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Who Owns the Water? A Case Study of El Paso del Norte

C. Richard Bath and Angela Petit



Land Tenure Center

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WHO OWNS THE WATER? A CASE STUDY OF EL PASO DEL NORTE

by

C. Richard Bath and Angela Petit

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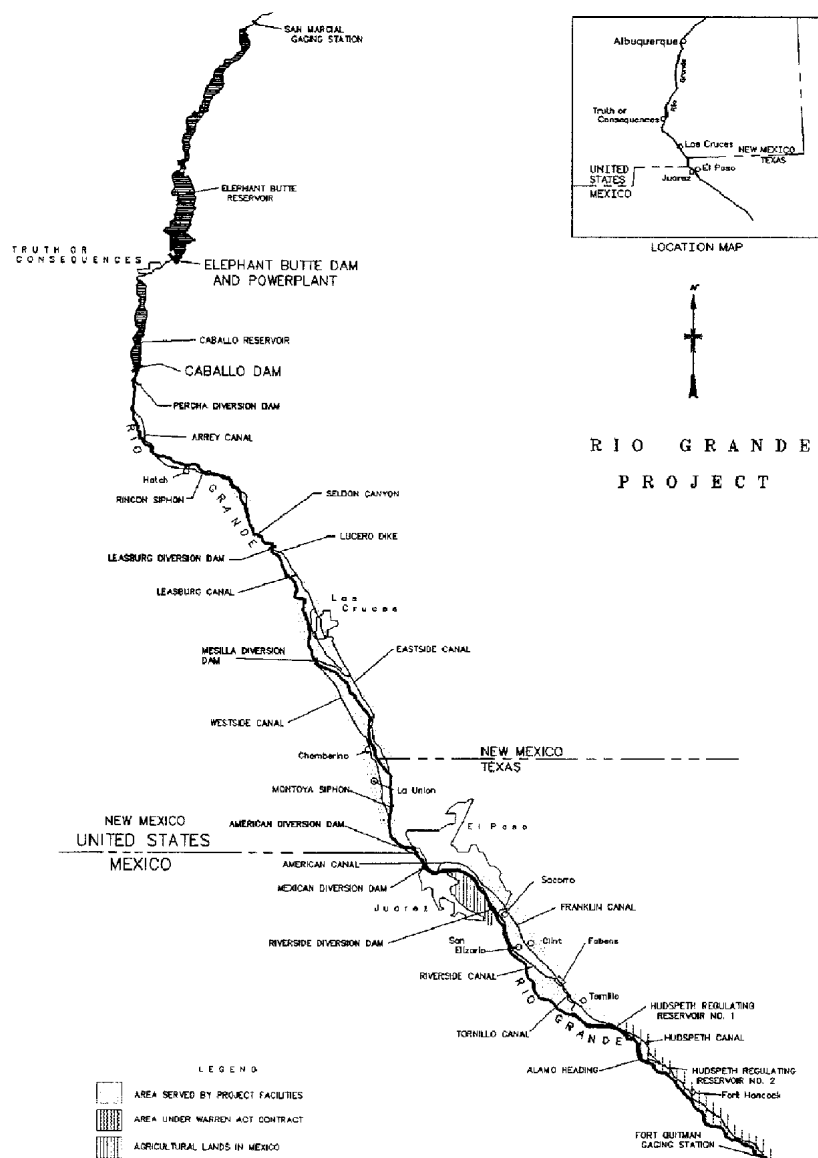
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Source: United States, Bureau of Reclamation (BuRec), 1995.

Figure 1

WHO OWNS THE WATER? A CASE STUDY OF EL PASO DEL NORTE

by

C. Richard Bath and Angela Petit¹

El Paso del Norte was the name used by both Spanish and Mexican administrations for the region encompassing El Paso, Texas, Ciudad Juarez, Chihuahua, and Dona Ana County in New Mexico, including the city of Las Cruces. It is increasingly the name now applied to what is well recognized as a regional economy, that is, a shared economic base (IM3 1991, 1993; TCBED 1997). Most of that economy is based on trade which has increased substantially since the signing of the North American Free Trade Agreement (NAFTA) in 1994. Another recognized economic integrative factor is the booming *maquiladora* industry which has blossomed even more since NAFTA went into effect. As a result of industrialization and migration, the population of El Paso del Norte has also soared to, currently, well over 2 million people. With both a booming economy and population growth, it has also become quite evident that the region shares common environmental interests, especially increased environmental deterioration, which was prominently featured throughout the NAFTA debate. Air pollution, damage to natural resources, and disposal of wastes were all hotly debated during the trade discussions (Bath 1991; EPA/SEDUE 1991, 1992). These discussions eventually led to the signing of an environmental side agreement to alleviate the fears on border residents that their environment was going to suffer unduly from the increased trade.

Also discussed during the trade talks was the issue of water availability and water quality. In fact, much of the discussion revolved around the quality of water in major urban areas such as Tijuana/San Diego, El Paso/Ciudad Juarez, *los ambos* Nogales, Laredo/Nuevo Laredo, and the Lower Rio Grande (Public Citizen 1996; Simon 1997). What was the primary issue was the lack of sewage facilities for the Mexican cities along the border. The problem remains a substantial one that has yet to be adequately addressed by either the federal government or the agencies created under the environmental side agreement, notably the Border Environmental Cooperation Commission (BECC) and the North American Development Bank (NADBank). Water quality, or the lack of it, is chiefly responsible for much of the threat to human health all along the U.S.-Mexico border (*Borderlines* 1998).

Perhaps more attention should have been paid during the NAFTA discussions to the problem of water supply. All along the border the population growth rate has placed increasing demands on water availability. It is quite evident in San Diego/Tijuana, Mexicali/Calexico, *los ambos* Nogales, and other twin cities located in the semiarid region of the borderlands. Nowhere is the problem more acute than in the El Paso del Norte region. It is now well understood that the

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major source of water for both El Paso and Ciudad Juarez, the Hueco Bolson, will be exhausted early in the twentieth-first century (US Bureau of Reclamation 1995; Niemi and McGuckin 1997).

As a result of the exhaustion of the aquifer, major efforts are currently being made to acquire surface water from either the Rio Grande or other sources. There are now four law suits under adjudication which are trying to resolve the question of water rights. These rights include the surface water from Elephant Butte Dam located in New Mexico about 125 miles above El Paso del Norte to Fort Quitman almost 80 miles to the southeast. This water remains the only unadjudicated stretch of the Rio Grande and the battle over water rights can be expected to result in increased hostility among the stakeholders.

In this paper we would like, first, to review the report filed by the Western Water Policy Review Advisory Commission (WWPRAC) since it, even if in hazy terms and without offending anyone, touches on all the major issues associated with water rights and uses in the Upper Rio Grande Basin, defined as that part of the river from the San Luis Valley in Colorado to Fort Quitman, Texas (Niemi and McGuckin 1997). We would like, second, to review historical developments over water use and water rights and briefly discuss the major characteristics of El Paso del Norte that do and will have an impact on water supply and consumption. Then we will review the positions of the major stakeholders in the Basin paying particular attention to their legal arguments. Finally, we will attempt to describe the possible alternative outcomes of the continuing struggle over water.

1. REPORT TO WESTERN WATER POLICY REVIEW ADVISORY COMMISSION

“Under the Western Water Policy Review Act of 1992, Congress directed the President to undertake a comprehensive review of Federal activities in the nineteen western states which directly or indirectly affect the allocation and use of water resources, whether surface or subsurface, and to submit a report of findings to the congressional committees having jurisdiction over Federal water programs” (WWPRAC 1997, letter by Denise Fort, chair, 30 September 1997). As part of what appears to be a global move away from the water subsidies provided by national governments, the aim of the review is to redirect the agencies involved in western water development, chiefly the U.S. Bureau of Reclamation and the U.S. Army Corps of Engineers, away from their past heavy involvement in providing the basic infrastructure to western irrigators. It requires a major new direction for these agencies and, as is usually the case with bureaucracies, it is not expected to be easy. Neither is it expected to be easy to deny the benefits of heavily subsidized water to western farmers. They can be expected to fight tooth and nail to protect their rights to the water. The existence of a long-standing “iron triangle” of western farmers, Congressional committees, and federal bureaucracies will make the dispute a very difficult one (McCool 1994). The battle appears to be joined throughout the West between farmers and ranchers who have the water rights and cities which need more and more water for their increasing populations (Reisner 1993).

The move of national governments away from providing major support for water infrastructure projects coincides with the revival of neoliberal economics, privatization of previously government-based operations, devolution to state and local governments of

previously federally concentrated programs, and, at least in the case of water, open markets for resource competition. It can be expected, and has already happened, that there will be serious opposition to such change. In fact, the opposition of Congresspersons is made apparent in the WWPRAC draft, especially any challenge to agricultural interests over water rights and usage. Senator H. Murkowski, Chairman of the Committee on Energy and Natural Resources, and Senator Jon Kyl, Chairman of the Subcommittee on Water and Power, object to “the visceral antipathy to irrigated agriculture” in the draft review and state their adamant opposition to dissemination and distribution of the report (WWPRAC 1997, Appendix). Obviously, such Congressional opposition does not bode well for the recommendations made in the report. It should be added that little or nothing has changed either among federal agencies or in Congress after several other such reports have been filed in the past by such national commissions. It is, indeed, difficult to move or change the iron triangle.

Niemi and McGuckin (1997, p. S-1), well aware of the hostilities generated by their report, begin by saying, “We make no recommendations whatsoever regarding the Rio Grande Compact, state and local laws, the responsibilities and rights of resource owners, the substantive merits of disputant’s claims to resources, or changes in specific uses.”¹

1.1 BOTTOM-LINE PROBLEMS

1.1.1 Base-line problem #1: The resources are finite, but the demands are not.

Obviously the Basin’s ecosystem has limits and these limits have been strained in recent years by several factors. These include the risk of drought. Although the Basin has not experienced a severe drought in the last fifteen years, historical evidence demonstrates that about every twenty years a drought can be expected. There are no contingency plans to deal with drought.

