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# Managing Acute Water Scarcity on the U.S.–Mexico Border: Institutional Issues Raised by the 1990's Drought

## INTRODUCTION

The "Great 1990's Drought" certainly ought to serve as a wake-up call for binational water management on the U.S.–Mexico border. Whether it will function as such remains to be seen. While the drought has had highly adverse effects in northern Mexico, the hardest hit of the several regions affected, its effects are unevenly distributed. Some may even draw the lesson that the drought, at least in Texas, has been well managed within the context of current institutional structures, and that it provides solid evidence the system is working, is flexible, and is adequate to meet most foreseeable needs, at least at the international level.

It is fair to say that the prospect of catastrophic drought has long preoccupied water managers in the arid border region—indeed the thrust of binational water management since the nineteenth century has centered on controlling or mitigating the consequences of droughts and floods. Drought, in fact, is a periodically recurrent phenomenon in the region and a vital factor—coupled with the region's natural aridity—driving the reclamation (water storage and distribution) movement. On the U.S.–Mexico border, the two major treaties allocating shared water resources anticipate drought in at least two ways: first, by providing for the development of water storage and delivery systems that aim at regularizing supply and husbanding scarce resources; and second, by addressing in some fashion the problem of rationing shared waters in times of abnormal or unexpected scarcity of supply of allocated water.

The problem, of course, is that neither of these strategies is sufficient to satisfy the competing (and growing) demand for water within the region. This, perhaps, is the principal lesson to be gleaned from the 1990's drought. In the United States, for example, surface water on the major international rivers is overallocated in relation to its availability. Even before the drought a wide range of proposals was advanced to augment water storage related to the use of the waters of the international rivers, reflecting the rising demand for water. Indeed, a number of major storage and distribution projects have been completed in the past decade

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in the United States and Mexico, and others are under consideration.<sup>1</sup> Moreover, the international mechanisms for rationing the costs of drought, or more to the point, the water available under drought conditions, remain controversial and, in their present form, are widely seen as less than adequate for equitably settling potential disputes within the treaty framework.

Taking the 1990's drought as its reference, the present study reviews the flaws, perceived and actual, in the present institutional framework for managing drought along the U.S.-Mexico border and points to a range of options for strengthening international cooperation in drought management that warrant the attention of binational water managers. In approaching the topic, it is important to begin from the assumption that the design of adequate institutional mechanisms for drought management is as much a social challenge as a physical challenge, perhaps more so, and that droughts, conceptualized as water shortages, are as much socially constructed phenomena as they are absolute reductions in the volume of available water.<sup>2</sup> Drought management is usually aimed more at the satisfaction of human wants than at meeting the most basic human needs, though the latter may be of concern, depending on distributional criteria applied to the provision of scarce water resources, on socio-economic conditions, and on the severity of natural supply reductions over time. The perceived need for water and its equitable utilization under normal and abnormal circumstances of supply are usually relative judgments that contribute to the complexity of drought management and the perceived adequacy of water management systems. This is especially true of binational water management institutions which, by definition, embrace different countries, different socio-economic systems, and different cultural realities.

This study also proceeds from the assumption that certain options raised in discussion of the 1990's drought are essentially untenable. Several commentators on the drought, for instance, have called for fundamental revisions to the present treaty framework, revisions that aim at treaty language more congruent with current canons of customary international law.<sup>3</sup> While the normative and substantive value of such revisions is not

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1. For instance, for a discussion of new water storage proposals on the Río Grande, see DAVID J. EATON & DAVID HURLBURT, *CHALLENGES IN THE BINATIONAL MANAGEMENT OF WATER RESOURCES IN THE RÍO GRANDE/RÍO BRAVO* (1992); LYNDON B. JOHNSON SCHOOL OF PUBLIC AFFAIRS, *WATER AND DEVELOPMENT, THE RÍO GRANDE/RÍO BRAVO* (Jurgen Schmandt ed., 1992/1993); Ralph K.M. Haurwitz, *An Overtaxed Giant: Farming and Urban Growth Along the Border Push Texas' Longest River to its Limits*, AUSTIN-AM. STATESMAN, Sept. 21, 1997, at A1.

2. See Diana M. Liverman, *Drought Impacts in Mexico: Climate, Agriculture, Technology, and Land Tenure in Sonora and Puebla*, 50 ANNALS ASS'N AM. GEOGRAPHERS 49, 49-50 (1990).

3. See Melissa Lopez, *Border Tensions and the Need for Water: An Application of Equitable Principles to Determine Water Allocation from the Río Grande to the United States and Mexico*, 9 GEO. INT'L ENVTL. L. REV. 489 (1997).

disputed here, the political barriers to achieving such revisions are sufficiently great as to justify the search for more achievable policy reforms. With these caveats in mind, this study proceeds in several parts. The first section reviews the extant binational framework for drought management, recapitulating what many others have said about the shortcomings of that framework and pointing out key structural elements affecting the prospects for bilateral cooperation in managing drought situations along the border. The second section briefly reviews the recent drought for the institutional responses and approaches taken by the governments, with emphasis on the 1995 water sharing agreement, Minute 293 of the International Boundary and Water Commission (IBWC), and identifies important unresolved issues related to the bilateral management of drought situations. The third section explores such institutional options as may exist within and outside the present treaty framework, with emphasis on the role and work of the IBWC and more recently formed international environmental institutions associated with the establishment of the North American Free Trade Agreement (NAFTA).

