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The *Natural Resources Journal*

The *Natural Resources Journal*, published four times per year, is a multi-disciplinary publication of the School of Law at the University of New Mexico. The *Journal* publishes articles that are both accurate in the discipline from which they come and accessible to the wider audience of professionals interested in natural resources generally. These technically competent, broadly accessible articles are drawn from law, economics, political science, public administration, and hard science, among others. In addition, the *Journal* emphasizes articles that cut across these disciplines. In the past year, the *Journal* has opened with an introductory essay and closed with an expanded book review section.

Recent issues of the *Natural Resources Journal* include articles on Conservation Easements, Geographic Information Systems, International Fisheries Conflicts, Forest Trusts, Wildlife Management, Nuclear Waste, Water Conservation, Section 7 of the Endangered Species Act, Conjunctive Water Management, Scrap Tire Disposal, The Prudent Operator Standard for Oil and Gas Leases, and much, much more. Recent volumes have also included special issues focusing on transboundary water issues between the United States and Mexico.

To learn more about the *Journal* and our recent issues, visit our web page at http://lawschool.unm.edu/Nrj/index.htm, contact our editorial or business offices by calling 505-277-4910 or 8659, or write us in care of the UNM School of Law, 1117 Stanford Drive NE, Albuquerque, NM 87131-1431. Subscriptions to the *Journal* are $40 per year for domestic orders and $45 per year for subscriptions outside the United States. Single back issues are available for $15 per copy.

NOTICE:

With the change of our name from CIRT To The Utton Transboundary Resources Center we have also changed the name of our Transboundary Resources Report to Utton Center Report

If you are receiving more than one copy of this newsletter, or have name or address changes please contact Reva Chapman at (505) 277-7809 or email UttonCenter@law.unm.edu

University of New Mexico School of Law
A PUBLICATION FROM THE UTTON TRANSBOUNDARY RESOURCES CENTER

Utton Center Report

VOL. 1, NO. 1
SPRING 2002

Message from the Director

Marilyn C. O'Leary

The Utton Center's Beginnings

This newsletter is the first one since our friend Professor Al Utton passed away, and my first one as the new director. In January, 1999 a group of Professor Utton's colleagues met and determined to continue his work. More information on their deliberations is contained on the inside pages of this *Report*.

Professor Charles DuMars, an internationally recognized expert in water law, became Acting Director and secured a substantial grant from the Department of Energy to get the Center off to a strong start. As many of you know, Chuck DuMars was a long time colleague of Al's at the UNM School of Law and collaborated with him on many projects. We are all extremely grateful for his successful efforts to acquire funding for the Utton Center and we look forward to continued collaboration with him on a number of projects. Despite his now having emeritus status Professor DuMars will continue to teach water law classes here at UNM and share his wealth of knowledge with our community.

We also want to thank Dean Robert Desiderio of the UNM School of Law for his support of the Center.

The University of New Mexico Board of Regents voted to rename CIRT in honor of Al's memory and it is now known as the Utton Transboundary Resources Center. We are still located in the UNM School of Law and we are working at full-steam. You will notice our new look and our new name.

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"The purpose of our first *Utton Center Report* is to establish who we are and the direction of the new Utton Center."

The Utton Center
TRANSBOUNDARY RESOURCES

In July, 2001 I began work here. I am a graduate of the UNM School of Law, a former Chair of the NM Public Service Commission, and while in private practice represented clients in the areas of water law, energy and utilities. I not only worked as lead articles editor of the *Natural Resources Journal* with Al, but over the years enjoyed a professional and personal relationship with him and his family. I am, needless to say, deeply honored to have been chosen to direct the work of the new Utton Center.

Purpose of Our Newsletter

The purpose of our first *Utton Report* is to establish who we are and the direction of the new Utton Center. We are standing on a foundation built by Al Utton and his colleagues from around the globe – a foundation which took more than thirty years to build. As we expand on this foundation we must be mindful of changes that have taken place and that continue to take place, and we must more effectively use tools now at our disposal as we seek to meet the demands of the future.We will continue to provide you with information on recent scholarship and practical applications related to transboundary resources.