A second factor is unsustainable use of groundwater. Both Albuquerque and El Paso-Ciudad Juarez, the two largest population centers in the Basin, have “bumped against the limits of the supply of readily accessible, potable groundwater” (Niemi and McGuckin 1997, p. 73). El Paso particularly must use more surface water since available groundwater will soon be exhausted.

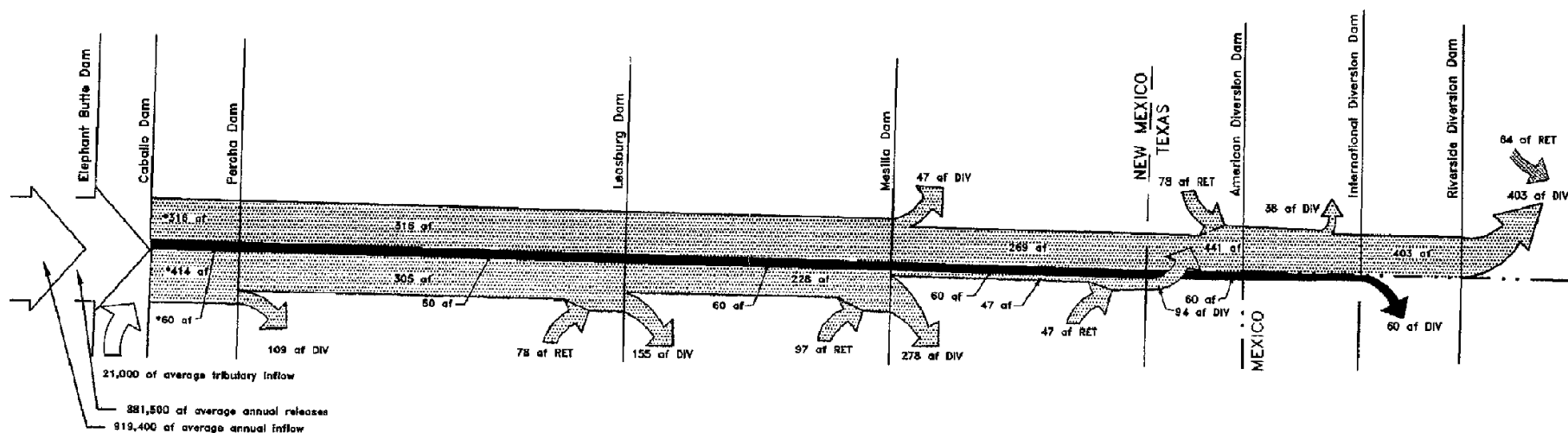
The Basin also experiences ecosystem degradation. “The river below Elephant Butte Dam has been extensively canalized and exhibits little of the habitat characteristics that existed prior to the development of agriculture in the area” (Niemi and McGuckin 1997, p. 74).

Rapid population increase continues with no end in sight and can be expected to place even more burdens on the limited water supply.

Water quality is declining. Water south of Elephant Butte is contaminated by nonpoint source pollution, chiefly from agricultural runoff and untreated sewage. Because of the high saline content of river water in El Paso, the El Paso County Water Improvement District (EPCWID) must divert more water than is permitted by the Bureau of Reclamation to dilute the dissolved salts in its return flows (TNRCC 1996).

¹ They are quite obviously trying to appear neutral and treading very lightly on any perceived condemnations of any of the stakeholders. They then go on to discuss the bottom line and contributory problems of the Upper Rio Grande Basin (Niemi and McGuckin 1997, pp. 72–107).

Flow Distribution of Rio Grande Project Water



*790 of authorized total
Rio Grande Compact release

- El Paso County Water Improvement District No. 1
- Elephant Butte Irrigation District
- Republic of Mexico
- Hudspeth County Conservation and Reclamation District

NOTES
DIV = DIVERSION FLOW
RET = RETURN FLOW
FLOWS IN 1,000 ACRE-FEET (af)

Figure 2

Source: United States, Bureau of Reclamation (BuRec), 1995.

1.1.2 Base-line problem #2: The basin's water and related resources are persistently allocated in a manner that is less than ideal.

Basically what Niemi and McGuckin argue here is that if there was really a truly competitive market for the water, then the allocation pattern would be distinctly different. The current system appears to be grossly unfair and the prevailing prices do not tell the economic truth. Prevailing prices do not reflect efficient water use or current values and they do not reflect the overall scarcity of the resource. Part of the reason is that the initial appropriators of the water paid nothing for the water and the current holder of water rights pays nothing when the value of that right increases (Niemi and McGuckin 1997, p. 77).

Further, water and related resources are not just private goods; they are also public goods. "America's economic and legal systems have not yet devised a good mechanism that allows the public to express their demands for public goods in a market setting" (Niemi and McGuckin 1997, p. 79). Reliance on the old mining approach rooted in the prior appropriation doctrine to water rights does not permit realistic marketing of water. For example, the marginal value for increasing the supply of water for irrigation is zero, but the marginal value for increasing the supply of water for angling is \$100 per acre-foot.

Resource management institutions show a strong bias favoring current commodity uses. Water management is rooted in the past when economic demands for water were considerably different than they are today. Certain noncommodity values, including spiritual ones, quality of life issues, environmental and recreational values, and ecological ones such as preservation of species, receive little consideration under current management programs. The two major minority populations in the Basin, Indians and Hispanics, unless they have acquired irrigation rights, are largely left out altogether from enjoying a common resource and they pay a disproportionate price for water in terms of overall income. This quite clearly raises the question of environmental equity.

Certain practices such as the overpumping of groundwater cannot be justified on a sustainable basis. If society does not invest in its resources for the future, there will not be any resources for subsequent generations. Some flexibility has developed. For instance, the International Boundary and Water Commission (IBWC) has finally acknowledged that it must be in compliance with federal environmental laws. In the past, the IBWC had argued that since it was authorized under the water treaties with Mexico of 1906 and 1944, and since as a section of the State Department it was concerned with national security issues, there was no need to comply with federal laws such as the National Environmental Policy Act (NEPA) or the Clean Water Act. Both the U.S. Bureau of Reclamation (BuRec) and the U.S. Army Corps of Engineers (Corps) have now included environmental issues in their operations.

Another problem is that ownership of the resources remains poorly defined. There is considerable doubt in parts of the Basin, notably in the section from Elephant Butte to Fort Quitman, about who owns what. Water has not been adjudicated in this section though there are several adjudication processes currently under way. But final resolution of these processes is years away. "In such a setting it becomes almost impossible for market forces to play a significant role in allowing and promoting open, fair, and voluntary transfers of water rights from low value uses toward high-value ones" (Niemi and McGuckin 1997, p. 87). In such an unresolved legal setting the rights and responsibilities of resource owners remains ambiguous.

1.2 CONTRIBUTORY PROBLEMS

1.2.1 Contributory problem #1: The basin's resources have not been managed as elements of an ecosystem.

All water users in the Basin use the water in terms of their own needs and not from the perspective of others' needs or the overall protection of the ecosystem. There has been no coherent or consistent effort to initiate and institutionalize an ecosystemic approach to resources. As a result, "arresting and reversing the widespread changes in the Basin's ecosystem will require a fundamental systematic change in the public and private activities affecting the plants, animals, soils, waters, climate, people, and processes that are interacting within the Basin" (Niemi and McGuckin 1997, p. 92).

1.2.2 Contributory problem #2: Past and current practices have rendered water and related resources unsuitable for some uses without corrective practices.

Again, the issue here is water quality and the pollution of the Basin's resources.

1.2.3 Contributory problem #3: Resource demands that come from industrial activities and are measured in monetary terms are difficult to reconcile with those that are not.

Basically resource management is subtly biased toward monetarized use of water resources rather than values that are not monetarized such as quality of life and environmental ones. Certain cultural values among Indians and Hispanics play no role in resource management.

1.2.4 Contributory problem #4: Many groups feel they are unable to participate effectively in resource-management decision making.

While this is certainly true of Indians, who have always been outside the province of decision making, a great deal of frustration has built up among many groups in the Basin. Some of this frustration is directed at local, state, and federal agencies. In particular, many "believe that much of the frustration stems from the Byzantine maze of overlapping entities with overlapping responsibilities for managing the Basin's resources and they seek the establishment of one or more forums for broad public review and involvement in resource management policy and practice" (Niemi and McGuckin 1997, p. 99). Further, those on one side of Elephant Butte Dam resent those on the other side.

Indeed, antagonism is building among the various stakeholders along the Rio Grande and time is running out for a successful management policy for water resources. It certainly does not help that all the stakeholders are suing each other. How will El Paso del Norte be affected? Will there be enough water for the future? Who will own the water and how much will it ultimately cost? An equally intriguing question is: How did we get to this situation in the first place? How did this mottled water resource management question arise anyway? What are the most important historical events in the evolution of the pattern of water use and management for El Paso del Norte? We will now pass to a discussion of this historical evolution of the pattern of water use and management for the El Paso del Norte region.

2. HISTORICAL EVOLUTION OF WATER USE AND MANAGEMENT PRACTICES FOR EL PASO DEL NORTE

While many water disputes are very complex, the Paso del Norte case, much like that of the other shared international river, the Colorado, is made even more complex because it involves not only local governments, but also three states, Colorado, New Mexico, and Texas, and two countries. This means that the legal framework is marked by international agreements, an interstate compact, and different state laws. As a result, the litigation history of the Rio Grande waters is voluminous and involves hundreds of law suits dating back to Spanish and Mexican legal systems as well as the different ones within the United States. In this account we cannot do justice to this complex legal history, but we would like to highlight some of the more important legal and policy decisions.

The history of the Rio Grande is a colorful and interesting tale (Horgan 1954; Clark 1987). It would appear that aside from the Pueblo Indians in northern New Mexico, little agricultural development occurred in the Paso del Norte region. Certainly there was nothing approaching the “hydraulic” society of the Hohokan or the Anasazi in New Mexico and Arizona (Clark 1987, p. 3). In the case of the latter two tribes, relatively complex water law emerged several hundred years before white men arrived in the region. Nevertheless, in the Paso del Norte several tribes, including the Suma, Manso, Jerome, and Jumano, evolved fairly complex societies based on agricultural production of corn, beans, and squash using river water and also actively traded with other tribes outside the immediate region (Sonnichsen 1968; Timmons 1990). Sometime shortly before the arrival of the Spanish, these settlements disappeared. There is some speculation among anthropologists that these settlements may have been much larger and older than previously believed, but, at this point, that remains speculation.