### THE INSTITUTIONAL FRAMEWORK FOR BINATIONAL DROUGHT MANAGEMENT

The international institutional framework for managing droughts affecting the U.S.-Mexico border region is found in two treaties that respectively apportion the shared waters of the Río Grande and Colorado Rivers and their tributaries. The first of these documents, the Convention between the United States and Mexico on the Equitable Distribution of the Waters of the Río Grande, signed in 1906,<sup>4</sup> applies to the upper reach of the Río Grande River from its headwaters to the point where the river passes by Fort Quitman, Texas. Mexico takes all its allotted water through the Acequia Madre (otherwise known as the Old Mexican Canal) at Cd. Juárez, Chihuahua. Article II of this treaty states, "In case, however, of extraordinary drought or serious accident to the irrigation system in the United States, the amount [of water] delivered to the Mexican Canal shall be diminished in the same proportion as the water delivered to lands under said irrigation system in the United States."<sup>5</sup>

The second document, the Treaty Between the United States and Mexico Regarding the Utilization of the Colorado and Tijuana Rivers and

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4. Convention between the United States and Mexico: Equitable Distribution of the Waters of the Río Grande, May 21, 1906, U.S.-Mex., 34 Stat. 2953 [hereinafter 1906 Water Treaty].

5. *Id.* art. II.

of the Waters of the Río Grande, signed in 1944,<sup>6</sup> applies to the lower reach of the Río Grande River below El Paso—Cd. Juárez and to the distribution of the waters of the Colorado River. Provisions directly affecting drought management are found in Articles II and III, Article IV, Article IX, Article X, Article XXIV, and Article XXV. Article II provides for the establishment of the IBWC and Articles XXIV and XXV entrust it with the settlement of disputes arising from the Treaty.<sup>7</sup> Article III specifies the priority of uses to be followed by the Commission in providing for the joint use of international waters, according first priority to domestic and municipal use, second priority to agriculture and stock raising, third priority to electric power, fourth priority to "other industrial uses," fifth priority to navigation, sixth priority to fishing and hunting, and seventh priority [last priority] to "any other beneficial uses which may be determined."<sup>8</sup>

Article IV of the Treaty, with reference to the lower Río Grande, stipulates the allocation of water below Ft. Quitman, Texas, such that, in brief, the United States receives all of the water of its major tributary streams (Pecos River, Devils River, Goodenough Springs, and Alamito, Terlingua, San Felipe, and Pinto Creeks) and one-third of the water from the major Mexican tributaries up to a maximum amount of 350,000 acre-feet (431,721,000 cubic meters) annually, to include the Conchos, San Diego, San Rodrigo, Escondido and Saldo Rivers and the La Vacas Arroyo, excepting the waters of the San Juan River and the Alamos River, which belong entirely to Mexico.<sup>9</sup> The two countries share any remaining waters equally. Article IV goes on to stipulate that:

In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the runoff of 350,000 acre-feet (431,721,000 cubic meters) annually, allotted in subparagraph (c) of paragraph B of this Article to the United States as the minimum contribution from the aforesaid Mexican tributaries, any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.

When the conservation capacities assigned to the United States in at least two of the major international reservoirs, including the highest major reservoir, are filled with waters

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6. Treaty Regarding Utilization of Waters of Colorado and Tijuana Rivers and of the Río Grande, Feb. 3, 1944, U.S.-Mex., 59 Stat. 1219 [hereinafter 1944 Water Treaty].

7. *Id.* arts. II, XXIV, XXV.

8. *Id.* art. III.

9. *Id.* art. IV.

belonging to the United States, a cycle of five years shall be considered paid, whereupon a new five-year cycle shall commence.<sup>10</sup>

Article IX, with reference to the Río Grande, further provides that,

The Commission shall have the power to authorize either country to divert and use water not belonging entirely to such country, when the water belonging to the other country can be diverted and used without injury to the latter and can be replaced at some other point on the river. [Section D]<sup>11</sup>

The Commission shall have the power to authorize temporary diversion and use by one country of water belonging to the other when the latter does not need it or is unable to use it, provided that such authorization of the use of such water shall not establish any right to continue to divert it. [Section E]<sup>12</sup>

In case of the occurrence of an extraordinary drought in one country with an abundant supply of water in the other country, water stored in the international storage reservoirs and belonging to the country enjoying such abundant water supply may be withdrawn, with the consent of the Commission, for the use of the country undergoing the drought. [Section F]<sup>13</sup>

Article X, with reference to the Colorado River, guarantees Mexico 1,500,000 acre-feet of water (1,850,234,000 cubic meters) annually, reserving the rest for the United States. It further provides that,

In the event of extraordinary drought or serious accident to the irrigation system in the United States, thereby making it difficult for the United States to deliver the guaranteed quantity of 1,500,00 acre-feet (1,850,234,000 cubic meters) a year, the water allotted to Mexico under subparagraph (a) of this Article will be reduced in the same proportions as consumptive uses in the United States are reduced.<sup>14</sup>

The general provisions of the 1944 Water Treaty contained in Articles II, XXIV and XXV, and Article III may also be said to apply to any efforts on

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10. *Id.*

11. *Id.* art. IX.

