated from Yuma County lands, comprised the bulk of these recycled waters. In December 1961, Hayden warned U.S. 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." Taking a conservative approach to the problem, Hayden argued that farmers in Arizona had used water of a similar quality in prior years. Furthermore, asking for a decrease in pumping would further endanger lands in the Mohawk Valley. Balking at Mexico's claims, Hayden suggested that "Mexico can solve her own problem if it is in fact a problem."<sup>28</sup>

Hayden's suggestion that Mexicali's irrigation infrastructure was the cause of the problem was partially correct, yet it avoided the issue of the United States' moral obligation to provide decent water for Mexican farmers in Mexicali. Prior to the crisis Mexican engineers clearly acknowledged that their waterworks were inefficient, which meant that less water was available than was necessary to properly wash out the excess salt that had gradually accumulated in the ground as a result of poor drainage capabilities.

During the crisis Mexican engineers and farmers initiated a plan of water conservation to compensate for the highly saline waters that were infiltra-

<sup>27</sup>Lenora Werley, "U.S. Takes Sudden Interest in Mexicali Water," *The Arizona Daily Star*, Sunday, December 17, 1961. Carl Hayden Collection, MS 1, Box 253, Folder 8; *Ibid.*, Translated this phrase reads, "Arizona - You have the word."

<sup>28</sup>Carl Hayden, "Remarks by Senator Carl Hayden, April 26, 1962, concerning complaints by Mexico on quality of Colorado River Water," Carl Hayden Collection, MS 1, Box 293, Folder 4, page 1; Telegram from Carl Hayden to Dean Rusk, December 20, 1961, Carl Hayden Collection, MS 1.



ting the Colorado River water from the Wellton-Mohawk Valley (point source pollution) and the rest of the Colorado River Basin (non-point source pollution). Amazingly, agricultural production did not fall off drastically during the crisis (1961-1975). Furthermore, Mexican engineers noted that a decrease during the 1966-67 season very well could be attributed to the arrival of the pink boll weevil as it could to damage from saline water. High temperatures also affected production in 1968-69, in addition to lygus bugs that attacked cotton plants. Ultimately, these engineers averred that the decline in production "could not be attributed solely to this same factor . . . during the years of the problem." As a result of the salinity problems, farmers and scientists in Mexicali Valley "formed a conscience concerning better use of water, complemented with another series of beneficial agricultural benefits."<sup>29</sup>

Despite greater efforts to conserve water around Mexicali, the sense of vulnerability to further losses in water supplies on both sides of the border set in motion a well-pumping frenzy that threatened to drain the aquifer faster than it could be replenished through natural precipitation and run-off. Mexicali farmers and officials justified their actions based on the damaging quality of water provided by the United States. While Mexico received 1,850 million cubic meters of water from the Colorado River according to the Mexican Water Treaty, they were pumping an average of 1,100 million cubic meters of water from the aquifers underlying the Delta. Engineers warned, however, that extraction around Mexicali in 1970 was depleting the aquifer so fast that farmers might have "made possible the intrusion of sea water into the southern zone, deteriorating the quality of the waters and of the lands."<sup>30</sup>

By 1963, USBR and Yuma County water officials pushed for federal approval of drainage wells that would rescue waterlogged farms near Yuma. At the same time, these pumps would counteract Mexican depletion of the aquifer underlying San Luis Rio Colorado and Yuma Valley. Ultimately, attention from Arizona'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

<sup>29</sup>"Problema de la salinidad creado por la calidad de las aguas, que Estados Unidos entrega a México conforme al Tratado de 1944, AHA, RG Consultativo Técnico, 13/61, 10.

<sup>30</sup>Ibid., 15.

state officials of the need to support funding measures for a drainage project similar to that discussed by USBR Commissioner Floyd Dominy a year earlier in Yuma. Mexican farmers, Gookin noted, “[were] rapidly and aggressively increasing their pumping through the drilling of new wells and subjugation of new land.” Gookin believed that if nothing were done to combat the new pumping, Mexican farmers would pump up to 1.5 million acre-feet of water per year.

Gookin feared that such events would affect underground resources in Yuma. “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 noted, “that the State Department is unsympathetic with western water problems and seeks to assist agricultural interest in Mexico.” He also expressed misgivings about Secretary of State Dean Rusk and President Lyndon Baines Johnson canvassing 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.<sup>31</sup>

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 of the river to levels greater than they had been prior to installation of the wells. 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.<sup>32</sup>

Despite construction of a drainage by-pass in 1965 intended to dump sali-

<sup>31</sup>Memo from W. S. Gookin, December 7, 1963, Carl Hayden Collection, MSS 1, Box 708, Folder 6.