When the Spanish arrived they brought with them water laws based on semiarid conditions found in Spain. Much of that water law had evolved under Moorish influence rather than Roman law and had a strong element of Islamic faith in it. As Clark (1987, p. 9) notes:

Islam not only subscribed to a belief in the purifying character of water, a belief shared by many religions in the rite of baptism, but also the moral obligation of each to help all others of the community in times of need. Water should be freely accessible to all, and Mohammed himself had proscribed the hoarding or sale of so priceless a commodity. The law of thirst, which granted to all living things completely free access to all waters to satisfy this need, derived directly from the Prophet.

Spanish water law conferred water rights on the community by a *fuero* from the king and did not give water rights to individuals. In terms of irrigation, beneficial use was the agreed condition for acquiring the water rights. In New Spain the lands belonged to the crown with water free for use by all inhabitants. In reality the distinction between land title and water rights was not really enforced. By the end of the sixteenth century, a fairly substantial amount of procedures for adjudicating water rights had evolved and rested on water judges’ drafting agreements acceptable to the various parties.

One very important development, resulting from the Pueblo Revolt of 1680, was that the Tigua Indian tribe fled Isleta outside Albuquerque and sought sanctuary in Ysleta, Texas, where they acquired some 3,000 acres of land and began cultivation. The *acequia madre* or mother ditch was used to divert river water for irrigation. Although they were not initial settlers in the

Pass of the North, the Tiguas have now joined the litigation by filing suit for what the tribe regards as its rightful share of river water.

For the next two centuries water use in New Mexico was governed by communal use and standards. The Indian tribes and the Spanish coexisted well since their views were compatible on communal governance over water rights and management. Irrigation was under the supervision of a *mayordomo*, but conflict was rare since agricultural production was largely for subsistence use and farm markets were so distant. Indian rights were protected by the *repartamientos de agua* under which water judges assured the tribes they would receive enough water for cultivation. With independence for Mexico in 1810, little changed in terms of water law.

In 1848, under the Treaty of Guadalupe Hidalgo, the former Mexican colonies were transferred to the United States and the Rio Grande became the boundary between Mexico and Texas (Griswold del Castillo 1990). Unfortunately, the treaty failed to take into consideration the meandering of the river itself and this later provided a major dispute between the two countries, that is, the El Chamizal dispute (Lamborn and Mumme 1988). In 1884, the two countries had signed a treaty covering gradual erosion, but a sudden switch of territory was not covered. Sometime during the 1850s a major *banco* had occurred when a substantial shift in the course of the river south took away several hundred acres in the growing downtown area of El Paso del Norte away from Mexico and they became U.S. soil. In 1895, Mexico asked for a judicial settlement over the land, and in 1910, the two sides agreed to an arbitration commission to resolve the conflict. Disgracefully, when the Arbitral Convention decided in favor of Mexico, the United States refused to uphold the convention. The issue was not resolved until 1964, and that was part of the Cold War ideology prevailing at the time and the desires of the United States to gain Mexican support for its continued attack on Fidel Castro in Cuba (Lamborn and Mumme 1988).

El Paso del Norte under both Spanish and Mexican administrations had been under the jurisdiction of either Chihuahua or Santa Fe. However, in 1850, in what is now regarded as a blatantly rigged vote, El Pasoans voted to join the state of Texas (Timmons 1990, pp. 117–21). Logically El Paso should have been included in the New Mexico territory, but the city had been occupied by many southerners and the issue was slavery. Texas supported slavery and New Mexico did not, so many more votes than voters were recorded and El Paso became part of Texas. It should be added that during the 1880s, the Mexican Paso del Norte was renamed Ciudad Juarez in honor of the former President of Mexico, Benito Juarez.

The territorial legislature assembled in New Mexico in 1851 stabilized the laws with respect to water and, not surprisingly, since almost all the legislators were natives with few Anglo representatives, they simply transferred Indian and Mexican procedures into the new territorial law. Two central features of the law were the primary dedication of water to agricultural purposes and the use of water through the community acequia (Clark 1987, p. 25). A subsequent act spelled out in considerable detail the method of administering the acequias. For the next thirty years water law remained largely rooted in Spanish concepts, though several changes were made by the legislature in water-related matters. Perhaps the basic point to make is that under Spanish law, water use and land titles were usually conferred upon usage and the question of titles was not regarded as critical. In contrast, Anglo-American land law was highly formalized and legalistic and rooted in the sanctity and preservation of private property. As the Anglos began to arrive in New Mexico, they embarked on land grabs which the natives did not understand and could hardly fight. The result, in the last twenty-five years of the century, was that most of the

land was stolen from the natives by various land rings. With this switch in landownership came a major change in water law and management, not to mention territorial politics.

2.1 PRIOR APPROPRIATION DOCTRINE

In the eastern part of the United States riparian water law, borrowed from England, governed water use. Riparian law works well when there is plenty of water, but in the western part of the country water scarcity was an omnipresent fact. Although several states, including Texas, experimented with riparian law, it was generally recognized that another approach was needed. Texas initially recognized Spanish and Mexican water law, but under the republic it adopted riparian law. There was a great deal of confusion until near the end of the century when the state finally adopted a modified prior appropriation doctrine, but the issue was not fully resolved until 1967 (Bath 1997, 1998).

The prior appropriation doctrine arose out of the California gold fields and resulted from the need for water to wash out the gold from the dirt and sand. The problem was that quite often the mine was not located close to water and the water had to be diverted from its source to the mineral deposits. Another problem was that many tried to divert the water for their own use, and some means had to be found to assure that those who initially diverted the water could not have it taken away from them by subsequent users. What happened was that basically the same procedure employed in filing a mining claim, that is, the first to claim the land for mining rights held the claim against all other claimants, was used for water. The same principle was applied to water: he who first diverted the water was entitled the property right to use the amount of water first diverted (Clark 1987, p. 38). The first principle of the prior appropriation doctrine was, simply, first-in-line, first-in-right. The senior appropriator was always first-in-line and retained the right against all subsequent users. Another criterion, derived from Spanish law, was that the water had to be put to "beneficial use." Beneficial use in the past had usually applied only to farm irrigation, but now it was expanded to mining claims. The concept of beneficial use did mean that it was not a right granted in perpetuity, but required constant use.

In California, one of the authors of the prior appropriation doctrine was Stephen J. Field, at the time a state legislator. However, Field went on to become a member of the state Supreme Court and then moved on to the U.S. Supreme Court. He became a strong advocate of the prior appropriation doctrine and defended it against judicial challenges from 1863 to 1897 (Clark 1987, pp. 38–39, 705). As a result, any effort to change the law during the latter part of the nineteenth century ran into its chief architect in the Supreme Court.

As noted earlier, New Mexico used primarily old Spanish and Mexican water law but as the pressures on land acquisition increased, and especially as mining activities increased in the territory, changes were made in the water law. A proposed state constitution written in 1889 had endorsed the prior appropriation doctrine, and two years later, in 1891, the territorial Supreme Court declared the doctrine the law of New Mexico (Clark 1987, p. 43). It still remains the law in New Mexico.

2.2 LAND AND WATER DEBATE IN THE UNITED STATES, 1870–1902

One of the most important federal acts for water development in the West was passage of the Homestead Act of 1862 (Reisner 1993, p. 41). Under the provisions of this act the homesteader could claim a quarter-section of land, 160 acres, and this became the chief means to encourage settlement of the largely barren West after the Civil War. Subsequent acts, chiefly the Desert Land Act, the Timber Culture Act, the Timber and Stone Act, and the Carey Irrigation Act, offered further incentives for settlement of the West. Although these acts were often contradictory and inconsistent for settlement of a semiarid land, they all protected the doctrine of prior appropriation and eventually reserved water use for the largest ranchers, the cattle syndicates, and the railroads.

During the 1870s, especially, primarily due to fortuitous weather conditions, huge numbers of settlers came West, including the Paso del Norte region and New Mexico. It was widely believed at the time that as farming and the amount of land under cultivation increased, the amount of precipitation would also increase or, as it was said, “rain follows the plow.” Over 6 million people settled in the West during the 1870s, though many of them would return East when the droughts of the 1880s made farming very difficult (Stegner 1954, pp. 216–17).

The drought plus the provisions of the Desert Land Act, requiring irrigation of the land before title could be obtained, encouraged the formation of irrigation companies based on the Mormon model in Utah. However, these companies were unable to generate sufficient funds for infrastructure projects, so a fierce nationwide debate began about the proper role of states and the federal government in financing the necessary irrigation works. Ostensibly the whole settlement plan was based on support for the small farmer, but from the start it was recognized that irrigation costs would require far more acreage than permitted under the various land settlement acts. The ultimate result was, as said by Wallace Stegner, “The yeoman and his version of the American Way were having a hard time as settlement approached the arid zone, and under the existing system of improvised, loosely phrased, loophole-riddled, corruptedly administered, and universally abused law he would continue to” (Stegner 1954, p. 223).

In order to support the western settlement the U.S. Congress funded several mapping and exploratory expeditions, one of which was headed by a one-arm Civil War veteran, John Wesley Powell, who was to have a momentous impact on subsequent water policy in the West. Unfortunately, it must be added, had Congress followed Powell’s recommendations for water use and management, then this paper would not have been written and the water war in Paso del Norte may well never have occurred. Powell’s explorations of the Colorado River and other regions sparked tremendous public interest in western development. Powell recognized that the wide variety of western lands required different amounts of acreage for different crops and different uses such as grazing, and that the 160-acre limitation of the Homestead Act would not work at all except under unusual circumstances. He noted that much of the land in the West was unsuitable for agriculture and that land which was suited would require extensive irrigation. Powell proposed two different uses of the land, one of irrigated farmland with a limit of 80 acres, and the other of rangeland or pasture with a limit of 4 sections or 2,560 acres. If his proposal had been followed, it would have greatly rationalized western agriculture; unfortunately, it was not.