12. *Id.*

13. *Id.*

14. *Id.* art. X.

the part of the IBWC to deal with drought problems arising on the Tijuana River. Article XVI with reference to the Tijuana stipulates,

In order to improve existing uses and to assure any feasible further development, the Commission shall study and investigate, and shall submit to the two Governments for their approval: 1) Recommendations for the equitable distribution between the two countries of the waters of the Tijuana River system; 2) Plans for storage and flood control to promote and develop domestic, irrigation and other feasible uses of the waters of this system . . .<sup>15</sup>

These formal provisions for drought management, as so many observers have noted, contain critical ambiguities and lacunae considered in light of the many drought contingencies the two countries might have to address along their common boundary as well as contemporary needs. Various analysts have noted the ambiguities contained in the 1906 and 1944 treaty language in the phrase "extraordinary drought or serious accident" to mentioned irrigation or delivery systems in either country.<sup>16</sup> Determination of *extraordinary drought* is nowhere specified in the treaties—it is essentially a political question, left in the hands of IBWC and other diplomatic negotiators to be determined on a case by case basis. While this solution maximizes flexibility, it fails to provide minimal assurances of the adequacy of supply to downstream parties suffering from prolonged severe reductions in water supply. In this same vein, analysts have correctly noted that the Treaty fails to anticipate long term changes in climatic conditions that could seriously exacerbate problems arising from overallocation of water (a particular problem on the Colorado River), reduction in water storage, rapidly rising water demand, and periodic temporary drought.<sup>17</sup> Where long-term, incremental climatic changes occur, significant difficulties could arise over the interpretation of the *extraordinary drought* provisions, both with respect to how the provision would be triggered as well as how it should be terminated.<sup>18</sup> In this respect, analyst

15. *Id.* art. XVI.

16. See Cesar Sepulveda, *Los Recursos Hidraulicos en la Zona Fronteriza Mexico-Estados Unidos. Perspectiva de la Problematica Hacia al Ano 2000—Algunas Recomendaciones*, 22 NAT. RESOURCES J. 1081 (1982); Albert E. Utton, *An Assessment of the Management of U.S.-Mexican Water Resources: Anticipating the Year 2000*, 22 NAT. RESOURCES J. 1097 (1982); Peter H. Glick, *The Effects of Future Climatic Changes on International Water Resources: the Colorado River, the United States and Mexico*, 21 POL'Y SCI. 23 (1988).

17. See GLEICK, *supra* note 16, at 27-29. The current U.S. policy debate over decommissioning Glen Canyon dam is worth noting as it would significantly diminish available water storage on the Colorado River. See Mark Eddy, *Grand Canyon the Issue with Dam*, DENVER POST, Oct. 9, 1997, at 1.

18. See GLEICK, *supra* note 16, at 33.

Peter Gleick, director of the Pacific Institute, has argued that a precise definition of the term *climate change* should be agreed upon by the two countries as a means of addressing potential long-term problems that could arise with potentially severe impacts on allocations and uses throughout the region.<sup>19</sup>

Other criticisms of the current institutional framework point to the allocative inequity of the 1906 and 1944 water treaties.<sup>20</sup> In the case of the former, the United States has a highly disproportionate share of the water and controls both the source and the flow of the resource, suggesting that any negotiated reductions might also be expected to favor the United States in the allocation of costs and benefits of any drought management solution on the upper Río Grande. In the case of the latter, both the Río Grande allocation and the Colorado allocation favor the United States, suggesting similar upstream-downstream problems, particularly on the Colorado River where the United States also has a virtual monopoly on source, flow, and storage.

Also apparent from the treaty language is the inadequate reach of the current drought management regime. Under current arrangements, there are various lacunae in drought management coverage along the border. Apart from its general provisions, the treaty provides no particular obligation to either country to respond to or accommodate the concerns of the other country on the Tijuana River. It makes no reference at all to streams and arroyos in the coastal range on the Pacific, nor to various isolated streams and rivers on the Arizona-Sonora border. It is questionable whether distant tributaries to the Colorado River—the San Pedro River or the Santa Cruz River—are covered under the terms of Article 10 or should be considered separately. And, it makes no reference to non-artesian groundwater aquifers recharged from surface precipitation.

Additionally, analysts have increasingly questioned some of the general provisions of the 1944 Treaty, ranging from criticism of the structure of water use priorities assigned in Article III to criticism of the IBWC.<sup>21</sup> These criticisms are well known and are only briefly recapitulated here. With respect to use priorities, some argue the structure of uses is anachronistic, reflecting historic rather than contemporary practices. Protecting instream flows and preserving biodiversity (wetlands, habitat, et cetera) by strict construction, among the least valued uses of water under the treaty as written may (by contemporary standards) outrank the value

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19. *See id.*

20. *See Lopez, supra* note 3.