<sup>32</sup>Confidential Memo, Carl Hayden Collection, MSS1, Box 333, Folder 18.

ne run-off from the Wellton-Mohawk Valley below the Mexicali intake at Morelos Dam, high salinity levels continued to pollute the Colorado River. As a consequence, political relations between the United States and Mexico were strained. In 1970, Luis Echeverría used inflammatory anti-American rhetoric to simultaneously kindle nationalist fervor and enhance his campaign for the Mexican presidency. During a speech to the United States 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." Echeverría successfully transformed a regional issue into an international platform for promoting Mexican nationalism.<sup>33</sup>

Eventually, President Nixon and Secretary of State Henry Kissinger opened talks with Echeverría on the salinity issue. By 1971, salt content in the river had been lowered to 1,240 parts per million, yet Mexican leaders pressed for even lower levels. The agreement reached in 1973— known as Minute 242 – stipulated that the United States would provide Mexico with 118,000 acre feet of clean water from Imperial Dam each year until a desalination plant near Yuma, which would purify saline run-off from the Wellton-Mohawk Valley, was completed. Overwhelming congressional approval of Minute 242 brought the salinity crises to a point of diplomatic closure on June 11, 1974. What began as a minor diplomatic nuisance for American leaders had gradually given Mexican presidents a powerful bargaining tool in dealing with the United States.<sup>34</sup>

The end of the salinity crisis in the mid-1970s only represented the beginning of other challenges related to the integrity of the Colorado River Delta's ecosystem. Heavy groundwater pumping continued to threaten bi-national aquifers in the region. Furthermore, an over-tapped river no longer carried enough water to maintain the marshlands near the Sea of

<sup>33</sup>In 1965, the United States agreed to the conditions of Minute 218, an arrangement drawn up between the United States and Mexico to resolve the salinity crisis. According to the agreement, the United States agreed to construct a thirteen-mile drainage bypass to carry run-off water to a location below Morelos Dam. An alternative solution would have required the United States to install tile drains to improve the recovery of saline waters from Wellton-Mohawk Valley fields. Mexican officials opted for the bypass because it allowed them to either accept or reject water from the affected valley. For a Mexican perspective on the salinity crisis, including Minute 218, see Luis Cabrera, *La salinidad del río Colorado: una diferencia internacional* (México D.F.: Secretaría de Relaciones Exteriores, 1975); Fradkin, 308; Metz, 281-283.

<sup>34</sup>Metz, 281-283; Fradkin, 315.

Cortez that had once been the home for an abundance of marine and fresh-water flora and fauna. Fortunately, by the end of the century, scientists and organizations on both sides of the border looked for ways to accommodate the ecosystem's well being within the context of regional development. The dying Colorado River delta, however, was only one manifestation of the challenges that extensive growth posed for natural resource management in the region. The rise of industry and an intensified use of pesticides on both sides of the border signaled the renaissance of the New River near Mexicali.<sup>35</sup>

### *THE NEW RIVER, MAQUILAS, AND THE IMPERIAL VALLEY*

The demise of the *Bracero* program in 1964 did not signal the end of demographic expansion in the Delta. It merely compelled interests in each nation to adjust their respective programs of economic development in the region. Those changes generated new ecological problems. In the Imperial Valley and Yuma Valley, agribusiness continued to dominate the local landscapes. 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, to construct "twin plant" operations in border towns, including Mexicali and San Luis Rio Colorado. Inputs could be imported duty free to Mexican 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 Luis, Arizona) for "finishing" and shipment — as if they were "Made in the USA." Initiated in 1965, The Border Industrialization Program (BIP) encouraged migration from

<sup>35</sup>For an in-depth discussion of groundwater conflicts and issues along the border region, see Stephen P. Mumme, *Apportioning Groundwater Beneath the U.S.-Mexico Border: Obstacles and Alternatives*, Research Report Series, 45, (San Diego: Center for U.S.-Mexican Studies, University of California, San Diego, 1988); Edward P. Glenn, Richard S. Felger, Alberto Burquez, Dale S. Turner, "Ciénega de Santa Clara: Endangered Wetland in the Colorado River Delta, Sonora, Mexico," *Natural Resources Journal*, Fall 1992, volume 32, 817-824.

the Mexican interior to the Delta and enticed American (and Asian) corporations to abandon union laborers in the "rustbelt" for unorganized labor south of the border.<sup>36</sup> As a result, population in the Delta region continued to soar, especially in Mexicali and San Luis Rio Colorado. By 1995, Mexicali's population had reached 695,805 and 133,000 called San Luis home. By 1996, Yuma County boasted a population of 132, 869, and Imperial County's census rose to 138,072.<sup>37</sup>

Ultimately, industrial and agricultural activities place 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.<sup>38</sup>

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, new and old, affluent and impoverished, stand side by side with national and transnational manufacturing, chemical, and food-processing factories. Increased immigration placed added pressure on the sewage system, which has chronically malfunctioned since the 1970s, dumping 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

<sup>36</sup>For a broad overview of the *maquiladora* program see Leslie Sklair, *Assembling for Development: The Maquila Industry in Mexico and the United States* (Winstchester, 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 perspective in *La frontera México-Estados Unidos: un estudio socioeconómico* (México D.F.: Terra Nova, 1980), 149-168.