Powell also recognized that riparian water law would not work in the West and recommended that water rights be inseparable from the land, a concept encouraged by the prior appropriation doctrine. But Powell also proposed that land should not be allocated and divided in

square sections of rectangular parcels and argued that land titles should follow topography to ensure that all landowners had some access to water. Further, he argued that only a community approach to water use and management would actually work. Here he cited the examples of Mormon community irrigation and the practices found in the northern New Mexico ejidos under Spanish law. Thus it became the function of government to develop and distribute water for the common good through a cooperative effort.

Powell also believed that the formation of states in the West should follow river basins. He argued that state boundaries based on artificial lines would sooner or later lead to disputes over water rights. He added, "Who owns the water? Shall the men of Colorado take all that falls in their State? And if so, shall the settlements in the valley of the Rio Grande be destroyed by the new settlements on the tributaries?" (cited in Clark 1987, p. 214). He added, "Will it not be an act of wisdom to settle these disputes in their incipiency before the passions of the people are inflamed and before rights and interests are established?" Since the United States owned the land in the West, but the states determined who owned the water, Powell foresaw that unless the federal government stepped in and resolved the question of water rights, there would be continual conflict over those water rights. Nonetheless, his urgent plea to Congress "to divide the waters in some wise and just manner" was ignored.

From Powell's presentation to the Congress in 1877 to the passage of the Reclamation Act of 1902, the question of water rights and water projects was hotly debated throughout the West and in Washington. Numerous irrigation companies were formed in the West to develop water projects. Many of these were harebrained schemes such as the El Paso Canal and Reservoir Company, formed in 1889 to build a dam on the Rio Grande and irrigate the waterless Jornada del Muerto above Las Cruces. It was thought that some 2 million acres would then become productive farmland. Other projects within New Mexico predicted a total agricultural acreage for the state of over 13 million (versus an actual 1 million in 1964). What did happen as a result of many of these schemes was that water rights became solidified under large holding companies.

By 1893, the National Irrigation Congress was asking the federal government to finance large-scale irrigation projects since most of the irrigation companies had been unsuccessful in raising the necessary funds (Clark 1987, p. 77). A new leader emerged in the House of Representatives, Francis G. Newlands, who had become discouraged over his own attempt to privately finance irrigation projects on the Truckee River in Nevada and began to campaign for the provision of water storage facilities by the federal government. Newlands wanted to use the receipts from land sales to finance irrigation works with the irrigators paying for the projects over a ten-year period without any interest. It should be added that nothing in the Newlands Act in any way, shape, or form was intended to interfere with the rights of states to assign water rights; states would retain the right to control appropriation, use, and distribution of all waters in their respective territories.

The Reclamation Act of 1902 enjoyed the support of the Congress (with the exception of some disgruntled eastern representatives), the president, both political parties, the vast majority of newspapers in the country, and the public. The Reclamation Fund would be used to finance

single-purpose irrigation projects (the projects were to be used *only* for irrigation) in sixteen western states.²

2.3 RELATIONS WITH MEXICO

Aside from the problems created by the Chamizal dispute and a major outbreak of violence in San Elizario in 1877, called the Salt War, there had been little trouble between Mexico and the United States over Rio Grande surface water allocation. River water was of such poor quality that it was used chiefly for agriculture, and El Paso residents, at least, obtained their drinking water from tank trucks bringing water from Deming, New Mexico. But by the 1880s, extensive farming in the San Luis Valley in Colorado and along the Middle Rio Grande Valley in the Albuquerque region had created serious water shortages in El Paso del Norte. El Paso was last in line and serious water shortages began to develop in the region.

Several efforts were made to build diversion or dam projects on both sides of the border, and concern for these projects eventually led to the formation of the International Boundary Commission (IBC) in El Paso in 1894. The new IBC, composed of one commissioner and one consulting engineer from each country, “would exercise exclusive jurisdiction over problems arising from changes in the bed of the river and from the erection of structures which would affect the boundary” (Clark 1987, p. 90). The soon-named U.S. Commissioner was Anson Mills, from El Paso, who immediately proposed building a large dam three miles above the city to create a fifteen-mile-long lake. Both El Paso and Ciudad Juarez enthusiastically supported the project (though, of course, the farmers in New Mexico did not), and the U.S. Congress then adopted a joint resolution asking the president to enter into negotiations to build such a dam. The president chose not to act.

In 1895, another drought brought matters to a head again. Mexico was incensed that a private irrigation company had been authorized to build a dam at Elephant Butte, some 125 miles north of El Paso. Foreign Minister Matias Romero protested to Secretary of State Olney that such a dam would violate traditional rights of Mexican farmers to have access to river water. Matias Romero also invoked a provision of the Treaty of Guadalupe Hidalgo, which prevented either country from building an obstruction which could impede navigation on the river. Secretary Olney asked for an opinion from Attorney General Judson Harmon. Harmon denied all of Mexico’s claims, saying it had no right whatsoever to any river water and there were no restrictions on river water use by U.S. citizens. The dam would not restrict navigation since the river could not be used by boats until the Rio Conchos flowed into it at Ojinaga/Presidio. The United States had complete sovereignty to use the Rio Grande in any way it wanted. Thus, under the so-called Harmon Doctrine, the downstream user had no rights at all. It was readily apparent to many that this meant downstream users such as El Paso, Texas, also had no rights.

Secretary of State Olney, in spite of the ruling, continued to work with Mexico. An investigation conducted by the new United States Geological Survey (largely a product of John Wesley Powell) led to the conclusion that the two countries should build a joint dam above El Paso and share the water equally. Hostility between El Paso/Ciudad Juarez and New Mexico

² Texas was not added until 1905, when the Rio Grande Reclamation Act was passed. The problem was that the federal government did not own any land in Texas since it had been a republic prior to entering the union, and, therefore, the federal government did not control the land.

farmers in the Mesilla and Hatch valleys began to mount. The private irrigation company, the Rio Grande Canal and Irrigation Company, which was largely financed by English funds, had by now solidified its control over the prospective dam at Elephant Butte. As a result, 170 Juarez residents filed a formal protest with the U.S. Department of State over the proposed dam.

Secretary Olney then asked for another opinion from Secretary of the Interior David R. Francis. His reply stated very strongly:

Congress has never granted, nor authorized this Department to grant, to this company, or to any company, a monopoly of the entire flow of the waters of the Rio Grande, and power to reduce to servitude landowners of New Mexico, Texas, and Mexico, living on the river below the reservoir proposed. The Department has no authority to approve a right of way through public lands to be used for such purposes (Clark 1987, p. 93).

On 5 December 1896, Francis issued an order suspending any further consideration of all future applications for right of way affecting the waters of the Rio Grande.

In early 1897, Olney asked Commissioner Mills as well as the Corps of Engineers whether the Rio Grande was really navigable. The Chief of Engineers, John M. Wilson, replied that while not actually navigable, the river could be used to float logs or flatboats at times and, in addition, any dam built upstream would affect the channel around El Paso and make it less navigable. Therefore, any dam built would require the approval of the War Department (Clark 1987, p. 93). If the War Department did not agree, then it could enjoin any private company from building such a dam. The memo may reflect what was becoming more and more apparent as a turf battle between the Corps and the newer Reclamation Service emerging in the Department of the Interior. While these old memos may appear irrelevant as we approach the twentieth-first century, they could play an important role in the current adjudication process in determining who actually controlled the river water at what time.

Legal counsel for the irrigation company was a formidable group of politicians, including Albert E. Fall, who was to become a senator and Secretary of the Interior, as well as S.G. Newcomb, who was to become head of the Bureau of Reclamation (Clark 1987, pp. 93–94). They sued in district court in New Mexico, which found no difficulty with determining that the Rio Grande was not a navigable river. The court found that the company had fulfilled all the legal requirements and there was no grounds for granting an injunction. On appeal to the U.S. Supreme Court, a unanimous Court (aided by Justice Field) found that “Congress had recognized the right of individuals in the arid West to appropriate water from nonnavigable streams in accordance with state law, and that the Rio Grande was not navigable in New Mexico” (*ibid.*, p. 94). However, the Court went on to acknowledge that states could not destroy the right of the United States to ensure a stream was navigable, so it reversed the decision of the lower court and remanded it with instructions to determine if the Rio Grande really was navigable.

Several other lawsuits were filed after this decision which muddled the already unclear waters even further. In 1900, two bills were introduced into the U.S. Congress by Texans asking that the Rio Grande be divided equitably, and this infuriated the New Mexicans. The passage of the Reclamation Act in 1902 changed the tenor of the debate somewhat, and in 1904, the National Irrigation Congress asked the head of the Reclamation Service to develop plans for a dam at Elephant Butte. The only problem was that Texas was not included in the 1902 Reclamation Act so a new law passed in 1906 included Texas. Subsequently, the Reclamation Service filed an application with the territorial engineer of New Mexico appropriating 730,000

acre-feet annually from the river below Elephant Butte which was modified in 1908 to include all the unappropriated waters of the Rio Grande (Clark 1987, p. 97). It is important to note that the initial federal request came in 1906, prior to the legal 1907 date used under the doctrine of prior appropriation in New Mexico (US Bureau of Reclamation 1995, p. ATT-1).

On 21 May 1906, Mexico and the United States signed a convention guaranteeing Mexico 60,000 acre-feet annually from the Rio Grande when the proposed dam was completed. Mexico, in turn, recognized that all claims filed by Mexican citizens against the United States were settled. As a final step Congress appropriated \$1 million to pay for the U.S. costs for the dam in order to fulfill federal obligations to Mexico under the 1906 treaty. With the legal situation resolved, dam construction began in 1908 and was completed in May 1916.

2.4 RIO GRANDE COMPACT

Aside from the 1906 treaty, the other major legal document covering the Rio Grande is the Rio Grande Compact, signed by Colorado, New Mexico, and Texas, which was finalized in 1939.