21. *See, e.g.,* JASON I. MORRISON ET AL. PACIFIC INST. FOR STUDIES IN DEVELOPMENT, ENV'T, AND SECURITY AND THE GLOBAL WATER POLICY PROJECT, THE SUSTAINABLE USE OF WATER IN THE LOWER COLORADO RIVER BASIN 63-64 (1996).



of navigation or fishing and hunting (functions accorded higher priority by the 1944 Water Treaty).

The IBWC's jurisdiction and mandate as well as its structures and procedures have also been called into question. Perhaps most relevant for purposes of drought management, the IBWC's jurisdiction is quite narrow in geographic terms, limited to the boundary itself and boundary waters as they constitute the boundary, and may thus be seen as technically inadequate for dealing with water supply problems of regional scope. Analysts drawn to administrative concepts like "ecosystem management" or "drainage basin management" have long chafed at the more limited jurisdiction of the Commission, viewing it as a political creation, mired in sovereignty, and mismatched to modern management challenges raised by ecological zones and hydrological cycles.<sup>22</sup> The Commission's mandate, to build and operate joint works and resolve such disputes as may arise related to the treaties under its jurisdiction, is seen as essentially reactive and ad hoc rather than proactive and capable of addressing problems in a systematic, comprehensive, and future-oriented fashion. Finally, the Commission's diplomatic structure is criticized as insular, secretive, and unresponsive to public concerns, factors conceived for the purpose of defending sovereign entitlements rather than forging consensual grassroots solutions to transboundary problems.<sup>23</sup>

These various criticisms of the present institutional framework certainly have merit, at least by degrees, and deserve to be taken seriously. They suggest some of the more important issues that ought to be addressed in any effort to improve on current practices and institutional arrangements for managing drought. Treaties, however, are political documents that reflect the diplomatic possibilities of the past as reinforced by the cumulative record of institutional practices in their service, and, as such, are often difficult to change. This is certainly the case where allocations of critical natural resources are involved, as is the situation here. Because it is highly unlikely that the present binding treaties allocating water resources between the United States and Mexico will be reopened for revision given the enormity of the political stakes involved, it is important to look for institutional reforms that may be had by reinterpreting treaty provisions, readjusting current institutional practices in ways that are consistent with the basic institutional framework or affirm it, or by other international

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22. See Helen Ingram et al., *International Boundary and Water Commission: An Institutional Mismatch for Resolving Transboundary Water Problems*, 33 NAT. RESOURCES J. 153 (1993); Roberto Sanchez, *Public Participation and the IBWC: Challenges and Options*, 33 NAT. RESOURCES J. 283 (1993); MARY KELLY, TEXAS CTR. FOR POLICY STUDIES, *FACING REALITY: THE NEED FOR FUNDAMENTAL CHANGES IN PROTECTING THE ENVIRONMENT ALONG THE U.S./MEXICO BORDER* (1991).

23. See *id.*

mechanisms operating outside the treaty framework that may improve current practices without impairing treaty based commitments. Before examining a range of reform possibilities within these parameters, however, it is wise to draw a few lessons from recent application of the binational institutional framework in the case of the current drought.

### THE 1990'S DROUGHT AND MINUTE 293: LINGERING INSTITUTIONAL ISSUES

The 1990's drought by most accounts began in 1992, as measurable seasonal precipitation declined across a broad swath of North America (ranging from the southwestern United States to the Yucatan). The most severe impacts were felt in northern Mexico, across five largely arid states, Sonora, Chihuahua, Durango, Coahuila, Nuevo León, and Tamaulipas. In these states, protracted drought conditions over several years led to dramatic reductions in water reserves for irrigated agriculture and had devastating effects on the cattle industry, commercial and subsistence agriculture, and many isolated communities in rural areas.<sup>24</sup> Nationwide, Mexican ranching and agricultural drought-based losses are estimated upwards of 1.1 billion U.S. dollars.<sup>25</sup>

In Mexico, by 1995 reservoirs in Chihuahua and Nuevo León were reported at less than five percent of normal storage<sup>26</sup> and a national water emergency had been declared. Available Río Grande water was placed off limits to irrigators, officially reserved only for urban and domestic consumption.<sup>27</sup> Under the Drought Emergency Program, 108.2 million U.S. dollars were dedicated to augment irrigation and water conveyance systems and improve the supply of potable water for needy communities. Despite such stopgap measures, the drought accentuated interstate rivalries for stored water,<sup>28</sup> disrupted migration and labor patterns, and contributed to a significant rise in health problems, particularly outbreaks of cholera.<sup>29</sup> In Texas, where drought effects were also severe with over 5 billion U.S.

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24. See BOB STEFANSKI, DROUGHT IN NORTHERN MEXICO, WEEKLY WEATHER & CROP BULL. 23 (June 27, 1995); James E. Garcia, *Drought on the Border*, AUSTIN-AM. STATESMAN, May 7, 1995, at C12; Nancy Cleeland, *Devastating Drought*, SAN DIEGO UNION-TRIB., June 26, 1995.