<sup>37</sup>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.civil.utah.edu/scerp/docs/berr1.html](http://www.civil.utah.edu/scerp/docs/berr1.html), October 15, 1998; "U.S. Mexico Border XXI, Frontera XXI," Environmental Protection Agency, Region 8, Dallas, TX, <http://www.134.67.55.16:7777/R9/MexUSA...a387d882563e1005dedaa?OpenDocument>, November 6, 1998; Yuma County and Imperial County statistics from *U.S. Bureau of the Census, USA Counties, 1996, CD-ROM*.

<sup>38</sup>Antonio González de León, "Factores de tensión internacional en la frontera," in González Salazar, editor, 15.

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."<sup>39</sup>

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 have 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.<sup>40</sup>

On the American side of the border, a definite bias towards the Mexican origins of the New River's contamination has shaped perceptions of who is responsible for the river's problems. 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 extra 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. Yet while the Mexican government took a remarkably long time to respond to complaints about the fetid pollution, many American-owned *maquila* factories also contributed to the chemical stew.<sup>41</sup>

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 to 75 per cent of the waters that comprise the New

<sup>39</sup>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 Pollution in Mexico (NEW)," *American University Case Study No. 142*, [http://www.sci.sdsu.edu/salton/NEW\\_RIVER.htm](http://www.sci.sdsu.edu/salton/NEW_RIVER.htm), October 15, 1998.

<sup>40</sup>Steve LaRue, "Taking the Initiative: The New River Cleanup," *The San Diego Union-Tribune*, December 26, 1992, A-1.

<sup>41</sup>Larry B. Stammer, "Pipe Break Sends Raw Sewage Into Salton Sea," *Los Angeles Times*, April 19, 1985, Part 1, 3.

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 American sources contribute to the New River's swirl of contamination.

Water from the Colorado River, which is diverted at Imperial Dam and transported to the region via the All-American Canal 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 American 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 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 strengths of pesticides.<sup>42</sup>

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. During the halcyon years of the 1950s, nearly 20,000 acres were sold for development and various re-

<sup>42</sup>See David DeVoss, "How the Bugs Finally Won," *Los Angeles Times*, September 20, 1987, Magazine, 18.

sorts 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 flyway and 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."<sup>43</sup>

The health of the sea and its surroundings, 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."<sup>44</sup>

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.<sup>45</sup>

The lake's increased salinity occurred primarily because the Sea has no drainage outlet and suffers from high evaporation rates in the blistering de-

<sup>43</sup>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, <http://www.lc.usbr.gov/~scao/index.html>, October 15, 1998.

<sup>44</sup>Frank Graham Jr., "Midnight at the Oasis," *Audubon*, May 1998, volume 100, number 3, 82-89.

<sup>45</sup>*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](http://www.sci.sdsu.edu/salton/deterioration_salton_sea.htm), October 15, 1998.



sert. 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 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."<sup>46</sup>

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, selling purified water to Southern California cities, or pumping low quality water to the Gulf of California only marginally address the central problem of exponential increases in regional development throughout the present century. Other solutions merely 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.

<sup>46</sup>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.lc.usbr.gov/~g2000>, October 15, 1998, 12-13; Boyle.

## CONCLUSION: ECONOMIC NATIONALISM AND ECOLOGY IN THE COLORADO RIVER DELTA

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, but has also insulated the region from its recent past, and as this paper suggests, obscured fundamental causes to seemingly separate problems. Happily, 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.<sup>47</sup>

While the prospects for change will be determined primarily by individuals in the Delta, Mexico City, and Washington D.C., 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.

<sup>47</sup>Tony Perry, "After 50 Years, New Hope for Detoxifying New River," *Los Angeles Times*, November 4, 1995, A-1.

In retrospect, while Mexican and American federalism differed markedly in the distribution of power between national and local governments, acute similarities in the actual administration of natural resources and immigration in the Delta region allowed for exponential growth on both sides of the border. In short, federal control (both Mexican and American) 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.

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 Mexican-American 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 pro-

duct of the different inequalities that could produce the abusive use and deterioration of existing natural resources.”<sup>48</sup>

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 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.”<sup>49</sup> 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.<sup>50</sup> To approach the region in any other way denies the realities of a shared history, ecosystem, and regional identity.

<sup>48</sup>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 los Estados Unidos de Norteamérica,” in *Ingeniería hidráulica en México*, January-April 1989, 19-29.

<sup>49</sup>John Gavin as quoted in Patricia Nelson Limerick, *Legacy of Conquest*, (New York: W. W. Norton, 1987), 346.

<sup>50</sup>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 internacional, 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 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.