A key legal decision for the interstate compact as a means to resolve conflicts over interstate waters was *Kansas v. Colorado* (1901). (It should be noted that Judge Field had left the Supreme Court.) The Court held that the prior appropriation doctrine should not go so far as to deny downstream users across state lines any water rights at all. Six years later the same issue came before the Court, and it held the federal government did have the power to resolve interstate water squabbles. Basically the Court was denying to states the total rights to appropriate waters, though the issue was far from resolved and is still a subject for continued litigation. What has been endorsed to resolve interstate issues is the interstate compact agreed to by the states involved and, subsequently, approved by Congress.

Efforts to construct dams in Colorado led to several law suits after Elephant Butte Dam was built, and eventually representatives from New Mexico and Colorado met in 1923 to resolve their differences. Both states agreed to include Texas in the negotiations as well. Interestingly, Herbert Hoover attended the meetings as a representative of the U.S. government. (Clark 1987, p. 217). The major force behind the effort to develop an interstate compact was the Albuquerque region and the fledgling Middle Rio Grande Conservancy District. It quickly became evident that there was a division within New Mexico over water use between the Albuquerque region and those below Elephant Butte Dam, chiefly the Elephant Butte Irrigation District (EBID) farmers. In fact, the EBID recognized that it had more in common with Texas farmers than those north of them in New Mexico. Thus began an unholy alliance between Texas and New Mexico farmers which was to persist until the 1980s.

In 1929, a preliminary agreement was reached which basically declared a moratorium on river projects until the necessary data for implementation of the compact were accumulated. A Rio Grande Joint Investigation, headed by federal officials, accumulated the necessary data and its final report was published in 1937. The final compact was signed in 1938 and approved by Congress the following year. The agreement accepted an average of 790,000 acre-feet annually to be delivered to Elephant Butte Dam. Mexico is guaranteed its 60,000 acre-feet per year and the remainder of the water is divided between EBID, with 57 percent, and El Paso County Water Improvement District #1 (EPCWID), with 43 percent. It should be remembered that the Reclamation Act provided water only for irrigation so there were no provisions for municipal use

in 1906. However, the opportunity was there for the city of El Paso to participate; it declined because it was thought to have more than sufficient groundwater for its needs.

The Rio Grande Compact was regarded at the time as an instrument forever to resolve differences between the states involved. It has proved to be fairly successful in resolving most issues, but the Compact Commission itself has no real enforcement powers, and, as a result, there is a considerable body of litigation and disputes arising out of the compact. The states have jealously guarded their rights, and when there is a major dispute it requires adjudication by the U.S. Supreme Court. Much of the success of the compact depends on the good faith of the three state commissioners and, in times of current legal squabbles, that good faith may be tested.

The Rio Grande Compact is rooted in the agricultural interests predominant at the turn of the century and this sometimes leads to anomalies. For instance, the compact calls for a specific percentage of water to be delivered every year to Elephant Butte Dam, but it also stipulates that if water “spills” any time during the year, then New Mexico and Colorado will have no further obligation to deliver any water for that year. In 1995, water managers had retained 100,000 acre-feet in Cochiti Dam and, when they realized the snowpack was small (1995 was a drought year), they decided to release that water in a “surge” which would cause a spill at Elephant Butte Dam in January and thus relieve them of any need for water deliveries for the rest of the year.³ In order to prevent a spill, farmers below Elephant Butte increased their deliveries, ostensibly to help reduce salinity in the canals and river bottom. The result was that El Paso and Ciudad Juarez had large amounts of water flowing for no purpose since the water could not be used in January and February. The conflict was never really resolved because no one could agree on the facts, and whether there really was a spill was never determined. It should be added that if there is a future drought, and most assuredly there will be, the same problem remains.

3. EVOLUTION OF WATER POLICY FOR EL PASO DEL NORTE

As previously noted, the Spanish built a system of acequias or canals to utilize river water for irrigation. However, the quality of Rio Grande/Bravo water was always so poor that residents usually sought drinking water from outside the city, chiefly from Deming, New Mexico. One of the first city ordinances in El Paso, Texas, in addition to prohibiting bathing or the throwing of trash into the canals, required residents to work on the canals one day yearly (Nicoll 1951, p. 5).

The first private water company, called the El Paso Water Company, was granted a franchise in 1881 to supply the city with drinking water. The company failed to develop the necessary waterworks so the franchise was switched to a company owned by Sylvester Watts from St. Louis, Missouri (Rittman 1996, p. 1). Watts built a reservoir above the city and installed pipes to carry water. Unfortunately, the pipes were faulty and, as a result, they leaked badly and turned the streets into mudholes. The water was hardly potable and the editor of a local newspaper, S.H. Newman of the *Lone Star*, began an attack upon Watts and his water system. Newman called it “the very worst system of water works ever erected in the United States” (Nicoll 1951, p. 18). Not only that, but the water was expensive since Watts charged seven times as much for the water as permitted under the city grant (Rittman 1996, p. 2).

³ It should be added that environmental groups support such surges, which scour the river of salt build-up and promote vegetation, particularly cottonwood trees.

By 1892, Watts had sunk wells to supplement river water and he also installed water meters, the first water meters installed for any city west of the Mississippi.⁴ Watts charged residents \$20 per meter, and this high price further enraged both citizens and Editor Newman. The success with new wells sunk on the east side of the Franklin mountains led to the conclusion that “there was an inexhaustible supply of water under the mesa” (Nicoll 1951, p. 53).

By this time water supply had entered the political arena and, in the mayoralty election of 1903, Charles R. Morehead, a prominent local banker and one of the leaders of the ring dominating the Democratic party, ran for the office promising a first-class water supply system, and he won. After the election a new franchise was awarded to the International Water Company to compete with the Watts interests, but the new company was not any more successful in delivering good water to the growing city.

In 1910, the city of El Paso purchased the International Water Company and embarked on a period of municipal water supply (Rittman 1996, pp. 4–5). By 1916, it was concluded that “the city of El Paso thought the water supply problem to be permanently and adequately solved for all time” because of the huge supply of groundwater available (Nicoll 1951, p. 85). One result was that the city could see no reason, then, to participate in the Rio Grande Reclamation project, so the city did not contract under the project for municipal water supply. (The city of Las Cruces, however, did.) Another feature of municipal water policy was that it was controlled by the economic elite of the city, chiefly the State National Bank under Charles Morehead and, later, C. N. Basset.

As a result of the Rio Grande Reclamation project, two very important water stakeholders were formed early in the century. Both the El Paso County Water Improvement District #1 (EPCWID) and the Elephant Butte Irrigation District (EBID) began as water users’ associations and later changed their names. Both were the parties responsible to reimburse the federal government for the construction costs of the Rio Grande project. Both were also active in recruiting new farmers to the region, though after the completion of the dam in 1916, there was less interest in attracting such farmers. It should be noted that prior to 1920, the major crops in the region were corn, wheat, alfalfa, vegetables, cantaloupes, and fruit trees. However, after the initial planting of cotton in 1920, cotton rapidly became, by far, the dominant crop produced in both the Mesilla and Lower Rio Grande valleys for the next sixty years. It should also be noted that from the start, there was an uneasy relationship between the two major cities in the irrigation project, Las Cruces and El Paso, and the two irrigation districts, EBID and EPCWID.

When Elephant Butte Dam was completed the costs were far more than initially predicted (which was true of every reclamation project), so in 1918, the liability of New Mexico farmers alone was \$6.5 million—versus an initial estimate of \$7.2 million for the entire project—and in order to pay it the costs were set at \$90 per acre. In 1922, the term for repayment was extended to twenty years at a cost of \$3.60 per acre. Two years later the repayment was extended again to forty years. A major complication of the financing of the entire works was the commitment to Mexico which was paid by the federal government. Two other factors also handicapped overall developments. The first problem was waterlogging of the river caused by the dam’s stabilizing the river flow. One result was that farmers had more water than they knew what to do with and, as a result, overirrigation led to serious salinity of the soil. Another problem was siltation at the

⁴ It should be noted that many major cities in the western states still do not have water meters.

dam itself. Both of these difficulties required drainage works which added substantially to construction costs.

In 1921, the first of many reports requested by El Paso city officials about water supply, the Lippincott Report, was filed. It concluded that there was more than sufficient groundwater to supply the city for the long term. The report did note that water use in the city could be expected to increase at least four times by the year 1950. Over the next twenty years there was growing concern over the salinity of well water, and in 1943, the city signed an agreement with EPCWID for conjunctive water use with the district supplying river water to mix with the more saline groundwater. Delivery of water was based on municipal ownership of some 2,000 acres, but the amount was not to exceed 3.5 acre-feet of water annually per acre. In order to use the water the first surface water treatment plant was built. In 1944, the city entered into a contract with EBID to provide 2,000 acres of project water, but this contract has never been implemented (Rittman 1996, p. 6).

In 1949, EPCWID and the city entered into another contract allowing the city to appropriate any river water in excess of project requirements. Then, in 1950, the state of Texas granted El Paso the right to appropriate the public waters of the state of Texas. Under the permit issued by the Board of Water Engineers, the city was entitled to 27,000 acre-feet of water unappropriated or unused from flood, storm, or return waters, sometimes called “wild waters.” However, the district filed suit over this grant, and in 1957, it was held to be invalid by federal Circuit Court (*El Paso County Water Improvement District No. 1 v. City of El Paso*).

By 1950, river water treated at the municipal plant accounted for 44.7 percent of all municipal water. However, the situation was to change dramatically over the next ten years and by 1962, river water accounted for only 16.8 percent of all municipal water (Wallace 1969, p. 6). By the late 1970s, groundwater accounted for 90 percent of municipal water (Rittman 1996, p. 8).

What happened is that because of politics, the city decided to depend entirely on groundwater. In the municipal elections of both 1947 and 1949, candidates who endorsed water conservation were soundly trounced in their bids for reelection (Reschenthaler 1968). Officials were stunned by a rapid growth in water demand during and after World War II. This demand, in turn, was sparked by both a rapid increase in population and an increase in water demand. The military demands of World War II resulted in a huge expansion of Fort Bliss as well as White Sands Missile Range. Together with the bracero program, which provided Mexican workers to U.S. agricultural interests, the border population expanded quickly. At the same time, water consumption increased from 72 gallons per capita daily in 1945 to 120 gallons per capita by 1950—and it kept going up. Two major reasons for the increase in consumption were the rapid suburban development with lawns and gardens and the invention and widespread use of evaporative air coolers or swamp coolers for most homes. By the 1980s, watering of lawns and air conditioners accounted for 55 percent of all water use in the city during the peak summer months. Douglas Rittman (1996, p. 25) states that actually water for lawns constitutes 70 percent of all water use in El Paso on the maximum production day.