The Center itself has a two-pronged approach to transboundary issues, one, academic research and scholarship and two, practical field projects. Our newsletters will provide information in both arenas.

First Utton Center-Sponsored Conference

We have planned a conference in the Fall to begin a long-term project of the Center that will culminate in a draft model interstate surface and ground water compact. We will invite experts from all disciplines who can help elucidate the areas of interstate water conflict and the contributions of their respective disciplines. They will address the state of the law and science as they affect interstate issues and will participate in interdisciplinary discussion on the current situation. This conference will be followed by a later one which will propose solutions. Smaller group gatherings will result in the draft compact.

First Utton Center Field Project

For our first field project we have partnered with Sandia National Labs here in Albuquerque to provide technical assistance and facilitation to the Middle Rio Grande Water Assembly. Together we will aid the Water Assembly with regional water planning and a decision-making process. The Utton Center has hired Lucy Moore to provide facilitation. As part of her work, Lucy will also mentor a number of law students who are studying mediation and the facilitation process. The Utton Center is represented on the project by Celina Moore, a second year law student who also has a Masters degree in Hydrology. This project allows us to achieve several important goals: working with stakeholders; promoting fact-based decision making; providing opportunities for student involvement; and partnering with other institutions.

Inside Our Newsletter

This issue discusses the limitations of current institutions to effectively deal with resource use and allocation. We feature a timely article by Professor Charles DuMars on the future of river management, particularly in New Mexico, and also a review, by Professor Joachim Blatter, of a volume of essays edited by Professor Blatter and Professor Helen Ingram. The book, "Reflections on Water" details different approaches to transboundary conflicts and cooperation. You will also find a description of the Utton Center's mission and goals as formulated by our advisory council.

I anticipate that our website will be up and running about the same time that you receive this *Report*, and that you will take the time to communicate with me on any issue that you feel should be our concern.

The New Federal Regulatory Water Rights and the Future of River Management: The Example of New Mexico

Charles T. DuMars, Professor Emeritus of Law, University of New Mexico School of Law

Throughout the United States virtually all the river systems are nearing or have reached physical limits. Water resource conflicts are increasing proportionately and, most often, where waters cross or define political boundaries. Thus, inter-jurisdictional water disputes are a possibility facing every independent water district, municipality, county, tribal reservation and government agency. Today, those conflicts also include struggles between, on the one hand, environmental groups and the agencies promoting their agendas and, on the other hand, traditional water users. This is also true internationally where conflicts between environmental, in-stream, municipal and industrial uses are escalating. This paper utilizes the example of New Mexico to provide candid approaches for resolving the complex interrelated choices presented in current water management.

The Need for New Approaches to Water Management in New Mexico

For most of the last century, water issues in New Mexico have revolved around the development of reservoir and diversion projects but in the last thirty years the spectrum of demands for water has broadened dramatically. The needs of cities have grown faster than the ability to serve them while water pollution, wildlife needs, and river protection are now serious public concerns. Loss of slack in the system has created steadily building tensions so that now it takes no more than one season's drought, a new flow regulation, or a jump on the population chart to trigger a full-fledged public controversy or a multi-party lawsuit over water rights.

Our water management institutions were not designed to address today's complex, high-risk, and high-consequence water conflicts. These institutions typically lack the scope and resources to arbitrate competing water claims that go beyond traditional and historic water rights. Moreover, they are often themselves active claimants on behalf of particular constituencies or traditional principles of water law. Water markets permit water to move to higher valued economic uses but are criticized as insensitive to the external costs of water delivery and consumption. This insensitivity makes institutions unsuitable for the task of comprehensively resolving the issues. Courts are hardly more suitable since the cost of litigation is prohibitive, and the end result is invariably unsatisfactory.

Scarcity manifests latent discord and when water budgets tighten,

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"Loss of slack in the system has created steadily building tensions so that now it takes no more than one season's drought, a new flow regulation, or a jump on the population chart to trigger a full-fledged public controversy or a multi-party lawsuit over water rights."

uses and values that were compatible in times of abundance realize a capacity for opposition. Here in New Mexico we are seeing several different kinds of disputes, including those in the following chart.