25. See Esther Shrader, *Mexicans Starve Amid Searing Drought*, SAN JOSE MERCURY NEWS, July 21, 1996.

26. See Cleeland, *supra* note 19.

27. See Marcelo Morichi & Jan Gilbreath, *Drought Brings Severe Crop Reductions and Cattle Losses to Mexico* (July 21, 1995) <<http://www.utexas.edu/depts/lbjschool/usmex/usmex.html>>.

28. See *Mexican State is Told to Share Water or Pay Neighbor Millions*, HOUSTON CHRON., Jan. 9, 1996; Schrader, *supra* note 25; *IDB-funded Dam Sparks Water-Rights Dispute*, 4 BORDERLINES, Mar. 1996, at 9.

29. See *id.*

dollars in estimated economic losses,<sup>30</sup> state water authorities intensified their conservation programs, conducting water conservation workshops for over 100 public water districts,<sup>31</sup> urging irrigation districts to ration water supplies as feasible, and alerting water users to the need to plan for possible reductions in supply.<sup>32</sup>

At the international level, facing intense pressure from the agricultural sector, Mexican President Ernesto Zedillo approached the U.S. State Department and Texas authorities in May 1995 with a formal request to divert up to 81,000 acre-feet of water for irrigation and other purposes from U.S. (Texas) allocated storage water in the international Río Grande dams.<sup>33</sup> Zedillo was initially rebuffed by the State Department and Texas Governor George W. Bush.<sup>34</sup> Governor Bush took the position that the state of Texas could not legally preempt private water rights and that until it was certain that Texas water rights holders drawing water from the Río Grande had an assured supply for the summer and fall it would be unwise to make a commitment to Mexico.<sup>35</sup> In a subsequent meeting with Mexico's border governors, Bush relented and agreed to allow Mexico to withdraw a smaller amount for human consumption only.<sup>36</sup>

Based on Texas' initiative, as well as evidence of serious Mexican conservation and mitigation efforts in the face of persistent drought, the United States (and Texas) consented to allow a water loan up to the amount of 81,000 acre-feet over a period of 18 months beginning in November 1995. IBWC Minute 293 expresses this arrangement.<sup>37</sup>

Minute 293, in its introductory part, recognizes the existence of an "urgent need" for water in Mexico.<sup>38</sup> Referring to the "spirit of Article 9 of the 1944 Water Treaty," it allows that "a framework of cooperation between the two countries could be considered to allow Mexico to alleviate the extreme drought that affects Mexico, giving preference to domestic and

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30. See Haurwitz, *supra* note 1.

31. See S. Parks, *Drought to Force Tough Decisions on Water*, DALLAS MORNING NEWS, May 9, 1996.

32. See *id.*

33. See Laurence Iliff, *U.S. Rejects Mexico's Request for Water*, EL FINANCIERO INT'L EDITION, May 22-28, 1995, at 1 (Mexico City, Mex.); Tod Robberson, *Turning off the Water Tap Along a Dusty Border*, WASH. POST NAT'L WKLY. EDITION, June 5-11, 1995, at 16.

34. See Iliff, *supra* note 33; Robberson, *supra* note 33.

35. See Iliff, *supra* note 33; Robberson, *supra* note 33.

36. See L. Iliff, *Drought Worsens; U.S. to Offer Water*, EL FINANCIERO INT'L EDITION, May 29-June 4, 1995, at 3; Morici & Gilbreath, *supra* note 27.

37. See INTERNATIONAL BOUNDARY & WATER COMM'N, MINUTE 293, EMERGENCY COOPERATIVE MEASURES TO SUPPLY MUNICIPAL NEEDS OF MEXICAN COMMUNITIES LOCATED ALONG THE RIO GRANDE DOWNSTREAM OF AMISTAD DAM (Oct. 4, 1995) (visited Apr. 4, 1999) <<http://www.ibwc.state.gov/min293.htm>>.

38. See *id.*

municipal uses of the international waters in accordance with Article III of the 1944 Water Treaty."<sup>39</sup> Noting that a reduction of Mexico's allotted reservoir water below the level of 121,606 acre-feet would impair Mexico's ability to satisfy needed municipal water supplies along the river, Resolution 1 of the Minute allows Mexico to borrow up to 81,071 acre-feet from the United States. The water is to be drawn from the United States' entitlement on the Conchos River for this purpose and may be borrowed so long as the combined storage of United States' waters in the international dams (Amistad and Falcón) remains in excess of 600,000 acre-feet.<sup>40</sup> Under Resolution 2 of the agreement, after the loaned water is delivered, all water borrowed from the United States' entitlement is to be repaid when Mexico's storage in Amistad reservoir exceeds 162,142 acre-feet and its storage at Falcón reservoir exceeds 40,536 acre-feet.<sup>41</sup> Finally, Minute 293 recognizes the importance of exchanging information on water management practices by the "competent water agencies in the two countries" and the importance of reinforcing IBWC practices in this regard "to cover information sharing and conservation measures."<sup>42</sup>

Minute 293, despite its particularities, will doubtlessly serve to some degree as a precedent setting agreement—an indicative framework for dealing with future drought situations on the Río Grande and, very likely, elsewhere along the border. For this reason, it is useful to reflect on the basic conditions associated with this solution to Mexico's drought predicament.