In 1951, a bond issue for the construction of a new water treatment plant was defeated and Fred Hervey was elected mayor. Hervey was totally convinced that the city had to rely on groundwater, which he viewed as more than sufficient for overall economic development. Accordingly, river water use was downplayed and received little further attention until the 1990s.

In 1952, Hervey created the Public Service Board (PSB) of the El Paso Water Utility (EPWU) to run the water and sewage systems of the city “with the same freedom and in the same manner as are ordinarily enjoyed by the Board of Directors of a private corporation operating properties of a similiar nature” (Bryson 1959, p. 27). The PSB/EPWU was to be a semiprivate corporation with the chief goal of making a profit. The PSB was appointed by the City Council with the Mayor of El Paso guaranteed a seat, but the aim was to create an independent board to oversee the water delivery and drainage system.

The PSB/EPWU was actually the result of Hervey’s resentment against the former city-owned water company and its control by the old elite. As Hervey later explained, “The old guard was the State National Bank and they were belittling me as a kid who didn’t know anything about city finances” (Brock, 18 April 1988). From the start the PSB was dominated by real estate interests in the city (Brock 1988, entire series). Of 21 members up to 1988, 14 were directly tied to real estate and development interests. The corporation’s chief aim became the purchase of land in order to obtain water rights; by 1970, it had become the largest single property owner in El Paso County with 17,453 acres. It had also become very wealthy; by 1987, its total indebtedness had risen to \$51,790,000, but its income was \$39,665,193 and its total assets were a whopping \$326,602,171.

Under the PSB/EPWU, water rates were kept very low. In point of fact, El Paso had the lowest water rates of any city in the entire Southwest. For instance, in 1985, water rates for the delivery of 3,000 gallons of water for Austin, Texas, were \$7.57; for Midland, Texas, \$10.50; for San Antonio, \$8.14; but for El Paso, only \$3.94 (Bureau of Economic Research, UTEP 1986). One reason rates could remain so low is the EPWU could generate revenues from the sale of land to developers (Rittman 1996, p. 9). In general it was felt by the economic elite that low water rates would help to foster economic growth and aid real estate developers (Brock 1988).

By the late 1970s there was growing concern over future water availability. Several measures were taken to increase awareness of the need for conservation. First, summer water discounts were canceled. Amazingly, in a semiarid zone, EPWU actually lowered its rate during the summer to increase residential water use. Second, the PSB declared a moratorium over the extension of any water lines beyond city limits. Third, the PSB began to search for alternative sources of water, including the Mesilla Bolson in New Mexico. These last two decisions helped create two major water problems encountered during the 1980s, the water war with New Mexico and the lack of water and sewage facilities for the colonias in El Paso County.

3.1 COLONIAS PROBLEM

In 1978, the PSB had declared a moratorium on the extension of water and sewage lines, ostensibly in the name of water conservation. More than likely, given the past record of PSB/EPWU in not pursuing any policy of water conservation, it was recognized that some evidence of conservation efforts would have to be made to justify the subsequent request for water from New Mexico in the Mesilla Bolson. Certainly the decision not to extend water lines beyond city limits was a contributory factor in the evolution of the colonias, but the development of these unincorporated rural settlements without basic services, including water and sewage, is a complex subject rooted in the economic reality of the border region (Bath, Tanski, and Villarreal 1994).

These factors include rapid population increase. El Paso and Ciudad Juarez are both among the leading cities in their respective countries in terms of population growth. In addition to attracting migrants, chiefly from the interior of Mexico (Ciudad Juarez is estimated to attract 30,000 migrants annually), who come to the border looking for employment in the *maquiladora* industry or in the United States, both sides of the border are characterized by high birth rates (Weeks and Ham-Chande 1992). In El Paso, birth rates are twice those of the state of Texas and almost three times the average of those for the United States; they are even higher in Ciudad Juarez. As a result, both cities have grown rapidly since 1950, Juarez by more than 350 percent to its current estimated population of between 1.2 and 1.5 million (which itself is interesting since the dispute involves 300,000 people or a city about the size of Cincinnati).

Another characteristic of the border is poverty (Peach 1997; TCBED 1997). In El Paso, per capita income in 1994 was \$12,940; in Texas, \$19,719; and in the United States, \$21,699. In the colonias, income is even lower—in some census tracts, less than \$9,000 annually. Using federal guidelines almost one-third of El Paso County's population and 40 percent of all children are classified as poor. Unemployment is a factor in this poverty since El Paso's unemployment rate is almost always twice that of the rest of the United States.⁵ Poverty means that much of the population cannot afford adequate housing, and the opportunity to build their own home on a rural plot is very attractive. It also means that they are highly unlikely to be able to pay for the installation of water and sewage lines.

Yet another border characteristic is the lack of adequate housing. It is doubtful that the housing industry could build enough low-income housing to keep up with rapid population increase, in the first place, but poverty means that at least one-third of the population cannot qualify for even the lowest home loan (Kolenc 1998). As a result, there is almost no new construction of low-cost housing, and federal programs which destroyed much of the cheap housing in South El Paso during the 1970s reduced the availability of even inadequate housing for the city's poor. The only alternative available was to buy a lot in a rural area, begin construction on a home, and sink a very shallow well in the river alluvium, often with a cesspool or septic tank right next to it, which means the incidence of gastrointestinal disease is extremely high.

The colonias became a national media interest during the 1980s, and the media attention generated some concern on the part of politicians. As a result, several federal and state programs aimed at providing services to colonia residents were developed. In turn, many residents in the colonias have received water and sewage delivery systems. However, when the colonias became a national issue in the mid-1980s, there were an estimated 60,000 colonia residents in El Paso County; today, there are an estimated 73,000. In other words, they just keep growing, no doubt partially because of the economic problems encountered in Mexico after 1994.

The basic problem is: Who is going to pay for these services? For higher-income residents, the developers will install water and sewage lines and pass the cost on to the buyer. But the colonia resident will have to pay for these costs or have the government, at whatever level, pay for all or most of it. PSB/EPWU is charged with making a profit and cannot absorb the costs. In any case, a new agency was created, the El Paso County Lower Valley Water District Authority, which is now responsible for providing water and sewage services to the colonia residents east of

⁵ Currently, May 1998, that rate is 10.5 percent, the lowest in many years and attributable to the economic growth spurred by the North American Free Trade Agreement (NAFTA).

El Paso. Installation of such services could cost as much as \$5,000 per residence and these people do not have the money. As it is, projected average monthly costs for water in the newer colonias to the east are \$151, which is a very high price for those making the minimum wage or less (McDonnell 1998). What will happen to these poor people, not to mention the even larger group across the river in Mexico, when water is marketed at a competitive price? Perhaps one reason that El Paso still has the lowest water rates in the Southwest, as indicated by table 1, is that either water consumption will decline with higher rates or people simply will not pay their bills.

TABLE 1. Average monthly residential bill, selected southwestern cities
(12,000 gallons water provided, 7,000 gallons of sewage, 1996)

CITY	COST
Dallas	\$55.83
Austin	\$53.83
Fort Worth	\$42.71
Tucson	\$36.02
Albuquerque	\$30.65
San Antonio	\$29.19
Las Vegas	\$28.34
Las Cruces	\$29.99
El Paso	\$25.92

Source: El Paso Water Utilities, 1 April 1996.

The question of poverty introduces the question of equity into the resolution of the water problem in El Paso del Norte. There is already the question of whether Mexico's allocation of Rio Grande water is equitable under a treaty negotiated under totally different circumstances almost 100 years ago. But how will the poor on the U.S. side of the border possibly pay a realistic market price for water? If water marketing is to be the solution for water allocation, then some means must be found to consider the needs of the poor. This is not just a quality of life issue; actually the health and life of residents is involved. The leading cause of infant death in Ciudad Juarez is gastrointestinal disease, much of it caused by polluted water; El Paso is one of the leading cities in the United States in terms of gastrointestinal diseases (much of it in the colonias). If those who currently own water rights are to market them at a profit, should the poor pay a disproportionate price in either currency or health?

3.2 EL PASO-NEW MEXICO WATER WAR

In 1980, the PSB filed a lawsuit against the state of New Mexico stating that the New Mexico groundwater law violated the interstate commerce clause of the United States Constitution. A week later, the PSB filed an application with New Mexico State Engineer Steve Reynolds for 266 wells in the Mesilla Bolson located north of El Paso (though a small part of it is located in

Texas and Mexico) to pump 246,000 acre-feet annually. Thus began the extremely acrimonious “water war” between El Paso, the state of New Mexico, and the irrigators of the EBID. It was a very complex and costly legal dispute which lasted eleven years and has left a legacy of distrust and suspicion among the various water stakeholders of the region (Barilleaux and Bath 1987; Earl and Czerniak 1996).

During the 1970s, the PSB/EPWU had explored various alternatives for future water supply and looked at several distant sources in Texas,⁶ but it rapidly became evident that the Mesilla Bolson in New Mexico offered the best possible future source of municipal water. It also became evident that there was considerable money involved in gaining the New Mexican water. Based on the price of alternative sources, Mesilla Bolson water would save El Paso between \$1 and \$5 billion dollars over a thirty-year period (Earl and Czerniak 1996, p. 367). Using a multiplier effect, the actual savings would be closer to \$10 billion. In turn, the amount of water involved, if used for agriculture by area farmers, would generate only \$90 million in additional revenue.