Types of Water Disputes in New Mexico

Interstate – the Pecos River System where claimants are contesting use-now vs. storage-for-later-release, consumptive vs. non-consumptive use, and use-upstream vs. use-downstream

Inter-agency – demands for better water quality by the Pueblo of Isleta and conflicts between the New Mexico Department of Fish and Game, the United States Fish and Wildlife Service and the Office of the State Engineer

Federal/Tribal vs. State – Issues between non-Indian water users and the Navajo Nation provide an excellent example where state and local governments regard federal water rights (reserved and non-reserved for tribal and public land), which for the most part are unadjudicated, as limiting their own property rights in water.

Federal/State vs. Tribal – the Jicarillas and the Rio Grande Pueblos' long-term needs and goals illustrate tribal interests where on-reservation water use or off-reservation water leasing may clash with federal laws, reserved rights and other priorities, or with state water claims.

Groundwater vs. Surface Water – in the Middle Rio Grande Basin we see these conflicts as the latest example of the inability of our institutions and laws to keep pace with human-created scarcity in aquifers hydraulically connected to surface waters.

Sorting out the policy and science issues in stream-related aquifers presents a particularly difficult issue. While all would agree that the need to conjunctively regulate ground and surface water is evident, what this means in terms of policy and science is far from clear. Even the goals that all share in the abstract can quickly disassemble when faced with the obligation of specific implementation. For example, in New Mexico all agree that conjunctive management of ground and surface water is a vital goal. However, knowledge of an aquifer is continually growing and changing. With each new iteration of mathematical models, the management regime for an aquifer is likely to change. Yet those who acquire water rights and invest in infrastructure need certainty. They are loathe to invest capital if the rules are likely to change throughout the duration of their acquisition of return on capital.

Some, who have not relied on the status quo, will strenuously press to have all water permits modified retroactively to reflect the new and "correct" knowledge of the aquifer. Conversely, those who have relied on the "science" at the time of their application will protest change.

There is no issue more complex or more important to the residents of New Mexico and the Middle Rio Grande Valley than understanding the hydraulic connection between ground water pumping in the region and the flows of the Rio Grande. Fortunately, New Mexico water law has made the state a pioneer in this area.

The complexity of this issue is illustrated well by the Middle Rio Grande river system in New Mexico. In this reach of the river an interstate compact commits a certain amount of water to downstream users in southern New Mexico and Texas. Within that same reach senior Indian Pueblo water users rely on the river's flow. Finally, senior non-Indian irrigators who use surface water are protected by the prior appropriation doctrine. These facts still prevail and for many years the amount of protection from groundwater pumping has been calculated by a conservative mathematical method that does not account for vertical movement of water in the aquifer, nor does it account for difference in depth between the river bed and the well screen.

The State Engineer has now proposed adoption of a numerical model utilizing sophisticated computer techniques that further refine our understanding of the hydraulic connection between water pumped from wells and the river. This new model was generated by Teideman and others at the U.S. Geological Survey in 1998 and has since been modified by Barroll of the New Mexico State Engineer's Office.

From a sense of caution and conservative management, the State Engineer has chosen not to apply the new model retroactively for an interim period of five years. He is apparently not willing to relieve all existing well-pumpers of their obligation to protect the river as calculated by the original method and at the same time, in certain circumstances, application of the old method makes those relying on it better off than application of the new model.

The differences in river management based upon different management tools can scarcely be over stated. Those who prefer use of the most conservative assumptions would no doubt argue that computer model results are not facts; they predict outcomes which may or may not be consistent with what occurs in the future. While some models are better than others, a change in input, either as to the properties of the soils or sediments in the ground where the well is located, or a change in the assumptions as to the velocity with which water moves through these soils, can result in widely varying predictions. For example, as recently as 1995, Kernodle, et al. (U.S. Geological Survey) predicted that pumped wells would have between 44% and 66% of their water pumped from the Rio Grande by the year 2020. The Teideman model suggested there would be a 90% long-term impact, while the Barroll modifications suggest around 75%. Thus, while all would likely agree that the revised numerical models are superior tools from a predictive stand point, they may not be superior in terms of determining water policy.