On the positive side, the 1995 agreement may be lauded for affecting a cooperative, if partial, solution to the Mexican drought crisis on the Río Grande. The agreement may be taken as *defacto* recognition by both parties, but particularly the United States, of the need, indeed the obligation, to assist its treaty partner in times of acute water scarcity. The agreement formally recognizes and reaffirms the 1944 Treaty's prioritization of domestic and municipal water uses as the most vital uses of allocated water on the border. It further reaffirms the constructive role of the IBWC as a diplomatic mechanism for crafting solutions to controversial and highly politicized binational problems.

On the negative side, the agreement is obviously restrictive and does little to address the issues of longstanding concern in drought management. Taken as a set of actions culminating in Minute 293, the binational approach to managing the 1990's drought has the following informal and formal features:

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39. *See id.*

40. *See id.*

41. *See id.*

42. *See id.*

1. Crisis (drought) management within the 1944 Treaty Framework (Minute 293)
2. Case by case negotiations directed by the IBWC (Minute 293)
3. Subnational veto over federal initiative (defacto political reality)
4. Reliance on stored reservoir water (Minute 293)
5. Cooperation by water lending (consistent with the treaty) rather than donation (Minute 293)
6. Relatively short credit timelines for borrowers (Minute 293)
7. Rapid recovery of owed water (Minute 293)
8. Concessions for the satisfaction of top priority (Article III-1944 Water Treaty) uses only (Minute 293)
9. Heightened cooperation for data sharing on water availability and management (Minute 293)
10. Technical assistance for improving water conservation practices in Mexico (State of Texas offer).

These mechanisms neglect a number of outstanding issues. First, though Minute 293 expressly invokes the 1944 Treaty, referring to Article IX for authority,<sup>43</sup> it fails to provide an adequate, even approximate definition of the notion of *extraordinary drought*. While Minute 293 clearly recognizes the existence of a water emergency on the Mexican side of the Río Grande, it refers variously to a "critical situation," to "dramatically reduced inflow," or to a "serious threat to meeting water supply demands" with reference to Mexico.<sup>44</sup> The net effect is to leave the definition of what constitutes an *extraordinary drought* to situational determination—in effect, if a nation believes it has an *extraordinary drought* situation it may approach the other country with its claim. Second, Minute 293 is highly specific; while it is in a sense precedent setting, it offers no explicit guidance for the handling of future droughts. While it reaffirms 1944 Treaty provisions for handling drought situations on the Río Grande, it does not attempt to extend these principles, or extrapolate from the prescribed solution under treaty, to apply to other situations along the border or existing lacunae in the international drought management framework. Third, there is no effort to modify the 1944 Water Treaty's priority of uses, or to acknowledge the importance of dealing with other water needs that might be affected by this or future droughts. It would thus be difficult to use Minute 293 to advance or improve the reach of the extant drought management regime at the international level. Fourth, while strengthening binational commitment to sharing technical information on water management for purposes of

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43. See *id.*

44. See *id.*

conservation and planning in the Río Grande basin,<sup>45</sup> it appears to do little by way of moving the two countries towards long-range planning for drought mitigation—to include considerations of social, economic, administrative, and climatic factors shaping water availability and utilization in the border region, much less the adoption of ecosystemic or drainage basin approaches to water management. Fifth, the 1995 drought management solution does little to address the broader equity issues implicit in the allocation of water along the border, or to better align the two countries with today's customary legal norms pertaining to the equitable utilization of waters. Finally, it is obvious but worth mentioning that the IBWC's jurisdiction and mandate remain unaltered.

The 1995 solution thus leaves much to be done at the international level in the line of managing protracted severe drought along the border. While there is little chance the basic treaty framework will be formally revised, there are nevertheless a number of concrete actions that could be taken both within and outside the current treaty framework that would strengthen binational capacity for drought management. The next section of this paper identifies several of the more interesting options that might be taken for strengthening drought management along the border.

### **STRENGTHENING INTERNATIONAL COOPERATION FOR DROUGHT MANAGEMENT ON THE BORDER**

If Minute 293 and the measures taken to alleviate the drought emergency in 1995 affirm but do not significantly add to the existing framework for international cooperation in drought management, what measures might be taken to strengthen this framework? To answer this question it is necessary to look at potential improvements within the present institutional framework as well as outside of it.

#### **Drought Management Reform within the Treaty Framework**

Strengthening drought management within the treaty framework means taking advantage of existing treaty language to develop and extend international obligations and practices. The principal barrier to achieving such gains is political rather than statutory, and given the embeddedness of political commitments and practices at the federal and state level on both sides of the border, such reforms are difficult to achieve. Nevertheless, with public support and diplomatic effort, changes of this sort are more attainable than textual revisions to the basic treaties governing national obligations in this area.

