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Institutional Alternatives for Managing Groundwater Resources: Notes for a Proposal

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INSTITUTIONAL ALTERNATIVES FOR MANAGING GROUNDWATER RESOURCES: NOTES FOR A PROPOSAL

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The La Jolla meeting in November increased the concern of all of us for the protection of resources and living conditions along our common border. We were made acutely aware of pollution and development problems that are closely related to the availability and use of water resources.

What I learned at La Jolla and what I have read since then in the papers that were presented[1] demand humility about proposing any international effort, or new institutional approaches, to the management of groundwater resources shared by our two countries.

The papers presented at La Jolla are a treasury of information and ideas. More ideas will be generated by this conference. I must confess at the outset, however, that my effort will not represent anything particularly novel[2] to this group, although it may startle some of our countrymen on both sides of the border who do not share our hope. But I say to all of them, in the words of President Lopez Portillo spoken on his visit to Washington on February 17, 1977: "He venido para convenir en continuar realizando convenios pues ni el diálogo ni el análisis cesar."[3]

You are well informed about the U.S.-Mexico treaty of 1944 and its

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1. *See*, e.g., Palacios, Escamilla & Reyes, *El Balance de Sales del Distrito de Mexicali, B.C.*, *infra* at 49; Ayer & Hoyt, *Industrial Growth in the U.S. Border Communities and Associated Water and Air Problems: An Economic Perspective*, 17 NAT. RES. J. 585 (1977); Carpenter & Blackwood, *The Potential for Population Growth in the U.S. Counties That Border Mexico: El Paso to San Diego*, 17 NAT. RES. J. 545 (1977); Zwerneman, *Economic Development in the El Paso-Juarez Area and Its Impact on Water Supply*, 17 NAT. RES. J. 619 (1977).

2. B. Burman & T. Cornish, *Needed: A Groundwater Treaty Between the United States and Mexico*, 15 NAT. RES. J. 385 (1975).

> This paper has suggested that the instrument of regulation be the International Boundary and Water Commission. This suggestion is made because the Commission has proven successful in the past in dealing with related matters and because utilization of an existing organization may speed agreement. Other organizations might be suggested for this purpose, for the need is not that any specific group do the negotiation, but rather that negotiations be conducted before the water is gone and before sections of the border area go dry. The waters replenish slowly in the border area—official action must be taken soon.

Id., at 403-04.

3. Wall St. J., Feb. 18, 1977, at 9, col. 3 (report of President Portillo's speech). The translation as it appeared: "I have come to agree to continue reaching agreements because neither dialogue nor analysis must cease."

earlier history and also about the subsequent developments over its meaning and its implementation.[4] I do not intend to review that long and difficult history which Lic. Sepúlveda and others have illuminated in their studies of water quality and boundary problems.[5] We are sensitive to the many small and large policy and technical details yet to be worked out by our respective countries with constructive suggestions, we shall hope, from groups such as this one.

Other members of this group from different disciplines have investigated, or are presently studying, specific geographic areas along the border, where ground and surface water resources are interrelated, and "closed" areas and non-tributary aquifers which are important to both countries.[6] I shall address the special legal problems of "mining" ground water, in order to emphasize that a joint management effort is essential.

This group has already surveyed the physical, economic, technological, and social areas of the common subject and our respective interests in it as citizens and scholars.[7] Reference to policy considerations, i.e., political matters, which have been emphasized in all of the literature, is limited to something we already know: viz, that law, on any level, is the result of the political process, national and international. This process sometimes produces laws, including treaties and other formal controls, that we find less than perfect. Yet we know that politics relates to the necessary management of power. Law, however, is only one form of social control which involves restraints that also release power and opportunity for the benefit of the community and the individual citizen.

Therefore, in outlining a proposal to encourage joint management of ground water resources, I speak to you as a citizen-lawyer who happens also to be a teacher. This teacher, by definition and everyday commitment, believes in the possibility of human improvement which includes the reshaping of legal institutions.