The legal positions of the two contestants were complex, but basically El Paso argued that New Mexico could not restrict the export of water because it violated the interstate commerce clause. Subsequently, in *Sporhase v. Nebraska* (1982), the U.S. Supreme Court held a similar Nebraska prohibition to be an unreasonable burden on interstate commerce and, therefore, unconstitutional. The New Mexico legislature passed a new Water Export Act in 1983, and El Paso refiled its application for both Hueco and Mesilla Bolson water. In 1986, hearings began on the El Paso application and lasted for 58 days with 13,000 pages of testimony (Earl and Czerniak 1996, p. 368). El Paso maintained that it was pursuing a policy of water conservation, but this was strongly challenged by New Mexico officials. El Paso also maintained that, as the hub of the region, water used by the city would benefit the entire regional economy.

In 1987, State Engineer Steve Reynolds ruled against the El Paso application and a new round of litigation began. But there were significant changes taking place which would eventually result in an agreement. First, the two people most involved in the dispute had been in their positions for a long time and both were regarded as “water czars” of their respective territory. In the case of El Paso, the general manager of EPWU, John Hickerson, had resigned after making some alleged racist remarks about colonia residents (Bath, Tanski, and Villarreal 1994, p. 26). State Engineer Steve Reynolds died in 1990. Both were replaced by young Hispanics, Ed Archuleta, in the case of EPWU, and Eluid Martinez, as state engineer (the latter is currently head of the Bureau of Reclamation). Both of these engineers were far more amenable to settling the dispute than had been their predecessors.

The dispute had also entered the political arena in El Paso. First, it became an issue with the El Paso Interreligious Sponsoring Organization (EPISO), an industrial area foundation organization based on the successful model of COPS in San Antonio. For the first time, Mexican-Americans were being heard through a consumer-oriented interest group which demanded water and sewage services for the colonias and which carried enough political weight to attract the attention of politicians. In 1988, in the *El Paso Herald Post*, Peter Brock had published his superb series which underlined the arrogance and disdain for the public of the PSB. The cost of the lawsuits against New Mexico also became an issue, since they amounted to over \$11 million for the city and they became an issue in the mayoralty election of 1989. In that

⁶ It has since acquired water rights in the Valentine and Van Horn area, about 100–150 miles to the east.

election, Susie Azar pledged to reach an agreement, and her chief opponent, Ray Pearson, former chair of the PSB, remained adamant in support of the El Paso lawsuits. Azar won and began to work for a settlement.

In the agreement signed in 1991, El Paso agreed to withdraw from further litigation and to base future water policy on conservation and a search for surface water supplies. In return, a pipeline canal would be built from Caballo Dam just below Elephant Butte to El Paso to supply surface water.⁷ Finally, the settlement established a Texas/New Mexico Water Commission to handle water problems in the region. Since 1991, El Paso itself has launched a major water conservation program that has significantly reduced overall water consumption almost to the goal of 160 gallons per capita daily. Such a turnaround is truly remarkable, and Ed Archuleta and the PSB/EPWU are to be congratulated for the program. But the question still remains: Who will get the water in the future and who will pay for it? In order to answer these questions, we must now turn to the legal positions of the stakeholders.

4. LEGAL POSITIONS OF WATER STAKEHOLDERS

While it would be impossible in a relatively short paper to fully describe the legal positions of all the stakeholders, we do believe it necessary at least to outline these positions. Our purpose is to illustrate just how complex this legal battleground is and how unlikely any judicial settlement will be in the near future.

4.1 MEXICO

We have not discussed at any length water policy developments in Mexico, but quite obviously, though not a party to any of the lawsuits, Mexico is very interested in their outcome. Mexico is entitled only to the 60,000 acre-feet of surface water guaranteed by the 1906 treaty and that must be used for irrigation. But Ciudad Juarez is going to be the first to feel the effects of the overpumping of the Hueco Bolson, which is its *only* source of municipal water supply. Equally obvious, it has no other possibility for future water supply than the Rio Grande.⁸ Mexico is currently undergoing a major change in water law aimed at completely removing the federal government from provision of water infrastructure and providing the framework for private water marketing, a totally alien concept under the principles of the Mexican Revolution. Previously water supply was heavily subsidized by the Mexican government, and now efforts are being made, mainly in Mexico City, to privatize the water supply system. It will be a very difficult task. Municipal and state governments are now largely responsible for provision of water services and, unfortunately, they often lack the finances and personnel for effective policy. We have elsewhere detailed these fundamental changes and believe it may take some time for the legal and policy framework for a new water policy to evolve (Bath and Petit 1998).

⁷ Although under NAFTA, the Environmental Protection Agency (EPA) has appropriated \$100 million, construction of the canal has yet to begin, probably because of the lawsuits currently being disputed and the uncertainty of water rights.

⁸ An attempt has been made to pump water from the Mesilla Bolson on the western side of the city, but the water flow from the wells has been very disappointing.

In the meantime, Mexico will have to appeal to the United States for more surface water from the Rio Grande/Bravo. It would appear that there are two grounds for such an appeal. First, under the terms of NAFTA and the environmental side agreement, both governments obligated themselves to the concept of sustainable development. While not a binding commitment, it would seem that water is absolutely essential to human endeavor and that Mexico, which consumes far less water per capita than the United States (75 gallons per capita daily versus 175 daily currently in El Paso), could invoke the treaty obligations under NAFTA. This would appear to give Mexico the moral high ground in an appeal for more water. The appeal could also be based on the role of the *maquila* industry, which is almost entirely of U.S. origin in Juarez, in promoting population increase. The *maquila* have played a key role in attracting migrants to the border, where jobs are available. After all, it is the U.S. consumer, not to mention U.S. companies, who benefits from the cheap labor provided by Mexicans for parts assembled in Ciudad Juarez. Water could be regarded as a cheap tradeoff for the cheaper automobiles, apparel and textile goods, television sets, and other consumer items. Perhaps the U.S. government could explain to the public why it is important to provide more water to Mexico—because Mexico's need really stems from U.S. industrial activities along the border.

Another possibility for Mexico would be to threaten to dam the rivers that supply the Rio Grande below Fort Quitman. About 80 percent of the water that flows into the Gulf of Mexico at Brownsville/Matamoras comes out of Mexico. Maybe Mexico should threaten to stop that flow if Ciudad Juarez does not receive more water. An important point to note is that any change in the 1906 treaty requires *federal* action by the government. The states take a backseat in such a decision, but it requires resolution of the muddled question of who owns the water.

4.2 UNITED STATES

While the U.S. federal government left much of the control over water to the states, there are several laws such as the Clean Water Act, Safe Drinking Water Act, Resource Conservation and Recovery Act (RCRA), Endangered Species Act (ESA), and a host of others that call for federal regulation. Most of these laws deal with water quality rather than quantity, but they do permit a regulatory role for the federal government.

There are two distinct processes for asserting federal water rights. First, the reserved rights doctrine stems from *Winters v. United States* (1908). In this case the Supreme Court upheld the federal government's right to reserve water rights for Indian reservations. The Court held "the power of the government to reserve the waters and exempt them from appropriation under the state laws is not denied, and could not be." The Winters Doctrine, as it is sometimes called, is highly disputed. Hundreds of cases involve claims by Indian tribes (McCool 1994). Some have far-reaching effects such as the Navajo claims on Colorado River water; New Mexico has a host of cases involving its Indian tribes. The problem is that the Supreme Court has been reluctant to strongly enforce the Winters Doctrine so there are several different interpretations of the ruling. It remains a hazy area of the law.

Two other cases are important for federal reserved rights. In *Arizona v. California* (1963) the Supreme Court held that reserved rights could be applied to other federal establishments such as national recreation areas and national forests. In *Cappaert v. United States* (1976) the Court held that the federal government has a right to unappropriated water which appertains to federal land. An interesting interpretation of this ruling would be applying it to federal land over

groundwater. There is currently no federal control or regulation over groundwater except for quality, but in New Mexico, the federal government is the largest single landowner—and, indeed, in Dona Ana County owns about 80 percent of all the land. While unlikely, it would be interesting to see the application of *Cappaert* to groundwater.

In March 1998, the Tigua Indian tribe in El Paso filed suit against EPCWID to obtain rights to all the water in the Rio Grande (Flynn 1998). While we have been unable to obtain a copy of the case, it would appear to be based on the reserved rights doctrine. This is the first time the Tiguas have filed a claim for river water and probably represents the political astuteness of the tribal attorney, Tom Diamond, who at one point also represented the PSB of the El Paso Water Utility. The Tiguas base their claim on a 1751 Spanish land grant and on aboriginal rights. They are angry for the district's charging what they believe to be unfair right-of-way fees to cross irrigation ditches owned by the district. Interestingly, Southern Union Gas (SUG) supports the Tigua claim, since they, too, had to pay \$90,000 to cross two irrigation ditches with gas pipelines going to the colonias. SUG representative, Ann Enriquez, claims that until 1980, when BuRec turned the ditches over to the district, SUG paid only \$500 to cross the ditches.

The Tigua suit could enormously confuse the other lawsuits since it would require settlement by the Supreme Court. It bears some resemblance to the Pyramid Paiute Indian tribes claims on the Truckee River water which will be discussed shortly. The tribe has also filed suit claiming ownership of much of the land east of El Paso. In May 1998, Texas Governor George Bush told the Texas Attorney General Dan Morales to pursue what he termed the illegal gambling in a casino built by the Tiguas in Ysleta. All in all, it is shaping up as a major legal battle between the Tiguas and several levels of government; the only sure winners are the lawyers.

The second way for the federal government to acquire water rights is through the state appropriation process, sometimes referred to as the Reclamation Way (US Bureau of Reclamation 1995, p. III-7-10). The Reclamation Act recognized the prior appropriation doctrine of western states, and the federal government has acquired water rights through the application processes required by the states. It will be remembered that the Reclamation Service did file for 730,000 acre-feet of Rio Grande water with the Territorial Engineer of New Mexico in 1907 and 1908. Several law cases were important in determining the extent of the Reclamation Way. In *Ickes v. Fox* (1936) the Court held that water appropriated through reclamation projects belonged to the landowners. The landowners had a vested property right in receiving a certain amount of water as long as it was put to beneficial use. The U.S. Secretary of the Interior could not arbitrarily reduce the amount of water. In *Nevada v. United States* (1983) the Court held that the United States could not raise a water rights claim on behalf of the Pyramid Lake Paiute Tribe because the water had already been appropriated. In general, then, for most of this century the Court has upheld the states' rights to determine water rights and restricted the role of the federal government.