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45. *See id.*

Assuming the political will is present, a number of changes may be had through deepening existing treaty-authorized practices or developing new authority pursuant to treaty through executive agreement of the two governments (in this case the Minute device of the IBWC). As to the former method, Resolution 7 of the IBWC's Minute 293 suggests one avenue of reform when it stipulates that,

The Commission will continue the practice of exchanging information regarding water management practices by competent agencies in the two countries in the best interest of having basin-wide information that will enable the proper authorities in the two countries to have the best information possible in developing conservation and other planning strategies in the part of the Río Grande basin in their respective territories.<sup>46</sup>

In this case, it would not require too much extrapolation of its present powers to authorize the IBWC to incorporate additional socioeconomic and other relevant data affecting water availability and utilization into its planning database, extending the practice to the whole border, and to make these data available to other governmental and non-governmental bodies for utilization in regional water management.<sup>47</sup> It is worth noting here that Texas' state environmental and water officials have long complained about the "lack of communication and coordination" among agencies and institutions and the failure "to develop data into usable form" for substantive application.<sup>48</sup> Despite centralized water administration in Mexico, numerous data and communications problems limit national capacity to anticipate and respond to critical water supply problems, including drought.<sup>49</sup> Building on Resolution 7 the IBWC could play an

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46. *See id.*

47. For a discussion of this aspect of the IBWC's functions, see Eaton & Hurlburt, *supra* note 1, at 90-93.

48. TEXAS WATER RESOURCES INST., TEXAS A&M UNIV., TR-166, ENVIRONMENTAL ISSUES OF THE U.S.-MEXICO BORDER REGION, A WORKSHOP SUMMARY 9 (Howard L. Malstrom & Wayne R. Jordan eds., 1994).

49. A recent World Bank study observes:

Although some drought contingency planning and management is done in Mexico, it is mostly localized and directed towards dealing with emergencies while they occur. What is needed is the definition of criteria and procedures, the development of detailed drought contingency plans, and the adoption of institutional and coordination mechanisms for implementing the plans prior to, during and after droughts.

Adequate reservoir operation and emergency management in Mexico, either in the case of floods or droughts, is hampered because of a dearth of hydrometric, climatological, and meteorological data, owing to the insufficient density and quality level of networks and their degradation

important role as a regional clearinghouse and analytical center for water supply data with a bearing on drought management. In view of the IBWC's specialized role in treaty implementation and transboundary water management generally, the Commission might well be authorized to spearhead a drought management task force, working with national and international bodies as it presently does in the Border XXI interagency water working group and extending participation in this case to state, local, and non-governmental organizations. The goals here would be to encourage the governments and localities to move more aggressively to conserve water resources, assist the governments in this process, and consider various contingency arrangements that could be recommended to the governments to meet particular situations.<sup>50</sup> While domestic political support is still very much a part of any such planning process, participating parties and water interests would be better informed and in some instances, perhaps, better prepared to buy into binational drought management schemes.<sup>51</sup>

In addition to measures in this vein, and perhaps as an outgrowth of this type of more intensive cooperation for drought management, the governments might consider using the IBWC to achieve certain treaty modifications. A short list of candidate reform that might be taken up in this way includes seeking agreement on the operational definition of *extraordinary drought*; or seeking agreement that would authorize the IBWC to issue a formal drought warning that could be used to trigger national conservation measures; or seeking agreement on a defacto reordering of water use priorities under Article III—hunting and fishing, for example, might be construed as habitat preservation and a mandate to support biodiversity objectives at a higher order or priority than is presently given. More ambitious, but also feasible within the Treaty context, is the

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since roughly 1985. During critical situations there are not enough rainfall data available and there are extremely few rainfall intensity reports.

THE WORLD BANK, REP. NO. 15435-ME, STAFF APPRAISAL REPORT: MEXICO WATER RESOURCES MANAGEMENT PROJECT § 1.27, Table D.1 (May 31, 1996).

50. It is perhaps worth noting that the Texas Water Development Board has recommended that the Texas State Legislature authorize the Texas Water Commission (TWC) to develop and implement a drought contingency plan as part of the water rights and wastewater approval process. It also recommended that the TWC should "require existing permit holders to implement water conservation programs and to prepare drought contingency plans within a two year period." TEXAS WATER DEV. BD., WATER FOR TEXAS: TODAY AND TOMORROW 4-4, (1990). The IBWC certainly has a mandate and the capacity to coordinate with and assist state agencies like the TWC in estimating water availability and developing basin wide rationing strategy.

51. For the record, Texas water interests used Mexico's lower level of conservation preparedness as an excuse for resisting concessions in the 1995 drought assistance negotiations. See Cleeland, *supra* note 24.



development of agreements defining and addressing the problem of *climate change*, allocating transboundary groundwater resources, allocating the waters of other unallocated streams, and the development of joint cooperative schemes for recharge and groundwater storage (water banking) to better husband scarce water supplies.