My specific assignment, as I understand it, is to suggest institutional changes that will encourage new methods of allocation, use, protec-

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4. C. TIMM, THE INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND MEXICO (1941); W. TILDEN, THE POLITICS OF SALT: BACKGROUND AND IMPLICATION OF THE MEXICAN-AMERICAN TREATY OF 1944 (1974).

5. Sepúlveda, *Areas of Dispute in Mexican-American Relations*, 17 SW. L. J. 98 (1963); Sepúlveda, *Mexican-American International Water Quality Problems: Prospects and Perspectives*, 12 NAT. RES. J. 487 (1972); Utton, *International Water Quality Law*, 13 NAT. RES. J. 282 (1973); Day, *Urban Water Management of an International River: The Case of El Paso-Juarez*, 15 NAT. RES. J. 453 (1975).

6. *See* Bradley & DeCook, Proposal for Transfrontier Allocation of Groundwater Resources: An Exploratory Assessment (mimeographed, U. Ariz. 1976).

7. *See supra* note 1.

tion, and conservation of groundwater resources shared by our two countries.

With that goal in mind, I shall propose generally, and within the framework of the Mexico-U.S. Treaty and the functions of the International Boundary and Water Commission,[8] a regulatory and administrative approach to groundwater management. The approach is similar to that I have been advocating for, and which is necessary for the management of groundwater among the States of the Union.

The feasibility of these suggestions should be tested by the combined research and cross disciplinary scholarship of groups such as this one. The hope supporting this suggestion lies in the strength and adaptability of existing institutions and in the mutual understanding and good relations existing along our 1600-1900 mile border, two-thirds of which overlies water resource areas.

The proposal requires a reexamination and a thorough review of the time tried Treaty framework and of the continuing mandates imposed on the International Boundary and Water Commission. If I may borrow an image from an earlier period, my proposal simply advocates better quality wine in the same scarred but reliable skins (botas).

You already know that there are large groundwater management problems on the U.S. side of the border.[9] Arizona's "nonmanagement" problems have been before the state legislature for years. My earlier criticism of Arizona's groundwater law[10] may raise serious doubts about the value of these suggestions at the international level. But that is a good place to begin. For, as Abelard reminded his, and later, centuries: by doubting we question and by questioning we may come upon the truth.

The states of Arizona, California, New Mexico, and Texas, which border the Republic of Mexico, are the heaviest users of groundwater in the U.S.[11] The shortage of groundwater in the boundary region intensifies the water supply problem. Each of these states has a different system of ground water law; none has adequate legislation or regulations for the protection and management of diminishing supplies within the state and along the border areas. New Mexico has

8. Treaty with Mexico relating to the utilization of the waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944, 59 Stat. 1219 (1945). T.S. No. 994 (effective Nov. 8, 1945). Articles 24 and 25 specify the powers and duties of the Commission. Article 24 and Article 25 are reprinted in 12 NAT. RES. J. 487, 489-90 (1972).

9. *See* Fisher, *Management of Interstate Groundwater*, 7 NAT. RESOURCES L. 521 (1974).

10. Clark, *Arizona Groundwater Law: The Need for Legislation*, 16 ARIZ. L. REV. 799 (1974).

11. Clark, *The Role of State Legislation in Groundwater Management*, 10 CREIGHTON L. REV. 469 (1977).

the only public control system, but regulations under it do not contemplate joint controls in the area of the border.[12] Arizona and Texas have virtually no controls except voluntary ones,[13] and the California law is beholden to similar rules of capture[14] which do little to discourage excessive pumping and waste.

An optimistic picture does not emerge from an examination of these conditions in the border states and in the adjoining areas of the Republic of Mexico.[15] Yet, these conditions, which we know cannot be ameliorated independently, offer an opportunity for formulation of an approach that transcends national boundaries. I see good reasons for pursuing it:

First, there is an interstate movement in several Western States, including Texas, for groundwater management at the state or district level. The recent formation of the Groundwater Management Districts Association, which encompasses numerous districts in several states,[16] is strong evidence of a desire for cooperation in meeting these problems.