The State Engineer, in managing the basin to protect compact deliveries and senior water rights, would argue that any responsible administrator should have a safety factor built into all decisions. We now see, through hindsight, that perhaps early water rights administrators were not so far wrong in applying the Glover-Balmer method, since it probably results in a retirement requirement that is about 20% more conservative than the new Barroll model. Stated more simply, one might argue that it may be prudent, at least for the near future while the matter is still under study, to err on the side of river protection by retaining a method that preserves the possibility of a 20% margin of error. Until sufficient testing is done, through monitoring wells and further calibration, it may be appropriate to err on the side of protecting river flows rather than development of municipal and industrial water supply from wells. Conversely, to maintain a conservative approach to river management that does not reflect what is actually occurring in the river and the aquifer, must surely be bad policy.

Equally, prolix policy choices are presented when one seeks to balance water quantity demands with the needs of endangered species for certain flow regimes, the needs of native riparian vegetation, and the water quality standards being called for under the obligation to limit maximum loads of pollutants in streams under the TMDL programs.

Any one of these issues requires extraordinary good quality science, performed over time, with longitudinal studies that confirm the accuracy of assumptions. The catch phrase for modifying behavior when assumptions are changed is of course, "adaptive management." Adaptive management works well for those who have not invested capital on a twenty to forty year planning horizon. It does not work so well for those who have.

The Cost of Conflict Resolution Through Litigation will Cause Parties to Turn to Adaptive Water Rights Administration Supported by Good Science and Reasonable Compensation for Losses

Modern water rights administration will need to acknowledge the need for institutional change as the needs of society change. It will also need to validate change through good science. It must provide notice of future uncertainty to those who invest in water rights infrastructure.

At the same time, it will need to obligate those currently utilizing water resources to adapt to change when necessary to improve water management, and also provide compensation should the adaptation come at a cost that could not have been anticipated when the individuals made their capital investment.

Currently, water administration institutions do not sufficiently use science to drive policy and they typically only provide forums for conflict resolution through legal procedures in the form of judicial trials and adversarial hearings. They rarely provide forums for problem solving. These systems will have to change – and they will change. Eventually, the costs of lawsuits and conflict will dwarf the costs of employing good science in policy and good river management. This reality will eventually bear fruit that supports society as a whole. Fair, fully compensated adaptation will be the result.

To be even more explicit: in dealing with water disputes we must overcome narrow modernist starting points to get a clearer understanding of what is at stake prior to negotiating better ways for water management.

Reflections on Water:

New Approaches to Transboundary Conflicts and Cooperation.

Edited by Joachim Blatter and Helen Ingram. MIT-Press, 2001.

"Water is the oil of the 21st century" (Popular statement which can be found, for example, in bank brochures in association with newly developed water funds or in opening paragraphs of newspaper and magazine articles)

"At a time when the First World is obsessed with computer technology, genetics, and the froth of media entertainments, we would be well advised to remember our relationship to the two atoms of hydrogen and one of oxygen that, bound by nature, support all life." (Jacques Leslie, *Harper's Magazine*, July 2000, p. 38)

"Living means communicating" (Peter Scherer, First sentence of the welcome address to the "World Water Congress: Efficient Water Management – Making it Happen" in Berlin, October 15-19, 2001)

Introduction: A new awareness of existentialist meanings of water

The above quotes all express a strong conviction that water and water politics/ management are moving to the forefront of global discourse. They also arrived at additional conclusions other than the fact that water is gaining importance. One suggests that water, more than oil, is getting to be an essential base for economic development and national welfare.

Jacques Leslie's emphasis is even more fundamental: water is the physical base for all living creatures and humankind has to accept its natural limitations. Water is a matter of life or death — not just a matter of prices and pleasure — and for some nations water issues can be framed in terms of "to be or not to be." In arid regions conflicts are becoming existential battles over national independence and sovereignty, and pundits warn that wars will be fought over water. But Leslie's statement contains another — and from a social scientist perspective — even more fundamental insight. He points to the occurrence of quite different and contradictory challenges and transformation. Environmentalists point to the natural limits for human development, and water scarcity is the cause for crises in some parts of the world, while other signs point in quite different directions. The transformation from an industrial to a knowledge-based economy, and towards an informational society in the developed parts of the world, has brought a new awareness of the cultural foundations of the human enterprise. Communication, cultural frameworks, identities and public discourse are gaining center stage in the new approach to water politics. This view may explain why many people are opposed to the management of water advocated by resource economists and suggests that water serves as a focal point for new community building.