However, recent legal decisions indicate a changing role for the federal government. In *Peterson v. U.S. Department of the Interior* (1990), the Ninth Circuit Court held that Congress by statute could change existing contracts involving water. The water districts which brought the case then filed a lawsuit claiming government action constituted a "takings" issue under the Fifth Amendment and they had been denied just compensation by the Department of the Interior. The Ninth Circuit denied the claim under the Fifth Amendment. The Court went on to apply three basic principles to federal contracts (US Bureau of Reclamation 1995: III-9-10):

1. Sovereign power, even when unexercised, is an enduring presence that governs all contracts subject to the sovereign's jurisdiction, and will remain intact unless surrendered in unmistakable terms.
2. Government contracts should be construed, if possible, to avoid foreclosing exercise of sovereign authority.
3. Governmental contracts should be interpreted against the backdrop of the legislative scheme that authorized them, and our interpretation of ambiguous terms or implied covenants can only be made in light of the policies underlying the controlling legislation.

In yet another California case involving the Central Valley Project, *O'Neill v. United States* (1995), the Ninth Circuit again held that even if the contract obligated the government to deliver a specific amount of water, the contract was not immune to subsequently enacted statutes. It should be noted in this context that subsequent acts of Congress after 1902 permitted reclamation project water to be used for flood control, electric power generation, municipal and industrial use, recreation, and preservation of species (WWPRAC 1997, chapter 4). All of these uses could be potentially employed to change the contract between the federal government and the water rights' holders. As the Bureau of Reclamation itself concluded, "It appears that if the Congress decides to change policy, the courts will support the change even if the landowners suffer water shortages and the legislation impacts existing contracts. On the other hand, it also is clear that the Secretary cannot arbitrarily and unilaterally make changes in contract provisions" (US Bureau of Reclamation 1995, p. III-10).

While the U.S. Congress has authorized other uses for Elephant Butte Dam, chiefly electric power generation and recreation, the only authorized purpose of the Rio Grande Project water is for irrigation. Nevertheless, in 1941, BuRec agreed to supply water to El Paso for municipal and industrial use for the 2,000 acres the city had purchased. In the legislation authorizing the Secretary of the Interior to supply municipalities with irrigation water at rates determined by BuRec, it was permissible provided that (US Bureau of Reclamation 1995, p. IV-5):

- ♦ It is not detrimental to irrigation.
- ♦ There is no other practicable source of water supply.
- ♦ There is prior approval by the appropriate water district.
- ♦ Money from such contracts is put into the Reclamation Fund, crediting the project supplying the water.

Indeed, under the provisions of the agreement, money paid by the city to the federal government was credited to EPCWID's repayment obligation.

Also in 1988, BuRec, EPCWID, and the Lower Valley Water District Authority (LVWDA, which has no water rights) entered into an agreement to provide Rio Grande water to the LVWDA to supply the colonias. The LVWDA must receive assignments of water from the current owners of land tracts and cannot by itself acquire water rights.⁹ In spite of these two cases, "Generally, it is not Department of the Interior policy to promote water transfers; however, [it] will facilitate transfers proposed by others that are in accordance with applicable state and

⁹ It should be added that the LVWDA, established in 1985, has almost no revenues and would not be able to purchase land as has the PSB.

Federal law. The Federal Government will suggest a water transfer when it is part of an Indian water rights settlement, a solution to a water rights controversy, or when it may provide a dependable water supply that would otherwise involve the expenditure of Federal Funds” (US Bureau of Reclamation 1995, p. IV-5).

In June 1997, the BuRec shocked all the stakeholders by filing suit against almost everyone involved in Rio Grande water. In all the other cases the federal government is the defendant, and for the Bureau of Reclamation to file suit was a genuine surprise. In *United States v. Elephant Butte Irrigation District, El Paso County Water Improvement District No. 1, Hudspeth County Conservation and Reclamation District No. 1, City of El Paso, New Mexico State University, Stahman Farms, State of New Mexico ex. rel, State Engineer* (1997), the BuRec claimed to be trying to resolve the question of water rights so that it could get on with its work. In a meeting in Cuernavaca, Mexico, in November 1997, Eulid Martinez stated that the BuRec could not get on with its new role and function in the Rio Grande Basin until the question of water rights was finally determined. As one representative from BuRec asked one of the authors, “We are trying to find out what we are supposed to do. Can you tell me, what should we be doing?”

In the case, BuRec returns to the original 1906 (with a 1908 supplement) application to New Mexico for all the unappropriated water in the Rio Grande as the basis for its claim to Rio Grande water. The federal government goes on to deny the claims of both the EBID and the EPCWID, especially the transfer of water rights to the two districts after they completed repayment of reimbursable costs for the project. It also denies the validity of the permit to all river water issued by the Texas Natural Resources Conservation Commission (TNRCC) to EPCWID in 1993. “Defendants’ actions have cast a cloud upon the United States’ right to divert, impound, and store waters of the Rio Grande....” The complaint goes on to cover water from Caballo Dam, return flows, inflows, and releases. The suit asks the court to enter a declaratory judgment quieting title to the United States of the waters of the Rio Grande Project, including the treaty obligations to Mexico. In order to cover all the bases, the suit was filed in both federal and New Mexico courts. It should be added that this case, as we shall see, led the disputants to try mediation as a solution to litigation.

4.3 NEW MEXICO

In *Elephant Butte Irrigation District et al. v. United States* (1993), both the EBID and the EPCWID are challenging the federal government’s past and present management of the Rio Grande Project. The districts argue that since they have discharged their obligations for the project, they are contractually entitled to receive full title to all project works. They also claim rights to all revenues generated through project use (if this includes recreational use, it could be substantial—Elephant Butte Dam is extensively used for recreation and fishing by over 1 million visitors annually) and also charge that the United States has overbilled them for annual maintenance and operation costs. They add that the operation of the electric power plant leads to evaporation of 20,000 acre-feet of water per year, for which they should be compensated.

In *Elephant Butte Irrigation District v. Reynolds et al.* (1991), the EBID filed suit in state court requesting a water rights adjudication of Rio Grande water from Elephant Butte Dam to the Texas border. EBID claims that since it completed payment of its reimbursable construction debt to the United States in 1971, the federal government no longer owns any water in New Mexico. EBID wants the court to declare it the recordholder of all water rights to Rio Grande water in

New Mexico. The suit also asks the state engineer to conduct an extensive hydrological survey of the stream system for the adjudication process. EBID also claims that all surface and groundwater have been appropriated in the area and that no more permits for groundwater pumping should be issued. (The settlement with El Paso makes the latter a moot point.)

Several facets of New Mexico water law besides the doctrine of prior appropriation deserve comment. First, the law specifies that water belongs to the public but may be appropriated by property owners. The owner must divert the water for beneficial use, though beneficial use has been liberally interpreted to mean almost any use. An appropriated right is considered property and can be transferred separately from the land, but the appropriator owns only the right to use the water and not the water itself. In order to obtain a water right, application must be made to the state engineer. New Mexico law does not, however, have any provision for instream protection, which has become a major rallying point for environmentalists. Water left in the stream is not considered to be of any beneficial use and, in at least one case involving the silver minnow near Albuquerque, the ESA was used to justify the need for continued river flow. There is some indication that the “public welfare” clause in the water law may be changing to protect communal rights.

4.4 TEXAS

Texas also disagrees with the U.S. claim that the 1907–1908 filing with New Mexico appropriated all the unappropriated water in the Rio Grande. The state of Texas claims that all the water that crosses into the state from New Mexico belongs to Texas. Texas began evidentiary hearings in 1996 to adjudicate the river water, but in the meantime the TNRCC granted the EPCWID a permit in 1993 to all the water in the Rio Grande up to its 376,000 acre-feet entitlement. TNRCC argues that the Rio Grande Project manager under a 1913 Texas law filed for the use of 70,000 acre-feet annually. Under the permit granted to EPCWID by the TNRCC, the district is entitled to all the water delivered except the 60,000 acre-feet delivered to Mexico. The permit does allow the EPCWID to use the water for irrigation, municipal, industrial, mining, and recreational purposes and also to sell it to the city of El Paso.

Interestingly, the federal government did not protest the granting of the permit to EPCWID. BuRec believes that the district is protecting federal rights to the water, but that legal title to the water still belongs to the federal government (US Bureau of Reclamation 1995, p. IV-3). Why the lawsuit filed by the United States then includes EPCWID is difficult to understand. In point of fact, in March 1998, BuRec and the EPCWID signed an agreement under which the district recognized that the federal government owns the water and in return it may sell or lease its water to El Paso or whomever it wants (*El Paso Times*, 6 April 1998). It should be added that in 1997 Texas passed a major new water law that could play a role in strengthening the El Paso Water Utilities as a regional planner of water use (Bath 1997, 1998).

5. POSSIBLE SOLUTIONS TO WATER PROBLEMS OF EL PASO DEL NORTE

What then is the likely outcome of this complex legal imbroglio? First, if the courts do resolve the legal dispute, it will have to be the U.S. Supreme Court which does so, because any decision

will be appealed by one of the parties no matter what the decision is. Second, although the appeals process is highly likely to take a long time unless the Supreme Court takes immediate interest, the difficulty is that addressing the question needs to be done now. We are running out of water and any further delays will intensify the crisis when it finally arrives. Third, almost everyone seems to agree that a marketing solution would be best. No one would dispute that those who currently hold water rights are entitled to make a profit out of those rights.¹⁰ The basic question here has already been raised and that is the question of equity. How are Mexico and the poor in El Paso del Norte going to participate in a marketing solution without the necessary funds? We simply assume that any rational water management plan will have to be based on governmental intervention of some type to protect those who cannot pay the market price for water.

Two other possible alternatives are negotiation or an act of Congress similar to that established for the Truckee River in California/Nevada called the Truckee River Operating Authority (TROA). Mediation became a possible solution in September 1997 when the contesting parties agreed to meet in Albuquerque to mediate a settlement.

¹⁰ Even if we disagree with the basic premise that a natural resource such as air or water should be owned by anyone, we believe they are communal resources which should be shared equally by all.

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