Secondly, the arrangements among several states which have emphasized surface waters[17] are being re-examined for their application to groundwater problems. Moreover, the 1968 Act of Congress which expressly recognizes the U.S.-Mexico Treaty as a "national obligation" also refers to groundwater conditions in areas of the Colorado and Gila rivers.[18]

Thirdly, the instate compact device,[19] which has been widely used in allocating interstate streams, has become, in comparatively recent times, the legal framework for the regulation of groundwater in several Eastern States. This constitutional device was not expressly applied to groundwater until 1961.[20]

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12. *See supra* note 2.

13. *See supra* note 11.

14. *See supra* note 2, at 389; *see* Anderson, *A History and Interpretation of the Water Treaty of 1944*, 12 NAT. RES. J. 600, 603 (1972); Holbart, *International Problems of the Colorado River*, 15 NAT. RES. J. 11 (1975); *International Symposium on Salinity of the Colorado River*, 15 NAT. RES. J. (1975).

15. Gonzales-de-Leon, *The Mexican Position: National and International Considerations*, 15 NAT. RES. J. 109 (1975); Mann, *Politics in the United States and the Salinity Problem of the Colorado River*, 15 NAT. RES. J. 113 (1975); MANN, CONFLICT AND COALITION: POLITICAL VARIABLES UNDERLYING WATER RESOURCES DEVELOPMENT IN THE UPPER COLORADO RIVER BASIN 141 (1975).

16. Groundwater Management Districts A., 1976 conference, Colorado Springs, Colo. (*see supra* note 11). Over 200 persons attended representing 30 management districts in nine or more states.

17. *See* National Water Commission Report, ch. 7 (1973).

18. Colorado River Basin Project Act, Pub. L. No. 90-537, §306, 82 Stat. 885, 887, 893 (1968).

19. U.S. CONST. art. I, §10, cl. 3.

20. Delaware River Basin Compact, Pub. L. 87-328, 75 Stat. 688 (1961). *See* J. MUYS, INTERSTATE WATER COMPACTS (1971).

In these developments we can see some history and view parallels with the movement for international cooperation.

The Western States are parties to numerous interstate compacts[21] and their use of the compact reminds us of the origins of that constitutional method for securing equitable uses of the great interstate rivers. But, as in the Mexico-U.S. Treaty, the compacts have paid little, or indirect, attention to groundwater until recently.[22]

The Colonies under the Articles of Confederation[23] were in somewhat the same position with regard to their general power to influence each other as the states are today with regard to the use of the compact device in water resource management matters: both the Articles and compact device intended to promote cooperation, yet both proved to be gravely deficient in providing overall management powers. Fortunately, the Articles of Confederation were supplanted, after a long struggle, by the U.S. Constitution with its compact clause which encourages "treaties"[24] among the states with the approval of the central government.

The Delaware and Susquehanna Compacts of 1961 and 1970[25] have gone the farthest in providing a legal framework for management of surface and groundwaters across state lines. They also have developed the unique feature[26] of having the U.S. Government as a partner with the states in the interstate effort and not merely as a chairman of the meeting.

The United States has learned most of its lessons about natural resource uses and conservation through a process that can be described only as education by disaster. Education by disaster is continuing, and not only with respect to groundwater mining or energy dissipation. As a result of this experience, the United States has institutionalized a system of "equitable apportionment" along interstate streams and has produced a doctrine widely accepted in

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21. *See* 5 WATERS AND WATER RIGHTS §403 (R. Clark ed. 1972).

22. 1944 Treaty, *supra* note 8, makes no reference to ground waters. *But see* Minute 242 of the Int'l Boundary & Water Commission, 69 Dep't State Bull. 395 (1973), reprinted at 15 NAT. RES. J. 2 (1975). Paragraphs 5 and 6 refer to groundwaters.

23. M. JENSEN, THE ARTICLES OF CONFEDERATION (1966).

24. Kansas v. Colorado, 206 U.S. 46 (1907). "Sitting, as it were, as an international, as well as domestic, tribunal, we apply Federal law, state law, and international law, as the exigencies of the particular case may demand." *Id.* at 97.