The third statement suggests that issues of water management and politics are already bringing people together. This perspective challenges — or more precisely complements — the pessimistic view that water scarcity will inevitably lead to conflict and war.

"Reflections on Water" is an attempt to disentangle the most important dimensions in the transformation of global water politics. It aims at an understanding of the divergent meanings of water and lays the groundwork for strategies to deal with water management and conflicts. The book focuses on cross-border watercourses, those areas where water management has been most difficult during the 20th century and where the current processes of internationalization and globalization open up new opportunities and risks.

The general background for water politics: current transformations beyond modernity

"Reflections on Water" puts water politics into the more general debates about transformations at the turn of the millennium. In the 1980's we witnessed challenges to the very core of western society and more recently "discovery" of the (endangered) ecological basis of mankind. But it is only the technological revolution in the 1990's (Internet, micro-electronics and genetics) that actually triggered the transformation of current societies beyond classic modern characteristics. Globalization, genetics and virtual realities are stripping those bonds which have connected humans to a local, material and natural (objective) reality while tearing down boundaries which define the individual (a natural and cohesive personality) and the social community (a territorially bound national society, economy and state). These processes of "debordering" nation states and "disembedding" social actors from national contexts are accompanied by a renewed awareness of natural limits and a new emphasis on "identity" and "locality".

What has to be stressed here is the fact that the book is not anti-modern. Just as Newtonian physics were not made useless by Einstein's discovery of quantum physics, these modern approaches to water politics are seen as quite helpful. Nevertheless, the hegemony of modern water politics' disciplines (law, engineering and economics) is challenged. We advocate an ontological and epistemological pluralism. This would mean that every water negotiation must begin with a clear analysis of the meaning(s) of water held by the actors and a determination made of their identities and boundaries. Further, it means that we can no longer only take into account nation states and their preferences based on economic interests.

To be even more explicit: in dealing with water disputes we must overcome narrow modernist

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starting points to get a clearer understanding of what is at stake prior to negotiating better ways for water management.

Expanding the technical, judicial and economic perspectives

Water has been defined by lawyers as a property of territorial units or nation states. Engineers see water as a natural resource transformable into products for human consumption and, from an economist's perspective, water is a commodity that can be exchanged and traded.

The old narrow thinking about water resulted in a change from "adapting to nature" to "controlling nature." With the renewed awareness derived from research on ecosystems, and a new recognition of the cultural importance of water, we are once again witnessing a transformation. We know that our new perception of water must be defined by this new awareness.

The conclusion reached in "Reflections on Water" is that the only way to understand the nature of water conflicts is to overcome our old definitions. As a simple property, water has a rather peripheral connection to individuals and social groups because it is only one possession among many. This limited association intensifies as water becomes integrated with the larger values of national security and community building. When water is perceived as a security issue and a potential threat to the sovereignty of states, anarchy and the competitive logic of "relative gains" prevail. This makes cooperative efforts for water management very difficult. We then find that not only political units like sovereign states but advocacy coalitions unrelated to territory (e.g. boaters, scientists and fishermen) are bound together by certain core beliefs and understandings about the meaning of water. Whether the political actors are members of a territorially-defined sovereign state or a non-territorial community, water is essential for their existence and identity. When compared to the concept of water as a property of nation states, the association between water and political actors might lead to greater risks but it also opens up new opportunities for transboundary cooperation.