### Treaty Compatible Drought Management Reforms

It may well be the case that the more important initiatives undertaken for advancing binational cooperation for managing periodic protracted drought and long range climate change affecting the availability of water resources in the region will be pursued outside the formal framework for bilateral drought management, but in a manner largely compatible with it. The evolution of institutions for binational cooperation has been substantial since the 1944 Water Treaty was made over fifty years ago and has accelerated in the past five years. A short list of recent developments with implications for drought management along the border includes the 1983 La Paz Framework Agreement on border environmental cooperation,<sup>52</sup> the Border XXI environmental cooperation process that has grown out of the La Paz Agreement,<sup>53</sup> the Border Environment Cooperation Commission (BECC) and its institutional sibling, the North American Development Bank (NADBank),<sup>54</sup> and the transregional Commission on Environmental Cooperation (CEC).<sup>55</sup>

These new institutions have already contributed to water management policy along the border and offer a range of opportunities for approaching issues that might otherwise be difficult to address at the level of the IBWC, singly, or within the formal and political limitations of the 1944 Water Treaty. For instance, the La Paz Agreement and, recently, the Border XXI Framework, have generated a binational institutional process for interagency consultation on substantive environmental issues at the federal level with some subnational governmental participation in decision making in each country. Border XXI's Water Working Group is composed

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52. Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area, Aug. 14, 1983, U.S.-Mex., T.I.A.S. No. 10827 [hereinafter the La Paz Agreement].

53. ENVIRONMENTAL PROTECTION AGENCY, NO. 160-R-96-003, U.S.-MEXICO BORDER XXI PROGRAM FRAMEWORK DOCUMENT (Oct. 1996) [hereinafter Border XXI Program].

54. Agreement Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank, Nov. 16, 18, 1993, Mex.-U.S., 32 I.L.M. 1545.

55. *North American Agreement on Environmental Cooperation (Final Draft)*, in THE ENVIRONMENT AND NAFTA, UNDERSTANDING AND IMPLEMENTING THE NEW CONTINENTAL LAW (Pierre Marc Johnson & Andre Beaulieu eds., 1996).

of the IBWC, the BECC, Mexico's National Water Commission (CNA), and the U.S. Environmental Protection Agency (EPA), with the IBWC playing a leading role in coordinating the Group's activities.<sup>56</sup> Much of the Group's recent work has focused on the development of BECC certified projects aimed at building and financing new, largely urban, border water infrastructure.<sup>57</sup> Such infrastructure development is often linked to conservation and will have the long range effect of reducing water losses by upgrading deteriorated urban water delivery systems, supporting waste water reclamation, as well as helping to ensure that new water systems conserve water more efficiently. The need for such infrastructure was frequently mentioned in press accounts of the 1990's drought.<sup>58</sup> While the Water Working Group has focused its activities on mostly short-term, practical objectives to date, it could, as suggested above, serve as a non-treaty mechanism for coordinating regional discussions of conservation ideas, planning concepts, and administrative and statutory reforms, both domestic and binational, aimed at advancing more efficient water use, conservation, and regional responses to protracted drought. The promotion of a region wide, comprehensive geographic information system (GIS) planning mechanism, as already envisioned,<sup>59</sup> will prove a considerable asset in binational drought management planning. Border XXI's strategic planning process, moreover, provides a mechanism for involving public participation in the crafting of binational responses to water scarcity.<sup>60</sup>

The CEC, for its part, provides a useful forum for developing ideas and strategies for dealing with problems of continental scope—global climate change, for example—and those with implications for regional water management along the border. As a trilateral institution with a mandate for addressing transboundary issues throughout the North American context, the CEC can take up issues that might otherwise languish on the binational agenda, providing a forum for discussion and debate of problems and policy alternatives, dealing at least hypothetically with questions that link water to trade through the environment, examining water markets and water transfer schemes (though it is important to note that natural resources management, as such, was formally and deliberately excluded from CEC's mandate<sup>61</sup>), and prodding the govern-

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56. See Border XXI Program, *supra* note 53, at I. 9.

57. See *id.* at III. 17.

58. Martin Espinoza, *Keeping the Water Flowing*, EL FINANCIERO INT'L EDITION, Jan. 22-28, 1996, at 8.

59. See Border XXI Program, *supra* note 53, at III. 39.

60. See *id.* at II. 1.

61. See North American Agreement on Environmental Cooperation, *supra* note 55, at art. 45, § 2(b).

ments to proceed with various transboundary agendas in the border area in the interest of meeting and deepening region-wide commitments.

### CONCLUSION

The impact of the 1990's drought (dare we say *extraordinary* impact?) certainly draws attention to the limitations of the current international drought management system along the U.S.-Mexico border. While it is commendable that the IBWC, with the cooperation of Texas state officials, struck a temporary agreement (Minute 293) to provide water relief to Mexico, this review shows that the Minute 293 solution falls well short of addressing a range of important drought management questions affecting U.S.-Mexican relations. Few of these problems are new, most have been well recognized for years. To date, however, the governments have lacked the vision and the will to seriously grapple with these questions.

As seen above, there is, in fact, a good deal that can be done to better manage protracted droughts along the border short of attempting to renegotiate the water treaties allocating water along the major international rivers. At the institutional level, we now have a set of new international institutions and practices affecting transboundary water management along the border that enhance binational capacity to find new solutions to the *enduring problems of allocating and conserving water resources*. It is to be hoped that the two governments, with the IBWC playing a constructive role in the process, may be persuaded to take advantage of the graphic lessons delivered by the 1990's drought to better prepare for cooperative solutions to future droughts as these may and will occur along their common border.