25. Delaware Compact, 75 Stat. 688 (1961); Susquehanna River Basin Compact, Pub. L. 91-57S, 84 Stat. 1509 (1970). *See* MUYS, *supra* note 20.

26. Delaware Compact, 75 Stat. 688, 691 (1961), one commissioner appointed by the President. Susquehanna Compact, 85 Stat. 1509, 1512 (1970), one commissioner appointed by the President. *See* MUYS, *supra* note 20, at 117 (Delaware Compact), 193 (Susquehanna Compact).

international law.[27] This institutional approach offers opportunities in the management of large groundwater aquifers that traverse state lines, such as the Ogallala formation, for example, which lies between parts of New Mexico, Texas, and the Plains States.[28] Equitable apportionment may be the institutional avenue for managing the underflow of the great interstate rivers such as the Platte, the Arkansas, the Colorado and the Rio Grande, all shared by several states where the surface water rights are being impaired by increased pumping in the alluvial valleys of each stream.[29] On two of those rivers, the Colorado and the Rio Grande, the effects are international in scope. The problem along these international rivers is of most concern in areas with large cities, such as in the California-Mexcali-Yuma and New Mexico-El Paso-Juarez areas.[30]

Industrial development and population projections must be viewed within the framework of functioning international institutions, such as the Mexico-U.S. treaty and the jurisdiction of the International Boundary and Water Commission. If the utility of this international framework has been doubted in the past, that is clearly not the case since the adoption of Minute 242 in 1973.[31] This development has demonstrated the vitality and flexibility of an established institution and also the cooperative spirit between the two countries. Minute 242, a major national and international advance from water quantity allocations to water quality concerns, has much larger implications for the two countries than any effort proposed for including ground water within the context of water resource management. The adoption of Minute 242 was more than a diplomatic and technical success; it is a prelude to more cooperative planning and a joint effort.

At the December meeting of the Ground Water Management Districts Association,[32] I outlined the essential requirements of any ground water management legislation. These principles are applicable to the international scene:

1. There must be clear understanding that the legal relationship to water in the ground is not like it is to sand, gravel, or minerals in place. Despite claims of "ownership," no system of law can provide a property right in the particles or molecules of water moving, however slowly, through the soil.

27. *Supra* note 21, at §150.5; W. TILDEN, *supra* note 4; F. TRELEASE, WATER LAW (2d ed. 1974) 659-83 (Equitable Apportionment).

28. *See* Snyder, *Ground Water Management: A Proposal for Texas*, 51 TEX. L. REV. 289 (1972).

29. *See* Fulhauer v. People, 167 Colo. 320, 447 P.2d 986 (1968).

30. Day, *supra* note 5.

31. Minute 242 of the Int'l Boundary & Water Commission, *supra* note 22.

32. Groundwater Management Districts A., *supra* note 16.

The legal rights are to the control and use of the water whether the focus is local or international.

2. There must be conjunctive management of surface and ground water in areas where the supplies are interrelated[33] such as along the great alluvial river valleys.
3. There must be a system of measurement of withdrawals from wells. Wells up to a specified capacity can be exempted. Metering requirements may make it necessary for both countries to drill test wells and develop a grid of wells in particular aquifers in order to plan for the use of the supply over a calculated period, or to determine "safe yield," and to prevent salt water intrusion.
4. Records must be kept of withdrawals over a period of time and controls must be placed on drilling in certain areas where future high priority and human uses are endangered. These controls must be enforceable both through the process of education and through legal actions.[34]
6. Allocation procedures, including permits, must be flexible in order to anticipate and minimize conflicts, shortages, and transfers to other uses. In the planning process there must be procedures, particularly for closed or non-tributary areas, which will allow for planned depletion[35] by certain uses, e.g. by irrigation, over a calculated period, and yet preserve a supply for domestic and other higher priority uses over an indefinite future.
6. The management effort must include and be related to all water quality matters and be designed to encourage conservation, to reduce waste, and to protect the environment.
7. The designated international agency must implement administrative authority which is broad enough to carry out the policies of the two countries; this authority must be strong enough to enforce policies designed for particular ground water areas along and near the border.[36]
8. The joint international agency, the strengthened International Boundary and Water Commission in this case, should continue to be composed of the most qualified people available from both countries; these people must be independent