As nature reveals itself to be far more chaotic and unpredictable than modern science once envisioned, the ecological paradigm provides fresh justification of the ancient perception of water as a sacred gift of nature not to be manipulated by human efforts. We humans have been forced to confront mounting evidence that the carrying capacity of our planet as well as our ability to control nature are inherently limited. The concept of water as a product of industrial and mechanical processes has been questioned. Ironically, we are simultaneously witnessing a transformation toward a symbolic, virtual reality that is potentially more liberating from natural, material or territorial conditions. This emerging virtual reality, characterized by a symbolized economy and social activities driven by the search for distinctive images, life-styles and tastes, will expand the meanings of water into dimensions formerly unimaginable. We trace the emerging transformation of water from a material reality to a symbolized and virtual reality along four lines: the remake of water from an input factor for agro-industrial processes to a life-style product (like the French table waters Perriér or Évian); the transplantation of "natural experiences" from natural places to adventure/theme parks and, most recently, cyberspace; the move from national water projects to global water banks; and the transformation of local water companies into actors in the field of global telecommunication.

Modern thought, based on economics and rationality, has tried to liberate water from its ancient territorial bonds in order to treat it as a tradable commodity. Thus, water partially escaped its ties to territory and its limitation to be used only in its natural form. The numerical price of the market place provides a universal mechanism to transfer water from one place to another, from one use to another and from one time to another. Today, this universal standardization and homogenization of goods has been seriously undermined.

Water can become incommensurate and a very "specific good." Ecologically water is connected to its natural environment in many ways. It carries with it the imprint of its place of origin including various types of microbial life and dissolved solids, temperature, corrosiveness, and taste. The dangers of altering the environment at the places of origin and destination place serious limitations on the commensurate value of water. Water is a specific good, according to cultural perspective, because it is deeply embedded in communal life. That water is regarded as a non-commodity may depend very much on shared beliefs transported by symbols, religion and myths.

Overview of the chapters

The book explores water politics at various times and places around the globe. María Rosa García-Acevedo's description of water flows, population, capital, and development projects across the U.S.-Mexico border over the past century provides a lesson in the evolution of meanings of water. Two case studies from border regions in the developed world – the Lake Constance region where Switzerland, Austria and Germany share the governance of the second largest lake in Western Europe, and the U.S.-Canadian border – show the value of including the cultural perspective in the analysis of transboundary conflicts and cooperation. Water, watersheds, wildlife and wildlife corridors became symbols for uniting political actors into transnational advocacy-coalitions rather than modern states being the dominant lines of conflict. On the other hand, Kathleen Sullivan and Pamela Doughman reveal that at the U.S.-Canadian and the U.S.-Mexican borders, national and technocratic perspectives on shared natural resources still predominate. Further case studies remind us that in many parts of the world, especially in areas of the former Soviet empire, transformations from pre-modern to modern ideas continue. Whereas Joe DiMento`s study on the Black Sea Environmental Program gives little hope that current processes of modernization will help to rescue the Black Sea from ecological collapse, the study of Paula Garb and John Whiteley on the Inguri River hydroelectric facility contains a more optimistic message. In the final case study David McDermott Hughes looks at the various definitions of water in boundary disputes in the Chimanimani highlands of Zimbabwe. His investigations provide primary evidence that different features of water politics co-exist at specific places and that a necessary first step in understanding the political struggles is to expose the divergent meanings of water.

The two final chapters of the book mirror the two introductory chapters. In the beginning we demonstrate that the current trend towards a "glocalized" (Roland Robertson) world changes the meanings of water and the contexts of transboundary water politics. In the final chapters we assert that the fluidity of water makes it a perfect example for consideration of governance in a world where the logic of "spaces of place" is being superimposed by the logics of "spaces of flows" (M. Castells).

Joachim Blatter is Assistant Professor, Department of Politics and Management, University of Konstanz, Germany.

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The Utton Center mission is to promote equitable and sustainable management and utilization of transboundary resources through impartial expertise, multi-disciplinary scholarship, and preventive diplomacy.

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The Utton Center Defined

Albert E. Utton and CIRT:

Professor Albert E. Utton spent nearly 40 years working in the field of international transboundary resource issues. As he expanded his original concern for potential conflicts between the United States and Mexico over the Rio Grande/Rio Bravo to transboundary issues worldwide he founded two organizations, the Natural Resources Center and the International Center for Transboundary Resources. These two institutions, based at the University of New Mexico School of Law, focused on domestic and international transboundary resource problems respectively. His goal was preventive diplomacy. Professor Utton became internationally recognized as an expert in the field and his name is synonymous with the Bellagio Groundwater Model Agreement (1989), a document that he co-authored.