33. For all the recommendations, *see supra* note 17.

34. Cano, Water Law and Legislation: How to Use Them to Obtain Optimum Resources From Water Resources 28, United Nat. Water Conference, Mar del Plata, Argentina (1977).

35. See Fundingsland v. Colorado Ground Water Comm'n, 171 Colo. 487, 468 P.2d 835 (1970), where the court approved a note of depletion based upon a 25-year period. The commission's authority to determine allowable depletion rates is pursuant to C.R.S. 37-90-107(5) (1973). Mathers v. Texaco, Inc., 77 N.M. 239, 421 P.2d 771 (1966) approved a 40-year time period.

36. Fox, *Institutions For Water Management in a Changing World,* 16 NAT. RES. J. 743 (1976). The view of this article is that it is impossible to establish a single organization that can embrace all aspects of water management and use.

of particularized regional pressures. The staff must be equally well qualified and independent.

Within the outlines of these minimal but essential requirements, what specific action can be taken?

1. The International Boundary and Water Commission should be formally mandated by the two governments to begin a joint research program which would include an inventory[37] of ground water supplies, detailing the areas of availability and present uses. The program should include the study of non-tributary sources and of other surface and ground waters that are interdependent. This can be done under the provisions found in Sections 24 and 25 of the Treaty.[38]
2. The governments of both countries should be advised of the costs of such a program and be required to supply adequate funds. Money spent for this purpose will produce more beneficial, and more immediate and long lasting, results than many international trade agreements which carry large subsidies.
3. This program coordinated on both sides of the border should include the drilling of strategic test wells, well metering, and record keeping which will encompass water quality matters. Selected areas of heavy demand and diminishing supplies should be studied first, particularly in the heavily populated areas, to provide the basis for future planning.
4. The goal should be a general assessment report at the end of five years, with interim annual reports which will be used in planning for land uses and for industrial and other development.
5. Meanwhile, complementing the work of the joint agency, there should be a cooperative research and planning program among scholars in institutions of both countries. These scholars should be aided by their institutions, by the governments of the states, and by the two central governments. The program should produce alternative proposals for more cooperation and improved joint management of ground water resources, both locally and internationally,[39] along our entire common border.

RESUMEN

El Tratado de 1944 entre los Estados Unidos y México y acontecimientos subsiguientes como Acta 242, tanto como otros acuerdos más

37. *See supra* note 34.
38. Treaty, *supra* note 8.
39. International organizations should be interested also, since similar problems exist throughout the world.

tempranos sobre limites providen un armazón institucional para el futuro manejo conjunto sobre aguas subterráneas por las dos naciones.

La Comisión Internacional de Limites y Aguas es una organización que funciona entre este armazón binacional y debe ser dado un cuerpo de empleados, el dinero y la autoridad a:

1). hacer estudios físicos más extensivos sobre las origenes de aguas subterráneas conjuntas en el área frontera.
2). preparar planes para mejorar los métodos de distribución y repartimiento entre los dos países que incluyen conservación, controlo de la calidad de reuso, y preferencias para usos domésticos en áreas pocas pobladas, como Tijuana y El Paso-Juárez.

Además, debe ser un esfuerzo a establecer administración conjunta de aguas superficiales y subterráneas en areas interrelacionadas dentro sistemas de control público o manejo en estados en los dos lados de la frontera.

Un programa de cinco años de duración que incluye estudios, construcción experimental de pozos, y cuidadoso recuerdo de datos debe producir un reporto en que las dos naciones pueden tomar acciones a favorecer el manejo y conservación futuro de los recursos fronterizos de aguas subterráneas.