Shortly after Professor Utton died in 1998, a group of his former associates met to explore ways to continue his work. In January, 1999 the group decided to bring Utton's two organizations under one administration and to build on his work with a renewed mission *'to promote equitable and sustainable management and utilization of transboundary resources through impartial expertise, multi-disciplinary scholarship, and preventive diplomacy.'*

Thus was born the Utton Transboundary Resources Center. The Utton Center has embarked on a plan that will continue work on the U.S. – Mexico border as well as directing resources to transboundary issues within the United States. While our initial focus in on water resources, we will also deal with other transboundary resource issues from time to time.

We include here, for your information, a brief outline of the current challenges facing water resources administration and a description of the Utton Center approach for addressing them.

Disputes Over Resources, Especially Water, Are Increased:

As water utilization has reached or is reaching its limits, the stress and tension on jurisdictions and their administrators becomes more and more intense. Institutions are expected to achieve a social good – efficient, fair distribution of water resources across the spectrum of users – with ever tightening water budgets. The competition between historic and traditional uses and new economies are becoming more tense and complex. When we add new claims regarding both the protection of endangered species and maintenance and protection of in-stream flow, or we are faced with long periods of drought, we face disputes that are extremely difficult to resolve.

Political Boundaries Stymie Solutions:

A drainage basin is defined by a watershed which includes all surface and ground waters in a relatively discrete hydrologic system. However, management systems are based on political boundaries such as cities, counties, states and tribal lands. Had water management been organized by river basin our current situation would be less intractable.

Water shortages and conflicts do not yet constitute a crisis in the United States, but that eventuality is looming. Our water management institutions were not designed to remedy these disputes nor have they evolved to do so.

Collaborative, Multi-disciplinary Approaches Provide Sustainable Solutions:

The stresses on all natural resource use, and particulary water and water users, are increasing. Traditional institutions are limited in their abilities to respond and may, in fact, exacerbate conflicts. We at the Utton Center believe that collaborative approaches among non-traditional partners are needed to reduce conflict and resolve management issues. Multi-disciplinary teams can help stakeholders understand problems and forge agreements.

To ensure continuity with the past, and a shared understanding of our mission, all projects undertaken by the Utton Center must:

- Be proactive, not reactive: identify potential problems and seek to avoid them
- Focus on transboundary/ interjurisdictional resources
- Approach projects impartially
- Strive to integrate the perspectives of relevant disciplines, institutions, and interests
- Have broad potential application as well as a strong theoretical foundation

While operating under these standards the Utton Center also involves itself more directly than before in offering ongoing legal and technical support to transboundary resource management groups. It will partner with stakeholders to create multidisciplinary teams of technical experts to find solutions to the problem — teams which will gather and analyze data and create models to support fact-based decision making. Such support will include using computer modeling to simulate water systems over a period of time and the use of data to consider alternative futures and develop agreements.

The Utton Center Goals Foster Sustainable Solutions

The Utton Center is an able partner in this process and our goal is to contribute to the sustainable management of transboundary/ interjurisdictional resources, particularly, but not limited to, rivers and watersheds, in the following ways:

- Employ interdisciplinary expertise, in a neutral setting, to promote understanding of resources, their use and management options
- Support data gathering and modeling as a means to foster joint planning and sustainable management
- Provide a model of resource management resulting from a successful outcome which was developed through common understanding and based on shared vision of the resource
- Contribute to the public understanding of a shared vision and multidisciplinary approach to resource issues by providing public access to data and agreements
- Organize workshops and seminars for resource managers to learn from technical experts about successful resolution of transboundary disputes
- Support interdisciplinary scholarship and foster innovation in providing solutions to transboundary resource management issues
- Use the educational setting to promote a multidisciplinary team approach to resource issues by including law students, water resource students, economics students, biology students, earth science students and engineering students
- Create legal forms to support the process
- Management solutions to transboundary resource disputes must be the result of collaboration among stakeholders, with scientists and lawyers providing theoretical and practical advice.